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THE ROAD AHEAD:
HOW WASHINGTON STATE SHOULD SWITCH FROM A PER-GALLON TO PER-MILE USAGE FEE

by Baruch Feigenbaum

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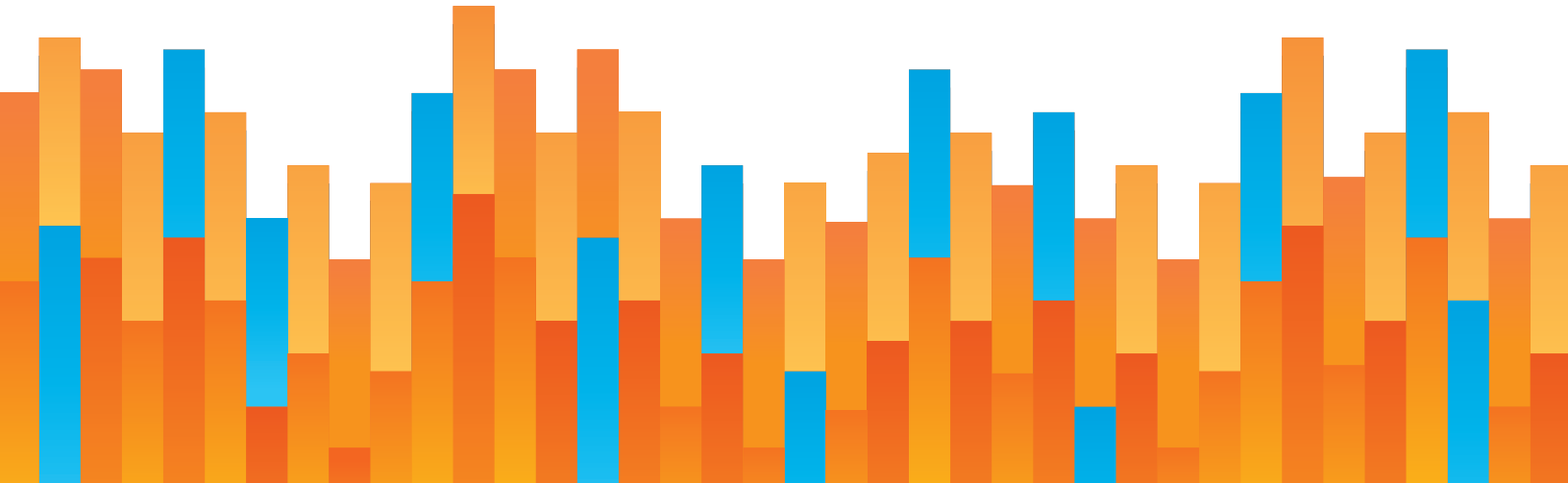

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PART 1

INTRODUCTION

For the past 100 years, Washington's highway network has depended on per-gallon taxes on gasoline and diesel fuel. The gasoline tax was first enacted in neighboring Oregon in 1919, and within a decade it was adopted by all of the then-48 states.[1] Nearly all states dedicated the revenue from these fuel taxes to the construction and maintenance of their roadway systems.

Unfortunately, Washington State's fuel tax has become unsustainable as a long-term revenue source for two reasons. First, combustion-powered automobiles are becoming more fuel-efficient.[2] Second, the number of electric and hybrid vehicles is increasing exponentially.[3] The tax has been compared to a rock star on his farewell tour. The fuel tax has served Washington State well for 100 years, but it is time to begin considering a more sustainable user fee as its replacement.

This problem of declining highway revenues was first studied by a special committee of the Transportation Research Board of the National Academy of Sciences in 2005. It concluded

1 Jeff Davis, "Oregon Enacts America's First-Ever Motor Fuel Tax," Eno Center for Transportation, 25 Feb. 2019. https://www.enotrans.org/article/the-gas-tax-at-100-oregon-enacts-americas-first-ever-motor-fuel-tax-february-25-1919/ (28 Jan. 2022).

2 Richard Truett, "Amid EV Hype the Internal Combustion Engine Keeps Improving," *autonews.com*, Automotive News, 12 Nov 2018. https://www.autonews.com/article/20181112/OEM06/181119968/amid-ev-hype-the-internal-combustion-engine-keeps-improving (28 Jan. 2022).

3 David Waterworth, "Exponential Growth: Global Sales of New Electric Cars May Tip Seven Million This Year," *thedriven.io*, The Driven, 20 Sep. 2021. https://thedriven.io/2021/09/20/exponential-growth-global-sales-of-new-electric-cars-may-tip-seven-million-this-year/ (28 Jan. 2022).

that fuel taxes would not remain viable as the primary highway funding source for the 21st century.[4] In response, Congress created the National Surface Transportation Infrastructure Financing Commission to examine how surface transportation should be funded over the long term. After considering many different alternatives, the Commission concluded that (1) the original users-pay/users-benefit principle should be retained and (2) the best way for users to pay would be a charge per mile driven, rather than per gallon consumed. It also recommended that the road usage charges (RUCs) *replace* the fuel taxes, rather than supplement them.[5]

In the 16 years since that Financing Commission report, Congress has authorized federal funding for state departments of transportation (DOTs) to carry out a number of pilot projects in which motorists and truckers operate their vehicles under a hypothetical RUC collection system.[6] In Washington, the State Transportation Commission (WSTC) was tasked with determining whether RUCs could be a replacement for the fuel tax.[7] The Commission created a 30-member steering committee consisting of state legislators, stakeholders, and associations that represent various interest groups from throughout the state. The committee oversaw a 2018 statewide pilot consisting of a little over 2,000 drivers. In 2020, after analyzing the results of the pilot, the WSTC issued a number of suggestions to the legislature and governor for pursuing a gradual transition to an RUC system.

In 2020, after analyzing the results of the pilot, the WSTC issued a number of suggestions to the legislature and governor for pursuing a gradual transition to an RUC system.

4 "The Fuel Tax and Alternatives for Transportation Funding Special Report 285," Transportation Research Board, onlinepubs.trb.org, 2006, https://onlinepubs.trb.org/onlinepubs/sr/sr285.pdf (28 Jan. 2022).

5 "Paying Our Way: A New Framework for Transportation Finance," National Surface Transportation Infrastructure Financing Commission, *rosap.ntl.bts.gov*, Feb. 2009. https://rosap.ntl.bts.gov/view/dot/17160 (28 Jan. 2022).

6 "Mileage Based User Fee Systems," *mbufa.org*, Mileage Based User Fee Alliance, 2022, https://mbufa.org/pilots/ (28 Jan. 2022).

7 "Washington Road Usage Charge Assessment," Washington State Transportation Committee, *wstc.wa.gov*, 31 Dec. 2020. https://wstc.wa.gov/wp-content/uploads/2021/01/WARUC-2020-Annual-Report.pdf (28 Jan. 2022).

However, before any transition occurs, Washington policymakers need to answer several questions about how the RUC revenue will be used, RUC program options, and privacy of an RUC system. Further, state leaders need to examine whether they will start collecting RUCs on all highways at the same time, or start on certain types of roadways. Finally, officials must decide when and how to sunset the fuel tax.

This policy brief focuses on how Washington policymakers might implement RUCs. First, it estimates the potential declines in fuel tax revenue over the next 30 years. Second, it discusses the general lack of understanding among some policymakers and the public about the need to transition to a new roadway funding revenue source. The brief details the state's RUC pilot project and how to ensure Washington State implements an RUC system in a way that preserves the long-standing users-pay/users-benefit principle. Next, it suggests a policy framework for how to develop a permanent RUC program in Washington and suggests an implementation order that builds on systems already in place on portions of the state's major highways. After that, it details how to solve RUC problems that must be addressed before a permanent RUC system is implemented. Finally, the brief suggests some next steps.

PART 2

THE COMING DECLINE IN WASHINGTON'S FUEL TAX REVENUE

Unlike some states that fund roads and bridges partly out of general fund revenue, Washington State maintains a separate transportation budget that pays for capital, maintenance, and operating costs for the state highway system, which includes the largest ferry fleet in the United States.[8]

Washington State highways are largely paid for by drivers through state fuel tax (49.4 cents per gallon) and vehicle license fees, which are deposited into the state's Motor Vehicle Account (MVA). The revenue sources that fund the MVA are protected under the state constitution's 18th Amendment, which restricts the expenditure of fuel tax and vehicle license fees in the MVA to highway purposes (spending on roads and bridges) only.[9]

8 "Senate 2021-2023 Biennium Transportation Budget Proposals," Washington State Budget Bills and Documents, *http://leap.leg.wa.gov/leap/budget/detail/2021/st2123Bien.asp*, 2022. http://leap.leg.wa.gov/leap/budget/detail/2021/st2123Bien.asp (23 Feb. 2022).

9 "18th Amendment to the Constitution," Washington State Legislature, *leg.wa.gov*, 2022. https://leg.wa.gov/JTC/trm/Documents/TRM_1315Update/6%20-%2018th%20Amendment.pdf (28 Jan. 2022).

In order to determine how quickly the fuel tax is losing purchasing power and if the trend of Washington residents buying all-electric and hybrid vehicles is expected to remain constant or accelerate, this analysis asked transportation consultant Ed Regan, who has been developing traffic and revenue forecasts for highways for many decades, to develop fuel tax projections. The projections build upon the 2021 "reference case" forecast issued by the U.S. Energy Information Administration (EIA) in its *Annual Energy Outlook*.[10] That reference case forecast was developed in late 2020, and it reflects reduced Corporate Average Fuel Economy (CAFE) standards set in the Trump administration; yet, it still anticipates fairly significant increases in fleet fuel efficiency over the next 15-30 years. It also assumes some increase in electric vehicle use but predicts that electric vehicles (EVs) will represent less than 10% of the U.S. light vehicle fleet by 2050.

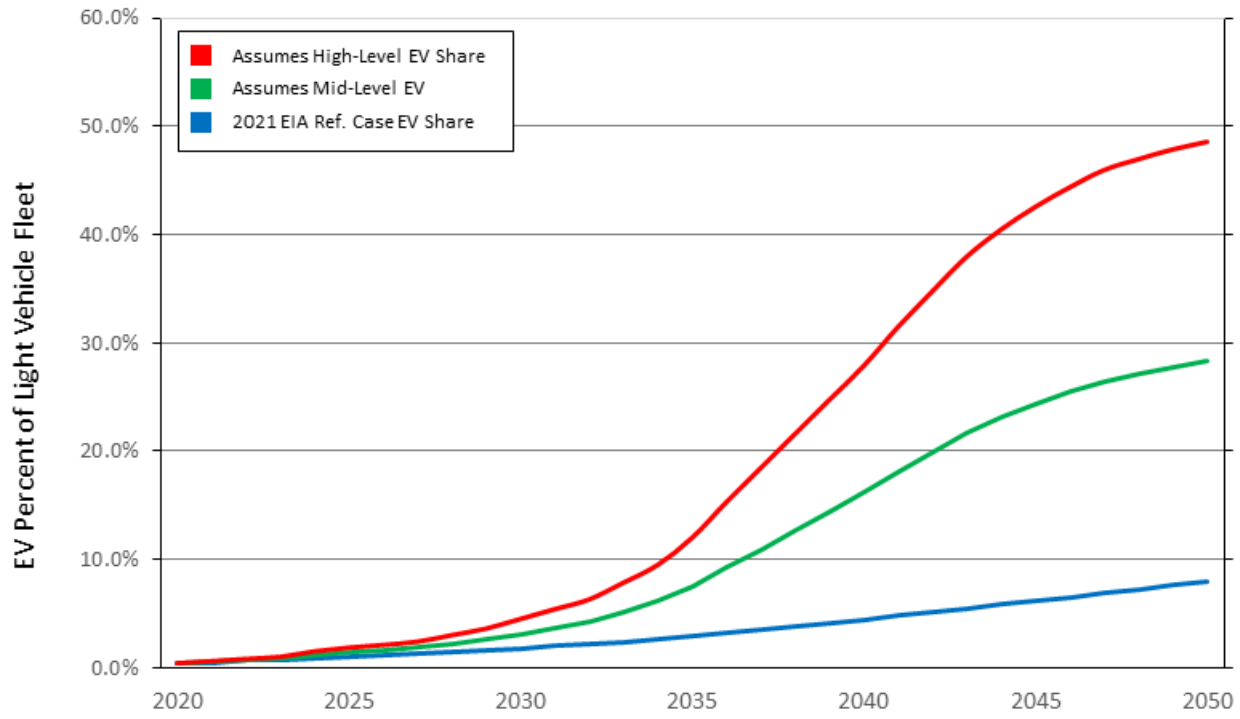
> *Washington State highways are largely paid for by drivers through state fuel tax (49.4 cents per gallon) and vehicle license fees, which are deposited into the state's Motor Vehicle Account (MVA).*

Most other forecasts expect a significantly higher share of EVs in the future, and Regan created two alternative scenarios with higher electric vehicle shares. As shown in Figure 1, the "High EV" scenario assumes almost 50% of light-duty vehicles will be electric by 2050. That scenario was adapted from global EV sales forecasts developed by Bloomberg New Energy Finance.[11] A third scenario was then created mid-way between the EIA reference case and the "High-Level" EV case, in which non-internal combustion engine (ICE) vehicles would exceed 15% of the fleet by 2040 and almost 30% by 2050.

[10] "Annual Energy Outlook 2021, U.S. Energy Information Administration, *eia.gov*, 3 Feb. 2021. https://www.eia.gov/outlooks/aeo/ (23 Feb. 2022).

[11] "Electric vehicle Outlook 2021," *aboutbnef.com*, Bloomberg New Energy Finance, 2021. https://about.bnef.com/electric-vehicle-outlook/ (23 Feb. 2022).

FIGURE 1: ALTERNATIVE ESTIMATES OF U.S. LIGHT VEHICLE FLEET EV SHARES

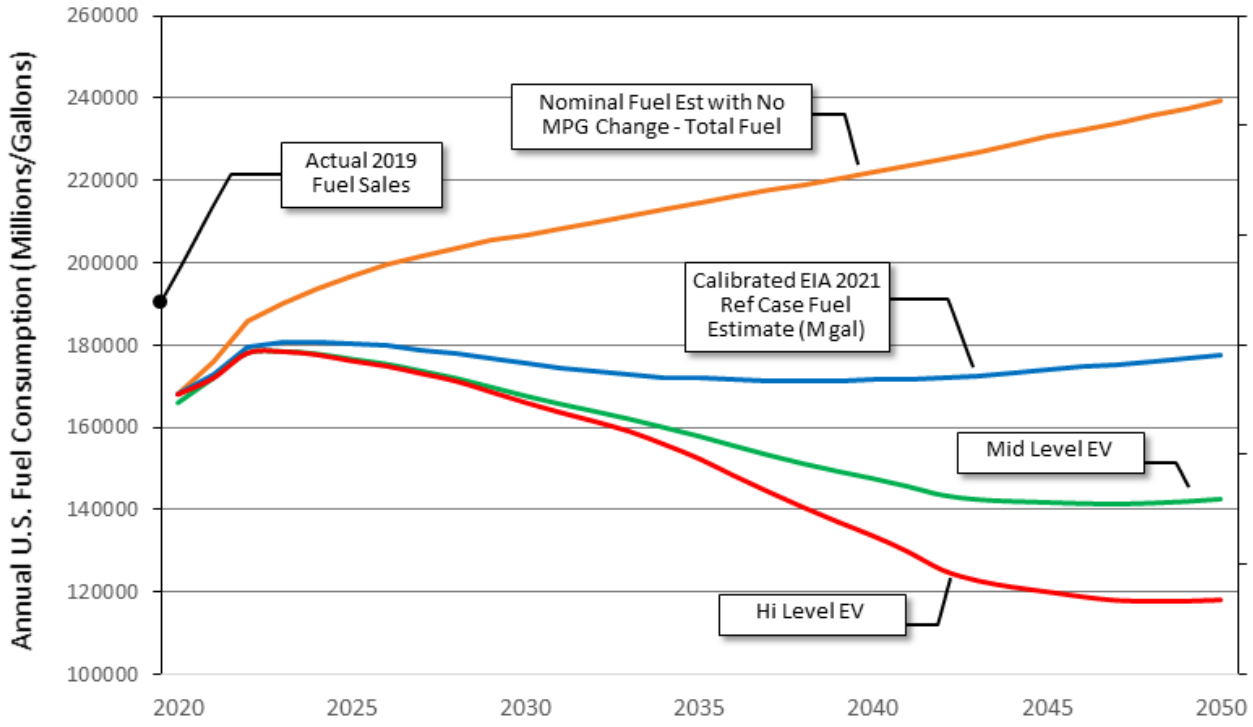


Source: U.S. Energy Information Administration, Bloomberg New Energy Finance

Future year domestic fuel consumption reflects EIA estimates of growth in vehicle-miles of travel (VMT). National VMT in 2020 declined by about 13.5% due to COVID-19 impacts, but EIA projects VMT to fully recover by 2023. Thereafter, EIA forecasts average growth of national VMT of 0.75% per year through 2050.[12] Figure 2 shows Regan's four alternative forecasts of annual fuel sales in the U.S., including both gasoline and diesel. The orange curve assumes no change in current fuel efficiency and no increase in the share of electric vehicles. This is not a realistic scenario, but it is provided simply for comparison with the three aforementioned alternative scenarios. With no increase in fuel efficiency, the 168 billion gallons of fuel sold in 2020 would hypothetically be expected to increase to about 207 billion gallons by 2030 and 239 billion gallons per year by 2050.

12 "API Query Browser," U.S. Energy Information Administration, *eia.gov*, 2022. https://www.eia.gov/opendata/qb.php?category=2106088 (23 Feb. 2022).

FIGURE 2: COMPARISON OF TOTAL U.S. FUEL SALES FORECAST



Source: U.S. Energy Information Administration. Bloomberg New Energy Finance.

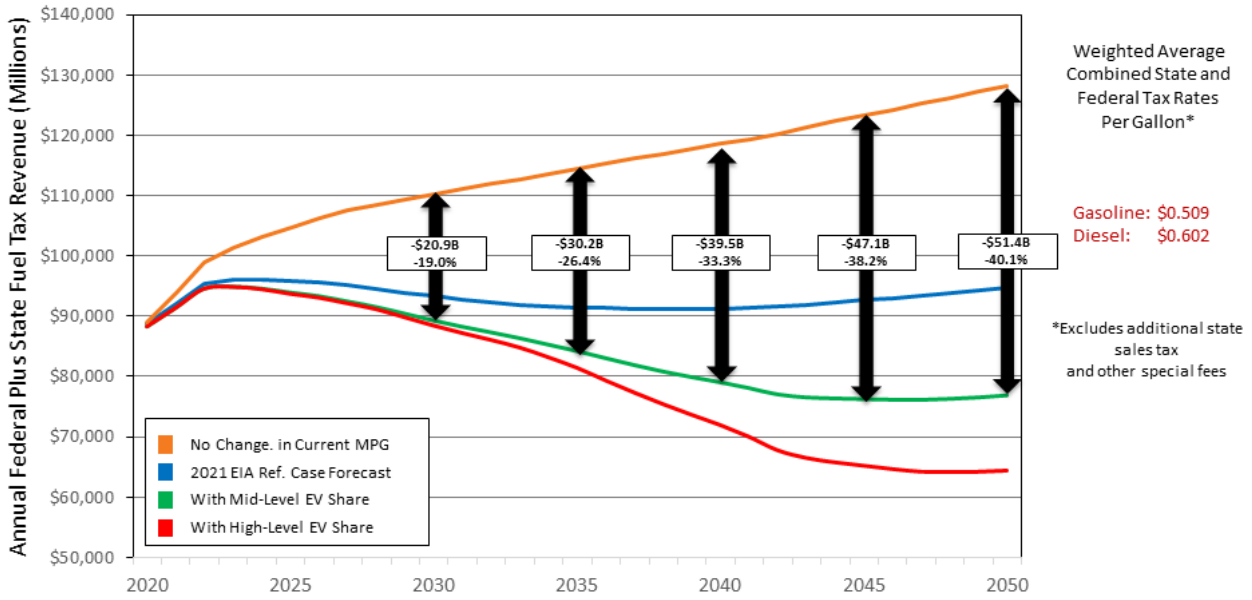
The blue curve shows the EIA 2021 reference case forecast (calibrated slightly to actual year-end fuel consumption from 2020). Even with relatively low estimates of electric vehicle penetration, the EIA forecasts that U.S. fuel sales will never again reach 2019 levels. If the "mid-level" EV scenario (green curve) is used, fuel sales will decline significantly, especially after 2030, with U.S. fuel consumption falling to around 140 billion gallons by the 2040s. With the "high-level" EV scenario (red curve), annual fuel sales in the U.S. would drop below 120 billion gallons by 2045.

Regan has also developed alternative projections of nationwide fuel tax revenue from both state and federal tax sources combined. Federal fuel tax rates have not been increased in almost 30 years, and stand at $0.184 per gallon for gasoline and $0.244 per gallon for diesel fuel. State tax rates vary, but after weighting by relative levels of travel in each state, the overall average state gasoline tax is $0.325 per gallon, resulting in an overall combined state and federal rate of $0.509 per gallon. The weighted average state diesel tax rate is $0.358/gallon, for a combined federal and state tax of $0.602 per gallon. Some states also

assess a form of sales tax or other fees on fuel consumption; these are not included in the rates above.

Figure 3 shows estimated combined annual state and federal fuel tax revenue (including both gasoline and diesel) for the hypothetical "No Change in Current Miles Per Gallon (mpg)" case and the three alternative forecast scenarios. With no change in MPG, total fuel tax revenue in America would increase from about $89 billion in 2020 to about $105 billion by 2025 and to over $128 billion by 2050. However, with increasing fuel efficiency, the 2021 EIA reference case will remain below $95 billion through 2050.

FIGURE 3: ESTIMATED COMBINED ANNUAL STATE AND FEDERAL FUEL TAX REVENUE (NO CHANGE IN MILES PER GALLON)



Source: U.S. Energy Information Administration, Bloomberg New Energy Finance

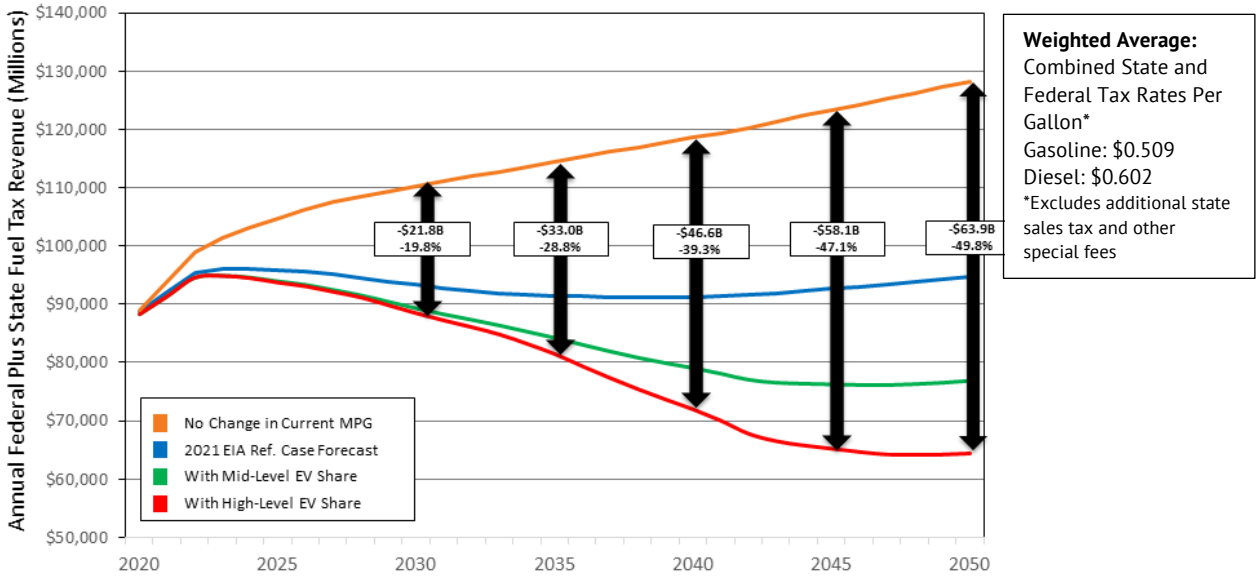
As depicted by the black arrows, with the "mid-level" EV penetration scenario, as compared to the "no change" case, fuel tax revenue would be reduced by 19% as soon as 2030, and more than 40% by 2050. This reduction would be entirely attributable to increased fuel efficiency of vehicles powered by internal combustion engine (ICE) vehicles and the increased use of EVs.

Figure 4 shows the net reductions between the "no change" condition and the "high-level" EV penetration scenario. In that case, national fuel tax revenue would be reduced by almost

40% by 2040 and almost 50% by 2050. While this might be considered a "worst case" outlook, it is becoming more likely based on recent trends and industry announcements:[13]

- GM plans to no longer offer ICE vehicles after 2035; Volvo may reach that point by 2030;
- Ford has stopped accepting pre-orders for its new "Lightning" EV version of its popular F-150 pick-up truck; it has already taken over 200,000 orders, which exceeds its estimated production capacity for the first two years; and
- California will not allow sales of new ICE vehicles after 2035.

FIGURE 4: ESTIMATED COMBINED ANNUAL STATE AND FEDERAL FUEL TAX REVENUE BETWEEN NO-CHANGE AND HIGH-LEVEL EVS



Source: U.S. Energy Information Administration, Bloomberg New Energy Finance

[13] Charles Morris, "GM Aspires to Stop Selling ICE Cars After 2035, Will Roll Out 30 Pure EVs by 2025," *chargedevs.com*, 29 Jan. 2021. https://chargedevs.com/newswire/gm-aspires-to-stop-selling-ice-cars-by-2035-will-roll-out-30-pure-evs-by-2025/ (24 May 2022),

Anmar Frangoul, "Volvo Says Shift to Electric Cars is Reason Behind its $2.9 Billion IPO," *cnbc.com*, CNBC, 5 Oct. 2021. https://www.cnbc.com/2021/10/05/volvo-says-shift-to-electric-cars-is-reason-behind-2point9-billion-ipo.html (24 May 2022),

Matthew Belvdere, "Ford Stops Reservations for F-150 Lightning Electric Pickup Due to Strong Demand, CEO Tells Cramer," *cnbc.com*, CNBC, 14 Jan. 2022. https://www.cnbc.com/2021/12/09/ford-stops-reservations-for-f-150-lightning-electric-pickup-because-of-demand-ceo-tells-cramer.html (9 Dec. 2021),

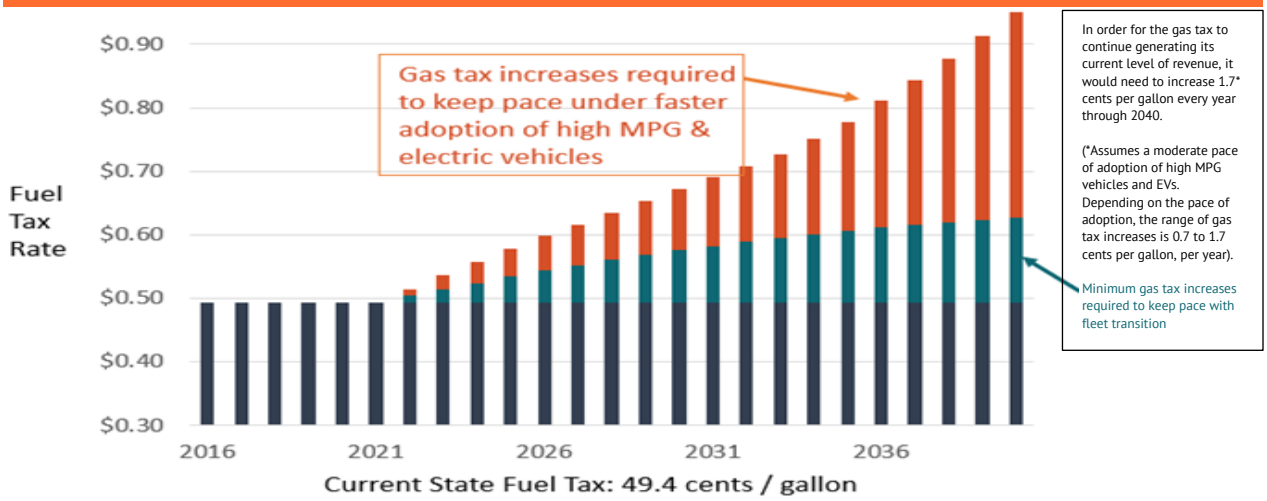
Emma Newberger, "California Unveils Proposal to Ban New Gas-Fueled Cars by 2035,"*cnbc.com*, CNBC, 13 Apr. 2022. https://www.cnbc.com/2022/04/13/california-releases-proposal-to-ban-new-gas-fueled-cars-by-2035-.html (24 May 2022).

What does this mean for fuel tax revenue in the state of Washington? The WSTC is in the process of developing fuel sales and tax revenue estimates for the state. The WSTC is tasked with developing a precise estimate. However, if state numbers are similar to this brief's national projection, even with the "mid-level" assumption on electric vehicle penetration, Washington State can look for a negative impact on fuel tax revenue of about 26% by 2035 and as much as 40% by 2050 as a result of increasing fuel efficiency and a progressive shift to electric vehicles.

What types of effects would this declining revenue have on the construction and maintenance of Washington's transportation system? According to earlier calculations by WSTC, by the year 2029, assuming that the motor fuel tax remains the same, 51% of state motor fuel tax revenue would be spent on debt service and only 9% on legislatively directed projects.[14] That leaves less money for lawmakers to spend on maintenance and preservation, as well as new projects.

In fact, as the WSTC calculated, assuming a moderate pace of adoption and transition to increasingly fuel-efficient and electrified vehicles in the coming decades, the state motor fuel tax rate would need to be increased 0.7 cents to 1.7 cents per gallon each year through 2040 to maintain current levels of revenue.[15] That would lead to a state fuel tax of 0.62–0.80 cents/gallon in 2040 and 0.69 cents–$1.00/gallon by 2050.

FIGURE 5: PRESERVING CURRENT REVENUE LEVELS OF THE GAS TAX WILL REQUIRE FREQUENT INCREASES



14 "Transportation 101," Washington State Transportation Commission, *wstc.wa.gov*, 9 Sep. 2020. https://wstc.wa.gov/wp-content/uploads/2020/09/2020-0915-Transportation-101.pdf. (28 Jan. 2022).

15 Ibid.

Given the increasing number of electric and hybrid vehicles, as well as the increasing fuel efficiency of conventional vehicles, the fuel tax is not a sustainable long-term funding source. Part 3 examines other weaknesses of the fuel tax.

PART 3

FIXING THE FUEL TAX'S SHORTCOMINGS

Most proposals to replace the motor fuel tax with a per-mile charge focus only on its declining revenues, since an increasingly large fraction of vehicles will be using less or zero gasoline in coming decades. But the fuel tax has additional shortcomings that could be fixed in the early design of RUC policy.

#1 Motor Fuel Taxes Don't Keep Pace with Roadway Needs

Washington State's motor fuel tax as well as alternative funding sources such as electric vehicle fees are not indexed to the consumer price index.[16] In a fast-growing state such as Washington, a larger fraction of highway budgets needs to be spent on widening existing corridors, rebuilding aging ones, and additional maintenance due to higher traffic loads. As a result, Washington State lawmakers need to raise the fuel tax periodically. Charging all vehicles per mile driven will keep pace with the growth in Washington's population and roadway usage, although this is not a substitute for improving efficiency at WSDOT.

16 "September 2021 Transportation Revenue Forecast Council," Washington State Office of Financial Management, *ofm.wa.gov*, 22 Sep. 2021. https://ofm.wa.gov/sites/default/files/public/budget/info/transpo/Sept2021VolumnI.pdf (28 Jan. 2022).

#2 Motor Fuel Taxes Are Not Transparent

For most types of infrastructure (electricity, water, telecommunications, etc.), the provider sends a bill that details the amount used, the rate per amount used, and the total amount owed. The customer knows who the provider is and how much infrastructure he/she used. With highways and other roads, the amount paid and the identity of the provider are obscure. On average, U.S. households paid just $46 per month in federal and state motor fuel taxes in 2011—far less than they paid for any of the other utilities (e.g., for electricity the national average was $107 per month).[17] Further, Americans have no idea who provides which highways and therefore whom to hold accountable for highway problems such as traffic congestion or potholes. For example, many drivers think the Interstate highways are owned by the federal government, rather than the states.[18]

#3 Motor Fuel Taxes Are a One-Size-Fits-All Method of Charging

In Washington, the average state motor fuel tax works out to 2.4 cents/mile.[19] That is the same whether someone drives solely on local streets, collectors, or major highways such as Interstates and freeways. Interstates are the most expensive to build and maintain, followed by four-lane divided urban highways, two-lane divided urban highways, and two-lane rural roads. With the current fuel tax method of paying for roadways, the people who use rural and local roads pay more than those roads cost, while those who use Interstates and freeways pay less than they cost. That is not equitable.

#4 Fuel Taxes Are No Longer Dedicated to User Benefits

The original state fuel taxes were based on the premise that highway users paid and highway users benefitted.[20] Fuel tax revenues were accounted for in highway *trust funds* and used solely to build, maintain, expand, and rebuild highways. The same principle

17 Robert Poole, *Rethinking America's Highways*, (Chicago: University of Chicago Press, 2018).

18 "Interstate Frequently Asked Questions," Federal Highway Administration, *fhwa.dot.gov*, 27 Apr. 2021. https://www.fhwa.dot.gov/interstate/faq.cfm (23 Feb. 2022).

19 Chris Sullivan, "Pay Per Mile Gains Steam in the Legislative Background in Olympia," *Mynorthwest.com*, 97.3 KIRO News Radio: Seattle, 11 Feb. 2021.

20 Jessica Lombardo, "Infrastructure Groups Urge User-Based Fee to Pay for Infrastructure," *forconstructionpros.com*, For Construction Pros, 7 Apr. 2021. https://www.forconstructionpros.com/infrastructure/news/21366533/industry-groups-urge-userbased-fee-to-pay-for-infrastructure (23 Feb. 2022).

was used in 1956 when the federal motor fuel tax was authorized and the dedicated Highway Trust Fund was established, solely to help states build new Interstate highways. But over the last 40 years, that principle has been seriously breached. Today, about 23% of the federal Highway Trust Fund is used for non-highway purposes.[21] Diversions of highway user-tax money encourage people to see the motor fuel tax as "just another tax" that they don't want increased. Fortunately, Washington State still retains constitutional protection for its state fuel taxes, unlike the federal government and many other states.

#5 Fuel Taxes Are Taxes, Not True User Fees

Electric bills, phone bills, and water bills are true user fees. Customers pay for the services that they have used—and no more. These user fees are spent solely on the capital and operating costs of the utility in question. But fuel taxes can be spent on any roadway project in the state, regardless of where the tax was collected. True user fees are spent on the roadway in which they are collected. Further, despite having a constitutional amendment dedicating fuel tax revenue for highways, Washington legislators have already figured out how to divert a small but real amount of money. This type of revenue source is legally defined as a tax, not a user fee.

Shifting from per-gallon fuel taxes to per-mile RUCs is a once-in-a-hundred-years opportunity. To maximize the effectiveness of the change, policymakers can start with a clean sheet of paper to design a per-mile charge that addresses all of the current fuel tax shortcomings, making it closer to paying a utility bill than the current tax. An RUC would have the following attributes:

- A true user fee, paid only by those who use roadways, commensurate with their mileage, and spent only on roadways.
- Equitable for all users, with different rates for major highways (Interstates, freeways), and other roadways.
- Transparent, making it clear which provider is responsible for which roadways.
- Subject to periodic increases, when justified by increased operating and capital costs, via a public process similar to rate-setting for other utilities.

[21] Robert Poole and Adrian T. Moore, "Restoring Trust in the Highway Trust Fund," Reason Foundation, August 2010. https://www.forconstructionpros.com/infrastructure/news/21366533/industry-groups-urge-userbased-fee-to-pay-for-infrastructure (23 Feb. 2022).

Before we implement a new RUC, let's take a step back and examine Washington's 2018 pilot program. As Part 4 shows, the pilot was an educational experience for policymakers.

PART 4

WASHINGTON'S ROAD USAGE CHARGE PILOT

Many states examining RUCs have limited experience with the concept. But that is not the case in Washington. In 2018, WSTC conducted a year-long RUC pilot project with a little over 2,000 volunteer participants.[22] WSTC tested a rate of 2.4 cents per mile, intended as a revenue-neutral rate to the state's 49.4 cent motor fuel tax (49.4 cents per gallon of gas/20.5 mpg state average = 2.4 cents per mile).

Participants had two low-tech and two high-tech options for submitting mileage:

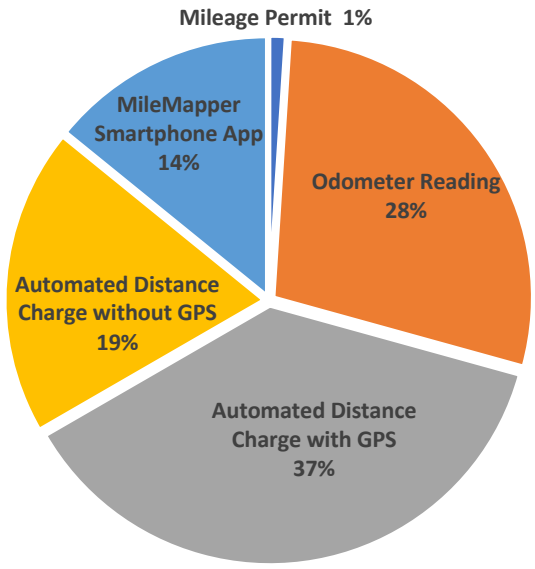
- A mileage permit allowed drivers to pre-purchase a block of miles (1,000/5,000/10,000) and pay a flat fee. Participants still had to report odometer readings through an app or in person every three months. This was the least popular option among drivers, used by only 1%;
- An odometer reading allowed drivers to take pictures of their odometer and submit the picture through an app or in person. Twenty-eight percent of drivers used this option;

22 "Washington State Road Usage Charge Assessment Volume 1," Washington State Transportation Commission, *waroadusagecharge.org*, Jan. 2020. https://waroadusagecharge.org/wp-content/uploads/2020/01/WSTC-Final-Report-Vol-1-WEB-2020_01.pdf (8 Mar. 2022).

- An automated distance charge allowed drivers to install a mileage recording device under their vehicle dashboard into an on-board diagnostic port (OBD-II), with or without GPS. Miles driven outside the state or on private roads were not counted by the GPS-enabled device, an option not available under the low-tech mileage permit and odometer reading options. The device counted miles and reported automatically for billing. Most drivers, 56%, chose this option (37% with GPS and 19% without); and
- The MileMapper Smartphone App was developed as a beta version that allowed drivers to submit mileage through an app on their smartphone. This option was simpler and less expensive than the other three options, but had drawbacks compared to the more mature automated distance charge in that it could not be associated with a specific vehicle, miles could not be recorded when the cellular signal was lost, and reliable fraud prevention and detection remained elusive. However, the app did allow users to toggle between GPS enabled and non-GPS enabled. Fourteen percent of drivers used this option.

The following figure shows the mileage reporting preferences of pilot participants.

FIGURE 6: MILEAGE REPORTING PREFERENCES OF WASHINGTON STATE ROAD USAGE CHARGE PILOT PARTICIPANTS (PERCENTAGES)



Source: Washington State Road Usage Charge Assessment Volume 1," Washington State Transportation Commission, *waroadusagecharge.org*

The pilot was a simulation, so while participants received invoices, no financial transactions occurred.[23] Drivers received credit on their invoices for the motor fuel tax that they paid at the pump. More fuel-efficient vehicles saw lower motor fuel tax credits and thus higher remaining balances for RUC. Less fuel-efficient vehicles use more fuel and pay more in motor fuel taxes, and thus had larger motor fuel tax credits on their invoices. Drivers who traveled frequently across state lines between Washington and Oregon had their mileage processed through an RUC reconciliation system called a "HUB." A small group of pilot volunteers submitted real payments to each state based on individual state motor fuel and RUC rates, as well as the miles they drove within state boundaries. The WSTC reported their final policy recommendations to the legislature in December 2019 and issued a final report in January 2020.

Throughout the pilot, participants were asked to fill out three surveys to share their experience and concerns.[24] The surveys had an average 76.7% completion rate. Most participants (91%) reported they were satisfied or very satisfied with their experience. They also indicated that privacy, transparency, and data security were the top three most important issues for them in a potential RUC system, though by the third survey and completion of the pilot, transparency was replaced with simplicity as the second most important issue.

> *"Those who were less supportive after the pilot indicated concerns about privacy and the high cost of administration, lack of fairness and geographic/income/vehicle equity, problems with technology and reporting mileage, and lack of trust in government collection and use of tax revenue."*

[23] "Washington State Road Usage Charge Assessment Volume 1," Washington State Transportation Commission.

[24] "WA Road Usage Charge Pilot Evaluation: Appendix A-2: Survey Results," Washington State Transportation Commission, January 2020, https://waroadusagecharge.org/wp-content/uploads/2020/03/WSTC-Final-Report-Vol-3-WEB-2020_03.pdf (23 Feb. 2022).

At the beginning of the pilot, 51% strongly or somewhat supported implementing an RUC as a motor fuel tax replacement in Washington; by the third survey, support increased to 72%.[25] At the beginning of the pilot, 43% said they would prefer an RUC to fund transportation; by the third survey, that increased to 53%. Notably, those who were uncertain and needed more information declined from 26% to 8%.

Overall, people seemed to believe the pilot was informative and helpful. Those who were less supportive after the pilot indicated concerns about privacy and the high cost of administration, lack of fairness and geographic/income/vehicle equity, problems with technology and reporting mileage, and lack of trust in government collection and use of tax revenue.

However, these survey results may not represent the viewpoint of state residents as a whole due to selection bias. Participants in the pilot were interested enough in an RUC to volunteer, and 51% had a favorable viewpoint before participating. In 2017, prior to the pilot, the WSTC conducted a random stratified survey of about 600 statewide residents and found that 58% opposed implementing an RUC in Washington State and only 32% supported it.[26]

One of the interesting findings from the pilot was that EV owners who drive over 9,400 miles per year would pay more under a 2.4-cent RUC than they currently do in annual registration fees ($225).[27] However, if they drive an average of 7,000 miles, EV drivers would pay $168 under the RUC—a 25% reduction compared to current state EV fees. In the pilot, EVs drove 31% less than gas-powered cars, and plug-in hybrid vehicles drove 18% less.[28]

Lowering the cost of collection is one of the biggest challenges. According to the WSTC, the cost to collect mileage through a time permit or odometer charge is 7%–8% of revenue,

25 Ibid.

26 "WA State Road Usage Charge Assessment Steering Committee Meeting," Washington State Transportation Commission, *wstc.wa.gov*, 27 July 2017. https://waroadusagecharge.org/wp-content/uploads/2017/07/WA-RUC-SC-07-27-17-Presentation.pdf (11 Mar. 2022).

27 "Washington State Road Usage Charge Pilot Project," Washington State Transportation Commission, *wstc.wa.gov,* Nov. 2019. https://countyleaders.org/wp-content/uploads/2019/12/WSAC-Presentation-WA-RUC-20191105_v01a_edit.pdf. (11 Mar. 2022).

28 Ibid.

and a much higher 12%–13% for the automated distance charge.[29] At scale with approximately five million Washington drivers, the Commission believes it can reduce that cost to under 10%. That would still be more than the 1%–2% of revenue expended in collecting current fuel taxes.

> *Pilot participants requested more mileage reporting options, streamlined enrollment, and simplified invoices. Other areas of needed additional analysis include enforcement, interoperability between states, administrative costs, and equity.*

Based on participant feedback, the Commission chose to prioritize several areas for improvement. Pilot participants requested more mileage reporting options, streamlined enrollment, and simplified invoices. Other areas of needed additional analysis include enforcement, interoperability between states, administrative costs, and equity. More information on pilot feedback is available on the Washington Road Usage Charge homepage.

The WSTC's primary finding was 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."[30] To that end, the Commission recommended that the legislature impose an RUC on hybrids (about 5%) of the state's vehicle fleet at the time), electric vehicles (less than 1%), and state-owned vehicles as a first step in what would amount to a 10- to 25-year transition.

One of the Commission's takeaways from the pilot was to ensure that an RUC system follows a users-pay/users-benefit funding mechanism. Unfortunately, not all stakeholders in Olympia subscribe to that principle. Part 5 details agency perspectives on RUC implementation.

[29] "Washington State Road Usage Charge Assessment Final Report," Washington State Transportation Commission, *wstc.wa.gov*, Jan. 2020. https://waroadusagecharge.org/wp-content/uploads/2020/01/WSTC-Final-Report-Vol-1-WEB-2020_01.pdf. (11 Mar. 2022).

[30] "Washington State Road Usage Charge Assessment Final Report," Washington State Transportation Commission.

PART 5

WASHINGTON STATE AGENCY PERSPECTIVES ON AN RUC

Washington State transportation agencies have differing views on how to implement an RUC. Some want to divert a portion of RUC funds to non-road purposes. It is critical for Washington State policymakers to ensure that RUC revenue remains dedicated to roadways. The most important and controversial of the Commission's policy recommendations is for the legislature to protect RUC revenue under the 18th Amendment. The recommendation moved forward with a majority vote, despite one commissioner, who is also a policy director for a Seattle transit advocacy group, voting against it. Additionally, influential Seattle-area officials and organizations who opposed dedicating RUC revenue to roads and bridges alone instead advocated that the money be made available for transit spending and environmental goals.

The Seattle Department of Transportation (SDOT) wrote:

- "Allow revenue to be spent on transit investments...RUC presents a tremendous opportunity to move past the transportation funding structure of the motor fuel tax and invest in the critical multimodal transit infrastructure that keeps people and goods moving in our region. While maintenance and preservation of roads and bridges is an appropriate use for RUC revenue, we believe there is a strong reason to

dedicate some of the proceeds towards investments in multimodal investments that improve safety and mobility for all users and reduce climate impacts of transportation:"

- "The RUC should include congestion factors in its pricing model, such as charging more to use roadways during peak commute periods;" and
- "…data collected through the program should be made available to local and regional governments for analytical purposes so that they can make more informed traffic and safety engineering decisions."[31]

Although the WSTC ultimately voted for 18th Amendment protection of RUC revenue, it will be up to lawmakers to decide on the policy parameters of any new vehicle use tax, and whether they want to constitutionally protect the revenue to ensure the RUC remains a true user fee, rather than becoming a general tax used to subsidize other programs unrelated to driving.

During the 2022 legislative session, lawmakers proposed House Bill 2026 to implement the RUC, charging drivers a 2.5-cent-per-mile charge.[32] The bill targets EV owners with mandatory participation, and expands participation on a voluntary basis to drivers who own hybrids and conventionally-powered vehicles. Interestingly, the bill caps the RUC for EV owners at $225 per year, violating its own rule that drivers should pay an RUC proportional to their use of roadways. This cap creates major equity problems since most EVs in the state are registered in Western Washington within wealthier ZIP codes.[33] Generally speaking, EV owners don't need the preferential tax break. Yet HB 2026 would reward EV owners by effectively reducing the RUC to zero after 9,000 miles—disconnecting the RUC from EV drivers' road use.

31 "Seattle Department of Transportation Letter," Washington Policy Center, *washingtonpolicy.org*, 12 Dec. 2019. https://www.washingtonpolicy.org/library/imglib/SDOT-Letter-1.pdf (23 Feb. 2022).

32 "HB 2026," Washington State House of Representatives Office of Program Research, leg.wa.gov, 2022, lawfilesext.leg.gov, https://lawfilesext.leg.wa.gov/biennium/2021-22/Pdf/Bill%20Reports/House/2026%20HBA%20TR%2022.pdf?q=20220311140052 (11 Mar. 2022).

33 Alex Halverson, "Report: Seattle is one of the Top Cities for Electric Car Ownership," *seattlepi.com*, seattlepi, 12 Oct. 2020, https://www.seattlepi.com/seattlenews/slideshow/electric-cars-seattle-portland-best-selling-210679.php (11 Mar. 2022).

Interestingly, the WSTC testified before lawmakers in committee that offering an "introductory discounted RUC rate or cap for EVs, phased out as EV adoption goals are achieved," is one way to "support environmental priorities and encourage EV adoption."[34]

Whatever the final form of the RUC, it should be consistent with the stated purpose—addressing road usage and dedicating funds to support roads and address that problem, rather than trying to satisfy several political constituencies at once. Leading with politics rather than principle raises red flags and reduces public trust.

Whatever the final form of the RUC, it should be consistent with the stated purpose—addressing road usage and dedicating funds to support roads and address that problem, rather than trying to satisfy several political constituencies at once.

In December 2019, WSTC put forward 16 policy recommendations to the legislature.[35] While WSTC's approach may not be perfect, designing a well-functioning RUC program around these policy recommendations, which can be consolidated into the following eight bullet points, will lead to a program Washington drivers can trust. The purpose is to ensure that Washington State used drivers' user fees on roadway projects:

- Allow for implementation options so the RUC can be gradually scaled and improved in the early stages;
- Conduct additional research on different per-mile rates based on characteristics of the vehicle owner (for example, where owner lives), vehicle (surcharge on low-MPG cars), or how the vehicle is used (different rates for ride-hail vehicles);

[34] "Washington State Road Usage Charge Research Update," Washington State Transportation Commission, *wstc.wa.gov*, 3 Feb. 2022. https://app.leg.wa.gov/committeeschedules/Home/Document/241286#toolbar=0&navpanes=0 (9 Mar. 2022).

[35] "Washington State Road Usage Charge: WSTC Recommendations and Final Report," *wstc.wa.gov*, Washington State Transportation Commission, 17 Dec. 2019. https://wstc.wa.gov/wp-content/uploads/2019/12/2019-1217-BP5-RUCPresentation.pdf (23 Feb. 2022).

- Conduct research alongside other states on compliance and enforcement, and test these mechanisms in the start-up stage. Spend additional time and possible testing before implementing statewide;
- Consider public private partnerships and other ways to reduce the high cost of administration. These strategies should be tested in the start-up stage;
- Test the RUC along the state border in the start-up stage. Explore solutions with Oregon DOT's OReGo program for drivers who travel frequently between Washington and Oregon;
- Develop a process to protect sensitive data;
- During the transitional period when both the state motor fuel tax and RUC are on the books, the legislature, WSTC, and other agencies should retain existing policy-setting and oversight roles; and
- Recommend alternative scenarios for a transition to the RUC. Protect RUC revenue under the state constitution's 18th Amendment for roadway purposes only, and ensure that programs that receive motor fuel tax refunds for non-roadway activities continue to receive those refunds.

This section has detailed several potential implementation models of an RUC. Policymakers are encouraged to implement a program that follows WSTC guidelines. Regardless of implementation method, there are several RUC challenges that need to be resolved. Part 6 considers some of the larger questions about the opportunity presented by shifting from a hundred-year-old method of highway funding to a different approach that will sustain highways for another hundred years.

PART 6

RUC PROBLEMS THAT NEED TO BE SOLVED

RUC challenges should be resolved before Washington State lawmakers implement per-mile charges. Part 5 explained why RUCs should not be designed as a slush fund for public transit and general government expenditures. However, in addition to program design, policymakers need to solve privacy, amount of vehicle-miles traveled, administrative, and fairness challenges.

6.1 ENHANCE PRIVACY PROTECTIONS

Some RUC pilot evaluation measures depend on participant perception and satisfaction. This is most consequential in discussions around personal privacy and data security. For example, as we know from Washington's past participation in a Road Usage Charge Pilot Program in 2012–2013, "While participants generally trusted that [the pilot] provided privacy protection and account security and provided similar protections as mobile phones and credit cards, they had no means of verifying this."[36]

[36] "Road Usage Charge Pilot Project Final Evaluation Report for Washington State Participants," D'Artagnan Consulting for Washington State Department of Transportation, *wsdot.gov*, May 2013. https://www.wsdot.wa.gov/research/reports/fullreports/807.1.pdf (23 Feb. 2022).

The WSTC has a suggested model privacy policy for the RUC in Washington State. The brief provides a justification for the need for privacy protections, model protections and details on implementing a program. It makes the following four recommendations:

- Exempt driving records from public disclosure;
- Retain travel data for vehicles and registered owners only as long as necessary to bill for those miles or settle billing disputes;
- Ensure drivers have full and transparent access to any of their own driving data submitted to the state, including protecting their right to request erasure of any personal information that isn't needed for billing; and
- Ensure there are remedies in law for drivers to lodge complaints and receive compensation for damages associated with security violations.[37]

House Bill 2026, which was introduced late last year, incorporates these recommendations into the legislation.

> *"Some RUC pilot evaluation measures depend on participant perception and satisfaction."*

6.2 RESOLVE THE STATE'S CONFLICTING MANDATE TO REDUCE VEHICLE-MILES TRAVELED (VMT)

In February 2007, Governor Christine Gregoire signed an Executive Order mandating the reduction of greenhouse gas (GHG) emissions in Washington.[38] Within a month, the state created the Climate Advisory Team (CAT). By January 2008, the CAT issued recommendations to accomplish the required reductions. Among the more controversial recommendations is for the state government to reduce how much people drive. The

[37] "Model Privacy Policy for Road Usage Charging–Appendix 6," Washington State Road Usage Charge Assessment Final Report, Washington State Transportation Commission, *wstc.wa.gov*, Jan. 2020. https://waroadusagecharge. org/wp-content/uploads/2020/01/WA-RUC-A-6-Model-Privacy-Policy-for-Road-Usage-Charging.pdf (8 Mar. 2022).

[38] "Executive Order 07-02, Washington Climate Change Challenge," Office of the Governor, *www.governor.wa.gov*, 7 Feb. 2007. http://www.governor.wa.gov/sites/default/files/exe_order/eo_07-02. Pdf (23 Feb. 2022).

advisory team recommended that the government reduce per capita VMT by 18% by 2020, 30% by 2035, and 50% by 2050, compared to what it would be with no state restrictions. These recommendations were adopted and signed into law.[39] The plan also recommended a variety of strategies to encourage drivers to reduce their daily VMT, including expanding transit and forcing development into specific corridors.[40]

VMT reduction targets were set to support state transportation policy goals, which include the goal of helping the environment and "enhancing healthy communities."[41] Yet, as a recent Reason Foundation policy paper by Arizona State University Professor Steve Polzin argues, reducing VMT can reduce economic activity.[42] Among the many consequences, reducing economic transactions would also reduce revenue from Washington's sales tax and business and occupation tax. Any decline in economic opportunity that results is likely to be disproportionately felt by lower-income Washingtonians.

Moreover, if projections of large-scale replacement of petroleum-fueled vehicles by electric vehicles are in the right ballpark, greenhouse gas emissions from the transport sector will decline even if Washington State eliminates its VMT reduction goals. Automobile market consultant Auto Pacific predicts that the combination of high fuel prices and declining production costs of electric vehicles will cause electric vehicle sales to increase dramatically over the next five years.[43] Figure 7 shows past and projected EV sales between 2018 and 2027 assuming fuel-efficiency standards and EV federal tax credits do not change.

39 "RCW 47.01.440 – Adoption of Statewide Goals to Reduce Annual per Capita Vehicle Miles Traveled by 2050 – Department's Duties – Reports to the legislature," Washington State Legislature, *app.leg.wa.gov*, 2008. http://app.leg.wa.gov/rcw/default.aspx?cite=47.01.440 (23 Feb. 2022).

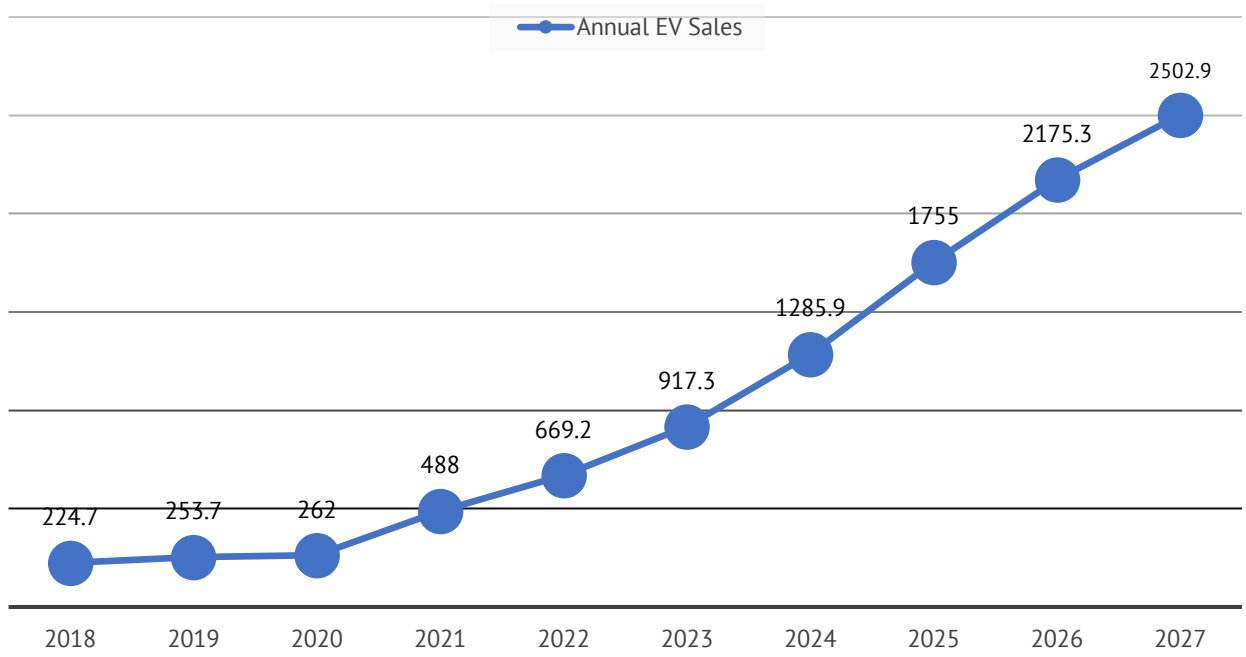
40 "2008 Climate Action Team Recommendations," 2008 Climate Action Team, Department of Ecology, *apps.ecology.wa.gov*, Nov. 2008. https://apps.ecology.wa.gov/publications/documents/0801035.pdf (6 May 2022).

41 "RCW 47.04.280 – Transportation System Policy Goals," Washington State Legislature, www.leg.wa.gov, 2022. https://app.leg.wa.gov/RCW/default.aspx?cite=47.04.280 6 May 2022).

42 Steven Polzin, "Examining the Causes of Induced Demand and the Future of Highway Expansion," Reason Foundation, 25 Jan. 2022. https://reason.org/policy-brief/examining-the-causes-of-induced-demand-and-future-of-highway-expansion/ (8 Mar. 2022).

43 John O'Dell, "EV Sales Soar as Variety and Gas Prices Climb," *Forbes.com*, 24 Feb. 2022. https://www.forbes.com/wheels/news/ev-sales-soar-in-2022/ (24 May 2022).

FIGURE 7: ANNUAL U.S. ELECTRIC VEHICLE SALES (IN THOUSANDS)



Source: Autopacific, U.S. Auto Sales to Soar, autopacific.com

The long-run electric vehicle future makes VMT reduction as a greenhouse gas reduction tool irrelevant.

6.3 REDUCE HIGH ADMINISTRATIVE COSTS

The current motor fuel tax is simple and cheap to collect, with administration costing between 1% and 2% of the revenue collected, since fuel is taxed at the wholesale level, rather than from millions of drivers individually.[44] The administrative cost of collecting and enforcing a new mileage charge has been estimated by some to be between 5% and 13% of collections, because each user has to pay individually.[45]

[44] Daryl S. Fleming et al, "Dispelling the Myths: Toll and Fuel Tax Collection Costs in the 21st Century," Reason Foundation, October 2012. https://reason.org/wp-content/uploads/2012/11/dispelling_toll_and_gas_tax_collection_myths.pdf (1 May 2022),

Alex Schroeder, "A Primer on Motor Fuel Excise Taxes and the Role of Alternative Fuels and Energy Efficient Vehicles," National Renewal Energy Laboratory, *afdc.energy.gov*, Aug. 2015. https://afdc.energy.gov/files/u/publication/motor_fuel_tax_primer.pdf (23 Feb. 2022).

[45] Robert Kirk and Marc Levinson, "Mileage Based Road User Charges," *sgp.fas.org*, Congressional Research Service, 22 June 2016. https://sgp.fas.org/crs/misc/R44540.pdf (23 Feb. 2022).

In 2010, the U.S. Department of Transportation's chief economist reported that, for a 10-mile corridor, a mileage tax using GPS would cost 4% to 5% of revenue collected, automatic vehicle ID (transponders) would cost 16% to 25%, and video tolling would cost 33% to 50%.[46]

> *... a team of all-electronic tolling (AET) experts found that collection costs in newer, small toll systems designed from scratch for AET could reduce collection costs for personal vehicles to 5% of revenue.*

However, the use of transponders and prepaid accounts for all-electronic tolling continues to bring down the cost of collection in this part of the highway sector. In a comprehensive study of the collection cost, a team of all-electronic tolling (AET) experts found that collection costs in newer, small toll systems designed from scratch for AET could reduce collection costs for personal vehicles to 5% of revenue.[47] The cost of collection of all-electronic tolls from trucks should be even lower. On current tolled Interstates, heavy trucks pay approximately four times as much per mile as passenger cars, yet the toll collection cost per transaction is the same as for cars. Hence, as a percent of revenue collected, for trucks charged via AET the cost of collection would be between 1% and 2%. If limited-access highways are the first portion of the roadway system to be converted to RUC, then AET-type cost of collection figures will apply. However, there will be some cost to install the gantries.

For the remainder of Washington's roadway system, deferring their conversion to RUC for a decade or two will likely see new methods of per-mile charging develop with higher levels of automation. Credit card companies such as American Express, MasterCard, and others handle billions of individual retail transactions every month, using highly automated systems.

46 Jack Wells, "Administrative Costs of Road User Charges," Texas A&M Transportation Institute, *utci.tti.tamu.edu*, 21 Apr. 2010. http://utcm.tamu.edu/mbuf/2010/presentations/pdfs/ Wells.pdf (23 Feb. 2022).

47 Daryl S. Fleming et al, "Dispelling the Myths: Toll and Fuel Tax Collection Costs in the 21st Century."

6.4 SUNSET ELECTRIC VEHICLE FEES

On average, Washington drivers pay $289 each year in state fuel tax.[48] Drivers who own and operate electric vehicles pay two annual car tab fees ($100+$50) that add up to $150. This fee is considered a motor vehicle fuel offset, rather than a registration fee. The state imposed an additional $75 hybrid transportation electrification fee starting in October of 2019, bringing the new total to $225. These fees are in addition to the standard $30 vehicle registration and appropriate weight fees. The EV fees are broken down as follows:

- The $100 electric vehicle fee compensates for electric vehicles not paying a state fuel tax. The first $1 million is deposited in the Motor Vehicle Fund with 70% of the remaining revenue deposited into the Motor Vehicle Fund, while 15% is deposited into the Transportation Improvement Account[49] and another 15% is deposited into the Rural Arterial Trust Account.[50]
- The $50 electric vehicle fee requires that the first $1 million raised is diverted to the state Multimodal Transportation Account. Remaining money is deposited into the Motor Vehicle Fund.
- The $75 electric transportation fee is deposited into the Electric Vehicle Account,[51] and finances electric and hybrid vehicle charging infrastructure. Starting July 1, 2025, these fees will be deposited into the Motor Vehicle Fund.

These fees can be changed through the legislative process if lawmakers conclude that EV users should pay the same rate per mile as other personal vehicles do, since all personal vehicles impart essentially the same amount of pavement wear and tear. Charging EV owners per mile driven on public roads would more accurately reflect the costs of their use of the road network.

48 "WA RUC FAQs," *waroadusagecharge.org*, Washington State Road Usage Charge, 2019. https://waroadusagecharge.org/faqs/#custom-collapse-0-4 (23 Feb. 2022).

49 "Revised Code of Washington 47.26.084 Transportation Improvement Account – Intent of programs – Local agency certification of funds," Washington State Legislature, *app.leg.wa.gov*, 2011. https://app.leg.wa.gov/RCW/default.aspx?cite=47.26.084 (23 Feb. 2022).

50 "Revised Code of Washington 36.79.020 Rural Arterial Trust Account," Washington State Legislature, *app.leg.wa.gov*, 1997. https://app.leg.wa.gov/RCW/default.aspx?cite=36.79.020 (23 Feb. 2022).

51 "Revised Code of Washington 82.44.200 Electric Vehicle Charging Infrastructure Account," Washington State Legislature, *app.leg.wa.gov*, 2015. https://app.leg.wa.gov/RCW/default.aspx?cite=82.44.200 (23 Feb. 2022).

Assuming Washington State is ready to make the transition to an RUC and ready to adopt some common-sense guidelines, the state should not implement an RUC on all the roads at once. Part 7 provides a roadmap for implementing RUCs on Interstates and other freeways first, and then on surface streets.

PART 7

CUSTOMER-FRIENDLY IMPLEMENTATION OF RUCS

While Reason Foundation recommends that Washington transition to an RUC, policymakers should not implement an RUC on all roadways at once. Transitioning to an RUC will be challenging, and implementation needs to be well thought out and deliberate. This part details how and why the state should transition Interstate highways and other freeways first, and then local roadways.

7.1 STARTING THE TRANSITION VIA MAJOR HIGHWAY IMPROVEMENTS

WSDOT and political leaders should not make revenue shortfalls the primary rationale for the needed transition from per-gallon taxes to per-mile charges. Rather, the focus should be the need for major investment in the state's aging highway system, which must be rebuilt and upgraded to cope with the state's projected population growth over the next three decades.

The core of Washington's highway system comprises limited-access highways: long-distance Interstates and freeways, plus the urban freeway systems in the Puget Sound

region. While the state has variably priced toll lanes on I-405 and several toll bridges across Lake Washington, Puget Sound, and the Columbia River, it has no tolled limited-access highways. Washington's Interstates and freeways total approximately 850 route-miles and include: I-5, I-82, I-90, I-205, I-405 and parts of some federal and state highways (SR 14, SR 18, SR 99, US 101, US 195, SR 167, SR 512, SR 518, and SR 520).

> *The Interstate system was authorized in 1956, and most of its corridors were built in the 1960s and early 1970s. That makes most of the system 50 years old or older—well beyond its original design life.*

The Interstate system was authorized in 1956, and most of its corridors were built in the 1960s and early 1970s.[52] That makes most of the system 50 years old or older—well beyond its original design life. Unlike other states such as Florida, Georgia, North Carolina, and even California, Washington has not rebuilt and widened a significant portion of any corridor on its Interstate system.[53]

In the 2015 Fixing America's Surface Transportation (FAST) Act, Congress asked the Transportation Research Board (of the National Academy of Sciences) to convene an expert committee to study the future of the nation's Interstate system. The committee's 596-page report was released in December 2018.[54] Among its main findings were the following:

- Much of the pavement is wearing out and needs to be replaced;
- The system has numerous bottleneck interchanges (such as I-5 at I-90) that are obsolete and should be replaced;

52 "Interstate Frequently Asked Questions," Federal Highway Administration.

53 "Overview," interstate-guide.com, Interstate Guide, 19 Oct. 2020. https://www.interstate-guide.com/i-075/, (23 Feb. 2022), "I-85 Widening and Improvements," North Carolina Department of Transportation, ncdot.gov, 2022. https://www.ncdot.gov/projects/i-85-widening/Pages/default.aspx (23 Feb. 2022).

54 "Renewing the National Commitment to the Interstate Highway System. A Foundation for the Future 2019," The National Academies of Science, Engineering, and Medicine, *nap.edu*. December 2018. https://www.nap.edu/download/25334 (23 Feb. 2022).

- There are not enough lanes in many corridors for projected growth in motorist and truck travel in coming decades; and
- The system could benefit from dedicated truck lanes in some key freight corridors, but none are currently planned.

In its recommendations, the TRB committee suggested a repeat of the original 90% federally funded program, which it estimated would require Congress to raise and spend an average of $57 billion per year for the next 20 years on the Interstates (totaling about $1.1 trillion), derived from a very large increase in federal fuel tax rates. But perhaps recognizing the low probability of that happening, the committee's report also discussed the possibility of financing this huge set of projects based on projected toll revenues, which would require amending the 1956 federal law to permit the use of tolls on the 90% of the Interstate system where tolling is not allowed.

A 2019 Reason Foundation policy study responded to the TRB committee's report, recommending the toll-financed approach to rebuilding and selective widening.[55] It also proposed that each state that decided to take this approach could use it to begin the transition from per-gallon taxes to per-mile charges. How would this be sequenced in Washington State?

WSDOT would first study the state's non-tolled Interstate corridors, assessing the age and condition of each, along with any need for widening, and by which decade reconstruction would be required. The department would create a long-term plan detailing which segments of each of the Interstates would be rebuilt and when. One by one, each corridor's reconstruction would be designed, financed (via RUC revenue bonds), rebuilt and widened where needed.

As each corridor was finished and re-opened to traffic, motorists and truckers would pay new per-mile RUCs *instead of state gasoline and diesel taxes*. The Good to Go tolling system, or a similar system, would calculate the amount of fuel each customer used driving on the rebuilt corridor (based on the vehicle make and model plus its Environmental Protection Agency (EPA) highway fuel economy rating), and software would calculate rebates of the state fuel taxes that would still be in place for all other roads.[56] For trucks, the system

[55] Poole, Robert. "The Case for Toll-Financed Interstate Replacement." Reason Foundation. April 2019. https://reason.org/policy-study/the-case-for-toll-financed-interstate-replacement/ (23 Feb. 2022).

[56] "Good to Go! accounts and passes," Washington State Department of Transportation, *wsdot.wa.gov*, 2022. https://wsdot.wa.gov/travel/roads-bridges/toll-roads-bridges-tunnels/good-go-accounts-passes (23 Feb. 2022).

would also need to be able to charge different rates per axle and rebate the revenue through the International Fuel Tax Association. This would demonstrate to people that the new per-mile charge was the *replacement* for the fuel tax. Via this process, over several decades, nearly 40% of all vehicle-miles of travel in Washington would be converted from per-gallon to per-mile, with no users paying both fuel taxes and per-mile charges for the same roadway.

> *One by one, each corridor's reconstruction would be designed, financed (via RUC revenue bonds), rebuilt and widened where needed.*

Starting with limited-access highways (where there are only a few places to get on and get off) means that the transition to per-mile charging can begin by making use of *existing technology*—the Good to Go system, consisting of windshield-mounted transponders linked to prepaid accounts. Adopting this approach avoids the need for near-term decisions about any new technology that would be needed in cars and trucks to enable per-mile charging for open-access federal and state roadways, such as US 12, US 97, SR 9, and SR 21 as well as local streets. Equipping all those other roadways for charging via Good to Go would require many thousands of gantries to record vehicles' passage, which would be far too costly (and unsightly).[57]

The program detailed in the preceding paragraphs would build public confidence that per-mile charges would replace per-gallon taxes, as each corridor was rebuilt and opened with the new charges *and* rebates of the fuel tax paid for driving those miles. Highway user fee rebates are already being offered to trucking companies that use the Massachusetts Turnpike and the New York Thruway, both of which are tolled Interstates. The rebate process has been automated by trucking service provider Bestpass, which offers trucking

"2022-2023 Fuel Economy Estimates Now Available," U.S. Department of Energy, *fueleconomy.gov*, 16 Feb. 2022. https://www.fueleconomy.gov (23 Feb. 2022).

57 Robert Kirk, "Tolling U.S. Highways," *sgp.fas.org*, Congressional Research Service, 26 Aug. 2016 https://sgp.fas.org/crs/misc/R43575.pdf (23 Feb. 2022).

companies a 48-state universal toll transponder and consolidated billing service.[58] Fuel tax rebates are not simply a theory. They are in actual practice in two states.

7.2 TRANSITIONING ALL OTHER ROADWAYS TO PER-MILE CHARGES

The second phase, after tolling limited access highways, is to eliminate the fuel tax altogether and replace it with a statewide per-mile charge for all other roadways. Converting the limited-access highways first will reduce demands on the gradually declining fuel tax revenue, as each Interstate and freeway is made self-supporting from its RUC. Limited-access highways are built to a higher standard and are more expensive to maintain than surface roadways. But with the fuel tax, drivers pay the same fuel tax rate regardless of the type of roadway they use. Once limited access highways are converted, fuel tax revenues will no longer have to be used to rebuild, widen, and maintain those corridors that have been converted.

Converting the limited-access highways first will reduce demands on the gradually declining fuel tax revenue, as each Interstate and freeway is made self-supporting from its RUC.

As Washington State designs its RUC program, it should take advantage of what it and other states have learned in their RUC pilot projects (and in the case of Oregon, Utah, and Virginia—permanent programs). Here is a brief summary of key features that have been well-received by participants in the statewide MBUF pilots:

- Keep it simple and understandable: a user fee to pay for roads;
- Replace the state motor fuel tax; don't add an RUC on top of that tax;
- Make it transparent, as with utility bills;

[58] "Toll Management Simplified with BestPass," *bestpass.com*, BestPass, 2022. https://bestpass.com (23 Feb. 2022).

- Use private firms, selected competitively, to handle collecting and protecting miles-traveled data; and
- Legislate strict privacy and security protections for miles-traveled data. Include penalties for failing to secure data.

Assuming Washington has started the transition to per-mile charging using the Good to Go system on all the limited-access highways, that system will handle the revenue collection for all of those miles of travel. That total would be approximately 40% of all the vehicle-miles of travel (VMT) in the state. The remaining challenge is to determine the best method of charging for the remaining VMT. That VMT consists of miles driven on two different categories of roadway: those with federal and state highway numbers that are managed and maintained by WSDOT and the remaining roads that are the responsibility of cities and counties.

Table 1 breaks down the VMT by roadway provider.

TABLE 1: WASHINGTON VEHICLE-MILES OF TRAVEL BY TYPE OF ROADWAY (2017)

Category	VMT (Millions)	Percent
Limited Access Highways		
Interstates, rural	4,242	8%
Interstates, urban	10,176	19%
Other freeways, rural	1,689	3.2%
Other freeways, urban	5,112	9.5%
Subtotal	21,219	39.5%
State Highways and Arterials		
Other principal arterials, rural	2,221	4.1%
Other principal arterials, urban	8,670	16.2%
Minor arterials, rural	2,062	3.8%
Minor arterials, urban	6,895	12.9%
Subtotal	19,848	37%
Local Roadways		
Major collectors, rural	3,216	6.0%
Minor collectors, rural	979	1.8%
Local roads, rural	1,085	2.0%
Major collectors, urban	2,972	5.5%
Minor collectors, urban	141	0.2%

Category	VMT (Millions)	Percent
Local roads, urban	4,198	7.8%
Subtotal	12,591	23.5%
Total Washington VMT	53,658	100%

Source: 2020 FHWA Highway Statistics, Table VM-2

Since it would be desirable to include greater roadway-provider accountability to highway customers in the new system of paying for roads, ideally, the system would know how many miles each vehicle traveled on state roads and how many on local roads. However, unless all vehicles used a precise system such as GPS that could distinguish between these road types, that would not a realistic goal.

A second best approach is for a state agency—either WSDOT or the Department of Motor Vehicles—to identify all the VMT in each county (and subtract the amount driven and already paid for via Good to Go on the limited-access highways) by road owner type. For simplicity, divide this number between state highways located in that county and the remaining city/county roads. WSDOT would prepare its annual budget for the state highways and calculate the rate per mile needed for the coming year, subject to regulatory approval. That budget could then be divided among the WSDOT districts. Further, a similar process would take place at the county level, with the county and city governments having available the VMT driven on their roads, and the authority to decide on a countywide charge per mile for the coming year.

The idea is to provide a transparent system under which highway customers know who provides the highways that they use, what their per mile charge is, and how much they must pay—similar to a utility bill. Figure 8 provides a sample Roadway Utility Statement. This statement is similar to the annual statement property owners receive for their property tax bills. But unlike property tax bills, drivers would have the option of paying their highway bills in quarterly or monthly installments.

FIGURE 8: 2035 COMBINED WASHINGTON ROADWAY UTILITY STATEMENT

ACCOUNT INFORMATION
Account Number: 00001234
Name: John Smith
Address: 400 Broad Street, Seattle, WA, 98109

ROADWAY USE AND CHARGES

PROVIDERS	PER-MILE RATE	MILES DRIVEN	AMOUNT
SURFACE STREETS:			
County Agency	2.0 cents/mile	3,122	$62.44
WA DOT	2.5 cents/mile	6,048	$151.20
LIMITED ACCESS	5.5 cents/mile avg.	4,830	$265.65
TOTAL AMOUNT DUE FROM CUSTOMER		**14,000**	**$479.29**

PART 8

CONCLUSION AND RECOMMENDATIONS

Washington State policymakers learned about RUCs in the state's pilot. RUCs are not yet ready to be implemented statewide for all vehicles. Further, it does not make sense to start converting from fuel taxes to RUCs on all highways at once. However, it is time for Washington State to plan how to implement an RUC program.

This brief recommends beginning the transition with Washington's limited-access highways. Washington's Good to Go charging system could be extended to non-tolled Interstates and freeways as those highways are modernized over the next two decades. The charges to use limited-access system should be stated on a per-mile basis. And customers paying these new electronic per-mile charges should be given rebates for the amount of fuel taxes that they have incurred for the miles driven on limited-access highways with RUC in place. When this step is completed, about 40% of Washington's vehicle-miles of travel will have been transitioned from paying per gallon to paying per mile. Customers will receive regular statements documenting the miles they drove and the amounts they were charged via mileage-based user fees.

Once the transition of the limited-access system is well under way, Washington should begin planning the transition of state and local roadways to a per-mile charging system. Reason Foundation asserts that before the state implements an RUC, lawmakers must

enshrine privacy and data security protections in statute, reduce administrative costs to prevent unnecessarily high per-mile charges, reduce construction costs, and resolve ideological disagreements regarding constitutional protection of RUC revenue to ensure that money is dedicated to highways only. These are worthwhile and necessary prerequisites to a successful and user-fee based RUC being implemented in Washington State.

> *… customers paying these new electronic per-mile charges should be given rebates for the amount of fuel taxes that they have incurred for the miles driven on limited-access highways with RUC in place. When this step is completed, about 40% of Washington's vehicle-miles of travel will have been transitioned from paying per gallon to paying per mile.*

In the near term, Washington policymakers should take an additional step to prepare for an RUC on limited-access highways. Drawing on the findings of the Transportation Research Board's study on the future of America's Interstates, Washington should study the need for modernizing the limited-access system. This study should be conducted corridor by corridor and include cost estimates and timeframes for modernizing highway segments. The feasibility of financing these projects based on bonding the revenue streams should be an integral part of this study. Similar statewide studies have been conducted in Connecticut, Indiana, Michigan, and Wisconsin.

In addition, Washington State policymakers should support Congress' effort to reduce or eliminate the 1956 ban on using tolls on the Interstate system. Washington State owns its highway network, and the federal government should not be telling Washington how to operate its roadways.

RUCs are critical to creating a long-term, sustainable funding mechanism. However, RUCs must be implemented carefully. If Washington State policymakers follow the recommendations in this brief, the state can be among the leaders in implementing RUCs.

ABOUT THE AUTHOR

Baruch Feigenbaum is senior managing director of transportation policy at Reason Foundation. Feigenbaum has a diverse background researching and implementing transportation issues including revenue and finance, public-private partnerships, highways, transit, high-speed rail, ports, intelligent transportation systems, land use, and local policymaking. Prior to joining Reason, Feigenbaum handled transportation issues on Capitol Hill for Rep. Lynn Westmoreland.

Feigenbaum is a member of the Transportation Research Board Bus Transit Systems and Intelligent Transportation Systems Committees. He is President Emeritus of the Transportation Research Forum, a reviewer for the *Journal of the American Planning Association* (*JAPA*), and a contributor to *Planetizen*. He has appeared on NBC Nightly News and CNBC. His work has been featured in the *Washington Post*, *The Wall Street Journal,* and numerous other publications. Feigenbaum earned his master's degree in Transportation Planning with a focus in engineering from the Georgia Institute of Technology.