

WASHINGTON STATE ROAD USAGE CHARGE ASSESSMENT—PHASE 4

APPENDIX

PREPARED FOR
GOVERNOR JAY INSLEE AND
WASHINGTON STATE LEGISLATURE

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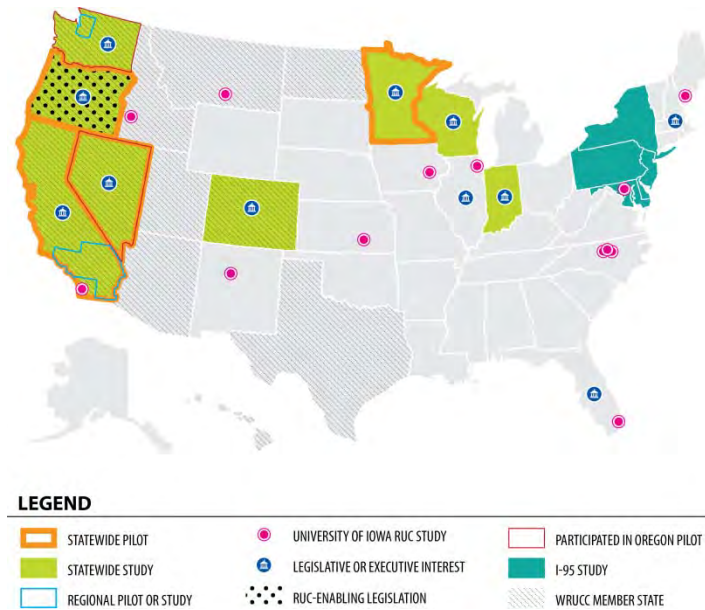
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Appendix A. Road Usage Charging Initiatives in the U.S and Other Countries

RUC Developments around the U.S.

In 2012, when the Washington RUC Steering Committee was first briefed on road usage charge systems around the world, there were only a few examples of implemented systems for passenger vehicles, and none in the U.S. Today, Oregon has begun RUC operations, California will begin a statewide RUC demonstration project in 2016, and several other states are making preparations for their RUC demonstration projects. Other states are actively studying road usage charging. The map below provides a pictorial summary of current RUC development around the U.S.

Figure 1: States with RUC Activity



Oregon implements road usage charge after 14 years of studies, trials

Oregon has been a pioneer in transportation funding as the first state to implement a fuel tax (1919), weight-mile tax (1925), and RUC for passenger vehicles (2015). Passenger vehicle RUC exploration began in 2001 with the Legislature’s creation of the Road User Fee Task Force (RUFTF), which oversaw a study of revenue alternatives, resulting in the recommendation to pursue RUC through pilot testing.

Oregon’s first pilot (2006-2007) was a technical success but a policy failure. It featured a “pay at the pump” model, using an in-vehicle device to record mileage with GPS and communicate data to the point-of-sale system at fueling stations. At fueling, participants received a mock receipt showing fuel tax credits and mileage fees due. The reliance on a single GPS-based device created public concerns about privacy, and the emergence of all-electric and plug-in hybrid vehicles raised doubts that a pay-at-the-pump model could work in the long term.

Oregon’s second pilot (2012-2013) was both a technical and policy success. After several years of policy development, the second pilot demonstrated user choice, open systems, commercial account management, and no GPS mandate.

Following the success of the second pilot, the Oregon Legislature passed Senate Bill 810 in 2013, creating the nation’s first permanently operational RUC program, populated initially by up to 5,000 volunteer motorists. OReGO began live operations (including tax collection) on July 1, 2015. The Oregon program is built around choice, open architecture, commercial account managers, interoperability, and scalability.

Strategic Objective of OReGO

Oregon DOT has adopted the following strategic objective for its RUC program:



“Create a sustainable road usage charge market that is simple and easy for payers, flexible and encourages evolution of mileage reporting technologies and business systems into effective, affordable, convenient and attractive options for the motoring public.”

Oregon is hoping to foster commercial markets for RUC and related services as a means of reducing the cost of operations and to provide more choices for motorists. To enable this, they have adopted the following principles for their system:

- Design the OReGO program with an **open architecture** to enable new market entrants
- Provide **motorists choices** in how they will report and pay for their road use
- Remain **technology agnostic**, relying on performance requirements and not devices
- Allow motorists to use the private sector account management services
- Ensure system design is **interoperable, scalable** and **geographically unlimited** to allow maximum compatibility with other jurisdictions and growth of private markets
- Develop OReGO to be **policy neutral** on future implementation—leave policy to the Legislature.

Oregon's program offers three mileage reporting choices

Motorists participating in Oregon's RUC program currently have three options for reporting their mileage:

Option 1: AZUGA GPS-enabled mileage reporting



Characteristics:

Motorists prepay into an account (similar to Washington’s GoodToGo toll accounting) by credit or debit card. After installing the device into the OBD-II port of the vehicle, mileage is recorded and taxable miles - on public roadways in Oregon - is charged while off-road and out-of-state miles are deducted from the motorist’s RUC invoice. Refunds are applied for fuel taxes paid, if any. Additional connected-car enabled services are available to the motorist, such as visual trip logs, fuel usage and costs per trip, teen driver “safe zones”, find-my-car apps for smartphones, etc. With express approval of the motorist, mileage data may be shared with others.

Option 2: Oregon DOT non-GPS mileage reporting, by Sanef ITS



Characteristics:

Motorists receive the device after registering their account with the Oregon Department of Transportation (through ODOT’s private partner, Sanef ITS), and plug the device into the OBD-II port of their vehicle. Total mileage is recorded regardless of where driven, since the device has no location detection capability needed to deduct mileage driven out-of-state or on private land. Invoices for miles driven are provided quarterly, unless the motorist’s amount due is less than \$20, in which case the invoice is provided at the next quarterly billing. Refunds are provided if the motorist

pays more at the fuel pump in fuel tax than is owed for the road usage charge. No additional connected-car enabled services are available. Oregon DOT and its partner, Sanef ITS, are prohibited from sharing mileage data even if the motorist consents.

Option 3: Verizon GPS-enabled mileage reporting for InDrive customers



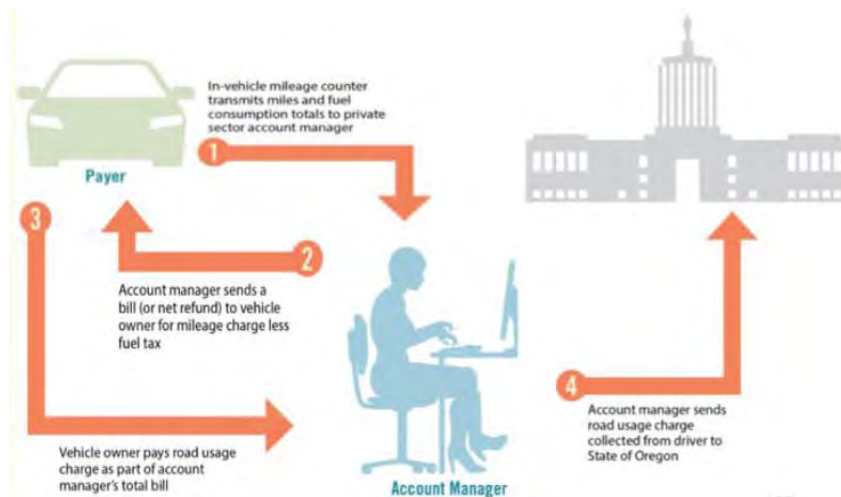
Characteristics:

Motorists who have already signed up for the In-Drive program—a pay-per-mile insurance program—can choose the Verizon telematics option. The In-Drive device records mileage and can differentiate between taxable miles on public roads in Oregon, which are charged, and private roads and out-of-state miles, which are deducted from the motorist’s RUC invoice. Refunds are applied to fuel taxes paid. Motorists signed up for InDrive can monitor their driving mileage, and the safer they drive, the more they save on auto insurance. Additional services are available such as stolen vehicle tracking, automatic crash notification, data services and family monitoring.

OReGO system overview

From transactional and system perspectives (as opposed to the individual motorist’s perspective), there are many business rules and policies that must be developed and implemented to ensure that the system operates in a manner that is fair to the public and achieves the revenue and the strategic development goals of Oregon State. For each of the three options outlined above, the following figure provides an overview of the generic account management process for RUC transactions.

Figure 2: Overview of OreGO



Oregon Road Usage Charge program

OReGO private sector account managers—the private firms that have been certified to provide road usage charge services—may conduct their own recruiting efforts to enroll motorists willing to participate in the program.

OReGO account managers proceed to enroll volunteers into the program. After installing the device, the in-vehicle mileage counter transmits miles and fuel consumption totals to the private sector account manager, where a bill (or net refund) is prepared showing the mileage charge owed after any deduction for fuel taxes already paid. Vehicle owners pay 1.5 cents per mile to the private account manager. The proceeds from the mileage charges paid to the account manager are collected and forwarded to the State of Oregon.

Current Status of OReGO

- Participation cap: 5,000 total volunteers.
- Original on-line volunteer expressions of interest: 2,678 vehicle owners.
- Participants as of September 21, 2015: 896 Oregon drivers.
- Breakdown by vehicle MPG: 25% below 17 mpg, 31% with 17-22 MPG, 44% above 22 MPG.
- Mileage reporting devices chosen by volunteers: GPS devices: 72%. Non-GPS devices: 28%.
- Top enrolled vehicle types, by make/model: 1—Toyota Prius. 2—Ford F-150 pick-up truck.

California implements “Road Charge” pilot program

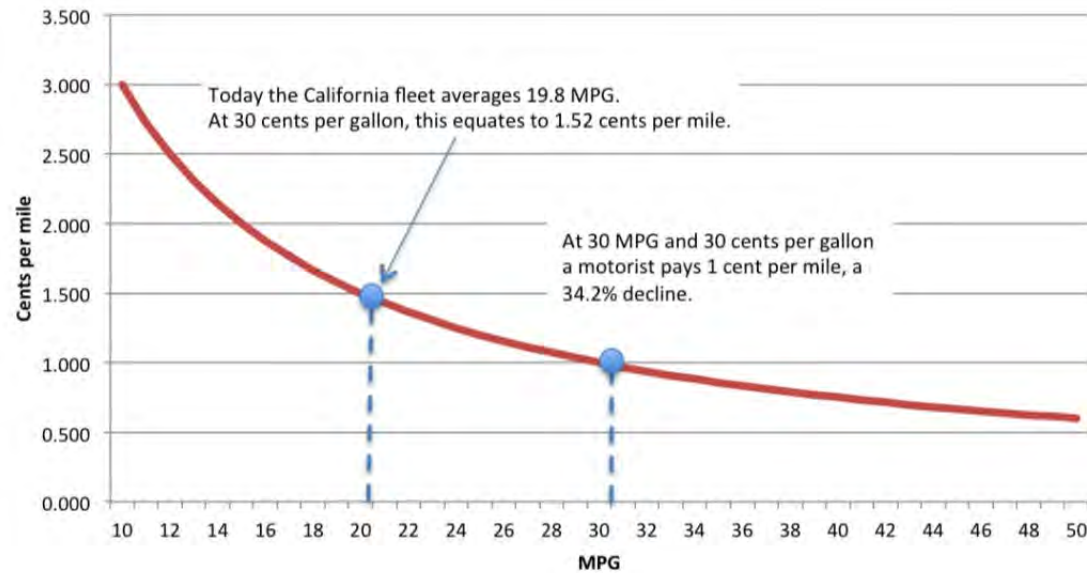
The California Road Charge Pilot Program was approved by the Legislature and enacted into law by Governor Brown in August 2014. The pilot program is currently in the public input and design phase, but will begin pre-implementation activities toward the end of this year. The statewide pilot test for about 5,000 volunteers is scheduled to begin in summer 2016.

Factors leading to exploration of road usage charging in California

Fuel taxes represent the most important highway revenue source for California. Improvements in on-road vehicle fuel economy and conversion of the fleet to alternative fuels (e.g., electric vehicles), threaten to undermine fuel tax revenues in California, as has been projected in other states as well.

The following figure illustrates the relationship between fuel economy and fuel tax revenues on a per mile basis in California. The horizontal axis depicts on-road fuel economy as reflected in MPG, while the vertical axis represents the equivalent cents per mile in fuel tax paid, at 30 cents per gallon (the combined rate of the statewide base excise tax and price-based excise tax on gasoline in California as of July 1, 2015). According to the Air Resources Board, California light vehicles averaged about 20 miles per gallon in 2015. This means that the average gasoline-powered car is contributing $30 \div 20 = 1.5$ cents per mile driven in California fuel taxes. Model Year 2015 vehicles are projected to average just over 26 miles per gallon, so those cars are contributing only 1.1 cents per mile. Drivers will be paying only 0.77 cents per mile by 2040, a decrease of 37% from today.

Figure 3: Fuel Tax Expressed in Cents per Mile



California is exploring road usage charges as a replacement for state fuel taxes

Faced with the likely erosion of motor fuel tax revenues, the California State Legislature passed, and Governor Brown signed, Senate Bill (SB) 1077 directing the Chair of the California Transportation Commission (CTC) to create a Technical Advisory Committee (TAC) to study road usage charge alternatives to the California fuel tax and make recommendations to the Secretary of the California State Transportation Agency (CalSTA) on the design and independent evaluation of a road usage charge pilot program. This investigation of road usage charge policy by an independent, select stakeholder committee convened by the Transportation Commission is similar to Washington’s approach.

However, SB 1077 went further. The Legislature also directed that a statewide pilot program be conducted to test various road usage charge policies, technologies, and payment approaches. Once the TAC’s recommendations have

been made to CalSTA, pre-implementation activities will begin in preparation for the pilot project, currently scheduled to begin in summer 2016.

The California Legislature has made clear that the road usage charge is intended to be a replacement mechanism for the fuel tax, rivers would not pay a road usage charge in addition to a state fuel tax.

California's TAC observed other possible policy reasons for a potential transition to a road usage charge system, including its potential to be a more equitable way to pay for roadways than the fuel tax.

Several agencies play roles in California's road usage charge program

The following entities have distinct and important roles in the California road usage charge program:

- **California Transportation Commission (CTC):** makes appointments to the Road Charge Technical Advisory Committee and provides input to California State Transportation Agency (CalSTA) on final pilot design.
- **California Road Charge Technical Advisory Committee (TAC):** 15-member select stakeholder committee studies road charge design options and makes recommendations on final pilot design features to CalSTA.
- **Caltrans:** provides all consultant and staff support for the TAC, and is responsible for implementing the road usage charge pilot program. Reports directly to CalSTA.
- **California State Transportation Agency (CalSTA):** the state agency that oversees all transportation-related agencies in California. Makes final decisions on how the road usage charge pilot will be implemented

The Road Charge Technical Advisory Committee (TAC) has been meeting to carry out its four primary activities:

1. Study road usage charge alternatives

Throughout the year, the TAC studied several road usage charge approaches, including self-reported mileage, certified odometer readings, smartphone-based mileage reporting, in-vehicle device-based mileage reporting, and telematics-based reporting.

2. Gather public comment on issues and concerns

In addition to evaluating the technical dimensions of a road usage charge system, the TAC developed an extensive public involvement effort to provide key information and feedback on its policy and design recommendations. These activities included:

- 12 open public meetings being held at 10 different locations throughout California;
- Establishment of a road usage charge advisory group comprised of 30 stakeholders to help provide review and feedback on the TAC’s work;
- Launch of a dedicated website to provide public information and to receive public comments;
- Focus groups in five cities across California to gain better insights into public knowledge and opinion; and
- Statewide public telephone survey to assess initial public attitudes about road usage charging.

3. Recommend road usage charge approaches and pilot program design to CalSTA

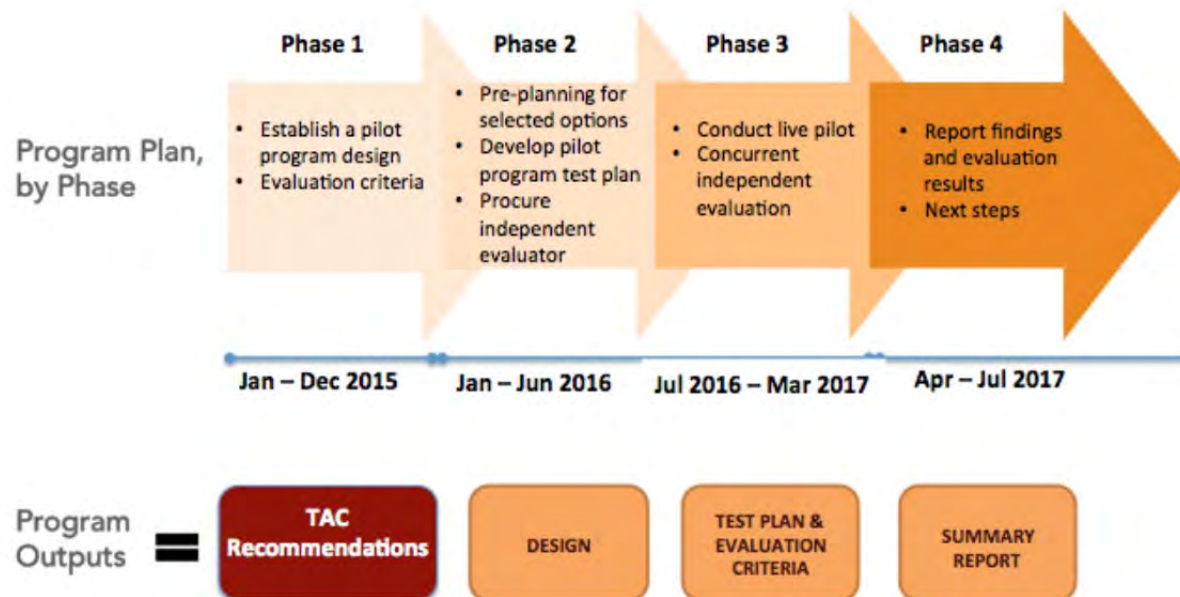
SB 1077 required the TAC to analyze and make recommendations on several issues, which were subsequently framed as “decision points” for the TAC. A list of the decision points and TAC recommendations is summarized in the table on pages 39 and 40.

4. Recommend criteria to evaluate California’s pilot

Finally, the TAC developed criteria to guide the evaluation of the pilot by an independent evaluator. The evaluation criteria encompasses eight categories (revenue, cost, operations, user experience, privacy, data security, equity and communications), with 36 separate goals and 50 individual criteria.

California’s pilot spans nearly three years at a cost approaching \$10 million

In early 2015, the California Legislature appropriated approximately \$9.6 million to Caltrans to carry out all Road Charge Pilot program activities, including conducting a 5,000+ person statewide pilot project to be completed no later than December 2017. The administration has expedited the pilot project so that it is now scheduled to begin in July 2016 and be completed in 9 months, in early 2017.



California Road Charge TAC Pilot Design Recommendations

The TAC made the following design decisions about California’s Road Charge Pilot.

The pilot will offer drivers a choice in account managers

More than one non-state account manager will be available for pilot participants to choose from. A simulated state account manager will also be offered.

The pilot will offer drivers a choice in mileage recording methods

Methods under consideration for the pilot include time permits, mileage permits, odometer charges (prepay and post-pay), automated distance charging without location information, and automated distance charging with location information.

Out-of-state vehicles will be included in the pilot and simulate payment for driving on California roads

Drivers from neighboring states who drive regularly in California will be recruited to participate in the pilot.

The pilot will test an open system design

Security standards and privacy protections will be required, and data content messaging formats between service providers and the state may be defined. However, the system will otherwise be designed in a way that is technology neutral and allows entry of multiple operational concepts, technologies, and service providers.

The pilot will test the interoperability of California’s system with that of other states

In the event another state does not have a pilot operational concurrent with California’s, interoperability will be simulated using account managers.

The pilot will include a cross-section of 5,000 vehicles that are reflective of the fleet currently using California’s public road network

The pilot will recruit a variety of vehicles with the goal of forming a vehicle pool that reflects the diversity of the fleet currently using California roads according to the matrix of vehicles and participant demographics developed and recommended by the TAC.

The pilot will offer methods to exempt miles driven on private roads or out-of-state

Both manual and automated options for claiming mileage exemptions will be tested.

The pilot will feature three approaches for protecting privacy: governance, accountability, and legal protection

The TAC recommended 12 privacy principles (governance), 4 privacy evaluation criteria (accountability), and privacy protection provisions (legal protection).

The pilot will be evaluated according to criteria recommended by the TAC

The 50 evaluation criteria adopted by the TAC span the following eight categories: revenue, cost, operations, user experience, privacy, data security, equity with respect to fuel tax, and communications.

The pilot will test ten data security features

The TAC adopted security features for authentication, authorization, data modification notification, data masking, encryption, data storage, data transmittal, data destruction, general IT network security, and third party data security system verification.

Western Road Usage Charge Consortium (WRUCC) vision and purpose

The Western Road Usage Charge Consortium is a voluntary coalition of departments of transportation. Members are collaborating on research and development for RUC systems. The WRUCC was created by adoption of an organizational charter.

Vision

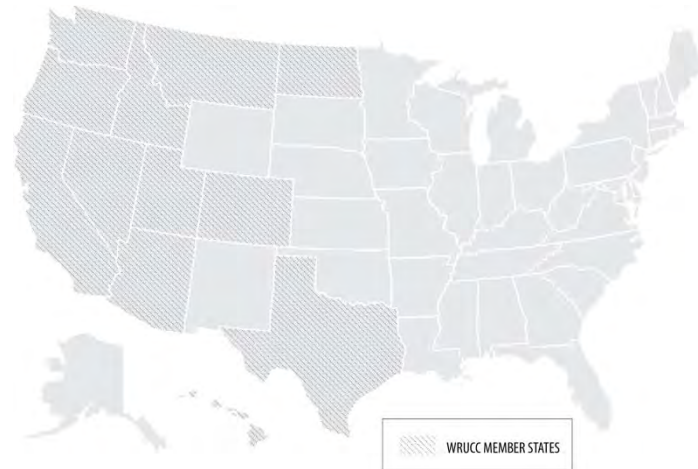
WRUCC's vision is to develop RUC systems that:

- Are open systems to foster competition in the market for providing RUC services;
- Allow for motorist choice in how a RUC would be assessed and paid;
- Are compatible with readily-available and affordable consumer products and technologies (e.g., smartphones, in-vehicle navigation systems); and
- Are designed to achieve the primary purpose of collecting road use taxes to fund roadway maintenance and improvements.

Purpose

WRUCC formed to develop **expertise** and preparedness within public agencies and facilitate **resource sharing** for research and projects of mutual interest. WRUCC offers opportunities to achieve **economies of scale** by **joint testing** of RUC systems over wide territory (i.e., western U.S.). It also functions as a **best practices** forum for sharing information and lessons learned. Members are free to determine if or how they wish to advocate testing or implementation of RUC systems in their states—they are not required to adopt or advocate a system used by another member.

Figure 4: WRUCC Member States



WRUCC goals reflect shared interests of member states

Consortium members have joined together to:

- Explore the technical and operational feasibility of various applications of multi-jurisdictional RUC systems;
- Investigate public and key decision-maker criteria for acceptance and share experience and lessons learned to foster positive outcomes;
- Develop standards and protocols for how RUC could best be collected and remitted among various jurisdictions;
- Develop preliminary operational concepts for how a multi-jurisdictional RUC system would be administered;
- Develop a model for regional cooperation and interoperability of RUC system that can be used in the western region and potentially across North America;
- Engage the automotive manufacturing and technology sector to encourage the ability for mileage reporting to occur in conjunction with other products and services the sector provides in the marketplace; and

- Share knowledge to maximize member preparedness and efficiency of policy and program development for road usage charging.

WRUCC has completed four joint research projects with six more on the way

Completed projects:

- Addressing out-of-state drivers in a RUC system (phase 1 of 2)
- Critical examination of Oregon RUC program
- Impacts of changing vehicle fleet fuel economy on state transportation funding
- RUC communications task force (ongoing)

Projects underway:

- Protection of privacy in a RUC system
- Key elements for a multi-state RUC certification program (phase 1 of 2)

Active solicitation:

- Addressing out-of-state drivers in a RUC system (phase 2 of 2)
- Roadmap for state consideration of a RUC system
- Effects of a RUC on rural residents
- Web-based cost of transportation calculator

Road Usage Charge interest among other states is widespread

Below are brief summaries of various RUC-related work or policy initiatives from other states.

Wisconsin

Wisconsin's bi-partisan Transportation and Policy Finance Commission researched mileage-based registration fees and developed a framework for a potential low-tech approach. The Commission recommended it along with a five-cent increase in the fuel tax to the Governor and Legislature, but no action has been taken on either revenue source. However, the Legislature is considering a proposal that would allow Wisconsin DOT to require drivers to report their annual odometer readings at the time of registration. This is intended to provide the state with important data for studying how much money could be raised from a mileage-based vehicle registration fee.



Nevada



Nevada was among the first states to research and test a potential road usage charge. Nevada DOT carried out the effort solely as a research project, in partnership with the University of Nevada-Las Vegas; so no legislative authorization was required. Nevada DOT earmarked \$1 million from its annual allotment of federal research funding (SPR funds, State Program Research) to conduct the research, which included a pilot test of a road usage charge. A second pilot had been planned that would have tested a new pay-at-the-pump method but that concept has not moved forward.

Colorado

Ten months ago, Colorado DOT announced that it was planning to launch a small RUC pilot project. As originally conceived, the project would involve 100 drivers who volunteer to participate in the pilot. Much like Oregon's first pilot and the pilot now



planned in California, participants would not pay actual money to CDOT but would instead receive a monthly or quarterly billing that shows how much would be owed in RUC at the rate of 1.5 cents per mile, versus what they paid in the state’s fuel tax. Like Nevada, Colorado is intending to conduct this small-scale pilot strictly as a research project within their available funds, rather than seeking a comprehensive statewide test that might require legislative authorization and additional funding. This pilot project is expected to take place in 2016.

Utah

Utah DOT is actively researching road usage charges and related policy implications. UDOT is currently analyzing the potential impacts of high-mileage vehicles on their projected state transportation funds, which are heavily reliant on fuel taxes. The state recently increased its fuel tax by five cents (effective January 1, 2016), and authorized a local-option county sales tax increase of .25% to fund transportation. The local option sales tax, in particular, drew criticism from the Utah Taxpayers Association because it is not a user fee and not in any way tied to use of the transportation system. The Utah Taxpayers Association has instead urged consideration of a mileage-based fee. Utah DOT officials are still considering the best approach to exploring RUC in more detail.



Indiana

The Indiana Legislature directed Indiana DOT to conduct an analysis of potential alternative revenue mechanisms that could help address the state’s transportation infrastructure. INDOT studied 50 traditional and innovative funding methods to address the infrastructure-funding gap. Among the mechanisms that appeared most viable for the state were a road usage charge for passenger vehicles, and a road usage charge specifically for trucks (a combination of weight and distance). The report is being finalized and will be transmitted to the Governor and the Legislature for their consideration.



International RUC developments of interest in Europe, New Zealand, Australia, and Canada

Though studied extensively by academics and practitioners, implementation of RUC has been limited to the following global examples:

- **Europe.** Several European nations use vignettes (stickers) that allow foreign motorists access to motorways for a designated period of time (a few days to a year).
- **New Zealand.** All diesel and alternative fuel vehicles have been subject to road usage charges since 1978 using a paper-based licensing scheme in which motorists pre-purchase blocks of kilometers.

Europe refresher: Several countries use vignettes (stickers) to charge for motorway use by visitors—an example of time-based road charging

Paper vignettes. A vignette is a windshield sticker that allows a vehicle to use certain roads in a country for a defined period. Frequent users typically buy a vignette that is good for a year, but shorter periods (down to a few days) are also available, depending on the country.



on

Since the Steering Committee was last briefed about international RUC system in 2012, there have been a few notable developments for road usage charging in other countries. This section highlights recent developments and status of RUC in **Europe, New Zealand, Australia, and Canada.**

Electronic vignettes. Two countries (Hungary and Romania) have operational electronic vignettes systems. With an e-vignette, no physical sticker is required. Instead, the license plate is registered with authorities for a set number of days.

Charge for motorways only. In most countries, the vignettes are required only to use the limited-access highway system (e.g., Autobahn, Motorways, Autoroutes).

Tax out-of-country motorists. All countries that have vignettes also have fuel taxes, but as fuel prices vary across Europe, and distances are short, in many cases the fuel taxes are inadequate because foreign motorists may drive through a country without purchasing any fuel.

Non-discriminatory. EU rules require that vignettes not discriminate in design or practice. Systems must charge the same amount to everyone, regardless of nationality.

New Zealand is the largest and longest example of road usage charge for light vehicles

1978 Startup: In 1978, New Zealand introduced a road usage charge (known in New Zealand as RUC) on all non-gasoline vehicles as well as any vehicles over 3.5 metric tons. A paper-based scheme was adopted that uses windshield-mounted sticker licenses. At the time of adoption, the number of non-gasoline passenger cars was negligible. Today, there are about 550,000 diesel cars subject to the road usage charges. Compliance is enforced at roadside against odometer readings, through annual safety inspections, and a robust audit program. Police have authority to ticket motorists whose licenses are not current. Because New Zealand is an island nation, cross-border travel is not an issue.

2008 Update: In 2008, the government commissioned an independent review to provide recommendations on updating policies and technologies associated with



the road usage charges. The following passage punctuates their findings: *“A good charging system should not be discarded in the pursuit of a perfect system. The policy aim should be for a system that accomplishes as many and as much of the objectives as possible at low cost and, from a dynamic perspective, is not so complicated that different parties are constantly tempted to chip away at various components and undermine it.”*

2009 Private Sector Agents: The government certifies private sector agents to handle license sales and fee collection for motorists, some of whom use electronic methods to replace paper licenses.

New Zealand is exploring new developments and improvements to its RUC program – including transitioning to an electronic system

New Zealand is now in the midst of transitioning from its earlier paper-based RUC system to allow electronic RUC reporting and payment systems.

Offering these system choices is driven by the government’s long-term goals for open system architecture, interoperability to allow roaming throughout the country, the most efficient (and least costly) back office management system, and forward-compatibility with advanced payment systems.

Heavy vehicles subject to RUC have been adopting electronic solutions since 2009, and penetration is now over 25%. The government is now looking at ways to enable and encourage electronic options for light vehicles.



New Zealand's National Transportation Plan calls for expansion of RUC and elimination of fuel tax

The National Transportation Plan identified the following goals and recommended actions:

- Investigate RUC for heavy vehicles, including levying charges by location and time, with a pilot test to be conducted between 2016 and 2019 by the Ministry of Transportation.
- Eliminate the fuel tax and transition all light passenger vehicles to RUC by 2020. Currently, only diesel-powered passenger vehicles are subject to RUC.
- Assess the ability for the current system to accommodate commercial service providers, advanced payment systems, and new technologies.

Australia: Nearly a decade of analysis and policy development moving toward RUC for light vehicles

Australia has been addressing RUC for the past decade, but recent years have seen growing momentum. Like the U.S., Australia collects federal fuel taxes, a portion of which is returned to the states. States supplement federal funds with local sources of transportation revenue, such as vehicle registration fees, tolling, and parking revenues.

The possible transition to a RUC system is marked by the following major recent milestones:

- In 2008, a federal commission headed by the Treasury studied all Australian taxes in an effort to simplify the nation’s tax policies. The commission recommended transportation taxes be reformed to “[give] individuals a clear signal about the cost of infrastructure, [so] they will have an incentive to use it efficiently.”
- The commission, known as the Henry Tax Review, published a report in 2010 identifying the consolidation of all motor vehicle related taxes into a single, unified charge using distance traveled as the most promising policy.
- In 2014, the Australian Productivity Commission identified the decline in fuel tax revenue and growth in road use and costs of construction as a further impetuses for policy reform. Their report calls on governments to undertake pilot studies of RUC for light vehicles.

Western Australia is investigating a heavy vehicle road charge

Main Roads Western Australia is the governmental agency responsible for providing passenger and freight mobility and transportation infrastructure in the state (including the large metropolitan area of Perth). In response to the

heavy mining industry that dominates the economy, Main Roads Western Australia is moving ahead with plans to introduce RUC for heavy vehicles that travel along a 50-mile freight route between Fremantle Port (the major export terminal for mineral commodities from Western Australia) and Perth's strategic industrial areas.

The Perth Freight Link project provides a free flowing, fully grade separated, highly productive freight roadway connection for light and heavy vehicles, and is the largest infrastructure investment in Western Australia, totaling over \$1.1 billion. The project will introduce a distance-based road usage charge on heavy vehicles over 4.5 tons and generate revenue to repay a portion of the capital costs of the project (with the rest being provided by state and federal contributions), and provide a sustainable source of funds to maintain and renew the corridor, while providing funds for other projects to enhance road freight productivity.

The project will be implemented over the next four years with a commission date of December 2019. The nature and scope of the Perth Freight Link Heavy Vehicle Charge project is similar to systems developed for projects of a larger network scale - the principles and issues remain the same.

Canada: Metro Vancouver looks at prospects for road usage charges in wake of failed sales tax referendum to fund transportation

Current British Columbia Premier Christy Clark pledged during her election campaign in fall 2014 that a referendum on potential new revenue sources for Metro Vancouver transportation improvements would be held. Although common in the U.S., transportation ballot initiatives and referenda rarely, if ever, take place in Canada. This referendum was to establish a set of transportation planning principles, potential funding sources, and/or specific transportation investments for the Metro Vancouver region.

Voting took place in spring 2015, with citizens of Metro Vancouver considering whether to adopt the Mayor's Council transportation investment plan, which outlined \$7.5 billion in transit, biking, and road upgrades aimed at reducing

congestion. To fund these investments, voters were asked to approve a new 0.5 percent sales tax called the Metro Vancouver Congestion Improvement Tax.

Ultimately, voters rejected the referendum by a margin of 62-38. The result of the referendum makes it uncertain how improvements to transit and transportation will be funded over the next decade in British Columbia. Despite this setback, the Mayor's Council will consider alternative regional funding sources as outlined in the plan.

- Mobility pricing on roads (distance or usage-based fees, similar to RUC)
- Increase the Provincial Sales Tax within Metro Vancouver
- Land value capture
- Annual vehicle registration fees
- Increase the B.C. carbon tax within Metro Vancouver

Appendix B. Current Federal, State and Local Road Usage Charge Activities

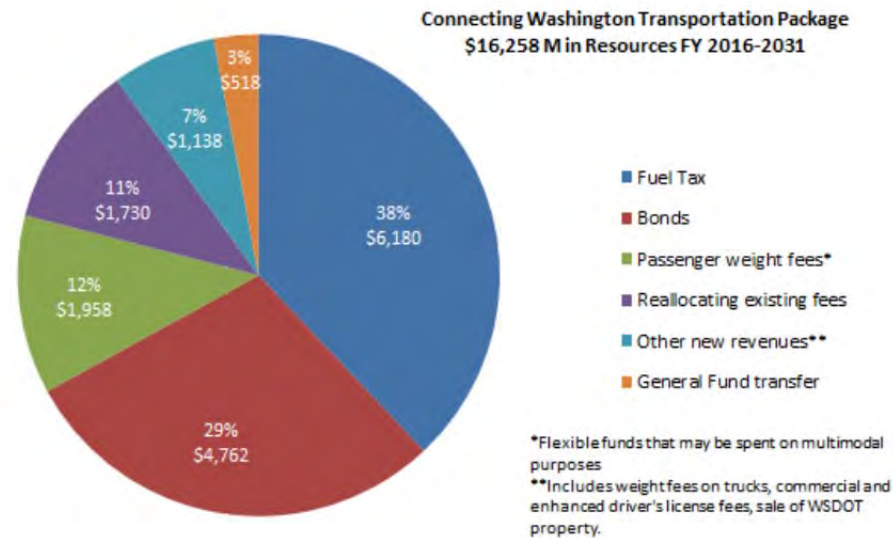
Highlights of the 2015-2031 Connecting Washington transportation revenue package

- Fuel tax: 11.9 cents increase, for a total state tax rate of 49.4 cents per gallon
 - First increase: 7 cents, on August 1, 2015
 - Second increase: 4.9 cents, on July 1, 2016
- Passenger weight fee increases for most cars, of \$15, \$25, or \$35 depending on weight
 - Increase becomes effective July 1, 2016
- Other state-imposed fee increases (e.g., weight fees on trucks, commercial driver’s license fees, enhanced driver’s licenses) go into effect July 1, 2016.
- Electric vehicle fee raised from \$100 to \$150
 - (5) The annual EV registration renewal fee now applies to vehicles that use both (a) at least one method of propulsion capable of being reenergized by an external source of electricity, and (b) is capable of traveling at least 30 miles using only battery power. In other words, in addition to the 100% battery electric vehicles (BEVs) that are eligible for the annual fee (such as the Tesla Model S and the Nissan Leaf), the fee now applies to Plug In Hybrid Electric Vehicles (PHEVs) that can go 30+ miles on pure electricity before switching to hybrid mode (such as Chevrolet Volt).
 - This section applies to annual vehicle registration renewals until the effective date of enacted legislation that imposes a vehicle miles traveled fee or tax.”

Other highlights of the 2015-2017 Transportation Budget

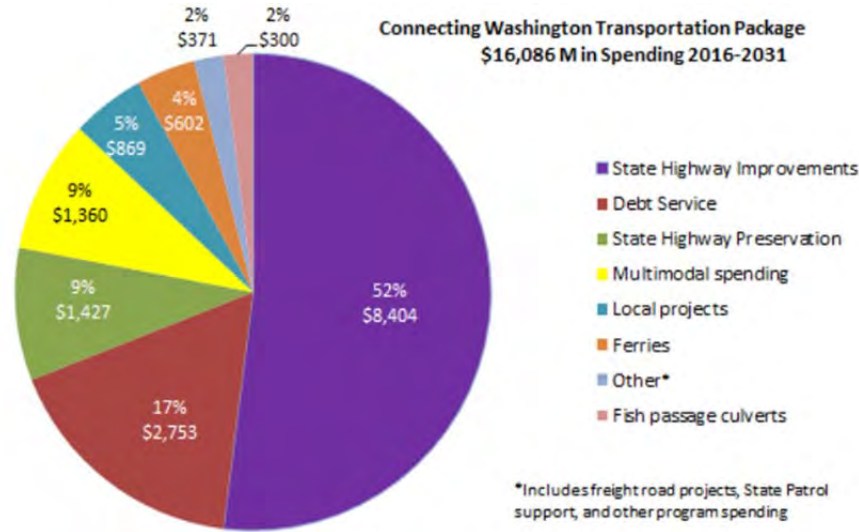
- Department of Licensing: \$27.4 million for business and technology modernization.
- Sound Transit received authority to ask Puget Sound residents for additional revenues up to \$16 billion to fund the ST3 package. The authority (subject to voter approval) includes:
 - A motor vehicle excise tax of up to 0.8 percent of vehicle value
 - An additional sales and use tax of 0.5 percent; and
 - A property tax levy of \$0.25 per \$1,000 of assessed valuation

Figure 5: 2015 Connecting Washington Transportation Package Revenue Sources



Source: Office of Program Research

Figure 6: 2015 Connecting Washington Transportation Package Revenue Uses



Source: Office of Program Research

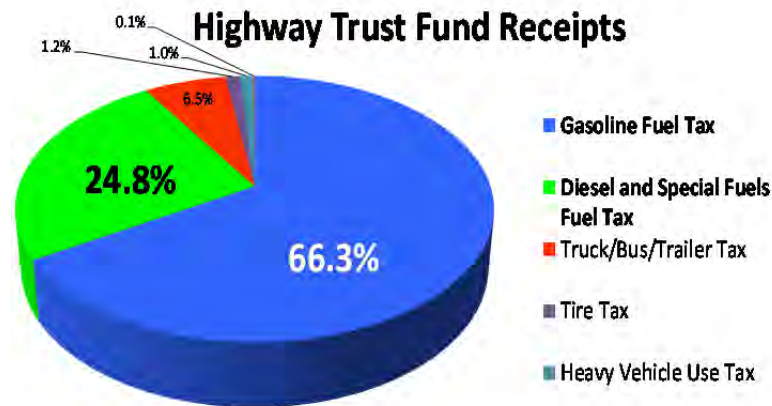
Federal transportation reauthorization: Fixing Americas Surface Transportation (FAST Act)

- The Highway Trust Fund is insolvent and the federal transportation program is not sustainable with the federal revenue sources currently in place. After 35 short-term extensions, or “continuing resolution”, a new five-year federal transportation act (the FAST Act) was enacted into law by President Obama on December 4, 2015. Of the total \$305 billion, \$230 will go to highways, \$60 billion will go to roads, \$10 billion will go to passenger rail, and \$5 billion will go to safety programs. The Highway Trust Fund in the new act is supported by an additional \$70 billion in one time revenues (non-trust fund revenues), and as a result, provides a five-year program level that is slightly higher than previous MAP-21 investments. In addition to a number of reforms and a focus on freight mobility investments, the Act advances innovative funding and financing opportunities. In recognition of the decline of the

fuel tax as a revenue source, Congress has created a grant program to support states efforts to explore alternatives.

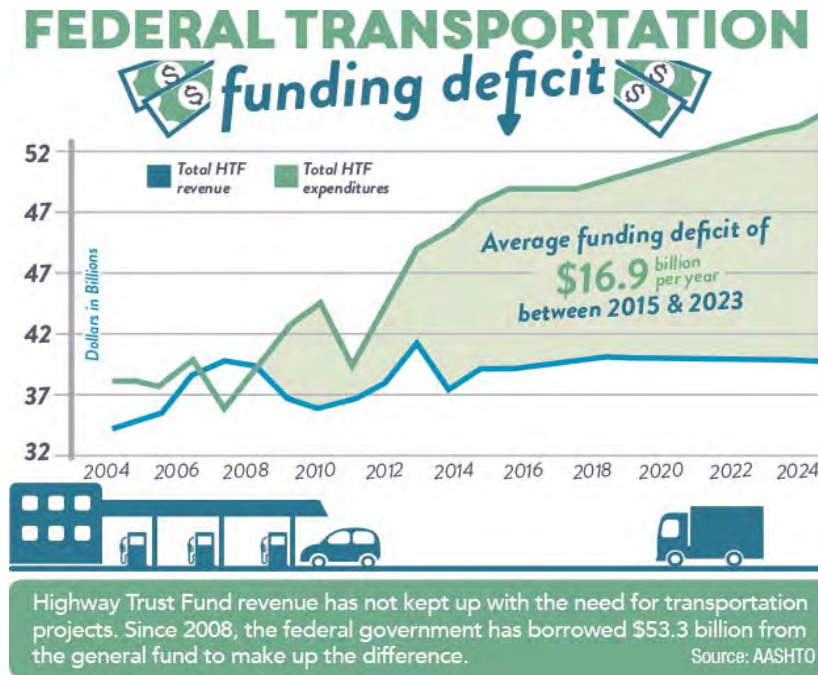
- The Highway Trust Fund dependence on a cents per gallon fuel tax has made it susceptible to the effects of increasingly efficient vehicles and inflation.
 - Motor fuel taxes have comprised 91% of the Highway Trust Fund over the past decade. (see Figure 7)

Figure 7: Highway Trust Fund Highway Trust Fund Receipts



Source: Federal Highway Administration, Highway Statistics, 2011

- Highway trust fund has had a funding deficit for a number of years and is not sustainable



Federal FAST Act; SEC. 6020 SURFACE TRANSPORTATION SYSTEM FUNDING ALTERNATIVES (bill language)

(a) *IN GENERAL.*—The Secretary shall establish a program to provide grants to States to demonstrate user-based alternative revenue mechanisms that utilize a user fee structure to maintain the long-term solvency of the Highway Trust Fund.

(b) *APPLICATION.*—To be eligible for a grant under this section, a State or group of States shall submit to the Secretary an application in such form and containing such information as the Secretary may require.

(c) *OBJECTIVES.*—The Secretary shall ensure that the activities carried out using funds provided under this section meet the following objectives:

- (1) *To test the design, acceptance, and implementation of 2 or more future user-based alternative revenue mechanisms.*

(2) To improve the functionality of such user-based alternative revenue mechanisms.

(3) To conduct outreach to increase public awareness regarding the need for alternative funding sources for surface transportation programs and to provide information on possible approaches.

(4) To provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms.

(5) To minimize the administrative cost of any potential user-based alternative revenue mechanisms.

(d) USE OF FUNDS.—A State or group of States receiving funds under this section to test the design, acceptance, and implementation of a user-based alternative revenue mechanism—

(1) shall address—

(A) the implementation, interoperability, public acceptance, and other potential hurdles to the adoption of the user-based alternative revenue mechanism;

(B) the protection of personal privacy;

(C) the use of independent and private third-party vendors to collect fees and operate the user-based alternative revenue mechanism;

(D) market-based congestion mitigation, if appropriate;

(E) equity concerns, including the impacts of the user based alternative revenue mechanism on differing income groups, various geographic areas, and the relative burdens on rural and urban drivers;

(F) ease of compliance for different users of the transportation system; and

(G) the reliability and security of technology used to implement the user-based alternative revenue mechanism; and

(2) may address—H. R. 22—272

(A) the flexibility and choices of user-based alternative revenue mechanisms, including the ability of users to select from various technology and payment options;

(B) the cost of administering the user-based alternative revenue mechanism; and

(C) the ability of the administering entity to audit and enforce user compliance.

(e) CONSIDERATION.—The Secretary shall consider geographic diversity in awarding grants under this section.

(f) LIMITATIONS ON REVENUE COLLECTED.—Any revenue collected through a user-based alternative revenue mechanism established using funds provided under this section shall not be considered a toll under section 301 of title 23, United States Code.

(g) FEDERAL SHARE.—The Federal share of the cost of an activity carried out under this section may not exceed 50 percent of the total cost of the activity.

(h) REPORT TO SECRETARY.—Not later than 1 year after the date on which the first eligible entity receives a grant under this section, and each year thereafter, each recipient of a grant under this section shall submit to the Secretary a report that describes—

(1) how the demonstration activities carried out with grant funds meet the objectives described in subsection (c); and

(2) lessons learned for future deployment of alternative revenue mechanisms that utilize a user fee structure.

(i) BIENNIAL REPORTS.—Not later than 2 years after the date of enactment of this Act, and every 2 years thereafter until the completion of the demonstration activities under this section, the Secretary shall make available to the public on an Internet website a report describing the progress of the demonstration activities.

(j) FUNDING.—Of the funds authorized to carry out section 503(b) of title 23, United States Code—

(1) \$15,000,000 shall be used to carry out this section for fiscal year 2016; and

(2) \$20,000,000 shall be used to carry out this section for each of fiscal years 2017 through 2020.

(k) GRANT FLEXIBILITY.—If, by August 1 of each fiscal year, the Secretary determines that there are not enough grant applications that meet the requirements of this section for a fiscal year, Secretary shall transfer to the program under section 503(b) of title 23, United States Code—

(1) any of the funds reserved for the fiscal year under subsection (j) that the Secretary has not yet awarded under this section; and

(2) an amount of obligation limitation equal to the amount of funds that the Secretary transfers under paragraph (1).

Puget Sound Regional Council “Transportation Futures” study update



VISION 2040

Nearly 3.7 million people live in King, Pierce, Snohomish, and Kitsap Counties, and the population is expected to grow by another 1.5 million by the year 2040. To address and provide a strategy for that growth, the Puget Sound Regional Council (PSRC) adopted VISION 2040 in 2008. VISION 2040 is an integrated, long-range strategy for managing this growth in a responsible manner that preserves and promotes economic vitality, a healthy environment, and the wellbeing of people within vibrant communities.

By supporting compact communities comprising both housing and employment sites, VISION 2040 strives to focus new growth and redevelopment in urban centers, contain the existing urban area boundaries, and conserve adjacent farm and forest lands. The strategy provides a framework for addressing policies around land use, economic

development, transportation, public facilities, and environmental issues. In particular, VISION 2040 provides a foundation for the region’s transportation plan, **Transportation 2040**.

Transportation 2040

The regional transportation plan was published in 2010 and updated in 2014 to better reflect the recent economic downturn. Transportation 2040 is a multimodal, long-range plan that establishes three integrated strategies:

- Congestion and mobility;
- Environment; and
- Funding.

Within each of these three strategies, there are four categories of investment:

- Preservation, maintenance and operations;
- Safety and security;
- Efficiency; and
- Strategic capacity.

Transportation 2040 assumes that the state will transition from the existing motor vehicle fuel tax to a state-wide road usage charge (pay per mile) system over the next two decades, and that all limited access highways in the region will be converted to full tolling by 2040.

Transportation Futures

In 2014, the PSRC embarked on an ambitious “Transportation Futures” study to further develop funding strategies to implement the identified investments and approaches of Transportation 2040. The study empaneled a Task Force of regional and state elected leadership, and civic leaders representing diverse regional interests that is currently working on long-range approaches and strategies on how to best to meet, fund, and finance future regional transportation needs.

Although the recently passed Connecting Washington transportation revenue package funds some of the capacity investments in Transportation 2040, there remain approximately \$36 billion (in constant 2008 dollars) of unfunded transportation needs through 2040 for which new funding regional sources must be identified. The Task Force is currently considering several scenarios comprising different revenue sources in various combinations that vary from the combination of RUC and system-wide tolling in Transportation 2040. Potential revenue sources include the following.

- System-wide or selected tolling of limited access facilities
- A carbon tax or emissions fee
- Transportation utility districts based on trip generation rates
- Phasing out of alternative (electric) vehicle fees and vehicle license fees with implementation of RUC
- Increases in ferry and transit fares beyond Transportation 2040 levels to keep pace with inflation

While the Task Force’s work is far from complete, early indications are that a regional RUC or pay per mile tax in addition to the assumed underlying state base level is emerging as a key component. If this moves forward, it will likely create some interesting dialogue around regional governance, including how regional RUC rates would be set, collected, and distributed locally.

Washington State Transportation Plan 2035 policy elements related to RUC

The Washington Transportation Plan (WTP 2035) is a comprehensive and balanced statewide transportation plan that establishes a 20-year vision for the development of the statewide transportation system, from state highways and ferries to sidewalks and bike paths, county roads, city streets, public transit, air and rail. It was adopted by the Transportation Commission in December 2014 and submitted to Governor Inslee and the Legislature.

WTP 2035 identifies significant statewide transportation issues, and recommends statewide transportation policies and strategies to the Legislature and Governor (RCW 47.01.071(4)). By law, WTP 2035 is required to be consistent

with state’s growth management goals, reflect the priorities of government, and address regional needs, including multimodal transportation planning.

WTP 2035 is based on the following six transportation policy goals established by the Legislature:

- **Preservation:** To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services.
- **Safety:** To provide for and improve the safety and security of transportation customers and the transportation system.
- **Mobility:** To improve the predictable movement of goods and people throughout Washington state.

NOTE: the 2015 Legislature passed ESB 5995 which modifies the Washington State Policy Goal on Mobility to read: Mobility: To improve the predictable movement of goods and people throughout Washington state including congestion relief and improved freight mobility.

- **Environment:** To enhance Washington’s quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment.
- **Stewardship:** To continuously improve the quality, effectiveness, and efficiency of the transportation system.
- **Economic Vitality:** To promote and develop transportation systems that stimulate, support and enhance the movement of people and goods to ensure a prosperous economy.

In WTP 2035, the Commission also stressed the need to improve the financial health of Washington’s transportation system (page 90) and emphasized two essential themes:

- Improved effectiveness from expenditure of existing revenues; and
- Enhancing existing revenue sources to address future transportation demands of a growing economy and population.

Among several possible revenue enhancements discussed, WTP 2035 recommends “continued evaluation of road usage charges.” (Page 93)

In the body of WTP 2035, the Commission notes some of the underlying reasons to move toward a road usage charge:

- Changing demographics, preferences, and technologies. Younger people are not being licensed or driving at the same rate as previous generations. (page 33)
- Fuel tax revenue is unpredictable, and volatility is likely to continue. A sustainable alternate funding source should not be so heavily based on fuel consumption. (page 40) Options may include further expansion of toll roads and express toll lanes, road usage charges, congestion pricing, employer-funded transportation choices, strategic private sector partnerships, and value-capture strategies. (page 41)
- New funding sources should be flexible and equitable and balance user-pay with ability-to-pay approaches. (page 41)

Appendix C. Performance Evaluation of Washington’s RUC Demonstration Project

Principles should guide the development and demonstration of RUC

Early in its work, the Steering Committee said that its goal was to identify and develop a sustainable, long-term revenue source for Washington State’s transportation system to transition from the current fuel tax system. The Steering Committee then adopted 13 Guiding Principles (not listed in priority order) on how to implement the goal:

Transparency	A road usage charge system should provide transparency in how the transportation system is paid for.
Complementary policy objectives	A road usage charge system should, to the extent possible, be aligned with Washington’s energy, environmental, and congestion management goals.
Cost-effectiveness	The administration of a road usage charge system should be cost-effective and cost efficient.
Equity	All road users should pay a fair share with a road usage charge.
Privacy	A road usage charge system should respect an individual’s right to privacy.
Data Security	A road usage charge system should meet applicable standards for data security, and access to data should be restricted to authorized people.
Simplicity	A road usage charge system should be simple, convenient, transparent to the user, and compliance should not create an undue burden.
Accountability	A system should have clear assignment of responsibility and oversight, and provide accurate reporting of usage and distribution of revenue collected.
Enforcement	A road usage charge system should be costly to evade and easy to enforce.
System Flexibility	A road usage charge system should be adaptive, open to competing vendors, and

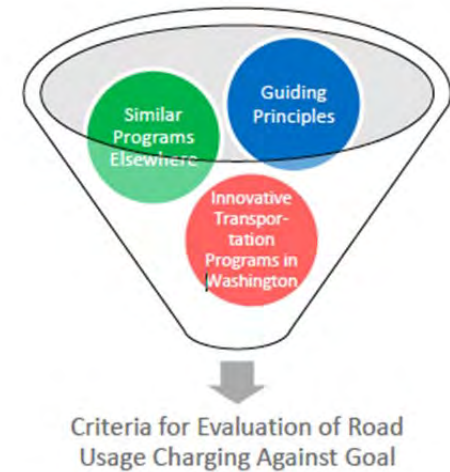
	able to evolve over time.
User Options	Consumer choice should be considered wherever possible.
Interoperability and Cooperation	A road usage charge system should strive for interoperability with systems in other states, nationally, and internationally, as well as with other systems in Washington. Washington should proactively cooperate and collaborate with other entities that are also investigating road usage charges.
Phasing	Phasing should be considered in the deployment of a road usage charge system.

Enhanced approach to a Demonstration Project: Setting performance criteria and measuring results

A demonstration project serves the purpose of providing data that will allow the Steering Committee to address several of the questions that remain in the “issues registry,” and to evaluate the program as a whole. It does so by providing data from a context-sensitive, real-world operational experience, but also by providing the opportunity to evaluate the effectiveness of various elements (operational, organizational, and financial) against criteria defined by the Committee. The demonstration project provides a mechanism for the Steering Committee to gather, measure, and evaluate data to determine whether a proposed RUC framework satisfies the goal of a sustainable, long-term revenue source for Washington’s transportation system to transition from the current fuel tax system.

Using the Steering Committee’s Guiding Principles to guide evaluation of a Demonstration

While the Steering Committee has not yet defined the full set of demonstration project evaluation criteria, the guiding principles established at the beginning of the Committee’s work serve as a starting point. Figure 8 illustrates how the Steering



Committee's guiding principles can serve as the foundation for demonstration performance criteria.

Each of the "issues registry" questions identified by the Steering Committee can similarly be tied to one or more of the Committee's guiding principles, which form the foundation of one or more criteria against which to evaluate the demonstration's performance as it generates data to answer the question. Once the criteria are established, an evaluation effort would assess performance relative to the criteria established.

Figure 8: Sample remaining question: How to operationalize the four RUC Methods

Guiding Principles	Example Demonstration Evaluation Criteria
Equity	Costs incurred under each operational concept, by vehicle type
Cost-effectiveness	Cost of collecting RUC relative to revenue collected
User options	Acceptability of methods tested based on user surveys
System flexibility	Adaptability of methods tested to incorporate other services beyond RUC
Simplicity	User perceptions of the ease of use of the RUC reporting methods
Enforcement	Effectiveness of enforcement in discouraging evasion
Privacy	Adequacy of safeguards to protect personal privacy
Data security	Ability of system to withstand breaches or attacks

Clearly Articulating the Purposes of a RUC Demonstration

The Guiding Principles have informed the feasibility study, development of operational concepts, and analysis of the business case for RUC during the first three phases of the Steering Committee’s work. These principles can be reflected in the purpose and design of a demonstration project, as well.

The Steering Committee will be asked to confirm and clearly articulate the primary purpose to be served by a revised RUC Demonstration that would likely occur beyond 2016.

Figure 9: Purposes of a RUC Demonstration

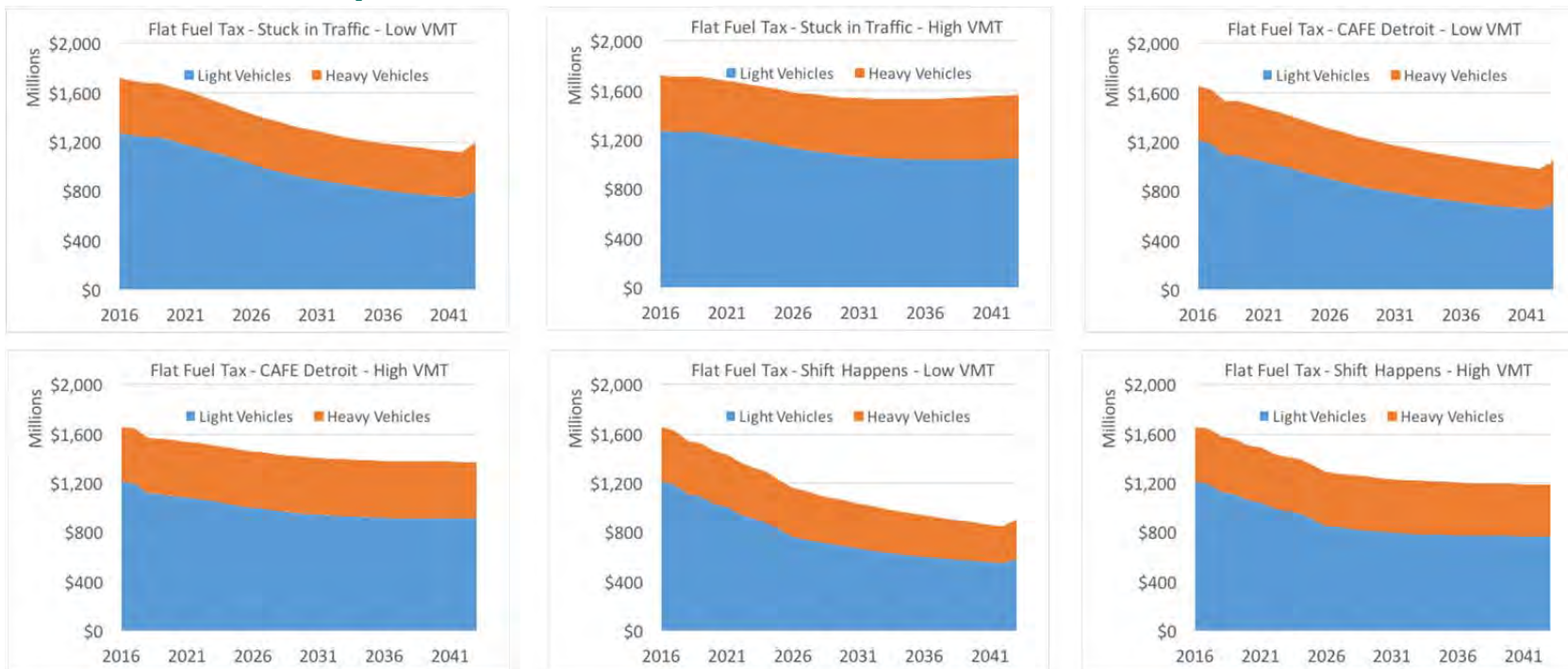
Purpose of Demonstration Project	Intended to Address...
Gauge Washington motorists’ preferences and reactions to RUC policy and concepts	Acceptability of RUC to fund future transportation needs
Test ease of use of RUC mileage reporting methods as recommended in Washington	Simplicity: User perceptions of the ease of use of the RUC reporting methods
Collect data on operational costs of RUC system in Washington state	Cost-effectiveness: Cost of collecting RUC relative to revenue collected
Identify agency capabilities, challenges and needs	Washington state government’s capacity to implement RUC
Assess flexibility of a RUC system to be adapted for other services in Washington state	Adaptability of methods tested to incorporate other services beyond RUC
Test the enforceability of Washington’s recommended RUC methods	Effectiveness of enforcement in discouraging evasion
Test Washington motorists’ privacy preferences	Privacy: Adequacy of safeguards to protect personal privacy
Assess potential differential impacts of RUC on Washington residents	Equity: Costs incurred under each operational concept, by vehicle type

Appendix D. Total Revenue Check

This appendix contains charts depicting total revenue under the three policy alternatives (flat fuel tax, indexed fuel tax, and Washington RUCs) under each of the three scenarios (Stuck In Traffic, CAFE Detroit, and Shift Happens) for two VMT growth scenarios. In all, there are 18 charts for each combination of the above (e.g., flat fuel tax – Stuck In Traffic – low VMT growth is one chart). Each chart shows aggregate revenue from both light and heavy vehicles. The two VMT scenarios were created as follows:

- The “low” VMT scenario is based on the Transportation Revenue Forecast Council’s September 2015 VMT forecast through 2043, assuming a split of 89.5% VMT for light vehicles and 10.5% for heavy vehicles.
- The “high” VMT scenario is based on the U.S. EIA Reference Case VMT for 2015-2040, which is a national projection. Annual VMT growth rates from the EIA projections for 2016-2040 were applied to Washington VMT from 2015.

Flat Fuel Tax Policy Alternative



Indexed Fuel Tax Policy Alternative



Washington RUCs Policy Alternative

