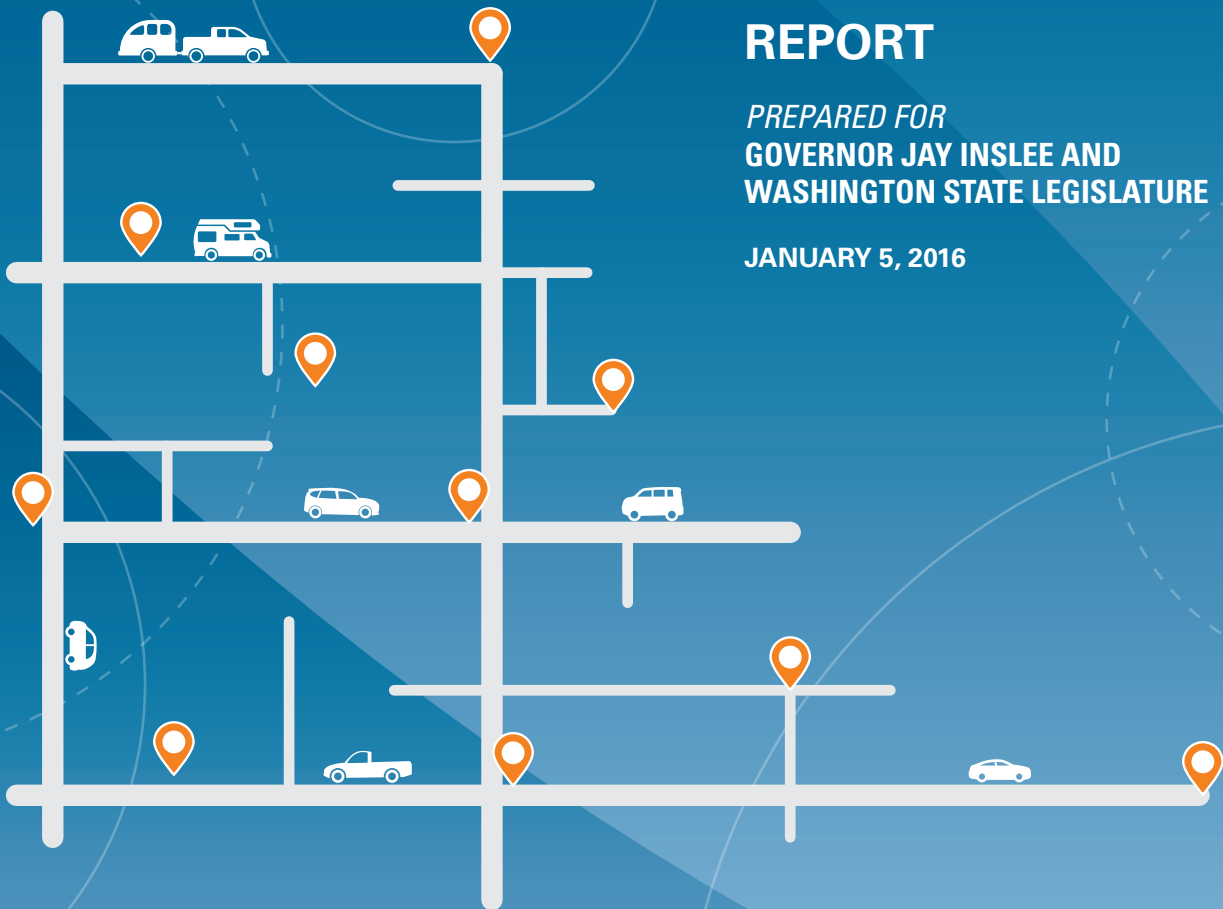


WASHINGTON STATE ROAD USAGE CHARGE ASSESSMENT—PHASE 4

REPORT

PREPARED FOR
GOVERNOR JAY INSLEE AND
WASHINGTON STATE LEGISLATURE

JANUARY 5, 2016





STATE OF WASHINGTON
TRANSPORTATION COMMISSION

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January 5, 2016

The Honorable Governor Jay Inslee
Office of the Governor
PO Box 40002
Olympia, WA 98504-0002

The Honorable Curtis King
Chairman, Senate Transportation Committee
PO Box 40482
Olympia, WA 98504-0482

The Honorable Judy Clibborn
Chairman, House Transportation Committee
PO Box 40600
Olympia, WA 98504-0600

The Honorable Steve Hobbs
Senate Transportation Committee
PO Box 40482
Olympia, WA 98504-0482

The Honorable Ed Orcutt
House Transportation Committee
PO Box 40600
Olympia, WA 98504-0600

Dear Governor Inslee, Senators King and Hobbs, and Representatives Clibborn and Orcutt:

We are pleased to submit the fourth installment of our Road Usage Charge Assessment, which builds on the deliberative work done in Washington State since 2012 on the important topic of transportation revenue sustainability. While we celebrate the significant accomplishment of the Connecting Washington Transportation Revenue package this year, we recognize the vulnerability of our current fuel tax source to sustain its long-term purchasing power, and the risk of further decline due to continued improvements in vehicle fuel economy.

Responding to the Legislative direction in the 2015 Transportation Budget, the Transportation Commission has continued its collaboration with the 25-member Steering Committee to advance Washington's road usage charge assessment through discussion of policy issues, analysis of revenue scenarios, and recommendations for next steps.



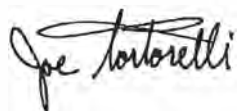
The business case has been updated to reflect changes in revenues and CAFE' standards, and we are carefully monitoring work underway in other states and countries with the intent to leverage lessons learned when designing a road usage charge demonstration project. We recognize, however, that Washington is unique and any consideration of an alternative to the fuel tax should be tailored to the interests of our drivers, businesses, and communities. To make progress on our assessment of road usage charging and provide critical information to inform policy decisions, we have developed a road map that delineates a path for future actions (see page 35). Any change in revenue collection methods will carry significant impacts, and the road map highlights deliberate steps necessary to position our state to be ready for such a transition, and to achieve full engagement of the public across the state throughout the process. One of the hallmark waypoints on the road map, at which we have now arrived, is a statewide demonstration project. It will serve the primary purpose of familiarizing the public with how a road usage charge system could work, and to gauge acceptance. It will also inform us as to how a road usage charging system could work from technical and operational standpoints.

2016 is a critical year for this work and we have a timely opportunity to seek federal financial support of a statewide demonstration project. The December 2015 enactment of the Federal Fixing Americas Surface Transportation (FAST) Act enables USDOT to create a grant program for states to test the acceptability and viability of a road usage charge. In order for Washington to be ready to take advantage of this federal funding opportunity and advance the policy development underway, it will be critical that we use this Legislative session to indicate our state's commitment to conducting a demonstration project that will inform our state and our nation's consideration of this fuel tax alternative. To this end, we have much work to do in 2016. We are recommending for your consideration a work plan (see page 48) that will place our state in a competitive position for federal funding, and will continue our state's progress in developing a long-term, sustainable transportation revenue source to support our quality of life and economic vitality.

Your leadership on this topic has thus far enabled Washington's careful, analytic approach to all facets of a road usage charge system, with informed decision-making along the way. The proposed actions in this report to prepare for a demonstration project are the next logical, necessary steps in this measured and methodical assessment.

We look forward to our continued work with you.

Sincerely,



Joe Tortorelli
Chairman, Road Usage Charge Steering Committee
Vice-Chairman, Washington State Transportation Commission

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Appendices and additional background information on 2015 RUC work are provided on the enclosed CD:

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

Appendix B: Federal, State and Local Road Usage Charge Activities

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

Appendix D: Total Revenue Charts

For more information about the Road Usage Charge Assessment including prior reports, please visit the Transportation Commission’s web site at: www.wstc.wa.gov, or the project web site at: <http://waroadusagecharge.wordpress.com>.

2015 STEERING COMMITTEE

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Commissioner Joe Tortorelli**
WSTC

Commissioner Anne Haley
WSTC

Commissioner Roy Jennings
WSTC

Sen. Curtis King
Yakima (R) 14th District

Rep. Judy Clibborn
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Rep. Ed Orcutt
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Sen. Ann Rivers
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James Thompson
Washington Public Ports Association
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Ted Trepanier
INRIX
Representing: Usage fee technology

Brian Ziegler
Pierce County Public Works
Representing: Counties

EXECUTIVE SUMMARY

Overview of the 2015 Work

In prior phases of work since 2012, the Steering Committee and the Washington State Transportation Commission (WSTC) addressed the feasibility of road usage charging (RUC) in Washington and evaluated the business case for it. Numerous policy issues were addressed and recommendations were submitted to the Legislature in prior sessions.

This year's work plan, completed between August and December 2015:

- Included two Steering Committee meetings (October 1 and December 1) to provide input on elements of work plan implementation (e.g., assumptions to make in the revised business case evaluation, which policy issues to address before undertaking a demonstration project, etc.), as well as recommendations on next steps for advancing a statewide road usage charge demonstration project and possible future RUC program.
- Updated the business case incorporating new assumptions, including changes in vehicle fleet mix, fuel economy, and new corporate average fuel economy (CAFE) standards for heavy trucks (see page 10).
- Provided a status update on national and international road usage charge developments, with special focus on Oregon, California, and British Columbia (see Appendix A).
- Monitored Federal Transportation Act development for programs that will provide states funding to conduct RUC demonstration project. Monitored activities of the 14 state Western Road Usage Charge Consortium (WRUCC) that is collaborating on RUC-related research (see page 8).
- Continued focused coordination between the WSTC, the Washington State Department of Transportation (WSDOT), and the Washington State Department of Licensing (DOL) on demonstration project goals and objectives.
- Revised the demonstration project approach to add project evaluation as measured against specific performance criteria to be developed by the Steering Committee (see Appendix C).
- Reviewed road usage charge policy principles in the context of other state transportation policies, including the 20-year Washington Transportation Plan 2035

Updated the Business Case to Reflect Recent Developments

The business case analysis update focused on three questions:

- What is the cost to the state of collecting a road usage charge?
- When does the buying power of the fuel tax go away?
- What are the policy alternatives?

Three illustrative policy alternatives were analyzed and implications of each were explored.

- **Maintain a Flat Fuel Tax** at 49.4 cents per gallon
- **Index the Fuel Tax** in a way that reflects the periodic historical trend increases
- **Implement a State RUC** that transitions, at a minimum, new vehicles beginning with Model Year 2020 to a distance-based usage fee

The key findings from this analysis were as follows:

- RUC is costlier to collect than fuel taxes, but costs decline with increasing scale.
- Fuel economy improvements threaten fuel tax revenue sustainability under all scenarios considered.
- Indexing the fuel tax and transitioning to a road usage charge both perform well in addressing revenue sustainability. However, RUC is more equitable than indexing the fuel tax, while fuel tax is more cost-effective to collect than RUC in the near term.

RUC Road Map

A Washington State RUC Roadmap was introduced as an illustration of the sequential steps in developing a road usage charge system (see page 34 for more detail). The RUC Roadmap documents milestones that have been reached, and the steps along a developmental pathway to investigate, design, test, and consider a RUC system for Washington State. Section 4 provides detailed descriptions for each of the various waypoints, particular attention is given to the steps and decision points leading up to a demonstration project.

Recommendations for 2016 Work Plan

1. Address unresolved policy issues

Throughout the entire assessment process dating back to 2012, policy, technical, legal, and administrative issues have been documented and listed in a “policy issues registry.” These policy issues require further examination and resolution before a RUC program could be enacted in Washington. Many of the issues do not need to be addressed in order to conduct a RUC demonstration project. The 2016 Work Plan priority is to address those policy issues that must be resolved in order to proceed with a demonstration project. In parallel and as resources allow, work will continue on the longer-term issues that require resolution if a permanent RUC program is implemented.

All issues identified in the policy issues registry as Tier 1 issues should be analyzed and addressed in 2016, prior to initiating a demonstration project. Addressing questions such as whether to charge out-of-state drivers will help shape the demonstration project plan. Additionally, the Tier 3 issues related to motor fuel tax bond requirements, and interoperability with other states, should be addressed in the 2016 Work Plan. These two issues have been of keen interest to the steering committee and it is important to identify the parameters of bond debt and interoperability as soon as possible, in order to develop strategic solutions.

See page 48 for more detail.

2. Develop a framework and criteria for evaluating a demonstration project

A demonstration project will provide data that will allow several issues remaining in the “parking lot” to be addressed, and to evaluate the RUC program as a whole. A demonstration project will provide data from a context-sensitive and real-world operational experience, and will *create the opportunity to evaluate the effectiveness of various elements of the demonstration project (operational, organizational, financial) against defined performance criteria and expectations.*

In 2016, prior to initiating a demonstration project, a full set of project evaluation criteria will be developed. The guiding principles established at the beginning of the RUC assessment process will serve as the starting point.

See page 51 for more detail.

3. Develop a strategic statewide communications plan

A strategic statewide communications plan will provide the outreach framework for all aspects of advancing road usage charging in Washington State from the early public engagement phase through development and implementation of a demonstration project.

See page 52 for more detail.

4. Revise the RUC Demonstration Project Plan

The revised Demonstration Project Plan should begin by articulating the need for and purpose of a demonstration project. Next, key parameters for the demonstration project should be designed – this comprises the heart of the 2016 Work Plan. These parameters, such as the location, number, and parameters of participant pool (income, age, vehicle type, business or personal use and ownership of vehicle, etc.), concepts to test, duration, and other factors should reflect the demonstration project’s purpose and need, as well as the guiding principles and evaluation criteria to be developed.

See page 53 for more detail.

2016 Work Plan Funding Request

The 2016 Work Plan is designed to accomplish the recommendations previously discussed. It would begin in early April 2016, when, if approved, legislative appropriations are anticipated to be available. The budget for this Work Plan is outlined below.

The new RUC federal grant program authorized in the FAST Act will likely favor ready-to-go demonstration projects, for which the project has been designed, the policy basis and operational concepts have been developed, and a state is ready to launch a demonstration project once federal funds are awarded. This proposed 2016 Work Plan will meet this expectation and make Washington State ready to move into a demonstration project in early 2017.

In order to accomplish the four 2016 Work Plan recommendations outlined earlier, five Steering Committee meetings are proposed from April through December 2016.

See page 55 for more detail.

Figure 1: Proposed 2015 Work Plan Budget

Task	Budget
1. Address Unresolved Policy Issues	\$ 98,750
2. Develop Framework and Criteria for Evaluating Performance of a Demonstration Project	\$ 123,750
3. Develop a Strategic Statewide Communications Plan*	\$ 133,750
4. Revise the RUC Demonstration Project Plan	\$ 243,750
TOTAL	\$ 600,000

* Does not include funding necessary for communications activities to occur if a demonstration project is funded

SECTION 1: INTRODUCTION

Recent transportation developments compel further consideration of Road Usage Charges (RUC)

Since the last report to the Legislature was submitted in January 2015:

- The Legislature enacted a 16-year Connecting Washington transportation revenue package that increases the state’s motor fuel tax by 11.9 cents per gallon to 49.4 cents per gallon.
- New federal Corporate Average Fuel Economy (CAFE) standards were announced for medium and heavy-duty trucks. EPA has not yet published the impact of these standards on truck fuel consumption, but initial estimates are 20-40% improvement above current levels.
- Road usage charging as an alternative to the state fuel tax has advanced in several other states.¹
 - Oregon has implemented a permanent RUC tax collection system, although the program is currently voluntary and capped at 5,000 volunteers.
 - California has completed its demonstration design process and will launch a statewide demonstration project in July 2016.
 - Colorado is moving forward with plans to test RUC, including a small demonstration project (less than 100 volunteers) scheduled to begin this spring.
- Most significantly, a newly-created federal grant program will provide up to a 50 percent federal match to states for testing alternative revenue mechanisms, including mileage-based fees (i.e. RUC).
- Early reports from USDOT are that states that are “ready to go” will be most competitive for an award.²

¹ See Appendix A for a more detailed description of RUC initiatives around the U.S. and internationally.

² See Appendix B for more information about this federal funding opportunity.

The purpose of a RUC demonstration project is to measure public reaction and acceptance factors – not to test whether devices will work.

- Other states have proven that mileage collection and reporting technologies exist, and can be effectively used to collect RUC.

A demonstration project is not an end in itself. The purpose of a demonstration project is to test assumptions and gather information about how a potential RUC system would perform and how motorists interact with it. Mileage recording and reporting technologies have evolved and have been commercially deployed over the last 24 months for road usage charging and other purposes. There is little question technologies for mileage recording and reporting are available and reliable.

The primary function of a statewide demonstration project is to allow motorists to interact with a live RUC system, and to gauge their reactions and identify public acceptance factors. The Steering Committee invested significant time in 2015 examining approaches to a demonstration project that will ensure this overriding purpose is clearly articulated and apparent to policymakers and the public. This is reflected in the Demonstration Project Evaluation Framework information, found in Appendix C; and in the recommendations for the 2016 Work Plan, found in Section 5.

Washington’s investigation and development of RUC has progressed significantly since 2012

Figure 2 summarizes the work completed from 2012 through the end of 2014.

Figure 2. Road Usage Charge Progress Report, 2012 to 2014

Date	RUC Milestone	Actions
2010 March	Legislature funds and directs exploration of RUC as a potential future replacement for the state fuel tax.	WSTC establishes 20-member Steering Committee to conduct fact-finding and make recommendations to the WSTC and Legislature.
2012 December	Unanimous conclusion that a RUC is feasible in Washington.	The Steering Committee and WSTC find that a RUC is feasible in Washington State and develop a work plan for 2013-15 to investigate to how such a system might work.
2010 April	Legislature provides funding and detailed direction to WSTC and WSDOT for more intensive work.	WSTC evaluates the business case and operational aspects of a potential road usage charge.
2013 December	Steering Committee and WSTC find that a RUC will provide greater and more stable net revenue over 25 years.	A policy framework for RUC was developed, and financial risks, costs, and net revenues for several operational concepts and scenarios were evaluated. Many identified issues are still to be resolved.
2010 March	Legislature funds continued RUC investigation, including input from State Treasurer.	Legislature directs examination of potential impact on state bondholders of switching from fuel tax, urban/rural equity issues, transition issues, and interstate issues.
2014 December	Final report and 2015-16 work plan is issued, recommending a statewide RUC demonstration.	Developed a Concept of Operations, examined potential impacts between urban vs. rural driver, considered alternate methods of implementation to avoid negative impacts to state bonding, and recommended a statewide demonstration in 2015-16.

The January 2015 report to the Governor and Legislature included:

- A Concept of Operations (ConOps), which describes at a high level how a RUC system may work from the motorist's perspective. It also serves as the technical basis for the financial analysis, and the starting point for designing a demonstration project.
- Evaluation of transition strategies to a RUC system, both in terms of which vehicles are charged and how those vehicles would transition into a road usage charge system.
- Preparation of a financial analysis reflecting the proposed ConOps, several transition strategies, and several sets of economic assumptions.
- Development of a proposed work plan based on questions remaining from the 2014 work.
- The proposed work plan included a proposed demonstration project, a public attitude assessment, and public communications and engagement effort.
- Parallel work by WSDOT, the Treasurer's Office, and WSTC (along with staff from the Legislature, DOL, and WSDOT) addressed urban/rural impacts of a RUC, and potential limitations on the ability to reduce or repeal the state's motor fuel tax.

In response, the Legislature directed:

2015-17 Transportation Budget Proviso to the WSTC, found in Section 205:

(1) \$300,000 of the motor vehicle account—state appropriation is provided solely to continue evaluating a road usage charge as an alternative to the motor vehicle fuel tax to fund investments in transportation. The evaluation must include monitoring and reviewing work that is underway in other states and nationally.

The commission may coordinate with the department of transportation to jointly pursue any federal or other funds that are or might become available and eligible for road usage charge pilot projects.

The commission must reconvene the road usage charge steering committee, with the same membership authorized in chapter 222, Laws of 2014, and report to the governor's office and the transportation committees of the House of Representatives and the Senate by December 15, 2015.

The resulting work plan for August - December, 2015:

- Included two meetings of the RUC Steering Committee (October 1 and December 1) to provide input and recommendations on how best to carry out the work authorized and funded by the Legislature during the 2015 session, as well as recommendations on next steps for advancing a RUC demonstration in Washington.
- Revised RUC business case using an updated financial model. This incorporated new assumptions, policy considerations, changes in vehicle fleet mix and fuel economy, new heavy truck CAFE standards, and other factors.
- Updated the Steering Committee on national and international RUC developments. This focused on RUC developments in Oregon, California and British Columbia, including multi-jurisdictional collaborations.
- Monitored Federal Transportation Act development for programs that will provide states funding to conduct RUC demonstration project. Monitored activities of the 14 state Western Road Usage Charge Consortium (WRUCC) that is collaborating on RUC-related research Continued coordination between the WSTC, WSDOT, and DOL on future demonstration project goals and objectives.
- Revised the demonstration project approach to add project evaluation as a key tool for assessing the project. The evaluation would use performance criteria developed by the Steering Committee.
- Reviewed RUC policy principles in context of other state transportation policies, including the 20-year Washington Transportation Plan 2035.

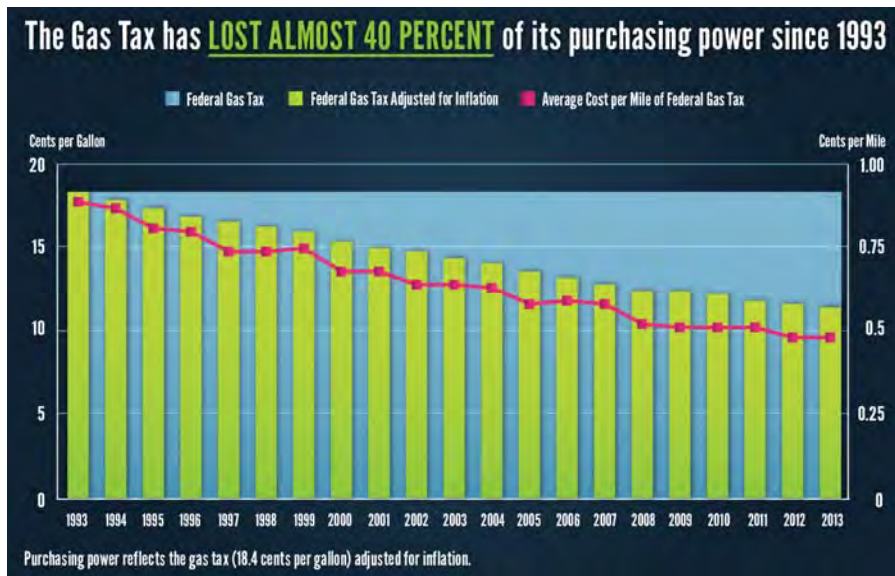
SECTION 2: CURRENT FEDERAL AND STATE ROAD USAGE CHARGE ACTIVITIES

Fuel taxes as a revenue source are not sustainable over time

Nationwide, transportation agencies have been challenged in recent years to find a sustainable and robust revenue stream to maintain and improve transportation infrastructure and services at a level needed to accommodate the aging transportation system and economic growth. The flat cents-per-gallon application of fuel taxes results in loss of revenue purchasing power in times of inflation, which is further eroded by improving fuel efficiency in modern vehicles and the rising number of alternative fuel vehicles.

At the federal level, the Highway Trust Fund balances have been dwindling for several years with available fuel tax revenues not keeping up with the demands of the transportation system.

Figure 3. Federal Gasoline Tax Rate and Loss in Purchasing Power



Source: AAA

Connecting Washington Transportation Revenue Package

The 2015 Legislature passed and the Governor enacted a transportation revenue package that makes significant investments in corridor completion, local routes, transit investments, traveler and pedestrian safety, and preservation of transportation infrastructure. These investments will make a measurable contribution to improving freight mobility and commute trips in the state. This 16-year, \$16 billion investment program is supported by a blend of fuel taxes (11.9 cents per gallon) and fees, including an increase in the electric vehicle fee which broadens the fee to plug-in hybrid/electric vehicles and dedicates a portion of the revenue for charging station infrastructure. (See Appendix B).

The 11.9 cents per gallon addition to the existing fuel tax provides a substantial stop-gap to the financial cliff that was facing state and local transportation agencies, enabling many unfinished corridor projects and infrastructure modernizations to go forward. However, unmet transportation needs continue to grow, and this program does not provide significant additional funding to maintain and preserve the state's existing road network.

The 2012 Connecting Washington Task force noted that there were approximately \$50 billion over 10 years in transportation investments needed to preserve the transportation system and make strategic investments in the corridors that hold the key to job creation and economic growth. The Task Force acknowledged the need for local option sources of revenue and recommended the state begin a transition to a more sustainable funding mechanism such as a road usage charge.

Federal “Fixing Americas Surface Transportation” (FAST Act) creates RUC Demonstration Program

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 billion will go to highways, \$60 billion will go to public transportation, \$10 billion will go to passenger rail, and \$5 billion will go to safety programs. In the FAST Act, the Highway Trust Fund 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 FAST Act advances innovative funding and financing opportunities. Relative to the recognition of the declining value of the fuel tax as a revenue source, Congress has created a grant program to support states efforts to explore alternatives.

Section 6020 of the FAST Act created the **Surface Transportation System Funding Alternatives** grant program. The intent of the program is for states to demonstrate alternative revenue mechanisms that utilize a user fee structure to maintain the long-term solvency of the Highway Trust Fund. The USDOT will develop the rules and grant program with the first round of applications likely due in late 2016. The WSTC will continue to work with WSDOT, DOL, and others to pursue the federal grant funds in 2016. More information on this can be found in the proposed 2016 Work Plan in Section 5 of this report.

Figure 4 summarizes the Federal RUC grant program, and the bill language is provided in Appendix B.

Figure 4: Summary of Federal RUC Grant Program

Provision	Contents
Multi-year funding	FY 2016: \$15 million FY 2017-21: \$20 million per year Geographic distribution of grants
Match funding	50% state match
Grant purpose	Demonstration activities that address a number of policy and operational issues
Reporting structure	Grant Recipient → USDOT Secretary → Public Report Online
Toll relation	Revenues from demonstrations are not defined as tolls for federal purposes

SECTION 3: THE UPDATED BUSINESS CASE FOR ROAD USAGE CHARGING

The Business Case Analysis Addresses Three Questions

In 2015, the business case analysis was updated to account for recent developments, such as an emerging commercial market for RUC account management and CAFE standards for trucks. This update focused on three questions:

1. What is the cost to the state of collecting a road usage charge?

- Cost of collection varies depending on the operational concepts offered by the state and chosen by the public. Concepts currently under consideration include a time permit, odometer charge, smartphone charge, and automated distance charge.
- A RUC system fully operated by the state would have distinct (likely higher) costs from a system operated in part by commercial partners because they may cover some costs on their own.
- It is unlikely that the cost of collecting a RUC will ever be as inexpensive as motor vehicle fuel taxes, though its benefits and equity considerations may be worth somewhat higher costs of collection.

2. When does the buying power of the fuel tax go away?

- There is no single moment at which the buying power of the fuel tax “goes away.” Instead, buying power erodes over time due to increasing vehicle fuel

TAKE-AWAYS

- RUC is costlier to collect than fuel taxes, but costs decline with increasing scale
- Fuel economy improvements threatens fuel tax revenue sustainability under all scenarios considered
- Indexing the fuel tax and transitioning to RUC each partially address revenue sustainability as well as guiding principles related to fairness and cost effectiveness

economy and adoption of alternative fuel vehicles, unless fuel tax rates are increased to compensate. Price inflation erodes the purchasing power of the fuel tax and RUC, as long as the rate (per gallon or per mile) is not indexed.

- The steepness of the declining trend in fuel tax revenues depends on fuel economy improvements, fleet electrification, and use of alternative fuels, and other technological and economic factors.

3. What are the policy alternatives?

Three illustrative policy alternatives were analyzed and the implications of each are explored below.

- **Maintain a Flat Fuel Tax** at 49.4 cents per gallon
- **Index the Fuel Tax** in a way that reflects the periodic historical trend increases
- **Implement a State RUC** that transitions, at a minimum, new vehicles to a distance-based usage fee

Question 1: What is the Cost to the State of Collecting RUC?

Few benchmarks exist for assessing the cost of collecting RUC from light vehicles. In past years, effort has focused on estimating bottom-up costs based on functions to be fulfilled in building a RUC system. There are several important considerations in estimating collection costs:

- One-time setup and ongoing annual operational costs are distinct from one another:
 - Setup costs vary by operational concept, transition approach, level of commercial partner involvement, and level of effort required by DOL.
 - Ongoing annual operational costs vary by operational concept, transition, level of commercial partner involvement, and level of participation by DOL and licensing partners (agents and subagents) relevant for operational costs.
- Costs vary by operational concept; four concepts are considered for analytical purposes:
 - Time permit
 - Odometer charge
 - Smartphone distance charge
 - Automated distance charge
- Costs also vary by transition strategy; several strategies are considered for analytical purposes:
 - Model year (the focus of this analysis)
 - Title transaction (a viable second option)
 - Tab renewal (likely too fast and burdensome)
- Experience suggests commercial partners can reduce costs; but questions should be addressed:
 - Where and how does the private sector bring efficiency?
 - What are the essential roles of the state in a scenario where commercial partners are involved?

Two Approaches to RUC Cost of Collection Analysis: State vs. Commercial Account Management

The range of potential costs to the state associated with collection are projected for two possible approaches to implementing RUC:

- **Approach #1: State of Washington account management.** A state agency and/or agents thereof handles all four operational concepts.
- **Approach #2: Hybrid commercial/state account management.** Commercial partners handle the smartphone distance charge and automated distance charge operational concepts, while the state handles the time permit and odometer charge operational concepts as well as program oversight.

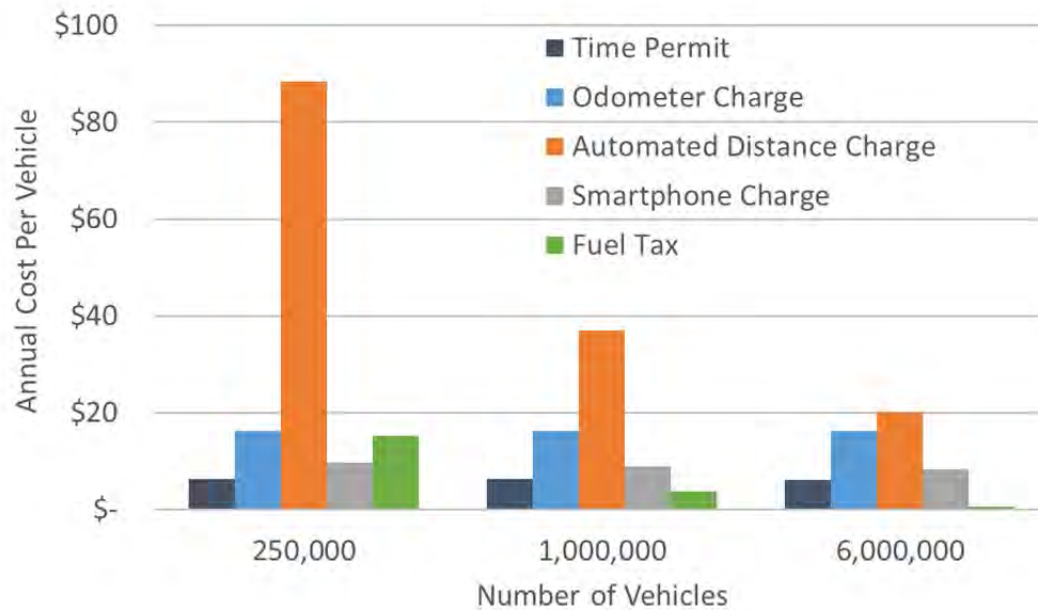
Annual projections for ongoing operational and administrative costs to the state are provided, assuming a start date of January 2, 2019 in which all Model Year (MY) 2020 and newer vehicles are subject to RUC. Ongoing annual costs to the state reflect growth in volume based on new vehicles enrolling in the RUC system. In this case, older vehicles are assumed to remain on the fuel tax.

In order to facilitate comparisons, annual cost of fuel tax collection on a per-vehicle basis is also demonstrated.

Approach #1: State of Washington Account Management

Figure 5 illustrates the annual cost to the state and/or agents thereof of collecting RUC per vehicle, assuming the state manages all accounts. The costs vary with the automated distance charge being the costliest in the short term. However, technology acquisition and utilization costs per vehicle decline with volume due to economies of scale. The time permit and odometer charge concepts do not vary much with volume, since most of the costs associated with these concepts are labor and financial transactions, which do not have significant economies of scale. Overall program management costs are factored into the cost per operational concept, and under this approach these costs are driven by enforcement.

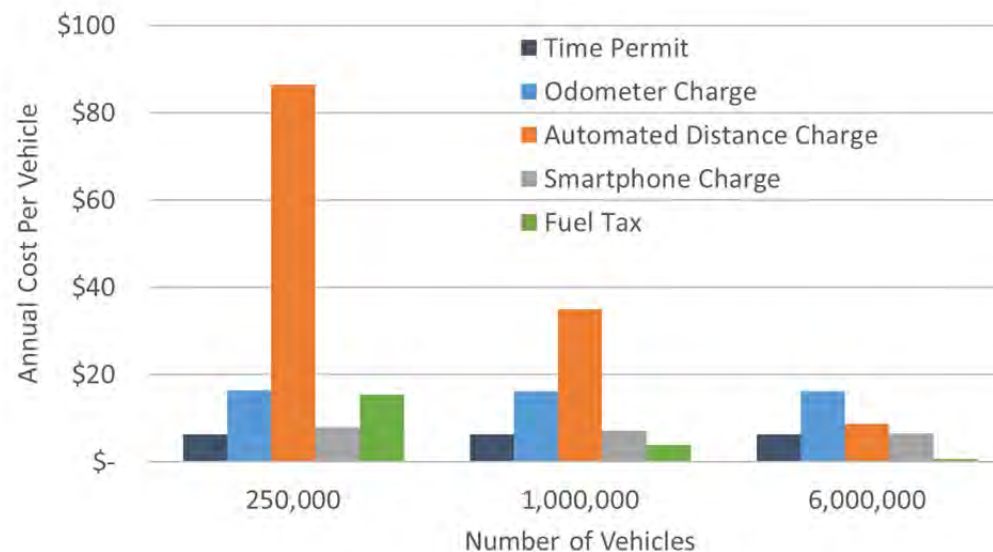
Figure 5. Ongoing annual cost to the state per vehicle, assuming state manages accounts



Approach #2: Commercial Partner Account Management

Figure 6 assumes that commercial partners manage the two technology-based concepts. The state provides the odometer charge and time permit as well as oversight and program management, including enforcement. All of these costs are included below. The overall cost per vehicle is lower than in Approach #1 because it is assumed that commercial partners can sell value-added services to offset the costs associated with RUC. It is also assumed they have better, cheaper access to technology and data than the state for mileage reporting and built-in incentives to lower costs. For the automated distance charge concept, costs continue to decline on a per-account basis beyond 1 million accounts more steeply than under a state account manager approach, owing to the ability of commercial partners to offset total costs with value-added service revenues.

Figure 6. Ongoing annual cost to the state per vehicle, assuming commercial account managers for technology concepts

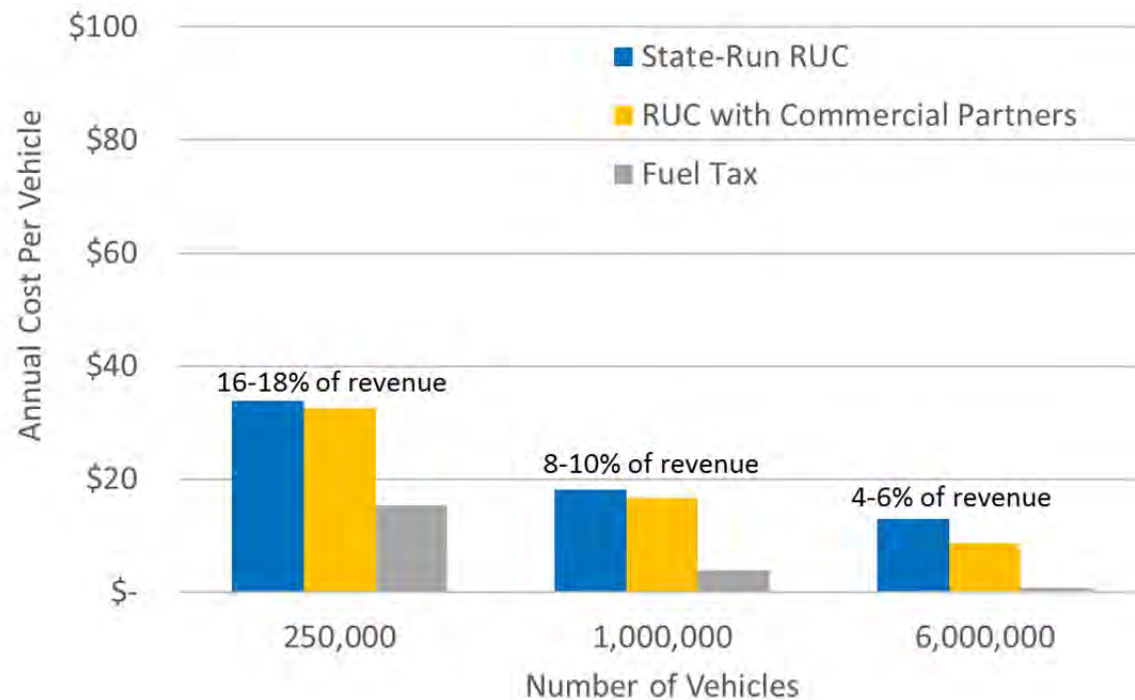


Comparison of State vs. Commercial Approach

The comparison shown in Figure 7 assumes the following split of customer choices across the four operational concepts: 10 percent time permit, 15 percent odometer charge, 40 percent automated distance charge, and 35 percent smartphone distance charge.

Although costly to collect at initial enrollment volumes, RUC collection costs as a proportion of total revenue fall to four to six percent at large volumes. The financial benefits of commercial partners are modest at the outset but grow with volume.

Figure 7. Cost of RUC at Various Volumes, Compared to Fuel Tax



Commercial Partners Bring Potential Benefits and Risks

The lower estimated cost for commercial partners to operate RUC reflects several assumptions.

- **Commercial partners are in a better position to keep pace with evolving technology.** Due to simpler development and procurement processes and economies of scale across state boundaries, commercial partners will more quickly and easily adapt to evolving technologies in the marketplace to report mileage, deliver invoices, and conduct transactions with RUC payers.
- **Competition drives efficiency and value-added services.** Commercial partners ultimately will compete with one another to provide value-added driving services to their customers, such as insurance discounts, driving tips, safety enhancements, and security features. Through competition, commercial partners lower their costs and can offset the costs of operating a RUC system by using pre-existing platforms built for other commercial services. Offering such services may be beyond the scope and legal capability of state agencies.
- **Commercial partners can interoperate and share with other jurisdictions.** One commercial partner may be present in multiple states, allowing for easy interoperability. Washington's public agencies may work with counterparts in other jurisdictions to develop standards and requirements for commercial partners that allow for flexible adoption of various policies and hopefully interoperability for end customers. This joint development activity could allow states to share RUC development and collection costs, such as linking vehicle registries, rather than Washington developing these elements on its own.
- **The state can focus on core state functions.** By leaving mileage reporting and RUC collection to commercial partners (functions which already exist in the marketplace), the state can focus its efforts on core functions, including: (1) negotiating and enforcing contracts with commercial partners; (2) developing, updating, and applying standards and requirements to commercial partners that reflect core state needs; (3) auditing and oversight of commercial partners and individual RUC payers; (4) enforcement of RUC and penalties on non-compliant commercial partners and individual RUC payers; and (5) communicating with the public and policy makers about the program.

- **Commercial partners bring risks as well as benefits.** Examples of risks of commercial partners are non-performance (e.g., failure to correctly or accurately collect mileage data and/or revenue), default or bankruptcy, failure to meet legal requirements of doing business in Washington and more. These risks require additional effort on the part of the state to mitigate them, monitor them, and actively work with commercial partners to ensure compliance. If the benefits outweigh the costs of working with and addressing the risks of commercial partners, then their involvement merits consideration.

Question 1 Take-Away: RUC Is Costlier to Collect Than Fuel Tax, but Costs Decline with Increasing Scale

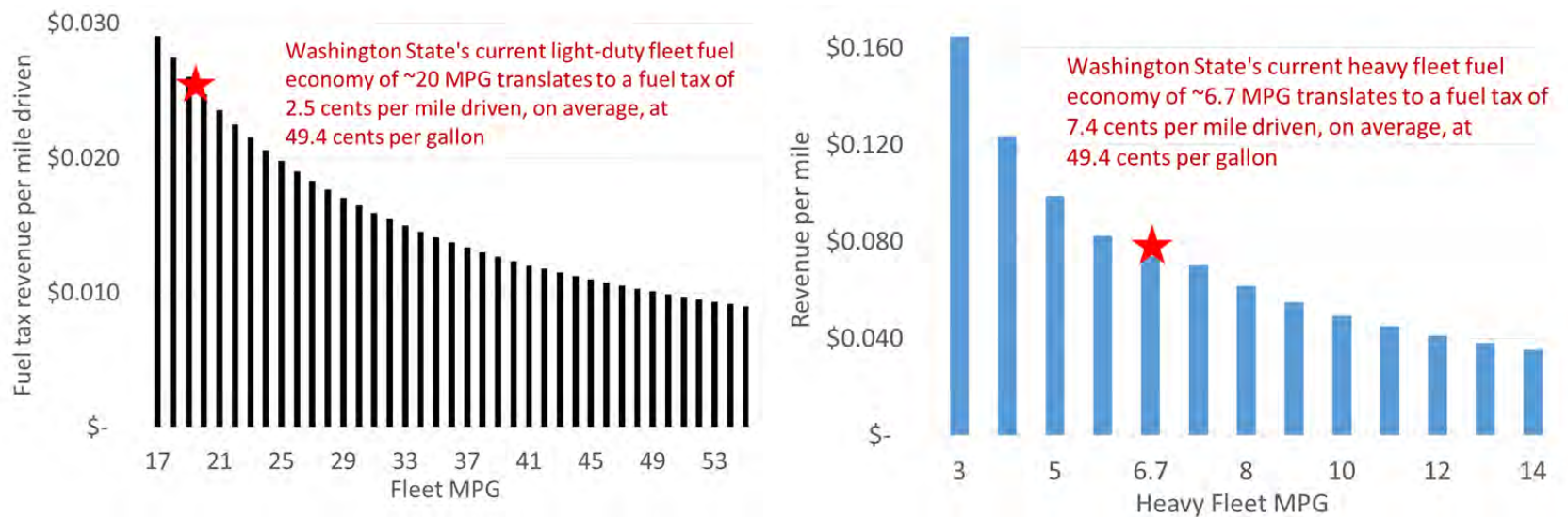
A key takeaway from this analysis is that a RUC is costlier to collect than fuel tax at any volume. Few revenue collection systems can match the efficiency of fuel taxes, which are collected at less than 1 percent of gross revenues. However, on a larger scale, the full cost of collecting RUC can fall below 5 percent of gross revenues and will provide sustained funding for transportation in future years when fuel tax revenues decline due to the growth in highly fuel efficient vehicles.

- Washington can achieve scale alone or in combination with other states. If states are willing to work together to certify commercial partners in multiple jurisdictions, those partners will enjoy economies of scale more quickly, and savings can be captured in turn by all participating states.
- A fully commercial system is unlikely for several reasons.
 1. Some customers may prefer to deal directly with the state.
 2. Commercial partners may reject some customers (e.g., customers who habitually do not pay or pay late, customers without access to banking services). Such customers must have a state-provided RUC reporting and payment option.
 3. Commercial partners may have little or no interest in offering some operational concepts such as the manual options (time permit and odometer charge) unless they see associated commercial opportunities.

Question 2: When Does the Fuel Tax Buying Power Go Away?

The fuel tax is a viable revenue source in the short term for at least two reasons. First, the majority of vehicles will continue to burn gasoline, diesel, and other taxable forms of fuel for several decades. Secondly, the fuel tax is efficient to collect and easy to comply with. However, as the fleet fuel economy and share of alternative fuel (electric) vehicles grow, fuel tax revenues on an aggregate per-mile driven basis will decline. Figure 8 depicts fuel tax revenue collected per mile driven by light vehicles and heavy vehicles, based on 49.4 cents per gallon tax.

Figure 8. Per-Mile Fuel Tax Revenue from Light Vehicles (left) and Heavy Vehicles (right) by MPG



Recent History of Fuel Economy and Fuel Tax

As shown in Figure 9, the Washington State fuel tax rate has increased since 1990 from 22 cents per gallon to 49.4 cents per gallon (as of July 1, 2016). This is an average of 1.1 cents per gallon per year, or about 3 percent average annual growth over the past 26 years.

Figure 9: Washington State Fuel Tax Rate per Gallon, 1990-2016

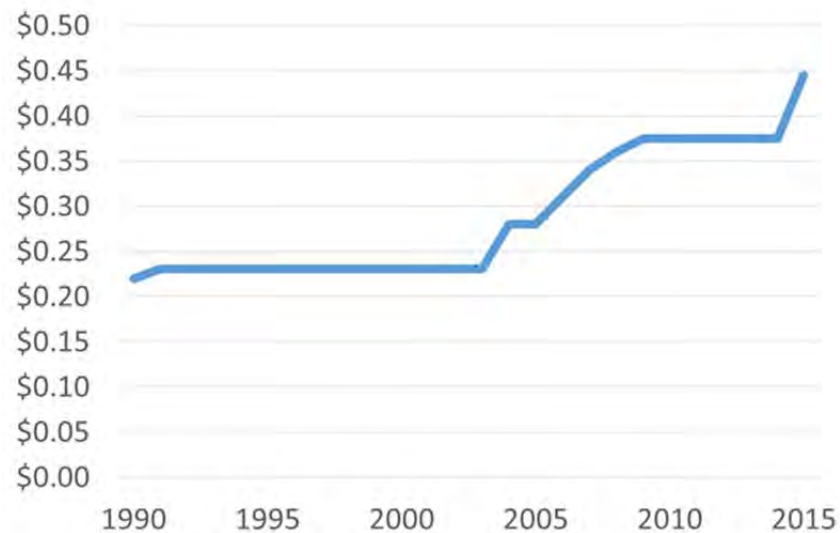
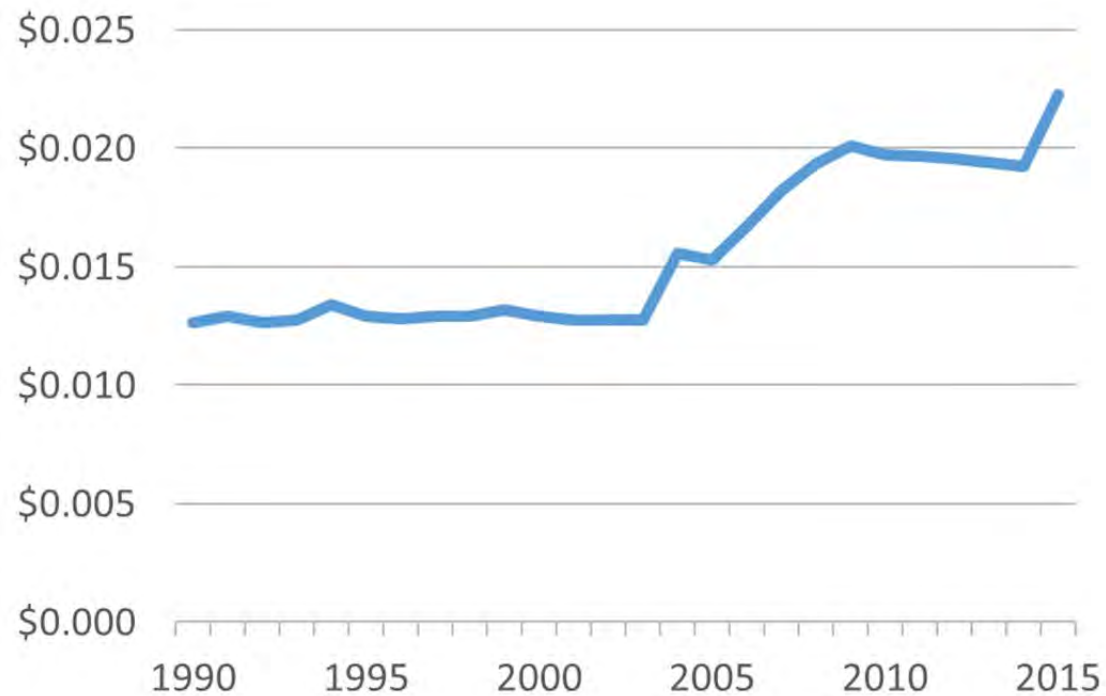


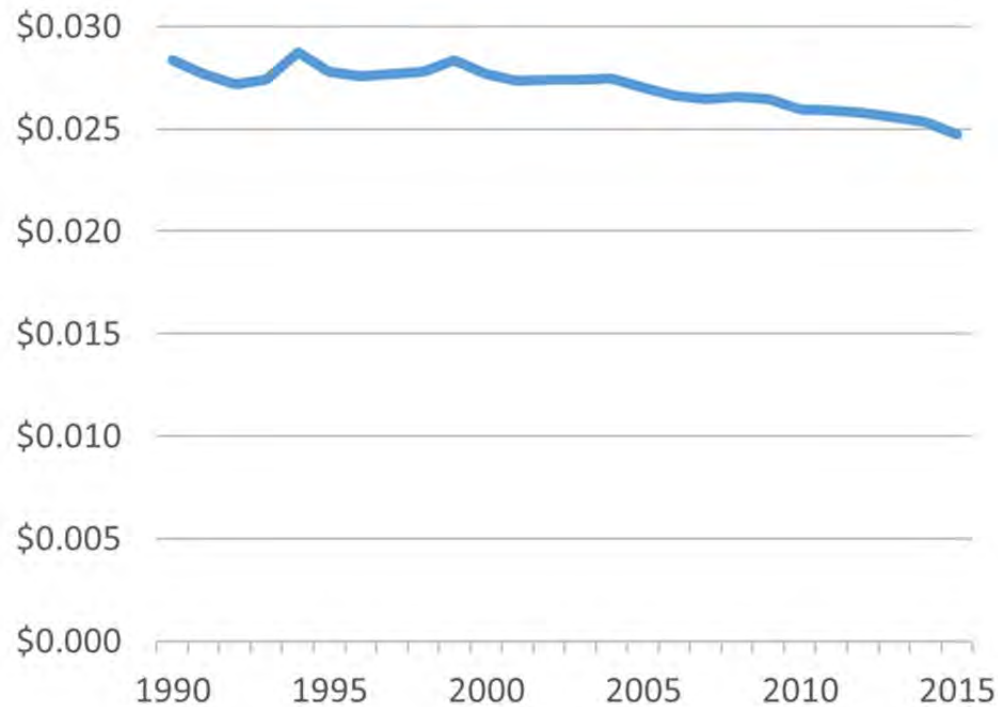
Figure 10 depicts fuel tax revenue from light vehicles per mile driven. Because fleet fuel economy was relatively flat from 1990-2010, this curve has a similar shape to the fuel tax rate curve. Starting around 2010, the revenue per mile driven begins to decline as fuel economy improvements erode fuel tax revenue.

Figure 10: Light-Duty Vehicle Fuel Tax Revenue per Mile Driven, 1990-2016



Finally, the recent decline in fuel tax revenue per mile driven becomes clearer in Figure 11. This figure illustrates what the per-mile revenue from fuel tax would have been going back to 1990 if the fuel tax rate had been 49.4 cents per gallon over that entire period. The decline owing to fleet fuel economy begins in 2000 and steepens around 2010.

Figure 11: Light-Duty Vehicle Hypothetical Fuel Tax Revenue per Mile Driven, 1990-2016 at 49.4 cents per gallon



Three Scenarios for Future Fuel Economy and Fuel Tax Trends

As the previous figures illustrate, fuel tax “buying power” does not suddenly go away. Rather, it erodes with improving fuel economy as motorists purchase more fuel-efficient cars or alternative fuel vehicles. Three scenarios were created to illustrate the possibilities of revenue risk:

Scenario 1: “Stuck In Traffic” (slow fuel economy improvement)

- **Light vehicles:** This scenario assumes the lowest growth in fuel economy based on the lowest available published forecast of fuel economy from any source, adjusted downward by 5-10 percent. This was based on last year’s Business Case Analysis.
- **Heavy vehicles:** The forecast is based on the 2015 Energy Information Administration (EIA) Reference Case, which projects fairly flat MPG.

Scenario 2: “CAFE Detroit” (EIA reference case fuel economy improvement)

- **Light vehicles:** This scenario adopts the EIA Reference Case (similar to the Global Insight forecast used by Washington’s Transportation Revenue Forecast Council), which assumes less than 2 percent of new sales by 2040 are all-electric, plug-in electric, and fuel cell vehicles.
- **Heavy vehicles:** This scenario adopts the EIA Reference Case and improved MPG by 10 percent to reflect CAFE standards for medium-duty and heavy-duty trucks for MY 2014-2018.

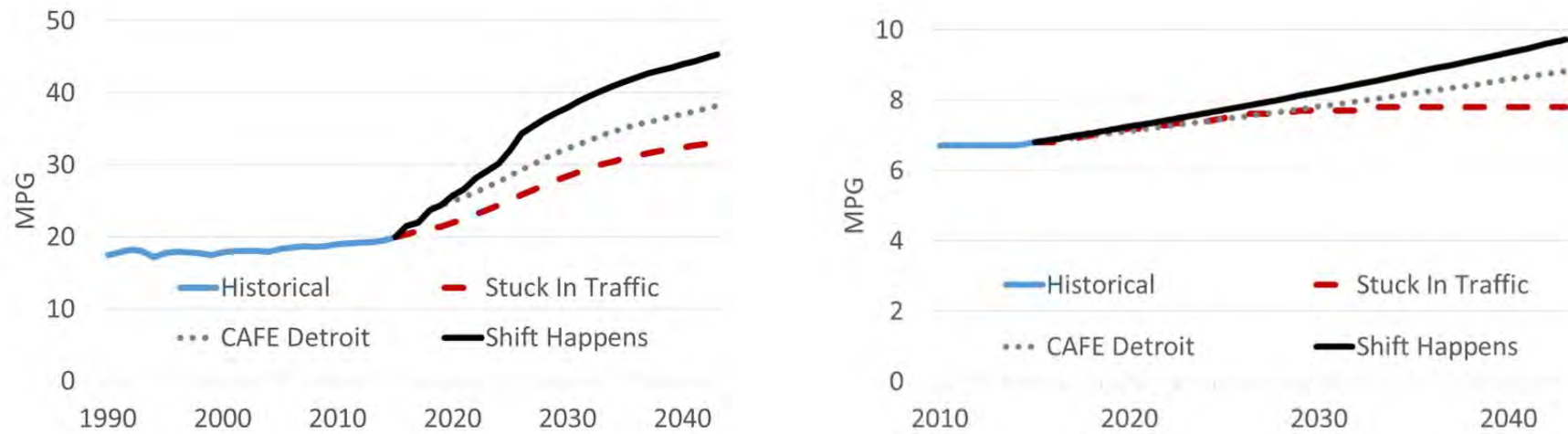
Scenario 3: “Shift Happens” (fast fuel economy improvement)

- **Light vehicles:** This scenario adopts the EIA High Oil Price scenario and more aggressive adoption of electric and plug-in hybrid vehicles than EIA predicts (up to 20 percent of new sales by 2040), in line with assumptions used by the Office of Financial Management in a study of future emissions scenarios.
- **Heavy vehicles:** This scenario adopts the EIA High Oil Price Scenario and added a 20 percent improvement to reflect proposed CAFE standards for heavy vehicles beyond MY 2018.

Three Future Fuel Economy Scenarios Illustrated

Figure 12 illustrates possible improvements in fuel economy for the Washington State fleet under the three scenarios described above. Historical fleet fuel economy has been relatively flat since 1990, improving from about 18 MPG to about 20 MPG by 2016. Light vehicles are shown at left, and heavy vehicles are shown at right.

Figure 12: Three Fleet Fuel Economy Scenarios for Light (left) and Heavy (right) Vehicles



Three Corresponding Future Fuel Tax Revenue Scenarios Illustrated

The faster fuel economy increases, the faster fuel tax revenue declines. This logic is reflected in Figure 13, which translates the three fuel economy scenarios presented above into fuel tax per mile scenarios for light and heavy vehicles. The reason for presenting revenue on a per mile driven basis is to remove the uncertainty associated with total vehicle miles traveled (VMT). If total VMT declines, then total revenue will decline more sharply than the curves presented below. On the other hand, if total VMT increases, then total revenue will decline less sharply than presented below. Appendix E explores the impact of the various fuel economy scenarios on aggregate revenues as a function of various VMT possibilities.

Figure 13: 49.4 Cent per Gallon Fuel Tax Revenue per Mile Driven for Light (left) and Heavy (right) Vehicles



Question 2 Take-Away: Fuel Economy Threatens Fuel Tax Revenue Sustainability Under All Scenarios Considered

The three fuel tax scenarios analyzed all result in substantial revenue losses per mile driven by 2040, ranging from 40-55 percent over current levels from light vehicles and 15-30 percent from heavy vehicles. How this translates into aggregate revenue depends on the number of miles driven by Washingtonians. Appendix E explores the impact of the various fuel economy scenarios on aggregate revenues as a function of various VMT possibilities. Regardless of aggregate VMT and aggregate revenue, the decline in revenue per mile driven threatens the ability of fuel tax revenue to keep up with revenues needed to improve the transportation system.

Question 3: What Are the Funding Policy Alternatives for Sustainable Transportation Revenue?

Three distinct funding policy alternatives were explored to determine the impacts they would have when applied to the three fuel economy scenarios just discussed:

- **Flat Fuel Tax.** Keep the fuel tax at 49.4 cents per gallon to provide a baseline comparison. The results for Question 2 provide this baseline.
- **Index the Fuel Tax.** Increase the fuel tax in line with historical trends. Washington State fuel tax has increased an average of 1.1 cents per gallon per year, or about 3 percent annually, on average over the 1990-2016 period, roughly tracking inflation. For comparative purposes, future fuel tax increases were assumed at 2.5 percent per year for 2019-2043, which is in line with inflation and roughly reflects the historical trend. The result is a fuel tax of 57.3 cents per gallon by 2025, 73.3 cents per gallon by 2035, and 89.4 cents per gallon by 2043.
- **Washington RUC.** Analyze what occurs to net revenue if RUC is implemented. To analyze this alternative, implementation was assumed along the same lines as the cost of collection analysis: beginning on January 2, 2019 only with new vehicles (Model Year 2020 starts on that date) at 2.5 cents per mile. Vehicles MY 2019 and older remain on the fuel tax of 49.4 cents per gallon. Neither rate changes from 2019-2043. All costs of collection are subtracted to provide a net-to-net comparison with the two fuel tax alternatives. In reality, this may have cost advantages since newer vehicles could be better equipped with technology to provide low-cost mileage reporting, but those potential cost advantages were ignored for purposes of this analysis.

For each of the three policy alternatives, results address the overarching goal of identifying a “sustainable, long-term revenue source,” as well as addressing two guiding principles: fairness (“all road users should pay a fair share”) and cost-effectiveness (“a RUC system should be cost-effective and cost efficient”).

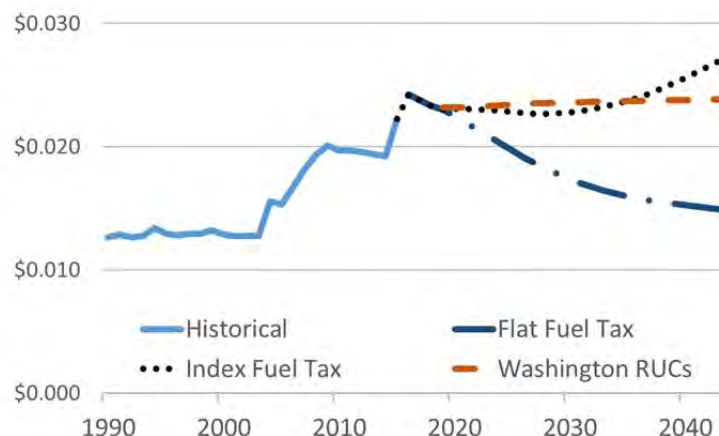
Results for Stuck In Traffic Scenario

Figure 14 depicts the comparison of net revenue per mile driven under three policy alternatives assuming the *Stuck In Traffic* scenario, which involves the slowest improvement in fuel economy. All three policy alternatives are net of collection costs. They include:

- **Flat fuel tax** of 49.4 cents per gallon
- **Index fuel tax** by 2.5 percent annually, to 57.3 cents per gallon by 2025 and 89.4 cents per gallon by 2043
- **Washington RUC** by transitioning to RUC with new vehicles only, beginning in MY 2020 at 2.5 cents per mile. Vehicles 2019 and older remain on a fuel tax of 49.4 cents per gallon

Under this scenario, RUC results in more sustainable revenue in the short term, but because it is not indexed, it does not increase over time. The “index the fuel tax” policy alternative, by contrast, results in more revenue per mile driven beginning in 2035. The RUC policy alternative, although not indexed, provides similar net revenue sustainability as indexing the fuel tax under this scenario, at least in the short- and medium-term.

Figure 14: Stuck in Traffic



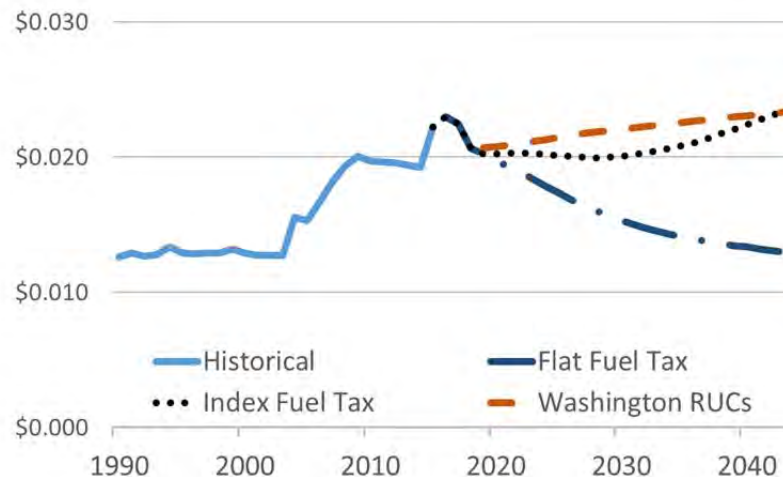
Results for CAFE Detroit Scenario

Figure 15 depicts the comparison of net revenue per mile driven under three policy alternatives assuming the *CAFE Detroit* scenario, which assumes the Washington vehicle fleet improves its fuel economy in line with CAFE standards as projected by the U.S. All three policy alternatives are net of collection costs. They include:

- **Flat fuel tax** of 49.4 cents per gallon
- **Index fuel tax** by 2.5 percent annually, to 57.3 cents per gallon by 2025 and 89.4 cents per gallon by 2043
- **Washington RUCs** by transitioning to RUC with new vehicles only, beginning in MY 2020 at 2.5 cents per mile. Vehicles 2019 and older remain on a fuel tax of 49.4 cents per gallon

Under this scenario, fuel economy improvements more than outweigh increases in the fuel tax rate by indexing it. The RUC policy alternative, although not indexed, is the more sustainable net revenue policy under this scenario.

Figure 15: CAFE Detroit



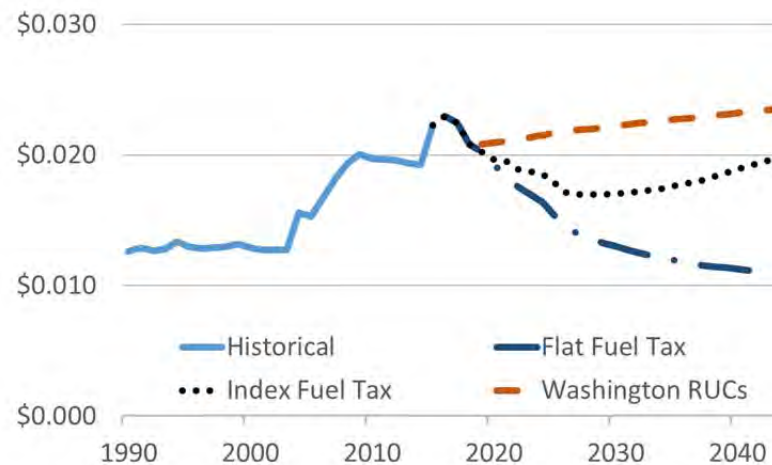
Results for Shift Happens Scenario

Figure 16 depicts the comparison of net revenue per mile driven under three policy alternatives assuming the *Shift Happens* scenario, which assumes the Washington vehicle fleet improves its fuel economy faster than in other scenarios. All three policy alternatives are net of collection costs. They include:

- **Flat fuel tax** of 49.4 cents per gallon
- **Index fuel tax** by 2.5 percent annually, to 57.3 cents per gallon by 2025 and 89.4 cents per gallon by 2043
- **Washington RUCs** by transitioning to RUC with new vehicles only, beginning in MY 2020 at 2.5 cents per mile. Vehicles 2019 and older remain on a fuel tax of 49.4 cents per gallon

Under this scenario, indexing the fuel tax policy alternative does not provide short-term protection against revenue erosion from fuel economy improvements. The RUC policy alternative, although not indexed, is the more sustainable net revenue policy alternative under “Shift Happens.”

Figure 16: Shift Happens



The Business Case Also Informs Fairness of Policy Alternatives Across Vehicles

In addition to the overarching goal of sustainable revenue, “equity” has been one of the guiding principles of this work, defined as “all road users should pay their fair share.” One dimension of equity is “fair share” by vehicle type. Figure 17 summarizes the estimated annual tax burden using five illustrative vehicles. It shows amount paid for 10,000 miles of driving under the following policy alternatives:

- Current fuel tax rate of 49.4 cents per gallon
- Possible future fuel tax rates of 57 cents per gallon (by 2025 under the *Increase the Fuel Tax* alternative) or 83 cents per gallon (by 2040 under the *Increase the Fuel Tax*)
- Possible RUC of 2.5 cents per mile

Figure 17: Fuel Tax and RUC by Vehicle Type

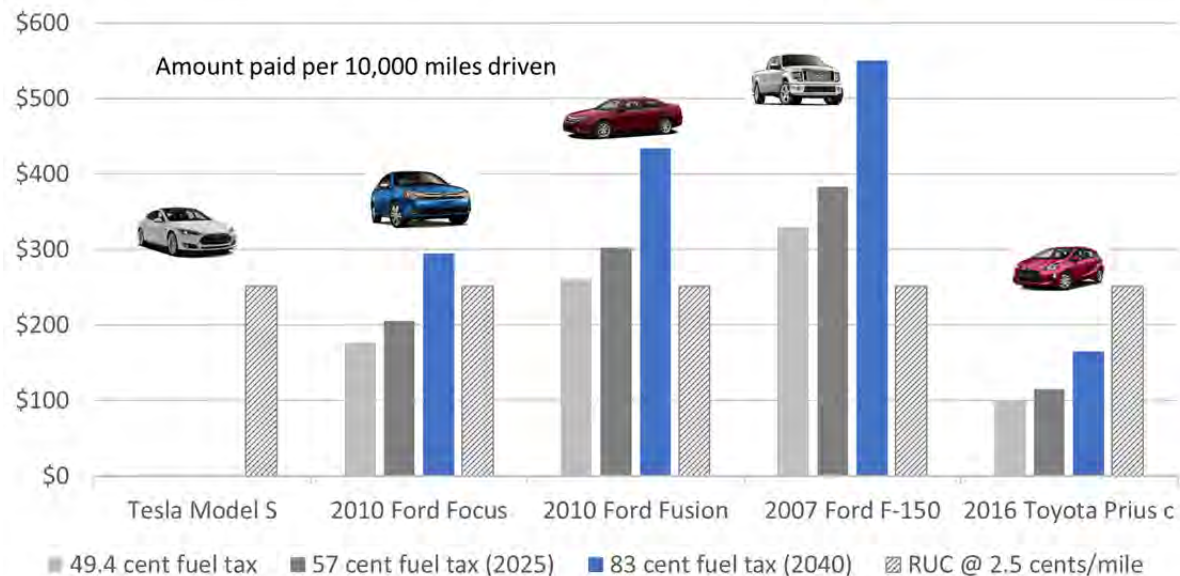
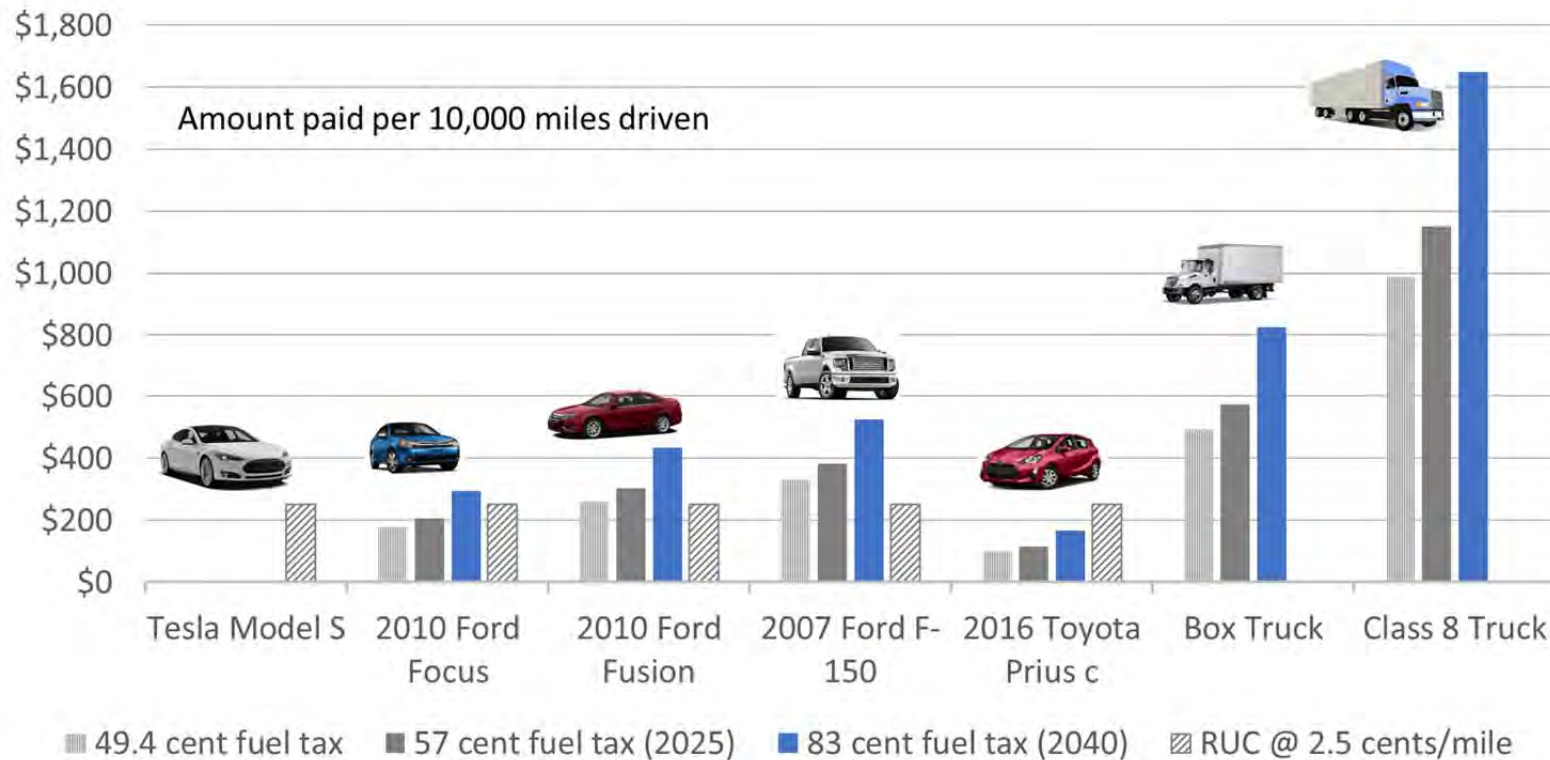


Figure 18 includes medium-duty and heavy-duty trucks to illustrate the implications of continued fuel tax rate increases on those vehicle types. Although RUC is not contemplated in Washington for heavy vehicles (thus it is not shown in the right two categories), the increasing fuel tax alternative places an increasingly large share of the tax burden on trucks relative to light-duty vehicles since trucks pay a diesel tax equivalent per gallon to the fuel tax.

Figure 18: Fuel Tax and RUC by Vehicle Type, including Trucks



Question 3 Take-Away: The Three Policy Alternatives Partially Address the Established Goal and Guiding Principles

Figure 19 provides a high-level summary of the takeaways of this business case analysis for the three policy alternatives. Each of the three alternatives partially satisfies the established overarching goal (revenue sustainability) and guiding principles related to the business case (fairness and cost effectiveness).

Figure 19: Summary of Business Case Takeaways

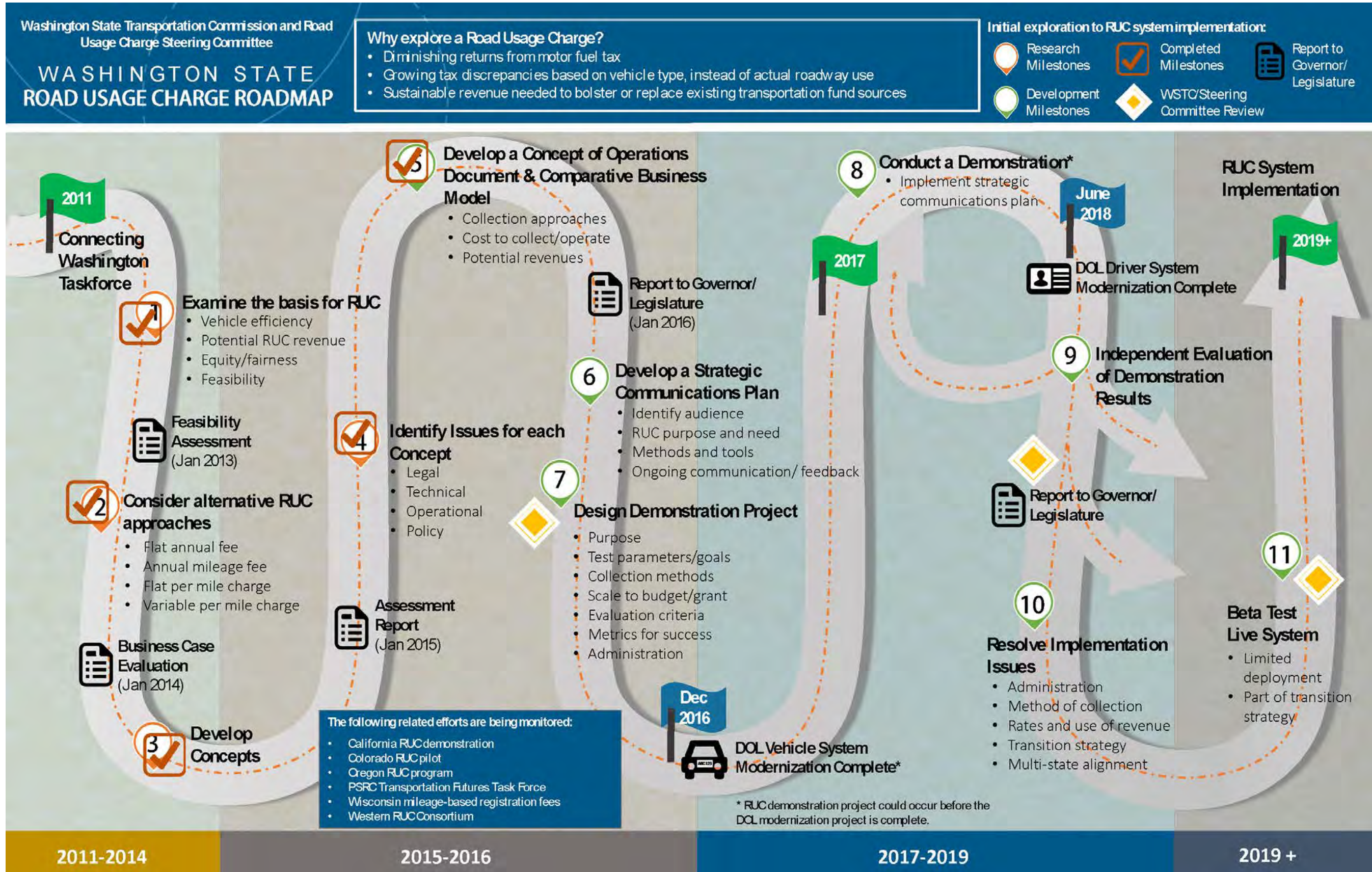
Alternative	Goal: Long Term Revenue Sustainability vs. MPG vs. Inflation Overall	Guiding Principle: Fairness	Guiding Principle: Cost Effectiveness
Flat Fuel Tax	○ ○ ○	◐	●
Index Fuel Tax	○ ● ◐	○	●
Washington RUCs	● ○ ◐	●	◐ → ◐ → ◐ short → medium → long

SECTION 4: THE ROADMAP TO ROAD USAGE CHARGING

A RUC Roadmap was introduced as an illustration of the sequential steps in developing a road usage charge system

The Washington State RUC Roadmap documents milestones that have been reached, and the steps along a developmental pathway to investigate, design, test, and consider a RUC system for Washington State.

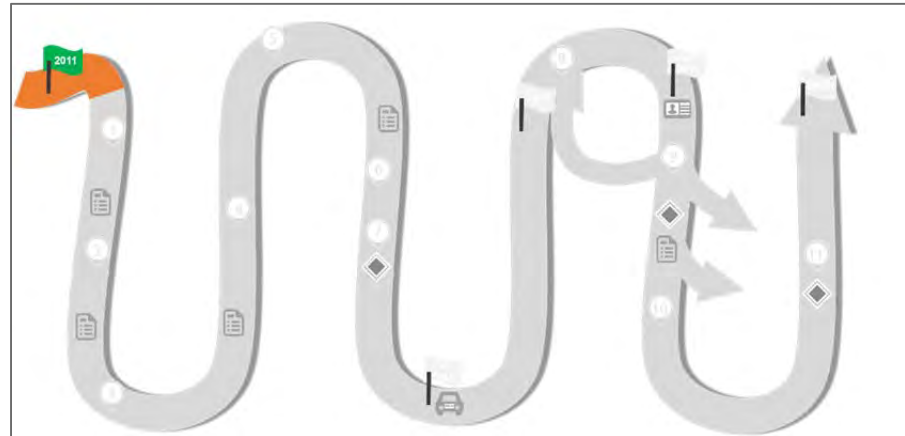
Although this section provides detailed descriptions for each of the various waypoints, particular attention is given to the steps and decision points leading up to a demonstration project.



Pre-2012 actions by Legislature, WSTC, and Governor mark the beginning of the RUC Exploration Phase

The **Exploration Phase** was marked by initial issue identification, scanning existing data and research, developing initial hypotheses, and considering policy aspects of transportation revenue. Washington's motivations for exploring transportation alternatives and eventually road usage charges were driven primarily by:

- Potential shortfalls in motor vehicle fuel taxes caused by improving vehicle MPG,
- Growing discrepancies in roadway taxes paid by individual drivers based on vehicle technology type, rather than actual roadway use, and
- Desire to identify a more sustainable transportation funding source that more accurately responds to vehicle miles traveled on Washington's roadways.



Exploration and research actions taken in Washington include:

- **2007 – Long-Term Transportation Financing Study:** the Joint Transportation Committee (JTC) studied existing and potential new methods for funding Washington's transportation needs.
- **2008 – Puget Sound Regional Council's Traffic Choices Study:** this federally-funded pilot tested ways that drivers might change their travel behavior in response to mileage-based fees that varied by time of day and location of travel.
- **2009 – Implementing Alternative Transportation Funding Methods:** the JTC analyzed the practicality of implementing mid-term and long-term alternative transportation funding methods. The study documented

the risk to state transportation revenues presented by increased fuel economy and the since-adopted federal CAFE standards.

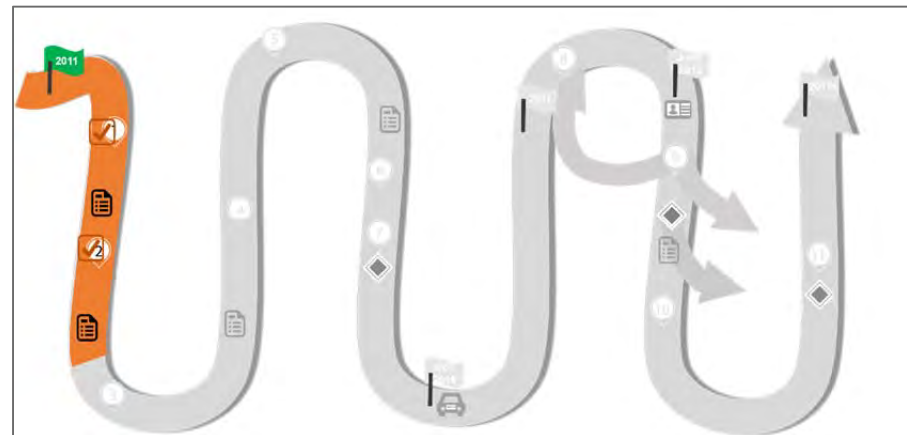
- **2011** – Washington State Transportation Commission held joint meetings with the Oregon and California Transportation Commissions to discuss, pledge cooperation, and provide early support for examination of mileage-based fees.
- **2011** – Governor’s **Connecting Washington Task Force**: while recommending a 10-year transportation revenue and investment package, this panel of business leaders and government officials also found the state’s reliance on motor fuel taxes is unsustainable over the longer term and recommended the Legislature test a mileage fee system and prepare for such a transition.



2012-14 Investigation Phase: Legislature directs the WSTC to further investigate RUC

The **Investigation Phase** included a more formal definition and validation of the revenue problem and the fiscal and policy impacts likely to result if the problem is not addressed. This phase identified a set of road charging alternatives that show promise for effectively mitigating or solving the problem. Finally, it examined state-specific conditions that would render RUC impractical or undesirable to implement.

In 2012, the Legislature directed the WSTC to convene a Steering Committee of elected and appointed officials, private industry, and stakeholder groups to investigate the feasibility of a road usage charge in Washington. The Steering Committee ensures a broader examination of RUC, beyond what could be provided if a single office or division of an agency conducted the assessment.



Feasibility Assessment

In 2012, the investigation of road usage charges was summarized into a single, precise question: is a road usage charge *feasible* given the unique factual circumstances and conditions present in Washington? Feasibility assessed demographics, physical geography, the existing transportation network, funding requirements, and restrictions in place, and measured whether a RUC is reasonably attainable with currently available technologies. To be clear: basic feasibility did not take into account current public or political support for a new method of taxation. That assessment (Acceptability) is conducted much farther down the road, as part of the Demonstration and Evaluation phases.

Desirability Assessment

Once basic feasibility was determined, the next step in the progression was to assess whether RUC was a *desirable* funding alternative worthy of further pursuit by policymakers. This required an assessment of whether the public policy benefits to be gained from RUC outweigh the tradeoffs and drawbacks. The fiscal benefits of instituting RUC were determined through a financial analysis that compared the expected revenues from a RUC system with the forecasted revenues if the state remains with the motor vehicle fuel tax (status quo). The policy-related benefits, tradeoffs, and potential drawbacks of RUC were identified and documented during this stage.

To improve the likelihood that fiscal and policy goals of a RUC will be realized, policy parameters to accompany any future RUC system were adopted. These guiding principles effectively act as the policy framework for any further consideration, development, testing, or implementation of a RUC system. By establishing this policy framework at an early stage, Washington is less susceptible to having technologies dictate consideration and development of RUC in the state.

Washington’s **Investigation** of RUC was completed in 2014, and included the following activities:



- **2012** -- Legislature directed the WSTC to “determine the feasibility of transitioning from the gas tax to a road usage charge system of paying for transportation.”



- **2013** – WSTC concurred with the Steering Committee’s determination that a RUC is a feasible option for funding Washington’s transportation system, and presented findings to the Legislature.



- **2013** – Steering Committee considered various alternative approaches to a RUC system, and decided that a flat rate, per-mile charge would best serve the current fiscal and policy objectives of the state.
- **2014** – Steering Committee recommended a policy framework to guide the business case evaluation. The policy framework set one goal (sustainable, long-term revenue source to allow a transition away from the fuel tax) and 13 guiding principles. This policy framework can be used to guide future development of RUC in Washington.

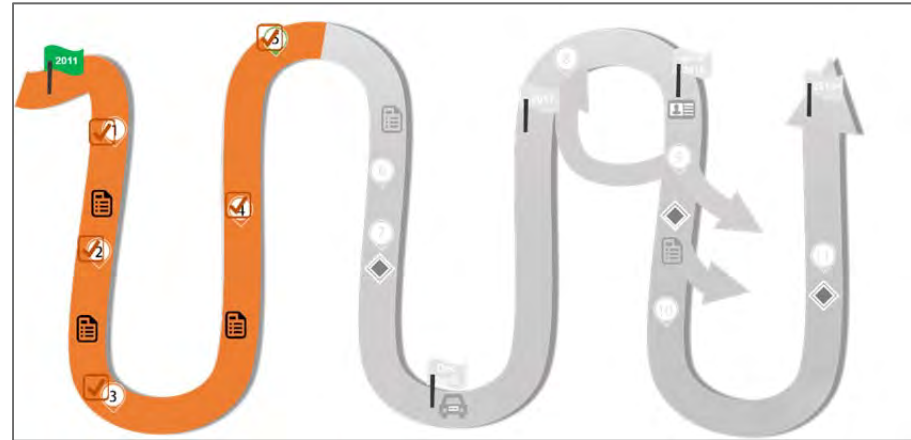


- **2014** – A business case evaluation is completed, showing that a RUC system would generate significantly more revenue for the state – even after deducting the cost of collections – than would be generated by the current motor fuel tax.

2014-15 Design Phase: A blueprint for a potential RUC in Washington begins to take shape

The **Design Phase** is where initial design choices were made about the type of RUC system that could be employed to achieve the overarching goal (revenue sustainability) in accordance with the established policy framework.

Two levels of RUC design activities were completed: first, a sketch-level description of the various operational concepts that were considered; and later, a more detailed Concept of Operations, which describes at a high level how the system may work from the motorist's perspective.



Issues Registry (“Policy Parking Lot”)

Throughout the design process, the most important legal, technical, operational, and policy issues raised by each of the operational concepts were identified. All issues have been recorded in an issues registry (or “policy parking lot”). There are certain policy issues that must be resolved in order to advance to the next major step in the RUC roadmap – a demonstration project – versus issues that do not need resolution until the Legislature considers enacting a permanent RUC program.

Detailed Business Case Evaluation

Once the formal Concept of Operations document was adopted, a more detailed business case evaluation was developed reflecting the choices made regarding a future RUC system. This business case evaluation zeroes in on the various mileage collection approaches and technologies proposed for use, the expected costs to operate and collect revenue for each operational concept, and the potential revenue.

Washington State is now emerging from the Design phase and is poised to move into the RUC Demonstration phase. The following **Design phase** activities have been completed:

3



- **2014** – Operational concepts were developed. Of all the concepts presented, only the hubodometer concept (measuring distance traveled based on wheel rotation) was discarded.

4



- **2014-2015** – Legal, technical, operational, and policy issues were identified and documented for each of the operational concepts under consideration. Resolution of these issues are major elements of the 2016 Work Plan.

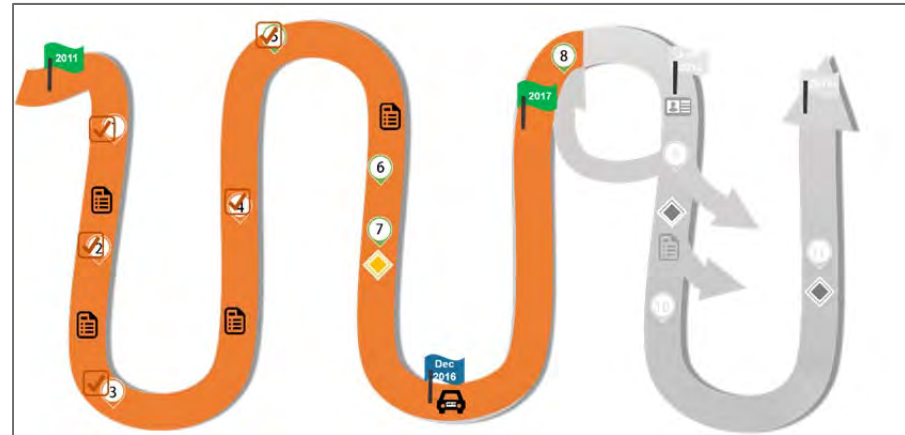
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- **2015** – Developed a Concept of Operations document that details how a RUC system would work in Washington.
- **2015** – Conducted a detailed Business Case Evaluation to more precisely estimate the expected costs and revenues of a RUC system that reflects the preliminary design choices.

The Road Ahead: Demonstration Preparation Phase

The **Demonstration Phase** culminates in a live test of road usage charge concepts (a demonstration project). A public demonstration project can serve many purposes, including testing new technologies, developing organizational experience in administering a new roadway charge, highlighting for motorists the inherent problem with the motor vehicle fuel tax, etc. While all of these are legitimate reasons to conduct a demonstration project, the overriding purpose that transcends all others is to ***determine how a RUC can be designed to be acceptable to elected officials and the public.***



Acceptability

Acceptability is intended to assess if the RUC policy framework, operational concepts, and mileage reporting methods can be structured in a way that engenders acceptance by elected officials and the public. The demonstration project tests what matters most to drivers who are actually participating in a RUC system.

Early RUC tests in other states that relied on mandated mileage reporting methods and devices were unacceptable to the public. Media reports – especially television – still tend to reflect and amplify fears that tracking devices will be mandated for installation in all personal vehicles. Not one state in the U.S. is contemplating such an approach, yet GPS-mandated tracking devices remain prominent in the public’s mind. The public’s current understanding of potential RUC systems is rather misinformed, which in turn affects their views and opinions toward a transition to such a system in the future.

The most effective way to measure consumer acceptance factors is to allow consumers to experience the product, in this case, to participate in a live test of a RUC system. For policymakers, this provides essential insight into how motorists may respond, what they might find acceptable, and what they deem unacceptable in a road usage charge system.

Preparing for a Demonstration Project

Below are the general steps in the **Demonstration Project Preparation phase** of the RUC Roadmap (not all of these items are illustrated on the RUC Roadmap graphic).

- **Prioritize Unresolved Issues:** Unresolved policy issues should be triaged so that they are addressed in logical sequence. Some issues must be resolved prior to launching a demonstration project (e.g., how many participants to include, what RUC rate should be tested for study purposes, etc.). Other questions are best answered only after gathering data from the demonstration project itself (e.g., motorists' acceptance or preferences for mileage reporting methods).
- 6 ▪ **Develop Strategic Statewide Communication Plan:** A communications plan should be in place prior to the launch of a demonstration project to ensure that potential participants, elected officials, and the general public are provided with accurate, timely information about the demonstration.
- 7 ▪ **Develop Evaluation Criteria:** To ensure the demonstration is effective in its purpose, a post-project evaluation should be conducted. A post-pilot evaluation will give policymakers critical information related to core acceptability factors for any future RUC system. The Demonstration Project Evaluation is given special attention in Appendix C of this report.
- 7 ▪ **Design the Demonstration Project:** The design of the demonstration project must align with the adopted policy framework, and ensure that the primary purpose of the pilot is achieved.

Live Demonstration Phase

The Steering Committee and the WSTC recommend that a statewide demonstration project be conducted. The live demonstration can move forward only if funding is approved.



- **Implement Strategic Statewide Communications Plan:** Developing, adopting and executing a Communications Plan allows the state to be proactive, rather than reactive, and helps ensure that conversations around the road usage charge remain factual and public input is encouraged.



- **Implement the Demonstration Project:** Implementation ranges from pre-implementation work, such as development of technical documents, procurement of RUC vendors to provide the services and technologies, recruiting volunteers to participate, testing equipment, etc., to conducting the RUC demonstration project, and finally, closing accounts and decommissioning equipment. Demonstration project elements were previously detailed in the *Washington State Road Usage Charge Assessment Phase 3 Final Report (January 2015)*, at pages 103 through 105. In light of new federal funding opportunities and emerging mileage recording and reporting technologies, the proposed 2016 work plan suggests a demonstration project that takes advantage of these changed circumstances.

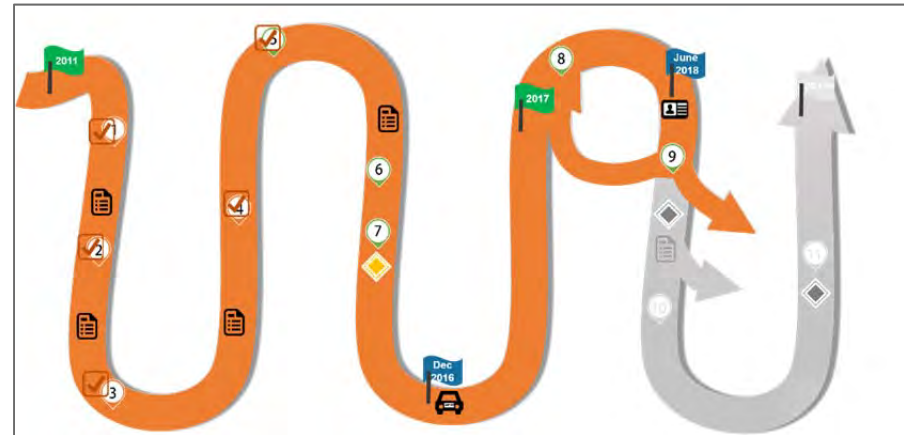
Evaluation and Revision Phase of a RUC Demonstration Project

A demonstration project will provide data that will allow policymakers to address several of the questions that remain in the “policy 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 defined criteria. The demonstration project provides a mechanism 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.

The Evaluation results will provide unique insights into whether or how a RUC system can achieve public acceptance. Questionnaires completed by demonstration project volunteers at key intervals throughout the project can be used to measure acceptance. Responses can reveal factors that tend to make RUC more acceptable (or even desirable) to the public. Similarly, the Evaluation can discover factors that make RUC less acceptable or even generate strong opposition.

With the results of the Evaluation in hand, the original RUC prototype can be revised to improve the likelihood of acceptance. This process of evaluation and revision was successfully used in Oregon’s first RUC pilot project. Although that pilot was generally viewed as a technology and operational success, the evaluation revealed that drivers had strong negative reactions to the requirement that their vehicles be equipped with a GPS device. As a result, Oregon Department of Transportation modified their RUC program so that no government-mandated devices or GPS-enabled devices are required. When the revised system was tested in the second pilot project, user acceptance was very high.

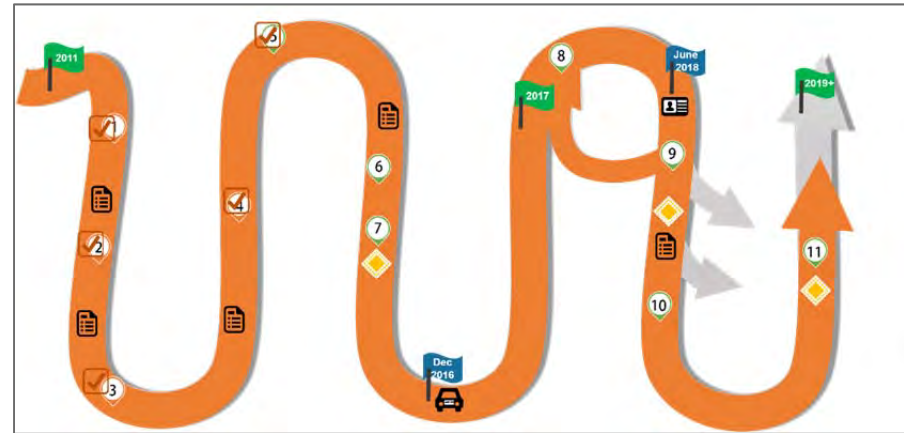


9

- **Evaluation:** Once the demonstration project is complete, a post-project evaluation report should be prepared that provides a full assessment of the project's performance against the evaluation criteria and performance measures that were established in the Demonstration Preparation phase. See Appendix C for more detail on Evaluation.

Future RUC System: Pre-Implementation Phase

The **Pre-Implementation Phase** is predicated on completion of a successful demonstration project, and approval to implement a RUC in whatever scale and form decided by the Legislature. In contrast, if the demonstration project does not provide encouragement that a RUC system is acceptable or could be made so through revisions to the prototype, then it is unlikely that the Legislature would authorize implementation of a RUC in the near future. During this phase, attention should be given to organizational design, and resolving remaining implementation issues, including a strategy for transitioning vehicles away from the fuel tax to RUC.



10

Organizational Design

While many RUC mileage reporting technologies and account services will be tested during the demonstration, it is unlikely that major institutional changes will be made during a limited duration demonstration project. The major task of the Pre-Implementation phase is to finalize *Organizational Design*, which calls for mapping current institutional processes (especially among various state agencies required to participate in a fully-implemented RUC system) and build necessary capacity for these organizations to

effectively carry out RUC-related functions, at the scale required. This task will also require similar process mapping and organizational structuring to enable private sector firms providing RUC services or technologies to seamlessly transfer information and interact with state government.

10 Resolve Remaining Implementation Issues

In addition to the administrative and organizational design issues, there may be other policy, legal, technical, and/or operational issues that must be resolved prior to RUC implementation. Issues could include the method of mileage collection, compliance and enforcement measures, establishing the initial RUC rates and the process by which adjustments will be made, and how the RUC revenue will be spent. A central implementation issue is the transition strategy: how many vehicles, which types, and when these vehicles will shift from paying the state's motor fuel tax to a RUC.

11 Beta Test Live RUC System

Adequate time must be provided to conduct live tests of the RUC system. Changes will have been made since the demonstration project, new organizations and vendors will have been authorized to collect taxes and administer accounts, and more robust accounting, auditing, and data security measures are likely to be required in a full-scale tax collection system.

Phasing in the RUC over a period of a year or more allows this early phase-in period to function like a limited scale beta test, where feedback from drivers, agencies, and vendors can be taken into account and any final adjustments made to the RUC system before full-scale implementation.

SECTION 5: PROPOSED WORK PLAN AND BUDGET FOR 2016

The proposed Work Plan for calendar year 2016 comprises four main activities:

1. Address unresolved policy issues, in priority order, as needed to prepare for a demonstration project;
2. Develop a framework and criteria for evaluating the performance of a RUC demonstration project;
3. Develop a strategic statewide communications plan; and
4. Revise the RUC Demonstration Project Plan to better reflect emerging technologies in the private sector, capitalize on opportunities at the federal level, and leverage work in other states, while also aligning with the established guiding principles and evaluation framework for Washington State.

1. Address unresolved policy issues

Throughout the entire assessment process dating back to 2012, policy, technical, legal, and administrative issues have been documented and listed in a “policy issues registry.” These policy issues require further examination and resolution before a RUC program could be enacted in Washington. Many of the issues do not need to be addressed in order to conduct a RUC demonstration project. The 2016 Work Plan priority is to address those policy issues that must be resolved in order to proceed with a demonstration project. In parallel and as resources allow, work will continue on the longer-term issues that require resolution if a permanent RUC program is implemented.

All issues identified in the policy issues registry as Tier 1 issues (see below) should be analyzed and addressed in 2016, prior to initiating a demonstration project. Addressing these questions will help shape the demonstration project plan. Additionally, Tier 3 issues related to motor fuel tax bond requirements, and interoperability with other states, should be addressed in the 2016 Work Plan. These two issues have been of keen interest to the steering committee and it is important to identify the parameters of bond debt and interoperability as soon as possible, in order to develop strategic solutions.

Registry of Unresolved Issues and Prioritization

During this past year, a prioritization process created a tiered system, where unresolved issues were sorted and scheduled for consideration according to their importance in relation to a potential demonstration project in 2016 or later (see Figure 20).

- The top tier of issues contains those that must be addressed prior to conducting a demonstration project. However, it should be noted that policy decisions made for purposes of the demonstration project do not equate to a final decision on those policy issues. All final decisions will be made by the Legislature should it be decided a permanent RUC program will be implemented. The intent is that all policy decisions made for purposes of the demonstration project will be re-assessed and evaluated following the demonstration and those findings will be forwarded to the Legislature.
- A second tier of issues is best addressed during the evaluation process that is proposed for the demonstration project.
- A third tier of issues can be addressed at any time – before, during, or after completion of a demonstration project, but must be resolved prior to implementing a permanent RUC program.

Figure 20: Registry of Unresolved Policy, Legal, Technical and Administrative Issues

Tier 1: address prior to a demonstration project	<ul style="list-style-type: none">▪ How to operationalize the four RUC operational concepts▪ Whether and how to charge out-of-state drivers▪ Exemptions from road usage charges for demonstration▪ Refunds▪ Use of private sector account managers
Tier 2: address as an element of the demonstration project	<ul style="list-style-type: none">▪ Driver reaction to the proposed RUC system▪ Public understanding and acceptance of the proposed system▪ State Information Technology needs▪ Institutional roles in implementing any future RUC system
Tier 3: to address outside of the scope of a demonstration project (either before, during or after)	<ul style="list-style-type: none">▪ Per-mile rate setting process and roles▪ Permanent exemptions▪ Use or dedication of RUC revenue▪ Interoperability with <i>GoodToGo</i> Toll System▪ Rate setting basis for time-based permit▪ Motor fuel tax bond requirements▪ Transition strategy - vehicles subject to paying RUC▪ Legal issues (e.g., interstate commerce clause, tax vs. fee, etc.)▪ Interoperability with other states

2. Develop a framework and criteria for evaluating the performance of a RUC in a demonstration project

Setting Performance Criteria and Measuring Results

A demonstration project will provide data that will allow several issues remaining in the “parking lot” to be addressed, and to evaluate the RUC program as a whole. A demonstration project will provide data from a context-sensitive and real-world operational experience, and will *create the opportunity to evaluate the effectiveness of various elements of the demonstration project (operational, organizational, financial) against defined performance criteria and expectations*. In other words, the demonstration project provides a vehicle for gathering, measuring, and evaluating data to determine whether a proposed RUC framework satisfies the goal of a *sustainable, long-term revenue source for Washington State’s transportation system to transition from the current fuel tax system*. A demonstration project evaluation would form part of the report shared with the Governor and Legislature as a critical measurement tool as they deliberate and decide whether, when or how to move forward with a RUC system in Washington State.

In 2016, prior to initiating any demonstration project, a full set of demonstration project evaluation criteria will be developed. The guiding principles established at the beginning of RUC assessment process will serve as a starting point. Figure 21 illustrates how the guiding principles can serve as the foundation for demonstration performance criteria using several examples.

Figure 21: Guiding Principles and Link to Evaluation Criteria

Guiding Principle	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
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

3. Develop a strategic statewide communications plan

A strategic statewide communications plan should be developed in advance of any potential road usage charge demonstration project in Washington. This plan will provide the outreach framework for all aspects of advancing RUC from the early public engagement phase through development and implementation of a demonstration project.

Communication efforts would solicit and provide information on the long-term funding challenges we face, what road usage charging is and why it is being assessed, and what the demonstration project is about and how it will work.

Development of a strategic statewide communications plan will delineate the work activities within a phased approach for implementing a RUC demonstration (see Figure 22).

Work to be accomplished in 2016 will begin with establishing key elements that will guide the communications activities throughout the demonstration project:

- High Level Program Goals/Outcomes
- Success Measures
- Communications Risks and Opportunities
- Target Audiences and Key Messages

Figure 22: Four Phases of a Successful RUC Communications Program



4. Develop the RUC Demonstration Project Plan

The Demonstration Project Plan should begin by articulating the need for and purpose of a demonstration. Next, key parameters for the demonstration project should be designed – this comprises the heart of the 2016 Work Plan. Parameters such as the location, number, and type of participants (income, age, vehicle type, business or personal use and ownership of vehicle, etc.), concepts to test, duration, and other factors should reflect the demonstration project’s purpose and need, as well as the guiding principles and evaluation criteria to be developed.

The demonstration project design should reflect emerging RUC technologies in the private sector, capitalize on opportunities at the federal level, and leverage work in other states, while aligning with the established guiding principles and evaluation framework.

To the extent that other opportunities align with the purpose and need for a demonstration project in Washington, the Demonstration Project Plan should leverage activities that may be ongoing beyond 2016, including:

- **Approaches in other states:** at least three other western states will be operating a RUC pilot project in 2016 (Oregon, California, and Colorado), which presents opportunities to test features of mutual interest (for example, cross-jurisdictional travel between RUC states).
- **Western Road Usage Charge Consortium (WRUCC):** work to be undertaken by WRUCC might benefit a Washington demonstration project.
- **Federal grant funding:** The new federal transportation reauthorization act (FAST Act), provides \$95 million in federal grant funding to states, on a dollar-to-dollar match basis, for alternative revenue demonstration projects. In effect, if a federal grant is provided, the state's cost to implement the proposed demonstration project will be reduced by half (\$3 million dollars, as compared to \$6 million state funding request for the 2014 demonstration project).
- **Department of Licensing (DOL) vehicle system upgrades:** a demonstration project may provide the DOL with a test bed to determine, in a low-risk environment, how their forthcoming new Vehicle Field System might be adapted for RUC purposes in the future. Note that the 2016 Work Plan calls for designing a demonstration project, but not implementing it until after the Vehicle Field System Upgrade is scheduled to be completed.

2016 Work Plan Funding Requirements

The 2016 Work Plan is designed to accomplish the recommendations previously discussed. It would begin in early April 2016, when, if approved, legislative appropriations are anticipated to be available. The budget for this Work Plan is outlined below.

The new RUC federal grant program authorized in the FAST Act will likely favor ready-to-go demonstration projects, for which the project has been designed, the policy basis and operational concepts have been developed, and a state is ready to launch a demonstration project once federal funds are awarded. This proposed 2016 Work Plan will meet this expectation and make Washington State ready to move into a demonstration project in early 2017.

In order to accomplish the four 2016 Work Plan recommendations outlined earlier, five Steering Committee meetings are proposed from April through December 2016.

Figure 23: Cost Estimates by Task

Task	Budget
1. Address Unresolved Policy Issues	\$ 98,750
2. Develop Framework and Criteria for Evaluating Performance of a Demonstration Project*	\$ 123,750
3. Develop a Strategic Statewide Communications Plan	\$ 133,750
4. Revise the RUC Demonstration Project Plan	\$ 243,750
TOTAL	\$ 600,000

* Does not include funding necessary for carrying out communications activities, if a demonstration project is funded.