

Washington State Road Usage Charge Assessment – Phase 3

Final Report

prepared for

Governor Jay Inslee
and
Washington State Legislature



**Washington State
Transportation Commission**



**Washington State
Department of Transportation**

**CAMBRIDGE
SYSTEMATICS**



**D'ARTAGNAN
CONSULTING**

BERK



**Washington State
Transportation Commission**

January 12, 2015



STATE OF WASHINGTON
TRANSPORTATION COMMISSION

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January 12, 2015

The Honorable Jay Inslee
Office of the Governor
PO Box 40002
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The Honorable Curtis King
Co-Chair, Senate Transportation Committee
PO Box 40482
Olympia, WA 98504-0482

The Honorable Steve Hobbs
Senate Transportation Committee
PO Box 40482
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The Honorable Judy Clibborn
Chair, House Transportation Committee
PO Box 40600
Olympia, WA 98504-0600

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 enclosed 2015 final Road Usage Charge report as directed by the 2014 Supplemental Transportation Budget (ESSB 6001). While it is a comprehensive report, we hope you will be able to review the detailed information contained in it. However, if you have just five minutes, please read the short Prologue. If you have only fifteen minutes, please read the Executive summary.

After two and a half years of research and policy analyses, summarized in the final report for 2014, the Road Usage Charge Steering Committee's work has addressed a great many questions about road usage charging. The work of the Steering Committee has shown that a road usage charge is technically feasible, is financially advantageous relative to the gas tax, and could be implemented through a variety of operational concepts. It meets many of the policy objectives the Committee set at the outset of this effort.

While the Steering Committee's work has shown that implementing a road usage charge will not be trivial and that it would likely be more costly and complex to collect than the gas tax, the significant potential for creating a revenue source that preserves funding levels and improves equity across vehicle types makes a compelling case for further study.

The Steering Committee now finds itself in a position where some key questions about road usage charging would be best answered through a demonstration, accompanied by a public attitude assessment and a public communications effort aimed at explaining the purpose, objectives, and outcome of the demonstration.

Executing such a demonstration would allow:

- A test of the systems needed to carry out the four methods of road usage charging described in the Concept of Operations, especially those that are not being used in Oregon;
- Citizens of Washington State to experience, witness, and engage with road usage charge concepts to determine first hand if they are acceptable and simple to understand;
- An assessment of Washington citizen attitudes towards road usage charging to give decision-makers information about their constituents' concerns;
- The state to begin communicating its objectives and plans for developing a new revenue source; and
- Washington state agencies to understand how a road usage charge system might affect existing systems and processes, and what new systems and processes might be needed.

While numerous questions remain, this type of information will help the Governor and Legislature make an informed decision about whether to move forward with a road usage charging policy and program in the future. It will also help the public understand the rigorous scrutiny the Steering Committee and the Transportation Commission have given the subject.

Therefore, we, the undersigned Commissioners, recommend the Legislature allocate funds for a road usage charge demonstration project in the 2015 to 2017 biennium, and that the Road Usage Charge Steering Committee continue in its role of guiding the investigation into this funding alternative. This should not be interpreted to mean that we have concluded a road usage charge system is the right step for Washington State, but rather that we believe it is time for a demonstration to provide more robust information about this promising policy to come to a conclusion.

Now is an advantageous time for Washington State to act. By law, Oregon's road usage charging program will begin on July 1, 2015, and by legislative mandate, California will launch a large-scale demonstration of road usage charging on or before January 1, 2017. By acting now, Washington can take advantage of synergies with these other programs and perhaps collaboratively work together to save time and costs.

We are in a unique situation to help both ourselves and benefit the other states in the region to influence a possible multistate road usage charge program.

Sincerely,



Commissioner Charles Royer, Chairman
Road Usage Charge Steering Committee



Commissioner Anne E. Haley, Member
Road Usage Charge Steering Committee



Commissioner Roy Jennings, Member
Road Usage Charge Steering Committee

Table of Contents

The 2014 Steering Committee	iii
Prologue	iv
Executive Summary.....	1
Section 1: Introduction.....	15
Section 2: Phasing of a Road Usage Charge	19
Section 3: Concept of Operations	33
Section 4: Financial Analysis	43
Section 5: Supplemental Work Prepared by Others	75
Section 6: Remaining Questions for the Future.....	87
Section 7: Proposed Work Plan.....	99

Appendices are provided on the enclosed CD

Appendix A: Excerpts from 2014 Supplemental Transportation Budget (ESSB 6001)

Appendix B: Financial Analysis Documentation

Appendix C: Light and Heavy Vehicle Fuel Tax Trends

Appendix D: Work Plan Cost Estimate Assumptions

Also provided on the CD are the foundational materials used by the Steering Committee and the Transportation Commission to reach the conclusions in this report, including reports by others. These are listed on the following page.

For more information about Road Usage Charge Assessment, please visit the Transportation Commission’s web site at:

www.wstc.wa.gov, or the project web site: <http://waroadusagecharge.wordpress.com>.

Additional Documents Contained on CD

Road Usage Charge Concept of Operations

Supplemental Work Prepared by Others

Treasurers Report: Fiscal Implications of a Potential Transition to Road Usage Charges

Western Road Usage Charge Consortium Report: Project 2A: Study of Interjurisdictional Road Usage Charge Issues and transmittal letter from WSDOT

WSTC Report: *Urban and Rural Financial and Equity Implications of a Potential Road Usage Charge System in Washington*

Materials Prepared for and Presented at Steering Committee Meetings

- Steering Committee Meeting #10: June 16, 2014
 - Briefing Book: *Approaches to Transition and Concept of Operations*
 - Presentation materials
- Steering Committee Meeting #11: September 25, 2014
 - Briefing Book: *Concept of Operations and Financial Evaluation*
 - *Draft Concept of Operations*
 - Presentation materials
- Steering Committee Meeting #12: November 17, 2014
 - *Draft Report*
 - *ConOps Comments and Responses*
 - *Concept of Operations*
 - Presentation Materials

Materials from the 2012 Feasibility Assessment and 2013 Business Case Evaluation

The 2014 Steering Committee

NAME AND AFFILIATION	REPRESENTING	NAME AND AFFILIATION	REPRESENTING
Steering Committee Chair, Charles Royer, WSTC Commissioner	Washington State Transportation Commission	James Thompson, Washington Public Ports Association	Ports
Anne Haley, WSTC Commissioner	Washington State Transportation Commission	Rod Brown Jr., Cascadia Law Group PLLC	Environmental
Roy Jennings, WSTC Commissioner	Washington State Transportation Commission	Brian Ziegler, Pierce County Public Works	Counties
Senator Curtis King, Yakima (R) 14 th District	Washington State Senate, JTC Seat	Scott Creek, Crown Moving Company, Inc.	Trucking Industry
Representative Judy Clibborn, Mercer Island (D) 41 st District	Washington State House of Representatives, JTC Seat	Don Gerend, City of Sammamish Councilmember	Cities
Representative Ed Orcutt, Kalama (R) 20 th District	Washington State House of Representatives, JTC Seat	Tom Hingson, Everett Transit	Public Transportation
Senator Marko Lias, Mukilteo (D) 21 st District	Washington State Senate, JTC Seat	Sharon Nelson, Consumer Representative	Consumer/Public
Senator Andy Billig, Spokane (D) 3 rd District	Washington State Senate, Senate Democratic Seat	Lynn Peterson, WSDOT Secretary	WSDOT
Representative Jake Fey, Tacoma (D) 27 th District	Washington State House of Representatives, House Democratic Seat	Pat Kohler, Director	Department of Licensing
Representative Linda Kochmar, Federal Way (R) 30 th District	Washington State House of Representatives, House Republican Seat	Janet Ray, AAA Washington	Motoring Public
Scott Merriman, Director of Policy and Legislative Relations	Office of the State Treasurer	Neil Strege, Washington Roundtable	Business
Curt Augustine, Alliance of Automobile Manufacturers	Auto and light truck manufacturers	Ted Trepanier, INRIX	User fee technology

Prologue

Why consider a road usage charge?

- For almost a century, motor fuels taxes (including the gas tax) have been a stable source of funding for our road network. They remain the primary source of transportation funding, supporting 76 percent of all state transportation investments, but are not sustainable over the long term.¹
- Collected from fuel distributors and based on a fixed amount per gallon, the gas tax:
 - Does not rise and fall with the price of fuel;
 - Does not keep pace with inflation; and
 - Declines on a per-mile basis as the vehicle fleet becomes more fuel-efficient.
- The vehicle fleet will continue to grow along with the number of miles driven, but vehicles will burn less gasoline – resulting in less revenue to maintain and operate our roadway system.
- To ensure an effective road system, the move to cleaner, smarter vehicles must be accompanied by a change in the way we pay for our roads. This approaching situation has caused state governments around the U.S. to look for alternatives.

What we did

- The Legislature directed the Washington State Transportation Commission to work with a diversified stakeholder Steering Committee to examine the feasibility of transitioning to a road usage charge, and then to explore policy issues, evaluate the business case, and lay out a path to potential implementation. This work was completed in 2012 and 2013 and previously reported on. In this third phase of evaluating road usage charges for Washington, we:

More...

¹ Connecting Washington Task Force, Final Report (2012).

- Developed a Concept of Operations (ConOps) that informs a broad audience with varying levels of technical knowledge, and is the first step in a systems engineering process. It describes all major aspects of the system and user interactions at a high level without dwelling on low-level technical details (see Section 3).
- Evaluated 10 road usage charge alternatives, all of which were forecast to yield more net revenue than the fuel tax over 25 years under four economic scenarios (see Section 4). Our analysis assumes that fuel taxes will remain in place, meaning that when drivers pay the road usage charge they would be credited for their estimated fuel tax payments so that they pay one tax or the other – not both.
- Identified remaining questions (Section 6), which we propose to begin answering through a demonstration, public attitude assessment, and public communications work plan that would take about 41 months at an estimated cost of about \$6.0 million (Section 7).
- Proposed that the Washington State Transportation Commission (WSTC) lead the next phase of this work, aided by the existing Steering Committee and a new technical advisory committee of state agency representatives (see Section 7)

Proposed road usage charge system for demonstration

- The proposed road usage charge system for demonstration would allow drivers to choose among four potential charging methods:
 - **A: Time Permit** – A flat fee to drive a vehicle an unlimited number of miles for one year;
 - **B: Odometer Charge** – A per-mile charge based on annual odometer readings;
 - **C: Automated Distance Charge** – A per-mile charge based on measurements by in-vehicle technology that can distinguish between in-state and out-of-state travel; and
 - **D: Smartphone Distance Charge** – A per-mile charge based on measurements by a smartphone with a special application that records photos of the odometer and may also use its own internal electronics to calculate distance traveled, in place of either Method B or C.

Executive Summary

Overview of the 2014 work.

- In **prior phases** of work, the Steering Committee addressed the feasibility and evaluated the business case for road usage charging in Washington, and addressed numerous policy issues.
- The 2014 work involved
 - Development of the **Concept of Operations (ConOps)**, which provided an opportunity for stakeholders to understand at a high level how the system may work, the technical basis for the financial analysis, and the starting point for designing a demonstration (see pages 4-5 and Section 3)
 - Evaluation of **transition strategies**, both in terms of **which vehicles get charged** and how those vehicles would **transition** into a road usage charge system (see page 6 and Section 2).
 - Preparation of a **financial analysis** that reflected the proposed ConOps, several transition strategies, and several sets of economic assumptions (see pages 7-8 and Section 4).
 - Development of a **proposed work plan** based on questions that remain after the 2014 work (see pages 10-13, and Sections 6-7). The proposed work plan includes a demonstration, along with a public attitude assessment and public communications and engagement effort.
 - Parallel work by the WSDOT, the Treasurer's Office, and WSTC (along with staff from the Legislature, Department of Licensing, and Department of Transportation) related to certain policy issues (see page 9, and Section 5).

Reports from prior phases of work can be found on the WSTC's web site: wstc.wa.gov.

The Concept of Operations describes a road usage charge system that offers Principals a choice of four methods in how to pay charges.

- Principals would choose among these four road usage charge methods:
 - **Method A – Time Permit** – unlimited driving for a specific time period (e.g., a year) for a flat rate;
 - **Method B – Odometer Charge** – prepayment of miles for a given year with reconciliation at the end of the year based on actual miles driven as measured with the vehicle odometer;
 - **Method C – Automated Distance Charge** – postpayment for miles driven on a periodic basis, as measured by an in-vehicle mileage reporting device; and
 - **Method D – Smartphone Distance Charge** – prepayment for miles driven as measured by an individual’s smartphone via a special application that records photos of the odometer and uses software to calculate mileage, in place of either Method B or C.
- The ConOps assumes that the fuel tax will remain in place, meaning that when Principals pay the road usage charge, they would be credited for their estimated fuel tax payments.
- The ConOps may be revised based on technology development and stakeholder comment before embarking on a demonstration.



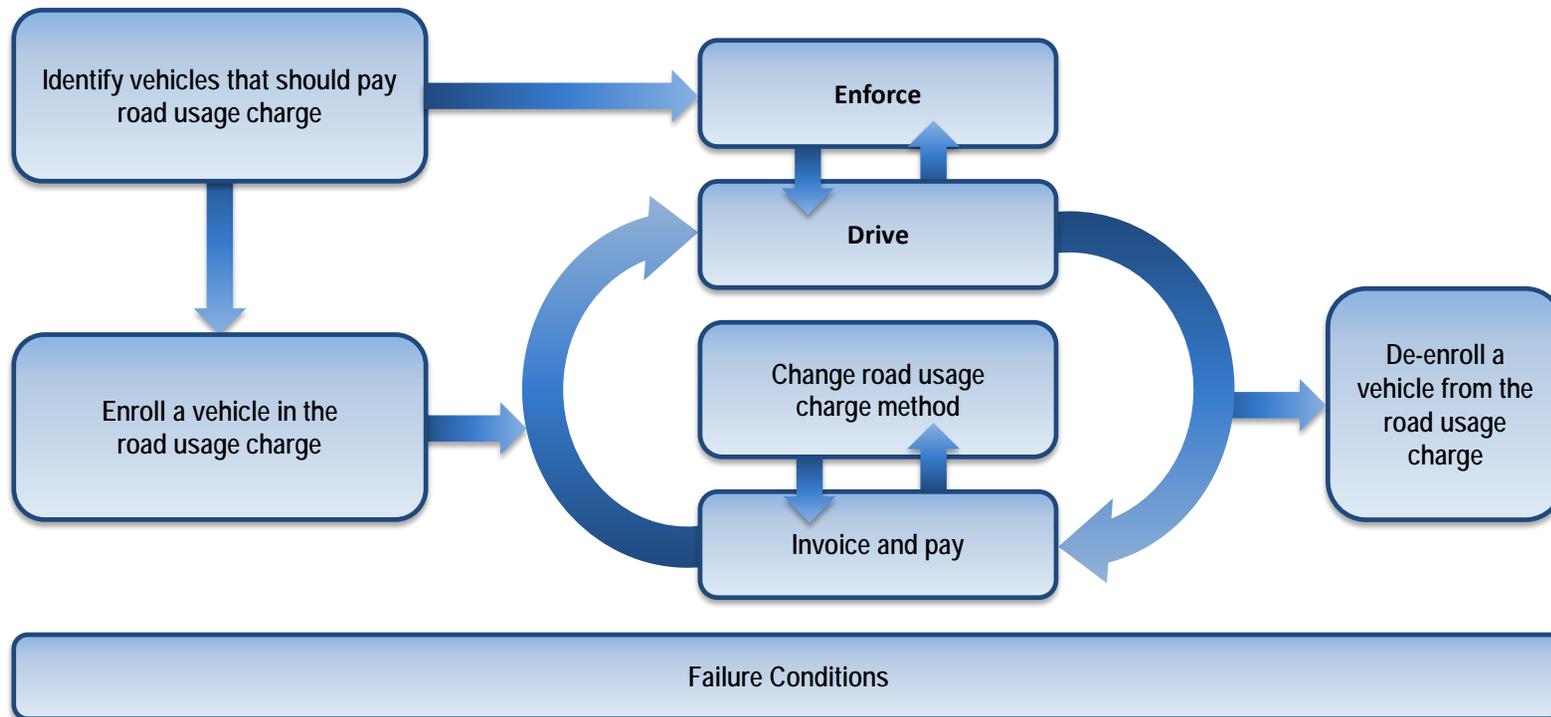
What are “Principals”?

Throughout the study, we have referred to the person responsible for paying a road usage charge as the “Principal,” recognizing that the “driver” or “owner” of a vehicle is not always the person responsible.

The Concept of Operations describes eight usage scenarios regarding how a Principal would interact with the road usage charge system.

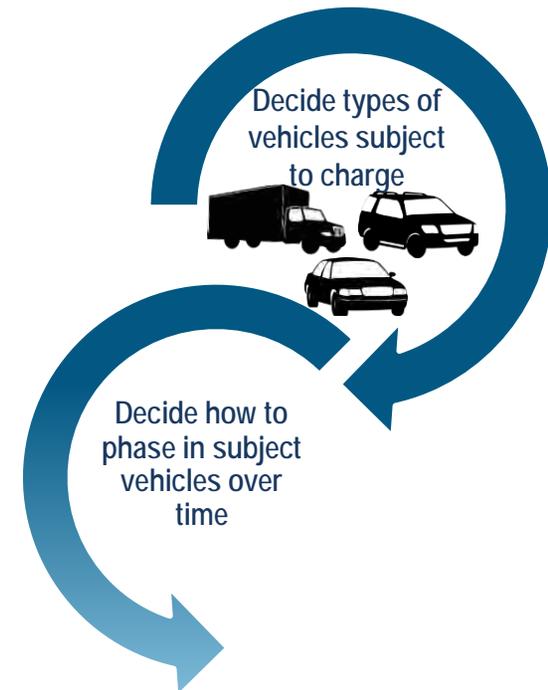
- Usage scenarios are the different ways in which users will interact with the road usage charge system.
- The ConOps provides context, summarizes stakeholder activities, identifies issues, and describes potential changes over time for each usage scenario.

Usage Scenarios



We explored several ways to phase in a road usage charge.

- The Legislature directed the WSTC to consider “*phasing and staging of how a road usage charge would be implemented as it relates to the types of vehicles that would be subject to a road usage charge and the nature and manner of a transition period.*”
 - To do this, we first envisioned **which vehicles would be subject to the charge** under an operational road usage charge system – there were several options, each with pros and cons.
 - Then, we considered different **approaches to transitioning** vehicles into the road usage charge program.
- For purposes of the financial analysis, we focused on three potential approaches to which vehicles to charge and two potential transition approaches (see table below, and more detail in Section 2).
- Further exploration of transition approaches would be appropriate after a demonstration is completed.



Phasing approaches assumed for financial analysis

Vehicles to Charge	Transition
10,000 pounds GVWR or less regardless of fuel type	Enroll at registration
Above the average fuel economy rating	Enroll at title transaction
Newer than a certain model year	

The financial analysis forecasts net revenues from road usage charges to be greater than from fuel taxes in all combinations of policy and economic conditions – despite higher collection costs.

- The financial analysis spanned the period from 2019 to 2043 and considered (see Section 4):
 - **Four economic scenarios** reflecting various possible future growth trends for light vehicle fleet size, statewide vehicle miles traveled (VMT), and fleet fuel economy; and
 - **Eleven policy alternatives:** one without road usage charging (and the fuel tax stays as-is) and 10 road usage charge alternatives, all of which assume the fuel tax remains in place but that some portion of the fleet transitions to road usage charges.
 - We assumed no vehicle ever pays both fuel tax and road usage charge – only one or the other.
 - We further assumed the per-gallon rate of the fuel tax and per-mile rate of the road usage charge would be constant over the 25-year horizon.
- Expected improvements in fleet fuel economy drive the strong performance of road usage charging relative to fuel tax.
- Net present value (NPV) of the 10 road usage charge alternatives ranged from \$1.3 to 7.2 billion larger than the fuel tax.
- On a year-by-year basis, net revenues from road usage charging alternatives were forecast to exceed fuel tax net revenue in the first, second, or third year, depending on the scenario.
- Road usage charges would be more costly to collect than fuel taxes, with operating cost ranging from 3.2 to 9.7 percent of revenue, compared with 0.5 to 0.6 percent for light vehicle fuel tax over 25 years.

What fuel tax increase would be needed to match the expected revenue from road usage charges?

- Since road usage charging is intended to stop the effect of improving fuel efficiency on highway maintenance and improvement funds, we were asked to evaluate how high the fuel tax would have to be raised to match expected road usage charge revenue.
- With numerous economic and policy scenarios and various approaches to raising the fuel tax, there are a range of answers to this question.
- We considered two illustrative approaches to raising the fuel tax, one to match the NPV of road usage charge revenue from light vehicles and a second to match annual net revenues:
 - **A one-time increase of 8 to 21 cents per gallon in 2019** would yield the same NPV of as road usage charge scenarios over the 2019 to 2043 period.
 - **Annual increases in fuel tax from 2019 to 2043 ranging from 0.8 to 1.5 cents per gallon** would be needed to match the annual net revenue from road usage charges on light vehicles.
- Counting revenue from heavy vehicles, the fuel tax rate would need to increase 0.6 to 1.0 cents per gallon annually to match annual net revenues, or 8 to 11 cents per gallon to match NPV with a one-time increase. Refer to Appendix C for more detail on heavy truck fuel tax revenues.
- We also added heavy vehicle fuel tax revenues to each of the four economic scenarios. Heavy vehicle fuel tax revenues are not sufficient to offset the expected future declines in fuel tax revenues from light vehicles.

The WSTC incorporated work by WSDOT and the Treasurer’s Office in developing the recommendations in this report.

- The Legislature tasked WSDOT, the Treasurer’s Office, and the WSTC to carry out analyses related to road usage charging in parallel with work done by the WSTC described in this report (see Section 5):
 - **WSDOT:** develop policy bases and operational concepts for reporting, collecting, crediting, and remitting road usage charges resulting from interjurisdictional travel.
 - **Treasurer’s Office:** explore the fiscal implications of road usage charges on outstanding motor vehicle fuel tax bonds and future transportation bond sales, including impacts of any reduction, refunding, crediting, or repeal of the motor vehicle fuel tax, in whole or in part.
 - **WSTC (along with Legislative staff, DOL, and WSDOT):** undertake a study of the urban and rural financial equity implications of a potential road usage charge system in Washington.
- Section 5 of this report contains a summary of these studies. The complete reports are on the CD that accompanies this printed version of this report, as well as on the WSTC web site at wstc.wa.gov.

Questions still remain.

- Questions about the policy and operations of a road usage charging program have been raised during the road usage charge feasibility assessment in 2012/2013, the evaluation of the business case in 2013/2014, and preparation of the Concept of Operations in 2014,
- We used a “parking lot” to keep issues that would be important to resolve as Washington came closer to a road usage charge demonstration or implementation (see table below, and discussed in detail in Section 6).
- Many of these questions are proposed to be addressed in the 2015 to 2017 fiscal biennium work plan (see Section 7), and will benefit from a demonstration rather than more study.
- However, some issues will remain even after the next biennium work plan. These remaining issues can be addressed if Washington chooses to ultimately implement a road usage charge.

Remaining Questions

How to operationalize the four road usage charge methods.	How will people react to the proposed road usage charge system?	Public understanding and acceptance of a proposed system.
Per-mile rate setting.	Rate setting for time-based permit.	Vehicles subject to charge.
Charging out of state drivers.	Exemptions.	Refunds.
Dedication of road usage charge revenue.	Motor fuel tax bonds.	Legal issues.
Institutional roles.	Private account managers?	Interoperability with other states.
Interoperability with toll system.	State IT needs.	

Proposed work plan

To move a road usage charge closer to implementation, we propose a three-pronged work plan for FY 2015 to 2017 (see Section 7).

- At the end of this work plan, policy-makers could be in a position to decide whether road usage charging is right for Washington, and then tackle the policy details needed to implement.
- The Steering Committee recommends that all three of these components are necessary to answer the remaining open questions and provide the information needed for a next step in addressing road usage charging as possible transportation funding policy.

Demonstration

- **Objectives:**
 - Expose Washington motorists to road usage charging policy and concepts,
 - Raise awareness of transportation funding issues,
 - Test road usage charge operations,
 - Identify organizational challenges, and
 - Refine cost estimates.
- **Activities:**
 - Plan, execute, and evaluate a demonstration of road usage charging methods.

Public Attitude Assessment

- **Objectives:**
 - Evaluate how well the public understands transportation funding sources and needs,
 - Assess public understanding of road usage charging, and
 - Identify questions, concerns, and reasons for support and opposition.
- **Activities:**
 - Polling,
 - Surveys,
 - Focus groups,
 - Stakeholder meetings, research, and analysis.

Public Communications and Engagement

- **Objectives:**
 - Communicate the purpose and details of the demonstration,
 - Address questions about road usage charging, and
 - Stimulate and monitor public discussion of transportation funding.
- **Activities:**
 - Recruit participants;
 - Provide Q&A to demonstration participants, public, and media;
 - Provide speakers to community groups; and
 - Maintain web and social media presence.

Proposed work plan – three components

The three areas of the work plan – Demonstration, Public Attitude Assessment, and Communications – can be accomplished in four stages at a cost ranging from an estimated \$3.4 to \$6.0 million and taking approximately 24 to 41 months.

Stage of the Work Plan	Stage 1: Planning	Stage 2: Setup	Stage 3: Execution	Stage 4: Evaluation	Estimated Cost (millions)
Demonstration	Develop budget and detailed demonstration plan, including technical documents.	Procure technology vendors and set up necessary systems.	Conduct demonstration and collect evaluation data.	Evaluation, analysis, and reporting, including findings and recommendations.	\$2.4 to \$4.5
Public Attitude Assessment	Baseline assessment via web surveys, focus groups, and stakeholder interviews.	Attitudinal surveys.	Participant surveys.	Comprehensive report on attitude assessment.	\$0.4 to \$0.6
Communications and Engagement	Prepare communications plan, manage communications, and begin media outreach.	Recruit demonstration participants and engage media.	Proactive communications during demonstration.	Continue media engagement and report on findings.	\$0.3 to \$0.5
Project Management	Coordinate and manage the project deliverables. Direct and provide policy interface, reports and presentations.	Coordinate and prepare the agreed plans for executing and testing the demonstration plan.	Manage and monitor the execution of the demonstration and reporting status to Legislature.	Prepare and present final reports and analysis.	\$0.3 to \$0.4
<i>Estimated Timeframe</i>	<i>6 to 8 months</i>	<i>6 to 12 months</i>	<i>6 to 12 months</i>	<i>6 to 9 months</i>	<i>24 to 41 months</i>
<i>Estimated Cost (millions)</i>	<i>\$0.8 to \$1.0</i>	<i>\$0.6 M to \$1.2</i>	<i>\$1.4 to \$3.0</i>	<i>\$0.6 to \$0.9</i>	<i>\$3.4 to \$6.0</i>

Note: Totals may not add due to rounding

Decision to continue or not

Progress reports to Legislature

WSTC recommends a robust demonstration to form a solid basis from which to make decisions. In particular:

- The WSTC should remain in the role as the lead agency investigating the potential to transition to a road usage charge.
 - The existing road usage charge Steering Committee should continue in its role of advising the WSTC
- The WSTC should convene a technical advisory committee composed of DOL, WSDOT, and Treasurer’s Office. A demonstration project should have the following characteristics:
 - The duration of the active demonstration (when drivers test the equipment) should be 12-months long to ensure coverage of all seasons and a full-year cycle of participation.
 - Up to 2000 participants statewide representing up to five regions to ensure we test in urban, rural, and border areas. Possible regions could be:
 - Southwest Washington (Vancouver area/Oregon border).
 - Northwest Washington (Bellingham/international border).
 - Central Puget Sound (Seattle, Tacoma, Everett).
 - Eastern Washington (Spokane area/Idaho border).
 - Central Washington (Wenatchee down to the tri-cities).
- A demonstration of this scope will require a budget and timeline at the upper end of the range described on the prior page, about \$6 million and approximately 41 months.

Section 1: Introduction

Key Points from the 2014 Budget Proviso (complete text in Appendix A).

- Keep the Steering Committee as it was in prior phases of work.
- Develop refined policy inputs related to phasing and staging of a road usage charge system relating to:
 - Types of vehicles; and
 - Nature and manner of transition period.
- Develop a concept of operations for a road usage charge system incorporating all three road usage charge methods from the prior year’s work.
 - In addition to a time permit and an odometer charge, the concept of operations recommendation must be developed to include a means for periodic payments based on mileage reporting utilizing methods other than on-board diagnostic in-vehicle devices.
 - Incorporate WSDOT work and findings regarding interjurisdictional travel, as directed in budget.
 - Recommend how to leverage Oregon technology and procedures.
- Revise the financial analysis from the prior year’s work.
 - Assume exemptions from a road usage charge would be the same as motor vehicle fuel and special fuels taxes.
 - Use financial analysis to look at more favorable transition options – as determined by the Steering Committee and WSTC.
- Additional work was delegated to:
 - WSDOT on interstate coordination;
 - The State Treasurer’s Office on evaluating the impacts on fuel tax bond holders; and
 - WSTC on urban/rural financial impact and equity, “within existing resources.”

The Steering Committee recommended a policy framework that guided the business case evaluation, with one goal and 13 guiding principles.

- Goal: Identify and develop a sustainable, long-term revenue source for Washington State’s transportation system to transition from the current gas tax system.
- **Guiding Principles** (not in priority order) on how we would implement the goal:

<ul style="list-style-type: none">• Privacy• Transparency• Complementary policy objectives• Cost-effectiveness	<ul style="list-style-type: none">• Equity• Data Security• Simplicity• Accountability• Enforcement	<ul style="list-style-type: none">• System Flexibility• User Options• Interoperability and Cooperation• Phasing
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- There are some principles that the Steering Committee considers to be important, but on which it deferred recommendation:
 - Whether to distinguish between travel on Washington public roads and other roads (e.g., private and outside the State).
 - Whether people from outside Washington should pay.

Section 2: Phasing of a Road Usage Charge

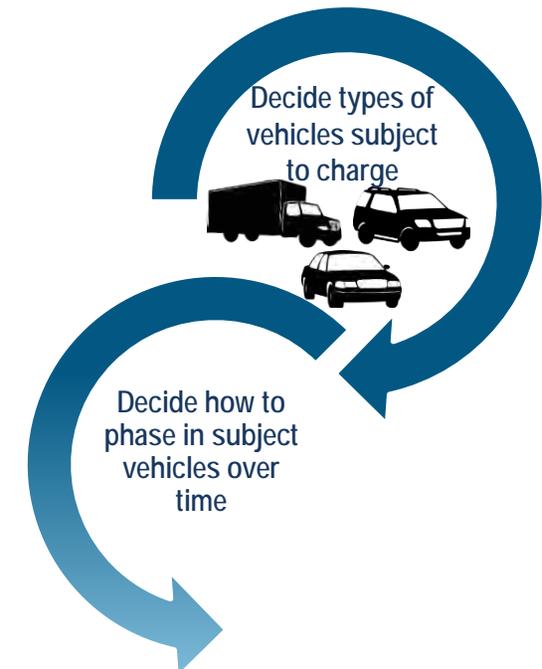
Last year’s business case evaluation made certain assumptions relating to phasing – some have changed for this year’s analysis.

Last Year	This Year
<p>The road usage charge would replace the motor fuel tax in 2015 with little transition period:</p> <ul style="list-style-type: none"> The rationale was to first consider whether a particular system was desirable, and then if it was, to consider how to handle the transition. 	<p>The Legislature specifically tasked the WSTC with evaluating “phasing and staging” in this year’s work:</p> <ul style="list-style-type: none"> We found that maintaining the motor fuel tax for the entire forecast period makes sense for a variety of reasons, easing the transition.
<p>The road usage charge would apply to all vehicles that do not use diesel fuel.</p> <ul style="list-style-type: none"> This was a simplifying assumption used to focus attention on passenger cars. 	<p>We revisited this assumption in this year’s analysis</p> <ul style="list-style-type: none"> We found that other approaches would be easier to carry out, and so do not distinguish by fuel type.

- This section addresses two considerations related to phasing in a road usage charge:
 - Alternative approaches to the vehicles that would be subject to the charge.
 - Alternative transition approaches relating to enrolling subject vehicles over time.

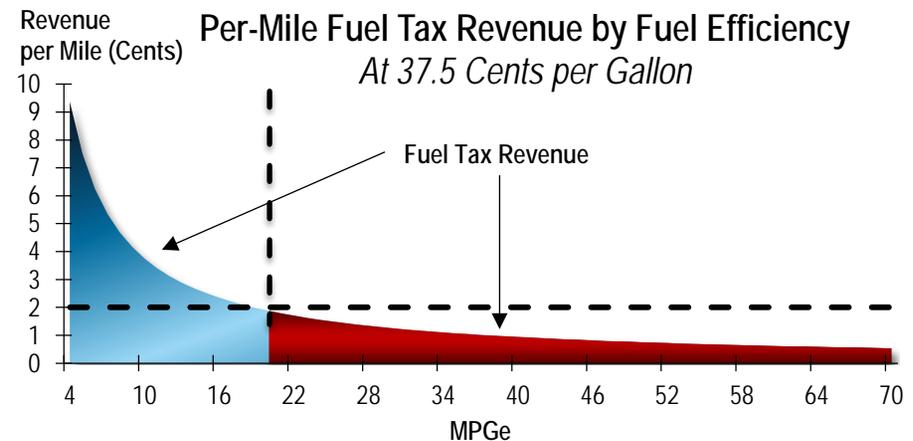
Phasing in road usage charging: types of vehicles and the transition period.

- The Legislature directed the WSTC to consider “*phasing and staging of how a road usage charge would be implemented as it relates to the types of vehicles that would be subject to a road usage charge and the nature and manner of a transition period.*”
 - To do this, we first envisioned **which vehicles would be subject to the charge** under an operational road usage charge system – there were several options, each with pros and cons.
 - Then, we considered different **approaches to transitioning** vehicles into the road usage charge program.
- In evaluating the ultimate system as well as the phasing, we considered three concerns, at a high level:
 - **Net revenue.** How does each alternative policy regarding subject vehicles affect the business case presented last year?
 - **Mechanics.** How would subject vehicles under each alternative be identified, how would tax collection and fuel tax refunds work, and does this create any additional costs and/or special operational challenges to address?
 - **Politics.** What are the relative political advantages and disadvantages of different approaches? The Steering Committee, WSTC, and ultimately the Legislature will address this, but we summarized initial thoughts on key considerations.
- The next five pages describe our evaluation of **which vehicles** should be subject to the charge.
- The five pages after that consider **transition approaches**.



Which vehicles? Revenue sustainability and political acceptability are influenced by how much different categories of drivers will pay.

- The Washington State fuel tax is 37.5 cents per gallon.
 - The cents per mile that drivers pay depends on vehicle fuel economy.
 - The average passenger car in Washington gets about 19.5 MPGe¹ (vertical dashed line on chart), which equates to 1.9 cents per mile (horizontal dashed line).
- Vehicles below the average MPGe pay more tax per mile than average (the blue area of the chart). Vehicles above the average MPGe pay less tax per mile than average (the red).
- The average MPGe will move to the right over time, meaning revenue to the State will decline.
- Also, individual vehicles will no longer be “clustered” around 18-25 MPGe, but will instead scatter to the right along the red curve, meaning that individual revenue contributions will be increasingly inequitable.
- We aimed for outcomes that addressed both the revenue problem and the fairness problem.
- This chart (and variations of it) helped us consider both revenue and fairness implications of taxing gallons versus miles.



¹The U.S. Environmental Protection Agency (EPA) uses miles per gallon equivalent (MPGe) for those vehicles with some form of battery electric power (e.g., plug-in hybrids and electric vehicles). For simplicity, we will use the term MPGe in reference to all vehicles.

Which vehicles? We considered several options for the vehicles that would be subject to road usage charges.²

- We considered these options:
 - a. All nondiesel vehicles;
 - b. All passenger cars;
 - c. Vehicles below 26,000 pounds gross vehicle weight rating (GVWR)³ regardless of fuel type;
 - d. Vehicles 10,000 pounds GVWR or less regardless of fuel type;***
 - e. Highly fuel efficient vehicles;
 - f. Vehicles above the average fuel economy rating; and***
 - g. Charge all new vehicles 10,000 pounds GVWR or less regardless of fuel type beginning with model year 2019.***
- The complete evaluation of options is provided in the briefing book used for the June 2014 Steering Committee meeting.
- Based on discussions with the Steering Committee, we evaluated the three concepts highlighted in bold italic above. These are described on the next three pages.

Gross Vehicle Weight Rating (GVWR) System Categories

Class	Gross Vehicle Weight Rating	Category
1	<6,000	Light-duty vehicles (primarily cars, SUVs, pickups)
2	6,001 to 10,000	Light-duty trucks (primarily very large pickups)
3-6	10,001 to 26,000	Medium-duty trucks and buses
7-8	>26,001	Heavy-duty trucks and buses

² The GVWR truck categories we adopted are based on the U.S. Department of Energy classifications. The table above defines categories and labels (e.g., “light duty”) as used in this analysis and based on guidance from the Steering Committee about which weight cutoff to use. Other institutions may have other classifications.

³ Gross Vehicle Weight Rating (GVWR) represents the maximum weight of the vehicle and what it can carry when fully loaded. It includes the weight of the vehicle itself plus fuel, passengers, cargo, and trailer tongue weight.

Which vehicles? Option 1: Charge vehicles 10,000 pounds GVWR or less regardless of fuel type.

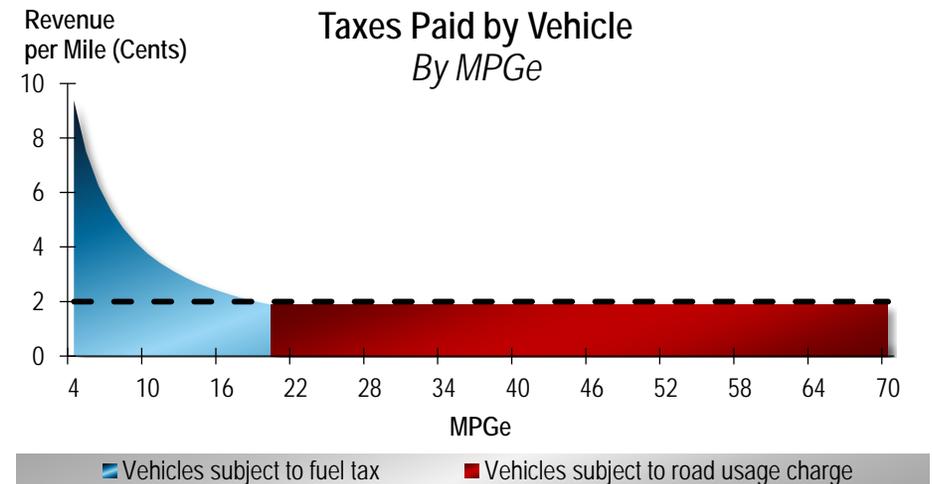
- This captures all pick-ups and SUVs but not medium-duty and heavy-duty commercial trucks above 10k GVWR such as delivery vans, work trucks, and garbage trucks.
 - This aligns closely with the informal term “passenger cars.”
- Vehicles greater than 10,000 pounds cause more road damage than those below this threshold.
 - Keeping such vehicles on the motor fuels tax or the special fuels tax means that the heavier vehicles will pay more per mile.
- Revenue.
 - Similar to the business case conducted last year.
- Mechanics.
 - Straightforward to identify vehicles by weight.
 - The vast majority of gasoline taxes collected will be refunded.
- Politics.
 - Avoids the heavy truck segment altogether.

Which vehicles? Option 2: Require vehicles with above average fuel economy rating – of all fuel types – to pay a road usage charge.

■ This is designed to solve the revenue erosion problem more directly and completely.

■ Revenue.

- Vehicles above the state average fuel economy (about 20 MPGe today, but likely higher at the time a decision about which vehicles to charge is made) would pay more than they do in fuel tax (the red area on the chart) – solving the revenue erosion problem.
- Vehicles below ~20 MPGe would pay more in fuel tax than they would if they convert to the road usage charge (the blue area on the chart)
 - If we allow these vehicles to opt in to paying a road usage charge, they would pay less than they do now – which should be considered in setting a per-mile rate.
 - High-mpg diesel vehicles, an increasing share of the fleet – would pay the road usage charge, avoiding revenue erosion from this sector.



■ Mechanics.

- It is relatively straightforward to identify the EPA fuel efficiency rating of vehicles.

■ Politics.

- Less challenging than other alternatives because it does not target a small group and it preserves the incentive to purchase efficient vehicles.
- There are no sharp differences or “edge effects” in tax rates at arbitrary MPGe ratings.

***Which vehicles?* Option 3: Charge all new vehicles 10,000 pounds GVWR or less regardless of fuel type beginning with model year 2019.**

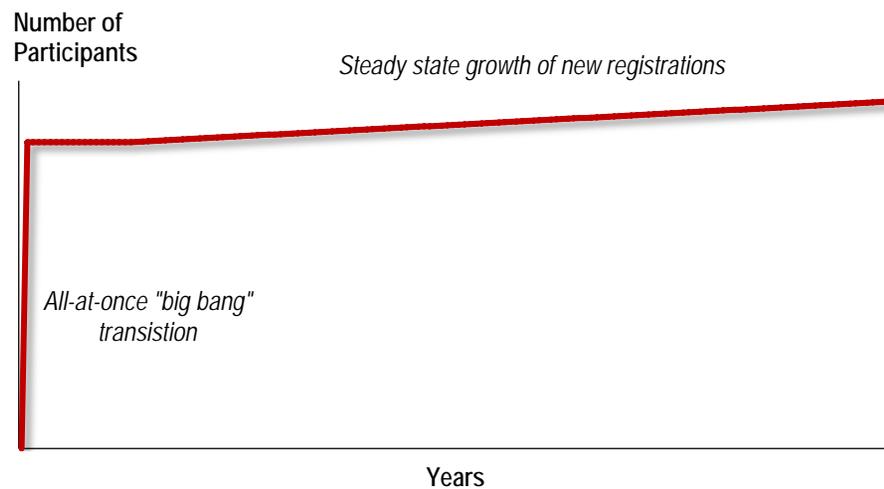
- This option emerged after evaluating Option 2. It provides a gradual transition, not based on engine technology.
- Like option 1, it focuses on light vehicles by only, including vehicles 10,000 pounds GVWR or less.
- Starting in 2019, all new (MY2019 and later) light vehicles are subject to the road usage charge.
 - With each passing year, there will be more vehicles built in MY2019 and later, and fewer built earlier, on the road, leading to a gradual increase in the percent of the fleet subject to the road usage charge.
- Additional options are possible, such as (eventually) expanding the program to include earlier model years vehicles, but such options were not explored in the financial analysis.
- **Revenue.**
 - This transition scenario is favorable in terms of revenue since new vehicles are expected to be more fuel efficient on average. Existing vehicles would continue to pay fuel tax only.
- **Mechanics.**
 - Straightforward to identify vehicles by Model Year.
- **Politics.**
 - Like Option 2, does not target a small group and it preserves the incentive to purchase efficient vehicles.
 - Possibly preferred by automotive manufacturers.

Transition approaches: A demonstration should precede and may become part of a transition.

- A demonstration may either:
 - Be conducted with a small number of vehicles as a means of answering policy questions and/or operational issues, then stopped while the Legislature debates whether to proceed with a live program and, if so, its final policy parameters, or
 - Continue as an operational program, without interruption.
 - We illustrate both of these options with each of the transition approaches on the next few pages.
- In either case, the Legislature must decide how to proceed after the demonstration.
- A demonstration could include:
 - Recruited members and/or volunteers:
 - To get a broad cross-section of vehicles, we probably need to provide incentives to participants to join the demonstration.
 - All-electric vehicles with an incentive of eliminating the \$100 flat fee.
 - State-owned fleet vehicles.

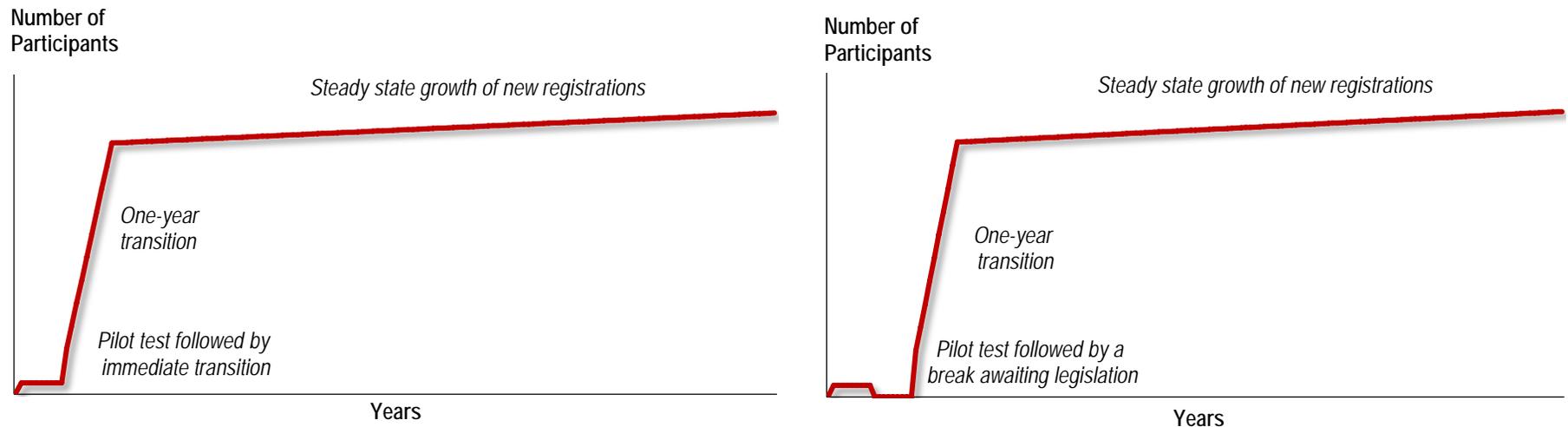
Transition approaches: We would never want a true “big bang” transition, i.e., all vehicles converting on the same day.

- This would overwhelm any new system.
- So we considered some alternative approaches.



Transition approaches: One approach would be to have all subject vehicles enroll upon their next registration.

- Principals must register vehicles with DOL once every 12 months, so this is a relatively fast transition over the course of one year.
- Includes new and used vehicles purchased from dealers as well as private sales.

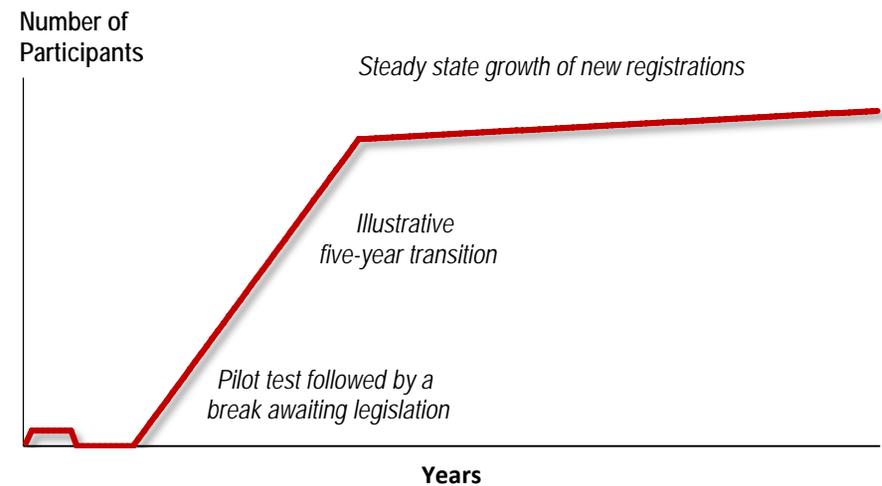
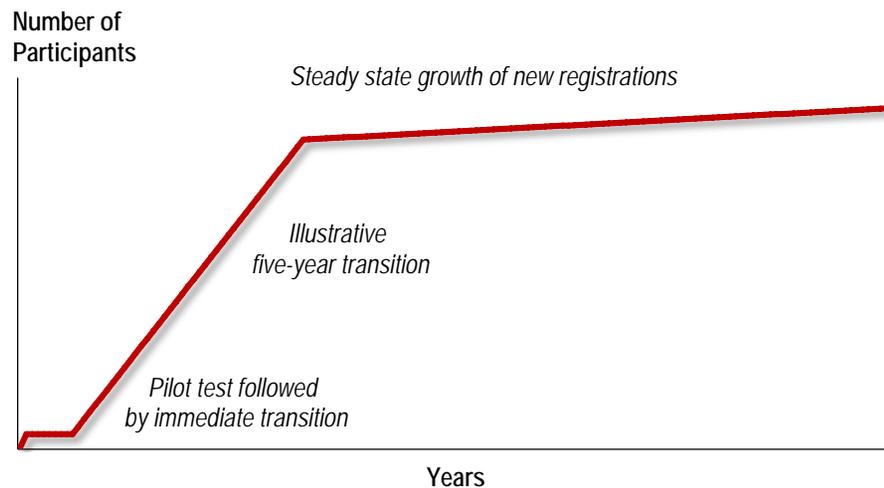


What are “Principals”?

Throughout the study, we have referred to the person responsible for paying a road usage charge as the “Principal,” recognizing that the “driver” or “owner” of a vehicle is not always the person responsible.

Transition Approaches: Another possibility is to phase in subject vehicles upon annual registration, using MPGe ratings and/or model year cutoffs.

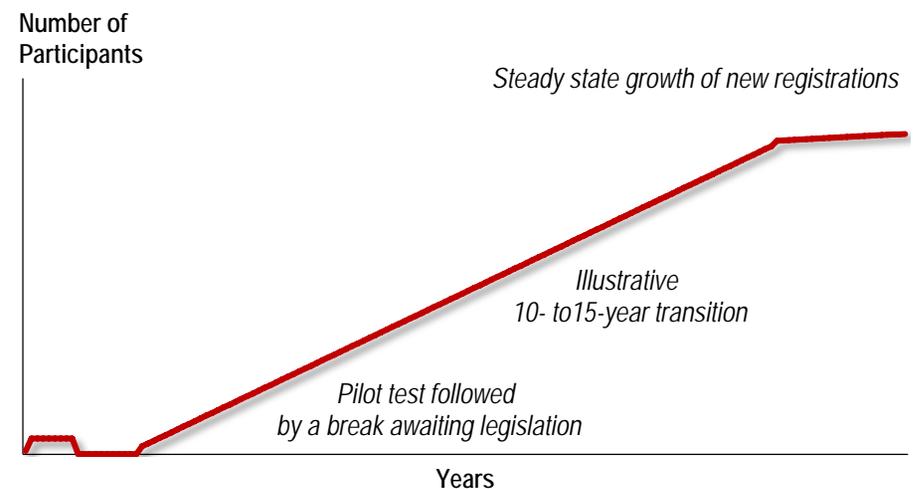
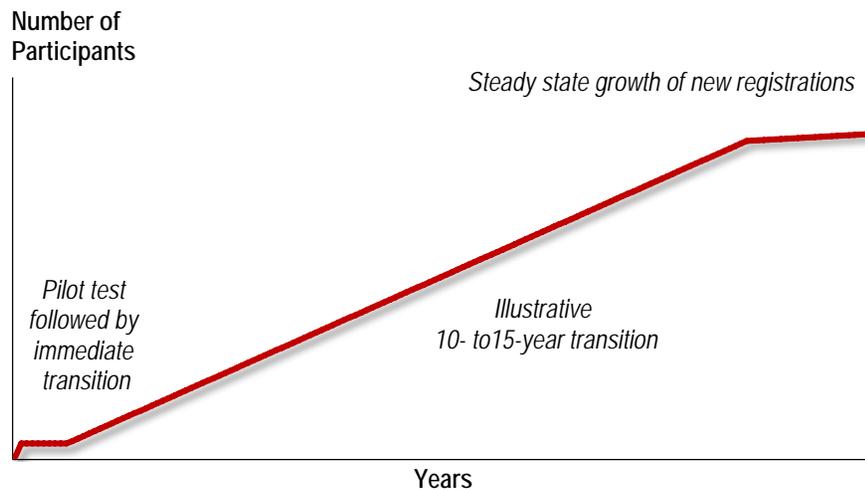
- There are many options using this approach, such as this one:
 - Start with vehicles greater than a particular MPGe (e.g., 2016 CAFE⁴ standard of 34.5) and/or start with vehicles of a specific model year (e.g., 2016 or newer); and
 - Criteria can change over time to capture subject vehicles at a managed, comfortable pace.
- Transition could take from one year to many years, with complete transition taking several decades.



⁴ CAFE refers to the Federal Corporate Average Fuel Economy standards most recently updated in 2012.

Transition Approaches: A third option is for all subject vehicles to enroll upon a title transaction.

- Title transactions occur for both new and used vehicle purchases from dealers as well as private sales.
- This transition would largely be complete after about 10 to 15 years, but a 100 percent transition would take several decades.
- This could be perceived as unfair since some Principals would not be required to enroll for many years.
- In all cases, the flat electric vehicle charge would be converted to a road usage charge during the first year, either as an option or as a requirement.
- In all cases, we could allow Principals to volunteer to enroll in the road usage charge program.



Section 3: Concept of Operations

The Concept of Operations (ConOps) is a high-level description of the proposed road usage charging system for Washington.

- A ConOps is intended to inform a broad audience with varying levels of technical knowledge, and is the first step in a systems engineering process. It describes all major aspects of the system and user interactions at a high level without dwelling on low-level technical details.
- A ConOps supports discussions among stakeholders – discussions that should lead to agreement on major design decisions – before any implementation details are decided.
- This section provides an overview of the ConOps. The complete ConOps is contained in a separate document.

The U.S. Federal Highway Administration (FHWA) provides the following description of a ConOps:

The Concept of Operations is a description of how the system will be used. It is nontechnical, and presented from the viewpoints of the various stakeholders. This provides a bridge between the often-vague needs that motivated the project to begin with and the specific technical requirements. There are several reasons for developing a Concept of Operations.

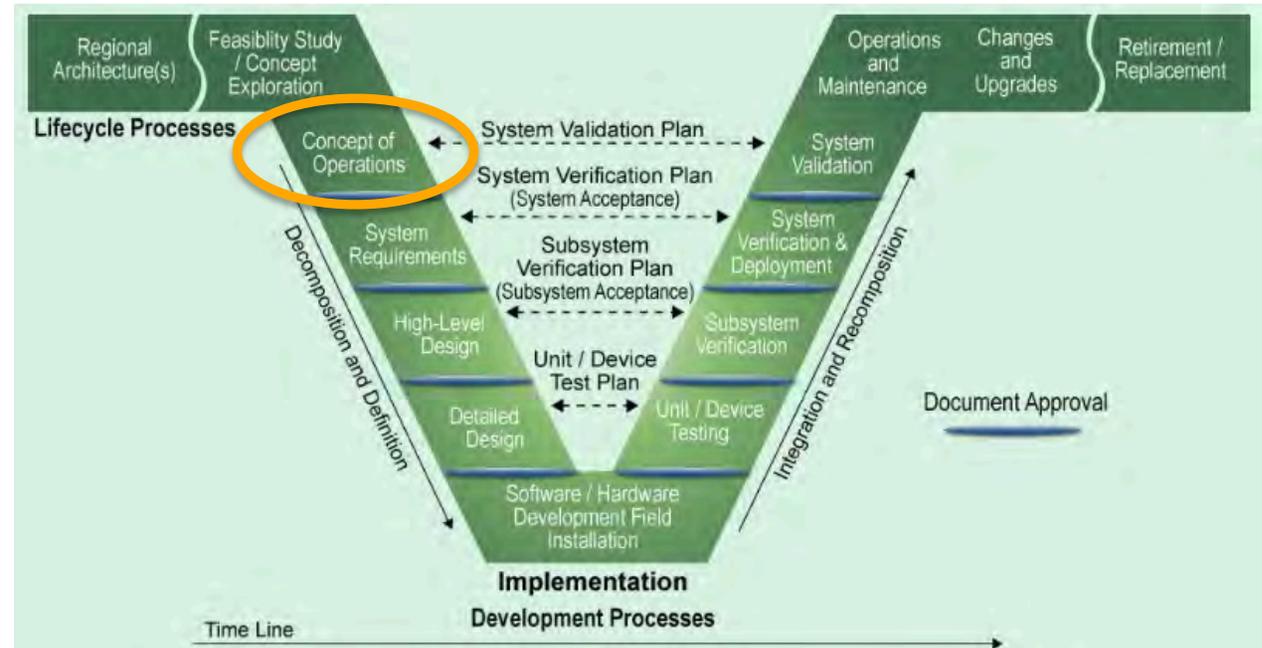
- Get stakeholder agreement identifying how the system is to be operated, which is responsible for what, and what the lines of communication are.
- Define the high-level system method and justify that it is superior to the other alternatives.
- Define the environment in which the system will operate.
- Derive high-level requirements, especially user requirements.
- Provide the criteria to be used for validation of the completed system.

Federal Highway Administration, California Division, "Systems Engineering Guidebook for Intelligent Transportation Systems, Version 3.0," November 2009. Available at: http://www.fhwa.dot.gov/cadiv/segb/views/document/sections/section8/8_4_5.cfm.

This ConOps sets the stage for further systems engineering development.

■ As illustrated in the U.S. Department of Transportation’s system engineering “V diagram” the next steps in systems engineering are:

- **A system requirements document:** This describes the complete functionality of the system – how the system outwardly performs – in detail, but does not specify how the system operates internally to generate the outward performance.
- **High-level and detailed design documents:** These documents specify exactly how the system operates internally. At the lowest level, design documents may include such detailed information as circuit board layouts and computer algorithms.

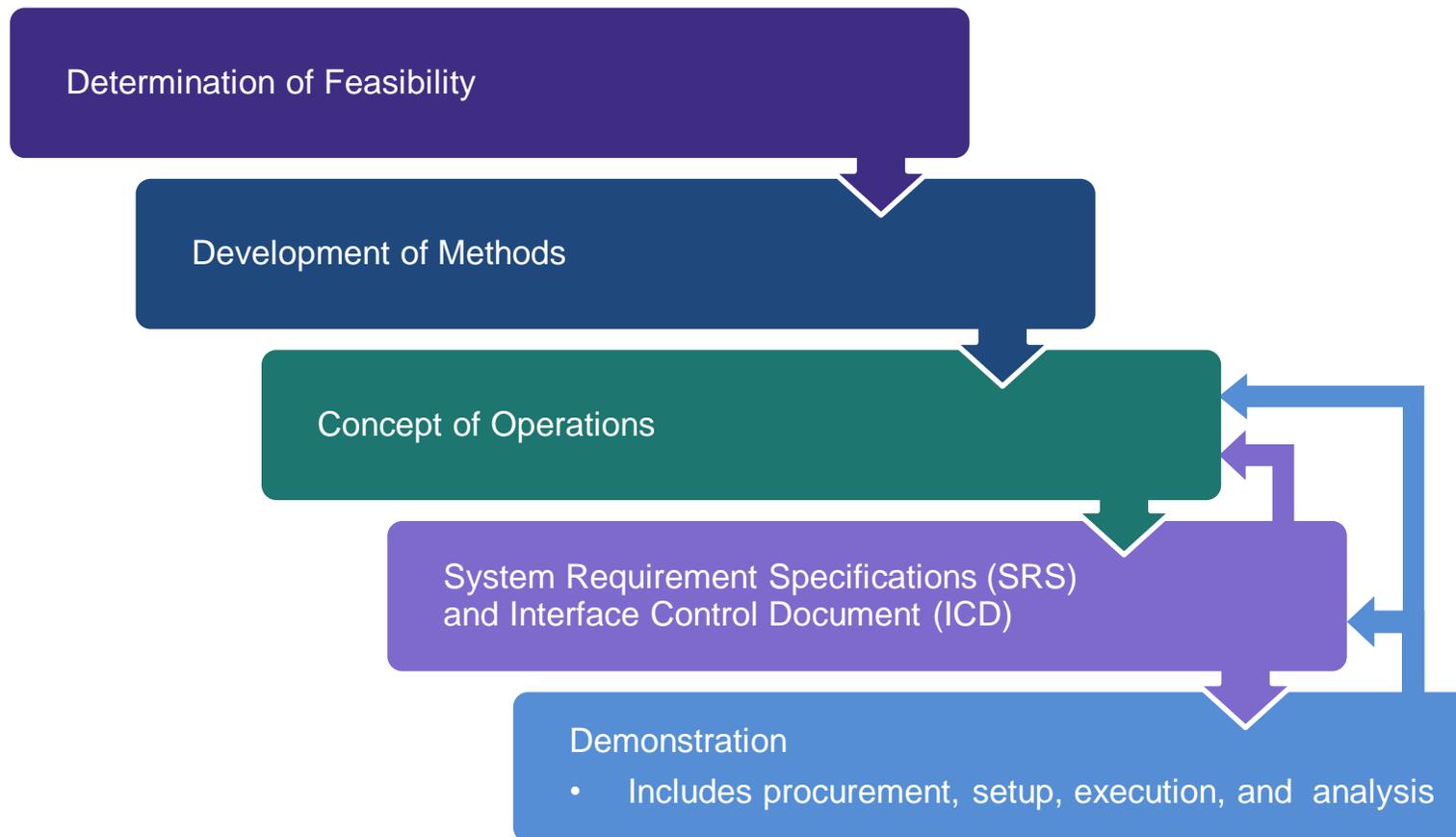


■ After these steps, software and hardware can be developed and installed, along with the testing indicated on the right hand side of the V-diagram.

- The right hand side of the V-diagram includes the tests to validate that the final product fulfills the specifications developed in the processes on the left hand side of the diagram.
- These tests are performed in the order indicating the V-diagram, starting with the most detailed specification test and concluding with the system validation, which validates that the final product fulfills the ConOps.
- Prior decisions are revisited at every step in the testing process, which can result in design changes and retesting.

The ConOps supports a technical development process with revisions expected before and after a potential demonstration.

- Applying the V-Diagram to a process that would make sense for road usage charging in Washington yields the following progression of steps.



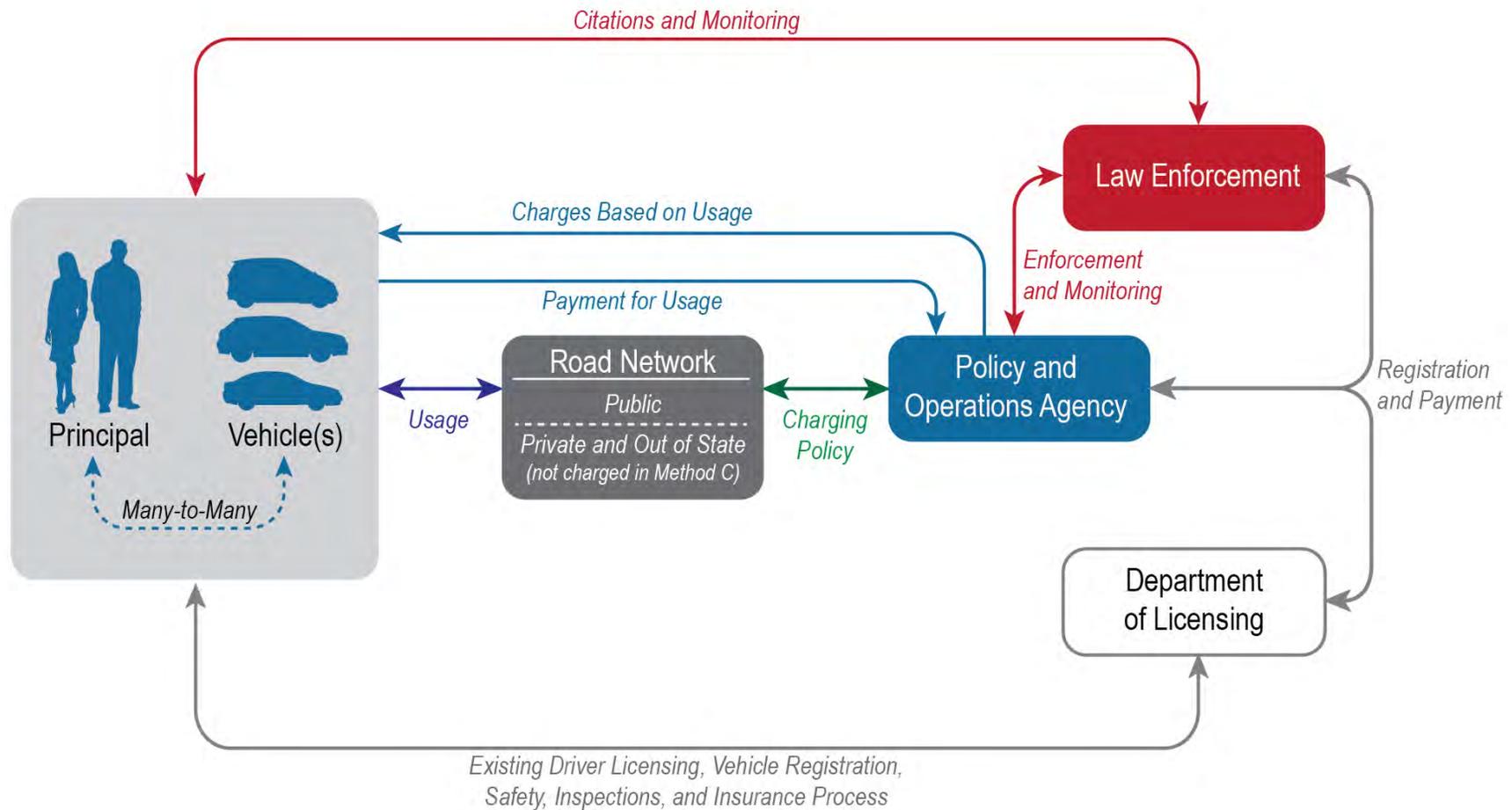
The ConOps describes a road usage charge system that provides Principals a choice of four methods in how to pay charges.

- Principals would have a choice of these four road usage charge methods:
 - **Method A – Time Permit** – unlimited driving for a specific time for a flat rate;
 - **Method B – Odometer Charge** – prepayment of miles for a given year with reconciliation at the end of the year based on actual miles driven as measured with the vehicle odometer;
 - **Method C – Automated Distance Charge** – postpayment for miles driven on a periodic basis, as measured by an in-vehicle mileage reporting device; and
 - **Method D – Smartphone Distance Charge** – Implement Method B or C using a smartphone application. When replacing Method B, the smartphone would be used to take a picture of the odometer and transmit mileage information, eliminating manual processing for this information. When replacing Method C, the smartphone would perform functions that would otherwise be performed by the in-vehicle mileage reporting device.
- The ConOps assumes that the fuel tax will remain in place, meaning that when Principals pay the road usage charge, they would be credited for their estimated fuel tax payments.



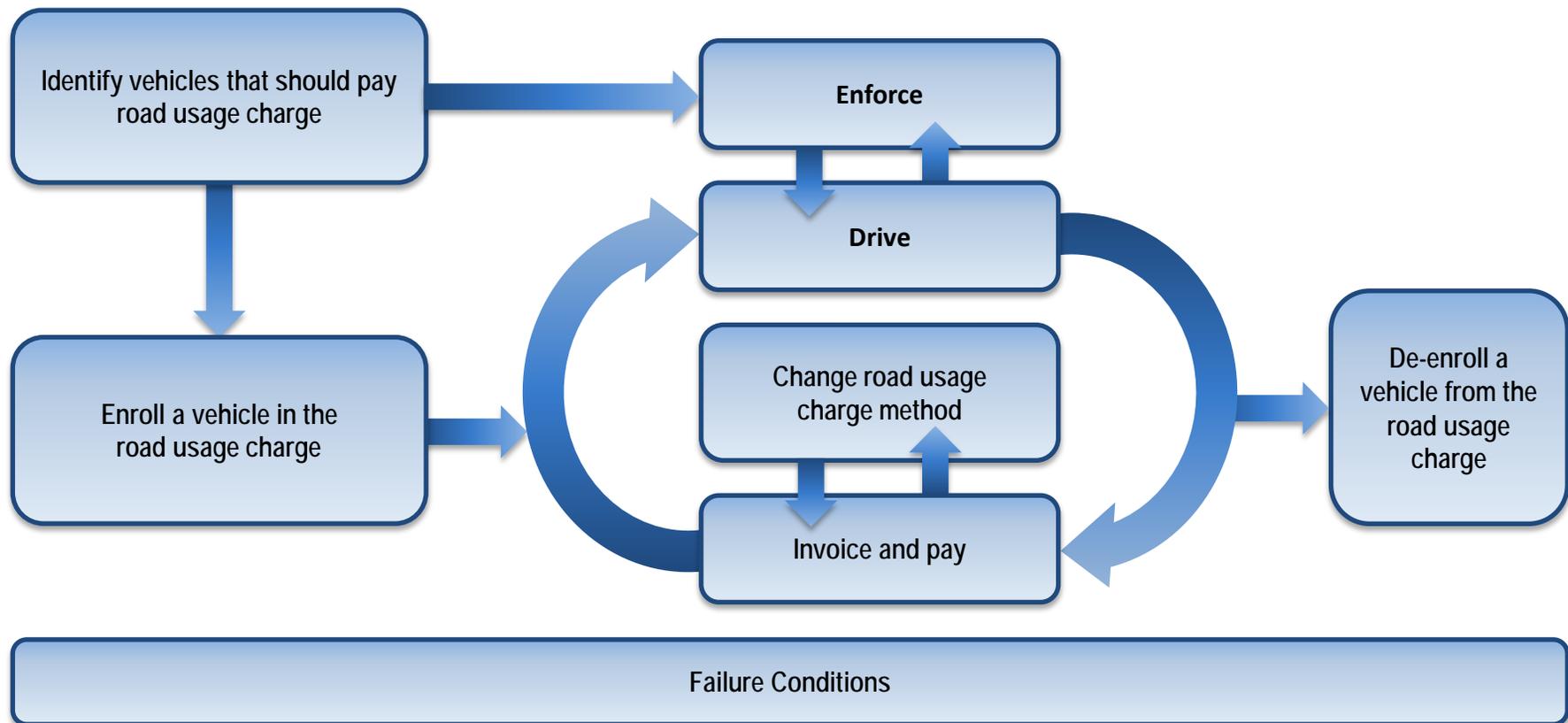
The ConOps illustrates the complete road usage charging system, from the perspective of the Principals and the system operators.

- Below is an overview of road usage charging system administered by the State.



The ConOps describes eight usage scenarios regarding how a Principal would interact with the road usage charge system.

- Usage scenarios are the different ways in which users will interact with the road usage charge system.
- The ConOps provides context, summarizes stakeholder activities, identifies issues, and describes potential changes over time for each usage scenario.



The ConOps provides a crucial jumping-off point for moving forward to a demonstration and, potentially, to implementation (if the Legislature chooses).

- The ConOps provides:
 - The technical basis for the financial analysis.
 - The starting point for designing a demonstration.
 - An opportunity for stakeholders to understand at a high level how the system works.
- The ConOps can be revised based on stakeholder comment before embarking on a demonstration.
- There are still numerous details to resolve, which are explained in subsequent sections.

Section 4: Financial Analysis

The financial analysis presented here follows direction received from the Legislature and Steering Committee

- The Legislative proviso directing this work includes the following requirements that relate to financial analysis:
 - “The work plan must include... a financial analysis evaluating the operational concept.”
 - “The work plan must consider phasing and staging of how a road usage charge would be implemented as it relates to the types of vehicles that would be subject to a road usage charge and the nature and manner of a transition period.”
 - “To reduce system development and operational costs, for road user charge options that rely on in-vehicle devices to record mileage, the work plan must recommend how the State can utilize the technology and back-office platforms that are scheduled to be provided by commercial account managers under the Oregon road usage charge program.”
- The Steering Committee directed the financial analysis to use these assumptions:
 - Assume a start date for road usage charging in FY 2019.
 - Consider road usage charges only for light vehicles ($\leq 10,000$ pounds gross vehicle weight rating, or GVWR).
 - Select a per-mile rate such that the average vehicle would pay the same under a policy of road usage charging as under a policy of fuel taxes using 2015 estimates.
 - Explore several ways to phase in a road usage charge, both in terms of **which vehicles get charged** and how those vehicles would **transition** into a road usage charge system focusing on these possibilities:

Vehicles to Charge

10,000 pounds GVWR or less regardless of fuel type

Above the average fuel economy rating

Newer than a certain model year

Transition

Enroll at registration

Enroll at title transaction

The financial analysis forecasts net revenues from road usage charges to be greater than from fuel taxes in all combinations of policy and economic conditions – despite higher collection costs.

- The financial analysis spanned the period from 2019 to 2043 and considered:
 - **Four economic scenarios** reflecting various possible future growth trends for light vehicle fleet size, statewide vehicle miles traveled (VMT), and fleet fuel economy; and
 - **Eleven policy alternatives:** one without road usage charging (and the fuel tax stays as-is) and 10 road usage charge alternatives, all of which assume the fuel tax remains in place but that some portion of the fleet transitions to road usage charges.
 - We assumed no vehicle ever pays both fuel tax and road usage charge – only one or the other.
 - We further assumed the per-gallon rate of the fuel tax and per-mile rate of the road usage charge would be constant over the 25-year horizon.
- Expected improvements in fleet fuel economy drive the strong performance of road usage charging relative to fuel tax.
- Net present value (NPV) of the 10 road usage charge alternatives ranged from \$1.3 to 7.2 billion larger than the fuel tax.
- On a year-by-year basis, net revenues from road usage charging alternatives were forecast to exceed fuel tax net revenue in the first, second, or third year, depending on the scenario.
- Road usage charges would be more costly to collect than fuel taxes, with operating cost ranging from 3.2 to 9.7 percent of revenue, compared with 0.5 to 0.6 percent for light vehicle fuel tax over 25 years.

Due to new assumptions, results from this year are not directly comparable to last year’s results.

Assumption	Last year	This year
Vehicles subject to road usage charges	Only nondiesel vehicles pay road usage charges	Three scenarios: 1) all light vehicles (≤ 10 k pounds) pay road usage charges; 2) vehicles above 2015 Washington fleet average fuel economy; and 3) light vehicles MY 2019 or newer
Fuel tax status	Stop collecting the gasoline tax, but keep collecting the diesel tax	Keep collecting all fuel taxes (gasoline and diesel), but credit fuel taxes paid toward road usage charges owed by subject vehicles
Road usage charge start date	2015	July 1, 2018 (FY 2019)
Transition	All-at-once	Three scenarios: 1) enroll in road usage charge upon registration renewal; 2) enroll upon a title transaction; and 3) enroll upon titling a MY 2019 or newer vehicle
Methods of collection	Consider Methods A, B, and C independently and in combination	All Methods (A, B, C, and D) available simultaneously
Per-mile rate	Rate is revenue neutral with gross gasoline tax revenues in 2015	Rate is revenue neutral with gross fuel tax revenues from light vehicles in 2015
Commercial account managers	Not assumed	Not assumed, but cost savings from private account management approximated for Method C
Evasion	Evasion accounted as a “cost”	Evasion accounted as a subtraction from gross revenues

The purpose of the financial analysis is to compare long-term revenue policy alternatives under various scenarios.

- The horizon of our analysis is 25 years, covering FY 2019 to FY 2043.
- The analysis focuses on comparing road usage charges to the State’s existing fuel tax. We did not consider the impact of broader funding issues, such as possible declines in Federal fuel tax allocations to Washington or changes in other state revenue sources.
- Revenue predictions are highly uncertain. Therefore, we assembled several scenarios to understand the relative impact of underlying trends on fuel tax and road usage charge revenues considering:
 - Vehicle miles traveled (VMT) by light vehicles in Washington;
 - On-road fuel economy of the Washington light vehicle fleet, expressed in miles per gallon (MPG); and
 - Number of light vehicles in the Washington fleet.
- Likewise, cost predictions over 25 years are highly uncertain. We took a cautious view and adopted conservative assumptions about future-cost savings. We also conducted sensitivity analyses to understand key drivers of revenue leakage and cost of collection. Several factors could cause future costs to diverge significantly from our projections, including:
 - Policy choices made today, such as which road usage charge methods to offer, how strictly to enforce with penalties and other mechanisms, and how closely to integrate road usage charging with existing state processes.
 - Technology evolution and availability, including back office hardware and software, in-vehicle devices, and telecommunications.
 - The decision whether to allow commercial account managers (e.g., through the Oregon platform) to collect road usage charges from Washington motorists, and the ultimate cost and performance of the Oregon platform.

We created four economic scenarios, each reflecting a combination of future trends in fleet size, statewide VMT, and fleet fuel economy resulting.

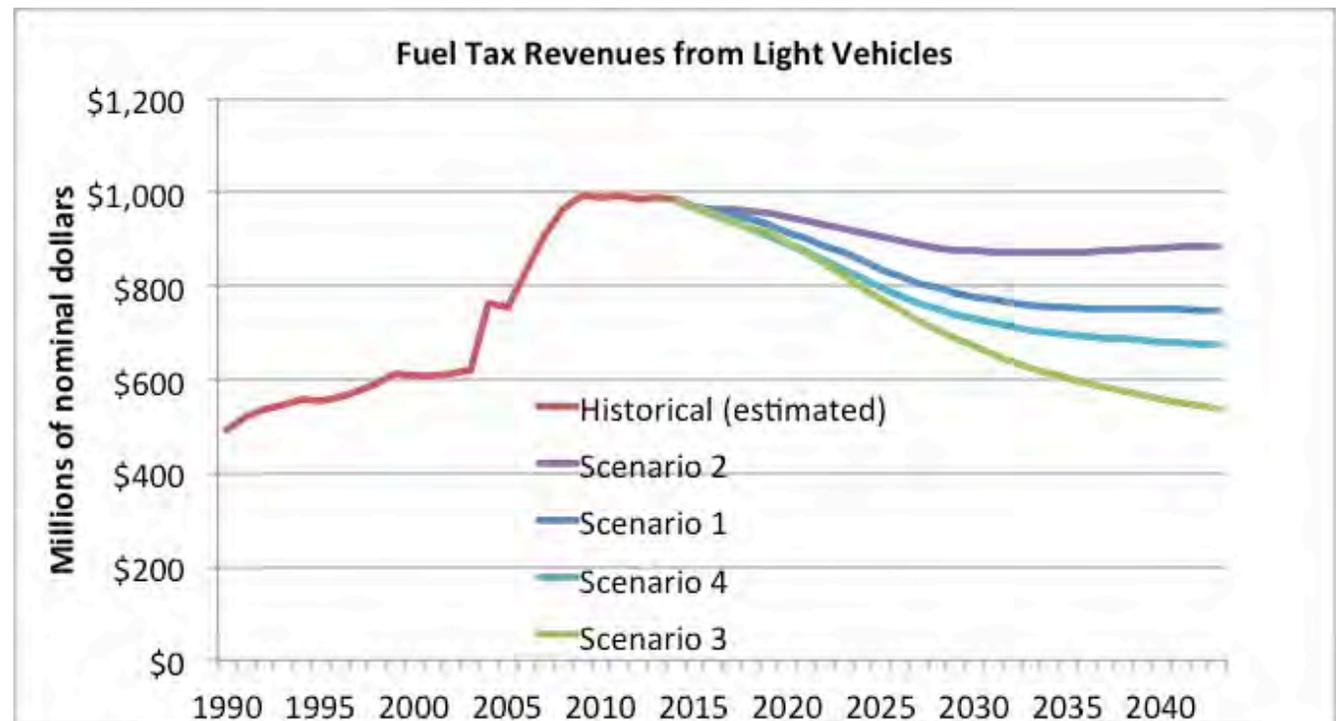
- The following four pages summarize the four economic scenarios showing a unique combination of future trends in light vehicle fleet size, statewide light vehicle VMT, and light vehicle fleet fuel economy.
- Each scenario starts from the same 2014 estimates of light vehicle fleet size, VMT, and fuel economy.
- The most optimistic revenue scenario for fuel taxes (scenario 2) is based on increasing VMT and small improvements in fleet fuel economy, while the most pessimistic revenue scenario (scenario 3) is based on flat/declining VMT and improvements in fleet fuel economy in line with current Federal CAFE standards.
- Refer to Appendix B for detailed documentation of the assumptions used.

Scenario 1: VMT grows and fleet fuel economy improves.

Scenario 2: VMT growth and small improvements in fleet fuel economy.

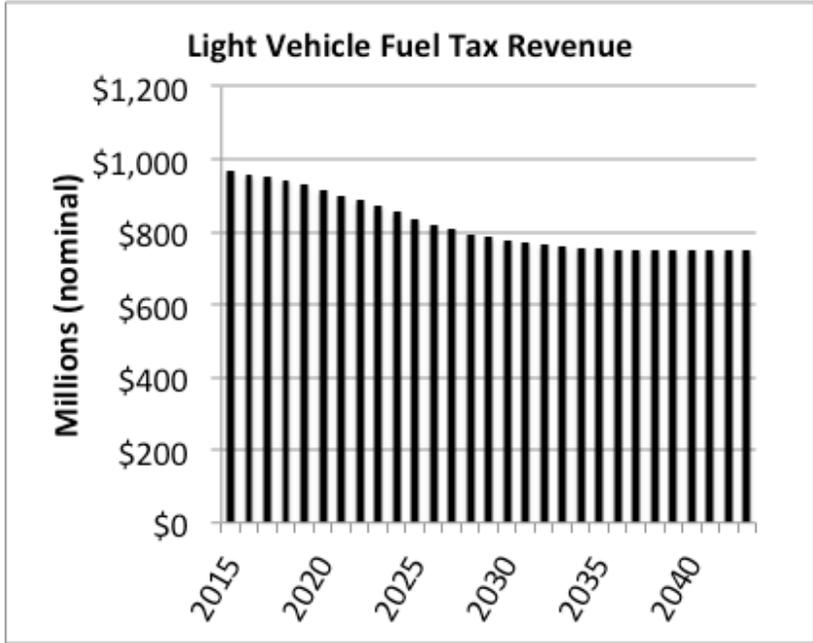
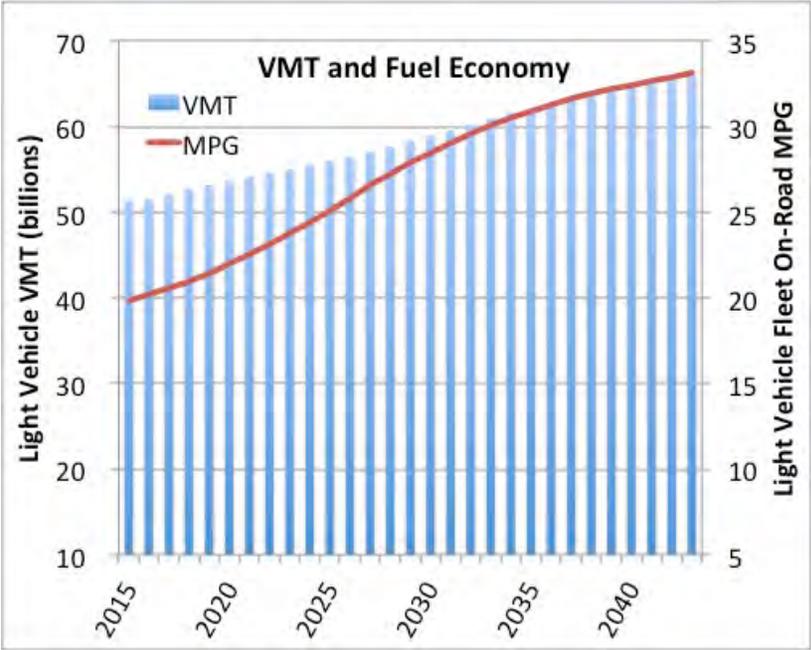
Scenario 3: Flat/declining VMT and fleet fuel economy improves.

Scenario 4: VMT growth and fuel economy improvement, but fewer vehicles.



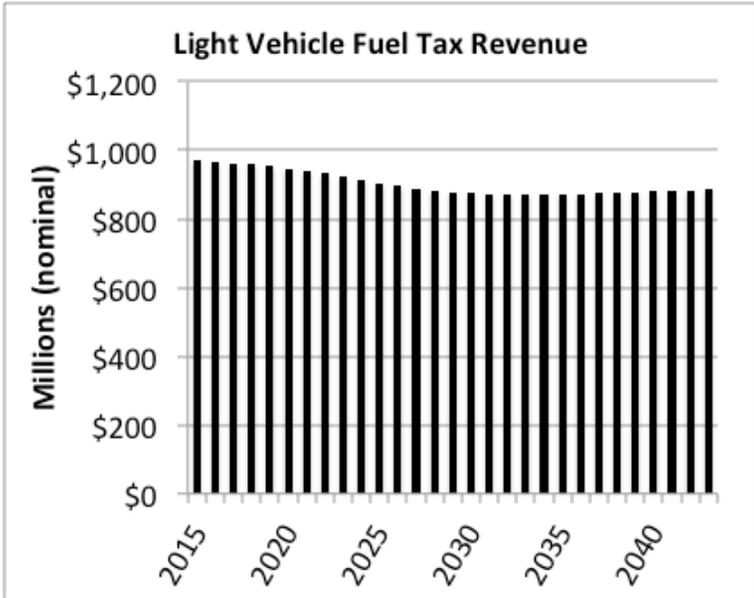
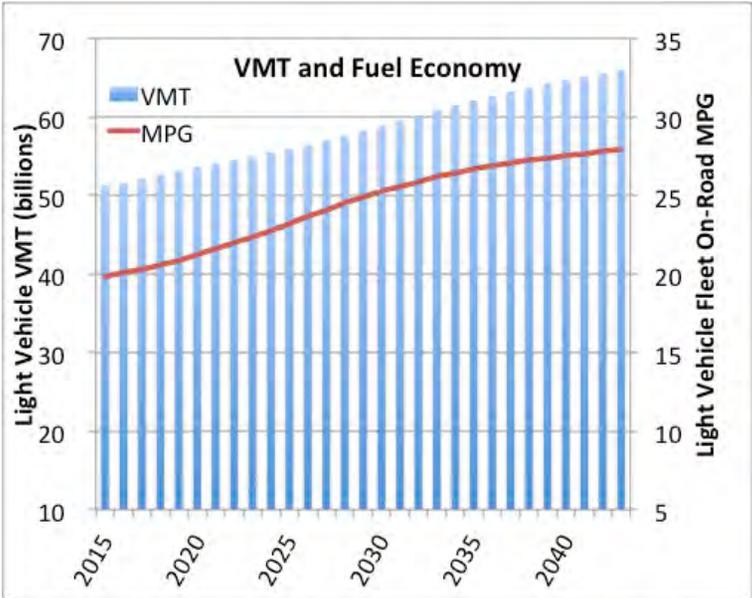
Economic Scenario 1: VMT grows and fleet fuel economy improves.

Factor	Assumption
Light vehicle fleet growth	Grows in line with historical trends, reflecting underlying growth in state population.
Statewide VMT	Miles traveled per licensed driver decline through 2020, then increase slowly beyond 2020, never reaching their prerecession peak. In aggregate, this means statewide light vehicle VMT grow steadily.
Fleet fuel economy	Improves in line with current industry and regulator expectations, reflecting CAFE standards and adoption of new vehicle technologies. However, fuel economy still lags the national average, reflecting slower fleet turnover in Washington relative to the rest of the country.



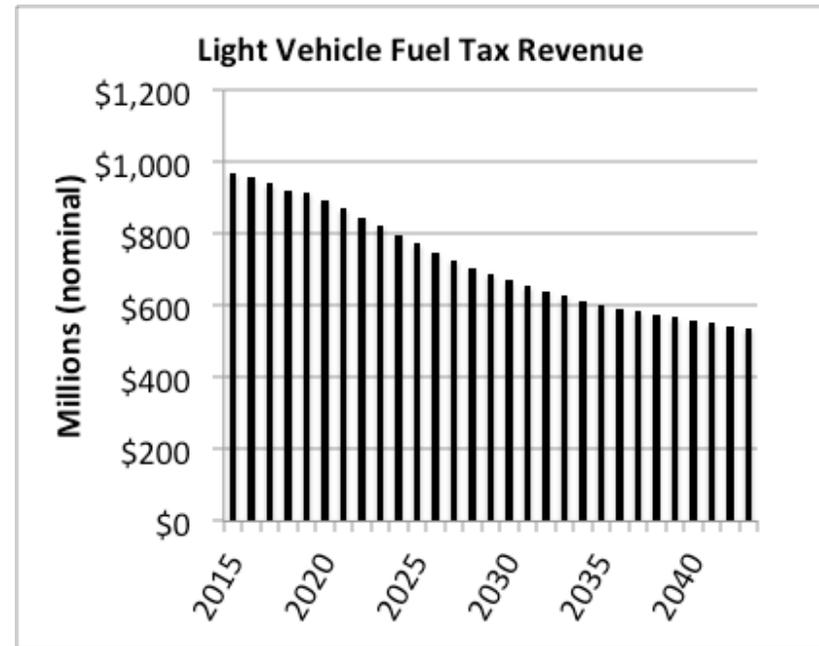
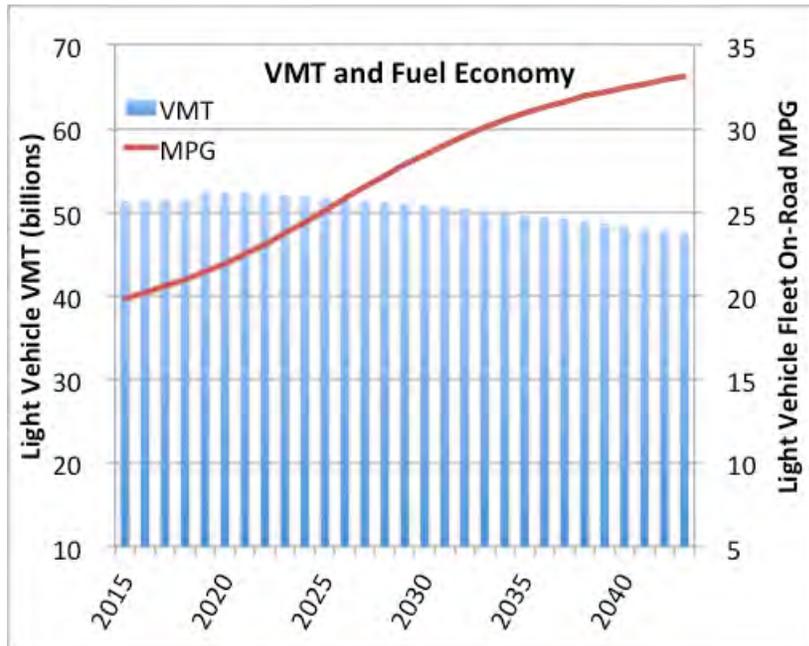
Economic Scenario 2: VMT growth and small improvements in fleet fuel economy.

Factor	Assumption
Light vehicle fleet growth	Grows in line with historical trends, reflecting underlying growth in state population.
Statewide VMT	Miles traveled per licensed driver decline through 2020, then increase slowly beyond 2020, never reaching their prerecession peak. In aggregate, this means statewide light vehicle VMT grow steadily.
Fleet fuel economy	Improves more slowly than expected by industry and regulators.



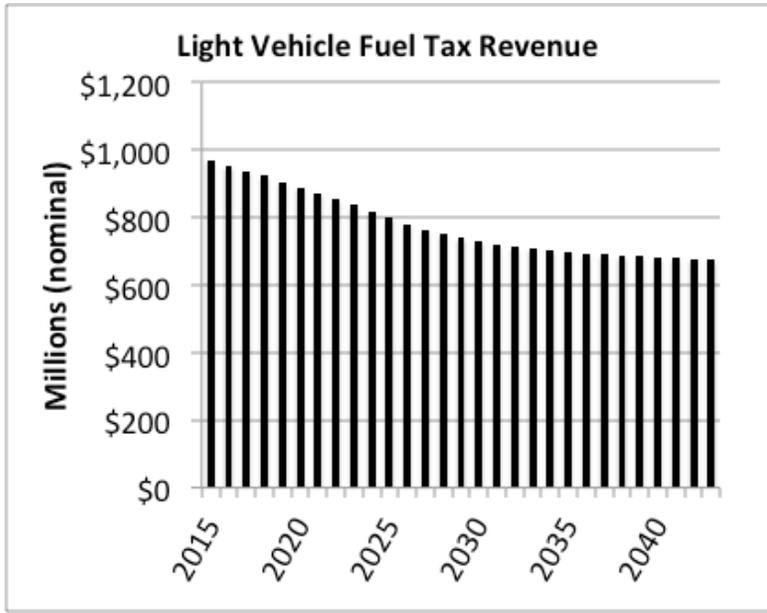
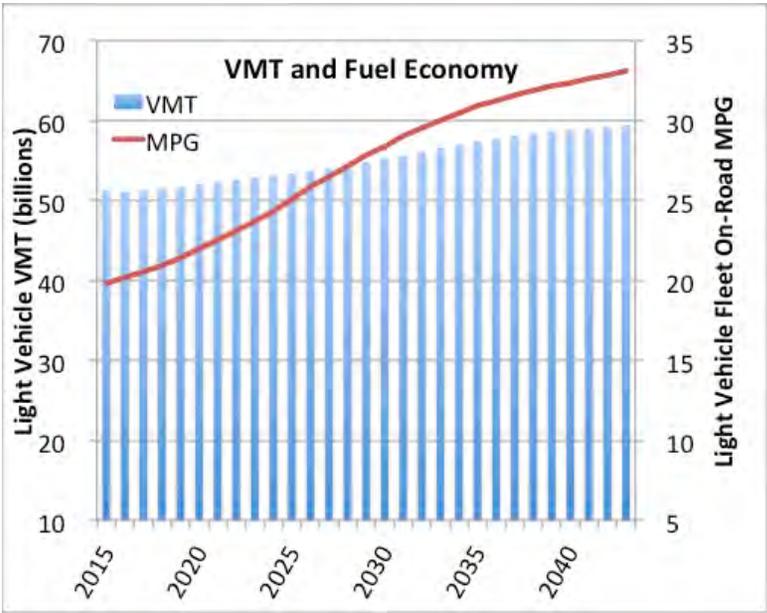
Economic Scenario 3: Flat/declining VMT and fleet fuel economy improves.

Factor	Assumption
Light vehicle fleet growth	Grows in line with historical trends, reflecting underlying growth in state population.
Statewide VMT	Miles traveled per licensed driver declines continuously through 2043. In aggregate, this means statewide light vehicle VMT increase briefly, and then decline steadily from 2020 onward.
Fleet fuel economy	Improves in line with current industry and regulator expectations, reflecting CAFE standards and adoption of new vehicle technologies. However, fuel economy still lags the national average, reflecting slower fleet turnover in Washington relative to the rest of the country.



Economic Scenario 4: VMT growth and fuel economy improvement, but fewer vehicles.

Factor	Assumption
Light vehicle fleet growth	Grows more slowly than historical trends, reflecting lower rates of car ownership and/or slower growth in state population.
Statewide VMT	Miles traveled per licensed driver decline through 2020, then increase slowly beyond 2020, never reaching their prerecession peak. In aggregate, this means statewide light vehicle VMT grow steadily but since there are fewer vehicles, VMT grows at a slower rate than in economic scenarios 1 and 2.
Fleet fuel economy	Improves in line with current industry and regulator expectations, reflecting CAFE standards and adoption of new vehicle technologies. However, fuel economy still lags the national average, reflecting slower fleet turnover in Washington relative to the rest of the country.



We evaluated 11 policy alternatives using each of the four economic scenarios – this provides a broad range of potential future outcomes (see next page)

- Policy alternative 1 represents status quo: keep the fuel tax only.
- Policy alternatives 2 through 11 represent road usage charge approaches.
 - In all road usage charge alternatives, all vehicles subject to road usage charges that consume fuel will continue to pay fuel taxes, since taxes would continue to be included in the price at the pump.
 - Any fuel tax paid would be credited toward road usage charges owed, through either direct measurement (Method C) or estimation (Method B).
- Since there are different costs associated with each of the road usage charge payment methods, we also varied our assumptions about how many motorists would choose each method.
 - This was important since different payment methods would have different costs of collections.
- The four economic scenarios combined with 11 policy alternatives yielded 44 separate scenarios.

Financial Analysis Findings

- Road usage charges are expected to be more costly for the State to collect than fuel taxes alone.
- In our scenarios, the NPV of road usage charges increasingly outperforms fuel taxes alone as fleet fuel economy improves.
- The fuel tax is a distance-based charge, but the per-mile rate varies depending on vehicle fuel economy, and revenues decline as fuel economy improves.
- The pages that follow present the results of our analysis of the 11 policy alternatives in the context of 4 economic scenarios – 44 combinations in total.
 - For full documentation of the methodology and assumptions, please refer to Appendix B where we document the basic equations and assumptions used to calculate gross revenues, leakage, and costs.

Combinations of policy alternatives and percentages of motorists choosing different payment methods.

Policy Alternative	Vehicles subject to road usage charge	Vehicles not subject to road usage charge	Transition Approach	Percent of Motorists Choosing		
				Method A	Method B	Method C
1	None	All	N/A	0%	0%	0%
2	All	None	Tab renewal	5%	75%	20%
3	All	None	Tab renewal	5%	20%	75%
4	All	None	Title transaction	5%	75%	20%
5	All	None	Title transaction	5%	20%	75%
6	>19.5 MPG	<19.5 MPG	Tab renewal	5%	75%	20%
7	>19.5 MPG	<19.5 MPG	Tab renewal	5%	20%	75%
8	>19.5 MPG	<19.5 MPG	Title transaction	5%	75%	20%
9	>19.5 MPG	<19.5 MPG	Title transaction	5%	20%	75%
10	MY 2019 or newer	MY 2018 or older	Model year	5%	75%	20%
11	MY 2019 or newer	MY 2018 or older	Model year	5%	20%	75%

Note: Since Method D represents a variation on how Methods B or C would be implemented, we did not separately estimate the number of people choosing method D. This is a conservative approach since the state would not bear any hardware costs for Method D, though we assume the state does bear these costs for Method C.

Road usage charges are expected to be more costly for the State to collect than fuel taxes alone.

- In our analysis, we estimate the cost to collect road usage charges ranges from 3.4 to 11.0 percent of gross revenues. This reflects the present value of all costs – capital and operating – over the 25-year period, as a percentage of the present value of adjusted gross revenues (revenues minus evasion).
 - Annual operating costs (excluding capital costs) range from 0.8 to 11.6 percent in any given year, with an average of 6 percent.
 - Total operating costs (excluding capital costs) over the 25-year period range from 3.2 to 9.7 percent, on an NPV basis.
- By comparison, we estimate the operating cost of light vehicle fuel tax never exceeds 1.1 percent of revenues in any year, and averages 0.5 to 0.6 percent over the 25-year horizon on an NPV basis. This value does not include any capital costs such as hardware and software acquisition and upgrades.
- The largest cost category in all scenarios is account management, which includes the direct cost of transactions (including, for example, credit card transaction fees paid by the State), customer service, device costs for Method C, equipment replacement costs for Method C, and communications costs for Method C.
- Commercial account managers could reduce cost of collection for Method C:
 - Prospective commercial account managers already have billing systems in place, as well as relationships with customers. The marginal cost of information technology (IT) and account management is small, and commercial account managers could recoup these costs by keeping a small transaction fee on all revenues collected on behalf of the State.
 - From a cost perspective, it would not be prudent to allow commercial account managers unless they can operate more cost effectively than the State. Therefore, we view our cost estimates as a ceiling.
 - Based on estimates from Oregon, it is conceivable that cost of collections of road usage charges could drop below five percent of revenues in the long term by employing commercial account managers.

Despite the higher costs of collection, we forecast all 10 road usage charge alternatives to yield more net revenue than the fuel tax alone over 25 years, regardless of the economic scenario.

- Road usage charge policy alternatives yield more net revenue on an annual cash flow basis in all years except 2019 and 2020, when startup costs of road usage charging would be incurred.
- These findings result from these considerations:
 - The fuel economy of the light vehicle fleet will improve such that declines in fuel tax revenue are forecast to be greater than the cost to collect road usage charges within one to five years, depending on the economic scenario.
 - Policies that feature a slower transition toward road usage charging (i.e., model year-based or title transaction-based) are forecast to have lower costs because they allow for a slow introduction of account management costs associated with road usage charging and incremental technology costs associated with in-vehicle devices.
 - Since we assume the fuel tax will remain in place under all policy alternatives, the opportunity for evasion of road usage charges is minimized.
 - Evasion efforts would only result in motorists avoiding the difference in fuel tax and road usage charging, leaving little incentive to attempt evasion of the road usage charge.

In all 10 road usage charge policy alternatives, we assumed that the state would continue to collect the fuel tax. Motorists subject to a road usage charge would receive a credit toward the road usage charge owed equal to the estimated or calculated amount of fuel tax paid. The State would also continue to bear the cost of collecting the fuel tax under all alternatives. All of these costs are reflected in the financial analysis.

Given the importance of fleet fuel economy, it is important to understand what Corporate Average Fuel Economy (CAFE) standards really mean.

- The National Highway Transportation Safety Administration (NHTSA) regulates Corporate Average Fuel Economy (CAFE).
 - CAFE is a set of lab-tested fuel economy standards across various classes of models of each automaker.
 - CAFE reflects a straight average across classes of models in a single make and does not necessarily reflect sales-weighted or on-road effective MPG, which could be higher or lower.
- Widely publicized CAFE standards are 35.5 MPG by 2016 and 54.5 MPG by 2025.
- The corresponding EPA “window sticker” is lower. Window sticker values are a more useful measure of actual on-road performance of new vehicles:⁵

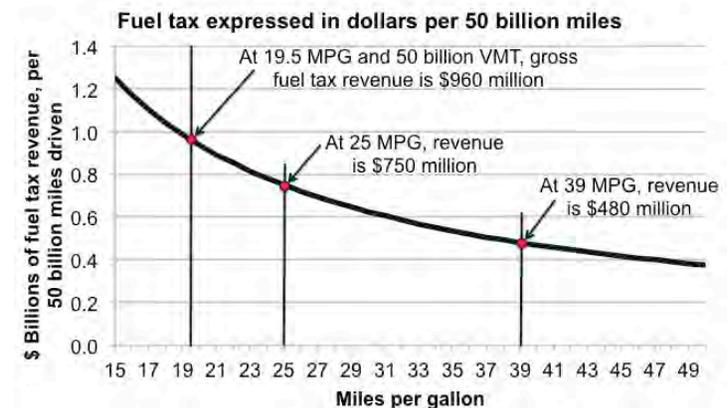
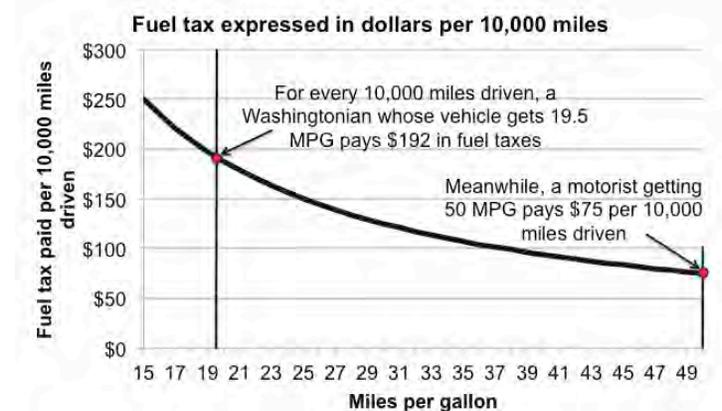
Expected MPG based on window sticker value

Category	2016	2025
Small cars	31	43
Sedans	24	34
Small light trucks	26	37
Big light trucks	19	23

⁵ U.S. EPA, Office of Transportation and Air Quality. *Fuel Economy Testing and Labeling: Questions and Answers*, EPA-420-F-14-015, April 2014.

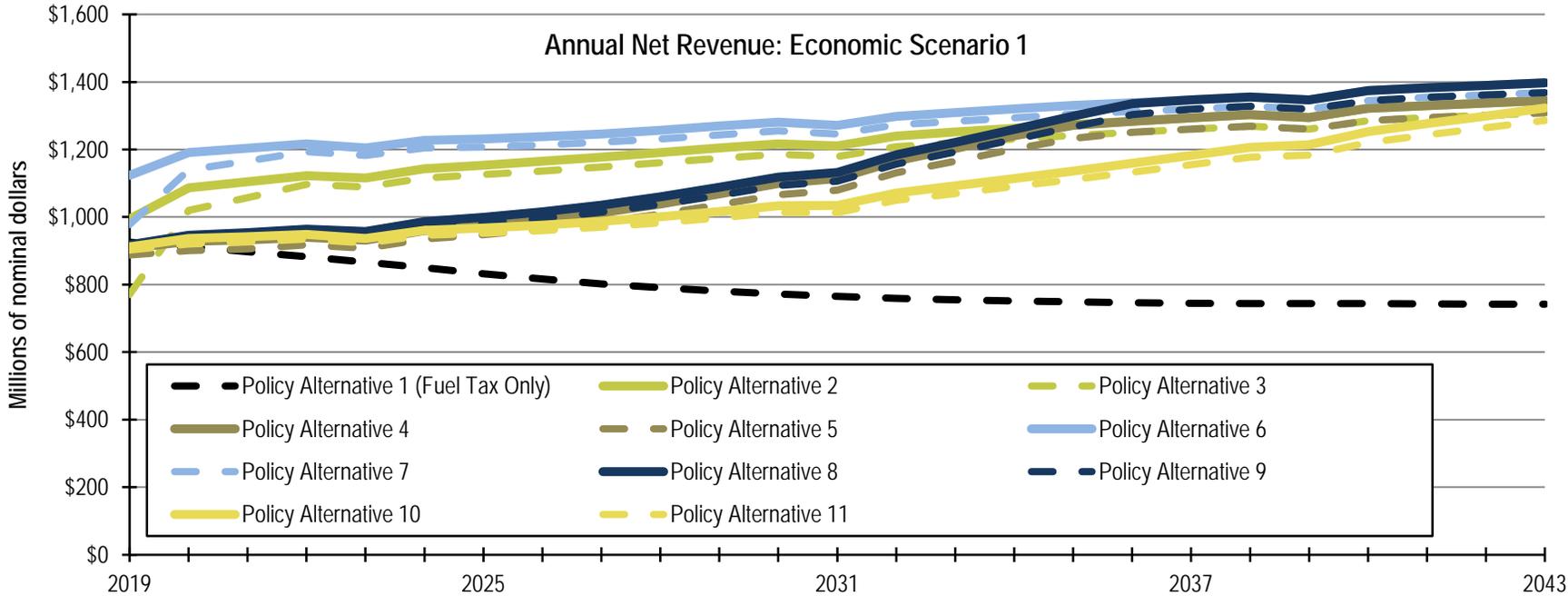
The fuel tax is a distance-based charge, but the per-mile rate depends on fuel economy – forecast fuel tax revenues decline as fuel economy improves.

- The top figure depicts the equivalent cost of fuel taxes per 10,000 miles driven as a function of a vehicle’s fuel economy (e.g., one vehicle for one year).
 - A vehicle averaging 19.5 MPG (the Washington average) pays \$192 in fuel taxes for every 10,000 miles driven.
 - By comparison, a vehicle averaging 50 MPG pays \$75 for the same mileage.
- The bottom figure shows the same curve scaled to 50 billion miles driven, which was approximately the amount of miles driven by light vehicles in Washington in 2014.
 - At 19.5 MPG, gross fuel tax revenue is \$960 million; at 25 MPG, gross revenue is \$750 million, and at 39 MPG, gross revenue is \$480 million.
- If MPG increases while VMT stays the same or declines, then fuel tax revenue will decline.
- If MPG and VMT change at the same rate in the same direction (increase, decrease, or remain flat), then fuel tax revenues will remain flat.
- If MPG remains flat or declines while VMT increases, then fuel tax revenue will increase.



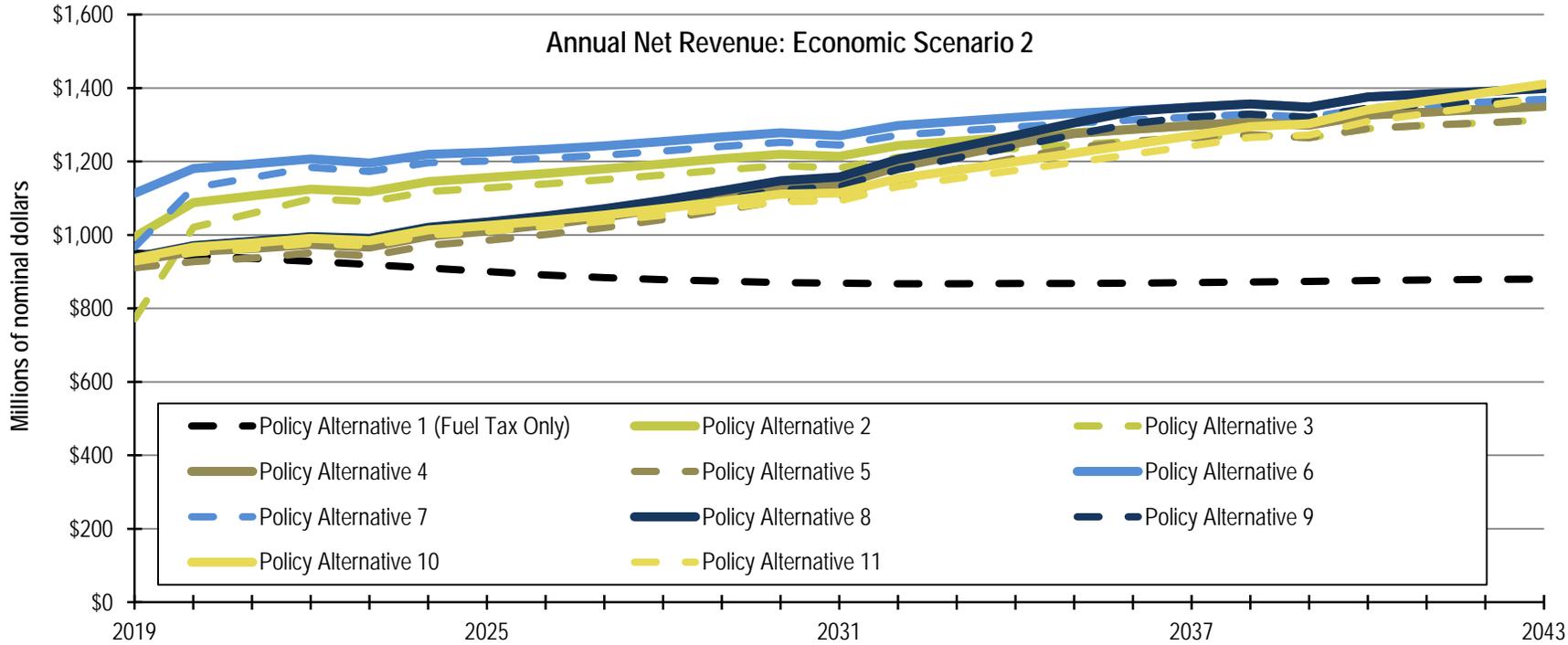
Economic Scenario 1: Road usage charge revenue estimated at \$3.4 to \$7.2 billion more than fuel tax over 25 years – 27 to 56 percent higher.

Measure	Outcome
NPV of fuel tax alone	\$12.8 billion
NPV of road usage charge policy alternatives	\$16.2 to \$20.0 billion
Year road usage charge revenue exceeds fuel tax revenue	Year 1 or 2 for nine of the policy alternatives. Year 3 for Alternative 5.



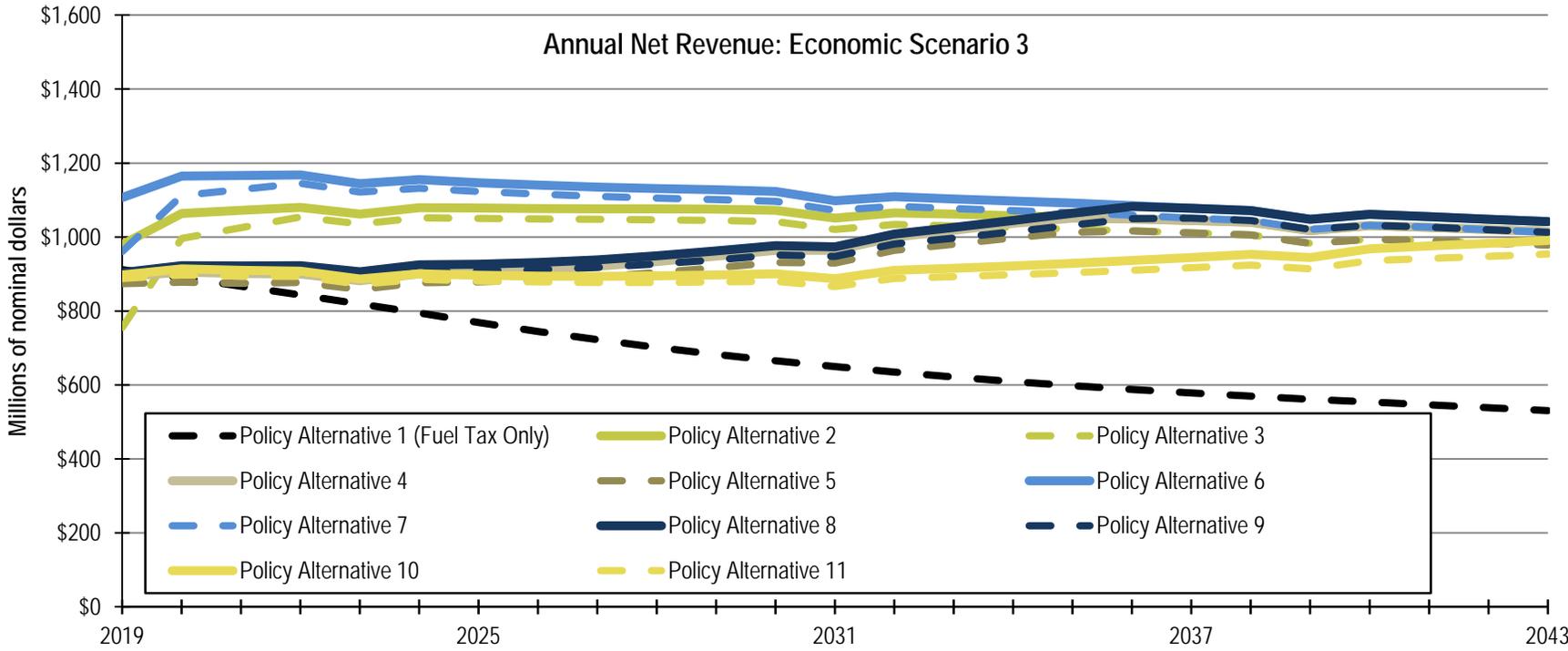
Economic Scenario 2: Road usage charge revenue estimated at \$3.0 to \$5.8 billion more than fuel tax over 25 years – 21 to 41 percent higher.

Measure	Outcome
NPV of fuel tax alone	\$14.1 billion
NPV of road usage charge policy alternatives	\$17.1 to 19.9 billion
Year road usage charge revenue exceeds fuel tax revenue	Year 1 or 2 for nine of the policy alternatives. Year 3 for Alternative 5.



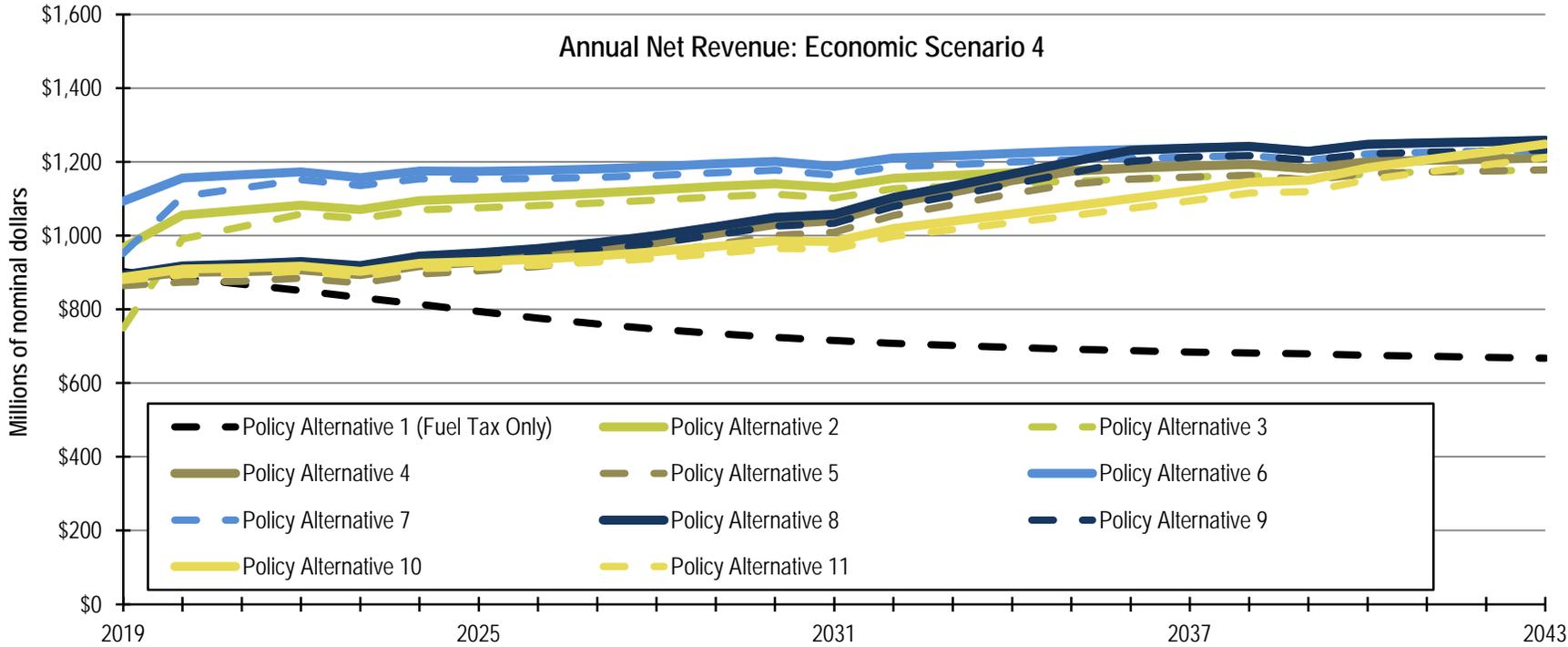
Economic Scenario 3: Road usage charge revenue estimated at \$2.9 to \$6.4 billion more than fuel tax over 25 years – 26 to 57 percent higher.

Measure	Outcome
NPV of fuel tax alone	\$11.2 billion
NPV of road usage charge policy alternatives	\$14.1 to 17.6 billion
Year road usage charge revenue exceeds fuel tax revenue	Year 1 or 2 for nine of the policy alternatives. Year 3 for Alternative 5.



Economic Scenario 4: Road usage charge revenue estimated at \$3.4 to \$6.7 billion more than fuel tax over 25 years – 28 to 55 percent higher.

Measure	Outcome
NPV of fuel tax alone	\$12.1 billion
NPV of road usage charge policy alternatives	\$15.5 to 18.8 billion
Year road usage charge revenue exceeds fuel tax revenue	Year 1 or 2 for nine of the policy alternatives. Year 3 for Alternative 5.



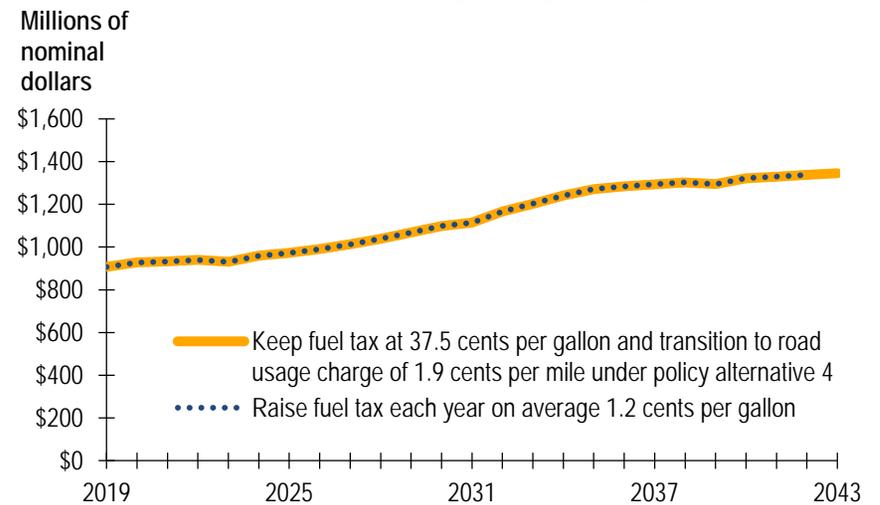
What fuel tax increase would be needed to match the expected revenue from road usage charges?

- With numerous economic and policy scenarios and various approaches to raising the fuel tax, there are a range of answers to this question.
- We considered two illustrative approaches to raising the fuel tax:
 - A single increase in 2019; and
 - Annual increases between 2019 and 2043.
- In both cases, we compare these fuel tax increases to road usage charge scenarios that:
 - Keep the rate at 1.9 cents per mile over the 25-year period (rather than increasing over time); and
 - Maintain the fuel tax at the current \$0.375 per gallon without increase.
- The next page shows the outcome of the analysis of the annual increase approach, and the page after addresses the one-time increase approach.

Annual increases in fuel tax from 2019 to 2043 ranging from 0.8 to 1.5 cents per gallon would be needed to match the NPV of road usage charge revenue from light vehicles.

Economic Scenario	Annual fuel tax increase required to match road usage charge NPV (cents per gallon)	Total fuel tax increase over 25 years (cents per gallon)	Resulting Fuel tax rate in 2043 (cents per gallon)
1	1.1 to 1.4	27.5 to 35.0	65.0 to 72.5
2	0.8 to 0.9	20.0 to 22.5	57.5 to 60.0
3	1.2 to 1.5	30.0 to 37.5	67.5 to 75.0
4	1.2 to 1.4	30.0 to 35.0	67.5 to 72.5
Average	1.2	28.9	66.4

Examples of two revenue profiles with equivalent annual revenues under Economic Scenario 1: 1) raise fuel tax on light vehicles on average 1.2 cents per year; and 2) keep fuel tax at 37.5 cents per gallon and transition to road usage charge for light vehicles

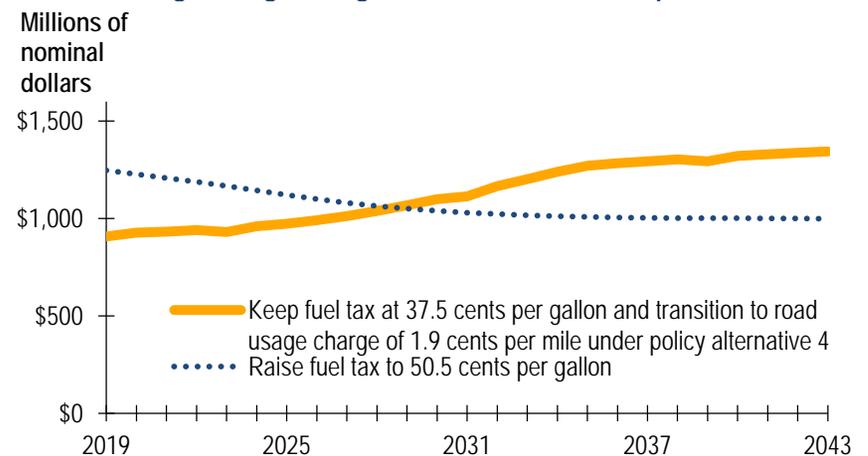


A one-time increase of 8 to 21 cents per gallon in 2019 would yield the same NPV of as road usage charge scenarios over the 2019 to 2043 period.

- This analysis does not match annual cash flows, but conceptually it implies a “trust” to hold excess revenues in early years that can be made available in later years when fuel tax receipts decline.
- By 2043, another large gas tax increase would be needed to maintain the same nominal revenue.

Economic Scenario	Fuel tax increase in 2019 to make NPV equal road usage charge revenue (cents per gallon)	Resulting fuel tax rate (cents per gallon)
1	10.0 to 21.5	47.5 to 59.0
2	8.0 to 15.5	45.5 to 53.0
3	10.0 to 21.5	47.5 to 59.0
4	11.0 to 21.0	48.5 to 58.5
Average	13.8	51.3

Examples of two revenue profiles with equivalent NPV under Economic Scenario 1: 1) raise fuel tax on light vehicles now versus; and 2) keep fuel tax at 37.5 cents per gallon and transition to road usage charge for light vehicles at 1.9 cents per mile



We tested the sensitivity of the technical assumptions to the estimated financial outcomes and found minimal effect.

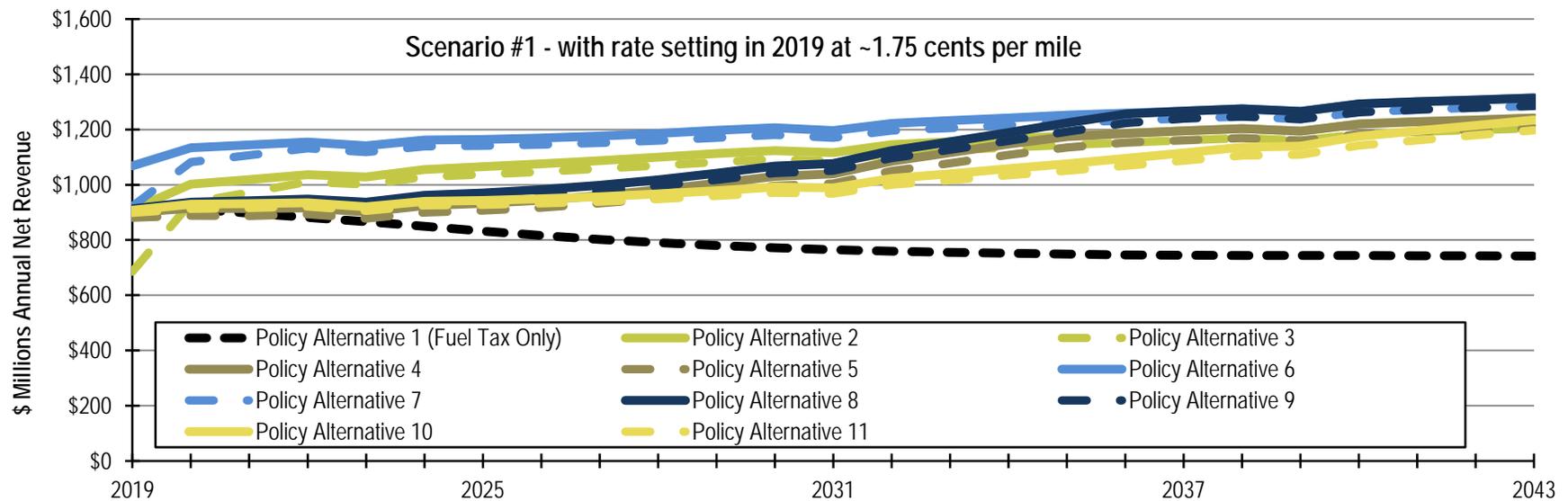
- Our financial analysis was based upon numerous assumptions with respect to the cost of collecting road usage charges – we tested whether large changes in these assumptions would change the relationship between expected NPV of road usage charges compared to fuel tax.
- We used Economic Scenario 1 together with Policy Alternative 11 as a reference case.
- We varied our assumptions in:
 - Revenue leakage rates;
 - Number of customers paying on-line;
 - Amount of time needed to audit an account; and
 - How much in-vehicle devices would cost.

Percent change in 25-year NPV for two combinations of economic scenarios and policy alternatives

Sensitivity Test	Economic Scenario 1, Policy Alternative 10 (Model-Year Transition, 75% B)	Economic Scenario 1, Policy Alternative 3 (Tab Renewal Transition, All Light Vehicles, 20% B)
Reference: Scenario 1, policy alternative 11	0%	0%
Triple leakage rates	-1.5%	-2.5%
Only 50% of customers pay on-line by 2029	-1.0%	-2.0%
Double audit time	-0.3%	-0.8%
Triple IT acquisition costs	-1.2%	-1.0%
Double device costs	-0.2%	0%

Setting the revenue-neutral rate in 2019 (rather than 2015) would result in lower revenues, but road usage charges would still outperform fuel taxes.

Measure	Outcome with 2015 rate setting	Outcome with 2019 rate setting
Per-mile rate	~1.9 cents per mile	~1.75 cents per mile
NPV of fuel tax alone	\$12.8 billion	\$12.8 billion
NPV of road usage charge policy alternatives	\$16.2 to \$20.0 billion	\$15.6 to \$18.9 billion
Year road usage charge revenue exceeds fuel tax revenue	Year 1 or 2 for nine of the policy alternatives. Year 3 for Alternative 5.	Year 1 or 2 for nine of the policy alternatives. Year 4 for Alternative 5.



We were asked to evaluate whether declines in fuel tax revenue from light vehicles will be more than made up by increases from heavy vehicles.

- We found that fuel tax revenue from heavy vehicles at current fuel tax rates would not offset revenue declines from light vehicles either on a per-mile basis or total.
- We considered four potential scenarios of future truck VMT and fuel economy to evaluate this.
- The results are presented on the following four pages.

We found similar trends when considering fuel tax revenue from heavy vehicles

- There are two trends that threaten to undermine heavy vehicle fuel tax revenues:
 - For the first time ever, fuel economy standards have been implemented for medium-duty and heavy-duty trucks (all classified as “heavy vehicles” for purposes of our analysis), beginning in model years 2012 and 2014, respectively. As truck fuel economy improves, fuel consumed and therefore fuel tax revenues will decline per-mile driven. EIA projects a 16 percent increase in fuel economy by 2035.
 - Manufacturers are building and fleets are beginning to adopt trucks powered with alternative fuels as liquefied natural gas (LNG), compressed natural gas (CNG), and propane.⁶ Washington State currently does not tax these fuel sources.⁷ EIA projects about 10 percent of energy consumed by trucks in 2040 will come from these alternative sources.
- The revenue risk from even small improvements in truck fuel economy is substantial.
 - A truck improving from 6 to 7 MPG causes greater revenue loss than a car improving from 20 to 30 MPG, even if they drive the same number of miles. For example, for a 100-mile trip:
 - A truck at 6 MPG consumes 16.7 gallons. At 7 MPG it consumes only 14.3 gallons, a loss of 2.4 gallons.
 - The car, driving the same 100 miles, consumes 5 gallons at 20 MPG and 3.3 gallons at 30 MPG, a loss of 1.7 gallons.
- Total Truck VMT in Washington declined sharply from 2007 to 2013, with a small increase in 2014. If truck VMT growth returns to historical levels, fuel consumed by trucks driving more miles could offset losses due to fuel economy improvements. However, revenue per-mile driven remains likely to decline because of the above factors.

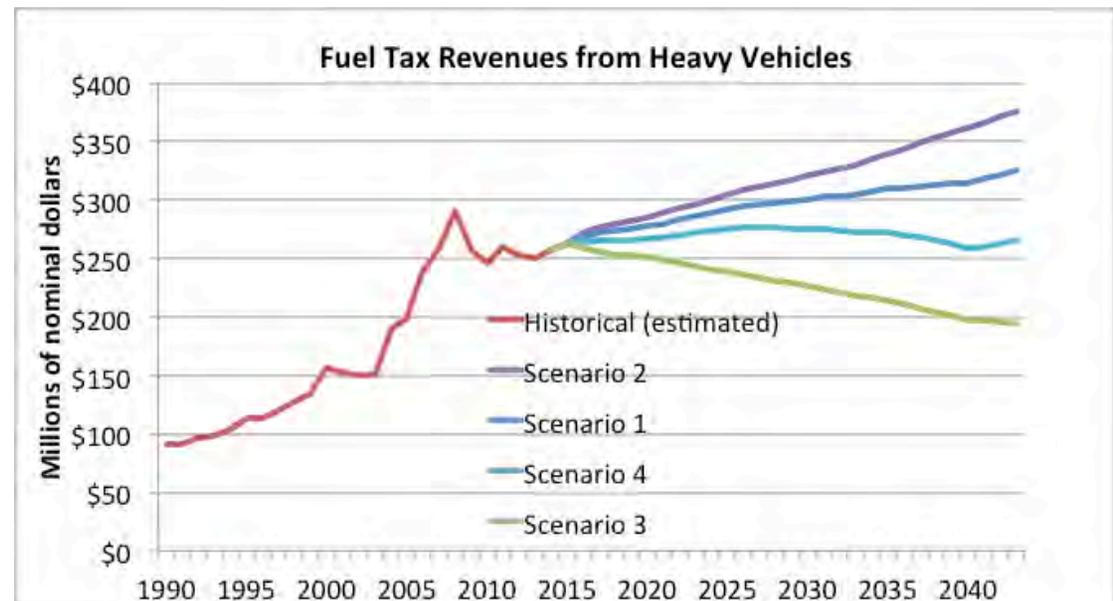
⁶ *Transport Topics, Special Report: Alternative Fuels*, December 2013.

⁷ Alternative fuel vehicles pay a flat annual fee (e.g., \$781.25 for the heaviest category of vehicles). Per legislation passed in 2014, DOL is currently studying adjustments to this fee. An additional study examining switching vehicles from an annual fee to a fuel tax is due in December 2015.

We created four scenarios of heavy truck fuel tax revenue paralleling the scenarios for light vehicle fuel tax.

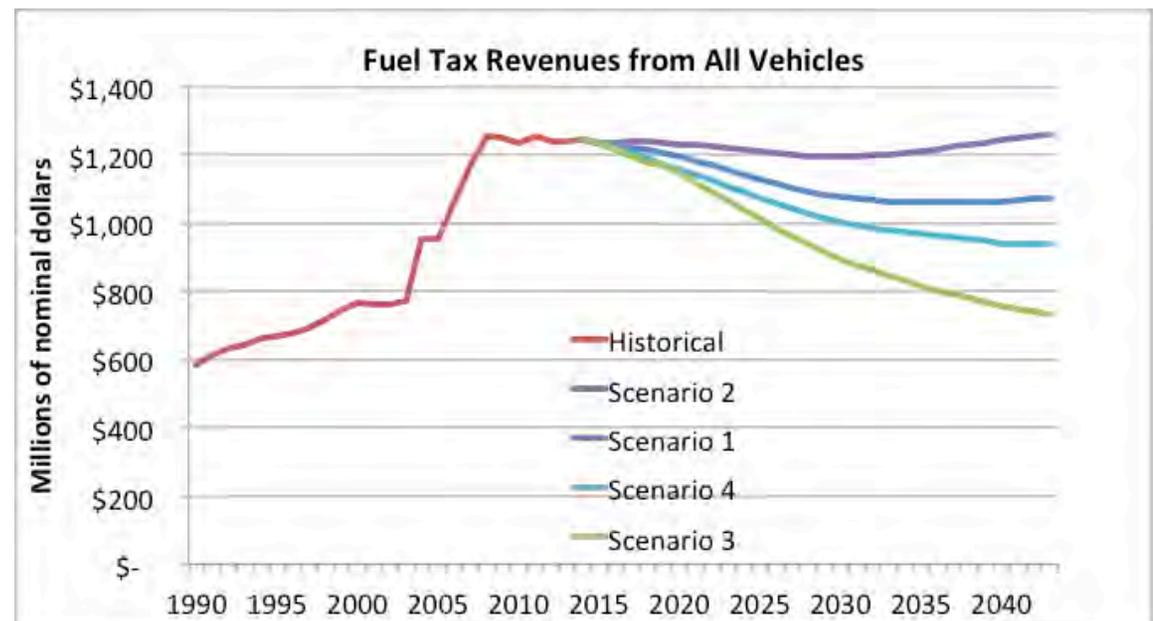
Methodological details, including equations, assumptions, and references to source data can be found in Appendix C.

- **Scenario 1** involves increasing VMT, improvements in the fuel economy of Washington’s heavy fleet, from 8.4 to 9.5 MPG, and adoption of alternative fuel trucks.
- **Scenario 2** involves increasing VMT, slow improvements in fuel economy of the heavy fleet (from 8.4 to 9.1 MPG), and zero adoption of alternative fuel trucks.
- **Scenario 3** involves flat/declining VMT, improvements in the fuel economy of Washington’s heavy fleet, from 8.4 to 9.5 MPG, and adoption of alternative fuel trucks.
- **Scenario 4** involves moderate growth in truck VMT, improvements in the fuel economy of Washington’s heavy fleet, from 8.4 to 9.5 MPG, and adoption of alternative fuel trucks.



We added heavy vehicle fuel tax revenues to each of the four economic scenarios, and still expect declines in the future.

- Each scenario starts from the same 2014 estimates of light + heavy vehicle fleet size, VMT, and fuel economy.
- The most optimistic revenue scenario for fuel taxes (scenario 2) is based on increasing VMT for all vehicles and small improvements in fleet fuel economy, while the most pessimistic revenue scenario (scenario 3) is based on flat/declining VMT and improvements in fleet fuel economy in line with current Federal CAFE standards and adoption of alternative fuels in the heavy vehicle fleet up to 9.6 percent by 2040.
- Refer to Appendix C for detailed documentation of the assumptions used.



We reanalyzed the question about fuel tax equivalency discussed on pages 57-59 with road usage charging considering fuel tax revenue from both light and heavy vehicles.

■ We found that:

- The following two policy scenarios result in equal net revenues **each year** over the period 2019 to 2043:
 - Assess a road usage charge of 1.9 cents per mile on light vehicles and a fuel tax at 37.5 cents per gallon on heavy vehicles.
 - Increase fuel taxes on all vehicles, light and heavy, by 0.5 to 1.1 cents per gallon per year, every year from 2019 to 2043, depending on the scenario.
- A **one-time** fuel tax increase of 6 to 16 cents per gallon, depending on the policy scenario, would have equal NPV as implementing a 1.9 cent per-mile road usage charge over the period 2019 to 2043 (while keeping the 37.5 cent per gallon fuel tax in place for heavy vehicles and vehicles not paying road usage charges).
 - This analysis does not match annual cash flows, but conceptually it implies a “trust” to hold excess revenues in early years that can be made available in later years when fuel tax receipts decline.
 - Another large increase in fuel tax would be needed in 2043 to maintain the same revenue level as road usage charges beyond that year.

Section 5: Supplemental Work Prepared by Others

2014 Supplemental Transportation Budget (ESSB 6001) directed several supplemental studies related to road usage charging to be conducted by WSTC, WSDOT and OST in parallel to the other work reported herein.

This section summarizes the work of the three supplemental studies, with the complete reports on the accompanying CD.

WSTC (Section 205)

(7) Within existing resources, the commission shall undertake a study of the urban and rural financial and equity implications of a potential road usage charge system in Washington. The commission shall work with the department of transportation and the department of licensing to conduct this analysis.⁸

WSDOT (Section 214)

(4) \$21,000 of the motor vehicle account-state appropriation is provided solely as matching funds for the department to partner with other transportation agencies located in the western region of North America to develop strategies and methods for reporting, collecting, crediting, and remitting road usage charges resulting from interjurisdictional travel. At least one partnering jurisdiction must share a common border with Washington.

Treasurer's Office (Section 703)

The office of the state treasurer shall explore the fiscal implications with respect to outstanding motor vehicle fuel transportation bonds and to future transportation bond sales, relating to any reduction, refunding, crediting, or repeal of the motor vehicle fuel tax, in whole or in part, that may occur in a transition to a potential road usage charge by which transportation activities may be funded in the future. The exploration of fiscal implications must examine possible effects on the state credit rating, interest rates, and other factors that affect the cost of financing transportation projects.

⁸ Subsection 7. See Appendix A for complete budget proviso.

Urban/Rural Equity

WSTC worked with WSDOT, DOL, and Legislative Staff to evaluate urban and rural financial and equity implications of a road usage charge.

- The study compared estimated and perceived differences in rural and urban driving activity and the resultant tax burden in three steps:
 - Created a model to compare estimated fuel tax payments with hypothetical road usage charge payments for light-duty vehicles registered to urban and rural residents in Washington State.
 - The comparison only applied to personal light-duty vehicles registered in Washington State, excluding light-duty commercial vehicles.
 - The model combined vehicle fuel economy and VMT assumptions to simulate differences in tax or fee payments.
 - Used the Voice of Washington State (VOWS) survey panel to develop a household inventory and mileage survey.
 - The VOWS survey provided perception data and information about the characteristics of household vehicles in urban and rural areas of Washington State.
 - Used the U.S. Census OnTheMap application to analyze commuting patterns data for workers in Washington State.

Urban/Rural Equity

The urban/rural equity evaluation found that rural drivers would pay slightly less under a road usage charge than they do now, and urban drivers would pay slightly more.

Tax Burden Comparison

- The tax burden for each group does not appear to significantly change with a switch from the current fuel tax to a hypothetical road usage charge.
- Rural residents tend to drive less fuel efficient vehicles and drive more miles per year than residents living in an urban area. This combination results in reduced road usage charge payments for rural drivers.
 - Under a road usage charges, rural drivers would pay about four dollars less than average per year and urban drivers would pay about two dollars more than average than under the current fuel tax.

Perceived Differences in Travel Characteristics from the VOWS

- The VOWS survey suggests:
 - Rural households report driving more miles per year than urban households.
 - There is little perceived difference between fuel economy of urban and rural drivers.

Commute Patterns of Workers in Washington State

- Both urban and rural Washington commuters commute longer distances, on average, in 2011 than in 2002,
- Washington workers who live in rural areas have a longer commuting distance than those who live in urban areas.

Interjurisdictional Issues

WSDOT led a study that examined interjurisdictional issues related to road usage charges through the Western Road Usage Charge Consortium.

- The legislature directed the Washington State Department of Transportation (WSDOT) to partner with other transportation agencies located in the western region of North America to develop strategies and methods for reporting, collecting, crediting, and remitting road usage charges resulting from interjurisdictional travel.
- WSDOT's Public-Private Partnerships Office led the study through the Western Road Usage Charge Consortium (WRUCC), carried out with the state DOTs of California, Colorado, Montana, Oregon, and Texas as joint funding partners.
- The study found that there is a wide range of policy and operational approaches for states with road usage charges to consider when addressing visitors, including charging visitors to use the roads through shadow charges, time-based fees, or mileage-based fees.
- Charging across state boundaries (and internationally) requires considering:
 - Individual circumstances and unique issues for each jurisdiction
 - Policy basis for charging visitors and corresponding operational concept(s) to implement the policy.
 - Multijurisdictional coordination for reconciliation of motorist payments.
- Multijurisdictional coordination can take many forms
 - Bilateral agreements on a case-by-case basis.
 - Multilateral agreement(s) among jurisdictions, with a clearinghouse that handles either:
 - Partial reconciliation (data only).
 - Full reconciliation (data and funds transfers).
- Enforcement can be coordinated across jurisdictions as well.

Interjurisdictional Issues

Leaving the fuel tax in place for visitors is the easiest and most cost-effective way to address payment of road usage charges by out of state travelers.

- There is a wide range of policy and operational approaches for states with road usage charges to deal with visitors:
 - Not all solutions are feasible or desirable.
 - It is likely that some combination of approaches is optimal, and there will be evolution over time.
 - In particular, the easiest approach at the start would be to leave fuel tax in place for visitors.
 - Precedents such as the International Fuel Tax Agreement (IFTA), and European e-vignette can inform the design of a solution.
- Consideration of equity issues is important in designing a policy solution:
 - Treatment of residents versus visitors.
 - Treatment of visitors versus visitors.
- Tax arbitrage (buying fuel in one state to avoid high fuel taxes in another) and evasion incentives also need to be considered.

Possible Next Steps:

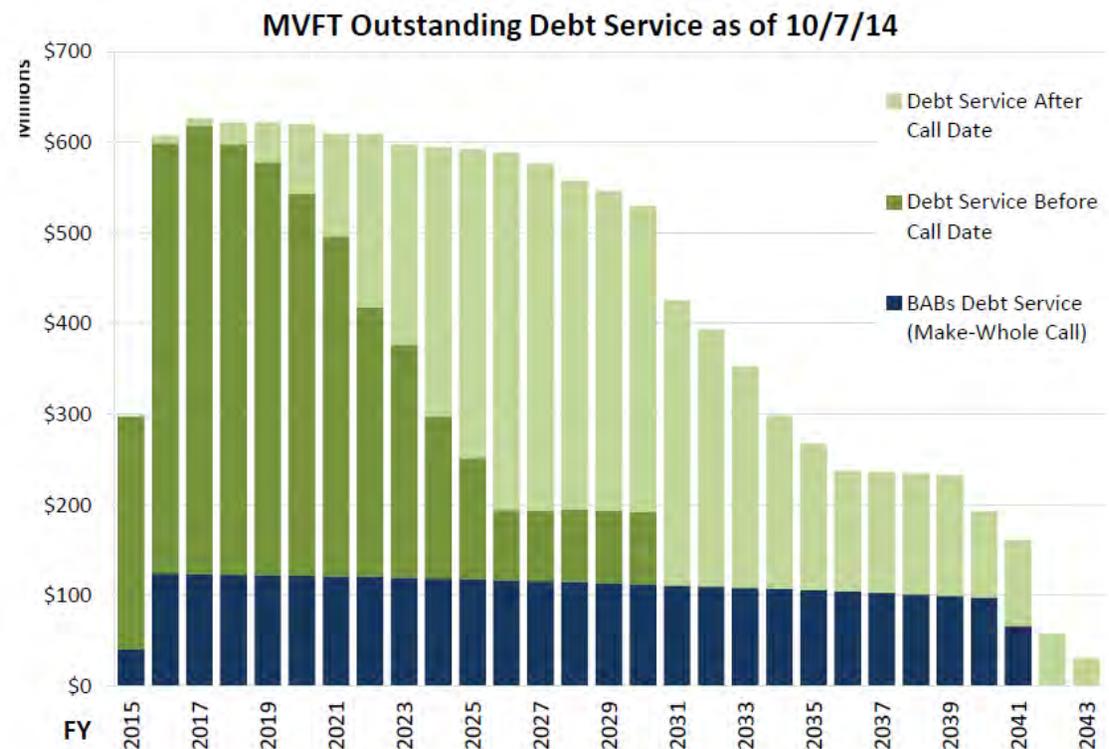
- Through the Western Road Usage Charge Consortium, WSDOT plans to conduct Phase II of the study to:
 - Define cost estimates of various approaches.
 - Explore specific issues for international crossings.

Test approaches as part of a multistate demonstration (e.g., CA-OR-WA).

Fiscal Implications

The Office of the State Treasurer (OST) explored the fiscal implications of transitioning to a road usage charge.⁹

- There are currently \$7.1 billion in motor vehicle fuel tax general obligation (MVFT-GO) bonds outstanding with the longest maturities extending more than 25 years.
 - Article II, Sec. 40 of the constitution provides that proceeds of Motor Vehicle Fuel Tax general obligation bonds (MVFT-GO) be used only for highway purposes.
 - A special provision in the state constitution exempts MVFT-GO bonds from the constitutional debt limit that otherwise pertains to general obligation bonds issued for the State’s capital budget – so long as there is enough MVFT revenue to cover the debt service.



⁹ The OST’s complete memo on this topic is provided on the accompanying CD, called *Fiscal Implications of a Potential Transition to Road Usage Charges*.

Fiscal Implications

Treasurer’s findings.

- It will not be possible to significantly reduce MVFT revenues until all of the obligations on MVFT GO bonds have been met since outstanding MVFT GO bonds can only be repaid with MVFT revenues.
 - Repealing the gas tax would be an unconstitutional impairment of the State’s bond contract with owners of outstanding MVFT-GO bonds and violate the legislative commitment to provide MVFT revenues at all times to pay the debt service on those bonds.
 - Refunding gas taxes to drivers who use the highway system may violate Article II Section 40 which provides that gas taxes “must be used exclusively for highway purposes.” The constitutionality of refunds for this purpose should be clarified.
 - Significant reductions or refunds of MVFT revenues could be seen by the market as a threat to the State’s ability to consistently pay debt service on outstanding MVFT GO bonds, and thereby potentially imposing additional demands on the State’s general fund. Unless successfully mitigated, these factors could negatively impact the State’s credit ratings and consequently increase borrowing costs across the board.
- It may be possible to leverage road usage charges for funding transportation projects at the State’s lowest borrowing costs within the current constitutional framework.
 - If the road usage charges can be structured as motor vehicle license fees, the state could authorize a new series of bonds pledging *both* road usage charges and MVFT revenues, with an overall pledge of the State’s full faith and credit, outside the State’s debt limit. The State’s capacity to issue transportation bonds would increase to the extent that new road usage charges exceed any declines in MVFT revenues.
 - This transition envisions using MVFT revenues to repay outstanding MVFT-GO bonds and to support new bonds backed by both revenue streams.
- Under current law, road usage charges which are not structured as motor vehicle license fees could be leveraged – outside of the debt limit – only in the form of revenue bonds.
 - Revenue bonds, particularly those leveraging a new untested revenue stream, typically have higher borrowing costs, higher coverage requirements, and credit enhancements.

Fiscal implications

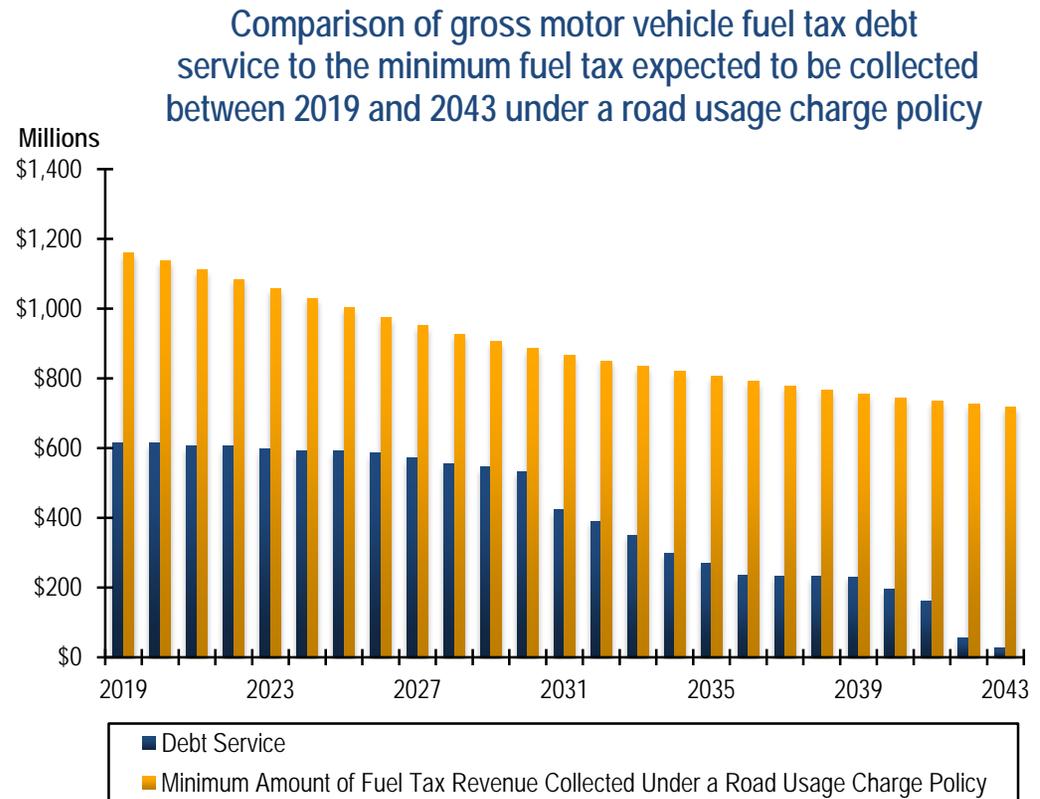
WSTC observations and perspectives on the OST memo.

- The findings and observations of the OST provide valuable insights into the possible implementation of a road usage charge program in Washington State. WSTC makes the following observations, clarifications, and perspectives.
- “Refunding gas taxes to drivers who use the highway system may violate Article II, Section 40 which provides that gas taxes ‘must be used exclusively for highway purposes.’”
 - Article II, Section 40 explicitly defines “highway purposes” to include “refunds authorized by law for taxes paid on motor fuels” (subsection d). Secondly, the Legislature has taken advantage of this clause of the Constitution to authorize refunds of fuel taxes paid for highway use to transit and paratransit operators, for example.
 - Based on these factors, it seems that a Legislatively authorized refund or credit of fuel taxes toward RUC would be well within the letter and spirit of Article II, Section 40.
- “Significant reductions or refunds of MVFT revenues could be seen by the market as a threat to the State’s ability to consistently pay debt service on outstanding MVFT GO bonds, and thereby potentially imposing additional demands on the State’s general fund. Unless successfully mitigated, these factors could negatively impact the State’s credit ratings and consequently increase borrowing costs across the board.”
 - This statement implies that RUC would result in “significant reductions or refunds” of motor fuel tax revenues. The road usage charge policy being considered does not call for “significant reductions or refunds” of fuel tax revenues. Rather, it keeps fuel tax collections in place through 2043.
 - Our lowest forecast of fuel taxes is well in excess of debt service through 2043 (see discussion on the next page).

Fiscal Implications

Under all road usage charge scenarios analyzed, fuel tax revenues would be more than sufficient to service outstanding fuel tax bond debt.

- Under road usage charging policy alternatives, we assumed the fuel tax would remain in place.
 - For individual motorists subject to road usage charges, fuel tax would serve as a mechanism to collect part of the amount owed, with the rest collected through Method A, B, C, or D.
 - Some motorists could be paid refunds if their vehicles fall below the current average of 19.5 MPG.
- The chart at right compares gross motor vehicle fuel tax debt service as of October 7, 2014¹⁰ to the minimum fuel tax expected to be collected between 2019 and 2043.
- The ratio of gross fuel tax to debt service never falls below 1.6, and rises to nearly 4.0 by 2040 as debt is retired, meaning there is little risk that fuel tax collections, even under an aggressive transition to road usage charging, will fail to cover current outstanding debt service obligations.



¹⁰Motor vehicle fuel tax debt service values were obtained from a presentation by the Treasurer’s Office to the Road Usage Charge Steering Committee on November 17, 2014.

Section 6: Remaining Questions for the Future

In the last two years we evaluated feasibility, tested the business case, and developed a ConOps – but numerous questions still remain.

- Numerous questions about the policy and operations of a road usage charging program have been raised during the road usage charge feasibility assessment in 2012/2013, the evaluation of the business case (2013/2014), and preparation of the ConOps (2014).
- We used a “parking lot” to keep issues that would be important to resolve as Washington came closer to a road usage charge demonstration or implementation.
- Many of these questions are proposed to be addressed in the 2015 to 2017 fiscal biennium work plan (see Section 7).
- However, some issues will remain, even after the next biennium work plan, which can be addressed if Washington chooses to ultimately implement a road usage charge.

Remaining questions related to road usage charges in Washington.

Question	Description	Approach to Address
<p>How to operationalize the four road usage charge methods.</p>	<ul style="list-style-type: none"> ■ The ConOps provides a high-level picture of the operations of a four-method road usage charge system. Operationalizing that system requires further design and testing, including work with stakeholders. 	<ul style="list-style-type: none"> ■ The proposed next phase work plan involves developing design documents for a demonstration of the proposed system. ■ The proposed next phase also includes elements related to how a system might be implemented within existing agencies, and what changes might be needed within existing processes.
<p>How will people react to the proposed road usage charge system?</p>	<ul style="list-style-type: none"> ■ To date, little work has been done related to public attitudes to road usage charging other than a few questions in the Voice of Washington Survey. ■ Road usage charge systems are virtually unknown, and people create their own views with little information. Understanding people’s attitudes towards road usage charging at various stages in the development process will help policy-makers decide on whether and how to move forward. 	<ul style="list-style-type: none"> ■ The proposed next phase work plan includes elements related to: <ul style="list-style-type: none"> ● A demonstration of the system where users can experience the operation of a system. ● Public attitude assessment of demonstration participants and the general public.

Question	Description	Approach to Address
Public understanding and acceptance of a proposed system.	<ul style="list-style-type: none"> ■ To date, there has been only limited communication about road usage charge development in Washington, other than posting the Steering Committee and WSTC’s reports on their web sites and occasional interviews. ■ Since there were no solid proposals on the table, there was little use for extensive public communications or public involvement. ■ The ConOps provides enough of a description about a proposed four-method system that the next phase of work can include a public communication effort. 	<ul style="list-style-type: none"> ■ The proposed next phase work plan includes a public communications component.
Per-mile rate setting. At what rate should the per-mile road usage charge be set?	<ul style="list-style-type: none"> ■ The financial evaluation update in this report assumed that rates would be set to be revenue neutral with gross gas tax revenues in 2015, and that road usage charges would start in 2019. <ul style="list-style-type: none"> ● However, this is only one of numerous potential approaches such as: <ul style="list-style-type: none"> – Incorporating the higher cost of collection into the revenue-neutral calculation. – Reevaluating the revenue need without reference to the existing revenue stream using a cost-allocation and/or an asset-management approach. 	<ul style="list-style-type: none"> ■ If a test is conducted in the next fiscal biennium, there will need to be a rate set for that test. ■ The ultimate decision on rate setting can be put off until a decision is made to proceed with a road usage charge.

Question	Description	Approach to Address
<p>Per-mile rate setting. At what rate should the per-mile road usage charge be set? (continued)</p>	<ul style="list-style-type: none"> – Indexing the rates to inflation or other ways of making sure revenue does not erode over time. – Incorporating environmental protection or congestion management goals in the rate. 	
<p>Rate setting for time-based permit. If the State provides drivers with an option of purchasing a fixed-price permit that allows for unlimited miles within a specified period of time (e.g., one year), how much should the State charge for such a permit?</p>	<ul style="list-style-type: none"> ■ Recognizing that some drivers may oppose having their travel metered in any way the ConOps includes a payment option in which drivers would simply pay a fixed amount on a periodic basis (e.g., annually) that allows for unlimited mileage during the period. ■ Yet to be determined is the appropriate annual charge for this option. ■ Ideally the rate should be high enough to avoid significant loss of revenue, in relation to fuel taxes, for high-mileage drivers, yet not so high as to seem punitive for lower-mileage drivers interested in a time-based permit. 	<ul style="list-style-type: none"> ■ If a demonstration is conducted in the next fiscal biennium, there will need to be a rate set for that test. ■ The ultimate decision on rate setting can be put off until a decision is made to proceed with a road usage charge.
<p>Vehicles subject to charge. Which light vehicles should be subject to the road usage charge?</p>	<ul style="list-style-type: none"> ■ Based on earlier analysis, the WSTC recommended that the road usage charge should only be considered for light vehicles. ■ The ConOps and financial evaluation assumed three potential scenarios: all light vehicles, only light vehicles with greater than average fuel economy, and only light vehicles newer than a particular model year. Other options also are possible. 	<ul style="list-style-type: none"> ■ This can be decided in enabling legislation.

Question	Description	Approach to Address
<p>Charging out of state drivers. Should the system be designed to accommodate charges for out-of-state vehicles that travel in Washington?</p>	<ul style="list-style-type: none"> ■ The ConOps assumed that the motor fuel tax would remain in force, which means that out-of-state drivers would pay road usage charges just as they do today – by paying a motor fuel tax. ■ If nearby states implement a road usage charge, then ways to integrate the systems means the potential to charge out-of-state drivers. 	<ul style="list-style-type: none"> ■ Multistate road usage charge approaches are being investigated by the Western Road Usage Charge Consortium (WRUCC). These investigations might point the way toward how road usage charging could work under a multistate environment.
<p>Exemptions. Should transit vehicles be subject to a road usage charge?</p>	<ul style="list-style-type: none"> ■ Transit vehicles are currently exempt from the fuel tax. The 2014 budget proviso stated, “For the purposes of this subsection (6)(b), the legislature intends that the commission focus its analysis by assuming that the exemptions under a road usage charge would be the same as those under the motor vehicle fuel and special fuel taxes.” 	<ul style="list-style-type: none"> ■ The Legislature would need to designate exemptions, if any, in enabling legislation.
<p>Refunds. Should existing motor fuel tax refunds also extend to road usage charges?</p>	<ul style="list-style-type: none"> ■ There are statutory provisions that entitle the following users to a refund of the amount of the motor vehicle fuel tax paid on each gallon of motor vehicle fuel: loggers, farmers, construction, urban transit, and marine use. ■ There also are refunds related to tribal agreements. ■ The question to be resolved is whether and how these refund policies for fuel taxes would apply in the context of road usage charges. 	<ul style="list-style-type: none"> ■ The Legislature would need to designate refunds, if any, in enabling legislation.

Question	Description	Approach to Address
<p>Dedication of road usage charge revenue. Would a road usage charge be subject to the same restrictions as the motor fuel tax under the 18th Amendment?</p>	<ul style="list-style-type: none"> ■ The 18th Amendment to Washington’s Constitution dedicates motor fuel taxes to “highway purposes.” ■ We have not addressed the uses of the road usage charge specifically in work to date. 	<ul style="list-style-type: none"> ■ The Legislature would need to designate any dedication of road usage charge revenue in enabling legislation.
<p>Motor fuel tax bonds. How does the State protect the integrity and rating of current and future motor fuel tax bonds?</p>	<ul style="list-style-type: none"> ■ Numerous tranches of bonds have motor fuel tax revenue pledges. There is concern that eliminating the motor fuel tax in favor of a road usage charge would violate existing bond agreements, and could affect the marketability of future bonds. ■ In this year’s business case analysis, we assumed keeping the fuel tax in place both to address these concerns and to provide a partial revenue collection mechanism for road usage charging that is less costly to operate and more difficult to evade. ■ Under all scenarios involving a transition to road usage charging, fuel tax collections remain more than sufficient to service outstanding debt through 2043. 	<ul style="list-style-type: none"> ■ The Office of the State Treasurer was tasked by the Legislature with evaluating this issue. They prepared a draft report in September 2014 that has led to further discussion about potential approaches that address their findings. Their final report is due in December 2014. ■ Future actions related to road usage charges will need to be cognizant of the findings of the Treasurers report.

Question	Description	Approach to Address
<p>Legal issues. What other legal considerations need to be addressed?</p>	<ul style="list-style-type: none"> ■ Unresolved legal issues identified to date include: <ul style="list-style-type: none"> ● Is a road usage charge a fee or a tax? ● Distance Measurement Instruments. Odometers, GPS systems, cell phones or other devices may or may not qualify as legal measurement instruments, unless specifically recognized as such. ● Commerce Clause. The applicability of the Commerce Clause of the Constitution may need to be evaluated if special provisions are made to collect fees from out-of-state drivers. ● Enforcement. The enforcement mechanisms used to monitor and penalize drivers (e.g., cameras) may need to be legally recognized. ● Data Security. Data security standards may need to be consistent with existing regulations under the Public Records Act. 	<ul style="list-style-type: none"> ■ Legal issues will need to be considered in enabling legislation. ■ Additional analysis to inform the legislative debate would be valuable.

Question	Description	Approach to Address
<p>Institutional roles. Which State agencies should be involved in designing, implementing, operating, and enforcing a road usage charge?</p>	<ul style="list-style-type: none"> ■ Work to date assumed that one or more Washington State agencies would add road usage charging into its current functions. ■ In the feasibility assessment phase, we conducted an initial investigation into the organizational capacity of different agencies to take on different road usage charge functions, including account management, public relations/customer service, cash flow, information technology needs, enforcement, auditing, and program administration. 	<ul style="list-style-type: none"> ■ There may be sufficient information in the feasibility assessment for the State’s policy-makers (Legislature and Governor) to identify agencies to take responsibility for road usage charge implementation. ■ Further investigation of these questions could be carried out by the WSTC, if so directed by the Legislature.
<p>Private account managers. Should a road usage charge system in Washington allow private account managers to be involved in metering road use and collecting charges on behalf of the State?</p>	<ul style="list-style-type: none"> ■ The ConOps assumed that a road usage charge system would be run by government. It also noted, however, that if private account managers could be engaged to lower costs, then Washington might pursue that option. ■ Oregon is developing a system that uses private account managers, and the 2014 budget proviso suggested considering “how the State can utilize the technology and back-office platforms that are scheduled to be provided by commercial account managers under the Oregon road usage charge program.” 	<ul style="list-style-type: none"> ■ By the time Washington is ready to conduct a demonstration, there will be real experience from Oregon with respect to the cost implications of using private account managers. ■ Washington should monitor the work there, and if the private account managers are cost effective, consider incorporating them into a Washington road usage charge.

Question	Description	Approach to Address
<p>Interoperability with other states. Should Washington pursue the development of a road usage charging system that is interoperable with similar systems in other states?</p>	<ul style="list-style-type: none"> ■ As neighboring states such as Oregon and California evaluate road usage charges, further consideration of interoperability with road usage charging in other states may be appropriate. 	<ul style="list-style-type: none"> ■ WSDOT was tasked with investigating interjurisdictional opportunities, and is doing so along with the Western Road Usage Charge Coalition. ■ Interoperability methods could be tested in a demonstration, potentially in conjunction with other states. ■ That work should continue in future phases of work.
<p>Interoperability with the State’s toll system. Should a road usage charge system be interoperable with the State’s toll system and, if so, how?</p>	<ul style="list-style-type: none"> ■ This question considers how a road usage charge system would interface with the toll system in terms of customer account management, back office transaction processing and accounting, and other similar functions. ■ Interoperability brings both opportunities and challenges. Road usage charges are very different from tolls. It may be more convenient for a driver to get one bill from the State that covers both tolls and road usage charges, but this convenience may not be worth the additional complexity of systems integration. ■ A related policy question is whether miles traveled on tolled facilities would be subject to tolls, road usage charges, fuel taxes, or some combination thereof. 	<ul style="list-style-type: none"> ■ The technical issues can be addressed in the system design phase of work, and possibly tested in a demonstration. ■ The policy questions can be addressed in enabling legislation.

Question	Description	Approach to Address
State IT needs. How would the institution of a road usage charge affect the need for information technology upgrades in various State agencies?	<ul style="list-style-type: none">■ It may be desirable to coordinate IT upgrades for road usage charging with any existing upgrade or implementation efforts, which would impact the transition toward road usage charges and the timeline of the business case.	<ul style="list-style-type: none">■ These opportunities can be identified in the system design phase.■ A demonstration would provide an opportunity to test the extent of IT upgrades needed.

Section 7: Proposed Work Plan

To address unanswered questions about road usage charging, we propose a work plan comprising three key activity areas for the 2015 to 2017 biennium.

- At the end of this work plan, policy-makers could be in a position to decide whether road usage charging is right for Washington, and then tackle other policy details needed to implement, if that is their decision.
- The Steering Committee recommends that all three of these components are necessary to provide the information needed for a next step in addressing road usage charging as possible transportation funding policy.

Demonstration

• **Objectives:**

- Expose Washington motorists to road usage charging policy and concepts;
- Raise awareness of transportation funding issues;
- Test road usage charge operations;
- Identify organizational challenges; and
- Refine cost estimates.

• **Activities:**

- Plan, execute, and evaluate a demonstration of road usage charging methods.

Public Attitude Assessment

• **Objectives:**

- Evaluate how well the public understands transportation funding sources and needs;
- Assess public understanding of road usage charging; and
- Identify questions, concerns, and reasons for support and opposition.

• **Activities:**

- Polling;
- Surveys;
- Focus groups;
- Stakeholder meetings, research, and analysis.

Public Communications and Engagement

• **Objectives:**

- Communicate the purpose and details of the demonstration;
- Address questions about road usage charging; and
- Stimulate and monitor public discussion of transportation funding;

• **Activities:**

- Recruit participants;
- Provide Q&A to demonstration participants, public, and media;
- Provide speakers to community groups; and
- Maintain web and social media presence.

Demonstration

A demonstration can test a road usage charge from the perspective of the Principal and the operating agency(s).

- **Front-end testing** allows participants to provide feedback on how the experience worked from a user’s perspective, including impressions, feedback (positive and negative), and assessment of technical performance. It addresses the following questions:
 - How do the methods operate in practice?
 - How easy are the methods to use?
 - How accurate are they? How easy or difficult are they to evade?
 - How do they impact user’s perception of privacy?
 - Which methods do users prefer? Do users prefer commercial account managers or government account managers?
- **Back-end testing** allows operating agencies to observe, understand, comment, and improve on back-office operations, including customer service provision, mileage measurement, data collection methods, billing, revenue collection, and accounting. It addresses the following questions:
 - What existing agency processes and systems can support road usage charging?
 - What system and process modifications are necessary?
 - How might agencies work together?
 - How much will different processes and components cost?
 - How does the relationship between agencies and commercial account managers work?

Demonstration or Pilot?

The word “demonstration” was chosen over the word “pilot.” For some, the word “pilot” may imply a first step towards an inevitable implementation. In contrast, the word “demonstration” implies testing of a concept with a further decision needed as to whether to implement.

Demonstration

Recommended work plan.

Component	Description
Initial planning and decision-making	<ul style="list-style-type: none"> ■ Clarify roles of participating agencies. ■ Refine the objectives and guiding principles that were developed during the business case evaluation (see Section 1). ■ Refine the demonstration objectives and desired outcomes. ■ Refine the methods to be tested, how they will be tested and what criteria establishes success or failure (e.g., time permit, odometer reading, automated distance charge, smartphone application, length, number of participants, evaluation criteria, interoperability, out-of-jurisdiction testing, costs, etc).
Develop system requirements document	Provide a systems requirement specification document for the demonstration consistent with the Concept of Operations (ConOps). This document is a full specification of what the system should do during testing.
Develop interface control document	Provide an interface control document for the selected methods. Ensure it is consistent with the ConOps and the System Requirements Specification used to define the demonstration system.
Develop demonstration plan	Develop a demonstration plan that will describe: <ul style="list-style-type: none"> ■ How each of the methods will be demonstrated; ■ Necessary resources – test facilities, people, computer resources, equipment, etc.; and ■ Methods for participant recruiting, on-boarding, billing, auditing, and customer service support.

Component	Description
Develop evaluation plan	The evaluation plan should identify the criteria and type of evaluation tools to be used to evaluate the operational concepts, organizational framework, and public attitudes. The evaluation plan will include methods for collecting feedback from participants relating to the user experience as well as attitudes towards road usage charging. It should be designed to answer whether and how the demonstration meets the stated objectives and guiding principles.
Procurement	Develop and implement a procurement strategy to acquire any necessary components, including technology and services to be tested.
Test procured equipment and services	Develop and execute a test plan demonstrating the end-to-end capabilities of the entire system, and retest as necessary in case of test failures as defined in the test plan.
Recruit participants	Recruit participants for the demonstration. This could include providing incentives for participants.
Volunteer dashboard	Create and monitor a digital hub for communications with qualified and participating volunteers using off-the-shelf interactive web tools.
Implement the demonstration	<p>Carrying out the demonstration plan would involve steps such as:</p> <ul style="list-style-type: none"> ■ Enroll participants; ■ Collect mileage data; ■ Issue invoices and collect payments (if part of the demonstration); ■ Provide accounting and testing of back-end operations; ■ Provide customer service, including training of staff; and ■ Close out, including off-boarding of participants and equipment and decommissioning test facilities.

Component	Description
Evaluation	<ul style="list-style-type: none"><li data-bbox="504 256 1957 357">■ Collect and analyze data as directed in the Evaluation Plan, including gathering feedback on user experience and attitudes through surveys and focus groups; and<li data-bbox="504 357 1957 459">■ Write a final report based on that analysis. Present and brief the Steering Committee, WSTC, House and Senate Transportation Committees and Governor.

Demonstration

How big a demonstration does Washington need?

- A demonstration could range in size from hundreds of participants over several months, to thousands of participants over one year.
- *Given the work that's been done elsewhere in the U.S., and the last three years of study undertaken in Washington, how much time and resources does Washington need to expend in order to get to a decision point?*
- Some of the considerations include:
 - **Methods to be offered/tested:** Testing all four methods lets us understand what drives participants to choose among the offerings, and to get feedback on how all the options compare.
 - **Geographic distribution:** Attitudes and driving habits vary by region. A representative sample of urban/suburban/rural, east/west, north/south and border/interior will ensure that a broad range of constituents have been fairly represented.
 - **Timeframe:** There should be enough time to simulate a complete cycle of enrollment, data collection, reporting, and payment. A 12-month period would be ideal, allowing each participant to be enrolled for 6 to 9 months. Participants could be added to the demonstration over a period of three months (rather than all at once).
 - **Number of participants:** There should be enough participants to provide a representative sample of the four methods and several geographic regions. Our initial estimate is a range from 1,000 to 2,000 individuals. For meaningful results (operational evaluation as well as participant feedback), we recommend a minimum of 300 individuals testing each method, except for Method A, which can be tested by a much smaller number of participants who might opt for it. The marginal cost of adding one participant is on the order of \$200 to \$500, including incentives.
 - **Multijurisdictional collaboration:** The most likely example would be to link with the commercial account managers in Oregon for Method C. Collaboration beyond this may be difficult due to different time horizons and objectives.

Public Attitude Assessment

Public attitude assessment addresses important questions about understanding and acceptance of funding alternatives.

- Before learning about road usage charging (baseline views):
 - How well do the public and key stakeholders understand transportation funding sources and needs?
 - How does the public react to road usage charging as an alternative funding policy?
 - What questions and concerns does the public have about road usage charging? What are their reasons for support and opposition?
- After learning more about road usage charging:
 - The same questions as above, but the respondents will have more information from which to develop responses.
 - Evaluate differences in responses.
 - Possible follow-up interviews and/or surveys to drill down on specific issues and understand attitudes affecting any noticeable change in attitudes or responses.

Public Attitude Assessment

Recommended components of the public attitude assessment.

Component	Description	Considerations
Market research	<p>Focus Groups: Pairs of focus groups, conducted in several regions of Washington before and after the Demonstration. Pairs of focus groups allow testing different populations within a given region.</p> <p>Surveys: Conduct surveys: before and after the demonstration.</p>	<p>This multifaceted data collection approach allows for an accurate assessment of the public’s baseline understanding of Washington’s transportation funding situation, current gas tax shortfalls, and road usage charging concepts. Initial focus groups in advance of the demonstration will inform the communications program.</p> <p>Focus groups provide an opportunity to have a structured conversation with Washington citizens, identify issues to probe further in statistically valid surveys, and follow up with alternative approaches after reviewing survey outcomes.</p> <p>Surveys complement insights from the focus groups by providing statistically reliable data. We suggest a combination of the existing Voice of Washington Survey panel with additional phone surveys.</p>
Stakeholder interviews	Two rounds of stakeholder interviews (before and after the demonstration.)	Stakeholder interviews provide a forum in which individuals and groups likely to be at the forefront of debate about a road usage charge can voice their concerns. Stakeholders might include business, environmental, or user groups, as well as DOL subagents and county auditors.
Report	Comprehensive research report analyzing findings and trends from the above activities.	The report should compare demonstration participant feedback with the more general public attitude assessments.

Public Communications and Engagement

This addresses the need to manage public communications about road usage charging, particularly in conjunction with a demonstration.

- Objectives of public communications and engagement:
 - Communicate the purpose and activities of the demonstration;
 - Address questions about road usage charging arising from the media and key stakeholders; and
 - Stimulate and monitor public discussion of transportation funding in media and public forums.

Public Communications and Engagement

Recommended components of public communications and engagement.

Component	Description	Considerations
Communications plan	Develop at the outset of the project, and update periodically as needed.	Prepare an overall plan for managing communications prior to and during the demonstration.
Communications content	Develop early in the project, and update periodically as needed. Content will include print materials and materials for use on the web.	Develop a messaging platform that highlights key messages for various audiences, as well as communications risks and opportunities; develop FAQ to ensure that representatives provide consistent messages to the public; develop a consistent graphic identity for the program (new web site, public education materials, presentations, etc.)
Public outreach and stakeholder briefings	Continuous over the life of the project, with particular emphasis on the beginning/early stages of the demonstration and when the findings are published.	Create a calendar of diverse face-to-face public engagements, including hard-to-reach communities, internal agency briefings, and legislative updates as the demonstration preparations proceed.

Component	Description	Considerations
Print and broadcast media engagement	Continuous over the life of the project, with particular emphasis on times when recruitment is underway, the demonstration begins, and reports are published.	Partner proactively with the media to give road usage charging a voice and explain what the road usage charge demonstration is, why it is being done, and what the anticipated outputs are. Also, respond to inquiries with spokespeople that are ready to engage the media.
Social media engagement	Continuous over the life of the project, with particular emphasis on times when recruitment is underway, the demonstration begins, and reports are published.	The public gathers a lot of information from social media, and it will be important to have a proactive presence. This could include a web-based interest forum for people interested in receiving information about road usage charging. It could also identify potential volunteers. Consider opportunities to coordinate the VOWS panel with social media outreach.
Educational video shorts and infographics	Illustrate transportation funding issues, describe reasons for studying road usage charges, and depict how citizens might interact with various payment systems (manual, automated, etc.).	Identify audiences such as city and county cable channels, for each item, and number of printed brochures.
Branding	Test concepts internally to ensure compatibility with the agencies, including messages and physical appearance. Optionally, test brand during any scheduled public opinion focus groups.	Three brand elements are necessary: name, logo/visual identify, and tagline.

The three areas of the work plan – Demonstration, Public Attitude Assessment, Communications – can be accomplished in four stages at a cost ranging from an estimated \$3.4 to \$6.0 million taking approximately 24 to 41 months (see Appendix D for assumptions).

Stage of the Work Plan	Stage 1: Planning	Stage 2: Setup	Stage 3: Execution	Stage 4: Evaluation	Estimated Cost (millions)
Demonstration	Develop budget and detailed demonstration plan, including technical documents.	Procure technology vendors and set up necessary systems.	Conduct demonstration and collect evaluation data.	Evaluation, analysis, and reporting, including findings and recommendations.	\$2.4 to \$4.5
Public Attitude Assessment	Baseline assessment via web surveys, focus groups, and stakeholder interviews.	Attitudinal surveys.	Participant surveys.	Comprehensive report on attitude assessment.	\$0.4 to \$0.6
Communications and Engagement	Prepare communications plan, manage communications, and begin media outreach.	Recruit demonstration participants and engage media.	Proactive communications during demonstration.	Continue media engagement and report on findings.	\$0.3 to \$0.5
Project Management	Coordinate and manage the project deliverables. Direct and provide policy interface, reports and presentations.	Coordinate and prepare the agreed plans for executing and testing the demonstration plan.	Manage and monitor the execution of the demonstration and reporting status to Legislature.	Prepare and present final reports and analysis.	\$0.3 to \$0.4
<i>Estimated Timeframe</i>	<i>6 to 8 months</i>	<i>6 to 12 months</i>	<i>6 to 12 months</i>	<i>6 to 9 months</i>	<i>24 to 41 months</i>
<i>Estimated Cost (millions)</i>	<i>\$0.8 to \$1.0</i>	<i>\$0.6 M to \$1.2</i>	<i>\$1.4 to \$3.0</i>	<i>\$0.6 to \$0.9</i>	<i>\$3.4 to \$6.0</i>

Decision to continue or not

Progress reports to Legislature

Demonstration

Factors that affect cost, schedule, and outcomes.

Dimension	Range	Considerations
Methods to be offered/tested	Methods A, B, C, and D	Mechanisms will be in place to ensure a minimum number of participants select each method.
Number of participants	1,000-2000	For meaningful feedback, each method should be tested by at least 300 participants. Up to 100 participants may test multiple methods for comparison (e.g., a household with four vehicles would test one on each method); such participants would also be asked to provide more detailed feedback than participants testing only one method.
Geographic distribution	3-5 selected locations or regions	Locations selected for the demonstration should be representative of the entire state.
Timeframe	21-39 months from project initiation	Initiation is assumed to be September 2015. Timeframe includes 6-12 months of live demonstration. If all steps go as quickly as possible, the entire demonstration can be accomplished within the 2015-2017 biennium. More likely, some activities will spill over into the 2017-2019 biennium.
Multijurisdictional collaboration	Potentially Oregon and/or California	If such collaboration provides cost and/or time savings or allows for testing of multijurisdictional frameworks for road usage charging, including measurement, reporting, payment, and reconciliation, without compromising Washington’s ability to achieve its own objectives on its preferred schedule.
Organizational framework	Operations handled by a third party(-ies)	Procured by the WSTC, but overseen by a working group with project management authority comprising representatives of the WSTC, DOL, WSDOT and Washington State Patrol.

Attitudes and communications

Factors that affect cost, schedule, and outcomes.

Dimension	Considerations
Type, number of surveys and sample sizes	One would be appropriate at the beginning and one at the end of the demonstration to test movement of attitudes among the public. If done with the VOWS instrument, the cost is reduced but there may be value to an independent survey company to eliminate self-selection bias.
Number and location of focus group sets	Ideally would correspond with the potential locations of the demonstration sites, but not necessarily. A distribution of locations is beneficial to get a sense of the whole state. Focus groups are normally done in sets to avoid coming to conclusions from a limited sample.
Branding	Extent and iteration of branding exercise.
Informational graphics and videos	As many or few as deemed necessary.
Communications intensity	From proactive to entirely reactive.

The next phase of work will benefit from participation from several state agencies.

- In the work to date, staff from WSTC, Washington State Department of Transportation (WSDOT), Department of Licensing (DOL) and the Office of the State Treasurer (OST) have participated through:
 - Interviews with consultants regarding current agency operations and how a road usage charge might affect or be integrated into those operations;
 - Review of interim documents; and
 - Participating in Steering Committee meetings, which have included executives from these agencies.
- The proposed work plan would entail higher level of involvement from these agencies, and potentially the Washington State Patrol as well, including:
 - Observation of demonstration planning, setup, and execution, including providing feedback and conducting analysis on implications of road usage charging on the agency’s existing processes and systems;
 - Input in developing road usage charge systems;
 - Potential involvement in some aspects of road usage charge data and revenue collection. In particular, DOL and DOL subagents or county auditors may need training on the road usage charge system, if they are involved in the demonstration;
 - Participation in meetings of a technical advisory committee; and
 - Potential support in development of public communications media and survey instruments.
- The cost estimates provided earlier do not reflect any additional costs associated with agency participation.

prepared for
Governor Jay Inslee
and
Washington State Legislature

