



Washington State Road Usage Charge Assessment

Transportation Commission Briefing

October 15, 2013



CAMBRIDGE
SYSTEMATICS

BERK



Washington State Transportation
Commission



Washington State
Department of Transportation

2013 Legislate Directive¹

Work to be done

- **Develop preliminary road usage charge policies that are necessary to develop the business case, as well as supporting research...**
- **Develop the preferred operational concept(s) that reflect the preliminary policies**
- **Evaluate the business case....must assess likely financial outcomes**
- **Identify and document policy and other issues that are deemed important to further refine....to gain public acceptance.**
 - » **Should form the basis for continued work...**

¹*ESSB 5024 Section 205(3)*

Project Schedule

Legislatively Directed Dates

- **Progress reports to the Joint Transportation Committee and Governor**
 - » Mandated by November 1, 2013
 - » Met with Joint Transportation Committee on October 9, 2013
- **Final Report**
 - » December 15, 2013
 - Possible extension
 - Finalize simplified business case analysis
 - In the meantime we will continue to stay on track

Project Work Plan Status

June 2013 through February 2014 – As of Today 10/14/13

Task		Description
1 - Develop Road Usage Charge Policy Statements		Develop road usage charge policy statements for use in refining road usage charge concepts in Task 2
2 - Refine Operational Concepts		Develop operational concepts that reflect the policies developed in Task 1
3 - Evaluate the Business Case		Evaluate the value proposition of potential road usage charging systems developed in Task 2 compared to the existing gas tax
4 - Documentation and Budget Preparation		Document the suggested findings resulting from the work conducted in Tasks 1 through 3, culminating in a final report from the Commission to the Governor and Legislature, including a workplan and budget for the next year

Overview of Material for Today's Discussion

- **Forecasts**
- **Operational concepts**
- **Financial evaluation**
- **Qualitative evaluation**
- **What a road usage charge means for motorists**
- **Issues to address in future work (the “parking lot”)**

Steering Committee Members and Affiliations

Name and Affiliation	Representing	Name and Affiliation	Representing
Steering Committee Chair, Commissioner Tom Cowan (WSTC Commissioner)	WSTC	Pete Capell (Clark County Public Works)	Cities and Counties
Commissioner Anne Haley (WSTC Commissioner)	WSTC	Cynthia Chen (University of Washington)	Appointed by WSTC
Commissioner Charles Royer (WSTC Commissioner)	WSTC	Scott Creek (Crown Moving Company, Inc.)	Trucking industry
Sen. Tracey Eide (Federal Way (D) 30 th District)	Washington Senate	Don Gerend (City of Sammamish Councilmember)	Cities and counties
Sen. Curtis King (Yakima @ 14 th District)	Washington Senate	Lynn Peterson (WSDOT Secretary)	Appointed by WSTC
Sen. Andy Billig (Spokane (D) 3 rd District)	Washington Senate	Tom Hingson (Everett Transit)	Public transportation
Rep. Judy Clibburn (Mercer Island (D) 41 st District)	Washington House of Representatives	Sharon Nelson	Appointed by WSTC
Rep Jake Fey (Tacoma (D) 27 th District)	Washington House of Representatives	Curt Augustine (Alliance of Automobile Manufacturers)	Auto and light truck manufacturers
Rep. Linda Kochmar Federal Way (R) 30 th District)	Washington House of Representatives	Kurt Beckett (Port of Seattle)	Appointed by WSTC
Rep. Ed Orcutt Kalama (R) 20 th	Washington House of Representatives	Kush Parikh (INRIX)	User fee technology
Rod Brown Jr. (Cascadia Law Group PLLC)	Environmental	Janet Ray (AAA Washington)	Motoring public
Neil Strege (Washington Roundtable)	Business		

FORECASTS

Forecast Overview

- **We prepared a range of forecasts to evaluate the business case**
 - » **State forecast**
 - » **Alternative forecast that generates lower revenue estimates (more “conservative”)**
- **Who would pay the road usage charge?**
 - » **All non-diesel vehicles including those that run on:**
 - **Gasoline**
 - **Gasoline/electric hybrid**
 - **All-electric/alternative fuels**
 - » **Diesel vehicles would continue to pay diesel tax**

“State” Forecast

- **Supplied by WSDOT based on forecast data developed by the Transportation Revenue Forecast Council**
 - » **Passenger car and truck registrations (by weight category)**
 - » **Vehicle miles traveled (VMT)**
 - » **Gasoline consumption**
 - » **Fuel efficiency (of the U.S. fleet)**
 - » **Gasoline tax revenue**
- **Extended to 2040 by WSDOT**
- **Most recent quarterly forecast available when did the work**

Alternative Forecasts

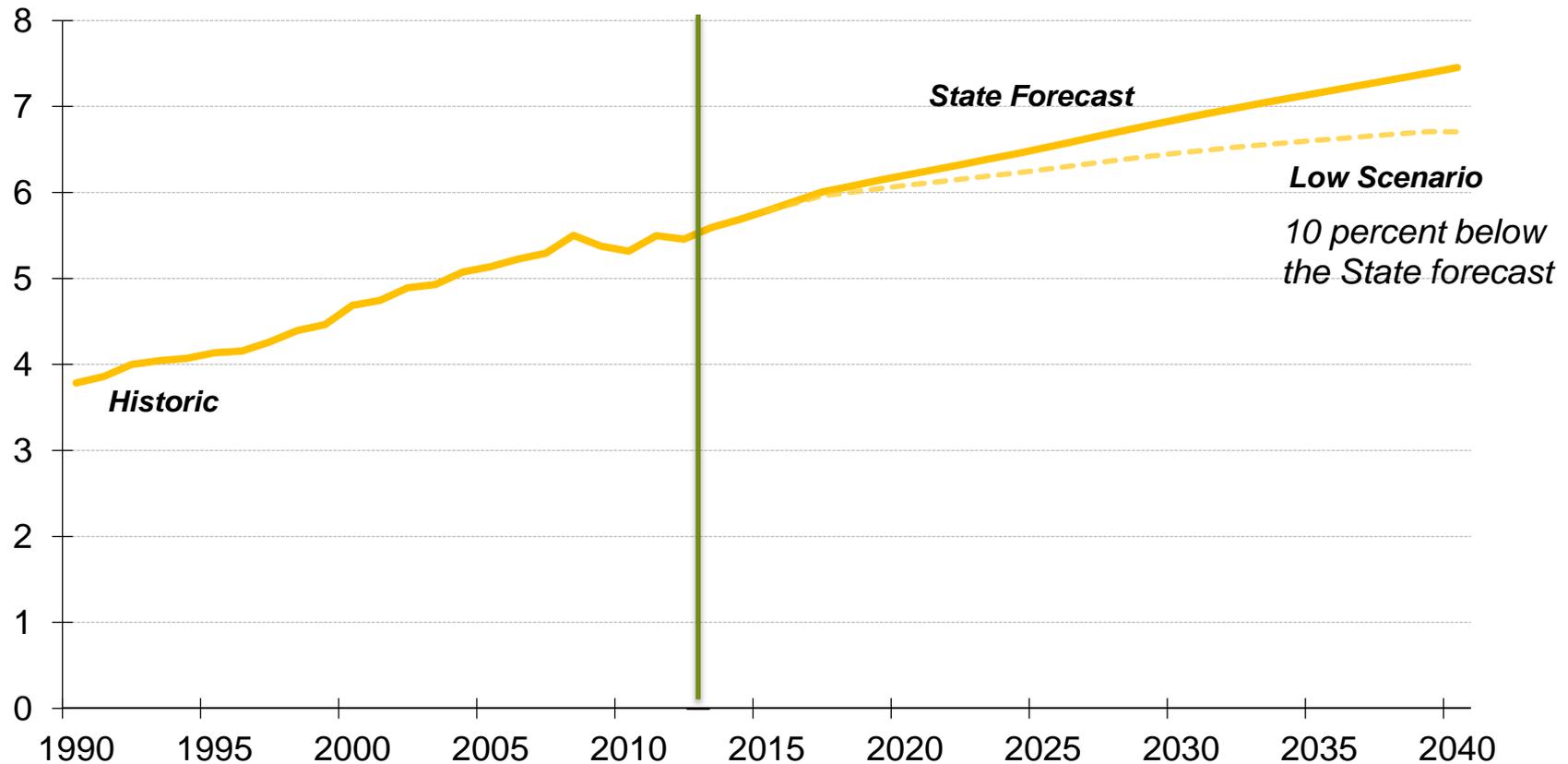
- **Scenarios that would generate less revenue**

Category	Basis for Low Forecast
Vehicle Registrations	10 percent below the State forecast
VMT	Tied to VMT reduction benchmarks found in RCW 47.01.440
Gasoline Consumption	Lower VMT and higher fuel efficiency
Fuel Efficiency	Higher fuel efficiency as forecast by Global Insight
Gas Tax Revenue	Low VMT and high fuel efficiency

Registered Non-Diesel Vehicles

State Forecast and Low Scenario

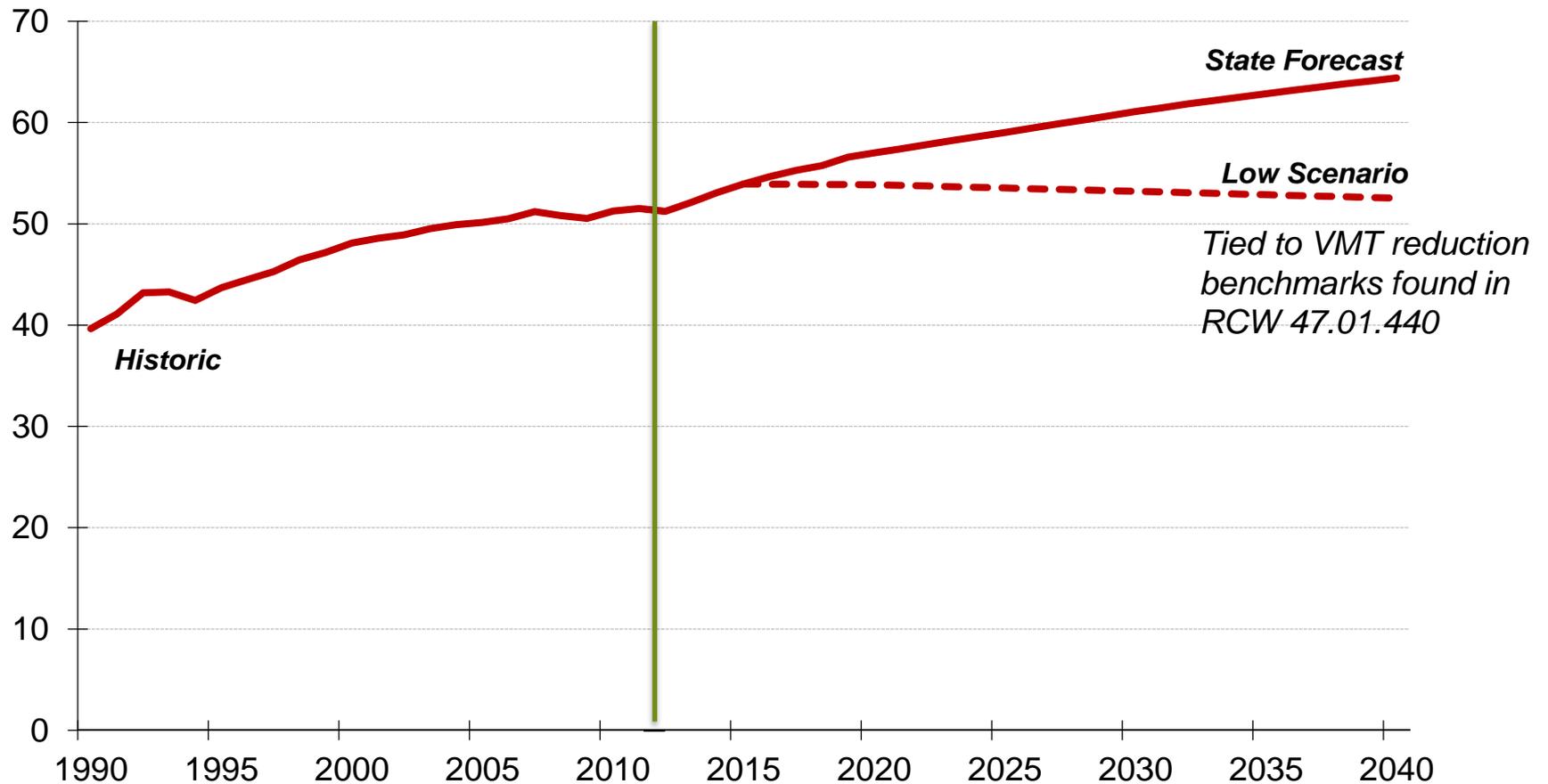
Total Non-Diesel Vehicles
(Millions)



VMT for Non-Diesel Vehicles

State Forecast and Low Scenario

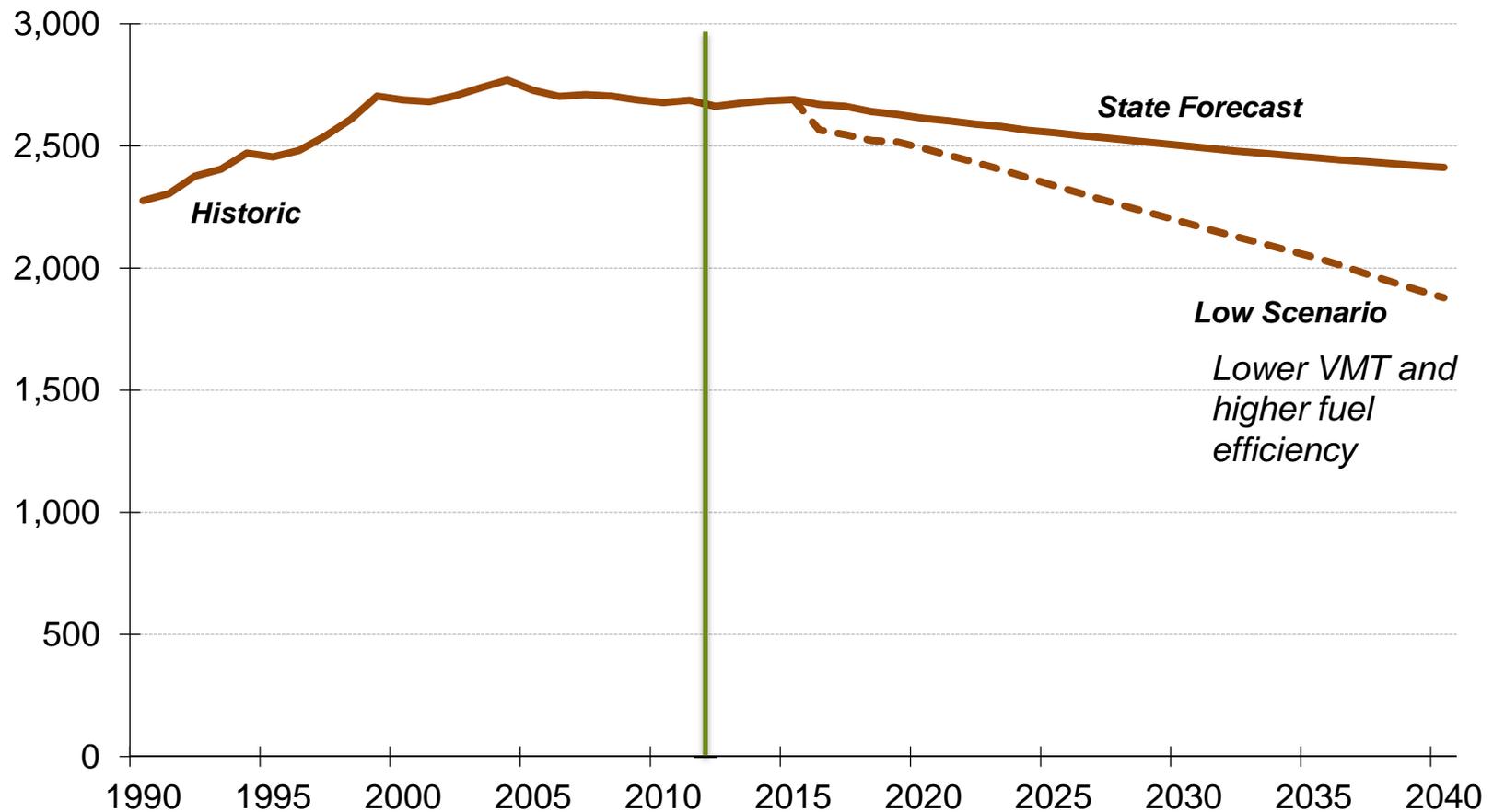
VMT per Non-Diesel Vehicles (Billions)



Gasoline Consumption

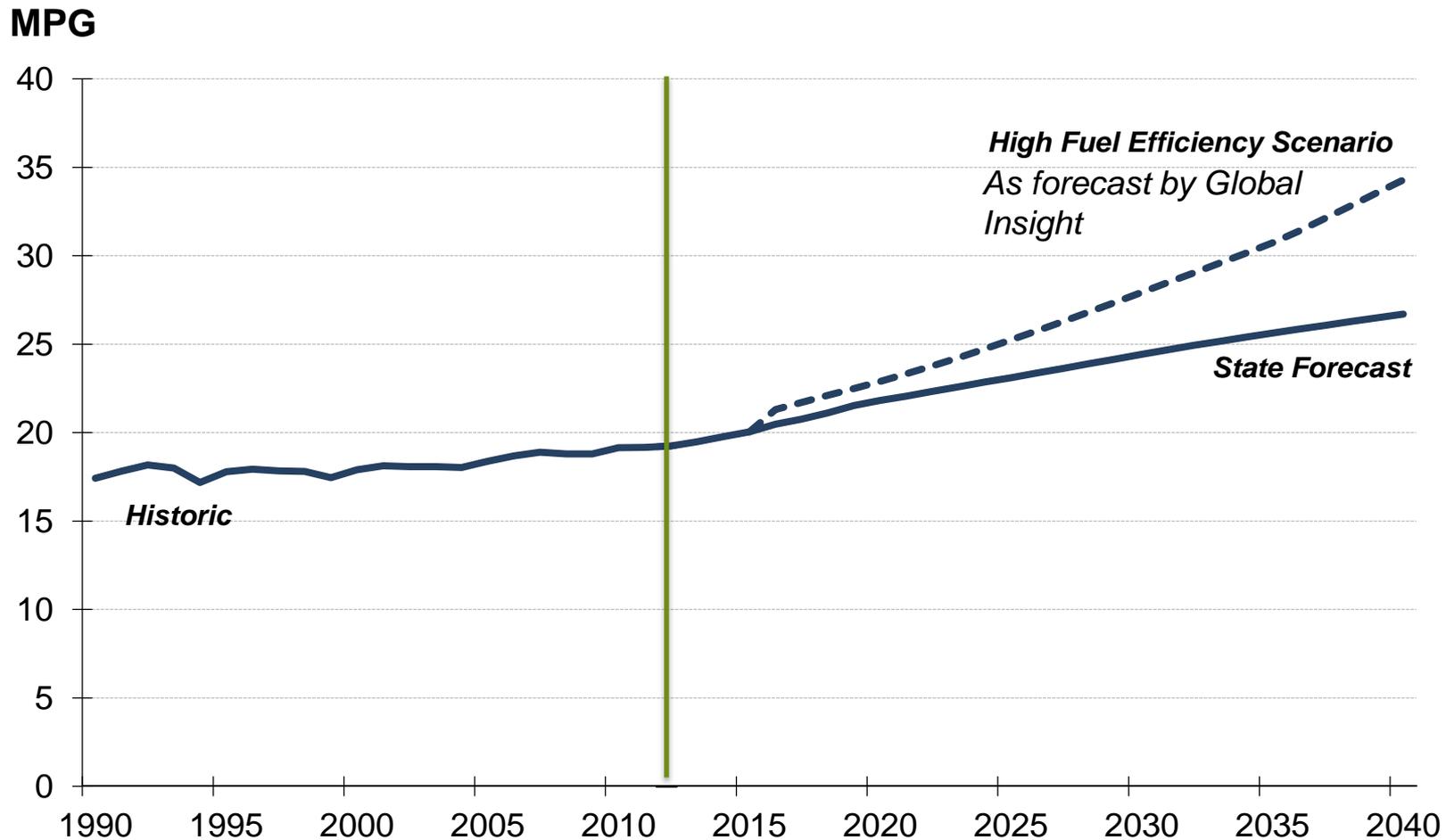
State Forecast and Low Scenario

Total Gas Consumption (Millions of Gallons)



Fuel Efficiency

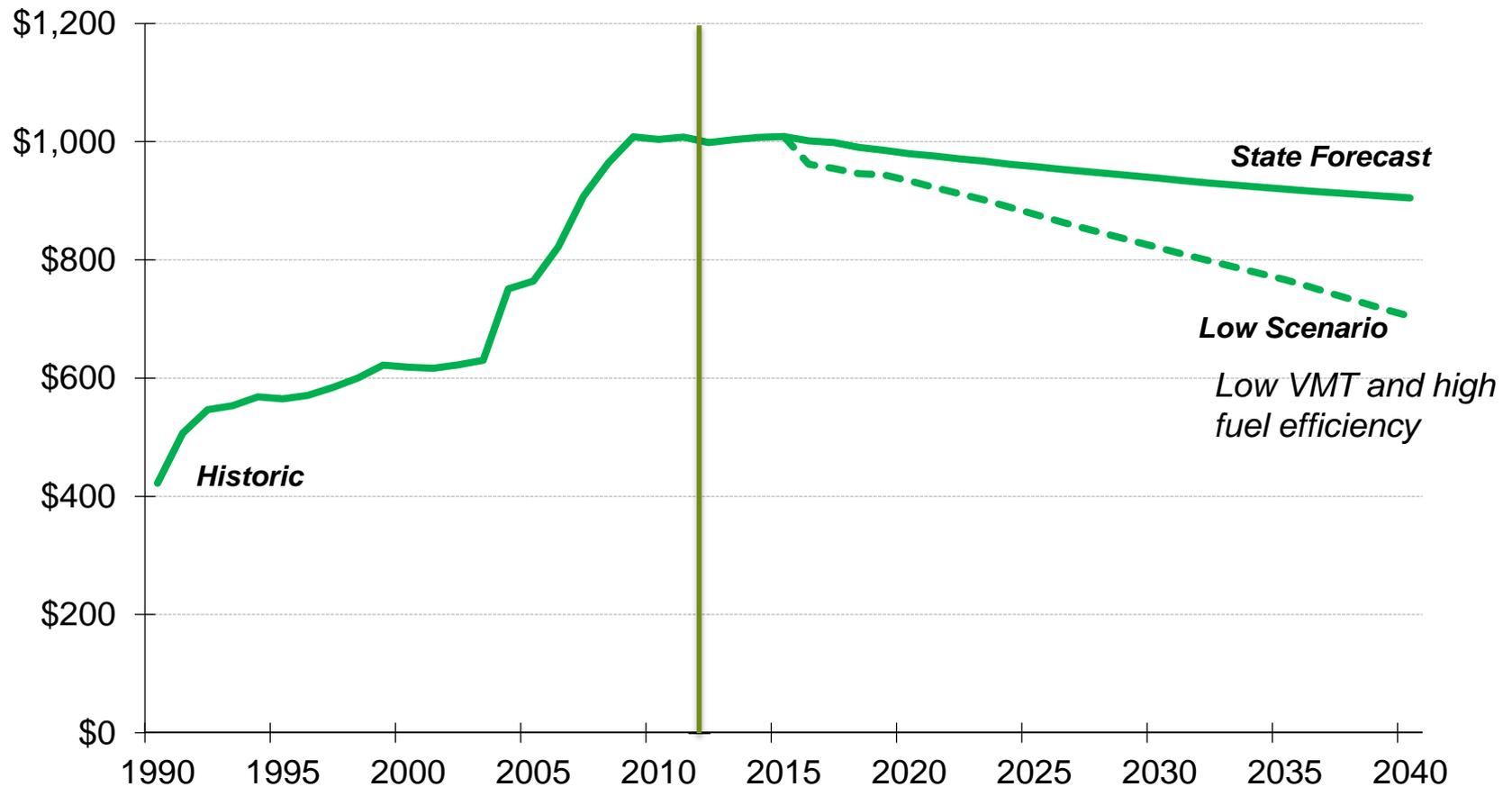
State Forecast and High Fuel Efficiency Scenario



Gasoline Tax Revenue

State Forecast and Low Scenario

Total Gasoline Tax Revenue (Millions)



OPERATIONAL CONCEPTS

Proposed Operational Concepts for Business Case Evaluation

- **Winnowed 8 operational concepts from prior work down to three to present a range of possibilities:**
 - » **A: Time Permit**
 - Permit for unlimited road network access for a given period of time.
 - » **B: Odometer Charge**
 - Prepay for a standard amount of miles, and then reconcile actual miles
 - » **C: Differentiated Distance Charge**
 - In-vehicle device records miles driven inside and outside State borders and charges accordingly
 - » **Plus, combinations - A&B; A&C; B&C; A+B+C**



Concept A: Time Permit

Overview



NOVEMBER 2012						
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

- Principals buy a permit for an unlimited number of miles for a given period of time (such as one year), tied to vehicle registration transactions
- Principal perspective
 - » User pre-purchases a permit for unlimited usage
 - » Permits are annual but can be paid in semiannual or quarterly installments
 - » Purchase and renewal is tied to vehicle registration
 - » Easy to enforce: valid tabs = valid permit
 - » Relatively easy to implement for out-of-state vehicles
- Agency perspective
 - » Similar to Department of Licensing (DOL) current handling of vehicle registration, except adds functions for account and Customer Relations Management (CRM)

Concept B: Odometer Charge

Overview



- Principals pre-pay for the amount of miles they expect to drive over a given period (such as one year)
 - » At period end, actual miles are reported and reconciled with amount prepaid
 - » System does not distinguish miles driven in Washington vs. out-of-state
- Principal perspective
 - » User estimates annual mileage and pre-purchases a permit to cover estimated miles
 - » At end of year, user reports actual miles traveled and reconciles payment (additional payment required or credit applied to next period), and pays in advance for following year
 - » Reporting periods can be annual, semiannual, or quarterly
- Agency perspective
 - » Accounting and CRM would need to be significantly scaled up from current functions at State agencies

Concept C: Differentiated Distance Charge

Overview



- **Principals use in-vehicle electronics to count miles traveled in state only**
 - » Represents the most technically involved of the three concepts and would require a sophisticated accounting and CRM system
 - » Could be operated fully by a State agency, outsourced, or left to consumers to select methods of reporting and payment using existing service providers (Note: for the business case we assumed a state agency will operate all aspects)
- **Principal perspective**
 - » User pays for road usage on Washington State at the end of each quarter, semester, or year
 - » Enforcement through device certification, compliance analytics, and odometer reading
- **Agency perspective**
 - » Requires extensive account and CRM
 - » Similar to tolling, but scale of accounts would be much more than current capabilities

Combinations of Operational Concepts

- Time Permit (A) + Odometer Charge (B)
- Odometer Charge (B) + Differentiated Distance Charge (C)
- Time Permit (A) + Differentiated Distance Charge (C)
- Time Permit (A) + Odometer charge (B) + Differentiated Distance Charge (C)



BUSINESS CASE EVALUATION – OVERVIEW

Financial Criteria

- **Sustainable revenue source**

- » This is the overriding goal
- » The present value of the cash flow helps illustrate the differences among alternatives

- **Cost-effectiveness**

- » Annual cost of collection as a percent of gross revenues
- » Net revenue comparison

Non-Financial Criteria

● Qualitative

- » Qualitative scale: 0 through 4
- » Transparency
- » Complementary policy objectives
- » Equity
- » Simplicity
- » Enforcement
- » Privacy

● Other Important Considerations

- » Ability to distinguish between travel on Washington public roads and other roads
- » Ability to charge non-Washington residents

Performance Criteria that Could be Met by Proper Design of a New System

- We did not evaluate these criteria because they would be part of all concepts and will not help evaluate the differences among the concepts
 - » Data security
 - » Accountability
 - » System flexibility
 - » Interoperability and cooperation
 - » Phasing
 - » User options

High-Level Assumptions

- **Road usage charge would replace the gas tax in 2015, with no transition period**
 - » Numerous ways to transition
 - » If there is a business case to be made for any of the alternatives, the implications of different strategies can be evaluated in the next phase of work
 - » The financial model is a good foundation from which to evaluate transition options
- **Non-diesel vehicles are subject to the road usage charge**

Rate Assumptions

- **Rate setting prerogative of the Legislature and Governor, but we assumed:**
 - » **Gross revenue neutrality in 2015**
 - Means that cost of collection is not included in rates
 - Net revenue neutrality would make the rates higher
 - » **Current gas tax of 37.5 cents per gallon**
 - » **No inflation adjustments for gas tax or road usage charge**

Alternative	Rate	Unit	Basis
Existing Gas Tax	\$0.375	Gallon	Current rate
A. Time Permit	\$174	Year	This equals the average annual gas tax paid in Washington forecast for 2015, which is total annual gas tax collections divided by the number of registered non-diesel vehicles
B: Odometer Charge	\$0.019	Mile	An amount equal to the total gas tax collections in Washington forecast for 2015 divided by the total number of miles driven by Washington non-diesel vehicles
C: Differentiated Distance Charge	\$0.019	Mile	An amount equal to the total gas tax collections in Washington forecast for 2015 divided by the total number of miles driven by Washington non-diesel vehicles

Gas Tax Collection Cost Assumptions

- Preliminary analysis of DOL's 2011-2013 biennial budget suggests that the cost to collect the gas tax represents about 0.8 percent of gas tax revenues annually
- Other national studies confirm this general range
- DOL updating estimates, with results expected December 2013

Summary Findings

- **We developed a conservative picture of road usage charging and gas tax revenues to 2040**
- **Concepts A, B, and C all outperform gas tax by anywhere from \$30 million to just under \$4 billion on a net present value basis over the 2015-2040 period**
 - » **De-coupling revenues from gas consumption is the biggest driver**
 - » **The simplest systems (A and B) suggest a larger differential, because of lower collection costs and initial capital outlays**
 - » **It may take 5+ years, conservatively, to make up the initial costs of implementing the new system, excluding any additional costs from an extended transition period (which may not be necessary, depending on the concept)**
 - » **The \$30 million difference scenario is probably unrealistic: Concept C without other options plus other extremely conservative operational assumptions**

Summary Findings (continued)

- **Combinations of concepts may not be meaningfully different than pure concepts**
- **None of the concepts appear to outshine the others in terms of the other policy objectives**
 - » Interpretations as to which concept may be “better” will depend heavily on the policy priorities of the individual
- **We assumed no involvement by private service providers for account management**
 - » Service providers would only be involved if there are demonstrated cost savings
 - » Oregon is developing a private service provider market—Washington could allow certification of the same providers
- **A long transition period might meaningfully change the results of the financial evaluation**

BUSINESS CASE EVALUATION – FINANCIAL

Components of the Financial Model

- **Forecasts for 2015-2040**
 - » Non-diesel vehicle registrations
 - » Gasoline consumption in Washington (used to compute tax revenues)
 - » Non-diesel VMT in Washington
 - » Fuel efficiency
- **Operational and economic assumptions**
 - » Expected adoption rates of each operational concept
 - » Audit rates
 - » Salary costs
 - » IT equipment costs
 - » Credit card merchant fees
 - » Inflation and discount rates
- **Computations**
- **Outputs**
 - » Present value of gross revenues and costs of collection and the net present value for 2015-2040

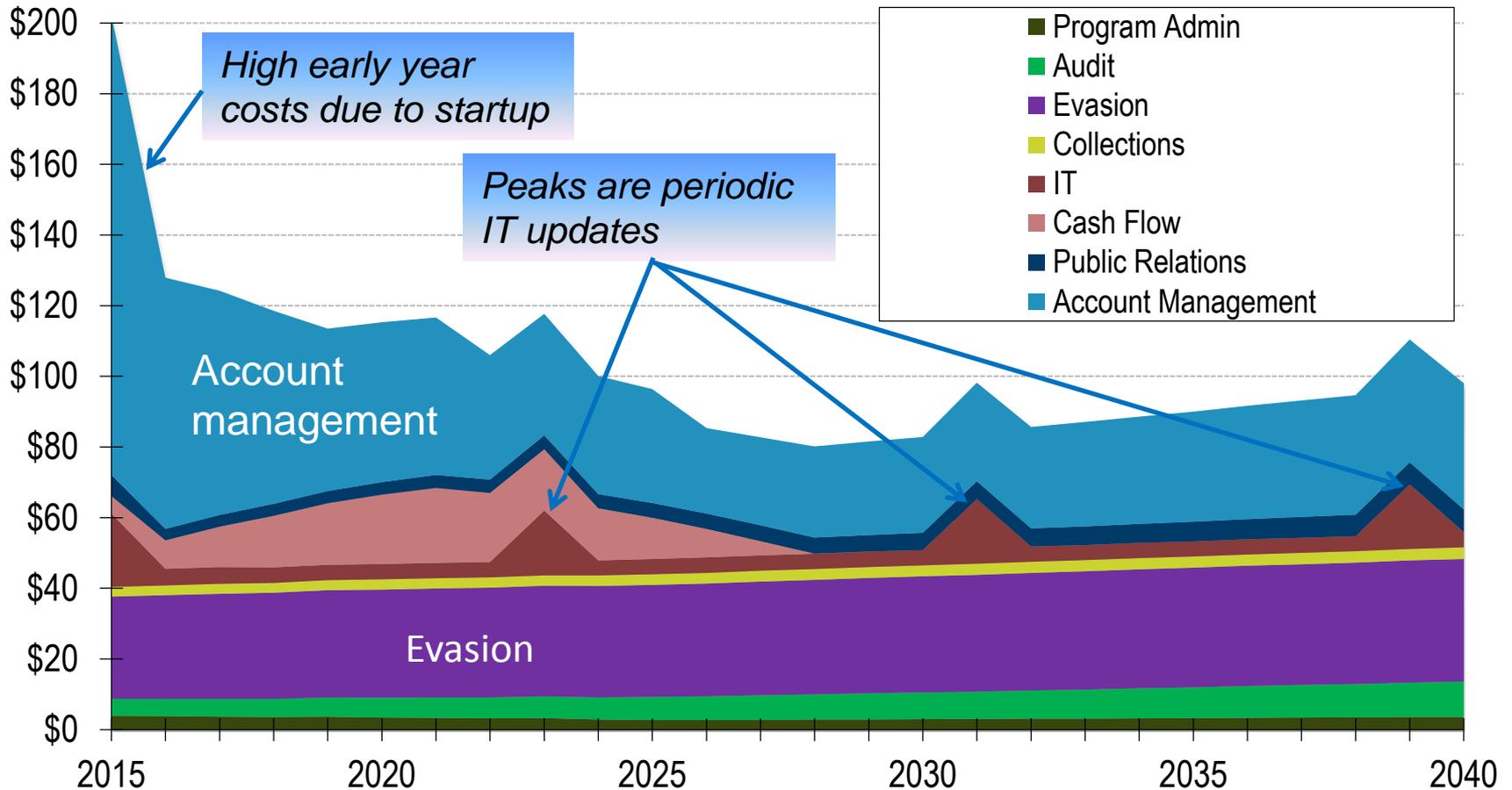
Major Cost Categories

Administration and Collection

- Program administration
- Account management
- Information technology (IT)
- Enforcement
 - » Lost revenue due to evasion
 - » Cost of recovering unpaid tax debt
 - » Cost of audit
- Public relations
- Cash flow

Example of Road Usage Charge Costs by Category for Concept A, B & C (2015-2040)

Dollars (Millions)



Assumptions – Cost of Road Usage Charge Collection

● Account management

- » Concepts A & B: 30% online, 35% in person, 35% via mail
- » Concept C: 60% online, 20% in person, 20% via mail
- » By 2025, all concepts increase to 90% online payment
- » Costs include in-vehicle hardware and communications for Concept C

● Evasion

- » Concepts A & C: 95% compliance (among already-compliant registered vehicles) with no audits
- » Concept B: 90% compliance (among already-compliant registered vehicles) with no audits

● IT

- » Upfront costs of \$20 million
- » 10% annual maintenance, 75% major maintenance every 8 years
- » 10 FTE to operate

● Cash flow

- » 1% interest on short-term loans to make net prepay road usage charge revenue equal to net gas tax revenue, rising to 4% by 2020

Other Important Assumptions

- 2% Inflation
- 3% Discount Rate
- Gas tax collection cost = 0.8% of gross revenues
- Road usage charge rate set in 2015 to be gross revenue neutral with gas tax
- Conservative fuel efficiency:

Scenario	2015	2020	2025	2030	2035	2040
State Forecasts: average fleet MPG	20.0	21.8	23.1	24.4	25.6	26.7
Low fuel consumption scenario: average fleet MPG	20.0	22.9	25.2	27.9	30.7	34.3

32 Scenarios Tested

- **Eight combinations of adoption rates for the concepts:**
 - » Gas tax only
 - » Concept A only
 - » Concept B only
 - » Concept C only
 - » Concepts A & B
 - » Concepts A & C
 - » Concepts B & C
 - » Concepts A & B & C
- **Four combinations of forecast assumptions:**
 - » State forecast of VMT and fuel efficiency
 - » State forecast of VMT and alternative forecast of fuel efficiency
 - » Alternative VMT forecast and State forecast of fuel efficiency
 - » State forecast of VMT and fuel efficiency, scaled down to reflect alternative forecast of registered vehicles

Present Values of Revenues, Costs, Net and Percent Cost of Collection (2015-2040) – All Scenarios

Concept Adoption Rates	State Forecast				State Forecast VMT and Higher Fuel Efficiency				State Forecast Fuel Efficiency and Lower VMT				State Forecast VMT, State Forecast Fuel Efficiency, Lower Registrations			
	Rev	Cost	Net	Cost/Rev	Rev	Cost	Net	Cost/Rev	Rev	Cost	Net	Cost/Rev	Rev	Cost	Net	Cost/Rev
<i>Basic Road Usage Charge System Adoption Rates</i>																
Gas Tax	\$17.1	\$ 0.2	\$16.9	1.0%	\$15.5	\$ 0.2	\$15.3	1.1%	\$15.5	\$ 0.2	\$15.4	1.1%	\$15.7	\$ 0.2	\$15.5	1.1%
100% A	20.5	1.4	19.0	6.9%	20.5	1.4	19.1	6.9%	20.5	1.4	19.1	6.9%	19.5	1.3	18.2	6.9%
100% B	19.8	1.6	18.2	8.0%	19.8	1.6	18.2	7.9%	17.9	1.5	16.4	8.5%	18.9	1.5	17.4	8.0%
100% C	19.8	2.5	17.3	12.7%	19.8	2.3	17.5	11.6%	17.9	2.5	15.4	13.8%	18.9	2.3	16.6	12.3%
<i>Variations in Road Usage Charge System Adoption Rates</i>																
5% A – 95% B	19.8	1.6	18.2	7.9%	19.8	1.6	18.2	7.9%	18.0	1.5	16.5	8.4%	18.9	1.5	17.4	7.9%
40% A – 60% C	20.1	2.0	18.1	9.9%	20.1	1.9	18.2	9.4%	18.9	1.9	17.0	10.1%	19.1	1.9	17.3	9.7%
40% B – 60% C	19.8	2.1	17.7	10.4%	19.8	2.0	17.8	9.9%	17.9	2.0	15.9	11.3%	19.1	1.4	17.7	7.6%
5% A – 50% B – 45% C	19.8	1.9	17.9	9.7%	19.8	1.8	18.0	9.3%	18.0	1.9	16.1	10.3%	18.9	1.8	17.1	9.6%

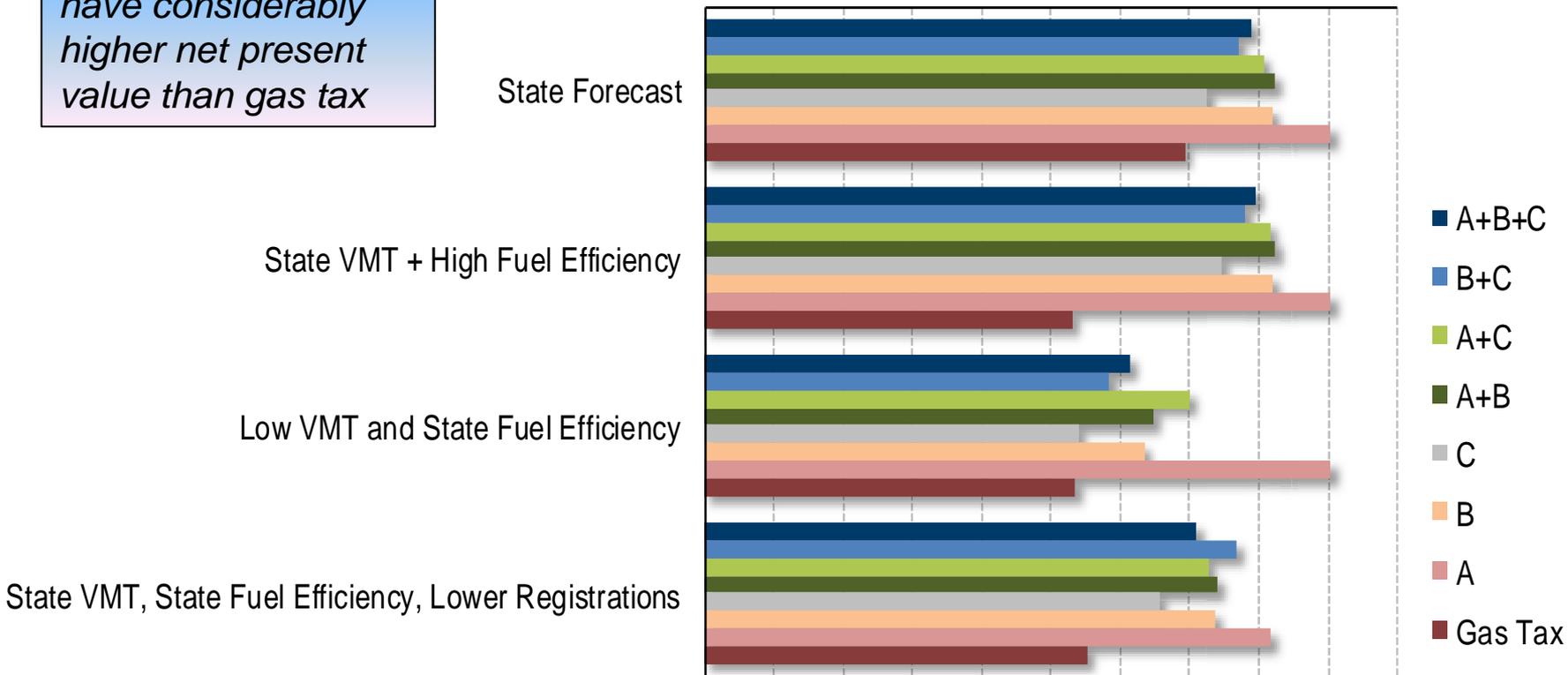
Present Value of Net Tax Revenue

Alternative Concepts and Scenarios 2015-2040

All road usage charge concepts have considerably higher net present value than gas tax

Billions of Dollars

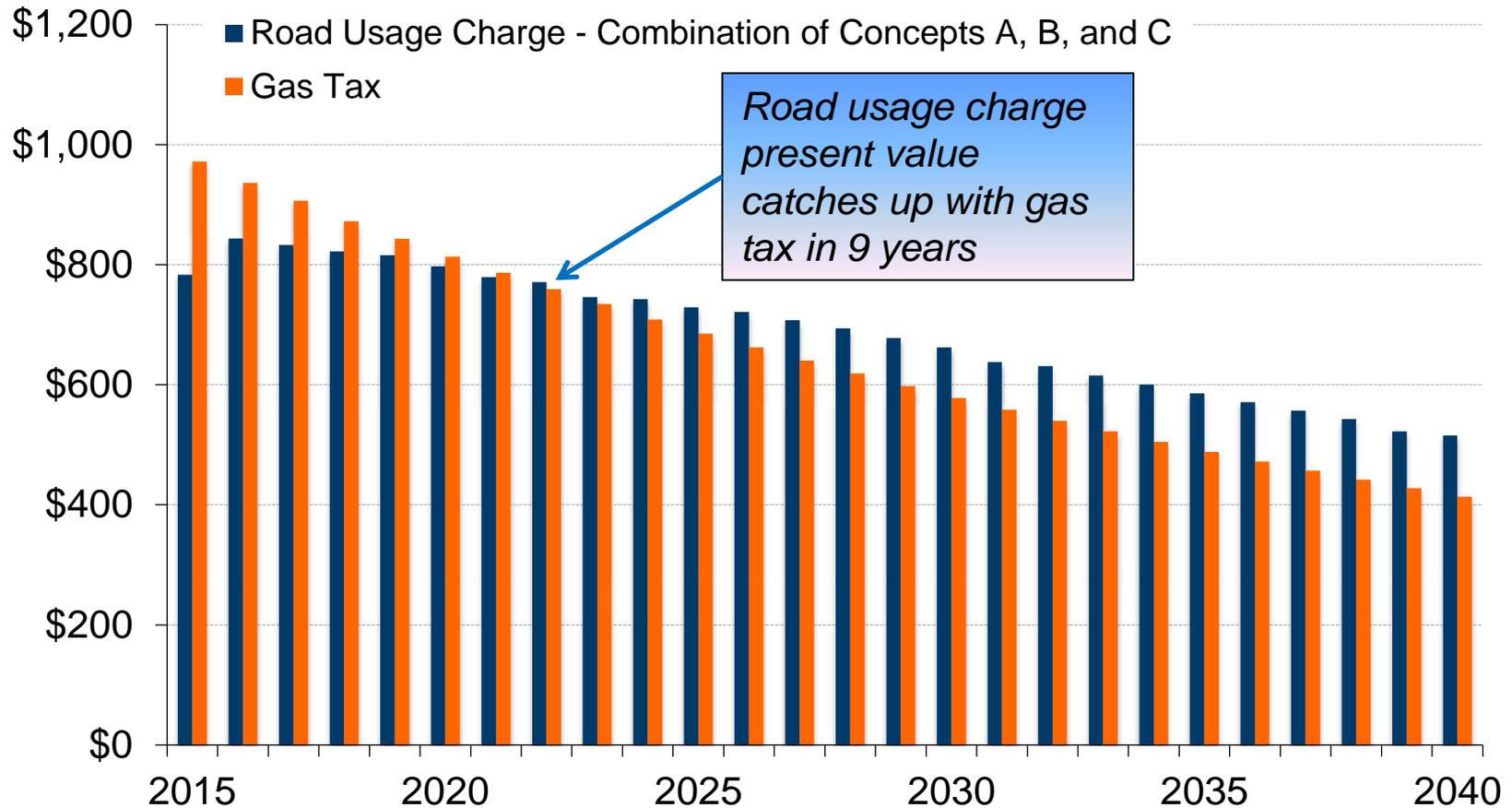
10 11 12 13 14 15 16 17 18 19 20



Present Value of Annual Net Revenues

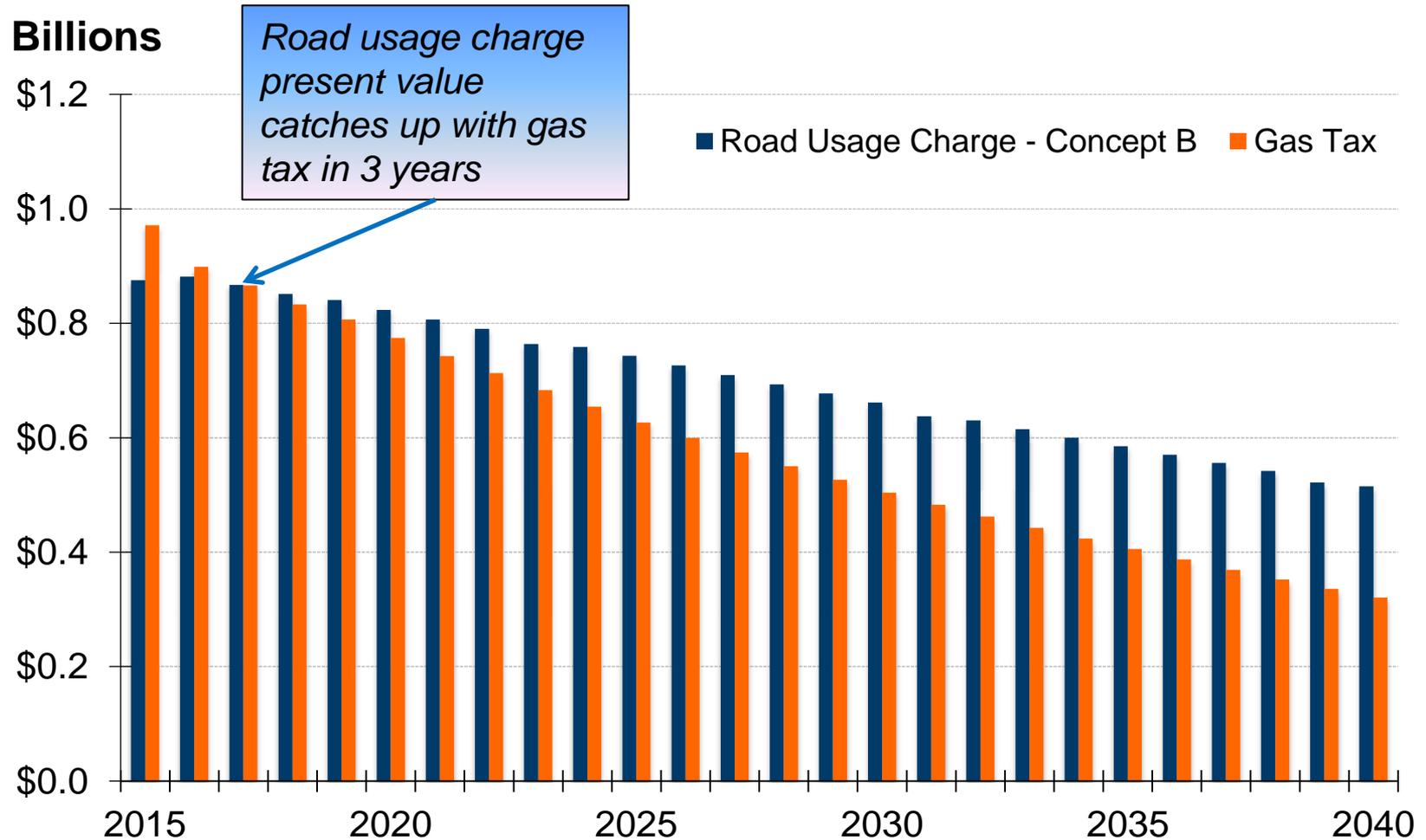
Gas Tax vs. Concepts A & B & C

\$ Millions



Present Value of Annual Net Revenues

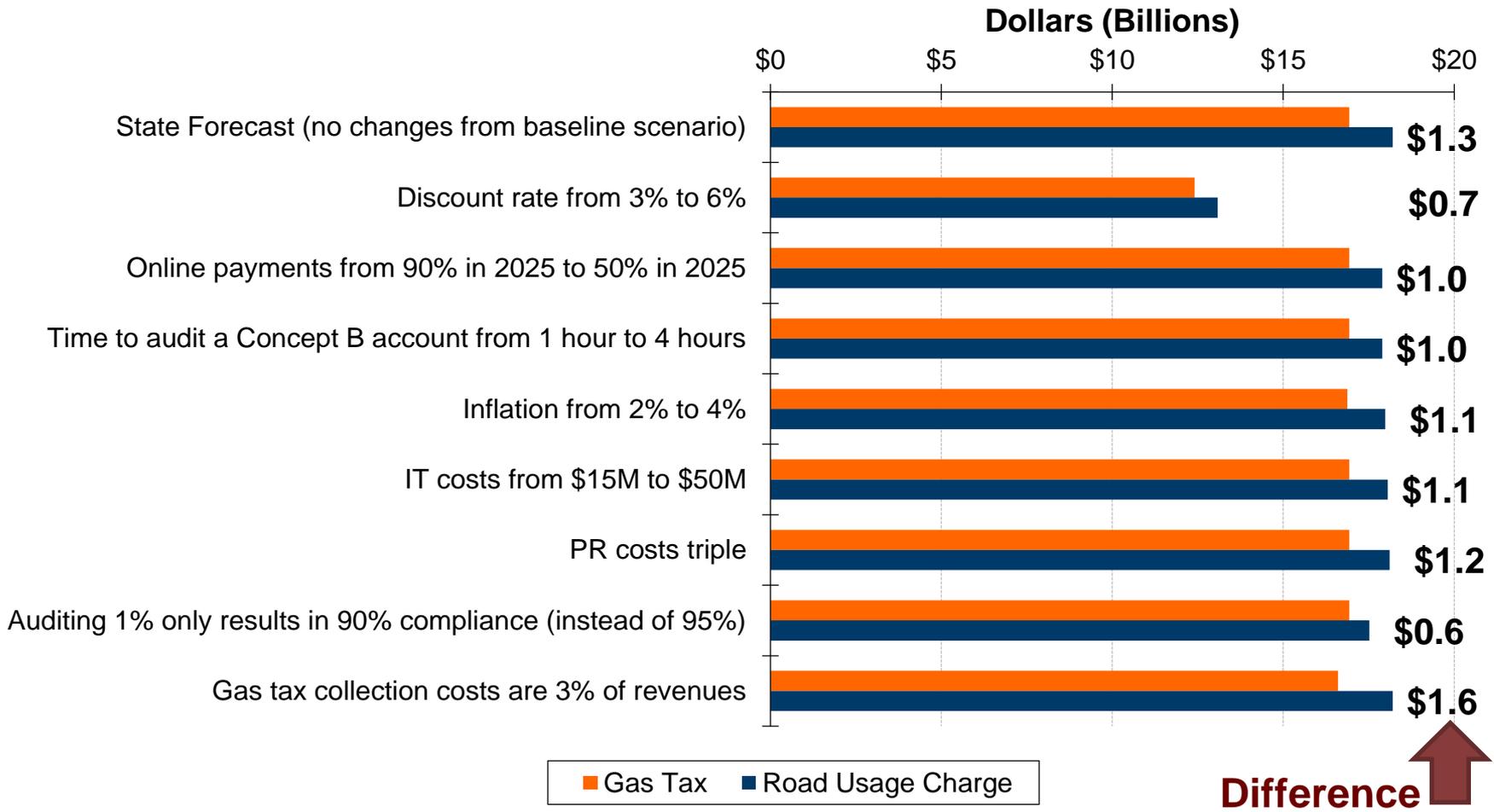
Gas Tax vs. Concept B, High Fuel Efficiency



Concept B Sensitivity Tests

Present Value of Revenue minus Cost

Discount rate and compliance rates have highest impact



BUSINESS CASE EVALUATION – QUALITATIVE

Qualitative Criteria are More Subjective and not Quantifiable

● Qualitative

- » Qualitative scale: 0 through 4
- » Transparency
- » Complementary policy objectives
- » Equity
- » Simplicity
- » Enforcement
- » Privacy

● Other Important Considerations

- » Ability to distinguish between travel on Washington public roads and other roads
- » Ability to charge non-Washington residents

Rating Scheme

- Ratings are the subjective judgment of the consultant team and are included simply to provide a starting point for the Steering Committee's consideration:

Criteria	Rating
Completely Satisfies Criteria	★ ★ ★ ★
Mostly Satisfies Criteria	★ ★ ★
Moderately Satisfies Criteria	★ ★
Minimally Satisfies Criteria	★
Does Not Satisfy Criteria	○

Summary Qualitative Evaluation

	Advantages	Disadvantages
Gas Tax	<ul style="list-style-type: none"> • Simple • Easy to enforce • No privacy issues 	<ul style="list-style-type: none"> • People are unaware of the tax and how much they pay (not transparent) • Imperfect proxy for road usage in that it varies greatly according to the fuel economy of individual vehicles
Concept A: Time Permit	<ul style="list-style-type: none"> • Transparent • Relatively simple • Easy to enforce • No privacy issues 	<ul style="list-style-type: none"> • No relationship to use
Concept B: Odometer Charge	<ul style="list-style-type: none"> • Transparent • Relatively simple • Easy to enforce • Privacy not a significant issue (but some might object to mileage reporting) • Strong relationship to use 	<ul style="list-style-type: none"> • Border residents that travel out of state or drive on private land may pay for many miles driven out of state or off public roads
Concept C: Differentiated Distance Charge	<ul style="list-style-type: none"> • Transparent • Strongest relationship to use, capturing in-state versus out-of-state travel 	<ul style="list-style-type: none"> • Less simple than others • Perception of privacy infringement • Less easy to enforce

**WHAT DOES A ROAD USAGE
CHARGE MEAN FOR
MOTORISTS?**

We compared the annual tax payments of different types of motorists under each concept

- **Representative vehicles**

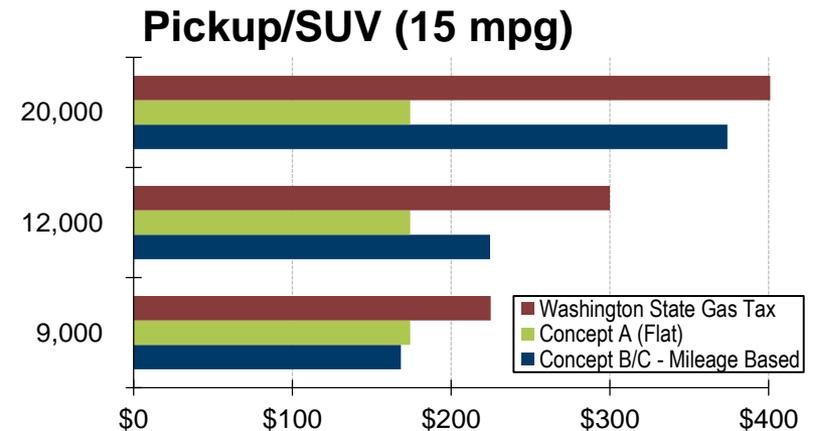
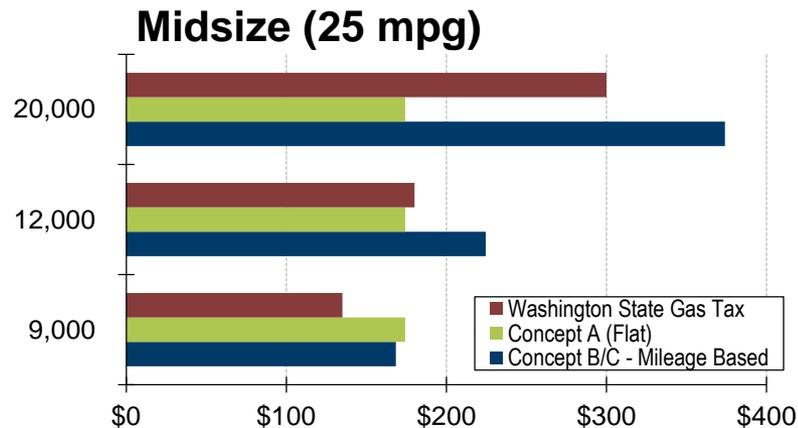
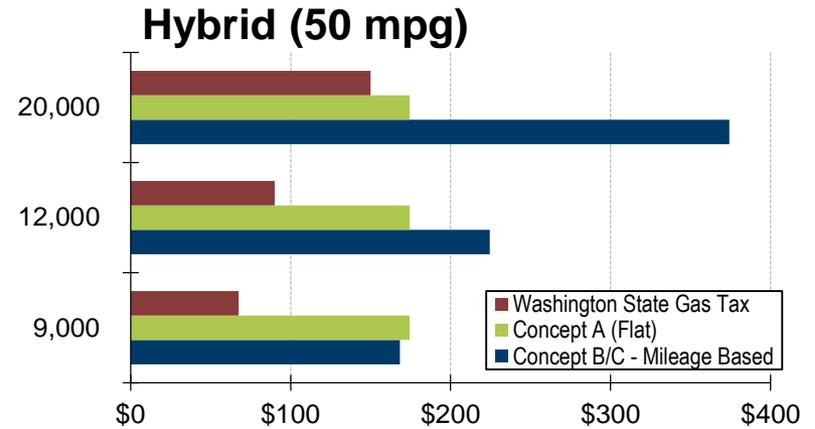
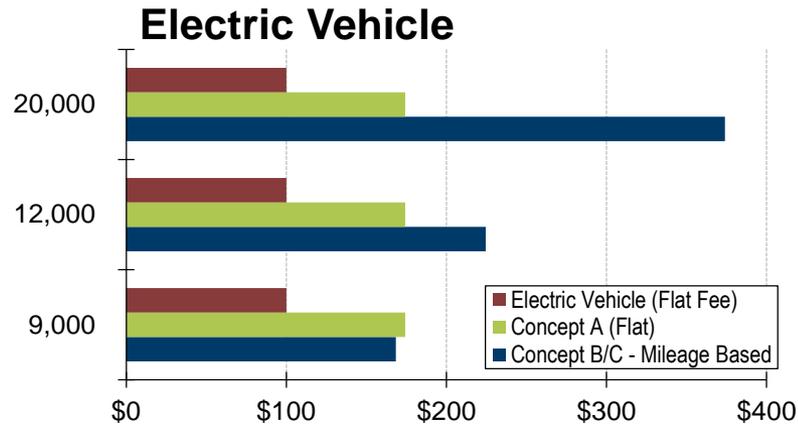
- » **Electric – \$100 flat tax enacted this year**
- » **Hybrid – 50 MPG**
- » **Compact/Midsize – 25 MPG**
- » **SUV/Pick Up Truck – 15 MPG**

- **Per year mileage levels**

- » **9,000**
- » **12,000**
- » **20,000**

- **Note electric vehicles currently pay a flat fee of \$100 per year**

Example Comparison of Annual Tax Payments by Vehicle Type and Annual Miles



PARKING LOT

These important issues have not been ignored – They are simply being deferred for later study

Issue	Issue
Gas Tax Bonds	Tribal Agreements
Rate Setting	Administrative Structure
Out-of-State Drivers	Interoperability with Toll System
Interoperability with Other Jurisdictions	Legal Considerations
Private Service Providers	Changes to the Gas Tax Rate
Transition	Technology
Which vehicles get charged?	“What if?” Scenarios
18th Amendment	Integration with Existing Processes
Transit Vehicles	Information Technology Upgrades
Refunds	Other?

STEERING COMMITTEE DIRECTION

Steering Committee Direction

- Long term forecasts show that gas consumption and gas tax revenue will decline due to improving miles per gallon
 - » Road usage charging can preserve revenue
- Road usage charging can be a long term gas tax replacement
 - » For today, the gas tax is still a viable source of revenue
- The business case for road usage charging has been made
- Broad consensus to move forward with all three concepts
 - » No dissenters among Steering Committee members present
- It's time to start addressing the parking lot issues, such as:
 - » Operational details
 - » 18th Amendment and use of revenue
 - » Transition approaches
 - » Affect on bonds

NEXT STEPS

Next Steps

- **Develop a final report for the Steering Committee to submit to the Commission, including a work plan and budget for the next year**
- **Finalize the Steering Committee's recommendations at its last meeting on November 18**
- **Submit the Steering Committee's final report to the Commission on December 10 or 11**

THANK YOU