Washington State
Road Usage
Charge Assessment

Proposed Road Usage Charge Concepts
for Business Case Evaluation

For Discussion at
Steering Committee Meeting #6

Document #4
June 5, 2013
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Section 1:

Review of Road Usage Charge Concept Fundamentals

\[1\] This Section is a brief summary of the fundamentals presented in Report 2: Potential Road Usage Charge Concepts for Washington, Steering Committee #2 Briefing Material, October 23, 2012. Please refer to this document for further detail.
Core Elements of a Road Usage Charge Concept

The core elements of a road usage charge were introduced in Report 2: Potential Road Usage Charge Concepts for Washington, Steering Committee #2 Briefing Material, October 23, 2012. The core elements are:

- **Principal.** The responsible party—individual or entity such as a corporation or other organization—that is legally responsible to pay charges and fines. This party should be defined in law.

- **Vehicle.** Vehicles that need to pay a road usage charge should be identified in legislation, as should vehicles that might be exempted.

- **Road Network.** The road network defines the roads that are subject to the road usage charge. It is possible that some roads might be excluded from charges, such as roads on private land and toll facilities.

- **Usage.** A measure of usage of the road system that can be based on distance or time (or both).

- **Charge Rates.** How much is charged per unit of usage.

- **Charging Policy.** The set of laws, regulations, and rules that defines the road network, usage, rates, and approved methods of measurement.

- **Road Usage Charge Administration.** The functions of this body includes account management, charge management, compliance and enforcement, and policy/administrative functions, which might led by a separate authority or by existing government agencies. A combination of governmental and private entities can carry out these functions, as discussed in greater detail in Section 2C.
Generic Operational Concept

The core elements combine to form operational concepts that include these characteristics:

- **Every vehicle** will have a single **principal**, but a **principal** may be responsible for more than one vehicle.

- **Usage** of the **vehicle** on the **road network** will generate **charges** based on the **charging policy**.

- **A road usage charging administration** will manage accounts, charge the **principal**, and collect and manage **payments**.

- The **road usage charge administration** might be part of an existing organization or organizations, a new entity, or some combination of these. It may also encompass both governmental and private sector elements.

Figure 1-1 provides an overview of how the core elements fit together into the **generic operational concept**.
**Framework for Operational Concepts**

As described in Report 2, Figure 1-2 outlines an initial framework for eight operational concepts, each reflecting how Washington State might implement a road usage charge, consisting of the following dimensions:

- **Basis of the charge** - Either time or distance (potentially including congestion or environmental factors).
- **Reporting responsibility** - Either declared by the user or detected by the road usage charge “system,” including any component technologies.

These eight operational concepts capture a broad range of policies—from “simple” usage charging to “more complex” congestion and environmental charging, and technologies — from no technology to non-location-based technology to location-based technology. It is possible—and probably preferable—to implement several operational concepts in parallel rather than relying on a single concept in order to achieve a range of choices for principals.

We illustrate the technology alternatives associated with the eight operational concepts on Figure 1-3 on the next page.
Figure 1-3 Road Usage Charge Operational Concepts with Enabling Technology Options
Overview of Administrative Functions

In order to carry out the operational concepts, the State must establish administrative functions in four primary categories:

- **Principal Account Management**, covering typical customer management functions such as opening and closing accounts, customer relationship management, and handling inquiries.

- **Road Usage Management**, which includes identifying road usage and calculating charges (whether detected automatically or through self-reporting), processing transaction data, and calculating and processing of eligible refunds.

- **Compliance and Enforcement** of road usage charge policy provisions for principals and vehicles. There is a fine balance between compliance and enforcement. Compliance is about making it easy for principals to use the system, while enforcement is about catching intentional violators. In addition to acting as a deterrent to evasion (and associated revenue loss) comprehensive, accurate, and timely enforcement can generate additional revenues depending on the policy for fines and penalties.

- **Road Usage Charge Authority**, including all policy and management functions of the governing authority of road usage charges such as setting policy, communications, and system-wide accounting. The authority manages and controls the other functional categories and their constituent functions. It holds the compliance responsibility for the State and has the authority to manage (or outsource) all other functional elements. It also has central functions that are unique to the overall running of the road usage charge that will most likely be retained by the government regardless of the degree of outsourcing in other categories.

Across these four categories, we have identified up to 38 administrative functions needed to carry out a road usage charge (see Figure 1-4 on the next page). Functions in each category are represented by rectangles. Processes are represented by arrows and interconnect to form a complete end-to-end process. The colors correspond to each of the four primary categories. Note that the road usage charge authority incorporates some functions that relate to the other three categories.

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For some operational concepts, not all 38 administrative functions will be necessary. For example, item 11 will not be necessary unless charges are differentiated by zone or segment.
Overview of Administrative Functions (continued)

Figure 1-4 Administrative Functions to Operate a Road Usage Charge

Principal Account Management
- Principal Register/Account Initiation or Additions
- Maintain/Support Customer (CRM)
- Usage & Account Handling
- Change Service Provider / Replace Equipment
- Handle Enquiries, Complaints & Usage Disputes
- Modify, Transfer or Close Account

Usage Management
- System Detect
- Principal Declare
- Process Transaction Data
- Calculate Charge Demands
- Reconcile Usage to Mileage and Zones
- Calculate & Process Refunds

Compliance & Enforcement
- Determine & Verify Infraction
- Manage Compliance
- Enforce
- Recover Fines & Penalties
- Handle Appeals
- Manage Repeat Offenders

Road Usage Charge Authority
- Comply with Policy/Legislation
- Manage Master Set of Accounts
- Audit (Prevent Fraud / Enhance Compliance)
- Set/Recommend Changes to Charge Rates
- Evaluate & Measure Operational Performance
- Manage System Performance (Monitor, inspect & Verify)
- Provide Stakeholder Comms, PR & Marketing
- Trusted Third Party Contract Management
- Provide Planning & Controls
- Manage Assets
- Manage IT/Comms & Security
- Road Usage Charge Management
- Manage Multistate, International and Toll Interoperability
- DOL Interface
- Manage GIS / Map Data
- Reconcile Transactions to Usage/Zones & Principal Account
- Distribute Technology & Inventory Management
- Recover Usage Charge Demands
- Process Usage Charge Payments
- Adjudicate Appeals & Privacy
Section 2:
Proposed Operational Concepts for the Business Case Evaluation
Proposed Operational Concepts for the Business Case Evaluation

A Range of Reasonable Options

Over the last few months, we presented a range of options to the Steering Committee, the Commission, and the Legislature, and came to the conclusion that road usage charging is “feasible.” Our task for the coming few months will be to evaluate the business case for road usage charging. Our goal was to propose a manageable set of options that could stand on their own, be combined, or phased in different ways that might achieve a balance between competing objectives.

We evaluated each of the eight operational concepts presented in Report 2 from the perspective of the Steering Committee’s discussions over the last five meetings, as well as our observations of similar efforts elsewhere. From this, we developed high-level descriptions of three concepts.

- **A. Time Permit** (Concept 1 from Report 2). This is the simplest system where principals would purchase a permit for unlimited road network access for a given period. The advantage of this system is that it would be relatively simple and inexpensive to operate (although the cost will not be trivial) and there are no concerns about privacy. The disadvantage is that it is not proportional to the amount of road usage by a principal.

- **B: Odometer Charge** (Concept 4 from Report 2, called “Estimated Annual Mileage Permit with Reconciliation”). With this system, a principal would prepay for a standard amount of miles, and then reconcile their actual miles periodically. This option also should not raise concerns about privacy, but would add the administrative function of checking odometers periodically, either for all vehicles or with a limited audit.

- **C: Differentiated Distance Charge** (Concept 7 from Report 2, called “Automatic Mileage and General Location Measurement”). This is the most robust of the options, which would involve an added in-vehicle device that records mileage, differentiates between miles driven within and outside of Washington State, and transmits usage data over cellular data networks. This system allows the most precise measurement of usage among the three options, but also is likely to be the most complex to implement. The complexity might be offset by the potential for certified third-party providers to measure and collect road usage charges in conjunction with an existing service such as pay-as-you-drive insurance or in-vehicle telematics.

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3 Engrossed Substitute Senate Bill 5024, 63rd Legislature, 2013 Regular Session. Complete text of relevant sections provided in Appendix A.
Potential Combinations of Concepts

The three concepts could be combined in a variety of ways, allowing users to choose the option that is right for them. Potential combinations include:

- **A** (time permit), on its own this option provides a simple solution to replacing the declining value of the gas tax, but without accounting for the different amounts that motorists travel.
- **A + B** (odometer charge), also a relatively simple solution, that allows motorists to be charged by the mile, but does not distinguish in-state versus out-of-state travel.
- **A+B+C** (differentiated distance charge), accomplishing all of the above, with the added benefit of distinguishing in-state versus out-of-state travel.
- **A, or A+B at the outset, with C following at a future time.** For example, the State would wait until the market is able to provide C at little or even no cost.

Common Elements of the Operational Concepts

Each of the three road usage charge concepts would require an approach to handling many activities, including:

- Account management, including creating, modifying, and closing accounts, as well as making payments;
- Tracking usage (whether miles or time), calculating charges, and processing transactions;
- Handling inquiries and disputes; and
- Compliance and enforcement, including collecting fines, handling appeals, and managing repeat offenders.

Also, any of the options could be priced differently based on vehicle characteristics (e.g., size, weight, environmental rating, or a combination of these factors). Such differentiation would add cost and complexity to any of the systems, and could add to the difficulty of achieving public acceptance.

Many of the activities will be similar between the options, while others may differ considerably. In the pages that follow, we highlight the elements of the operational concepts from the perspective of the user experience. This high level view will guide the policy discussions expected at the Steering Committee Meeting #6 in June 2013. After the June meeting, we will investigate the details and costs associated with the entire system needed to implement a road usage charge for presentation at Steering Committee Meeting #7 in September 2013.
## Comparison of Concepts

<table>
<thead>
<tr>
<th>Comparator</th>
<th>A. Time Permit</th>
<th>B. Odometer Charge</th>
<th>C. Differentiated Distance Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basis for charge</td>
<td>Time</td>
<td>All Miles</td>
<td>Miles in Washington</td>
</tr>
<tr>
<td>Proportional to use?</td>
<td>No</td>
<td>Yes (but includes out-of-state miles)</td>
<td>Yes</td>
</tr>
<tr>
<td>Special in vehicle device?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Burden to motorist</td>
<td>Minimal</td>
<td>Moderate</td>
<td>Minimal to moderate</td>
</tr>
<tr>
<td>Enforcement options</td>
<td>&gt; Visual (vehicle tab or out-of-state vehicle vignette)</td>
<td>&gt; Visual (vehicle tab)</td>
<td>&gt; Detect equipment disconnections and other fraud indicators</td>
</tr>
<tr>
<td></td>
<td>&gt; Automatic license plate recognition</td>
<td>&gt; Random audits</td>
<td>&gt; Random audits</td>
</tr>
<tr>
<td></td>
<td>&gt; At vehicle registration</td>
<td>&gt; Reconcile amount when vehicle is sold</td>
<td>&gt; Reconcile when vehicle is sold</td>
</tr>
<tr>
<td>Ability to capture out-of-state drivers</td>
<td>Yes, with vignette</td>
<td>No, unless paired with time permit</td>
<td>No, unless paired with time permit</td>
</tr>
<tr>
<td>Ability to distinguish out-of-state travel</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
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Note that for all three concepts A, B, and C, we have assumed that principals would prepay their road usage charges, thereby eliminating the issue of the State having to track down past payments. This would allow principals with cash-flow issues to spread their payments over time.
Section 2A: Time Permit
**Time Permit: Overview of Basic Concept**

Time permits are simple to implement and simple to enforce. They require little or no technology and are unlikely to raise privacy issues. They are a simple pass that allows a motorist to use Washington’s roads as much as they choose over a specified period of time.

- Time permits allow unlimited road usage in Washington for a specific period such as a year, half-year, month, week or day.

- Several European countries use a time permit approach called “vignettes”\(^4\) to collect revenue on their motorway system. Vignettes typically use windshield stickers to indicate that a vehicle complies with the fee requirement, but some countries have migrated to electronic approaches that link permits to a license plate. Random checks of license plates can detect people that are driving without a time permit.

- Separate time permit stickers are an additional cost, both to create and manage. Therefore, we suggest a system that links permits to vehicle tabs. If you display a valid vehicle tab, then you have paid your time permit charge.

- For Washington residents that have cash-flow concerns, there could be a system to allow monthly or quarterly payments. People that do not pay their fee by the end of the tab period would not be able to have their tabs renewed.

Washington could decide to charge non-residents under this concept by issuing vignettes indicating valid dates of use for periods from one day to one year, with lower prices for the shorter periods. The system could use window decals or a license plate registration system supplemented by enforcement by mobile devices capable of automatic license plate recognition (ALPR).

The main advantage of this system is that it is simple to calculate whether a motorist has a valid permit or does not. No further accounting is required. And we believe that the cost of this system will be considerably lower than the other systems that distinguish between different amounts of driving.\(^5\) The main disadvantage is that motorists that drive more do not pay more, which some people may view as inequitable.

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\(^4\) Refer to Report 1: *Domestic and International Review and Policy Context, Steering Committee #1 Briefing Material*, September 13, 2012, page 46 for further details on European vignette systems.

\(^5\) We say, “we believe” because we have not conducted a cost analysis yet, which will provide a firmer basis for this assertion, as well as a comparison of costs of the different systems.
**Time Permit Operational Concept**

Users would experience the time permit concept as follows:

- The principal purchases a permit valid for a certain period when they renew their vehicle tabs through the same methods that are currently available today: in person, online, through License eXpress, or by mail.\(^6\)

- Valid vehicle tabs mean that the principal has paid their time permit charge, so enforcement is identical to enforcement of valid registration.

- If Washington desires, out-of-state motorists can register for long- or short-term time permits either online, or through vending machines located near State borders. These motorists will be provided with a window sticker and their license plate would be recorded in a database.

**Time Permit Compliance and Enforcement**

The time permit system would have several types of compliance and enforcement procedures:

- **Valid Tabs.** If a vehicle has valid tabs, it would be presumed to have a paid time permit. For motorists that choose to pay in installments, they will not be able to renew their tabs without fully paying their prior year time permit bill.

- **Spot Checks.** Police can conduct spot checks on out-of-state vehicles (if such vehicles are charged) to confirm the validity of a window decal. Alternatively, we can investigate a fully electronic system that matches license plates with valid time permits and is enforced through mobile scanners already deployed in police cars, as is done in several European countries.

- **Automatic Checking.** Time permits must be continuous. Other than a grace period for reapplication, the timeline of purchasing time permits should be unbroken and provide no gaps. This is relatively easy to record and check with a database.

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\(^6\) We have made the assumption that the keeper of road usage charge accounts would be the Department of Licensing, but other options are possible. We can provide better perspective on the options after we interview staff at the Department of Licensing, Department of Revenue, and Department of Transportation.
Issues for Discussion

The time permit concept is a simple system, yet there are some complexities that require further discussion:

- Under this concept, there is no direct linkage between how much a driver uses the system and how much they pay: everyone pays the same. People that drive a lot of miles will pay the same as those who drive only a few. What does the Steering Committee think about the fact that the time permit does not provide this linkage?

- This is the only one of the three concepts that could feasibly apply to out-of-state drivers. Does the Steering Committee want to assume that out-of-state drivers will need to have a valid permit? Or should out-of-state drivers travel on Washington roadways for free?
Section 2B: Odometer Charge
Odometer Charge: Overview of Basic Concept

Under an odometer charge concept, motorists would be charged for each mile they drive, as measured by their odometer (Concept 4 from Report #2). With this system, a principal would prepay for a standard (or estimated) amount of miles, and then reconcile their actual miles periodically (e.g., once per year). The next period's miles can be based on the mileage incurred in the prior period.

The advantage of this system is that it is relatively simple and that the placement of electronic devices in vehicles would not be necessary. And, unlike the time permit concept, all road usage is captured. There are also a few disadvantages:

- There is no way to distinguish between miles driven on Washington public roads from those driven on private roads or outside of the State.
- There is no easy way to tell if a vehicle is out of compliance on a real-time basis, since odometers cannot be read without entering a vehicle.
  - However, every driver has to renew their vehicle tabs annually, and odometers will always be read at the time a vehicle is sold or serviced.
  - Additional spot checks or audits are possible.
- There is no easy way to charge out-of-state drivers.
**Odometer Charge Operational Concept**

Following is an outline of the basic concept for the odometer charge system.

- The principal prepays their mileage charge for the year based on an estimate of the number of miles they will drive. Alternatively, they could use a generally recognized standard amount, such as 12,000 miles per year. This prepayment could occur when vehicle tabs are renewed.

- Upon renewing vehicle tabs, principals would report their odometer reading and compare the number of miles driven to the estimate, resulting in either a refund or an invoice for the amount owed. For over payments, principals could choose to allocate their refund to the next year’s payment. For significant underpayment, Washington may want to consider assessing a penalty.

- For principals concerned about making large lump sum payments all at once, Washington could offer the option of quarterly or monthly payments, similar to estimated income taxes.

- Upon selling a vehicle, principals would reconcile their final mileage. Washington might consider penalties for significant underreporting.
Odometer Charge Compliance and Enforcement

The odometer charge system would be enforced in the same way registration is enforced today - through the display of valid tabs. Compliance would be checked at the time of vehicle transfer. In addition, it may be possible to use publicly available or proprietary databases (such as those used by CARFAX Vehicle History Reports™) to verify mileage. We will investigate these possibilities in the next phase of work.

Issues for Discussion

There are a number of issues related to the odometer charge concept that require further discussion:

- Is the Steering Committee comfortable with a system that does not charge out-of-state drivers? Or should this concept be bundled with a time permit concept that enables charging for out-of-state drivers?
- Is the Steering Committee comfortable with a system that does not provide refunds for out-of-state travel?
- What does the Steering Committee think of a third-party provider, such as CARFAX, as agents to the State for collecting and providing mileage information?
- Odometer reading can be combined with option A, stand by itself, or be combined with options A and C.
Section 2C: Differentiated Distance Charge
**Differentiated Distance Charge: Overview of Basic Concept**

A differentiated distance charge would allow miles driven within Washington State to be charged, while those outside of the State are not charged. It would use a combination of vehicle location technology, sensors, and cellular communications to record data on vehicle miles driven differentiated by whether the travel is within or outside of Washington. We propose a system that can distinguish between in-state and out-of-state travel, but not distinguish between specific roads, to mitigate some of the privacy concerns. This system would:

- Require advanced location sensing and communications technology that can distinguish whether miles driven are inside or outside of Washington. Although there are ways to make this usage data secure, the perception of data security may remain a concern for some. This technology is already available for pay-as-you-drive insurance as well as in-vehicle telematics such as GM's OnStar. These systems might be used for road usage charging as well.

- Involve data handling, record keeping, accounting, and auditing that is more complex than the simpler systems described in the time permit and odometer charge concepts.

- Likely involve integration with other services that motorists want related to location through government partnership with private certified service providers. In this way, the cost of implementation might be kept low, and government does not have to create, manage, and update rapidly changing technology offerings. Over time, it might be possible (though not necessarily assured) that systems could be available at no charge to the State.

The advantage of this system is that motorists would not be charged for miles driven outside of Washington, thus it may be viewed as more fair than a system that charges for all miles, regardless of where they are driven. The disadvantage is that the differentiated distance charge concept is likely the most costly of the three systems, and is likely to raise the largest concern about privacy, even though there are ways to ensure privacy and data security.
Differentiated Distance Charge – Technology Options

Several technologies enable differentiated charging, which are described below. Under all combinations of systems envisioned, motorists could turn off location detection devices to preserve privacy, but they would lose the ability to distinguish out-of-state travel.

Global Positioning System (GPS) – GPS receivers provide a vehicle’s location by triangulation from signals received from the NAVSTAR GPS satellite system. Typically, accurate readings require signals from four or more geosynchronous satellites.

GPS with Digital Mapping – Incorporating digital mapping into a GPS system provides the potential for additional accuracy and future application of different charging parameters. Digital maps are downloaded periodically and stored in the on-board device. The maps may then be used to match the vehicle’s location to facilities on the map. This improves locational accuracy and distances calculated from the points along the route or by cross-referencing associated tables that provide distances for road segments driven.

Inertial Navigation Sensors (INS) – Some on-board units contain sensors for augmenting or supplementing GPS and mapping data. Accelerometers can precisely measure vehicle acceleration and deceleration as well as speed. Solid-state gyroscopes can provide direction or heading. These sensor inputs can provide inertial navigation assistance to cross reference GPS data or provide a secondary estimate of location based on the last known point or location. Inertial navigation sensor data can be combined with digital map data for measuring distance. In some on-board units, they use both GPS positioning and inertial navigation sensor data together with predictive algorithms to more precisely and continuously measure distance and location.

Cell Tower Triangulation – Since the advent of the smartphone, cellular networks can be used to triangulate the angle and distance from the cellular towers to estimate the location of the cellular modem. While not as accurate as GPS, cell tower triangulation can provide locations when GPS signals are lost due to dense overhead vegetation or other disruptions. Many smartphones will use a combination of cell tower triangulation for pinpointing the location of the smartphone.

Digital Mapping – Digital mapping is an essential element of any of the above technology alternatives. Whether GPS, INS, or cell tower triangulation, the location data must be mapped in order to determine where travel occurred (i.e., within or outside of Washington). Digital maps may be downloaded onto the in-vehicle device itself (so-called “thick client” approach) or simply hosted by the account managing entity (“thin client”). In the former approach, the computation of charges by zone occurs on the device. In the latter approach, location data are transmitted to the account managing entity who determines distance traveled and charges by zone using digital maps on its own servers.
Differentiated Distance Charges – Technology Options (continued)

Connection to the Vehicle Bus – On-board devices can also be connected to the vehicle electronics and read the vehicle control unit to capture total distance as measured by the vehicle odometer. On-board units will have other design features including:

- Power management to minimize drainage of the vehicle’s battery;
- Activation of a “heartbeat” in which the on-board unit reports its status between the in-vehicle device and the central server over the communications network;
- Status display options;
- Measures for tamper detection/fraud resistance, including the ability of the on-board unit to detect and record when it is disconnected or the antenna is disconnected as well as the ability to detect any anomalies indicative of possible tampering or attempted fraudulent alteration of monitored data;
- Bluetooth communications for pairing (and un-pairing) with a smartphone or other vehicle telematics systems; and
- Backup battery and charger to trickle-charge and maintain the battery as the active power source.

In short, the differential distance charge concept is an advanced option that can measure and report vehicle distance and report those miles to either a government-operated facility or a commercially operated entity (known as a certified service provider⁷) that has a contractual relationship with the road usage charge authority to handle accounts and manage the mileage report. It is likely that the road usage charge will be another value-added service offering of existing certified service providers who currently provide pay-as-you-drive insurance, traveler information, and concierge services.

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⁷ Certified agents might be banks, grocery stores, or convenience stores.
Differentiated Distance Charge Operational Concept

Following is an outline of the basic concept for the differentiated distance charge system.

- The principal will select a certified service provider that is authorized to handle his account management on behalf of the road usage charge authority. The selection process may be influenced by an existing business relationship that the principal has with the service provider (e.g., pay-as-you-drive insurance) or is attracted to do business with the certified service provider because they offer other value-added services (e.g., parking, toll payment, fuel payments, discounts at fast food chains, etc.).

- The principal will register with the certified service provider who will in turn notify the road usage charge authority.

- The certified service provider will collect the actual mileage driven each month by the principal's vehicle and will invoice the principal, just like any other utility bill.

- The certified service provider will also monitor and manage the on-board device that it has installed in the principal's vehicle, checking the device to ensure that it has not been tampered with or is non-operational. Since the certified service provider would be responsible for all vehicle mileage of the principal's vehicle, it will also record and keep the initial mileage of the odometer to ensure that all miles are recorded and reported to the road usage charge authority under its contractual and service provisions.

- The principal is free to switch or change certified service providers or to have the account managed by the road usage charge authority.

- Road usage charge revenues would be collected and handled separately from other value-added services offered by the certified service provider.

- The certified service provider would collect, report, and forward tax revenues to the road usage charge authority. The State could include provisions for performance that the certified service provider must maintain and report on to the road usage charge authority so that it can be monitored for performance under its certification and contractual obligations. One of these provisions could be the audit of accounts to ensure that the certified service provider is operating in accordance with general accounting procedures and the key performance indicators of the service agreement.
Differentiated Distance Charge Compliance and Enforcement

Compliance and enforcement of the differentiated distance charge concept is more complex than the other two concepts because compliance is based almost entirely on the security and performance of the in-vehicle device. The transaction data collected on each vehicle outfitted with an in-vehicle device would contain the vehicle identification, error codes, and mileage data. Automated intelligent software agents can analyze the data stream to read patterns and indications that would be difficult by human eyes to discover or detect.

Determine and Verify Infraction

The heartbeat from the unit will inform the certified service provider that the unit is healthy or off-line and the in-vehicle unit would be installed with anti-tampering and automatic detection of attempts to alter its performance. All removals from the vehicle will be recorded by the on-board unit. These attempts will also register error codes detailing precisely what is malfunctioning or disconnected on the unit. Such messages would require the unit to be serviced, with the maintenance crew providing a reading of the odometer of the vehicle and the last distance reading recorded by the in-vehicle device. The maintenance crew would transfer these mileage readings electronically to the certified service provider so that it has the distance from the last mileage reading prior to the tampering. Since this reading can be cross-referenced with distance traveled, burn rates and other factors, the veracity of the odometer reading can also be assessed.
Differentiated Distance Charge Compliance and Enforcement (continued)

Manage Compliance

The certified service provider can apply automated intelligent agents to the software of the transaction processor to monitor compliance automatically, similar to those used to detect credit card fraud. The intelligent agents will look for unusual driving patterns and flag them for investigation. The road usage charge authority will also have the ability to audit the certified service provider.

Enforcement

The certified service provider can contractually enforce a non-compliant principal by terminating their account for cause and transfer the principal’s account to the road usage charge authority for handling. Rules will need to be developed to determine what happens in these cases.

Appeals

Principals will need to be able to contest charges. Appeals can be limited to a specific event or on specific penalties or fines.

Repeat Offenders

The certified service provider can be responsible for identifying repeat offenders and non-payers. In addition to action against their credit rating, certified service providers can simply refuse service to a repeat offender.
Issues for Discussion

As the most sophisticated of the three operational concepts, there are a number of issues related to the differentiated distance charge concept that require further discussion:

- Would the Steering Committee be comfortable with a system that requires a location-based in-vehicle device (that could be turned off by the principal)? Would the Steering Committee be comfortable with a system that allows a location-based in-vehicle device?

- This option would not charge out-of-state drivers. Would you always want this option bundled with a time permit that enables charging for out-of-state drivers?

- Is the Steering Committee comfortable with enlisting commercial entities to act as certified service providers or agents of the State to handle the collection of this tax?

- Is the Steering Committee comfortable with certified service providers using automated intelligent agents to look for unusual patterns in driving behavior?

- This option can be combined with option A for both in-state and out-of-state mileage readings. Likewise, it can be offered with option B for a non-technical choice.

- Furthermore, all three options could be combined, with at least one of the options able to capture out-of-state travel.
Section 3: Next Steps
Work Plan (June 2013 – February 2014)

The work plan moving forward will focus on evaluating the business case for road usage charges in Washington State. Specific work activities are built around the following core tasks.

<table>
<thead>
<tr>
<th>Task</th>
<th>Task Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1 - Develop Road Usage Charge Policy Statements</td>
<td>Develop road usage charge policy statements for use in refining road usage charge concepts in Task 2.</td>
</tr>
<tr>
<td>Task 2 - Refine Operational Concepts</td>
<td>Develop operational concepts that reflect the policies developed in Task 1.</td>
</tr>
<tr>
<td>Task 3 - Evaluate the Business Case</td>
<td>Evaluate the value proposition of potential road usage charging systems developed in Task 2 compared to the existing gas tax.</td>
</tr>
<tr>
<td>Task 4 - Documentation and Budget Preparation</td>
<td>Document the 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.</td>
</tr>
</tbody>
</table>
## Schedule of Meetings

<table>
<thead>
<tr>
<th>Date</th>
<th>Type</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 11, 2013 (SeaTac)</td>
<td>SC</td>
<td>Policy writing and operational concepts</td>
</tr>
<tr>
<td>July 30 or 31, 2013 (Olympia)</td>
<td>Commission</td>
<td>Policies and operational concepts</td>
</tr>
<tr>
<td>August 2013 (date to be determined) Via Web</td>
<td>SC Subcommittee: Concept Subcommittee;</td>
<td>Operational concepts in depth</td>
</tr>
<tr>
<td>September 12, 2013 (SeaTac)</td>
<td>SC</td>
<td>More detailed operational concepts and cost estimates</td>
</tr>
<tr>
<td>September 2013 (date to be determined) Via Web</td>
<td>SC Subcommittee: Business Case Model Subcommittee</td>
<td>Review business case model and assumptions. Include JTC staff</td>
</tr>
<tr>
<td>October 9, 2013 (Tacoma City Hall)</td>
<td>JTC</td>
<td>Legislatively mandated progress report</td>
</tr>
<tr>
<td>October 14, 2013 (SeaTac)</td>
<td>SC</td>
<td>Review business case and policy/other issues</td>
</tr>
<tr>
<td>October 15 or 16, 2013 (Olympia)</td>
<td>Commission</td>
<td>Review business case and policy/other issues</td>
</tr>
<tr>
<td>November 4-8, 2013 (week of) Via Web</td>
<td>SC Subcommittee: Final Report Subcommittee</td>
<td>Review report work in progress</td>
</tr>
<tr>
<td>November 21, 2013 (SeaTac)</td>
<td>SC</td>
<td>Draft report and draft proposed workplan/budget for next year, potentially including a pilot</td>
</tr>
<tr>
<td>December 10 or 11, 2013 (Olympia)</td>
<td>Commission</td>
<td>Draft final report – approve for submittal to Legislature and Governor</td>
</tr>
<tr>
<td>January or February 2014 (date to be determined) (Olympia)</td>
<td>Transportation Committees of Legislature</td>
<td>Present final report and recommendations</td>
</tr>
</tbody>
</table>
Appendix A:

Engrossed Substitute Senate Bill 5024, Section 205(3)
For The Transportation Commission

The appropriations in this section are subject to the following conditions and limitations:

(3)(a) $400,000 of the motor vehicle account--state appropriation is provided solely for the development of the business case for the transition to a road usage charge system as the basis for funding the state transportation system, from the current motor fuel tax system. The funds are provided for fiscal year 2014 only.

(b) The legislature finds that the efforts started in the 2011-2013 fiscal biennium regarding the transition to a road usage charge system represent an important first step in the policy and conceptual development of potential alternative systems to fund transportation projects, but that the governance for the development needs clarification. The legislature also finds that significant amounts of research and public education are occurring in similar efforts in several states and that these efforts can and should be leveraged to advance the evaluation in Washington. The legislature intends, therefore, that the commission and its staff lead the policy development of the business case for a road usage charge system, with the goal of providing the business case to the governor and the legislative committees of the legislature in time for inclusion in the 2014 supplemental omnibus transportation appropriations act. The legislature intends for additional oversight in the business case development, with guidance from a steering committee as provided in chapter 86, Laws of 2012, augmented with participation by the joint transportation committee. The legislature further intends that the department of transportation continue to address administrative, technical, and conceptual operational issues related to road usage charge systems, and that the department serve as a resource for information gleaned from other states on this topic for the commission's efforts.

(c) For the purposes of this subsection (3), the commission shall:

(i) Develop preliminary road usage charge policies that are necessary to develop the business case, as well as supporting research and data that will guide the potential application in Washington;

(ii) Develop the preferred operational concept or concepts that reflect the preliminary policies;

(iii) Evaluate the business case for the road usage charge system that would result from implementing the preliminary policies and preferred operational concept or concepts. The evaluation must assess likely financial outcomes if the system were to be implemented; and
(iv) Identify and document policy and other issues that are deemed important to further refine the preferred operational concept or concepts and to gain public acceptance. These identified issues should form the basis for continued work beyond this funding cycle.

(d) The commission shall convene a steering committee to guide the development of the business case. The membership must be the same as provided in chapter 86, Laws of 2012, except that the membership must also include the joint transportation committee executive members.

(e) The commission shall submit a report of the business case to the governor and the transportation committees of the legislature by December 15, 2013. The report must also include a proposed budget and work plan for fiscal year 2015. A progress report must be submitted to the governor and the joint transportation committee by November 1, 2013, including a presentation to the joint transportation committee.