A-13

USE OF PRIVATE SECTOR SERVICE PROVIDERS TO COLLECT RUC

WA RUC

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Use of Private-sector Service Providers to Collect RUC

D'ARTAGNAN CONSULTING

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PREFACE

The purpose of this report is to provide information for the Washington Road Usage Charge Steering Committee's consideration as they begin to deliberate whether or how the state of Washington could transition to a per-mile fee system as a future replacement for the state's motor vehicle fuel tax (gas tax).

The information contained in this report examines the criteria for assessing whether a legislatively-adopted road usage charge program should use private-sector service providers, a government agency or some combination to collect mileage data and the road usage charge from motorists subject to it. Should the state decide to use private-sector service providers for collection roles, additional issues arise such as whether there should be only one private-sector service provider or an open market of multiple private-sector providers to instill continuous competition within the RUC collection mechanism. This paper will assess these possibilities.

This report is being presented to the Steering Committee as a draft version for review and discussion at its upcoming meeting on June 27, 2019.

For this report, all footnotes and citations appear at the bottom of the page to improve readability.

EXECUTIVE SUMMARY

The purpose of this report is to examine five RUC delivery configurations for collection of mileage data and a road usage charge from payers, with the following objectives:

- Develop criteria for assessing the collection of mileage data and a road usage charge from payers under various RUC delivery configurations.
- Apply the criteria for collection of mileage data and a road usage charge under the three categories of possible delivery configurations:
  - Fully state operated RUC system
  - Private-sector service providers operated RUC system with state oversight:
  - Service provider/state hybrid RUC system:
- Determine the most advantageous delivery configuration for collection of mileage data and a road usage charge under various preferences.
- Determine a transition pathway for achieving the most advantageous delivery configuration for collection of mileage data and a road usage charge under various preferences.

This paper assesses the possibilities for delivery of a RUC system for a state. Chapter 3 describes five configurations for delivery of the revenue collection functions for a RUC system. Chapter 4 defines the criteria for assessment of the five configurations. The assessment undertaken in chapter 5 applies these criteria to inform selection of the delivery mechanism for a fully mature, final end state RUC system.[1] In other words, the chapter 5 assessment suggests answers to the question, “What is the best delivery mechanism for a RUC program after government has refined its oversight and administrative systems and RUC is broadly mandated for all, or substantially all, new passenger vehicles?”. Chapter 6 determines the transition pathways to a fully mature, final end state for a RUC program.[2] Chapter 7 identifies legal elements required for the

[1] The complete detailed analysis of how the assessment criteria apply to each delivery configuration is contained in Appendix A.
[2] The complete detailed analysis of how the transition criteria apply to each transition pathway is contained in Appendix C.

state of Washington to enable third parties to act on behalf of the state to collect mileage data and a road usage charge.

The high-level operational elements of a RUC system are:

- Customer service and account management
- Charge identification and processing
- Compliance, enforcement, and audit
- Maintenance and operation of the vehicle registry
- Oversight of the system activities, including monitoring and reporting.

This assessment covers private sector involvement for two of the five high-level operational elements of a RUC system: (1) customer service and account management and (2) charge identification and processing. This paper assumes the other three elements—compliance, enforcement, audit; maintenance of the vehicle registry; and oversight—remain largely or entirely the purview of the state.

The five configurations for delivery of the customer service and account management and charge identification and processing functions in a RUC system are contained in the following table:

Configurations	RUC System Delivery Description
Configuration 1	Government agency-only delivery
Configuration 2	Single private-sector services provider delivery
Configuration 3	Open market private-sector services provider delivery
Configuration 4	Combination of government agency-only delivery and open market for private-sector provider delivery
Configuration 5a*	Combination of government agency delivery and single private-sector provider delivery under a closed system
Configuration 5b*	Combination of government agency delivery and single private-sector provider delivery under an open system

Assessment Criteria. This paper uses these 32 assessment criteria (see table 4-2 for a list of the criteria) grouped into six categories to orient assessment of each of the five most likely RUC system configurations. These six categories are as follows:

- Administrative effectiveness,

- Participant experience,
- Operational performance,
- Practical availability,
- Flexibility, and
- Policy alignment.

Assessment of the Five Configurations. Through application of 32 assessment criteria, the assessment finds that government-only delivery (configuration 1) is desirable for providing manual reporting options but not for provision of a range of technology options. Single private-sector provider delivery (configuration 2) has no advantages in a final end state, but may enable transition to a fully mature program by temporarily providing technology options and account management services requiring advanced technical expertise in a RUC program's initial stages. An open market for multiple private-sector service providers (configuration 3) is best for a large RUC system in need of technology evolution and cost reductions that come from private sector competition. An open market combined with government provision of an additional service option (configuration 4) will also be desirable for a large system with an ability to mix manual reporting options provided by private-sector service providers with automated reporting options provided by the government. Thus, configurations 1, 3 an 4 are the preferred delivery configurations. Which configuration is the best will be determined by the nature of the RUC system adopted.

Transition. While it is possible for a RUC system to begin at its final end state, the likelihood is low. Rather than undertake the risky proposition of mandating RUC for a substantial portion of the vehicle fleet, a wiser strategy suggests beginning with an initial, short-term configuration by adding vehicles into the program in increments over time. In this way, the general driving public familiarizes itself with the RUC program in small bites as the RUC system expands into complete coverage over a number of years.

Assessment of the four transition pathways to a final end state for a RUC program reveals that the best transition pathway depends upon the preferred RUC delivery configuration. The transition pathway question for each preferred delivery configuration yields a different answer.

For government-only delivery (configuration 1), the best transition pathway is procurement of *a single, private-sector service provider for a limited duration (transition*

pathway 2) operating under an open system adopted by the government. Although not foundational to the final end state of government operations, a single private-sector service provider offers the greatest certainty and simplicity, and allows transferability to the ultimate government-operated RUC system.

For the configuration of an open commercial market for multiple service providers (configuration 3), the best transition pathway is *a single, private-sector service provider as the first entrant into an open commercial market with open system performance standards adopted at the beginning of the program* (transition pathway 3). Transition pathway 3 would lead to an easy transition to an open commercial market, better meeting the criteria for foundation, adaptability, ease of implementation and timeliness than any other transition pathway. As the first entrant into an open market, a single provider could simplify the work of a single state government by removing or reducing the procurement and oversight responsibilities of regulating an open market and managing multiple private-sector providers.

For the configuration for a *combination of government agency and private-sector open market* (configuration 4), the best transition pathway is a combination of government agency and procurement of a single, private-sector service provider as the first entrant into an open commercial market with the same open system performance standards as the ultimate open commercial market (transition pathway 4). The other transition pathways will prove cumbersome because there will be more complexities and risk by either adding the government functions or adopting the specific open system performance standards required for an open commercial market at a later time.

In summary, rather than commence in a final end state, the RUC system will likely start with a transition pathway that leads to one of the three preferred delivery configurations. The optimal transition pathway differs depending upon the recommended final end state delivery configuration under consideration.

- For *government-only delivery* (configuration 1), the optimal pathway would be a single, private-sector service provider for a limited duration operating under an open system adopted by the government. (transition pathway 2).

- For *open commercial market for multiple private-sector providers delivery* (configuration 3), the optimal pathway would be a single, private-sector service provider as the first entrant into an open commercial market with open system performance standards adopted at the beginning of the program (transition pathway 3).
- *For a combination of government agency and open market for multiple service providers delivery* (configuration 4), the optimal pathway would be starting with a combination of government agency and procurement of a single, private-sector service provider as the first entrant into an open commercial market with the same open system performance standards as the ultimate open commercial market (transition pathway 4).

1 Introduction

1.1 WA RUC Steering Committee interest private-sector service providers to collect mileage data and road usage charges

The Legislature authorized investigation of a per-mile road usage charge (RUC) with the intent of studying a funding mechanism as a potential future replacement for the state's motor vehicle fuel tax ("gas tax").[3] With increases in vehicle fuel economy and quicker adoption of alternative-fuel vehicles, a transportation funding system dependent on gasoline sales will face declining revenue per mile, drawing into question whether the current gas tax system of roadway funding is financially sustainable or fair over the mid and longer term.

Throughout its deliberations, the Washington Road Usage Charge (WA RUC) Steering Committee has identified policy issues for resolution before enactment of a per-mile RUC. One of those issues is to understand the best way to administratively collect a road usage charge. Configuration options include government agency collection, a single private-sector service provider collection, collection by private-sector service providers in an open, competitive market, or combinations of government agency and private-sector service provider collection. This report provides analysis of each configuration option for Steering Committee consideration.

1.2 Importance of delivery configuration for a RUC system

The delivery configuration for a RUC system will impact costs, timetable for system implementation, risks, and complexity. The Steering Committee preferred to work with private service providers in the demonstration phase of the WA RUC Pilot Project. This was based on the prior work done elsewhere, primarily in New Zealand and Oregon, to develop approaches and models for private-sector provision of RUC services through an open market. Although difficult to simulate an open, competitive market in a limited-term trial with no real financial stakes, a pilot does allow competing service providers to offer choices to motorists. The WA RUC pilot featured two private-sector service providers

[3] 2012 Supplemental Transportation Budget, Chapter 86, Laws of 2012, at section 205, subsection (4),

offering five mileage reporting methods along with the customer service and charge processing functionality for volunteer participants.

Assessment and understanding of the tradeoffs made with the use of private service providers aids development of a policy that guides future procurement for RUC systems. This understanding also assists defining the roles and responsibilities for state agencies either to buy, test, own, and operate a system, or to supervise and monitor the performance of private firms that do so.

1.2.1 Research approach

The WA RUC Pilot Project featured two private-sector service providers using a mix of specialized and off-the-shelf commercial technology and systems to deliver the mileage reporting methods in a *simulated open market* with a data collection hub. WA RUC volunteer drivers chose their service provider and technology for customer service, account management, charge identification and processing.

An *open market* allows private-sector service providers to engage in continual competition, entering and exiting the open market at will. A government agency procures qualified private-sector service providers to participate in the open market. A private-sector provider qualifies for participation in the open market by proving its capability to meet the standards through a certification process. This paper references simulations of open markets undertaken in various RUC pilots and programs but the reader should recognize the virtual impossibility for any limited-budget pilot test or program to truly simulate an open market, operationally or financially, with a short duration or limited number of participants.

To complete the research for this paper, the project team undertook several parallel analyses, including an assessment of the state IT system needs and costs of a RUC system under various scenarios, development of a range of possible state organizational designs for implementing a RUC, and this analysis of private-sector provision of RUC services. Specifically, this paper analyzes the experience of pilot participants, including their understanding of the choices available and their preferences. Experience in other jurisdictions were gathered and assessed against criteria to test the merits of various delivery configurations. This research also identified legal elements required for the state

of Washington to enable third parties—private-sector service providers—to act on behalf of the state to collect RUC.

1.2.2 Objectives

This paper examines delivery configurations for collection of mileage data and a road usage charge from payers, with the following objectives:

- Develop criteria for assessing the collection of mileage data and a road usage charge from payers under various RUC delivery configurations.
- Using available evidence and knowledge, apply the criteria for collection of mileage data and a road usage charge under five possible configurations:
  - Fully state operated RUC system
    1. Government agency-only configuration
  - Service provider operated RUC system with state oversight:
    2. Single private-sector service provider configuration
    3. Multiple service provider configuration in an open market
  - Service provider/state hybrid RUC system:
    4. Combination of government-agency and open market private-sector service providers configuration.
    5. Combination of government-agency and single private-sector service provider configuration
- Determine the most advantageous delivery configuration for collection of mileage data and a road usage charge under various preferences.
- Determine a transition pathway for achieving the most advantageous delivery configuration for collection of mileage data and a road usage charge under various preferences.

The rudiments of an open market for RUC services have already appeared. Oregon's ORe*GO* program currently has two commercial account managers under contract, one of whom is also under contract for services for the Utah RUC program. The WA RUC pilot project used a third private-sector entity to provide RUC services. These firms, in various combinations, have also provided, or will provide, RUC services for the California Road Charge Pilot Program and other RUC pilot demonstrations in Colorado, Pennsylvania, Delaware and Minnesota. The membership of the Washington D.C. based Mileage

Based User Fee Alliance indicates there are other firms interested in joining the RUC market once it reaches a certain level of maturity. This may mean promise of a sizable number of participating RUC payers and access to a perpetually open market, upon a firm's certification of capabilities to meet performance criteria, that will allow entry and exit at will.

This paper assumes that the state of Washington prepares a viable business case that will attract private-sector service providers to offer their services to the RUC program during solicitation under any of the various delivery configurations. This paper also assumes that the procuring government agency does due diligence to ensure that the private-sector service providers contracted under any configuration are financially and technically robust to sustain operations at a large scale.

1.2.3 Methodology

This paper assesses the possibilities for delivery of a RUC system for a state. Chapter 3 describes the five configurations for delivery of the revenue collection functions for a RUC system. Chapter 4 defines the criteria for assessment of the five configurations. The assessment undertaken in chapter 5 applies these criteria to inform selection of the delivery mechanism for a fully mature, final end state RUC system.[4] In other words, the chapter 5 assessment suggests answers to the question, "What is the best delivery mechanism for a RUC program after government has refined its oversight and administrative systems and RUC is broadly mandated for all, or substantially all, new passenger vehicles?". Chapter 6 determines the transition pathways to a fully mature, final end state for a RUC program.[5] Chapter 7 identifies legal elements required for the state of Washington to enable third parties to act on behalf of the state to collect mileage data and a road usage charge.

[4] The complete detailed analysis of how the assessment criteria apply to each delivery configuration is contained in Appendix A.
[5] The complete detailed analysis of how the transition criteria apply to each transition pathway is contained in Appendix C.

2 BACKGROUND

2.1 Collection of taxes and fees in the United States

For an entity to collect taxes, fees, tariffs or any other revenue[6] for public purposes, the entity must have the ability to identify and interact with the payers and the data for determining the tax amount, the authority to issue tax invoices and collect the tax, and a place to forward the revenue. In most cases, the entity must also have an ability to account for whether the tax invoices are paid and ensure compliance.

Most tax and fee systems that generate revenue for public purposes in the United States use government agencies and personnel to collect revenue in various authorized ways. Property taxes, income taxes, and fuel excise taxes are collected in this manner as well as fees for hunting and fishing licenses, permits for construction and air emissions, and many other activities.

It is also common in the United States for authorized private-sector entities to collect revenue on behalf of the government. Sales taxes, for example, are collected from the payer by private-sector retailers who then forward the revenue collected to a government agency. The retailer collects the data necessary to calculate the tax—the sales amount—then applies the sales tax rate, collects the tax as part of the transaction and forwards the total taxes collected from multiple transactions to a government agency.

2.2 Collection of a road usage charge

At present, the state collects fuel excise tax and registration fee revenue directly. In the case of the fuel tax, the Department of Licensing collects revenue from fuel distributors, who then pass the cost along the supply chain, ultimately to the end consumer. If there is a transition toward RUC, the use of private-sector service providers would represent a change from the status quo.

Five high-level operational elements of a RUC system are:

1) Customer service and account management
2) Charge identification and processing

[6] For purposes of this paper, all types of revenue will be referred to as “taxes.”

3) Compliance, enforcement, and audit
4) Maintenance and operation of the vehicle registry
5) Oversight of the system activities, including monitoring and reporting.

This paper focuses on provision of the first two operational elements. Both government agencies and private-sector entities have the capabilities to provide customer service and account management and charge identification and processing.

The vehicle registry is a natural state monopoly. Since proper identification of vehicles and their owners is necessary for association of an owner and vehicle to a RUC account, enforcement and audit are inherently best suited to state provision. Oversight is necessarily a state function because only the state has a duty to ensure the public interest is met. Customer service and account management, and charge identification and processing, however, may be delivered by a private sector entity.

3 Configurations for Delivery of Revenue Collection Functions in a RUC System

This chapter presents five configurations for delivery of the customer service and account management and charge identification and processing functions in a RUC system. States either operate, or have tested operations for, each of these configurations whether for passenger-vehicle RUC or heavy vehicle weight-distance tax. The essential configurations are:

1. Government agency-only configuration
2. Single private-sector service provider configuration
3. Open market private-sector service providers configuration
4. Combination of government-agency and open market private-sector service providers configuration
5. Combination of government-agency and single private-sector service provider configuration

3.1 Government agency-only configuration

For collection of RUC solely by a government agency (configuration 1), the agency must have the ability to identify and interact with the payers, the ability to accumulate the data necessary for collection of RUC, and collection authority. The agency must also have sufficient resources such as personnel (technical, communications, management), computer systems, a data management database and data management tools.

Four states in the United States use solely government agencies to collect a road usage charge for heavy vehicles called the weight-mile tax.[7] These states fundamentally use a paper-based reporting system to collect the data for calculation of a weight-mile tax, including not only self-reported miles-traveled but also distributed axle-weight and vehicle configuration (i.e., tractor and number and type of trailers). Oregon's weight-mile tax

[7] The states collecting weight-miles taxes are Oregon, New Mexico, Kentucky and New York.

program allows submission of electronic data handled by EROAD, a private player certified by the government that performs similar functions for heavy trucks that WA RUC service providers handled for passenger cars in the pilot.

For enforcement purposes, weight-mile taxation takes advantage of other policies that also manage common-carriers such as weight-limits, safety requirements and driving hours-limits. It is understandable why one government agency would manage all the policies applied to common carriers. In the state of Oregon, which has the most robust weight-mile tax program, the Motor Carrier Transportation Division also regulates common-carriers and enforces laws applied to them.

No state has attempted collection of a RUC, as applied to passenger vehicles, exclusively by a single government agency, even by simulation, in any RUC pilot or program thus far.[8] [9]This may be because government agencies tend not to have the initial technical expertise to collect passenger-vehicle RUC or the ability to obtain new personnel for tests. To date, RUC programs in the United States have used advanced technology for mileage reporting. Government agencies are best suited for oversight capabilities rather than maintenance of the cutting-edge knowledge of technologies and businesses systems found in the private sector.

Up to this point, passenger-vehicle RUC has only occurred in small demonstrations and programs or on time-limited tests. Adding a large government staff in such cases may prove impractical for a pilot program or demonstration limited in size or duration. A sizable permanent program may yield a more positive environment for a government-only RUC collection system for passenger vehicles.

3.2 Single private-sector service provider configuration

When a government agency lacks sufficient capacity for collection of a tax—whether inadequate staffing levels, technical capacity or skillsets—the agency may seek a single

[8] Oregon DOT's Road User Fee Pilot Program (2006-07) and Minnesota DOT's Road Fee Pilot Test (2010-12) both contracted with research entities to conduct their field studies, as delivery partners, rather than the agencies.
[9] Oregon's ORe*GO* program has a state provided account management option (in addition to the Commercial Account Managers option), called the Oregon Account Manager (OAM) but the state contracts with a single private-sector service provider to provide the stripped-down service (i.e., no location-aware device and no value-added services) offered by the state. The state of Oregon does not provide mileage data collection, invoice preparation and RUC account management through its own personnel.

private-sector provider for the necessary services (configuration 2). A government may seek a single private-sector provider for a RUC pilot or an initial RUC system with the intention of moving to an open market for private-sector providers later (see configurations 3 and 4 below).

Through the procurement process, the agency can assure the availability of the necessary personnel, expertise and systems by contracting with a private-sector entity. The agency's responsibilities lessen to oversight and some elements of enforcement.

For passenger-vehicle RUC collection systems, government agencies have procured single private-sector service providers for small, per-mile charge demonstrations in Colorado and the I-95 Corridor Coalition.[10] In Colorado, the government agency procured and contracted the private-sector service provider as part of a delivery team to provide all the services necessary for collection of RUC from a set of volunteer payers recruited by the agency. Given the operational time constraint of only a few months, the agency contracted with the team's delivery partner, an independent consulting firm, to provide oversight. Since the RUC payers were volunteers, enforcement functions were not fully implemented.

As a private entity with a number of government agency members, the I-95 Corridor Coalition procured a private-sector delivery partner to assist with selection of a private-sector service provider for providing the technical aspects of mileage reporting and account management. The coalition's delivery partner provided oversight. The RUC payers were volunteers, making full enforcement functionality unnecessary.

3.3 Open market private-sector service providers configuration

An alternative to a single private-sector provider, this configuration establishes an open private-sector market for RUC services. An open market aims to achieve viable and continual competition among service providers. The agency may procure a set number of providers or allow every qualifying provider to participate. A private-sector provider

[10] Both the Colorado RUC demonstration and the I-95 Corridor Coalition demonstration occurred over several months in 2018. While technically the I-95 Corridor Coalition is not a governmental entity, the coalition represents members comprising transportation-related government agencies.

qualifies for participation in the open market by proving its capability to meet the standards through a certification process.

Under configuration 3, the government agency establishes standards for qualifying private-sector entities to meet and follow. These standards take the form of technical documents[11] and contractual agreements with the providers. These standards set forth the performance requirements necessary for system functions and oversight parameters and the qualifying providers are contractually required to adhere to them.

The only government agency in the United States that has come close to procuring an open market of private-sector service providers for an operational passenger-vehicle RUC system is the Oregon Department of Transportation (ODOT) for its ORe*GO* program.[12] In 2015, ODOT contracted with four private-sector service providers to provide collection services for Oregon's recently enacted RUC program for passenger vehicles. ODOT negotiated a market contract signed by each service provider. Only three of these entities successfully completed the certification process to become *Commercial Account Managers* (CAMs) authorized to collect mileage data and road usage charges for Oregon's operational RUC program.[13] At this point, the service providers authorized to provide services for the ORe*GO* program is limited to the originally procured and certified service providers. ODOT has indicated an intention, however, to open the market to all qualified comers at some point.[14]

Extensive RUC pilot programs for passenger vehicles in California and Washington procured multiple private-sector service providers.[15] In both cases, a government agency procured a single delivery partner, rather than delivering the pilots through the agency itself. The delivery partner, in turn, procured and managed the service providers at one time, before the start of the pilot, with no subsequent opportunity for further entrants. Nevertheless, the private providers competed for market share during the pilot programs, simulating most of the salient aspects of an open market system to motorists.

[11] The technical documents consist of an Interface Control Document, Systems Requirement Specifications and Business Rules adopted by the agency. They may also include a Service Level Agreement.
[12] http://www.myorego.org/
[13] One of the CAMs has since dropped out of the program, leaving only two CAMs remaining.
[14] Conversation with Maureen Bock, manager of the ODOT Office of Innovation, Spring 2018.
[15] The California Road Charge Pilot Program of 5,000 volunteers operated from June 2016 to March 2017. The Washington Road Usage Charge Pilot program of 2,000 volunteers operated from February 1, 2018 to January 31, 2019.

3.4 Combination of government agency and open market private-sector service providers configuration

For various reasons, a government agency may seek a combination of agency provision and private-sector provision of RUC services. A government may prefer, for example, to take advantage of competition among the private-sector service providers providing technology-based mileage reporting methods to reduce costs and promote technological innovation. The government may find, on the other hand, that manual reporting take place under the agency banner. For purpose of this paper, *Configuration 4* means a combination of government agency-only delivery and an open market for private-sector service providers.

In addition to the market-based approach for commercial account managers (CAMs) for ORe*GO*, ODOT also procured one private-sector entity to exclusively provide the government option, referred to as the Oregon Account Manager (OAM). The CAMs and the OAM have different functions. The CAMs may offer location-based mileage reporting and value-added services and seek the permission of payers to use their personally identifiable information. Value-added services include add-on commercial features such as drive scoring, "find my car," and other enhancements. The OAM may only offer non-location aware mileage reporting and cannot offer value-added services nor seek the use of personally identifiable information, as befits a government agency. ODOT provides these two options to offer participating volunteers clear choices for account management.

For the California Road Charge Pilot Program, the state contracted for their delivery partner to provide a combined configuration similar to ORe*GO.*[16] The WA RUC pilot did not feature a government procured collection option.

For an operational RUC program, the state of Washington may use an open market for private-sector provision of technology-based mileage reporting while using the Department of Licensing for providing one or more manual methods for data collection. The private-sector service providers could also offer value-added services, but DOL would not.

[16] The California Road Charge Pilot Program referred to the government option as the State Account Manager (SAM).

3.5 Combination of government agency and single private-sector service provider configurations

Configuration 5 entails a combination of a government agency-only delivery with a single private-sector service provider under either a proprietary closed system (configuration 5a) or under a nonproprietary open system (configuration 5b). These two configurations may emerge from a desire for a government agency to provide manual mileage reporting methods and a private-sector entity to provide automatic mileage reporting methods. While an open system would more easily allow for a competitive re-procurement (configuration 5a), a closed system is another possible option (configuration 5b).

3.6 Summary of the Configurations

The following table provides an overview of the five configurations presented in this chapter.

Table 3-1: Overview of the five delivery configurations for collection functions in a RUC System

Configurations	RUC System Delivery Description
Configuration 1	Government agency-only delivery
Configuration 2	Single private-sector services provider delivery
Configuration 3	Open market private-sector services provider delivery
Configuration 4	Combination of government agency-only delivery and open market for private-sector provider delivery
Configuration 5a*	Combination of government agency delivery and single private-sector provider delivery under a closed system
Configuration 5b*	Combination of government agency delivery and single private-sector provider delivery under an open system

4 Assessment Criteria for RUC Delivery Configurations in a Final End State Program

This chapter determines the criteria for assessing the RUC collection configurations described in chapter 3. In making this determination, chapter 4 draws from the 13 Guiding Principles for RUC as set by the Washington RUC Steering Committee and the selection criteria for the federal FAST Act section 6020 grant program. This chapter also identifies additional criteria that should prove helpful in the assessment.

4.1 Washington's 13 Guiding Principles as assessment criteria

During the RUC development phase, the Washington Road Usage Charge Steering Committee established one goal and recommended 13 Guiding Principles for business case evaluation of road usage charging concepts.[17] The goal was to identify and develop a sustainable, long-term revenue source for Washington State's transportation system to transition from the current fuel excise tax system. The 13 Guiding Principles indicate how the state should implement the goal and provide a basis for assessing the pros and cons of the five configurations for collection of a road usage charge.

Similar to 13 Guiding Principles, selection criteria developed for the FAST Act section 6020 federal program provide further nuanced guidance for assessing the five most likely configurations for a road usage charge. These federal criteria are: public acceptance, congestion mitigation (if appropriate), cost of system administration, income equity, geographic equity, urban vs. rural equity, protection of personal privacy, reliability and security of technology, ease of compliance, implementation, auditing and enforcement, use of independent third-party vendors, flexibility and user choice, and interoperability. These federal criteria align well, in succession, with the 13 Guiding Principles set forth in the following table.

[17] Washington State Road Usage Charge Assessment Final Report (FY 2014)

Table 4-1: WA RUC Steering Committee's 13 Guiding Principles

No.	Guiding Principle	Objective
1.	**Transparency**	A road usage charge system should provide transparency in how the transportation system is paid for.
2.	**Complimentary policy objectives**	A road usage charge system should, to the extent possible, be aligned with Washington's energy, environmental, and congestion management goals.
3.	**Cost-effectiveness**	The administration of a road usage charge system should be cost-effective and cost efficient.
4.	**Equity**	All road users should pay a fair share with a road usage charge.
5.	**Privacy**	A road usage charge system should respect an individual's right to privacy.
6.	**Data security**	A road usage charge system should meet applicable standards for data security, and access to data should be restricted to authorized people.
7.	**Simplicity**	A road usage charge system should be simple, convenient, transparent to the user, and compliance should not create an undue burden.
8.	**Accountability**	A road usage charge system should have clear assignment of responsibility and oversight, and provide accurate reporting of usage and distribution of revenue collected.
9.	**Enforcement**	A road usage charge system should be costly to evade and easy to enforce.
10.	**System Flexibility**	A road usage charge system should be adaptive, open to competing vendors, and able to evolve over time.
11.	**User Options**	Consumer choice should be considered whenever possible.
12.	**Interoperability and Cooperation**	A Washington RUC system should strive for interoperability with systems in other states, nationally and internationally, as well as with other systems in Washington. Washington should proactively cooperate and collaborate with other entities that are also investigating road usage charges.
13.	**Phasing**	Phasing should be considered in the deployment of a road usage charge system.

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[18] This paper places phasing apart from the other criteria to consider this complex and impactful topic on its own in chapter 6.

4.2 Additional principles not considered assessment criteria

In its final report for FY 2014, the Washington Road Usage Charge Steering Committee considered adding the following two *possible principles* to the list of 13 guiding principles, but stopped short of doing so:

Distinguishing between travel on Washington public roads and other roads, and
Payment of RUC by non-resident drivers.

This paper does not add these two *left-out* principles to the delivery assessment criteria. *Distinguishing road type* is a technical issue not having much bearing on delivery of a RUC system, except to note that, as a practical and technical matter, manual collection of mileage data could never have this capability. Requiring *RUC payment by non-resident drivers* is a separate policy question, with its own distinct challenges, that could impact selection of RUC delivery but until the legislature authorizes this, frankly, far-in-the-future, difficult-to-implement policy, it is not warranted to add such a criterion to assessment of RUC delivery configurations. Furthermore, even the WA RUC pilot participants regarded the out-of-state driver question as the least important of nine RUC principles surveyed.[19]

4.3 Additional considerations for assessment criteria

The following eleven additional considerations should inform assessment criteria for the five configurations for collection in a RUC system.

- Ease of administration
- Risk of delivery
- Provider responsiveness to payer needs and requests
- Provider resolution of payer issues
- Capability of communications and customer support
- Ability to audit the provider (among the federal FAST Act criteria)
- Ability to detect tampering and fraud
- Reliability of technologies (among the federal FAST Act criteria)
- Open system (among the federal FAST Act criteria)
- Ability to coordinate with a local tolling system

[19] *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 3, Question 13, p. 37.

- Practical availability, including risk of delivery, resources, technological and business system, enabling system affordability[20] and continuity[21]

Although perhaps not essential for determining the viability of a road usage charge, these additional considerations prove helpful in discernment of one or more recommended delivery configurations for a road usage charge system.

4.4 Categories for assessment criteria

The various principles, criteria and considerations for assessing configurations of a RUC system can be grouped into six categories:

- Administrative effectiveness,
- Participant experience,
- Operational performance,
- Practical availability,
- Flexibility, and
- Policy alignment.

This paper uses these six categories to orient assessment of each of the five most likely RUC system configurations.

[20] This paper examines *affordability* in the context of whether a particular delivery configuration enables the RUC program to reduce overall costs and grow to a size when the net revenues can support the highway system as well or better than the gas tax. This paper examines *cost effectiveness*, by contrast, from the standpoint of how well one delivery configuration compares with the other delivery configurations from a cost perspective.
[21] *Practical availability* means whether a configuration is readily available given practical considerations, as opposed to *theoretical availability* which means a configuration is available under certain theories or concepts rather than practicalities.

Table 4-2: Categories and corresponding criteria and type of issues

Category	Criteria	Type of Issue
Administrative effectiveness	• Ease of administration • Accountability and oversight • Cost-effective and cost-efficient	Operational issues
Participant experience	• Simplicity, convenience, ease of use, minimally burdensome compliance • Transparency of access • Responsiveness • Issue resolution • Communications and customer service	Operational issues

Operational performance	• Technologies
	  ○ System alignment
	  ○ Accuracy and reliability
	  ○ Availability of user choice
	• System integrity
	  ○ Privacy
	  ○ Data security
	  ○ Easy to enforce
	  ○ Costly to evade
	  ○ Ability to detect tampering or fraud
	  ○ Ability to audit
	• System alignment
	  ○ Coordination with tolling system
	  ○ Interoperability with other jurisdictions
		Operational issues

Practical availability	• Risk of Delivery • Resources • Technological and business system capabilities • Affordability • Continuity	Practical issues
Flexibility	• Open to competing vendors (open system) • Adaptability for policy changes • Ability to innovate and evolve technology and business systems • Scalability	Design issues
Policy Alignment	• Transparency of system • User pay system • Alignment with state's energy, environmental and congestion management goals • Fairness and equity	Design issues

5 Application of Assessment Criteria to RUC Delivery Configurations for a Final End State program

Chapter 5 applies the assessment criteria developed in chapter 4 to the RUC delivery configurations identified in chapter 3. The purpose of this chapter is to identify the most appropriate configurations for delivery of a RUC program in a fully mature, final end state and corresponding policies likely to affect selection of the actual configuration for delivery of RUC in the state of Washington. In other words, the assessment in this chapter intends to suggest answers to the question, "What is the best delivery mechanism for a RUC program after government has refined its oversight and administrative systems and RUC is broadly mandated for all, or substantially all, new passenger vehicles?"

5.1 Assessment of five configurations for RUC delivery

The assessment results for the five most likely configurations for delivery of a RUC system are contained in Table 5-1. A more detailed assessment of the configurations can be perused in Appendix A.

Key:

Indication	Meaning
○	Poor/ Does not support
◑	Fair / Partially Supports
◕	Good / Mostly Supports
●	Excellent / Fully Supports
◒	Equal/ No difference

Table 5-1: Harvey Ball Assessment of five configurations for RUC delivery

Assessment of RUC Delivery Configurations	Configuration 1 (Government-Only)	Configuration 2 (Single Provider)	Configuration 3 (Open Market)	Configuration 4 (Combination/ Open)	Configuration 5 (Combination/Single)
Administrative effectiveness					
• Ease of administration	◑	●	●	◑	◑
• Accountability and oversight	◕	◑	◑	◑	◑
• Cost-effective and cost-efficient	◑	○	●	◑	○
Participant experience					
• Simplicity, convenience, ease	◑	●	●	●	●
• Transparency of access	◒	◒	◒	◒	◒
• Responsiveness	◒	◒	◒	◒	◒
• Issue resolution	◒	◒	◒	◒	◒
• Capability of communications	○	●	●	●	●
Operational performance					
• Technologies					
○ System alignment	○	●	●	●	●
○ Accuracy and reliability	○	● for automatic	● for automatic	● for automatic	● for automatic
○ User choice	○	○	● for automatic	● for manual and automatic	○
• System integrity					
○ Privacy	○	○	●	● if open	○
○ Data security	◒	◒	◒	◒	◒
○ Easy to enforce	◒	◒	◒	◒	◒
○ Costly to evade	◒	◒	◒	◒	◒
○ Detection of tampering and fraud	◒	◒	◒	◒	◒
○ Ability to audit	◒	◒	◒	◒	◒

Assessment of RUC Delivery Configurations	Configuration 1 (Government-Only)	Configuration 2 (Single Provider)	Configuration 3 (Open Market)	Configuration 4 (Combination/ Open)	Configuration 5 (Combination/Single)
• System cooperation					
○ With toll system	◒ For coordination	● For integration	● For integration	◒ For coordination	○
○ Interoperability	◒	◒	◒	◒	◒
Practical availability					
• Risk of delivery	●	○	◑	○	○
• Resources	◒	◒	◒	◒	◒
• Technology & business system	○	○	●	◑	◑
• Enabling System Affordability	○	○	●	◑	○
• Continuity	●	○	◑	◑	○
Flexibility					
• Open to competing vendors	○	○	●	◑	○
• Adaptability for policy changes	◒	◒	◒	◒	◒
• Ability to innovate and evolve	◑	◑	●	◑	○
• Scalability	◑	◑	●	● if open	○
Policy Alignment					
• Transparency of system	◒	◒	◒	◒	◒
• User pay system	◒	◒	◒	◒	◒
• Alignment with state's other policy goals	◒	◒	◒	◒	◒
• Fairness and equity	◒	◒	◒	◒	◒

Assessment of the five most likely configurations for delivery of a RUC program in a fully mature, final end state reveals that an open system for multiple private-sector service providers (configuration 3) yields the best overall results in the operational categories of administrative effectiveness, participant experience and operational performance. An open market for multiple firms meets criteria for ease of administration, cost-efficiency

and cost-effectiveness[22], convenience, and abilities to produce technologies appropriate for a RUC system and protect privacy. In the design category of flexibility, the open market allows for competing vendors and abilities to innovate and evolve technologies and systems. The open system is also easily scalable.

The combination of an open market for multiple providers with government agency provision (configuration 4) produces similar positive results for criteria in the operational performance, participant experience and the flexibility categories. The open market/government agency combination produces less certainty, however, in assuring practical availability for minimizing delivery risk. The possibility for administrative effectiveness (ease of administration and cost-efficiency) for the open market/government combination will depend upon the structure of the combination.

Assessment of government agency-only delivery (configuration 1) shows positive results in the practical availability category with the lowest risk of delivery and the best chance for continuity over the other configurations. Government agency-only delivery has severe challenges, however, in the flexibility category, struggling with criteria for openness to competing vendors, ability to innovate and scalability. Government delivery also struggles with the operational performance and participant experience categories. In the transportation sector, chronically-delayed staffing levels and under-funded capital costs for modernizing government IT infrastructure often challenge government to adequately deliver customer services and user-friendly technologies. For a RUC program, this will also mean difficulty for government to provide an attractive assortment of mileage reporting options beyond manual methods.

The single private-sector service provider delivery method (configuration 2) has severe challenges. Although single provider delivery appears easier, faster and less expensive at the start, configuration 2 removes continuous competition—and therefore eliminates downward pressure for cost-efficiencies—once the RUC program becomes permanently

[22] The open market becomes cost-effective once a RUC program reaches a viable number of participants. At the introductory levels, an open market for a RUC program will be challenged to generate positive net revenue. Configurations 3 and 4 will not take advantage of competition until the number of vehicles reaches 50,000 to 100,000.

operational.[23] With a contract in-hand, the single provider's practical availability and participant experience weakens as the firm has little reason to improve technologies, business systems, cost-effectiveness, system affordability or customer service. A single provider is not strong in the flexibility category either, as the sole contracted entity will, by definition, not be subject to competition, and may have little financial motivation to innovate, scale or engage in transition planning. A good example is the telecommunications monopoly of AT&T. There is no question that the AT&T phone service worked well but prior to the court consent order issued in 1982, AT&T's services to the public were very slow to innovate; the phone attached to the wall and there was only standard phone service and equipment and nothing more. After the AT&T breakup, the seven spinoff companies began to offer new services to businesses and households, leading to a cellular network, wireless handheld phones and the Internet in the first decade. Now we have handheld computers (smartphones) worldwide, wireless data streaming and free phone conferences with people situated in multiple places on the globe as the same time. It's hard to imagine telecommunications now without the expectation of perpetual innovation. The pre-1984 AT&T may have accomplished some of this but likely at a glacial pace because the company had no competition. Competition among telecommunications companies quickened innovation applications.

The combinations for a single private-sector service provider with a government agency (configurations 5a and 5b) are completely impractical as a final end state. Each combination has the weaknesses of single private-sector provider delivery while weakening the strengths of government agency-only configuration. Of the two combinations, however, configuration 5b is preferable due to a better assessment of the delivery risk and continuity criteria. As an open system, the authorized government agency could transfer the RUC system under configuration 5b to a new entity, albeit not necessarily swiftly, should the agency discover a business reason to do so.

[23] A RUC system becomes *permanently operational* when it performs all the functions necessary for RUC collection and does not have a termination date.

6 RUC Transition Pathways to a Final End State Program

6.1 The basis for a transition strategy

A RUC program will almost certainly not start with a fully mature, permanent, operational system in its final end state. Rather than undertake the risky proposition of mandating RUC for a substantial portion of the vehicle fleet, a wiser strategy suggests beginning with an initial, short-term configuration by adding vehicles into the program in increments over time. In this way, the general driving public familiarizes itself with the RUC program in small bites as the RUC system expands into complete coverage over a number of years. This transitional phasing approach could either occur over a planned period or as political opportunities emerge. The most favored approach of the WA RUC participants for implementing a RUC system statewide is for a gradual phase in over five to ten years to eventually replace the gas tax.[24]

A transition strategy should lay out, in advance, the final end state to which the program aspires in order to assure that the steps taken in transition lead to the aspiration rather than to a dead end. A strategy for expansion from a small initial RUC program to a full road usage charge program over time would identify which passenger vehicle segments would enter the program and when.

This chapter suggests a potential transition pathway for each of the three final end state delivery configurations recommended in chapter 5. These recommended final end state configuration possibilities are:

- Government-only delivery (configuration 1);
- Open commercial market of private-sector service providers (configuration 3); and

[24] 33% of WA RUC pilot program participants favored a gradual phase in of a RUC system over five to ten years to eventually replace the gas tax. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 3, Question 23, p. 41.

- Combination of government and private-sector open market (configuration 4).

6.2 Potential transition pathways for RUC delivery configurations

To transition a RUC program from policy enactment to a fully mature, final end state, the early stages of RUC delivery must enable movement from one phase through others, while continuing operations with minimal difficulty, until completion of the entire journey from an initial, small-scale, introductory program to the ultimate program. This could take a number of years, possibly even a decade or two, depending upon how quickly policymakers add new vehicle segments to the RUC program.

There are four relevant transition pathways for a RUC program to achieve its final end state.

6.2.1 Government start pathway (transition pathway 1).

RUC delivery starts with a government agency providing whatever data gathering, invoicing and account management is preferred or necessary. This transition pathway is similar to configuration 1.

6.2.2 Single, private-sector service provider with open system pathway (transition pathway 2).

For the initial stages of a RUC program, the government procures a single, private-sector service provider for a limited duration under an open system adopted by the government.

6.2.3 Single entrant in an open commercial market for multiple, private-sector service providers pathway (transition pathway 3).

RUC delivery starts with an open commercial market operating under performance criteria and standards for an open system set by the government but does not open the market for competition. Rather, the government establishes performance criteria and standards for an open system, a provider certification process and a market contract for an open market. Then, prior to opening up the market, the government procures a single, private-sector service provider that qualifies under the certification requirements under the market contract as the first provider under the open commercial market. Once the new RUC system begins to operate smoothly and sufficient RUC payers have entered

the program for meaningful competition, the government opens up the open commercial market to other certified providers.

6.2.4 Combination of government agency and single, private-sector service provider pathway (transition pathway 4).

RUC delivery starts with a combination of government agency and single private-sector service provider (transition pathway 4) under either an open system general in nature (4a), or an open system specific to the same open system performance standards that will be required for an open commercial market (4b) [25] leading to transition to the final end state at a later time.

6.3 Additional criteria for assessment of transition pathways

While still relevant in transition, assessing the transition pathways for final end state delivery configurations must go beyond the assessment criteria laid out in table 4-2 to consider additional criteria.[26] The four additional criteria critical to assessment of transition pathways are as follows:[27]

- Foundational (to the ultimate delivery configuration).

  Strategically, the transition pathway should take steps toward, and indeed, lead to the ultimate end state program. Transition pathways that are foundational to the ultimate RUC system will enable quicker procurements, make movement from phase to phase less difficult, less expensive, and less confusing for the motoring public, and build institutional knowledge within the oversight agency and any private-sector service providers.

[25] Note that the combination of government agency and single, private-sector service provider under a closed system, although theoretically a transition pathway, is not viable as a foundation for transition to any of the recommended final end state delivery configurations.
[26] Note that this paper assumes that procurement of each transition pathway will ensure functionality for the program characteristics and transition capabilities. As such, functionality is not considered in this paper as a criterion for discernment of transition pathways.
[27] It must be noted that an additional factor may strongly influence the selection of a transitional pathway: political viability. This paper does not have sufficient information to evaluate political viability. Indeed, political viability is too fluid and elusive for evaluation as enduring consideration anyway.

- Adaptable (from phase to phase).

  Whether a transition pathway will have the ability to adapt from phase to phase will depend on design. Any delivery method using a closed, proprietary system loses flexibility, so any closed system pathway would require, before commencement, consideration of an entire transition plan, without any changes, over the transition period. Delivery configurations using an open system will maintain flexibility to accommodate alterations to a transition plan over the transition period or even a transition that is fluid.

- Timely (quickly available for each phase of implementation).

  Whether a transition pathway is timely will depend upon whether the prescribed entity has access to adequate staffing, resources and technical expertise to enable quick adjustments as conditions require. As policymakers add vehicle segments to the program, the former level of resources will be challenged to meet the new obligations without an ability to keep staffing, resources and expertise current. Timeliness will also depend upon the ability of the government to provide speedy procurement of outside resources.

- Ease of implementation.

  Whether a transition pathway is easy to implement depends upon the relative complexity of obtaining and accessing the necessary resources and expertise to enable functionality of the program.

6.4 Assessment of transition pathways to ultimate RUC system

This section applies the additional assessment criteria developed in section 6.3 to the transition pathways identified in section 6.2. The purpose of this section is to identify the most appropriate transition pathways for each viable RUC delivery configuration in its final end state.

Assessment of the four transition pathways to a final end state for a RUC program reveals that the best transition pathway depends upon the preferred RUC delivery

configuration identified in chapter 5. The transition pathway question for each delivery configuration yields a different answer.

For government-only delivery (configuration 1), the best transition pathway is procurement of *a single, private-sector service provider for a limited duration (transition pathway 2) operating under an open system adopted by the government*. Although not foundational to the final end state of government operations, a single private-sector service provider offers the greatest certainty and simplicity, and allows transferability to the ultimate government-operated RUC system. The single service provider would enroll RUC participants, provide mileage reporting technologies or services, collect mileage data and manage invoicing and RUC payer accounts. The transition may occur once the government feels properly resourced.

A single service provider may wish to apply its own proprietary system rather than adhering to requirements of an open system adopted by the government. While accessing a closed system provides certainty about how the system operates, the proprietary closed system often ties a program to its provider for a lengthy period of time, if not for entire term of the program. Shifting from a proprietary closed system to entirely government administration could prove problematic and expensive. Requiring that the single provider use an open system performance criteria and standards adopted by the government will remove these challenges.

For the configuration of an open commercial market for multiple service providers (configuration 3), the best transition pathway is *a single, private-sector service provider as the first entrant into an open commercial market with open system performance standards adopted at the beginning of the program* (transition pathway 3). The government could simply go straight-away to the open commercial market rather than this transition pathway but if the government has concerns about putting together such a complex arrangement from the outset or is unwilling to accept the risk of engaging and managing multiple providers in an introductory program, procuring a single, private-sector service provider to operate under an open system (transition pathway 2) could aid the transition.

While, for this pathway, the government must adopt open system performance criteria and standards amenable to an open commercial market, examples of these standards already exist for RUC. The Oregon DOT's ORe*GO* program started with the essentials of an open commercial market for its 2015 launch, creating technical documents,[28] a certification process and a market contract. The California Road Charge Pilot Program and the Washington Road Usage Charge Pilot Project used similar open system requirements, updating many of ORe*GO* the technical documents.

Transition pathway 3 would lead to an easy transition to an open commercial market, better meeting the criteria for foundation, adaptability, ease of implementation and timeliness than any other transition pathway.[29] As the first entrant into an open market, a single provider could simplify the work of a single state government by removing or reducing the procurement and oversight responsibilities of regulating an open market and managing multiple private-sector providers.

For the configuration for *combination of government agency and private-sector open market* (configuration 4), the best transition pathway is a combination of government agency and procurement of a single, private-sector service provider as the first entrant into an open commercial market with the same open system performance standards as the ultimate open commercial market (transition pathway 4). The other transition pathways will prove cumbersome because there will be more complexities and risk by either adding the government functions or adopting the specific open system performance standards required for an open commercial market at a later time.

[28] The technical documents for the open system performance criteria and standards include an interface control document, system requirements specifications and business rules.
[29] Utah DOT, the second state to enact an operational RUC program, intends to use this transition pathway, implementing the initial stage of the program by procuring and contracting with a single private-sector service provider then transitioning to an open commercial market later. Given the fast pace from enactment to implementation mandated by legislation, the desire to minimize additional bureaucracy, and the relatively small scale of the initial program, Utah deemed this approach most practical.

Table 6-1: Optimal Transition Pathways for Final End State Configurations

Final End State Configuration Preference	Optimal Transition Pathway
Government-only delivery (Config 1)	Single private sector provider operating under open system adopted by government (Transition pathway 2)
Open commercial market for multiple private-sector providers (Config 3)	Single entrant into open commercial market with open system adopted at beginning (Transition pathway 3)
Combination of government and open market for multiple private-sector providers (Config 4)	Combination of government agency and single entrant into open commercial market for multiple private-sector providers (Transition pathway 4)

7 Legal Elements for Third Parties to Collect RUC in Washington

This chapter identifies legal elements required for the state of Washington to enable third parties to act on behalf of the state to collect mileage data and a road usage charge. Although this chapter was drafted and reviewed by lawyers, this chapter is not intended to provide specific legal advice to the state of Washington. The state should obtain legal advice and representation from its lawyers in the Office of the Attorney General of Washington for specific legal advice pertaining to legislation and rulemaking for any part of a RUC system or program.

7.1 Authority elements

The authorizing legislation for a RUC program should grant authority to a government agency to develop, procure, administer, operate, and enforce the program. Should the legislature desire that the RUC program go beyond traditional government delivery or commonly used single private-sector provider delivery to creation of an open market for private-sector service provider competition, the legislation should have provisions defining such a procurement.

Suggested RUC delivery provisions in legislation:

- The legislation should define the term “open system;”
- The legislature should confer powers on an agency to implement a RUC program, including the establishment of oversight and audit procedures to ensure the proper reporting, collection and remittance of RUC revenue to the state;
- The authorized agency should adopt standards for an open system for the RUC program;
- Special procurement authority to create an open market for private-sector RUC service providers to collect metered mileage data and a road usage charge and engage in RUC account management on behalf of the state of Washington.

7.2 State Treasury policy coordination

The Office of the State Treasurer (or in some cases, the Department of Revenue) establishes policies for management of tax revenue. These policies may include requirements for how private-sector entities must handle the revenue and time-limits for forwarding revenue raised to the Treasurer. At a minimum, the Treasurer's Office and the Department of Revenue should be actively involved in creating a legal, accountable and efficient revenue collection and remission process.

8 Conclusion

Selection of the delivery mechanism for a RUC system may seem like lower priority decision-making. Policymakers should regard delivery of the RUC system, however, as essential to success of the policy implementation. Selection of the appropriate delivery configuration for a RUC system can lead to reduced cost, less risk, and better system applications. The delivery configuration will also aid in identifying critical areas for management focus.

While the 32 assessment criteria do not have equal value, this paper does not weigh the relative importance of the criteria, leaving that judgment for the reader. For example, one reader may regard the *risk of delivery* as the most important criterion and dismiss all other criteria as less essential for selection of the delivery mechanism. Another reader may view risk as something that the RUC program management can effectively manage, placing greater importance on *reduced cost of delivery*. The relative weight applied to each of the 32 criteria by the reader may yield widely different results.

In fact, this paper identifies just such a variation among the five delivery configurations. Government agency-only delivery of RUC (configuration 1) indeed has less risk and assures greater continuity. On the other hand, an open market for private-sector service providers (configuration 3) will take advantage of cost efficiencies as the scale of a RUC program rises while, at the same time, aptly applying innovative technologies and business systems.

A reader's preference for mileage reporting methods will affect selection. If the RUC system will use only manual methods for mileage reporting, then a government agency-only delivery should have preference. If the RUC system will only use automated methods for reporting, then one of the private-sector configurations should be chosen; furthermore, the availability of up-to-date user choices would indicate preference for an open market for private-sector providers (configuration 3). If the RUC system will use both manual and automated mileage reporting methods, then a combination of government and a private-sector open market (configuration 4) yields the best result.

Rarely will a single, private-sector provider delivery (configuration 2) rate a favorable assessment for delivery of a fully mature, permanent, operational RUC system[30] that is in its final end state. As discussed in Appendix A, single, private-sector service provider delivery (configuration 2), in a final end state, lacks the advantage of competition to achieve innovation, create cost efficiencies and reduce the delivery risk, among other disadvantages. There may be an exception for single provider delivery when the overseeing government agency establishes an open system with plans to open up the program to a competitive open market at a later stage.

Procurement of a single private-sector provider may seem, at first glance, like the best alternative to government provision of a government program, largely because single provider procurements are common in government. At the beginning, single provider delivery appears easier, faster, less risky, and less expensive. There is no need to develop standards and a certification process. The single provider can deploy its proprietary system easily and quickly. The single provider requires minimal oversight. Expensive change orders and design constraints do not come until later. While it is true a RUC system would bear the fruits of competition during the procurement stage, the RUC system under a long-term, single provider will not have the advantage of competition during system operations. Moreover, the exclusion of prospective new entrants from the market during the period of operation of a single private provider reduces the ability of other firms to learn, innovate, evolve approaches, reduce costs, and compete at competitive moments against incumbent providers. The opportunity for competition does re-occur until the single private provider's contract term ends and the government re-procures the services.

Despite its initial appeal, a single private-sector provider has a far less positive assessment than an open market of multiple private providers and also lacks a government agency's advantages of low risk and continuity. More distressing, unless the government procures for an open system, the embedding of a proprietary system into the RUC program may mean the single provider's system may not be removable, except at great cost and risk, leaving the state stuck with one, almost certainly inflexible, provider for the entire duration of program operations. Whatever the initial appeal of procurement

[30] A *permanent operational RUC system* is one that performs all the functions necessary for RUC collection and does not have a termination date.

of a single private-sector provider, establishing an open market for multiple private-sector providers has far greater advantages in terms of cost, risk, and flexibility for system operations.

In summary, government-only delivery (configuration 1) is not desirable to enable provision of a range of technology options. Single private-sector provider delivery (configuration 2) has no advantages in a final end state, except perhaps in transition to a fully mature program by temporarily providing technology options and account management services requiring technical expertise in a RUC program's initial stages. An open market for multiple private-sector service providers (configuration 3) is best for a large RUC system. An open market combined with government provision of an additional service option (configuration 4) will also be desirable for a large system with an ability to mix manual reporting options with automated reporting options.

While it is possible for a RUC system to begin at its final end state, the likelihood is low. Rather, the RUC system will start with a transition pathway that leads to a preferred delivery configuration. The optimal transition pathway differs depending upon the recommended final end state delivery configuration under consideration.

- For *government-only delivery* (configuration 1), the optimal pathway would be a single, private-sector service provider for a limited duration operating under an open system adopted by the government. (transition pathway 2).
- For *open commercial market for multiple private-sector providers delivery* (configuration 3), the optimal pathway would be a single, private-sector service provider as the first entrant into an open commercial market with open system performance standards adopted at the beginning of the program (transition pathway 3).
- *For combination of government agency and open market for multiple service providers delivery* (configuration 4), the optimal pathway would be starting with a combination of government agency and procurement of a single, private-sector service provider as the first entrant into an open commercial market with the same open system performance standards as the ultimate open commercial market (transition pathway 4).

Appendix A: Application of assessment Criteria to RUC Delivery Configurations

This Appendix applies the assessment criteria developed in chapter 4 to the RUC delivery configurations identified in chapter 3. The purpose is to identify the most appropriate configurations for delivery of a RUC program that is fully mature in a final end state and the policies which will likely affect selection of the actual configuration for delivery of RUC in the state of Washington.

As described in chapter 4, the various criteria for assessing configurations of a RUC system can be grouped into six categories:

- Administrative effectiveness,
- Participant experience,
- Operational performance,
- Practical availability,
- Flexibility, and
- Policy alignment.

This assessment of the five most likely configurations is divided into six sections for each of the six categories of criteria. Each section starts with a chart of the category and associated criteria used in the assessment. Each section ends with a chart comprising the results of the assessment for that category.

I. Administrative effectiveness

Table A-1: Administrative Effectiveness Criteria

Category	Criteria	Type of Issue
Administrative effectiveness	• Ease of administration • Accountability and oversight • Cost-effective and cost-efficient	Operational issues

a. Ease of administration

Taking on RUC—the complex systems and additional resources required for a government to create a new account-based payment system from scratch to manage potentially millions of new payers—may seem a daunting endeavor for a state government. The intensity of this assignment will seem all the more daunting should the government entity assigned the authority to develop, administer, and operate the system have no experience managing taxpayer accounts. The implementation alone, let alone operations, will require acquisition of skillsets and talent rarely needed for other purposes. Preparation and operation of pilots can assist with acquisitions of skillsets and talent within a government agency but whether this occurs will largely depend upon configuration of pilot delivery, or, in other words, the extent to which the government agency involves itself in actual preparation and operations.

Should the assigned agency already have experience and systems related to account management (configuration 1), such as a state DMV or the Washington Department of Licensing, that familiarity has the advantage of not needing a culture-shift. What DOL may find unfamiliar and potentially difficult is managing the technologies and data necessary for account management in a RUC program.

The recent account management activities conducted in RUC demonstrations, pilots and an operational program show that private-sector entities can ably handle account-management, mileage-reporting technologies and data management for a per-mile charge program.[31] Several private-sector entities have shown these abilities. Therefore, a single private service provider (configuration 2) or an open commercial market of private service providers (configuration 3) could provide a RUC system. Adding a government role to the private-sector role (configurations 4 and 5) would not necessarily make administration that much more complex.

[31] "Although ORe*GO*'s revenue-generating potential is constrained by the number of volunteers participating, the program provides ODOT and AMs [account managers] the opportunity to operate and fine-tune a real program that includes collecting, tracking, and submitting tax dollars. It also provides volunteers with a legitimate RUC experience." Kathryn Jones, Maureen Bock and the Oregon Department of Transportation, *Oregon's Road Usage Charge: The OReGO Program Final Report, April 2017,* p. 6 of Executive Summary.

Configuration best suited to address this criterion: A single private-sector provider (configuration 2) or an open market of private-sector providers (configuration 3).

b. Accountability and oversight

A government agency must retain oversight responsibilities under every configuration. Should government employees perform the delivery tasks (configuration 1), the overseeing agency will adopt rules, procedures and protocols to establish appropriate oversight of activities. Should private-sector entities perform delivery tasks (configurations 2, 3, 4 and 5), the overseeing agency will adopt rules and impose service level agreements containing similar procedures and protocols. The primary difference will be that overseeing government employees will have the advantage of day-to-day viewing of activities while overseeing private-sector entities will be remote and based on achievement of performance standards set forth in contracts. Using private-sector entities will shift oversight of day-to-day activities to the private-sector manager who will be obligated to meet performance standards set forth in the service level agreements with the overseeing government agency.[32] Oregon's experience with an operational RUC program indicates the overseeing government agency can accomplish appropriate oversight of private-sector service providers. The ORe*GO* private-sector account managers regarded the government agency as properly resourced and managed to oversee private-sector provision of a RUC system.[33]

The delivery preference on this criterion may simply be a matter of agency preparation and training and a strict certification process for private-sector providers. The quality of management services will depend on the entities involved.

Configuration best suited to address this criterion: Equal for all configurations.

[32] "AMs [account mangers] indicate that SLAs [service level agreements] are tough, but fair and effective." Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Account Manager Satisfaction and Program Improvement Report*, January 12, 2017, p. 7.
[33] "AMs [account mangers] agree, based on their experience with the [ORe*GO*] program to date, that ODOT Is capable of running a statewide RUC program, and running it well." Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Account Manager Satisfaction and Program Improvement Report*, January 12, 2017, p. 6. "AMs [account managers] report that ODOT staff have the skills and resources to support both the program and the volunteers. ORe*GO* staff have … supported operations, and searched for and resolved glitches, According to AMs, ORe*GO* staffing, resources, level of staff involvement, and overall support from ODOT have contributed to program effectiveness." Ibid, p. 6.

c. Cost-effective and cost-efficient

Research conducted for the WA RUC Steering Committee's business case analysis in 2015 indicates that the most cost-effective method for delivery of a RUC system is the open market private-sector service providers (configuration 3). The business case forecasts that competition in an open market reduces operating costs compared to government agency delivery (configuration 1). Other analyses of cost for a RUC system offer only qualitative rather than quantitative analysis for this criterion.[34] The business case revision currently underway may provide a more definitive analysis. A complete answer may only be achieved when a RUC system achieves economies of scale.[35] Nevertheless, a competitive, open market for private-sector providers (configuration 3) could take advantage of value-added services to help carry the system's operational costs such as for invoicing and collection.[36] Indeed, some private-sector providers regard RUC as a value-added service for other services already provided.

As the state's RUC market evolves, the state will be able to take advantage of the lower operating costs of the private-sector providers. Negotiation could achieve lower RUC compensation rates, perhaps down to zero, for full application to all passenger vehicles.

The above observations assume advanced technology approaches to mileage reporting. New Zealand offers an example of fully manual mileage reporting (pre-paid distance permits) with administrative costs less than 5% of revenue, and well below that of any advanced technology based reporting methods under consideration in the U.S. It is noteworthy, however, that only 1% of drivers in the WA RUC pilot opted for pre-paid mileage permits. Post-paid odometer charges, which could be delivered on a fully manual

[34] "Quantitative measures could not be developed for this criterion due to lack of useful data. On a qualitative basis, however, all the account managers noted that economies of scale would be available in a statewide scenario. Moreover, in other general discussions with account managers regarding costs, their respective business models appear to be based on 'millions of vehicles' included in a road charge system, with the road charge component becoming a 'value added' to the other services they provide to customers." *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-18.
[35] "[A]ll account managers [in the California Road Charge Pilot Program] noted that economies of scale could not be achieved through a pilot, but will likely be available in a statewide scenario consisting of millions of users." *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, pp. 3-4.
[36] "[T]he [California road charge] account managers' respective business models can accommodate a road [usage] charge with the other services and deliver amenities they already provide to customers." *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, pp. 3-4.

basis through DOL, similar to New Zealand, was more popular, with 29% opting for that approach.

Configurations best suited to address this criterion: A competitive, open market for private-sector providers (configuration 3) could share the cost of RUC provision with value-added services in competition amongst certified providers. A combination of government agency and an open market for private entities (configuration 4) would also take such an advantage but adding government costs would make the configuration less cost-effective and government agencies will not provide commercially attractive value-added services to help carry the costs. A government-only approach (configuration 1) can be cost effective if the state offers only manual reporting of mileage, such as a pre-paid mileage permit or post-paid odometer charge, particularly if these approaches build on existing registration processes. As a monopoly, a single private-sector service provider will rarely prove as cost-effective as the other configurations.

Table A-2: Administrative Effectiveness Assessment

Assessment of RUC Delivery Configurations	Configuration 1 (Government-Only)	Configuration 2 (Single Provider)	Configuration 3 (Open Market)	Configuration 4 (Combination/ Open)	Configuration 5 (Combination/Single)
Administrative effectiveness					
• Ease of administration	◑	●	●	◑	◑
• Accountability and oversight	◕	◑	◑	◑	◑
• Cost-effective and cost-efficient	◑	○	●	◑	○

Key:

Indication	Meaning
○	Poor/ Does not support
◑	Fair / Partially Supports
◕	Good / Mostly Supports
●	Excellent / Fully Supports
◒	Equal/ No difference

II. Participant experience

Table A-3: Participant Experience Criteria

Category	Criteria	Type of Issue
Participant experience	• Simplicity, convenience, ease of use, minimally burdensome compliance • Transparency of access • Responsiveness • Issue resolution • Communications and customer service	Operational issues

a. Simplicity, convenience, ease of use and minimally burdensome compliance

Whether a RUC system is simple, convenient or easy for payers to use will depend upon how the authorizing law and the authorized government agency sets up and operates the system. The manner of delivery for the RUC system could compound complexity or not. The RUC pilots have largely tested private-sector provision, one with government oversight. While there was some confusion in the California pilot about how to choose an account manager,[37] the bulk of participants entered easily into the other RUC pilots and found nothing that made RUC system entry or compliance burdensome.[38] [39] [40] [41] The WA RUC pilot's participants reported satisfaction with the amount of time they spent in participation.[42] The WA RUC pilot's single sign-on improvement to program entry should

[37] "Focus group participants were less clear on how to select an account manager, or even what an account manager was. They did not feel they has a good understanding of the differences between the various account managers when they were faced with the selection upon enrollment … the concept of account manager perhaps was not as clear as it could have been." *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 48.
[38] Over 90% of OReGO volunteers said signing up was simple and that the MRD was easy to install and activate. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 23.
[39] Over 75% of OReGO volunteers said statements were clear and accurate but 11% said statements were not clear and accurate. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 21.
[40] 91% of Colorado Road Usage Charge Pilot Program participants believed that the RUC information was clear and easy to understand. Colorado Road Usage Pilot Program Final Report, December 2017, p. 77.
[41] 77% of WA RUC pilot program participants said the account set-up process was clear and easy to complete and only 9% found it difficult. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 1, Question 13, p. 11. 92% of WA RUC participants said the instructions for using the chosen mileage reporting method were clear and easy to follow. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 2, Question 2, p. 15. 79% of WA RUC pilot program participants said reviewing mileage data was easy and only 7% found it was difficult. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 3, Question 7, p. 34.
[42] *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 3, Question 11, p. 36.

make even easier the operation of an open market for private-sector providers. The lower, yet positive, regard for the ease of entry into the California pilot likely had to do with the availability of numerous mileage reporting options and insufficient explanation of them.[43] To resolve any confusion about selection of an account manager and mileage reporting choices, the RUC system could deploy mitigation measures such as a strict certification process, clear communication rules for payers, and a central repository where payers have access to full descriptions of all options and gain help in making choices.

Manual reporting methods proved more cumbersome than automated methods. In the California pilot, the estimated personal costs the participants endured for compliance using manual methods were more than twice as much as for the automated methods.[44] Furthermore, though not recorded or estimated, the personal time spent on manual methods over automated methods must have been more since manual methods required active, attentive compliance by taking a picture of the odometer and forwarding it to an account manager while automated methods required only passive compliance (except for the smartphone method). Since a government agency will tend to have responsibility for operation of manual methods, the government-only delivery (configuration 1) should be considered more burdensome for most RUC payers than the other delivery methods operating automatic reporting. Even so, some of the older, technologically-challenged RUC payers may find the manual reporting methods less burdensome.[45]

Theoretically, government agencies can provide automatic reporting methods, albeit out-of-date and certainly not on the cutting-edge technologically. Furthermore, government distribution of technologies would be problematic. Rather than provide the in-vehicle technologies directly, the government would likely rely upon a private vendor to maintain an inventory and distribution system. Updating the technologies would only occur during

[43] 72% of the California Road Charge Pilot Program participants were satisfied with ease of enrollment; 69% satisfied with time for enrollment; 67% satisfied with enrollment process overall; 66% satisfied with clarity of communications about enrollment; 65% with process of choosing AM; 47% satisfied with getting enrollment questions answered. Less than 10% were unsatisfied with these activities (except 12% unsatisfied with clarity of communications for enrollment). *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-23.
[44] *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, pp. 2-19, 2-20.
[45] See the next criterion: *Transparency and Equity of Access*.

periodic, competitive re-procurements with potentially troublesome transitions for thousands and potentially millions of RUC payers.

If policymakers adopted a policy for ensuring *equity of access* for all RUC payers for reporting mileage traveled, the RUC system would take into account technological disparities for required participatory functions among age groups, income groups and geographically remote groups. This may adjust the relative value of manual reporting methods versus automatic reporting methods for this criterion but, on balance, the overwhelming majority of payers would likely prefer automatic over manual reporting for ease of use, especially as demographic changes to society occurs over time. The policy of *equity of access* may be better assessed in the *availability of choice* criterion.[46]

Configurations best suited to address this criterion: Delivery methods primarily supporting automatic reporting (configurations 2, 3, 4, 5). As such, configuration 1 cannot be completely dismissed for this criterion.

b. Transparency of access

Whether a RUC system has *transparency of access* will depend upon how the authorizing law and the authorized government agency sets up and operates the system. The manner of delivery of the RUC system could cloud access or not. The RUC pilots have largely tested private-sector provision, one with government oversight. Participant access to private-sector account managers hampered few of them.[47] [48] [49] [50]

Configurations best suited to address this criterion: Equal for all configurations.

[46] See paragraph 5.4.1.2.
[47] Over 60% of ORe*GO* participants said it was clear how to get help with questions about statement or invoice, while 30% had no opinion. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 22.
[48] 78% of California Road Charge Pilot Program participants were satisfied about the clarity of invoice and transparency of charges on invoice and only 4% were unsatisfied. *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-49.
[49] 42% of California Road Charge Pilot Program participants were satisfied with ability to reach AM when needed but 50% found no reason to reach out. *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-24.
[50] 81% of WA RUC Pilot Project participants said logging into account was easy and less than 5% said difficult. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 3, Question 7, p. 34.

c. Responsiveness

Responsiveness in a RUC system is largely dependent upon corporate culture and management. The RUC pilots have largely tested private-sector provision, one with government oversight and none of these RUC efforts to date have shown much difficulty with responsiveness.[51] [52] [53] Thus, no delivery method can at this point be said to have an advantage.

Configurations best suited to address this criterion: Equal for all configurations.

d. Issue resolution

Whether issues are resolved or not in a RUC system is dependent upon technical capability, corporate culture and management. The RUC pilots conducted to date have largely tested private-sector provision, one with government oversight and, while there is some room for improvement, none of these RUC efforts to date have shown much difficulty with issue resolution.[54] [55] [56] [57]

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[51] Over 76% of *OReGO* participants reported no problems getting answers to questions and 20% had no opinion and only 4% had problems. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 19.

[52] 42% of California Road Charge Pilot participants were satisfied with promptness of responses but 51% found no reason to reach out. *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-24.

[53] 38% of WA RUC Pilot Program participants said responses to questions were prompt; 54% had no questions and only 3% were unsatisfied with promptness. *Washington RUC Pilot Project Pilot Participant Survey #2*, Question 11, p. 14. Of those participants who had questions, 83% were satisfied with promptness and 8% were dissatisfied. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 2, Question 10, p. 21.

[54] Over 40% of *OReGO* volunteers who had a problem with MRD [mileage recording device] were able to get help and over 50% had no problems, and only about 8% had problems that were not resolved. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 22.

[55] 35% of California Road Charge Pilot Program participants were satisfied with resolution of issues but 55% had no issues and only 4% were unsatisfied. *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-24.

[56] "15% of technology users reported experiencing a technical issue with their reporting method, with nearly half reporting the issue was not resolved to their satisfaction." *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-45.

[57] 35% of WA RUC Pilot Program participants said their questions were answered and 54% had no questions, and only 5% were unsatisfied with issue resolution. *Washington RUC Pilot Project Pilot Participant Survey #2*, Question 11, p. 14. Of those participants who had questions, 76% were satisfied with issue resolution and 13% were dissatisfied. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 2, Question 10, p. 21.

Advantage: Equal for all configurations.

e. Communications and customer service

Whether a delivery method conducts communications and customer service well depends upon an appropriate level of resources, applied skillset, corporate culture and management. The RUC pilots conducted to date have largely tested private-sector provision, one with government oversight. Overall, pilot participants in all the RUC pilots were positive about their interactions with private-sector account managers and customer service.[58] [59] [60] The only RUC effort with government agency oversight that engaged in participant communications was also regarded as positive.[61] Nevertheless, agencies operating vehicle registries will likely implement manual methods of reporting in a RUC system and they are generally regarded as less proficient with customer service in most states.

Configurations best suited to address this criterion: Delivery methods primarily reporting configurations 2, 3 and 4.

[58] 96% of *OReGO* volunteers were satisfied with interactions with AMs and only 4% regarded their interactions with AMs as poor. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 7.
[59] 47% of California Road Charge Pilot Program participants were satisfied with communications with account manager, 43% had no contact with AM and only 4% were unsatisfied with communications with their account manager. *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-24.
[60] 45% of WA RUC Pilot Program participants were satisfied with customer service; 46% had no need of customer service; only 4% dissatisfied with customer service. *Washington RUC Pilot Project Pilot Participant Survey #2*, Question 11, p. 14. Of those participants who had questions, 71% were satisfied with customer service and 8% were dissatisfied. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 3, Question 7, p. 34. 95% of participants in the WA RUC pilot were satisfied about the clarity of communications they received. *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 3, Question 11, p. 36.
[61] Only 3% of participants regarded their interactions with ORe*GO* staff negatively while 81% regarded their interactions positively. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 25.

Table A-4: Participant Experience Assessment

Assessment of RUC Delivery Configurations	Configuration 1 (Government-Only)	Configuration 2 (Single Provider)	Configuration 3 (Open Market)	Configuration 4 (Combination/ Open)	Configuration 5 (Combination/Single)
Participant experience					
• Simplicity, convenience, ease	◑	●	●	●	●
• Transparency of access	◒	◒	◒	◒	◒
• Responsiveness	◒	◒	◒	◒	◒
• Issue resolution	◒	◒	◒	◒	◒
• Capability of communications	○	●	●	●	●

Key:

Indication	Meaning
○	Poor/ Does not support
◑	Fair / Partially Supports
◕	Good / Mostly Supports
●	Excellent / Fully Supports
◒	Equal/ No difference

III. Operational performance

Table A-5: Operational Performance Criteria

Category	Criteria	Type of Issue

Operational performance	• Technologies
	  ○ System alignment
	  ○ Accuracy and reliability
	  ○ Availability of user choice
	• System integrity
	  ○ Privacy
	  ○ Data security
	  ○ Easy to enforce
	  ○ Costly to evade
	  ○ Ability to detect tampering or fraud
	  ○ Ability to audit
	• System alignment
	  ○ Coordination with tolling system
	  ○ Interoperability with other jurisdictions
		Operational issues

a. Technologies

A RUC program may have a number of combinations of manual or automated reporting methods. The WA RUC Pilot Program tested five reporting methods. Which reporting method or combination of reporting methods will be used in a Washington state RUC program will be decided by a combination of legislative policymaking and administrative practicality. The manner of mileage reporting available will impact the preference for delivery configuration.

i. System alignment

Government-only delivery (configuration 1) can best deliver a manual-only reporting mechanism in the state of Washington. In the WA RUC pilot, a number of the state's vehicle licensing offices (VLOs) participated in collection of odometer data for calculation of RUC for pilot participants choosing that option.[62] The government agency could adopt the roles of oversight, data manager, and billing and collections under such a system.

If the RUC system used automated reporting, private-sector providers (configurations 2 and 3) would provide better opportunities to provide current technologies. In a competitive market, private-sector firms have the motivation to provide up-to-date

[62] *WA RUC Report on Vehicle Licensing Offices*, April 22, 2019

technologies in order to maintain and improve market-share. Private-sector entities provided all the automated reporting methods for the Oregon, California, Washington, Colorado, Pennsylvania and Delaware pilots.

For a combination of manual and automated reporting methods, the combination of government and private-sector provider delivery (configuration 4) should yield a competent structure.

Configurations best suited to address this criterion: For automated reporting, private-sector providers (configurations 2 and 3). For a combination of manual and automated reporting, a combination of government and private-sector providers (configurations 4, 5). For manual reporting only, government-only delivery (configuration 1) would be the best configuration but manual-only reporting would also bring with it the inability to exempt out-of-state travel, thus reducing its attractiveness.

ii. Accuracy and reliability

For manual reporting, due to an odometer reading before and after comparison of photos, the WA RUC pilot results show that the accuracy of collecting mileage data through the privately operated VLOs was 100% for all miles of reported manual method users in what essentially could be a government-operated program (configuration 1). Even though the state's licensing offices (i.e., the VLOs and the county licensing offices) may collect manually reported mileage data, all other system elements—oversight and testing of data accuracy and reliability, invoicing, RUC collection—would be operated by a government agency (although there is the possibility for RUC collection at the licensing office level). It remains to be seen whether a statewide application of this licensing office-based system would have the same level of accuracy and reliability as this limited, initial test.[63] Manual reporting in the California pilot had the greatest percentage of non-reporting vehicles.[64] The percentage of non-reporting vehicles for manual reporting methods in the

[63] The WA RUC manual reporting method operated by eight VLO offices was overseen by the delivery partner consulting firm D'Artagnan Consulting LLP rather than a government agency.
[64] *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-26.

Washington pilot were similarly high relative to non-reporting for the automated reporting methods.[65]

The error rates for the pilots in California and Oregon indicate a minimal number of issues with the in-vehicle, automated reporting devices provided by private-sector providers (configurations 2, 3, 4, 5).[66] [67] Smartphone reporting also had significant non-reporting issues in the California because of an obligation for periodic reporting odometer readings, a requirement not imposed for smartphone reporting in the WA RUC pilot project although the Washington non-reporting percentage was lower for the smartphone method over any other reporting method.[68] [69] [70]Smartphone accuracy, reliability and compliance issues do not cast aspersions on any particular delivery configuration.

Configurations best suited to address this criterion: Private-sector entities because in-vehicle, automated reporting devices are aligned with provision by private-sector entities (configurations 2, 3 and possibly 4 and 5 if the government does not provide manual reporting) and provide the most accurate and reliable method of reporting. Manual reporting has yet to show consistent reliability owing to dependence upon reporting by resident drivers, but results from the Washington pilot's VLO reporting show enough promise to expect the possibility that government sector provision (configuration 1 and 4) of manual reporting may become accurate and reliable with further improvements.

iii. Availability of user choice

RUC payers have embraced the availability of choices of reporting method.[71] Until the motoring public finds an overwhelming preference for a particular reporting method,

[65] In the WA RUC pilot, the non-reporting vehicles for the manual methods averaged about 20% while the non-reporting vehicles for the automated methods averaged under 10%. *WA RUC Pilot Project data analysis by D'Artagnan Consulting LLP*, June 20, 2019.
[66] Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 7.
[67] In the California pilot, location-aware, in-vehicle, automated reporting devices had an error rate ranging from 1.5% to 2.34% while non-location-aware, in-vehicle automated reporting devices had an error rate ranging from 0.98% to 1.69%; both are within the range of odometer accuracy and therefore acceptable. *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-37.
[68] *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, pp. 2-26, 2-27.
[69] It must be noted that smartphone reporting required periodic odometer reporting for the California pilot.
[70] In the WA RUC pilot, the non-reporting vehicles for the smartphone methods exceeded 20%. *WA RUC Pilot Project data analysis by D'Artagnan Consulting LLP*, June 20, 2019.
[71] 98% of pilot participants choosing automated devices in the WA RUC pilot project found them convenient; 92% of pilot participants choosing odometer reading in the WA RUC pilot project found this method convenient; 88% of pilot participants choosing the smartphone app in the WA RUC pilot project

having choices will improve public acceptance for RUC. If policymakers adopt a policy for equity of access, then providing payers access to multiple choices will treat all payers fairly notwithstanding their income, proficiencies with technologies, geographic locations or personal preferences.

While government agency-only delivery (configuration 1), single private-sector provider delivery (configuration 2) and combined government agency and single service provider delivery (configuration 5) could each procure multiple choices for mileage reporting, an open market for private providers (configuration 3) will provide a greater possibility for current and cutting-edge options. A combination of government agency and open market private-sector providers delivery (configuration 4) could assure choices for manual reporting and current or cutting-edge automatic reporting options.

The public may have a preference for automatic reporting.[72] In the California pilot, the most common reporting methods considered "the right choice" by participants were automatic methods[73] and the most common devices considered the best choices other than the one actually chosen were automatic devices.[74]

Configurations best suited to address this criterion: A government agency providing a manual reporting option combined with an open market of private-sector providers (configuration 4) providing cutting-edge automatic reporting options will likely provide the motorist with the broadest choices for mileage reporting. If policymakers prefer only automatic reporting choices (rather than manual reporting), they should also prefer an open market of private-sector providers (configuration 3).

found it convenient; and 72% of pilot participants choosing the mileage permit in the WA RUC pilot project found this method convenient; *Washington Road Usage Charge Pilot Evaluation: Survey Results*, Survey 3, Question 5, p. 33.

[72] "Participants who chose an automated approach were more likely to agree that their reporting method was easy to use as compared to those using manual methods." *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-33.

[73] Of participants choosing the built-in, telematics technology, 90% said it was the right choice; of participants choosing the without location, plug-in device, 90% said it was the right choice; of payers participants choosing the location-aware, plug-in device, 82% said it was the right choice. *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-39.

[74] Of those participants who thought another reporting method was better than the one they chose, 30% chose built-in, telematics technology, 28% chose the non-location, plug-in device and 15% chose the location-aware plug-in device. Of all the other methods, only the odometer charge came close at 13%. *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-40.

b. System integrity

The integrity of a RUC system depends upon its ability to protect privacy and provide security for personal data of the payers as well as how well the system manages enforcement—evasion and detection of tampering and fraud—and the ability to audit.

i. Privacy

It is clear from public engagement, pilot participant survey results, and media stories that a RUC system *must* protect the privacy of personal information used for calculation and billing of a road usage charge. The new Washington law protecting general privacy of data will apply to RUC data but additional provisions specifically associated with RUC collection may be necessary for enactment of a RUC program.[75] With regard to delivery of a RUC system, the question is whether any of the potential delivery configurations will have an advantage or a disadvantage in applying privacy protections required by law.

To comply with legal privacy protection requirements, a government agency will adopt rules, procedures and protocols to assure compliance. The effectiveness of these policies will depend upon effective management.

The legal privacy protection requirements imposed for RUC will almost certainly apply to applications for involving private-sector entities. Reporting from the California pilot reveals that private-sector providers complied diligently with strict privacy protection requirements.[76]

As the only operational RUC system for light vehicles in the United States, ORe*GO* imposes by law protection of personally identifiable information upon both the government agency and its personnel as well as private-sector service providers, and their personnel, involved with RUC collection.[77] The overseeing government agency may add further requirements to ensure compliance with the privacy law in the private-sector provider's service level agreement with the agency. The effectiveness of these provisions for compliance with the privacy protection law will depend upon their nature and

[75] *WA RUC Model Privacy Policy for Road Usage Charging,* December 2018.
[76] *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, pp. 2-55. 2-57, 2-60, 2-61.
[77] Oregon's Road Usage Charge privacy protection provisions are contained in statute (ORS 319.915) and rules (OAR 731-090-0010).

management oversight by the agency.[78] No configuration will have the advantage in ensuring compliance with privacy protection law.

Providing RUC payers with choices for which entity collects the RUC and the manner of mileage reporting can be seen as an additional privacy protection measure. By having choices, payers may select the RUC payment approach which suits themselves, and thus best protects their personal privacy.

As the central feature for effective compliance with privacy laws, proper management gives none of the configurations an advantage. With regard to offering choices for account management and mileage reporting methods, the configuration offering the most viable current choices would have the advantage. Offering the most current choices will tend to favor, though not necessarily, the open market for private-sector service providers (configuration 3 and 4). A properly procured single private-sector provider (configurations 2 and 5) could also offer extensive mileage reporting choices but not the option for other managing accounts by another private-sector entity and the reporting choices will not necessarily be current or on the cutting-edge. Government-only delivery (configuration 1) will be challenged to offer several automated, current reporting options.

Configurations best suited to address this criterion: Multiple service providers in an open market (configuration 3), or a combination of government provider and multiple private service providers, depending upon the nature of the combination (configuration 4).

ii. Data Security

Security of personal information requires an entity collecting RUC to use best practices in managing data security. Best practices require continual monitoring and upgrading to address the continual assault on data systems. An overseeing governmental agency must ensure application of these best practices not only for a government-only delivery configuration but also for private-sector service provider configurations where the obligation is identified in the service level agreement between the service provider and the agency. Under any RUC delivery configuration, the effectiveness of data security

[78] "AMs [account mangers] indicate that SLAs [service level agreements] are touch, but fair and effective." Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Account Manager Satisfaction and Program Improvement Report*, January 12, 2017, p. 7.

measures will depend upon the ability of the overseeing agency to continually update best practices and manage either government or private entity compliance.

Configurations best suited to address this criterion: Equal for all configurations.

iii. Easy to enforce

For any delivery configuration, non-payment may be managed by whichever entity manages RUC accounts by taking legal debt collection activities and actions through the civil court system. More severe violations for fraud and tampering, however, will need government authority to impose appropriate sanctions. The law authorizing RUC will likely include civil penalties and perhaps criminal charges for varying degrees of transgressions. Notwithstanding the delivery configuration, the enforcement responsibility in a RUC system will rest with the overseeing agency. The most extensive RUC pilot programs did not apply useful enforcement regimes because these volunteer-based projects were not appropriate test environments for enforcement measures.[79]

Configurations best suited to address this criterion: Equal for all configurations.

iv. Costly to evade

Whether a RUC will prove costly to evade depends on the level of interest imposed for late payment and the penalty structure adopted for non-payment in the authorizing legislation. For private-sector service providers, the overseeing agency should place interest and penalty provisions to discourage evasion in the service level agreement with the agency if they are not laid out in statute.

Configurations best suited to address this criterion: Equal for all configurations.

v. Ability to detect tampering or fraud

The effectiveness of identifying fraud and tampering will depend upon law enacted and the related rules, procedures and protocols established by the government agency and proper management of them. The ability to detect fraud and tampering will largely depend

[79] *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-28. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Account Manager Satisfaction and Program Improvement Report*, January 12, 2017, p. 7.

upon the technologies selected for mileage reporting rather than the delivery configuration.

Configurations best suited to address this criterion: Equal for all configurations.

vi. Ability to audit

Auditing of accounts and business systems will be necessary for either accounts managed by a government agency or a private-sector service provider. The overseeing government agency will have the responsibility to ensure auditing occurs on a regular basis. The resources applied, appropriate auditing practices and proper management will determine whether effective auditing occurs. Audit results from the California Road Charge Pilot Program indicate that that a competitive market of private-sector service providers is feasible.[80] Audits completed for the ORe*GO* program appear strong.[81] *No* delivery configuration appears to have a disadvantage concerning auditing.

Configurations best suited to address this criterion: Equal for all configurations.

c. System cooperation

The government will not deploy a RUC system in a vacuum. The RUC system will have to integrate or, at minimum, coordinate with other government operations such as the Washington's tolling system and interoperability with other states' RUC systems as well as the Washington's fuel tax system during a transition from the fuel tax to RUC.

i. Coordination with tolling system

The state's tolling system uses an electronic pre-paid system called *Good to Go!* This toll-tag system automatically charges a driver's pre-paid account every time the driver's vehicle passes through a toll gantry. It is possible for RUC and *Good to Go!* to use a common device or the same accounting system.

[80] "The [California Road Charge Pilot Program] audit confirmed that the data for all test WINs in the VIN Summary Report were identical to the raw data used by account managers to prepare their monthly reports…This audit exercise did not result in any modifications to the data collection or administrative systems." *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-32.
[81] "*AMs* [account managers in the *OReGO* program] agree that a SOC 2 audit is an effective way to ensure proper financial management of state revenues; … that the SSAE 16 audit touches every aspect of the operation, including financial processes, privacy, and security of the operation." Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Account Manager Satisfaction and Program Improvement Report*, January 12, 2017, p. 7.

Since the state government operates the toll system by hiring a single operator (similar to RUC delivery configuration 2) in a proprietary, closed system, it may be possible for the government to combine the RUC and tolling systems. Should the government operate the RUC system solely (configuration 1), combining the two systems may prove problematic unless the government switches to operation of the toll system in addition to RUC.

If the overseeing agency prefers to have a private entity operate both the toll system and the RUC system, the government would have to expand the contractual authority of the private entity operating the toll system to include a single-provider RUC system (configuration 2). This would mean this entity would undertake a large expansion of its accounting system and learn to operate new mileage reporting technologies. If the current entity operating the toll system does not have this capability, then the government would have to find a new provider for both systems at the end of the toll service contract period. No tolling provider has yet to enter the RUC market although some tolling companies have shown interest.

As an alternative to a single-provider of both account management and technologies for tolling and RUC, the state could develop an open market for RUC or both (configuration 3). Technologically, a single device could provide RUC reporting as well as automatic toll-tag for a prepaid tolling account. In this case, the toll payer would have the choice of either using two devices—the mileage reporting device and the *Good to Go!* toll-tag—or use the combined device. The standards set by the government in a nonproprietary, open system should allow development and application of this combined technology. If the toll system uses a proprietary closed system, the two systems would likely prove impractical to combine until the government procures a new toll provider at the end of the toll service contract period.

Using a combination of government provision and an open market provision (configuration 4) or combination of government provision and single private-sector service provider (configuration 5) for both RUC and the toll system appears complex, without added value, compared to the other three delivery configurations. Overall, therefore, government agency-only delivery in any configuration (configurations 1, 4 or 5) is disadvantaged for integration with a tolling system.

While integration of the two systems may prove doable under some configurations and perhaps preferred, the tolling system does not have to integrate with the RUC system but

must, rather, coordinate with it. The key to success for coordination is simply providing consistent customer service and making coherent customer referrals from one system to the other. Proper coordination could occur under any of the configurations.

Configurations best suited to address this criterion: Configurations 2 and 3 (under the current government preference not to operate the toll system). Even under configurations 2 and 3, integration with the toll system will only be realistic if both the RUC and toll systems operate under an aligned nonproprietary open system, or a single provider operates RUC and the toll system under the same proprietary, closed system. Under a coordination strategy, there is no preference for any of the configurations.

ii. Interoperability with other jurisdictions

Essential to integration of RUC among the states, neighboring RUC systems must have the ability to interoperate. Without interoperability among RUC systems, the unresolved quandary concerning how to charge RUC to non-resident drivers will persist indefinitely beyond the transition phase for full RUC application. Fortunately, the early state investigations are largely working from the same model for collection of RUC.

Since Oregon adopted an open system for competing vendors in 2015, creating the standards for system operations by commercial vendors, the states that followed worked from the same design. While certain aspects of the standards continue to evolve,[82] the essential underpinnings of the Oregon RUC system remain in place. The states involved with this evolutionary process should have little difficulty, if any, in adopting a common set of standards to facilitate interoperability.

Implementation of a hub for multi-state interoperability, as tested in the WA RUC pilot project, should put any question about interoperability to rest.[83] The pilot demonstrated a proof of concept for multi-state mileage reporting, accounting, and financial reconciliation. The hub itself was flexible to accept data, reports, and funds either directly from commercial account managers in an open system (as was done for Washington) or from

[82] The standards are compiled in four documents: the mileage message, the interface control document, the systems requirement specifications and the business rules.
[83] [The California Road Charge interoperability] simulation does indicate that interstate interoperability is feasible, provided participants have a location-based mileage reporting approach, and that the mapping used by the account managers are accurate with respect to state boundaries." *Evaluation of the California Road Charge Pilot Program*, November 17, 2017, p. 2-30.

states (as was done for Oregon).[84] States plugging their RUC systems into a multi-state hub will agree to the basic standards of a RUC system.

Cooperating with other states to establish interoperability for RUC systems will be a matter for state governments to resolve. The configuration of the RUC system would only impact this cooperation if operated under a closed system or under contracts with private service providers that do not allow the government to evolve the standards.

Configurations best suited to address this criterion: Equal for all configurations, as long as the contracts for the private service providers allow the government to evolve the standards for the RUC system to accommodate interoperability.

[84] WA RUC Steering Committee Meeting, Preliminary results of interoperability test with other states, May 2, 2019, pp. 31-33.

Table A-6: Operational Performance Assessment

Assessment of RUC Delivery Configurations	Configuration 1 (Government-Only)	Configuration 2 (Single Provider)	Configuration 3 (Open Market)	Configuration 4 (Combination/ Open)	Configuration 5 (Combination/Single)
Operational performance					
• Technologies					
○ System alignment	○	●	●	●	●
○ Accuracy and reliability	○	● for automatic	● for automatic	● for automatic	● for automatic
○ User choice	○	○	● for automatic	● for manual and automatic	○
• System integrity					
○ Privacy	○	○	●	● if open	○
○ Data security	◒	◒	◒	◒	◒
○ Easy to enforce	◒	◒	◒	◒	◒
○ Costly to evade	◒	◒	◒	◒	◒
○ Detection of tampering and fraud	◒	◒	◒	◒	◒
○ Ability to audit	◒	◒	◒	◒	◒
• System cooperation					
○ With toll system	◒ For coordination	● For integration	● For integration	◒ For coordination	○
○ Interoperability	◒	◒	◒	◒	◒

Key:

Indication	Meaning
○	Poor/ Does not support
◑	Fair / Partially Supports
◕	Good / Mostly Supports
●	Excellent / Fully Supports
◒	Equal/ No difference

IV. Practical availability

Table A-7: Practical Availability Criteria

Category	Criteria	Type of Issue
Practical availability	• Risk of Delivery • Resources • Technological and business system capabilities • Affordability • Continuity	Practical issues

For RUC pilot programs in Oregon, California, Washington, Colorado, Pennsylvania and Delaware, several private companies have come forward to contract and operate mileage data collection and RUC invoicing and collection systems. These companies headquarter in Canada, France and the United States. There are also several other firms, with the requisite technical expertise, monitoring RUC market development in the United States for an opportunity to enter. There appears to be adequate industry interest to support private-sector involvement in RUC delivery (configurations 2, 3, 4).

a. Risk of delivery

Whether an entity responsible for delivery of a RUC system can ably bear the risk of delivery depends upon the sufficiency of the resources—person-power, budget, authority, computing power, technologies—assigned to the effort and the overall financial capability of the entity. There is fair certainty that the state of Washington can effectively manage the risk of the overall financial responsibility in a government-only delivery arrangement (configuration 1). Whether a private-sector service provider will also have sufficient overall financial capability to bear the delivery risk depends upon the entity procured. Delivery risk could be a factor in selection of a single private service provider (configurations 2 and 5). For a qualifications-based open market for multiple private service providers (configurations 3 and 4), the RUC system's certification process could require adequate overall financial capabilities in order to pass the certification process. Whether the government agency responsible for selection of private-sector entities applies appropriate and effective measures for selection will be a matter of management and therefore not certain but likely for a capable agency. Further, whether the selected entities maintain adequate overall financial capabilities during the term of their involvement as a RUC service provider will depend upon appropriate contractual terms

and effective oversight by the procuring government agency and therefore not certain but likely for a capable agency.

Application of sufficient resources to manage risk is likely, though occasionally challenging, for government-only delivery (configuration 1) at various stages along the way. Whether private service providers will have sufficient resources to manage risk should be regarded similarly to having the overall financial capabilities. Sufficient resourcing should be a factor in selection of private-sector entities and also a requirement in the service contract. Success in this regard will depend upon the procurement capabilities of the procuring government agency.

Configurations best suited to address this criterion: The ability of government-only delivery (configuration 1) to bear the risk of delivery is nearly certain. Appropriately procured private-sector entities (configurations 2, 3, 4 and 5s) could also have adequate capacity to bear the risk of delivery but this depends upon strict contractual provisions and the competency of the procuring government agency. An open market for private-sector providers (configurations 3 and 4) will have the best opportunity to accept an entity's departure from the market through a shift of payers to another entity. Failure of a single private provider (configuration 2 and 5) would not have this flexibility.

b. Resources

Appropriate levels of funding, personnel and technologies are necessary for a successful delivery model. Although there are many adequately resourced government programs, there are also many government programs which cannot claim this capability, particularly during a transition from small to large. Private-sector companies tend to resource a profitable enterprise, which a RUC system will be once sufficient payers participate. Recent RUC pilots in Oregon, California and Washington indicate the availability of adequate resourcing for private-sector functions. Any difference in RUC delivery models will depend upon the individual entities involved and whether government procurement office competently procure private-sector entities with adequate resources.

Configurations best suited to address this criterion: Equal for all configurations.

c. Technological and business system capabilities

Research labs and private-sector companies on the cutting-edge can provide the evolving technological and business system capabilities necessary for a RUC system.

Governments tend to lag behind the technologies and business systems curve. The government may procure a single private-sector provider (configuration 2) starting on the cutting-edge but then fall behind for lack of urgency after securing the contract.

Configurations best suited to address this criterion: Open market private-sector service provider delivery (configuration 3) will more likely consistently provide appropriate technical and business systems for RUC. Any company that does not maintain its capabilities will fall out of the market and its customers shifted to another private entity. Combined government and private service provider delivery (configurations 4 and 5) will have the same advantage if operated as an open system.

d. Enabling System Affordability

No matter the configuration, cost/benefit research in RUC financial models for Oregon, California and Washington indicates that a large program of at least a million payers may be necessary to generate significant net revenue and shrink the relative administrative costs to acceptable levels, generally regarded as below 10% cost of collection.[85] Private-sector entities participating in those RUC efforts agree and believe that a multi-state RUC program may be needed to enable system affordability.[86] The best way to accomplish a multi-state RUC program alignment would be through an interoperability hub populated by private-sector service providers participating in an open market (configuration 3 and 4). A single provider, whether government or private entity operated (configurations 1 and 2), should have significant difficulties aligning with other states. Whatever the configuration, early stage, introductory RUC programs with only a few thousand participants will have difficulty attaining sufficient net revenue to cover costs.[87] This may

[85] California Department of Transportation, *California Road Charge Pilot Program Final Report*, 2017, p. 71; Washington Road Usage Charge Steering Committee, *Meeting #12 Briefing Book*, December 1, 2015, p. 12; Oregon Department of Transportation, *Road Usage Charge Pilot Program 2013*, p. 27

[86] "AMs [account mangers] believe that a RUC needs to be mandatory and multi-state in order to generate sufficient revenue, both for the state and for private AMs." Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Account Manager Satisfaction and Program Improvement Report*, January 12, 2017, p. 12.

[87] At the introductory levels, an open market for a RUC program will be challenged to generate positive net revenue. For example, Oregon's ORe*GO* program, with its statutory limit of 5,000 volunteer participants, generates very little net revenue for this very reason. Kathryn Jones, Maureen Bock and the Oregon Department of Transportation, *Oregon's Road Usage Charge: The OReGO Program Final Report, April 2017,* pp. 49-50.

only happen once a RUC program reaches a viable number of participating RUC payers, likely in the range of 50,000 to 100,000.

Configurations best suited to address this criterion: Configurations 3 and 4 because of an ability to participate in a multi-state RUC program alignment. An open market for private-sector service providers (configurations 3) has a slight advantage over the combined government and open market (configuration 4) because the government provision costs do not have to be covered.

e. Continuity

RUC program delivery must maintain continuity for as long as the state wants the revenue provided. The government-only delivery model (configuration 1) certainly provides the best assurance of continuity. Private-sector firms can go out of business but government agencies tend to endure, especially if there is support for the underlying program. There is more risk that a single private-sector provider (configuration 2) will go out of business than an entire open market of private-sector providers (configurations 3 or 4). There is, however, a greater likelihood that one private-sector provider will go out of business in an open market supported by multiple firms; yet the open market can manage that occurrence by providing a simple way for RUC paying customers to switch to another certified private-sector provider within the market. Indeed, the only operational RUC program in the United States, Oregon's per-mile road usage charge program, had one private-sector provider leave the program during the first year and shifted that provider's customers to another provider, although an independent reviewer suggests the process could be made easier.[88] [89] The way to assure continuity in an open market is for

[88] "If an AM [account manager] leaves the program or if a volunteer wants to switch AMs, volunteers must start over by exiting the program and re-registering with a new AM. Many volunteers have been willing to do this. However, as the program continues, and especially if it expands, ODOT should consider having processes, procedures, and systems in place that allow volunteers to switch between AMs without re-registering. Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Account Manager Satisfaction and Program Improvement Report*, January 12, 2017, p. 10.

[89] During WA RUC pilot operations, the pilot delivery team experienced the positive benefits provided by competition and the ability to mitigate operational risks. When one service provider entered chapter 11 bankruptcy, the pilot delivery team had the option of migrating participants to the other service provider, albeit this option ultimately proved unnecessary to deploy.

the government to procure multiple certified private-sector providers as well as an open and continual procurement and certification opportunity for newly interested companies.

Configurations best suited to address this criterion: Government-only delivery (configuration 1) has the best chance of maintaining continuity with a properly structured open market of private service providers under an open system (configuration 3 and 4) close behind. Correctly managed, there will be little difference between configurations 1, 2, and 3 for this criterion. The biggest risk of a lapse in continuity would occur with a single private-sector service provider (configurations 2 and 5).

Table A-8: Practical Availability Assessment

Assessment of RUC Delivery Configurations	Configuration 1 (Government-Only)	Configuration 2 (Single Provider)	Configuration 3 (Open Market)	Configuration 4 (Combination/ Open)	Configuration 5 (Combination/Single)
Practical availability					
• Risk of delivery	●	○	◑	○	○
• Resources	◒	◒	◒	◒	◒
• Technology & business system	○	○	●	◑	◑
• Enabling System Affordability	○	○	●	◑	○
• Continuity	●	○	◑	◑	○

Key:

Indication	Meaning
○	Poor/ Does not support
◑	Fair / Partially Supports
◕	Good / Mostly Supports
●	Excellent / Fully Supports
◒	Equal/ No difference

V. Flexibility

Table A-9: Flexibility Criteria

Category	Criteria	Type of Issue
Flexibility	• Open to competing vendors • (open system) • Adaptability for policy changes • Ability to innovate and evolve technology and business systems • Scalability • Transition, phasing	Design issues

To enable success for a RUC system, the delivery configuration must have the flexibility to accommodate an open system, adapt to policy changes by the legislature, innovate and technically evolve, scale to a large size and enable transition to a full RUC application.

a. Open to competing vendors (open system)

This assessment criterion, adopted by the WA RUC Steering Committee as a guiding principle, indicates a preference for configurations 2, 3, 4 and 5 which are the only configurations which could facilitate an openness to competing vendors. In a single private provider procurement (configurations 2 and 5) competition would occur only at the selection stage and, as such, is not a place for continuous competition for actual RUC paying customers among competing vendors. Adoption of an open system is the only way to facilitate such competition among vendors.[90]

Configurations best suited to address this criterion: Configuration 3 which supports open market competition among private-sector service providers and configuration 4 for a combination of government agency delivery and private-sector delivery but only if supportive of open market competition. A government-only delivery (configuration 1) cannot meet this criterion.

[90] The only definition of *open system* in law is contained in the statutes enacted in Oregon for the Per-mile Road Usage Charge Program. ORS 319.900(1) says "'open system' means an integrated system based on common standards and an operating system that has been made public so that components performing the same function can be readily substituted or provided by multiple providers."

b. Adaptability for policy changes

Any delivery configuration can adapt for policy changes if the supporting set of standards and contracts contain sufficient flexibility.

Configurations best suited to address this criterion: Equal for all configurations.

c. Ability to innovate and evolve technology and business systems

Unless an open system is required by law, government-only delivery would be susceptible to selection of closed system technologies and business systems that will quickly go out-of-date. Without an open system mandate, a single private service provider would tend to use a closed system to protect its position. Closed systems impede innovation and technical evolutions.[91] Only real competition amongst private-sector providers for RUC paying customers in an open market will provide a significant, real-time incentive for innovation and technical evolution of RUC systems. To operate efficiently, the open market must allow the free flow of competitors into and out of the market. This will require adoption of a perpetually available opportunity for access to a vendor certification process and an ability to enter into a binding contract with the state or other authorized entity at any time. No state has issued such an open opportunity procurement document, although there are indications that Oregon intends to do so when the RUC market matures sufficiently.[92]

Configurations best suited to address this criterion: The open market for private-sector service providers (configuration 3) meets this criterion and the combination of government delivery and private-sector delivery (configuration 4) could meet this criterion as well if operated as an open market. Government-only delivery (configuration 1) and single private-sector provider delivery (configurations 2 and 5) have less incentive to innovate and evolve technologies and systems and indeed will not do so if operated under a closed system.

d. Scalability

Any system for application to a small number of vehicles—such as Oregon's application of RUC to volunteers and Oregon and Utah's application of RUC to those opting-in to avoid higher flat fees—must be able to scale upward from thousands to millions of

[91] A "closed system" is proprietary in nature which only one provider is able to support.
[92] Conversation with Maureen Bock, manager of the ODOT Office of Innovation, Spring 2018.

vehicles for a RUC delivery configuration to be viable for the future. Though theoretically scalable, each delivery method must obtain resources to grow larger. An open market of private-sector providers, by nature, is designed to seek additional RUC paying customers and adapt to growth. There is less assurance in this regard with government-only delivery or single private-sector service provider delivery. Government agencies tend to have a tough time obtaining approval for the large appropriations necessary for timely growth to scale for configurations 1, 2 and 5.

Configurations best suited to address this criterion: The open market private-sector providers delivery (configuration 3) and a combination of government delivery and private provider delivery (configuration 4), if operated under an open system, naturally will adapt to scalability needs more quickly than two configurations 1, 2 and 5.

Table A-10: Flexibility Assessment

Assessment of RUC Delivery Configurations	Configuration 1 (Government-Only)	Configuration 2 (Single Provider)	Configuration 3 (Open Market)	Configuration 4 (Combination/ Open)	Configuration 5 (Combination/Single)
Flexibility					
• Open to competing vendors	○	○	●	◑	○
• Adaptability for policy changes	◒	◒	◒	◒	◒
• Ability to innovate and evolve	◑	◑	●	◑	○
• Scalability	◑	◑	●	● if open	○

Key:

Indication	Meaning
○	Poor/ Does not support
◑	Fair / Partially Supports
◕	Good / Mostly Supports
●	Excellent / Fully Supports
◒	Equal/ No difference

VI. Policy alignment

Table A-11: Policy Alignment Criteria

Category	Criteria	Type of Issue
Policy Alignment	• Transparency of system • User pay system • Alignment with state's energy, environmental and congestion management goals • Fairness and equity	Design issues

Generally, public policies adopted by the legislature will determine the transparency of a RUC system, whether RUC is a user pays system that aligns with other statewide goals and the fairness and equity of the application.

a. Transparency of how the system is paid for

The state's gas tax is hidden within the price of the gasoline purchase amount. If collected at the fuel pump, the transaction structure could also hide the per-mile charge from view of the payer. If RUC is collected through presentment of an invoice in an account-based system, collection becomes transparent to the payer. Transparency is largely a matter of policy and management which can be applied under any RUC delivery method. The purpose of the various RUC pilots, which applied either a combination of government and private-sector provision (configurations 4 and 5) or more than one private-sector providers (configuration 3), was clear to the participants.[93]

Configurations best suited to address this criterion: Equal for all configurations.

b. User pay system

A per-mile charge is by its nature a user pay policy that will not be affected by RUC delivery method.

Configurations best suited to address this criterion: Equal for all configurations.

[93] "It was clear that the purpose of the ORe*GO* program is to provide a method to fund the ongoing maintenance of Oregon's roads and bridges." Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 19.

c. Alignment with state's energy, environmental and congestion management goals

Whether the structure of the per-mile charge aligns with the state's energy, environmental and congestion management goals depends upon to whom the charge applies and the rate structure rather than any of the delivery configurations.

Configurations best suited to address this criterion: Equal for all configurations.

d. Fairness and equity

Whether the payers regard a per-mile charge as fair or those with policy interest regard the per-mile charging system as equitable will depend upon to whom the charge applies, the rate structure and individual perspective rather than any of the delivery configurations. The overwhelming majority of payers participating in the ORe*GO* program considered fair a flat-rate, per-mile charge that everyone paid while only a small fraction regarded the flat-rate, per-mile charge for everyone as unfair.[94]

Configurations best suited to address this criterion: Equal for all configurations.

Table A-12: Policy Alignment Assessment

Assessment of RUC Delivery Configurations	Configuration 1 (Government-Only)	Configuration 2 (Single Provider)	Configuration 3 (Open Market)	Configuration 4 (Combination/ Open)	Configuration 5 (Combination/Single)
Policy Alignment					
• Transparency of system	◒	◒	◒	◒	◒
• User pay system	◒	◒	◒	◒	◒
• Alignment with state's other policy goals	◒	◒	◒	◒	◒
• Fairness and equity	◒	◒	◒	◒	◒

Key:

Indication	Meaning
○	Poor/ Does not support
◑	Fair / Partially Supports
◕	Good / Mostly Supports
●	Excellent / Fully Supports
◒	Equal/ No difference

[94] Public Knowledge LLC, *Oregon Department of Transportation OReGO Program: Volunteer Satisfaction and Program Improvement Report*, January 12, 2017, p. 18.

Appendix B: Transition Policy of WA RUC Steering Committee Work Plan

On November 9, 2017, the Washington Transportation Commission presented a work plan for the Washington Road Usage Charge Steering Committee containing the following transition policy.

Transition policy

a. Definition of the issue

Because of the importance of fuel tax system to transportation funding and debt service, any future RUC policy must account for the realistic prospects of moving away from a fuel tax and toward a RUC over a period of time.

b. Relevance to RUC

Although RUC policy could be implemented at any time, it is critical that lawmakers, should they move toward adopting such a revenue mechanism, appreciate the impacts of the method of transition on RUC implementation and operations. A swift transition from fuel tax to RUC could create substantial burdens for state agencies, while a slow or protracted transition may neglect the opportunity for revenue sustainability.

c. Research approach

The approach is this research is to build on prior work done by the Steering Committee that considered example transition approaches. The project team will work with the Steering Committee to construct a range of transition approaches, describe their policy features, and analyze their impacts on revenue, system operations, costs, motor fuel tax bonds, and public acceptance. Examples of transition approaches range from “big bang” (all vehicles subject to RUC at once, while eliminating the gas tax) to gradual (only new vehicles subject to RUC, with older vehicles continuing to pay the gas tax).

Appendix C: Transition Pathways to a Final End State for a RUC Program

This appendix suggests a potential transition pathway for each of the three final end state delivery configurations recommended in chapter 5. These recommended final end state configuration possibilities are:

- Government-only delivery (configuration 1);
- Open commercial market of private-sector service providers (configuration 3); and
- Combination of government and private-sector open market (configuration 4).

I. Potential transition pathways for RUC delivery configurations

There are four viable transition pathways to a fully mature, final end state for a RUC delivery configuration.

a. Government start: Government-only transition (transition pathway 1).

b. Solo provider start: Single, private-sector service provider with open system (transition pathway 2).

c. Solo provider start: An open commercial market for multiple, private-sector service providers with a single entrant to start (transition pathway 3).

d. Combination start: Combination of government agency and single, private-sector service provider (transition pathway 4).

II. Additional criteria for assessment of transition pathways

Assessing the transition pathways for final end state delivery configurations must go beyond the assessment criteria laid out in table 4-2 to consider additional criteria.[95] The four additional criteria critical to assessment of transition pathways are as follows:[96]

- Foundational (to the ultimate delivery configuration);
- Adaptable (from phase to phase);
- Timely (quickly available for each phase of implementation);
- Ease of implementation.

III. Assessment of transition pathways to ultimate RUC system

a. Assessment of transition pathways to government-only delivery

To achieve a final end state of government-only delivery (configuration 1), the easiest pathway to implement would invest a government agency with adequate staffing, resources and expertise from the start and then, as the program grows, give the agency the necessary resources at each growth stage. This would ensure the government-only transition pathway (transition pathway 1) is foundational for the ultimate system. Whether this pathway would also be adaptable and timely will depend on the agency's ability to obtain and maintain sufficient expertise and acquire adequate staffing and resources each time a vehicle segment joins the program. Governments tend to lag in these functions because the budgetary process is often slow and sometimes unpredictable, but this tendency is not a certainty in every case. Each state must evaluate the responsiveness and nimbleness of its own budgetary process in this regard.

[95] Note that this paper assumes that procurement of each transition pathway will ensure functionality for the program characteristics and transition capabilities. As such, functionality is not considered in this paper as a criterion for discernment of transition pathways.
[96] It must be noted that an additional factor may strongly influence the selection of a transitional pathway: political viability. This paper does not have sufficient information to evaluate political viability. Indeed, political viability is too fluid and elusive for evaluation as enduring consideration anyway.

If the government agency responsible for RUC implementation feels short of the staffing, resources and expertise necessary to implement RUC itself (transition pathway 1), procurement of a single, private-sector service provider for a limited duration to commence program implementation (transition pathway 2)[97] before shifting to government administration could prove a viable approach. The single service provider would enroll RUC participants, provide mileage reporting technologies or services, collect mileage data and manage invoicing and RUC payer accounts. The main question is whether the single service provider would apply its own proprietary system or adhere to requirements of an open system adopted by the government. Shifting from a proprietary closed system of a single service provider to entirely government administration could prove problematic and expensive. To make a single service provider viable as a transition option, the government agency should adopt and apply open system performance criteria and standards to the single service provider's implementation to enable transition to government administration when the government feels properly resourced.

Transition pathway best suited to achieve government-only delivery of ultimate system: Procurement of a single, private-sector service provider for a limited duration (transition pathway 2) operating under an open system adopted by the government. Although not foundational to the final end state of government operations, a single private-sector service provider offers the greatest certainty, simplicity, and allows transferability to the ultimate government-operated RUC system as long as the single provider operates under an open system adopted by the government in the introductory stage of the RUC system.

b. Assessment of transition pathways to open commercial market for multiple service providers delivery

An open commercial market for multiple private-sector service providers (configuration 3) may begin at the initial introductory stage of program implementation without a transition pathway and continue through growth periods to a fully mature, final end state. This maintains certainty of an ability to adapt to a fluid transition as it is perfectly foundational

[97] Note that transition pathway 2 has characteristics similar to configuration 2. While configuration 2 may not be advisable as a final end state, its structure has advantages as a transition pathway provided the single, private-sector service provider operates under an open system adopted by the government instead of the single provider's own proprietary system.

to the final end state of an open commercial market and provides the easiest and timeliest transition. To undertake an open commercial market from the start, the overseeing government agency must adopt open system performance criteria and standards,[98] adopt a market contract, procure and manage multiple providers and develop a certification process to ensure the providers can meet the standards before commencement of services. This approach is not simple for an initial implementation of a RUC program by a single state. Nevertheless, Oregon DOT has shown that putting together the structure for an open commercial market and management of multiple private-sector service providers can work in the initial implementation stage despite the challenges.[99]

If the government has concerns about putting together such a complex arrangement from the outset or is unwilling to accept the risk of engaging and managing multiple providers in an introductory program, procuring a single, private-sector service provider to operate under an open system (transition pathway 2) could aid the transition. The government would have to adopt and publish the standards for the open system so that transition to the next phase, an open commercial market, can occur without difficulties, although the government would still have to adopt the open commercial market standards and contracts before opening the RUC market. [100] This pathway offers simplicity and ease of initial implementation, and thus fairly easy transferability to the open commercial market but not necessarily foundational for an open commercial market (configuration 3) if the open system standards do not account for transition to the open market. Timeliness of

[98] The open market performance standards will be developed technical documents such as the Interface Control document, the Systems Requirements Specifications document and the Business Rules document. Examples of these foundational documents are now operational for Oregon DOT's ORe*GO* program.
[99] Oregon's ORe*GO* program launched an open commercial market strategy on July 1, 2015. The launch was based on open system performance criteria and standards adopted by the government and negotiation of a market contract but this qualifications-based procurement opportunity limited the number of initial private-sector service providers for the initial introductory stage of the program. The Oregon DOT held back opening up the market to establish easy entry and exit until the number of RUC payers grows enough to warrant additional private-sector service providers. For this approach, Oregon DOT has endured the trials and tribulations of working with three private-sector service providers and withdrawal of one service provider, including transfer of the withdrawing service provider's customers to another provider.
[100] This paper does not consider a transition pathway for procurement of a single, private-sector service provider under a *closed system* because it is, by definition, not viable to transition from a closed system to an open market based on an open system. The government would essentially have to jettison the closed system and start from scratch in putting together the open system. There is no real transition.

the transition may also be affected as the government would be compelled to develop and adopt new open system performance standards for the open commercial market.

Alternatively, the government may take a step further at the start by procuring a single, private-sector service provider as the first entrant into an open commercial market under the same open system performance requirements and market contract that will be required for the open commercial market (transition pathway 3) This pathway would lead to an easy transition, better meeting the criteria for foundational, adaptability, ease of implementation and timeliness than any other transition pathway.[101] As the first entrant into an open market, a single provider could simplify the work of a single state government by removing or reducing the procurement and oversight responsibilities of regulating an open market and managing multiple private-sector providers.[102]

The timing for transition from a single, private-sector service provider (either transition pathway 2 or 3) could vary to align with the emerging circumstances. Among the circumstances to consider is the agency's resourcing, competency and confidence to manage an open market and whether the RUC program grows to a sufficient number of customers to attract multiple private-sector service providers.

Transition pathway best suited to achieve open commercial market for multiple providers: If a fully open commercial market does not occur at the start of a RUC program, procurement of a single, the best transition pathway is a single, private-sector service provider as the first entrant into an open commercial market with open system performance standards adopted at the beginning of the program (transition pathway 3). The government may find this pathway more laborious at the start[103] but the transition to

[101] Utah DOT, the second state to enact an operational RUC program, intends to do just this, implementing the initial stage of the program by procuring and contracting with a single private-sector service provider then transitioning to an open commercial market later. Given the fast pace from enactment to implementation mandated by legislation, the desire to minimize additional bureaucracy, and the relatively small scale of the initial program, Utah deemed this approach most practical.

[102] Indeed, the original, single, service provider could seek to remain in the open commercial market and compete with the newcomers once the open market commences under either transition pathway 2 or 3.
[103] The government must develop open market performance standards in technical documents such as the Interface Control document, the Systems Requirements Specifications document and the Business Rules document. See Oregon DOT's ORe*GO* program for examples.

the open commercial market will be foundational, completely fluid, and can be completed in a timely way. Something similar could be accomplished by a single, private-sector service procured for a limited duration and operating under an open system not prepared for a commercial market (transition pathway 2) but there could be delays or uncertainties when the government transitions to the open commercial market at the end of the contract term. A open system that is general in nature is not as adaptable as an open system specific to the intended open commercial market.

c. Assessment of transition pathways to combination of government agency and private-sector open market delivery

All described transition pathways could achieve a final end state that involves a combination of government agency and private-sector open market (configuration 4). A government agency could begin the program (transition pathway 1), adding an open commercial market in a later phase. Or, the program could open with a single private-sector service provider operating under a general open system (transition pathway 2) and add the government agency and an open commercial market in later phases. As a third option, the government could procure a single private-sector service provider as the first entrant into an open commercial market with specific open system performance standards adopted at the beginning of the program (transition pathway 3). As a fourth option, the RUC program could start with a combination of government agency and single private-sector service provider under an open system (transition pathway 4) of a general nature (4a), or with specific open system performance standards required for an open commercial market (4b), leading to transition to the final end state at a later time.

Leading with a government agency (transition pathway 1) may prove problematic if technical expertise is required to implement automatic reporting options, which is likely, for a preferred final end state involving a combination of government agency and private-sector open market. Transitioning from government provision of automatic reporting to an open commercial market could also prove complex because it would require all existing payers to shift either reporting method or technology.

Starting with a single private-sector service provider under a general open system (transition pathway 2) could offer government operations (which is likely to be for manual reporting options) and open system operations (which is likely to be automatic reporting

options). This pathway is not necessarily easy because the government is better positioned to deliver manual reporting options in most cases. This pathway is also not necessarily foundational for the open commercial market portion if the open system standards do not allow for transition to the open market. Timeliness of the transition may also be affected as the government would be compelled to develop and adopt new open system performance standards for the open commercial market.

Beginning with a combination of government agency and single private-sector service provider as the first entrant into an open commercial market with the same open system performance standards as the final end state (transition pathway 4b) may have the least complexity for transition and offers a foundation for a final end state for a combination of government agency and open commercial market for multiple, private-sector service providers (configuration 4).

Transition pathway best suited to achieve a combination of government agency and private-sector open market delivery: Procurement of a combination of government agency and a single, private-sector service provider as the first entrant into an open commercial market with the same open system performance standards as the ultimate commercial market (transition pathway 4b). The other transition pathways will prove cumbersome because there will be more complexities and risk by either adding the government or adopting the specific open system performance standards required for an open commercial market at a later time.