Western Road Usage Charge Consortium (WRUCC)

Forum and Process for Road Usage Charge (RUC) Certification

Detailed Description of the Five Elements

NEW PATHS TO ROAD FUNDING   **rucwest.org**

Contents

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1.   Executive Summary

This report defines, develops, and documents a structure for a forum and process for WRUCC to adopt in order to reach a common understanding of Road Usage Charge (RUC) system elements that may be certified in a system available to multiple states.

The primary goals of the forum and process described in the report are to:

- ► create documents against which products and systems can be certified,
- ► generate buy-in from participating states for the certification documents, as well as the process by which they are created,
- ► encourage other states to actively support the effort, and
- ► generate sufficient information and understanding of certification needs to support an informed request for financial and staff resources.

Based on these goals, this report proposes a committee purpose and structure, list of specifying documents for the committee to create, and decisions for the committee to make. In addition, it defines participation expectations for committee members, estimates the level of effort during the certification document creation phase of the committee's work, and provides start-up guidelines.

The committee's purpose is twofold, encapsulated in its two phases of existence:

1. developing the five specifying documents outlined in Section 2.1 that constitute the foundation of a multi-state certification program, and
2. developing any additional documentation and processes necessary to establish, operate, and continuously improve a multi-state RUC certification program.

Its proposed structure includes up to three committee members from each participating state, with a Chair, Vice-chair, and Secretary. The Certification Committee may establish sub-committees as needed.

The Committee itself does not have decision-making power except as delegated by the WRUCC Board of Directors or Steering Committee. However, the Committee is expected to draft documents, propose guidelines for consideration, and make recommendations to the Steering Committee. All proposals and recommendations should proceed first to the Steering Committee, then at the direction of the Steering Committee to the Board of Directors. Decision making is recommended to lie with states that chose to participate in certification work; however, all WRUCC states will be kept informed of the content and progress of this work.

The Committee may draft a Concept of Operations, System Requirements, Interface Control Document, and Business Rules for a RUC system that may be available to several states. Estimates of the time commitment necessary to complete these documents include periodic Committee meetings, time to draft and review documents, and time to liaise with staff in home states, and total approximately 300-400 hours per year, per state for the first phase of the committee's work (i.e., 300-400 hours of total work per state across all committee members provided by the given state). The precise participation level will vary by state. While all member states will be encouraged to devote the estimated 300-400 hours per year, per state, some states may not be able to devote this much. In cases in which states will be devoting significantly less than this

amount of time, the states should notify the committee chairman, so that their limited resources are deployed appropriately.

2. Introduction

2.1. Background of WRUCC Certification

RUC system efficiencies are expected to be greater if multiple states have similar requirements, structures and certification. These potential benefits, including lower costs and better opportunities for interoperability, are why several agency heads of WRUCC member states suggested this project area. The WRUCC Charter presents the vision for RUC systems that may include common elements, but does not specify those elements. Before certification efforts can take place, WRUCC member states need to come to a common understanding of common system elements to be certified.

To accomplish this, WRUCC must create documents against which products and systems can be certified, and to ensure maximum participation by WRUCC member states, the documents should be created in a way that is collaborative and generates buy-in.

This report describes the creation and work of a subgroup to be known as the Certification Committee within the WRUCC that is tasked with developing the specifying documents. Every member state will be invited to join the committee. It is anticipated the governing documents will provide that every participating state will agree to follow decisions of the document committee. Governance should allow any objections to be raised within the committee by a participating state, and all objections will be considered by the committee according to the committee governance rules. The Certification Committee will finalize and obtain agreement from their state's lead on the participation expectations. It is assumed that this committee will regularly update WRUCC as a whole.

2.2. Goal of the Report

The primary goal of this report is to clearly define, develop and document a structure by which participating WRUCC members can reach a common understanding of RUC system elements that may be certified in a system available to multiple states. Descriptions of the committee's structure, participation expectations, and reporting requirements are intended to be detailed enough to derive resource and support requests to the Board of Directors, while discussion of the specifying documents is general enough that the committee, in collaboration with the WRUCC Steering Committee and Board of Directors, is free to establish a scope that fully supports the goals of WRUCC.

2.3. Organization of the Report

The organization of this report is intended to clearly identify the work, decisions and progression (i.e. tasks and workflow) required for WRUCC to develop certification standards and documents, while providing sufficient information and understanding of certification needs to support an informed request for financial and staff resources.

Section 3 identifies and describes the contents of the specifying documents that will be the primary products of the committee's work. These documents include a common Concept of Operations, System Requirements Specification, Interface Control Document, and Business Rules.

Section 4 describes the purpose, membership, leadership, operating rules, and reporting functions of the Certification Committee. This section, along with the next, also provide detailed estimates of the anticipated

level of effort for committee members during committee establishment, development of the specifying documents, and longer-term maintenance of the specifications.

Section 5 clearly defines participation expectations for committee members. It defines eligibility to serve on the committee and attendance requirements, and estimates the time that will be required to prepare for and attend meetings, draft and review documents, and liaise with home department staff.

Section 6 addresses the order and progression of tasks under the committee's purview, beginning with formalizing the committee structure and progressing through the tasks of clearly delimiting the committee's scope, identifying the specific technical questions to be addressed, deciding on the scope of the business rules document.

Finally, Section 7 provides a clear sequence of start-up procedures for the committee to follow.

3. Specifying Documents

This section describes the actual documents that will be created by the certifying committee—the documents which identify the common elements of a RUC system, and the specifications that can be used as a basis for procurement. These documents are intended to describe the elements of a complete architecture for an operational RUC system, but they will be developed with the maximum degree of flexibility. Wherever possible, the documents will specify components as elective. In cases in which multiple options exist for satisfying the requirements of a component, such as in the selection of mileage reporting concepts, these documents will clearly state the known options from which an individual state may choose, and whether the options can be combined or are mutually exclusive. The documents will strive to specify RUC system components from a *functional* perspective, so as not to exclude future innovations. Of course, the documents will also specify common elements of existing or potential future RUC systems in WRUCC states. Moreover, the documents will also specify instances in which state-specific additions can take place.

The overall system is presented in the Concept of Operations, which describes the system's technical and business aspects at a high level, from perspectives of system users. Two detailed technical documents are derived from the Concept of Operations, but provide greater specificity than that document: the System Requirements and the Interface Control Document. One Business document, the Business Rules, derives in part from the Concept of Operations, but is also influenced by standard business practices such as accounting practices. Together, these four documents specify a RUC system with sufficient detail that it can be procured; however, numerous implementation decisions will still be left up to the states who create RUC systems procured from these documents.

3.1. Concept of Operations

A Concept of Operations (ConOps) is a qualitative description of the characteristics of a system from the viewpoint of individuals or organizations who will use the system, including the distinct user experiences of the RUC payer, RUC administering body, and RUC Account Managers. The ConOps will describe all elements of the experience of these users, indicating the elements that may be optional and the elements that states will have to choose from, most notably, the mileage reporting methods.

A ConOps is both a communications tool and the highest-level specifications document. As a communications tool, it should be easily understood by people without an in-depth background in the system, and can be used to start conversations about features and implementation decisions on that system. As the highest-level specifications document, the ConOps represents first step in the systems engineering process. The next step is developing system requirements, which are lower-level specifications, in that they describe all aspects of a system—they are not limited to the users' experiences, as the ConOps is.

The main goals of a ConOps are to:
- ► Facilitate stakeholder agreement on a functional description of system operation;
- ► Define the high-level system structure and demonstrate its advantages over other alternatives;
- ► Describe highest-level user requirements;

A generic outline of a concept of operations is as follows:
1. Scope/Introduction – explaining the areas covered by the document

2. Description of Current Situation/System – explaining what is currently happening, without a new system
3. Description of Needs for New System—explaining why a new system is needed
4. Overview of New System – describing the new system at a high level
5. Description of Environment and Constraints of New System – defining environmental factors and constraints for the new system
6. Operational Scenarios or Usage Scenarios are the ways in which the system would actually be used. Examples for RUC include adding a vehicle to the RUC system, driving, paying for RUC, and exiting the system.

In the ConOps, the Usage scenarios should be explained for single state operations and wherever appropriate, for multi-state operations.

3.2. System Requirements

System Requirements are the second step in the systems engineering process, after the Concept of Operations. They are derived from Concept of Operations, and should be interpreted in the context of the Concept of Operations, but generally go into more detail than a Concept of Operations, in that they explain in detail what the system must do, both in ways that directly impact the user experience and in ways that do not directly impact the user experience. However it is vital that System Requirements are functional, not technically specific—they should specify what the system must do, but not how the system should do it.

System requirements present an appropriate level of specificity for procurement of products or systems. As they are functional, they leave flexibility for system and service providers to develop their own preferred ways of implementing given systems. System requirements may use technical language, and thus may not be suited for a non-technical audience.

For RUC, it has been common for System Requirements to be organized by four high-level, distinct functional areas or subsystems:

1. Mileage Reporting—this subsystem includes all methods by which mileage is reported to an account manager, including manual methods and device-in-vehicle (automated) methods. Multiple Mileage Reporting methods will be included—all mileage reporting methods approved for use in the WRUCC. There will be some common requirements among mileage reporting methods, but many requirements will differ by Mileage Reporting Method.
2. Account Management—this subsystem processes mileage transactions generated by the mileage reporting and manages user accounts. This is the system that collects payments from drivers and reports payments to the state.
3. Account Management Oversight—this subsystem operates at the state government level and includes all functionality whereby account management functions are checked or verified by the state. Thus, it generally includes accounting functionality to oversee the operations of account managers, a verification functionality to check that all RUC-liable vehicles are registered with an account manager, and a performance audit functionality to verify that all account managers are performing according to their certified specifications.

4. Interstate Transactions Clearing [if included in interoperability architecture] – if the Committee decides to include inter-jurisdictional RUC collections/reconciliation in the specification documents, this subsystem would include all means by which interstate transactions are made.

3.3. Interface Control Document

The Interface Control Document (ICD) describes communication interfaces between the subsystems:

- ► Mileage Reporting
- ► Account Management
- ► Account Management Oversight
- ► Interstate Transactions Clearing [if included in interoperability architecture]

Thus, the ICD for RUC will include the following interfaces:
- ► Mileage Reporting to Account Management
- ► Account Management to Account Management Oversight
- ► Account Management and/or Account Management Oversight to Interstate Transactions Clearing [if included in interoperability architecture]

While all these documents are important, in a sense, the ICD is the key document for the entire committee and the RUC system codified within all of these documents, because the communications protocols in the ICD will allow the WRUCC states to work as a unit.

ICDs are technically specific—they describe precisely all communications protocols used to transfer the information. However, they are not detailed device specifications—implementation details are generally not described, only the communications protocols.

The Mileage Reporting to Account Management interface typically includes both an over-the-air component and a wireline/Internet component. In most cases, the over over-the-air component is proprietary—property of the company that provides the mileage reporting equipment. However, the wireline/Internet component is specified in the ICD, and is called the mileage message.

The Account Management to Account Management Oversight provides the data for state-level accounting and auditing. It comprises a number of period reports:
- ► Mileage and Revenue reports: mileage and revenue by of all vehicles signed for one account manager.
- ► Vehicle or VIN reports: specific mileage details for each vehicle covered.
- ► Error and Events reports: reports on that may indicate fraud or unusual occurrences by indicating specific errors and events, such as device disconnections or GPS outages.
- ► Account Update Reports: updated details of account holders, such as address and vehicle.

3.4. Business Rules

Business rules provide a foundation for account managers to guarantee to the state that they are performing their duty to the state and providing the public good service. As such, they include accounting rules and rules that guarantee fiduciary responsibility.

The committee should strive to create common business rules where possible. However, the Business Rules are each state's rules that govern business interactions between the state, its account managers, and its account management oversight, and as such there may be many state-specific rules which the overall Business Rules document will need to respect. If a state determines to participate in inter-jurisdictional RUC assessment and reconciliation, it may also adopt business rules governing those activities; here again, the committee should strive to create common business rules where possible, but there may be many state-specific rules. For clarity and ease of use by potential private partners, careful attention should be paid to document structure specific to common requirements, points of variation and where to find details on these variations.

The main types of business rules included in this document are the following:
- ► Rules that govern the structure of the account manager, to guarantee that the entities providing account management are financially strong. Such rules may include minimum financial holding and insurance requirements, financial reporting history requirements, etc.
- ► Rules that govern the business processes of the account manager. These are rules that govern the business behavior of account managers. Specifically, they state how account managers must handle mileage data and customer account data, and how they process payments.
- ► Rules on Credits, Refunds, and Exemptions. These are rules that specify when mileage charges do not apply and/or can be credited or refunded back to the motorist.

4. Certification Committee

In order to develop materials, processes, and agreements for multi-state certification, WRUCC requires a higher level of staff effort and more diverse types of technical expertise from member states than has been available to date. A Certification Committee is proposed to organize these staff resources, handle technical work, and develop proposals and recommendations related to certification for consideration and adoption by the Steering Committee, with escalation to the Board of Directors at the discretion of the Steering Committee. This section summarizes the characteristics of the Committee.

4.1. Committee Purpose

The purpose of the Certification Committee is twofold, encapsulated in its two phases of existence:

1. Initially, the purpose is to develop the five specifying documents outlined in Section 2.1 that constitute the foundation of a multi-state certification program. As part of that process, the Committee must adhere to the start-up procedures and member expectations, while making the decisions needed to complete the specifying documents. As part of start-up procedures, the committee should decide how long this phase may take and what the transition to phase 2 might look like.
2. Over the longer term, the committee purpose is anticipated to evolve as appropriate to develop additional certification documentation and processes. Additional documentation and processes will be necessary to establish, operate, and continuously improve a multi-state RUC certification program.

4.2. Committee Membership

Membership on the Committee is voluntary. However, for states participating in the certification program, membership on the committee is required. Each WRUCC member state may appoint up to three (3) members to participate in the activities of the committee. This limit is intended to ensure that the committee size and conduct of meetings is manageable. The chief functions of the committee are to develop and maintain specification documents, and to keep relevant offices in their home states (DOT, DMV, procurement, treasury, etc.) engaged and informed of the Committee's work. The types of staff expertise most appropriate for Committee members and alternates include:

► Technical expertise, held by employees such as software engineers, process engineers, systems engineers, and IT specialists, can help with drafting and reviewing technical documents.
► Business process expertise, held by employees such as business analysts, business process engineers, and procurement officers, can help with drafting and reviewing requirements and business rules documents.
► Policy expertise, held by employees including government relations staff, project/program managers, and policy analysts, can help to ensure that the policy needs and preferences of each individual state are appropriately reflected in the products of the Committee.

Member states may substitute staff appointed to the committee at any time, so long as the total roster of members does not exceed three at any given time. In addition, the Committee may consult as many state staff as necessary, and engage consultant support as necessary for specialized, technical tasks. Consultants may

be identified by a state as one of their committee members; however, it is highly recommended that, in this event, at least one state staff is also a committee member and there is regular state-level communication among members to ensure that a clear state perspective is available to the committee as a whole. Also, although consultants may be employed, it is always the committee's responsibility that the work be completed.

Similarly, the committee is responsible for all decision-making that it is given under the authority of the WRUCC Board of Directors or Steering Committee—it cannot pass decision-making responsibility on to consultants. If the committee finds items that it is incapable of making a decision on or feels it would be inappropriate for it to make a decision on, it may escalate such decisions to the Steering Committee.

A state that misses three or more consecutive meetings shall lose voting privileges unless and until a majority of the other Committee members votes to restore voting privileges, or the state attends two consecutive Committee meetings. Attendance at all meetings may be virtual (e.g. via conference call) or in person.

4.3. Committee Leadership

Committee leadership is summarized in the table below.

Title	Appointment or Election	Term	Responsibilities
Chair	Selected from among the voting members (not proxy) by majority vote	12-month terms with no limitation on consecutive terms	• Preside over all meetings • Select meeting dates and sites in consultation with Committee members • Report on Committee activities to the Steering Committee and Board of Directors as necessary
Vice Chair	Selected from among the voting members (not proxy) by majority vote	12-month term with no limitation on consecutive terms	• Serve as Chair in the absence of the Chair
Secretary	Appointed by the Chair	Coincident with the Chair	• Post meeting agendas • Record and distribute minutes of meetings • Maintain a record of Committee decisions and a library of Committee documents

4.4. Subcommittees

The Committee may, by majority vote, form subcommittees as necessary to carry out the business of the Committee. Examples of the types of subcommittees that may be formed include but are not limited to:

Technical Subcommittees:

• Technical specifications development—a subcommittee the focuses on creating the technical documentation (ConOps, requirements, ICD)

- Certification entity specifications development—a subcommittee that would create a document specifying details for the entity that would perform certification activities based on the technical document

Business Subcommittees:

- Procurement process and regulations—a subcommittee that focuses exclusively on procurement of goods and services based on the documents created by the committee
- Inter-jurisdictional RUC assessment and reconciliation process development—a subcommittee that focuses on creating the processes for inter-jurisdictional interoperable RUC systems

4.5.   Committee Operating Rules

The Committee does not have decision-making power except as delegated by the WRUCC Board of Directors or Steering Committee. However, the Committee may draft documents, propose guidelines for consideration, and make recommendations to the Steering Committee. All proposals and recommendations are made to the Steering Committee for approval. If necessary certain decisions or issues, at the discretion of the Steering Committee, may be escalated to the Board of Directors. As a general rule, the Committee will only seek approval or direction from the Steering Committee on complete documents or fully formed recommendations, or to resolve issues on which the Committee is unable to reach a decision. Documents and decisions recommended to the Steering Committee should be acted upon within one month. To support committee expediency in light of various state-specific approval processes, a state's approval at the Steering Committee level can be conditional on a state-specific review process.

Meetings. The Committee shall meet quarterly or as otherwise directed by the Chair. The Secretary shall post agendas at least one week prior to each meeting. The Chair shall preside over meetings, which shall be designed in general to last no more than one hour.

Work Sessions. The Committee shall hold work sessions on an ad hoc basis as called by the Chair. The Secretary shall post agendas at least one day prior to each work session. The Chair shall preside over work sessions or appoint a work session leader. The length of work sessions will vary, but in general should be designed not exceed four hours.

Committee Phases. The Committee is expected to exist in perpetuity. However, it will exist in two distinct phases, with each phase corresponding with the Committee purpose stated in Section 2.2.1.

- ► During phase 1, the committee will develop all the documents described in Section 2.1. This phase is targeted to last one year, but could end up lasting two years, depending on how long the states take to reach agreement. This phase will require a substantial workload, estimated at 300-400 person-hours per year per state.
- ► During phase 2, the committee will maintain the documents developed in phase 1 in perpetuity, and develop new documents as necessary to establish, maintain, and continuously improve any multi-state certification processes. The Committee shall study and keep pace with evolving technologies, address questions or issues arising from the vendor marketplace, and respond to requests or

questions of member states. The workload of this phase may vary, but will generally be substantially less than during phase 1, estimated at 4 person-hours per month.

Voting. Each WRUCC member state is entitled to one vote on Committee matters. It is up to the member state to designate the voting member from its delegation. Proxy votes are also allowed, except in the election of Committee Chair and Vice-Chair. Attendance by the voting member of each state (or proxy) is required for the state to be counted toward quorum. Per WRUCC operating procedures, quorum shall consist of more than one-half the membership, including members who attend by proxy. States are expected to provide a voting member (or proxy) to attend to all Committee meetings, whether in person or virtual (e.g., telephone or webinar).

Advisory Nature of Decisions. No decision or recommendation of the Committee is binding—the Steering Committee may modify or eliminate any decision or recommendation of the Committee, and no state that has chosen not to be on the committee is required to follow its decisions. Because certification is an opt-in program, states that choose not to participate in the committee are not obligated to participate or follow the Committee's direction. States that choose to participate, however, are expected to follow the non-optional aspects of the specifying documents; these states are also responsible for determining and recommending what content is non-optional. This provides the flexibility to accommodate state-specific deviations within a common set of standards and rules.

Such a certification program can lead to efficiencies in the identification and procurement of RUC services from the market place to meet any individual state's policy needs. Therefore, it is in the interest of all WRUCC members to participate in the Committee process to ensure that each state's policy preferences are reflected in the certification documents and processes and that, to the extent possible, more rather than fewer requirements are identified as non-optional.

4.6. Committee Reports

The Committee shall report its activities to the WRUCC Steering Committee quarterly meetings and to the Board of Directors, at their discretion, at least annually (at the Board of Directors annual meeting). The Committee shall also communicate the following to the Steering Committee:

► Certification-related documents for consideration and adoption **by WRUCC members participating in the certification committee**.
► Recommendations regarding certification for consideration and adoption **by WRUCC members participating in the certification committee**.
► Requests for information, participation, clarification, or resources to carry out the work of the Committee for consideration and adoption **by WRUCC members participating in the certification committee**.

Although approval sits with participating states, the work of the committee and decisions made will be regularly and actively shared with all WRUCC member states.

5.   Participation Expectations

The success of the committee's activities is dependent upon having a competent and active membership. The work of the committee comprises both technical activities related to identifying RUC concepts and technologies, agreeing on common standards, and documenting those standards for WRUCC, as well as organizational activities such as seeking input and consensus from the various state agencies that would be impacted by the results of WRUCC's certification activities. To accomplish these goals requires both thoughtful composition (e.g. a membership that is competent and knowledgeable) and significant support from sponsoring agencies (the state agencies that employ committee members).

5.1.   Committee membership

The committee's work is anticipated to fall into at least two distinct parts. During the first part, the committee will work to plan and develop the various documents outlined above in Section 2. Once that work is complete, the committee may continue in a less active posture to monitor standards and new RUC concepts and propose updates or revisions to the documents.

For the first part of the committee's work, that is, the planning and development of the documents listed in Section 2, the ideal committee member is an employee of active member of WRUCC, an agency that will bear some responsibility for implementing RUC (such as the state's DMV), or a closely allied contractor to the WRUCC member agency. In all cases, committee members must have the full support of their employer, especially with respect to fulfilling the time commitments presented in Section 5.3 below and be willing to commit to the time commitments presented below.

The committee membership may author the documents outlined in Section 2 or may choose to engage a consultant to assist with that work. In either case, it is critical that committee members are sufficiently knowledgeable in their respective field(s), or have the authority to identify qualified proxies within their home organizations, to either undertake the work of creating certification documents or supervise such work.

Finally, the committee should choose members that are able to contribute to and take ownership of tasks, and who fulfill responsibilities and assignments.

5.2.   Participation

Committee members are expected to prepare for, attend, and participate in all in-person and virtual meetings. Because consistent and full participation is critical to keeping the work of the committee moving forward, any state that is entirely absent from, and fails to send a proxy to, 3 or more consecutive meetings will lose voting privileges for a period of time as discussed in Section 3.2 above.

5.3.   Time Commitments

By their very nature, committee workloads are variable. The chair and members share responsibility for ensuring work is evenly distributed among the committee membership and steadily throughout the term of the committee, but as the committee's work evolves (for instance, from planning, to developing and writing standards documents, to maintaining documents), the overall workload may vary considerably. As such, task assignments and creation of sub-committees should be carefully monitored. During the first phases of the

committee's work (planning and creating the certification documents), the expected annual time commitment will be 300-400 hours and is likely to include the following:

- ► Quarterly
  - > 4 hours each quarter for in-person committee meetings, which may be held in conjunction with WRUCC quarterly meetings to reduce both cost and travel time. This time estimate includes typical pre-meeting preparation such as reviewing documents (agendas, committee reports, meeting reports, and technical documents) prepared for the committee.
- ► Monthly
  - > Up to 4 hours per month for periodic workgroup or subcommittee (specific project/deliverable-based) meetings. It is anticipated that these meetings will be conducted via webinar or conference call and not require any travel. Workgroup meetings are not intended to be used as time to set priorities for the committee or conduct other general committee business, but rather as time to complete a specific project or produce a specific deliverable in a group setting.
  - > Up to 20 hours to complete tasks preparatory for workgroup meetings or to complete individual project assignments. This time includes correspondence with other committee members and any consultants that are assisting with document development, coordination with state subject matter experts and agency staff, and briefings to agency executives.

Once the committee's initial work of establishing and documenting certification standards is completed, the anticipated time commitment required to maintain and update documents is likely to be significantly less, amounting to perhaps 4 hours per quarter to prepare for and attend quarterly meetings, and up to 40 hours per year for periodic ad-hoc subcommittee work.

The precise participation level will vary by state. While all member states will be encouraged to devote the estimated 300-400 hours per year, per state, some states may not be able to devote this much. In cases in which states will be devoting significantly less than this amount of time, the states should notify the committee chairman, so that their limited resources are deployed appropriately.

6.   List of Decisions

The list of decisions included in this section constitute a substantial portion of the work that the committee must complete during its first phase. The first two sections of decisions—the Committee Structure Decisions and the Fundamental Scope Decisions—should be answered before the committees start work on any of the documents presented above in section 1 (ConOps, SRS, ICD, and Business Rules). The remaining decisions can either be made before the work begins on those documents, or in the course of the crafting of those documents. The authors recommend that after the Fundamental Scope Decisions are complete, the committee revisit the list of technical and business decisions given here. Those upon which they can quickly agree to an answer should be answered before the detailed work begins; the remaining ones should be answered in the course of the detailed work.

This section is based on the assumption that all specifying documents generated by the committee (ConOps, SRS, ICD, Business Rules) will apply to all states that choose to participate in the WRUCC certification program—if a state chooses to participate, then it is mandatory to participate in all specifications. However, there will be many individual specifications within those documents that do not necessarily apply to everyone. Many individual specifications within each document may be optional, non-mandatory, or not applicable to all. All such optional requirements should be identified as such within documents. It is vital, however, that any requirement or element that is part of the expected minimum system content be mandatory (not optional). Such elements will be identified in the final documents.

Committee structure decisions (subsection 4.1 below) must be answered first. These decisions are all included in the start-up procedures (section 5). However, they are described in detail here, in this list of decisions section, as well as mentioned in the start-up section, because they are indeed decisions that the committee must make, and it is vital that these decisions be made before the committee begins any technical work. That is because if any conflicts arise, the "losers" of such conflicts may feel like they have been mistreated because the rules were still being written.

After the Committee Structure Decisions are made, the Fundamental Scope Questions (Section 4.2 below) should be answered. These are basic questions that impact many aspects of the committee work on all the documents. Proceeding to detailed work without answering the Fundamental Scope Questions could lead to significant redundant work and greatly lengthened decision-making processes.

After Fundamental Scope Questions are answered, the remaining technical and business decisions can be answered in any order. Work can proceed in parallel on these decisions. While some of these decisions may indirectly impact other decisions, all of these decisions can be made independently without leading to significant redundant work. As mentioned above, the authors recommend that after the Fundamental Scope Decisions are complete, the committee revisit the list of technical and business decisions given here. Those upon which they can quickly agree to an answer should be answered before the detailed work begins; the remaining ones should be answered in the course of the detailed work.

6.1.   Committee Structure Decisions

Prior to the first meeting, a number of questions must be answered that determine how the committee will operate. These answers may, where appropriate, be incorporated into the committee's governance

documents. Other answers may be recorded in a separate standard operating procedures document. These decisions are as follows:

Resources. The committee should decide what resources it will need for the first phase of its existence—the time of generating the base specifications documents. Based on the activities it intends to accomplish, it should decide what financial, personnel, and other resources it will need. It should also discuss whether all resources must be provided by the WRUCC Board of Directors, or whether some resources can be provided by some individual state agencies directly. The committee may decide to save this subject for a discussion item during the first committee meeting, if it becomes too challenging to resolve prior to the first meeting. Examples of resources provided by state agencies individually include staff and staff time; examples of resources provided by WRUCC include travel reimbursement, meeting facilities, and consultant support if necessary. Resource questions include the following:

- ► What resources are needed for phase one of committee work?
- ► What resources has the committee been provided by the WRUCC?
- ► What other resources are available within member DOTs, beyond those already committed to the WRUCC, to help this committee accomplish its tasks?

Length of Committee Member Service. How long will committee members serve? The base work of the committee—generating draft documents will take a least one year. Thus, the authors recommend that committee members plan to serve at least one year. However, it may well take longer than one year to transitions create and finalize draft documents. Thus, the authors suggest that a two-year term would be better. Such term lengths do not mean that all committee members are compelled to serve this time. If committee members unexpectedly change jobs to a position where it no longer makes sense for them to participate then such members should be able to resign the committee. This decision relates to the minimum term that committee members should commit to serving, barring unforeseen events.

Committee Communications. How will the group communicate a consistent message, internally and externally? Will all published documents be circulated to all committee members for input prior to publication, or will a review subcommittee do this instead? Will there be any guidance to committee members about what information can be shared by committee members prior to document publication, or how it should be shared? If so, who will prepare this guidance?

Progress Measurement. How will the committee measure and track its own progress? It is vital that the committee be able to give concrete statements to the Board and Steering Committee about the progress that it is making, because such questions will surely be asked. Will certain individuals be responsible for determining the progress on the various documents, and estimating completion dates?

6.2. Fundamental Scope Questions

Fundamental Scope questions should be answered first, by the whole committee, before detailed work is started on the individual documents.

Which Mileage Reporting Methods should be included in the specifying documents? States should not be required to adopt all mileage reporting methods included in the document. Rather, states should be allowed to choose from among the included concepts, which ones they would like to include in their system. It may be

more useful to phrase this question as to whether any concepts should be excluded. Possible concepts include the following:

- ► Automated Distance Charge with GPS—any technology-based method that includes GPS to record distance-traveled data.
- ► Automated Distance Charge without GPS—any technology-based method that does not include GPS that records distance-traveled data. Different requirements may be needed for two sub-classes of this mileage reporting method:
  - > Vehicle data-based—any technology that uses data from vehicle electronics to calculate distance traveled
  - > Odometer-image-based—any technology that uses digital images of the vehicle odometer to calculate distance traveled.
- ► Manual reporting methods—any non-technology method for determining distance traveled. Major categories of manual reporting methods are as follows:
  - > Odometer charges—post-payment for distance traveled based on odometer readings
  - > Mileage Permits—pre-payment for a fixed block of miles (say, 1,000, 5,000, or 10,000 miles), with enforcement based on occasional odometer readings
  - > Time-permits—pre-payment for unlimited travel for a fixed amount of time (say, a week, a month or a year).
  - > Note that while the concepts themselves are manual, the odometer readings to support the concepts could still be made using technology such as smartphones.
- ► Others—other mileage reporting methods may also be possible, for example, a pay-at-the-pump method.

Terminology. What should the mileage reporting methods be called? The names here are suggestions—they committee can adopt them, or rename them, as it chooses.

What technical functionality for Mileage Reporting devices should be supported by the documents. In general, the documents should specify what the technology has to accomplish, not what the technology is, to allow room for innovation. However, some specific accommodations for the use of smartphones, native in-vehicle telematics, or other technologies may be needed in order to ensure that these technologies are supported. The Committee should explicitly decide which known technologies should be supported by the documents.

Types of vehicles covered by specifications. The committee should decide which types of vehicles should be covered by the requirements. Should only light vehicles be covered, or should heavy (commercial) vehicles also be covered? As the needs of these two types of vehicles may be different, and rate structures may be different, the committee should decide whether Requirements for different vehicle types can be made in separate sections, or applicability of requirements can be limited to one type or the other. With a given vehicle type, should there be specific accommodations for sub-types. For example, should all light vehicles be treated equally, or should there be some different accommodates to support vehicles by propulsion type (gas vs. diesel vs. electric vs. CNG).

6.3. Specific Technical Questions

There are a range of specific technical questions that the committee will need to answer. The authors propose that after the fundamental scope questions are answered, the committee review these questions and answer those which it can answer quickly. Those which it cannot answer quickly should be answered in the course of the detailed work.

What performance requirements should apply to the overall system? Overall system performance requirements include the following:

- ► Percentage of all driven miles by RUC-liable vehicles that are recorded by the system
- ► Percentage of dollars that should have been collected that actually are collected by the system
- ► Percentage of RUC-liable vehicles actually registered for the system
- ► Fully loaded cost of collection, absolute and/or per-dollar collected

What performance requirements should various subsystems be held to? For example, account managers could be held to performance requirements similar to those given above for the overall system—but limited to the vehicles that are actually registered with them. In addition, they could be given requirements on Availability/Uptime/Communications. Similarly, Mileage Reporting can be given requirements on accuracy, such as accuracy of distance or fuel recorded. It can also be given requirements related to environmental conditions (e.g., what is the temperature range of operation?) and durability (what is the Mean Time Between Failures?).

System Security. What system security requirements should be made? Security requirements may be made in many areas, including the following: encryption, authentication, authorization, data masking, data modification notification, data storage, data transmittal, data destruction, general IT network security, and data security audits required.

Disaster Recovery. What Disaster Recovery Requirements should be made? Disaster recovery requirements may include what types of Cloud-based implementations are acceptable? Is a Backup site required, and if so, with what equipment? Are there different disaster recovery requirements for the State systems and for Account Managers, or are they the same?

Time Zone Recording. How will time zones be accounted for in storing/transmitting and reconciling data?

What system health measures or errors should be tracked? All systems will need to track certain unusual errors and events that may indicate fraud or data quality issues. Such errors and events may include Unplugs/replugs (for plug-in mileage meters)**,** poor GPS signal strength instances (for GPS-based mileage meters), any direct evidence of tampering, various hardware issues, various software issues, and any manually entered/altered data.

What Interoperability Measures should be included? Interoperability specifications should be made so that vendors can make products and services that can work in a system that is interoperable. Interoperability specification do not have to fully establish interoperability—attempting to add that to the task of the specifying documents committee could significantly complicate and slow down its work. Interoperability measures that could most easily be created in these documents should specify the types of data/information that will be

needed for interoperability, and the definitions of those data/information types. Additional measures, such as creating requirements for transfer of money, should probably be beyond the scope of this work.

State-level Accounting or Account Management Oversight. To what extent will State-level Accounting or Account Management Oversight be included in the technical specifications? Will periodic reconciliation of account managers to state funds be included in the technical specifications? Will audits of Account Managers be included in the specifications? How will these be specified?

6.4. Business Rules decisions

There are a range of business rules decisions that the committee may need to answer. The authors propose that after the fundamental scope questions are answered, the committee review these questions and answer those which it can answer quickly. Those which it cannot answer quickly should be considered in the course of the detailed work.

Rules that govern the structure of the account manager. A range of rules may be required to guarantee that account managers provide the service desired by the states and the WRUCC. In particular, it may be desirable to have some basic common rules on financial soundness of the company. However there will certainly be further state-specific rules. If the committee chooses, it may drop this section in favor of having only state-specific rules, but this is not recommended. Greater consistency of rules will lead to greater economies of scale, both within individual account managers and in the market for account management as a whole. Thus the committee is encouraged to seek out the commonalities to the greatest extent possible.

Similarly, the committee may wish to have some common requirements for the minimum level of Customer Service provided by account managers, or it may drop this also in favor of having only state-specific rules.

Where there is a mix of common and state-specific deviations, careful attention should be paid to document structure to provide the greatest clarity and ease of use to potential private partners; clarity as to common requirements, areas with variation and how to find variation details.

Rules that govern the business processes of the account manager. There are four areas of account manager business processes in which the committee may decide to have rules:
- ► Rules on mileage data and odometer data transactions, such as how often such transactions are made, what manual adjustments are allowed, etc.
- ► Rules on Payments, such as which means of payment are acceptable, when transfers to states must be made, etc.
- ► Rules on Data Use, such as to what degree account managers are allowed to use motorist data to sell motorists additional services.
- ► Rules on participant account management support, such as what are the minimum levels of required participant support.

Rules on Credits, Refunds, and Exemptions. These rules will govern cases in which charges paid are refunded, credited towards future charges owed, or not charged at all. These rules will comprise the following:

► Fuel tax credit/refund rules—rules that govern when fuel taxes that exist must be paid by vehicles paying the road charge, and when the paid fuel taxes can be refunded or credited against future road charges owed.

► Non-chargeable miles credit/refund rules—rules that govern when charges for miles driven on road that a home jurisdiction cannot charge for (out-of-state, off-road, or private road) miles can be refunded or credited against future road charges owed.

► Rules on exempt groups or areas—rules that govern which individuals, vehicles, or areas may be fully exempt from the road charge. Examples may include Military Bases, or Indian Reservations.

7.   Start-up Procedures

There are a number of actions that must be undertaken by WRUCC prior to the Certification Committee's first meeting, and others that, while not strictly required to initiate the committee's work, may help it be more productive.

7.1.   Prior to first meeting

Prior to scheduling the first meeting of the certification committee, WRUCC membership should resolve any outstanding questions regarding the committee's structure, such as its size, the length of members' terms, and whether the committee has a pre-determined sunset (ending time).

The next step is to identify participating states, and committee members for those participating states. WRUCC may choose, through its Steering Committee, to either issue an open call to WRUCC member states for participation, referring to work produced in the course of this document and presentations given at WRUCC quarterly meetings, or to issue direct invitations to specific member states. The first option identifies those who are interested and willing to dedicate the required time; the second may be useful to recruit specific expertise to the committee.

From among those who volunteer or are recruited into committee service, an initial small group of two or three people should be nominated by the WRUCC Steering Committee to draft the Certification Committee Charter and circulate it to the full committee membership for review and comment with the goal of producing a document that can be adopted at the first committee meeting.

These committee members should also discuss resources, communications, and progress measurement, as defined above in section 4.1, so that they can make a proposal that can be discussed more widely in the first committee meeting.

Next, the proposed committee membership should identify, by consensus, the acting chair for the first meeting. This individual will act as chair for the first committee meeting only and may most appropriately be the WRUCC administrator rather than a committee member.

Finally, the proposed committee membership should identify the date and location of the first committee meeting. Again, for the first meeting only (or until committee officers are elected), this may most appropriately be coordinated by the WRUCC administrator. If possible, dates and times for the first four quarterly meetings should be identified prior to the first committee meeting.

7.2.   The First Committee Meeting

Ideally, the first committee meeting will be held in-person at one of the WRUCC quarterly meetings, and completing the activities listed above prior to the committee's first meeting will allow it to make best use of limited meeting time. If, however, any of those activities are not completed prior to the first meeting they should be at the top of the agenda, ahead of all other activities.

At the first meeting, the committee should elect a committee chair, vice-chair, and secretary. Upon election of the chair, the acting chair may stand down.

After election of officers, the committee should discuss and adopt a formal statement of the committee's purpose and expectations to ensure the full membership understands the work they will be undertaking, and what will be required of them.

Next on the agenda should be a discussion of the proposed committee charter and governance rules, followed by adoption by the committee. Full review and revision of these documents prior to the first committee meeting will greatly facilitate this step.

The key activity of the first committee meeting is to set priorities and schedules for the committee. To accomplish this, the committee should:

- ► List actions necessary to complete the committee assignment, which will have been discussed earlier in the meeting.
  - > Decide the order of decisions (from Section 4 of this document) the committee will undertake and assign these decisions to the committee calendar as "projects". Each project, or where appropriate portion of a project, should be assigned one project leader, who is the person responsible for its completion. The prioritized order of decisions will guide the order and scope of document creation.
- ► Begin work on high priority activities and agree upon a schedule for completion of each activity.
  - > The committee should set report dates/frequency to report progress on each assignment.
  - > If necessary, workgroup and subcommittee membership should be recruited, although it may not be finalized until after the meeting.
  - > Project leaders can flesh out detailed schedule after the meeting.
- ► Agree on the time/location of next meeting, and if feasible, all meetings of the full committee for following calendar year, if this scheduling was not completed as a pre-meeting activity. The newly elected Secretary will be responsible for coordinating meeting agendas and webinar or conference call details.

The committee member should consider proposals on resources, communications, and progress measurement, as defined above in section 4.1, so that these aspects of committee work are clearly defined from the first meeting onward.

After these activities, the committee should decide how long it intends phase one (base document generation) to take and what the transition to phase two (document maintenance) might look like.

8.   Next Steps

To implement the forum and structure for articulating and documenting common WRUCC certification that is described in this report, the following activities should be undertaken:

- ► Present this report to the WRUCC Steering Committee with the recommendation to establish a WRUCC Certification Committee. This presentation should include details on proposed committee structure and membership, participation expectations and estimated level of effort, and proposed specifying documents. Any concerns or issues raised by the Steering Committee membership should be resolved prior to presenting any resource requests or committee documents to the WRUCC Board of Directors.
- ► Present estimates of level of effort, participation expectations, and general descriptions of the documents the committee will produce to the WRUCC Board of Directors. Incorporate any feedback from the Board into the committee's scope and any schedules that are developed for document creation.
- ► Upon creation of the committee, issue an open invitation to WRUCC member states for committee membership and proceed as described in Sections 6 and 7 of this report.