



RUC West Regional RUC System Definition and Pilot Planning Project

Date of Submittal: October 2018

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Project	RUC West Regional RUC System Definition and Pilot Planning Project
STSFA Grant No.	DTFH61-16RA00013
Participating States	Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oklahoma, Oregon, Utah, and Washington
Date of Submittal	October 2018

Summary of the Project

The ***Regional RUC System Definition and Pilot Planning Project*** has set the stage for a regional RUC system in the western United States. The project accomplished two main objectives:

- 1) Created a high-level concept of operations that all eleven participating states agreed on, which outlines the basic principles of how a regional RUC system will function for future pilots.
- 2) Created detailed system and business requirements for the Oregon-California pilot.

See all the accomplishments for this project in Appendix A. The total project cost was \$1.9 million, and ended July 31, 2018.

The most valuable lesson learned from this project is that a regional RUC system is possible. Each state has its own requirements-- different RUC rates, public funds laws, methods of fuels tax collection and disbursements, and overall politics— but this project demonstrated that a regional system can be built to be agile enough to accommodate each states' needs, but yet also prescriptive enough to seamlessly function for drivers.

RUC West

RUC West is a voluntary coalition of 14 western state departments of transportation that are committed to collaborative research and development of a new funding method for transportation infrastructure based on drivers' actual road usage. The collaborative nature of RUC West, coupled with institutional knowledge of, and investment in road usage charge (RUC), make it the prime coalition to define a regional system to promote and establish RUC consistency, interoperability, and compatibility throughout the western United States.



The participating states for this grant are: Arizona, California, Colorado, Hawaii, Idaho, Nevada, Oklahoma, Montana, Oregon, Utah, and Washington.

Project Synopsis

The ***Regional RUC System Definition and Pilot Planning Project*** set the stage for a regional RUC system and pilot by defining the system and developing essential regional pilot project plans to prepare for implementation. The vision is to define a regional system that embraces the following attributes, which would provide the flexibility needed to accommodate each state's institutional and operational environment:

- Per-mile charge, variable by state of vehicle registration, for light passenger vehicles.
- Open system architecture to foster competition in the RUC services market.
- Choices for participants regarding how a RUC would be assessed and paid, including, but not limited to: mileage reporting technology, mileage reporting detail (e.g. GPS and non-GPS) and account managers (both private and public sector).
- Interoperability, which is the seamless transfer of information between disparate state systems.
- Accommodation of both illustrative and actual billing.
- Foster administrative cost efficiencies and economies of scale for all parties.
- System design that would not preclude congestion pricing.
- Use of industry standards and best practices for system reliability and security, including compatibility with readily available and affordable consumer products and technologies such as smartphones, in-vehicle navigation systems, and other data-dependent vehicle technologies.

Project Work

RUC West contracted with WSP (formerly Parsons Brinkerhoff) on April 14, 2017 to deliver the project. The work was broken into two main tasks: system definition and project planning.

System Definition

The system definition phase identified the interacting, interrelated, and interdependent elements of a regional RUC system. Its main purpose was to gather ideas and detailed requirements from each state on how they envision a RUC system operating inside and outside of their borders, and to determine what they will need from the system.

Below is a list of deliverables in this task, alongside the purpose of the deliverable, and its completed date.

Deliverable	Purpose	Status/Due Date
Interoperability White Paper	To draw consensus amongst the states on what “interoperability” means.	COMPLETE
Individual State Requirement Gathering Sessions	To gather technical and business requirements for a RUC system from each state.	<ul style="list-style-type: none">• CO: 9/6 COMPLETE• ID: 9/8 COMPLETE• UT: 9/13 COMPLETE• OR: 9/21 COMPLETE• HI: 9/25 COMPLETE• OK: 9/29 COMPLETE• NV: 10/3 COMPLETE• MT: 10/13 COMPLETE• CA: 10/18 COMPLETE• WA: 10/19 COMPLETE• AZ: 10/2 COMPLETE TASK COMPLETE
Concept of Common Operations: Workshop 1	To obtain input and identify issues to be incorporated into the Concept of Common Operations	COMPLETE (July 12, 2017)
Concept of Common Operations: Workshop 2	To review the initial draft of the CCO. It is intended to determine which requirements are mandatory and operational per states	COMPLETE (Feb 7, 2018)
Concept of Common Operations DOCUMENT (includes white paper and PowerPoint)	A list of RUC system requirements for all participating states. It highlights design elements and requirements that states have in common, those that are unique to individual states, and those that allow states to opt in or out.	COMPLETE (Feb 26, 2018)

Steps Forward: Vendor Perspectives	WSP conducted at least 3 interviews with the private sector to gather their views on: the future of RUC and how states can best prepare, barriers to vendor entry, and technical opportunities.	COMPLETE (July 31, 2018)
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Project Planning

The project planning phase moved the project from the theoretical to the actual mechanics of making a RUC system work. This phase was broken into two main areas: communications and project operations. Communication deliverables are available to all participating states and help states discuss RUC West pilots and activities. The project operations documents will be used for future regional RUC interoperability pilot between California and Oregon.”

Below is a list of deliverables in this task, alongside the purpose of the deliverable, and its completed date.

Deliverable	Purpose	Status/Due Date
Communication Plan	The plan must: establish goals for public information and outreach, identify targeted stakeholders, identify methods for sharing information, and define key messages.	COMPLETE (Mar 27, 2018)
5 communication Meetings <ul style="list-style-type: none"> • Kickoff • Per Tier of State (3) • Final 	To discuss the communications plan and ensure all states have the materials they need to discuss the pilot.	COMPLETE (Apr 30, 2018)
Test Key Messages (2 Trial Groups)	To determine the success of outreach methods and key messages in the communications plan. Persons in groups chosen by representatives in each tier.	COMPLETE (June 30, 2018)
RUC Pilot Website	This website will be used to recruit volunteers for Phase 2 (regional pilot operations) and will be launched for the OR/CA pilot.	Branding and Wireframe: COMPLETE (Sep 27, 2017) Final Website: COMPLETE (Dec 13, 2017)
Website Updates	Updates on the project that are published on the main RUC West website, and other state websites.	From January 2018 until the end of the project.
3 Media Kits	Include news releases along with talking points.	COMPLETE (Mar 6, 2018)

Deliverable	Purpose	Status/Due Date
5 summaries <ul style="list-style-type: none"> • Rural drivers • Fuel efficient vehicles • Data privacy • Transportation funding • Out-of-state drivers 	WSP produced 5 summaries on difficult RUC topics that can be presented to stakeholders at each state's discretion.	COMPLETE (Apr 11, 2018)
Evaluation Strategy Plan	Plan identified the data needed to evaluate the system against system objectives, and methods for analyzing the data.	COMPLETE (Feb 27, 2018)
Oversight and Management Plan	The plan will identify the membership of an oversight committee, address how inter-jurisdictional issues will be resolved, and ensure consistency and communication.	COMPLETE (May 28, 2018)
Contract Documents	The requirements to operate a regional RUC system in 2019.	COMPLETE (Feb 28, 2018)

Budget

Total Project Cost

Expenses	Amount
In-Kind	\$ 203,798.06
Contract and DOJ	\$ 1,767,476.00
TOTAL	\$ 1,971,274.06

Contract Costs

Project	% Task Completed	Baseline Budget	Amount Spent	% of Budget Spent
1: Project Management	100%	\$236,174	\$236,174	100%
2.1: Preliminary CCO Workshop	100%	\$116,590	\$116,590	100%
2.2: State Requirements	100%	\$102,664	\$102,664	100%
2.3: Develop CCO	100%	\$277,942	\$277,942	100%
2.4: Private Sector Interviews	100%	\$158,587	\$158,587	100%

Project	% Task Completed	Baseline Budget	Amount Spent	% of Budget Spent
2.5: CCO Workshop II	100%	\$84,884	\$84,884	100%
3.1: Communications	100%	\$314,119	\$314,119	100%
3.2: Evaluation	100%	\$135,014	\$135,014	100%
3.3: Oversight/Management Plan	100%	\$200,288	\$200,288	100%
3.4: Contract Documents	100%	\$133,528	\$133,528	100%
Contingency	0%	\$51,610	\$7,000	14%
TOTAL (FINAL)		\$1,811,402	\$1,766,793	98%

In-Kind Expenditures

State	Type	Baseline Amount (Grant Agreement)	Spent Total (FINAL NUMBERS)
California	Staff Hours	\$131,250	\$ 63,826.99
Colorado	Staff Hours	\$131,250	\$ 10,741.38
Idaho	Staff Hours	\$75,000	\$ 10,629.85
Montana	Staff Hours	\$40,000	\$ 7,341.00
Oregon	Staff Hours	\$131,250	\$ 85,277.69
Utah	Staff Hours	\$75,000	\$ 20,508.87
Washington	Staff Hours	\$25,000	\$ 5,472.28
TOTAL			\$203,798.06

Meeting STSFA Objectives

System Design / Gather State Requirements

STSFA Objectives Met:

- *Improve the functionality of such user-based alternative revenue mechanisms.*
- *Provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms.*

It is critical to hear each states' needs, and though reaching consensus is a difficult task, it is possible. To create a comprehensive concept of operations, WSP traveled to each of the eleven participating states to gather requirements. Each state was encouraged to bring public servants from the following categories: information systems, revenue collection, fuels tax collection, and communications and if applicable, any person they had working on RUC. It was important to ensure each state had the opportunity to critically think through what it would need at the state level, and how its suggestions would play out on a national level. Each state had at least a day-long workshop. WSP presented use cases to assist states in developing requirements they had for a RUC System.

Obtaining and documenting individual state needs increased not only the functionality of any future RUC system, but also greatly enhance the political palatability of RUC as well.

State requirements gathering was completed in November 2018. The information that was collected during these meetings formed the basis of the Concept of Common Operations.

System Design / Develop Concept of Common Operations

STSFA Objectives Met:

- *Improve the functionality of such user-based alternative revenue mechanisms.*
- *Provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms.*
- *Minimize the administrative cost of any potential user-based alternative revenue mechanisms.*
- *Minimize the administrative costs associated with the collection of fees.*

The concept of Common Operations (CCO) is one of the main deliverables of this contract. The CCO describes how a regional RUC system will function at a high level. It's a monumental document, which allows each state to maintain its own requirements, but yet function as a whole with other states at a regional level.

The CCO includes the following:

- RUC system needs and related policy directives;
- RUC marketplace needs and the resulting goals and objectives;
- Proposed operational approaches and strategies for attaining those goals;
- Interoperable needs/goals/policy/directives/objectives;

- Long-range operations planning and guidance for development of subsequent system definition documents;
- A description of how certification of services, account managers, and devices will occur amongst the states, which, at a minimum, shall address:
 - how to engage in, manage and govern multi-state certification;
 - a common decision making structure amongst states – such as a certification board; and
 - staff support and level of effort required from each state for certifications.
- The data flows and protocols of the RUC system which, at a minimum, must address:
 - How to calculate and credit state fuels tax accurately and efficiently. (Note that the fuel tax rates differ per state, and may go to different state departments.) This must include a protocol for how to handle a state that does not want to credit fuels tax, but instead wants to adjust RUC charges accordingly.
 - How to calculate and assess mileage charges accurately and efficiently. Note that the mileage charge may differ per state.
 - How to handle exemptions, such as vehicles that are exempt from paying state fuel tax because they are part of a public/exempt fleet.
 - How to handle participant vehicles crossing national borders and/or state lines that are not in the regional pilot.
 - How to validate vehicle and participant registration per a state's requirements.
 - How to manage participant accounts to prevent fraud.
 - Collecting payments and transfer of public funds amongst the states.
 - Remittance to states and creating an auditable record of RUC data by account.
 - Remittance of funds to a state; including remittance of funds from one payer to multiple states.
 - Policies for collecting, managing, storing, transmitting, and purging data.
 - Policies for system security, disaster recovery and business continuity.
 - Policies for system and subsystem outcomes and behaviors.
 - Suggested best practices for a state to manage RUC internally.
 - Documented interface and communications protocols.

WSP submitted the Draft CCO to ODOT for review on November 27, 2017 and a second draft on February 4, 2018, and a final CCO in late February 2018.

Project Planning | Communications

STSFA Objectives Met:

- *Conduct outreach to increase public awareness regarding the need for alternative funding sources for surface transportation programs and to provide information on possible approaches.*

Communications Plan

RUC is a relatively new concept that requires public awareness and acceptance. It also requires enabling legislation, considerable outreach activities, and clear communications with elected officials, decision makers, the driving public, and the private sector to become a reality. It will be critical to develop a thoughtful regional pilot communications plan that addresses ways to develop outreach materials, such as frequently asked questions (FAQs), websites/blogs, presentations, media kits, press releases, videos, and to help address earned media coverage.

Continued public education may help drivers be more cognizant of the miles they drive, which could lead to congestion mitigation. RUC West has already started working on a phased communications program that includes brand identity, logos, tagline, message platform (key messages about road usage charging, the purpose of RUC West and state tiers), and a public website (www.rucwest.org) designed as an information source for road usage charging. The website includes background information on transportation funding, details about road usage charging, FAQs, information about the different tiers of state participation, and published research studies from the RUC West and other sources.

RUC West asked WSP to prepare a communications plan that participating states can use when talking about the Regional RUC Pilot and RUC efforts. The communications plan established goals for public information and outreach, identified targeted stakeholders to receive information, identified methods for sharing information, and defined key messages.

There are three different tiers of talking points within the communications plan to mirror the different tiers of state participation:

1. Tier 1: states that are actively promoting road usage charging as an equitable road-funding solution (enacted policy and implementing a program): Oregon and California
2. Tier 2: states that are exploring alternative funding options (testing RUC pilot programs): Washington, Hawaii, Utah, and Colorado.
3. Tier 3: states that are monitoring transportation trends (watching, or researching, road usage charge environment): Arizona, Idaho, Montana, Nevada, and Oklahoma.

The communication plan focuses on the goal of increasing public awareness of national transportation funding and the need for a sustainable transportation funding solution. The communication plan also focuses on increasing public acceptance of a road usage charge system. The communication plan also confirms and documents communications coordination amongst the participating states.

WSP submitted the draft RUC West Pilot Communications Plan to ODOT for review on December 18, 2017. The draft communications plan was forwarded by ODOT to RUC West member states on December 20, 2017 with a request that comments and input be provided by January 12, 2018. The Communications Plan was finalized at the end of February 2018.

Communication Workshops

WSP and its subcontractor PRR performed five communications workshops with all participating states: one kickoff, one workshop per tier of state (Tier 1, Tier 2, and Tier 3), and one wrap-up meeting.

At the end of October, PRR facilitated three tier level communications workshops to obtain input for the development of the Task 3.1 Communications Plan and folios. These workshops were conducted September 21st (Tier 1), on October 24th (Tier 2) and October 30th (Tier 1 and Tier 3). Summaries of these workshops were submitted in November. On December 14th WSP submitted a revise draft of the Tier 3 Communications Workshop Summary based on input received from Tier 3 states. On December 18th ODOT notified WSP of its approval of the Tier 1 and Tier 2 Communications Workshop Summaries and approval of the Tier 3 Communications Workshop Summary was provided on December 21, 2017.

Folios

WSP was commissioned to produce five aesthetically pleasing summaries, not to exceed three (3) pages in length, accompanied by easy-to-understand graphics based on RUC West developed communications and results of any RUC West studies or research, that address the following:

1. How a RUC program will affect rural drivers and communities.
2. How a RUC program will affect drivers of fuel efficient or electric vehicles, and an analysis on whether a RUC program provides a disincentive to purchasing fuel efficient or electric vehicles.
3. Data privacy in a RUC program.
4. How federal and state transportation systems are currently funded, the future of those funding sources, and how RUC serves as a viable alternative.
5. RUC Interoperability and what it means.

All five folios were forwarded by ODOT to RUC West member states for review and comment on December 28, 2017. Updated folios were again distributed to RUC West on February 7, 2018 and were finalized end of May 2018.

Website

WSP and its subcontractor, CH2M, built a website for the California/Oregon pilot. The website is expandable, so that when California and Oregon are ready to enroll participants for the pilot, the website will be launched to provide that functionality.

The website was delivered on December 13, 2017, and will remain in Oregon's keeping until the Oregon/California pilot kicks off.

Project Planning / Evaluation

STSFA Objectives Met:

- *Improve the functionality of such user-based alternative revenue mechanisms.*
- *Provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms.*

WSP was charged with developing an evaluation plan. The evaluation must help RUC West understand how the RUC West Regional Pilot will functionally work, and when it concludes, how well it worked, the keys to success, and the resources required to successfully implement and operate RUC on a broader scale. It must also define obstacles that need to be addressed to create an interoperable system. Specifically, it will evaluate operations, compliance, program management, technology systems, and public acceptance.

The evaluation plan also defines the information, methods, measures, schedule, risks, and budget associated with deploying each of the data-gathering and analysis activities for the evaluation program. This plan also includes strategies for data collection, and identifies the following components: the types of data needed to evaluate the program against the program objectives; models for analyzing the data (both quantitative and qualitative); topics and questions for public surveys and focus groups; and how to develop a report that can be easily understood by all stakeholders which details findings, analysis methods, results, and recommendations.

WSP continued development of the evaluation plan based on input received at the September 20, 2017 Evaluation Plan Workshop. WSP submitted the draft Pilot Evaluation Plan to ODOT on December 8, 2017. The plan was then forwarded to RUC West member states for review with the directive that comments be provided by January 5, 2018. The Evaluation Plan was finalized at the end of February 2018.

Project Planning / Oversight/Management Plan

STSFA Objectives Met:

- *Improve the functionality of such user-based alternative revenue mechanisms.*
- *Provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms.*

RUC's long-term viability requires a regional, and ultimately nationwide approach with a robust organizational and managerial plan. As RUC becomes a more prevalent funding alternative, the number of policy questions and needed stakeholders will exponentially increase. WSP will develop a regional pilot oversight and management plan. An oversight committee will be established by RUC West and participating states that will begin with the RUC West Steering Committee structure and add some ad hoc technical and financial members. Ad hoc members will provide guidance based on their state requirements. The oversight committee will provide project direction and work to establish policies and processes for governance and administration of a multi-jurisdictional program.

Addressing inter-jurisdictional issues (e.g., how a vehicle registered in one state might be charged for driving in another state) will be an important aspect of a regional system. It will help ensure consistency across all RUC West states in terms of system data flows and communications protocols. For example, the mileage reporting technology used in one state must provide necessary information in another state, and accounting and auditing procedures must enable interstate transfer of funds.

Interoperability embraces the ability of different information technology system and software applications to communicate, exchange data, and use the exchanged information. RUC's basic level of interoperability is the open system design that is structured to allow any mileage reporting solution to serve any account management system. This sets the stage for competition, innovation, and keeping pace with evolution of technology in mileage reporting. An open RUC system platform common to multiple states (i.e., sharing a common set of requirements) sets the stage for advanced interoperability opportunities such as sharing data across multiple jurisdictions to create an integrated road usage charging system.

WSP defined interoperability amongst the RUC West participating states (Appendix B). The characteristics of this definition include:

- Motorists pay RUC in participating RUC states through one mileage reporting solution and one account.
- Motorists receive and pay a single bill for travel in all states.
- States develop agreements to remit any funds collected in one state to the state where miles were driven.
- Motorists from other states can measure and report miles driven outside their home states without the use of additional devices or short-term permits.

WSP also scheduled and conducted an Oversight and Management Plan Workshop to garner RUC West input and identify issues attendees feel should be incorporated into the draft plan.

The Regional Pilot Oversight and Management Plan includes:

- Operating Procedures for the Regional RUC Pilot Oversight Committee
- Inter-jurisdictional frameworks, which will address transfers of funds between states, system data flows, and communication protocols
- Policy framework consistent with the CCO for the new regional pilot
- Framework for interoperability data sharing including the characteristics listed above

WSP continued development of the oversight and management plan and proposed membership of the Oversight and Management Committee based on input received at the September 20th Oversight and Management Plan Workshop.

On December 1st WSP submitted a draft technical memorandum outlining proposed membership for the RUC West Pilot Oversight and Management Committee. The Oversight and Management Plan was finalized in May 2018.

STSFA Objectives Met:

- *Improve the functionality of such user-based alternative revenue mechanisms.*
- *Provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms.*
- *Minimize the administrative cost of any potential user-based alternative revenue mechanisms.*
- *Minimize the administrative costs associated with the collection of fees.*
- *Test the design, acceptance, and implementation of two or more future user-based alternative revenue mechanisms.*

Another critical deliverable from this effort is the detailed system and business requirements that will be the basis of the contracts for the CA regional interoperability pilot between California and Oregon. These documents move RUC from a concept to a fully operational project and program. There are five different documents:

- The **system requirement specifications (SRS)** must describe the overall requirements and data flows for the system and subsystem. It must precisely state what must be done (outcomes and behaviors), but not how the required functionality will be implemented. Because each state is different, WSP delineate system data flows and processes that are mandatory and those which are desirable or optional.
- **Interface control document (ICD)**. Interface protocols must specify how communications with the RUC system will occur, address system interfaces and the project context, and describe the open system objective for the RUC system. The interface protocols must also include the details of the mileage message, tax reporting, technical specifications for all interfaces between subsystems, and RUC processing to RUC accounting interfaces.
- **Business requirements document (BRD)** and rules must describe the business and operational conditions expected of vendors when conducting RUC operations, including policies and penalties related to collecting, managing, storing, transmitting, and purging data. The business requirements and rules must provide the operational conditions and processes and provide a set of detailed requirements with which RUC vendors must comply. The business requirements and rules also must address system constraints such as those related to security and reliability.
- **Service Level Agreement (SLA)** outlines the customer service protocols for the account managers and other business partners.
- **Vendor Cross Reference Index (VCRI)** that allows the certifying entity and business partners to easily reference requirements across all of the contract documents.

RUC West states that are not California and Oregon have access to these documents to develop data flows and protocols, and business requirements that integrate common requirements with state-specific details (e.g., states can opt in or out of specific functionality using only some mileage reporting methods or can add their own functionality).

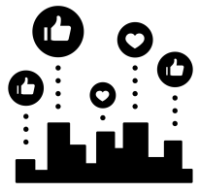
WSP also hosted a Contract Workshop. Attendees were key members from California, Colorado, Oregon and Washington. The Workshop established which requirements from the CCO and state pilots (California, Colorado, Oregon and Washington) should be included in the regional pilot.

On November 7th CH2M facilitated a conference call with representatives from ODOT and Caltrans to resolve discrepancies in the California and Oregon System Requirements Specifications (SRS) and Interface Control Document (ICD). WSP submitted the draft Business Requirements Document, Service Level Agreement, Interface Control Document, and System Requirements and Specifications on November 30th.

ODOT forwarded the draft pilot contract documents to RUC West member states for review and comment on December 12th. Member states provided comments by end of January 2018. The contract documents were finalized March 2018.

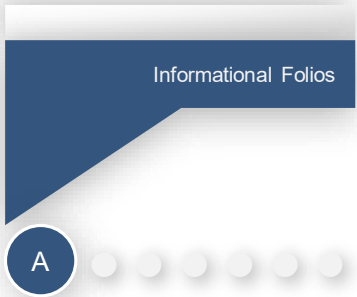
Conclusion and Next Steps

RUC West will continue to move the RUC concept forward at a regional level. The regional interoperability pilot between Oregon and California will be the next monumental step—charging Oregon RUC rates and crediting Oregon fuels tax for Oregon miles, and charging California RUC rates and crediting California fuels tax for California miles—all while providing a seamless experience for the driver. This grant is the foundational for that pilot, and for other pilots that emerge out of RUC West. The main focus for this grant was to garner consensus on what a functional, regional RUC System will look like (Concept of Common Operations) amongst eleven states, and to develop the contract documents, which are specific requirements that account managers will use to move RUC from theory to reality.



Communications

RUC West appreciates that communications and public education are key elements of advancing RUC initiatives. Member states were engaged in the development and refinement of the communications resources developed for this effort including subject matter folios, a communications plan, media kits and a website.

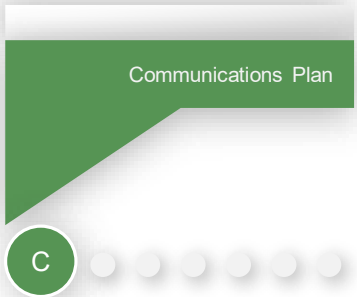


RUC West produced five Subject Matter Folios (briefings on key issues) to be used by member states in discussions with legislators, stakeholders and the general public.

- Topics included:
- ✓ Data Privacy
 - ✓ Rural Drivers & Communities
 - ✓ Fuel Efficient / Electric Vehicles
 - ✓ Future of Transportation Funding
 - ✓ Measuring Miles Beyond Borders



RUC West produced three media kits that can be modified and issued as press releases by member states prior to, during and following the multi-state pilot. These kits contain basic information on the pilot that can be used by any member state, regardless of whether they are participating in the pilot.



The Communications Plan serves the goal of building awareness, participation, key messages, messaging strategies, and understanding of the Regional RUC Pilot Project and road usage charging leading up to and during the one year multi-state pilot.



Procurement Support and Future Policy Considerations

RUC West prepared and issued a Request for Information (RFI) that was advertised by the Oregon DOT. Private sector vendors who may one day serve as RUC business partners were invited to answer a set of questions to gauge their interest in a regional RUC pilot, provide comment to the contract documents, and identify any key considerations RUC West should address prior to releasing a RFP. The results of the RFI responses led to in-depth interviews with four vendors, with a summary of the interview results provided in a technical memorandum.

Numerous topics and issues were raised through the workshops and working meetings that, while important for RUC implementation, were outside of the scope of this effort, but documented in a white paper. These included issues that will need to be addressed prior to the upcoming pilot, such as how large the participant pool should be and how should participants be recruited and enrolled, as well as longer term policy issues, such as how to compensate and incentivize private sector vendors, how to standardize the certification of vendors across states, and establishing exactly how the clearinghouse will interact with other state agencies such as DMVs.

The Project Team

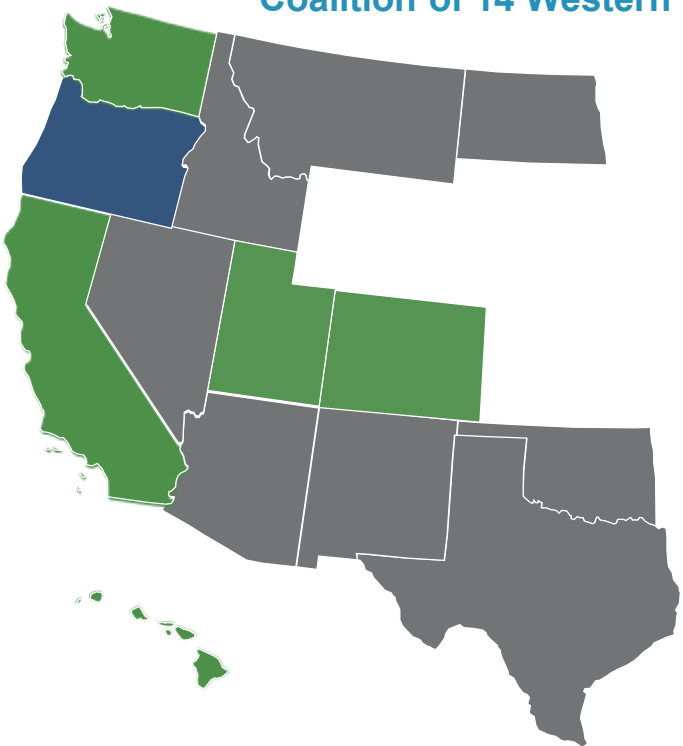
This project was led and managed by **Kathryn Jones** (Oregon DOT) and **Carrie Pourvahidi** (California DOT) on behalf of RUC West. The consultant team was lead by **WSP** in partnership with **CH2M** and **PRR**. Contacts for the project team:

- Kathryn Jones, Oregon DOT, Kathryn.m.Jones@odot.state.or.us, (503) 986 3108
- Mike Warren, WSP USA, Michael.Warren@wsp.com, (720) 480 2895



Regional RUC System Definition & Pilot Planning Project

Coalition of 14 Western States to Examine and Test RUC Concepts



RUC West brings together leaders from state transportation organizations to share best practices and research RUC. RUC West is the foremost authority on road usage charging in the United States, bringing together leaders from 14 state transportation organizations to share resources and explore innovative funding solutions for preserving the future of our transportation network. RUC West member states are organized into three tiers based on their current level of involvement in advancing RUC in their jurisdiction:

Tier 1 Enacted Policy to Implement RUC Programs

- Oregon

Tier 2 Testing RUC through Pilot Programs

- California
- Colorado
- Hawaii
- Utah
- Washington

Tier 3 Research RUC Concepts

- Arizona
- Idaho
- Montana
- Nevada
- New Mexico
- North Dakota
- Oklahoma
- Texas

Building the First Multi State Demonstration of Road Usage Charging

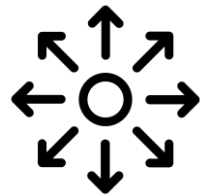
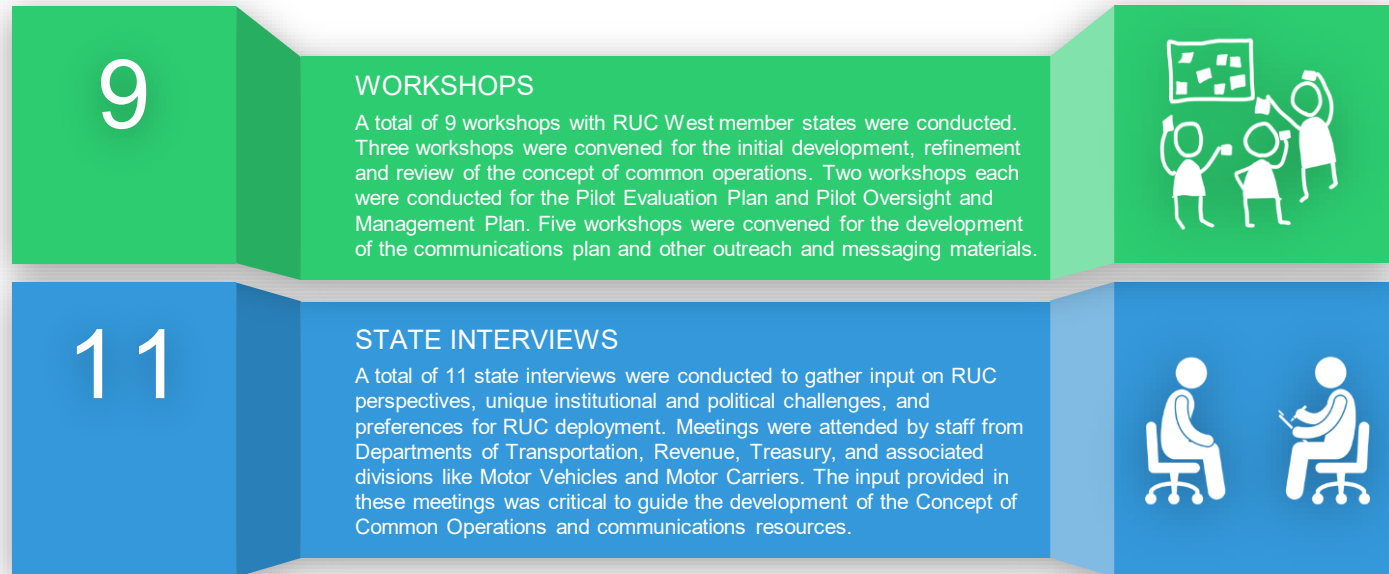
Funded through the 2016 Surface Transportation System Funding Alternatives (STSFA) grant, RUC West developed a first of its kind, multi state RUC program. The first step in this process involved the completion of different conceptual and technical documents, communications materials, and evaluation and oversight materials.





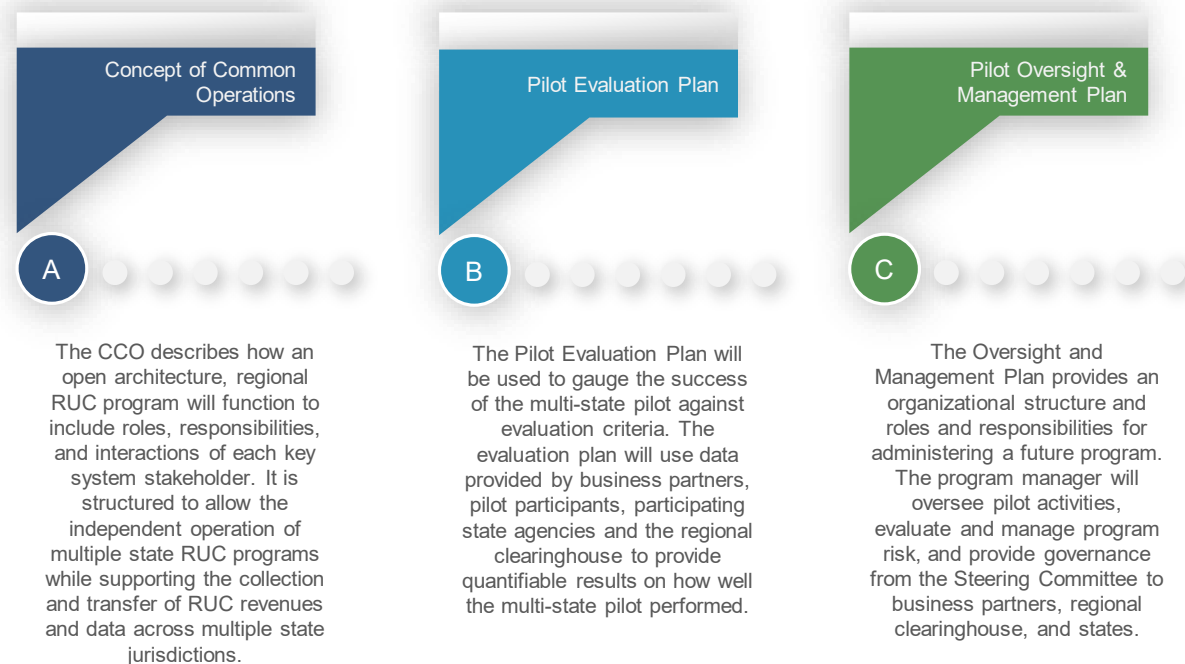
Needs Gathering & Research

Developing a multi-state RUC program required the active engagement of each of the participating RUC West member states to gather each state's unique needs, capabilities and expectations for RUC. Key activities conducted to accomplish this included:



Planning Activities

RUC West's project team developed several planning documents for the multi-state RUC pilot and a potential future system. These materials were initially developed through workshops with RUC West member state representatives, subsequently refined, reviewed by all participating states, and finalized in a concluding workshop.

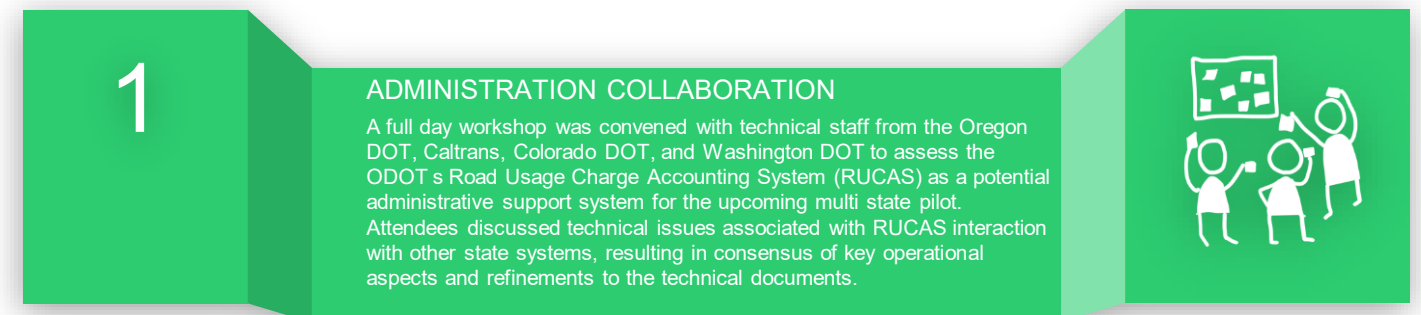
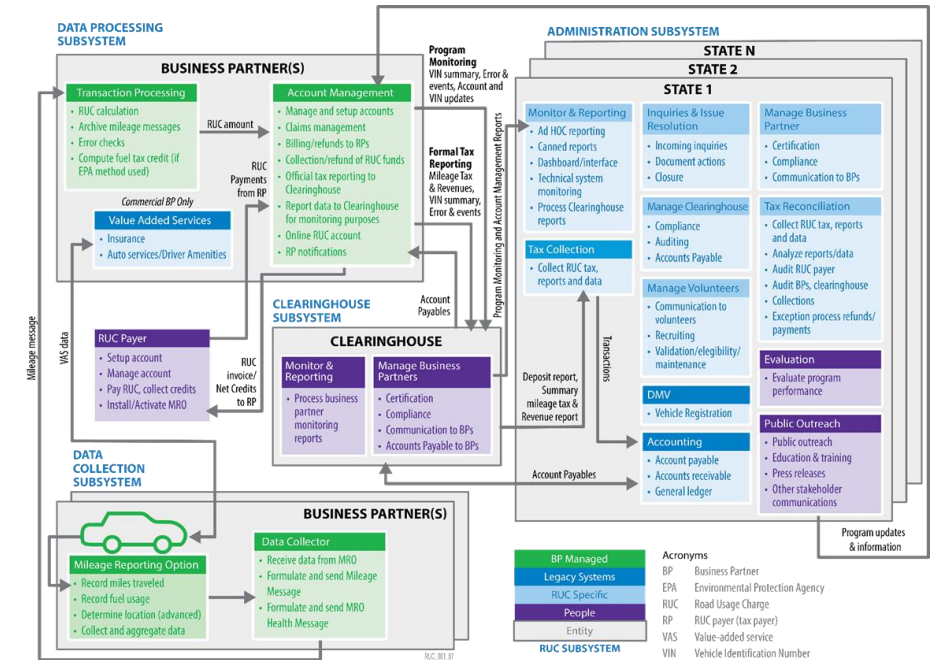


Technical Design

Technical documents and assessments complemented the concept planning activities, as well as will support subsequent pilot operations and administration for a regional RUC system.

The CCO provides a high-level overview of how the regional RUC system will function and stakeholders interact. RUC West next developed a series of contract documents to provide technical guidance on how the system is to be developed, operated and administered.

- **Business Requirements Document (BRD)** - The BRD provides non-technical rules for conducting business such as payment remittance, data transfers, audit support, and financial reporting.
- **Interface Control Document (ICD)** - The ICD provides technical specifications for all system and subsystem interfaces.
- **System Requirements Specifications (SRS)** - The SRS outlines the technical and functional requirements for regional RUC pilot system and the specific subsystem requirements for: the Data Collection Subsystem, the Data Processing Subsystem, the Administration Subsystem and the Clearinghouse Subsystem.
- **Service Level Agreement (SLA)** - The SLA is an agreement between business partners and RUC West that defines the expected levels of required services such as customer service, hardware provisioning, reporting, and data protection to be provided over the course of the pilot.
- **Verification Cross Reference Index (VCRI)** - The VCRI cross references requirements from the BRD, ICD, and SRS, providing details on how systems and processes will be certified.



Appendix B- Interoperability Definition

The Institute of Electrical and Electronics Engineers (IEEE) defines interoperability as the ***“ability of a system or a product to work with other systems or products without special effort on the part of the customer. Interoperability is made possible by the implementation of standards.”*** Interoperability is just one of many attributes that will provide the flexibility needed to accommodate each state’s unique institutional and operational environment as part of future multi-state Road Usage Charge (RUC) pilots. As such, one objective of the Regional RUC System Definition and Pilot Planning Project is to define a regional RUC system that embraces the concept of interoperability but is cognizant of RUC-specific issues and challenges from state to state.

During the April Kickoff Meeting for the RUC West Regional RUC System Definition and Pilot Planning Project, participating states were asked to articulate what interoperability means to them and what a truly interoperable regional RUC system would look like from their state’s perspective. This discussion was summarized during the subsequent July 12th Concept of Common Operations (CCO) Workshop in Denver, CO. There, workshop participants engaged in a facilitated discussion to further refine RUC West’s concept of interoperability and develop a vision of regional interoperability for incorporation in subsequent RUC pilot technical documents and outreach materials. As a result of these two sessions, a broad vision of interoperability was developed with the following attributes:

- **User Oriented** - RUC systems must not be onerous for users; otherwise they will never be successfully implemented, much less interoperable. As such, interoperability should be viewed from the perspective of the user. This means providing users with a seamless experience where they are unaware of differences in RUC system components from state to state. System users should not have to use or set up different devices, RUC accounts, reporting systems, or billing systems when travelling across state lines, as this will increase the burden of compliance. In other words, users should not “run into a brick wall” when crossing states lines – they should “see the same things” from state to state. One state representative noted that the system should resemble (in some ways) national restaurant chains, where each location may be operated by a different manager but the customer is unaware of any major differences from location to location. Another aspect of a user-oriented, seamless RUC system is that users should only pay their state/business partner and receive credits from their state/business partner. For example, a driver travelling across multiple states should be charged for travel in those states with one business partner handling all aspects of assessment and billing. The allocation of funding for travel in other jurisdictions should be handled by that one business partner (or perhaps a regional clearinghouse), not the user. In general, state representatives agreed that an interoperable system will be seamless when it *acknowledges* and *unifies* the unique differences and challenges each state faces.
- **Transparent** - An interoperable system must be transparent to users as well as business partners and state agencies tasked with administration and/or operations. The system should also be available for state audit. Drivers should clearly understand what is being assessed and what they are paying; not only within their home state but also for other states where they may drive. States should similarly be able to easily verify, with confidence, that they receive road

charge funding that is due to them for travel within their state. Business rules and requirements should be clear and understandable for business partners.

- **Consistent** - Consistency is another desirable trait for a multi-state RUC system. An interoperable system should be consistent in terms of messaging and communications (including outreach and education) to states, vendors and system users / RUC payers. For example, communications on the business case for transitioning to RUC or the overall objectives of RUC implementation should occur with consistent messages, themes, and resources across state lines. An interoperable system should also be consistent in terms of system definitions. This means achieving consensus among states on the definition and function of various system elements such as clearinghouses, business partners, vendor certification processes, governance entities, etc.
- **Scalable** - An interoperable system should facilitate opportunities for system expansion. System components should be agile enough that new states can be easily added while accommodating their unique needs, preferences for RUC rates, approaches for crediting fuels taxes paid, etc. The concept of scalability also applies to regional system administration and governance, where system elements should easily accommodate new states and significant increases in new users.
- **Equitable** - Although the concept of equity does not necessarily have technical implications for this effort, it is an important concept from a policy perspective and has significant implications for future governance. As such, it should be a central consideration for RUC West as it proceeds with system development and the formulation of business rules and procedures for joining the RUC system. An interoperable system should function and provide benefits to participating states on an equal basis. An interoperable system should not impose burdens on one state, nor should it result in excess benefits to any one state. The system should also not be dependent on the participation of certain states or certain users such that the withdrawal of one state negatively impacts the participation of other states or the experience of users in other states.

Achieving interoperability among state RUC systems supports the overall feasibility of the RUC concept itself. An interoperable system will ensure that multi-state system elements, such as clearinghouses, function as designed and reduce compliance costs for states as well as users. A feasible system is more likely when complexity is minimized, consistency is maximized, and decisions are made at the outset with the recognition that they will impact the system long-term. Furthermore, a truly interoperable system that fulfills these required attributes would (and should) serve as a model for the rest of the country to follow. This will require the nurturing of an “open” RUC market that is accessible to all business partners and technology vendors who want to operate within it. An open market, in turn, will require consistent processes for the interstate certification of business partners and vendors.