WASHINGTON STATE ROAD USAGE CHARGE

RUC Innovation Spotlight

October 21, 2021
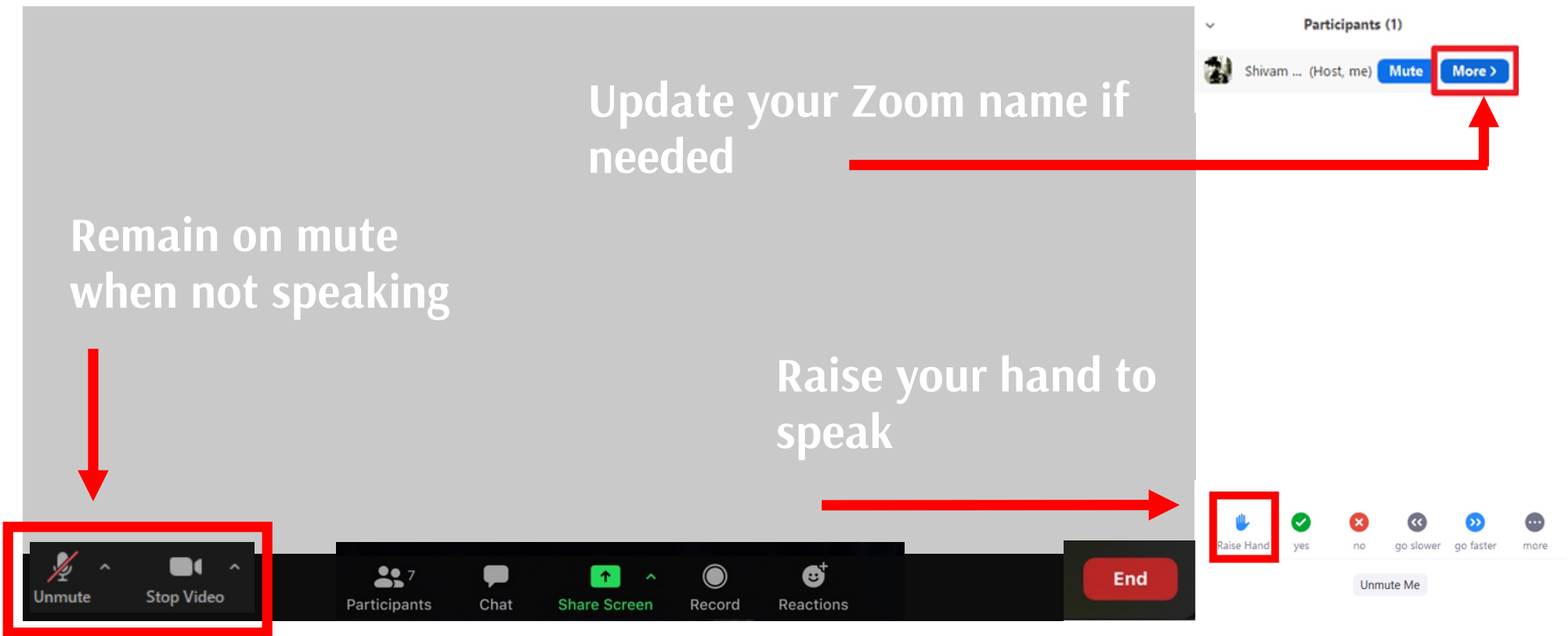
Washington State Transportation Commission

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WA **RUC**

Agenda

1) Welcome & introductions

2) RUC Innovation objectives

3) Comparison of business models

4) Integrating business models

5) Potential Pilot scenarios

6) Next steps

WA **RUC**

Welcome & Introductions

Travis Dunn
Project Manager, CDM Smith

WA RUC

Upcoming Steering Committee Virtual Activities

November 3   9-10:30am   Cost of Collection Spotlight

November 23 9-10:30am   Equity Spotlight

December 13 10am-2:30pm Steering Committee Meeting

WA **RUC**

RUC Innovation Research

Roshini Durand
CDM Smith

RUC Innovation Objectives

WA RUC

Mileage reporting enhancements through research, industry outreach, and design

Incorporate new mileage reporting approaches into Washington's RUC research, such as in-vehicle telematics, improved smartphone apps, use of private businesses to provide odometer verification and mileage reporting services, and more

New mileage reporting methods ➔ **RUC Innovation**

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RUC innovation objectives

1. Improve the user experience

- More choices for mileage reporting and payment
- Better service design to address operational equity and promote compliance
- User-friendly privacy policies

2. Optimize RUC Service

- Build on existing state capabilities
- Leverage private sector services
- Define public/private sector roles

3. Open the market

- Identify new business models
- Define standards

RUC innovation objectives

1. Improve the user experience

- More choices for mileage reporting and payment
- Better service design to address operational equity and promote compliance
- User-friendly privacy policies

2. Optimize RUC Service

- Build on existing state capabilities
- Leverage private sector services
- Define public/private sector roles

3. Open the market

- Identify new business models
- Define standards

Guidelines from three perspectives:
- **End user:** simplicity, transparency, convenience, accessibility, privacy protection, user choice
- **Public sector:** ease of administration, cost efficiency
- **Private sector:** justifiable business case for supporting RUC services
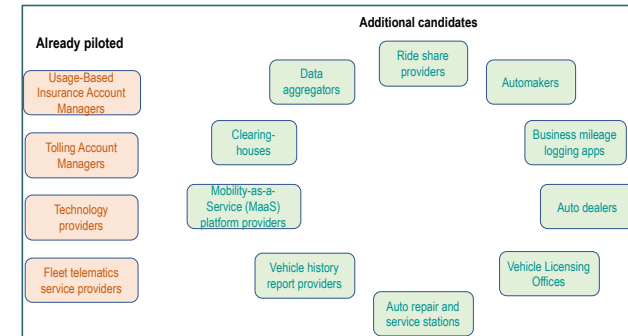
Research approach – 3 steps

1. Break down RUC into core function

- **Identify subject vehicle & owner/lessee**–connect with vehicle registry & set up account
- **Generate road usage data for subject vehicle over designated time**–report data
- **Access road usage data**–receive reporting of road usage data
- **Apply per-mile charging rates**–process data to determine amount of charges
- **Provide invoice to owner/lessee**–issue notice of the charge
- **Collect payment**–provide one or more ways to pay
- **Issue acknowledgement of payment**–create a receipt
- **Enforce payment**–apply mechanisms for ensuring everyone pays
- **Remit revenue to appropriate fund**–integrate revenue collection with financial systems

2. Identify new mileage reporting and payment choices

Feasibility / Services	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)			
Fully automated (no action required)			

3. Identify compatible business models

Already piloted

Additional candidates

- Usage-Based Insurance Account Managers
- Tolling Account Managers
- Technology providers
- Fleet telematics service providers
- Data aggregators
- Ride share providers
- Automakers
- Clearing-houses
- Business mileage logging apps
- Mobility-as-a-Service (MaaS) platform providers
- Auto dealers
- Vehicle history report providers
- Vehicle Licensing Offices
- Auto repair and service stations

Step 1 – RUC functions

RUC framework

Identify subject vehicle & owner/lessee–connect with vehicle registry & set up account

Generate road usage data for subject vehicle over designated time–report data

Access road usage data–receive reporting of road usage data

Apply per-mile charging rates–process data to determine amount of charges

Provide invoice to owner/lessee–issue notice of the charge

Collect payment–provide one or more ways to pay

Issue acknowledgement of payment–create a receipt

Enforce payment–apply mechanisms for ensuring everyone pays

Remit revenue to appropriate fund–integrate revenue collection with financial systems

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Step 2 – New mileage reporting and payment choices

RUC framework

Identify subject vehicle & owner/lessee–connect with vehicle registry & set up account	
Generate road usage data for subject vehicle over designated time–report data	
Access road usage data–receive reporting of road usage data	
Apply per-mile charging rates–process data to determine amount of charges	
Provide invoice to owner/lessee–issue notice of the charge	
Collect payment–provide one or more ways to pay	
Issue acknowledgement of payment–create a receipt	
Enforce payment–apply mechanisms for ensuring everyone pays	
Remit revenue to appropriate fund–integrate revenue collection with financial systems	

What new mileage reporting methods can cover diverse customer circumstances and preferences?

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Step 2 – New mileage reporting and payment choices

RUC framework

🗒	**Identify subject vehicle & owner/lessee**–connect with vehicle registry & set up account
📍	**Generate road usage data for subject vehicle over designated time**–report data
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📝	**Issue acknowledgement of payment**–create a receipt
⚠	**Enforce payment**–apply mechanisms for ensuring everyone pays
🏛	**Remit revenue to appropriate fund**–integrate revenue collection with financial systems

What new mileage reporting methods can cover diverse customer circumstances and preferences?

What payment methods suit customer needs?

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Step 2 – New mileage reporting and payment choices

RUC framework

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Remit revenue to appropriate fund–integrate revenue collection with financial systems

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Inventoried options to cover diverse customer circumstances and preferences

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)			
Fully automated (no action required)			

Exploring best practices from other transportation payment such as:
- Tolling
- Transit
- Mobility-as-a-service (MaaS)

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Step 2 – Next research update (invoice layout and enforcement)

RUC framework

Identify subject vehicle & owner/lessee–connect with vehicle registry & set up account

Generate road usage data for subject vehicle over designated time–report data

Access road usage data–receive reporting of road usage data

Apply per-mile charging rates–process data to determine amount of charges

Provide invoice to owner/lessee–issue notice of the charge

Collect payment–provide one or more ways to pay

Issue acknowledgement of payment–create a receipt

Enforce payment–apply mechanisms for ensuring everyone pays

Remit revenue to appropriate fund–integrate revenue collection with financial systems

What invoicing layout to promote understanding and transparency?

What enforcement mechanisms would be relevant and acceptable?

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Step 3 – Identify compatible business models

Identify subject vehicle & owner/lessee–connect with vehicle registry & set up account

Generate road usage data for subject vehicle over designated time–report data

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Apply per-mile charging rates–process data to determine amount of charges

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Collect payment–provide one or more ways to pay

Issue acknowledgement of payment–create a receipt

Enforce payment–apply mechanisms for ensuring everyone pays

Remit revenue to appropriate fund–integrate revenue collection with financial systems

1. What business models can deliver some or all RUC functions efficiently?

2. How can they support operational equity?

3. How can they enhance the user experience?

4. How can they address typical RUC issues (e.g., need to protect privacy)?

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Step 3 – Identify compatible business models

Vehicle registry

X

Identify subject vehicle & owner/lessee–connect with vehicle registry & set up account

Generate road usage data for subject vehicle over designated time–report data

Access road usage data–receive reporting of road usage data

Apply per-mile charging rates–process data to determine amount of charges

Provide invoice to owner/lessee–issue notice of the charge

Collect payment–provide one or more ways to pay

Issue acknowledgement of payment–create a receipt

Enforce payment–apply mechanisms for ensuring everyone pays

Remit revenue to appropriate fund–integrate revenue collection with financial systems

Technology providers

Fleet telematics service providers

Usage-Based Insurance Account Managers

Tolling Account Managers

Who else can support RUC functions?

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Step 3 – Identify compatible business models

Identify subject vehicle & owner/lessee–connect with vehicle registry & set up account

Generate road usage data for subject vehicle over designated time–report data

Access road usage data–receive reporting of road usage data

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Collect payment–provide one or more ways to pay

Issue acknowledgement of payment–create a receipt

Enforce payment–apply mechanisms for ensuring everyone pays

Remit revenue to appropriate fund–integrate revenue collection with financial systems

What can they support efficiently?

Ride-share providers	Automakers
Data aggregators	Business mileage logging apps
Clearinghouses	Auto dealers
Mobility-as-a-Service platform providers	Vehicle Licensing Offices
Vehicle history report providers	Auto repair and service stations

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Comparison of Business Models

Summary of overall approach

1. Break down RUC into core function

📇	**Identify subject vehicle & owner/lessee**–connect with vehicle registry & set up account
📍	**Generate road usage data for subject vehicle over designated time**–report data
🚗	**Access road usage data**–receive reporting of road usage data
🖥	**Apply per-mile charging rates**–process data to determine amount of charges
📱	**Provide invoice to owner/lessee**–issue notice of the charge
💳	**Collect payment**–provide one or more ways to pay
🧾	**Issue acknowledgement of payment**–create a receipt
⚠	**Enforce payment**–apply mechanisms for ensuring everyone pays
🏦	**Remit revenue to appropriate fund**–integrate revenue collection with financial systems

2. Identify new mileage reporting and payment choices

Feasibility / Services	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)			
Fully automated (no action required)			

3. Identify compatible business models

Already piloted

- Usage-Based Insurance Account Managers
- Tolling Account Managers
- Technology providers
- Fleet telematics service providers

Additional candidates

- Data aggregators
- Ride share providers
- Automakers
- Clearing-houses
- Business mileage logging apps
- Mobility-as-a-Service (MaaS) platform providers
- Auto dealers
- Vehicle history report providers
- Vehicle Licensing Offices
- Auto repair and service stations

Mileage reporting options tested in first WA RUC pilot (2018-2019)

Level of assistance \ Connectivity	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)	Vehicle Licensing Offices (using odometer image capture app)		
Self-reporting (manual action required)		Smartphone app • Odometer image capture • Optional GPS toggle	
Fully automated (no action required)		Plug-in device • With GPS • Without GPS	

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Summary of additional mileage reporting options explored

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)	Vehicle Licensing Offices (using odometer image capture app)	• Assisted installation (technology provider or retail partner)	• Automaker support
Self-reporting (manual action required)	• Camera phone (text) • Website portal	Smartphone app • Odometer image capture • Optional GPS toggle Smartphone mileage logging	• In-vehicle telematics (infotainment systems)
Fully automated (no action required)	• VIN look-up services	Plug-in device • With GPS • Without GPS 3rd party telematics interface	• In-vehicle telematics (infotainment systems) • Data aggregator platform

Summary of business models assessed

Additional candidates

Already piloted

Usage-Based Insurance Account Managers

Tolling Account Managers

Technology providers

Fleet telematics service providers

Data aggregators

Ride share providers

Automakers

Clearing-houses

Business mileage logging apps

Mobility-as-a-Service (MaaS) platform providers

Auto dealers

Vehicle history report providers

Vehicle Licensing Offices

Auto repair and service stations

Combining business models and reporting choices

Vehicle registry-based system

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)			

Develop RUC as part of a Mobility-as-a Service platform

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)	X	X	X

Collaborate with automakers

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			X
Self-reporting (manual action required)			X
Fully automated (no action required)			X

Collaborate with retail partners for reporting and payment

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)	X	X	X
Self-reporting (manual action required)			
Fully automated (no action required)	X	X	X

Partner with data aggregators (e.g., insurance industry)

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)	X	X	X

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Potential pilot approach: Compare business models
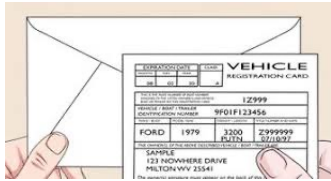
	Vehicle registry-based system	Retail partners	Data aggregators	MaaS providers	Automaker collaboration
Equity	●●●	●●●	●●●	●●●	●●●
User experience	●●●	●●●	●●●	●●●	●●●
Cost of Collection	●●●	●●●	●●●	●●●	●●●
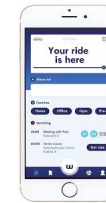
Questions

- What would a pilot involving different business models look like?
    - Who would be ideal participants?
    - Should participants take part in more than one?

- What metrics should we use to evaluate user experience, equity, and cost effectiveness?

Integrating business models

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End-user perspective

What's the best configuration
for a simple user experience?

Choice is good, but imagine the decision-making process and user experience

Retail networks for reporting and payment

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)	X	X	X
Self-reporting (manual action required)			
Fully automated (no action required)	X	X	X

Vehicle Registry based system

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)			

Mobility-as-a Service provider

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)	X	X	X

Data aggregators services (insurance industry)

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)	X	X	X

Automakers

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			X
Self-reporting (manual action required)			X
Fully automated (no action required)			X

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Choice is good, but imagine the decision-making process and user experience

Easier if the user has a
single entry point

RUC Service

Access to a set of integrated services

Entry points

Consider 2 starting points for integrating services:
- Vehicle-registry based system
- Account-based system (already tested)

RUC Service

Integrating business models: Vehicle registry as entry point

1. Start with existing building blocks

- Functions covered by vehicle registry system

2. Define a minimum viable RUC service

- Define simplest most cost-efficient service that can be offered

3. Identify enhancements through partnerships

- Identify who is best positioned to support service enhancements
- Offer value-added service enhancements

Vehicle registry system – functions covered

Identify subject vehicle & owner/lessee–connect with vehicle registry & set up account

Generate road usage data for subject vehicle over designated time–report data

Access road usage data–receive reporting of road usage data

Apply per-mile charging rates–process data to determine amount of charges

Provide invoice to owner/lessee–issue notice of the charge

Collect payment–provide one or more ways to pay

Issue acknowledgement of payment–create a receipt

Enforce payment–apply mechanisms for ensuring everyone pays

Remit revenue to appropriate fund–integrate revenue collection with financial systems

Has vehicle and owner data

Feasibility / Services	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)			

Would require mileage data

Annual reminders to vehicle owners

Ability to accept one-off payments

Issue simple receipts

Vehicle registration renewal

Existing funds transfer mechanism

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Vehicle registry system – what enhancements to prioritize?

	Enhancement
📋	**Identify subject vehicle & owner/lessee**–connect with vehicle registry & set up account
📍	**Generate road usage data for subject vehicle over designated time**–report data
🚗	**Access road usage data**–receive reporting of road usage data
🏧	**Apply per-mile charging rates**–process data to determine amount of charges
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🤝	**Collect payment**–provide one or more ways to pay
📋	**Issue acknowledgement of payment**–create a receipt
⚠️	**Enforce payment**–apply mechanisms for ensuring everyone pays
💰	**Remit revenue to appropriate fund**–integrate revenue collection with financial systems

Has source vehicle data

Feasibility Services	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)			

Would require mileage data

Annual reminders to vehicle owners

Ability to accept one-off payments

Issue simple receipts

Vehicle registration renewal

Existing funds transfer mechanism

Possible pilot scenarios for discussion

Roshini Durand & Ging Ging Fernandez
CDM Smith

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Minimum Viable RUC Service (based on vehicle registry)

Vehicle Registry based system

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)			

Report mileage annually

Potential entry point

Vehicle-registry based system

(Pre-)pay annual invoice online or at vehicle licensing office

Ongoing vehicle renewal process to enforce payment

Pilot concept 1 – Minimum viable RUC service

- Design the simplest and most cost-efficient RUC workflows (both online and in-person)
- Develop components to emulate a realistic RUC experience (reminder notices, online experience, simulated payment)
- Gauge user acceptance, assess equitable access, measure compliance

Potential entry point

Self report annually

Simulated vehicle registry system

(Pre) Pay annual invoice (online or at vehicle registry)

Vehicle renewal process (to enforce payment)
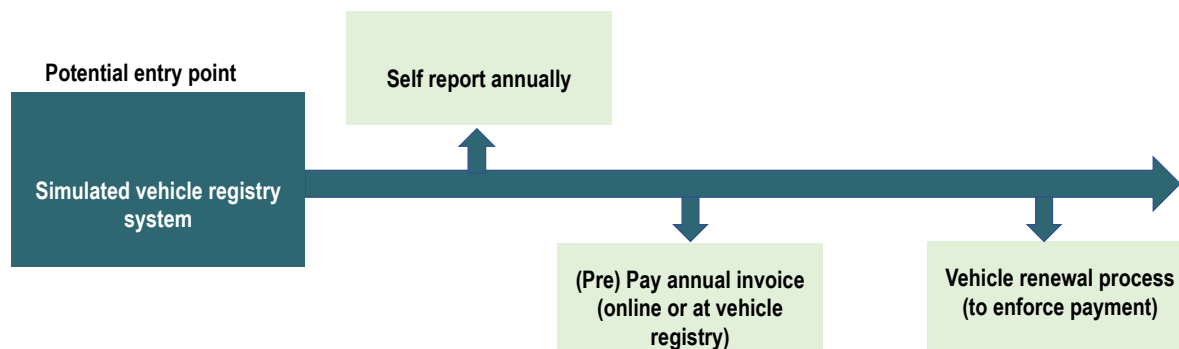
Enhanced RUC Service (more payment options)

Vehicle Registry based system

Connectivity Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)			
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)			

Report mileage annually

Potential entry point

Vehicle-registry based system

Hand-off to partner to administer payment plans (post-pay and prepay)

- Tolling operator
- Maas provider

Partner enforces payments and administers collection process

Pilot concept 2 – Enhanced service (more payment options)

- Build on pilot concept 1 design
- Design vehicle registry workflow with hand-off for payment plan
- Recruit private partner to simulate payment plan experience
- Compare user experience, equity, compliance

Potential entry point

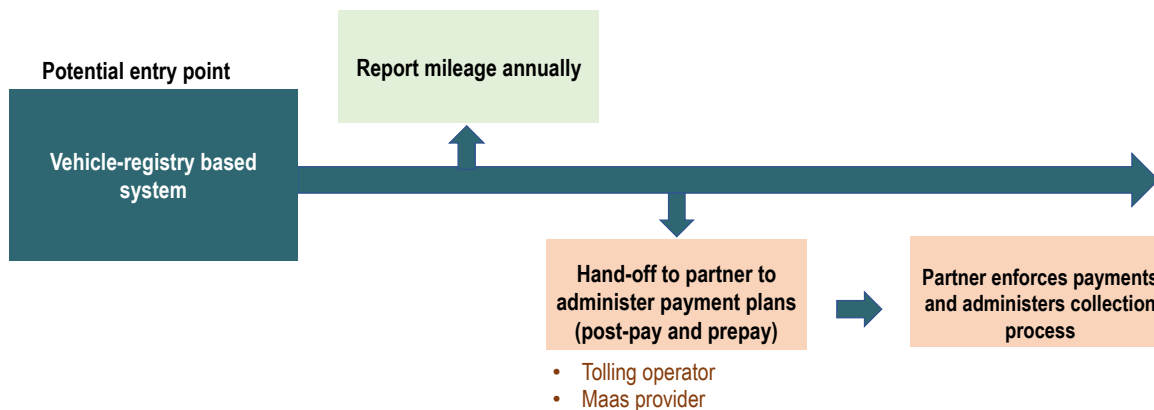Report mileage annually

Vehicle-registry based system

Hand-off to partner to administer payment plans (post-pay and prepay)
- Tolling operator
- Maas provider

Partner enforces payments and administers collection process

Enhanced RUC Service (more payment and reporting options)

Connectivity / Level of assistance	No connectivity	3rd party connectivity	Native connectivity
Assisted (in-person assistance)	X	X	X
Self-reporting (manual action required)	X	X	X
Fully automated (no action required)	X	X	X

Hand off to partner for more mileage reporting methods

- Plug-in device
- Native automaker telematics
- Odometer-image capture

Potential entry point

Vehicle-registry based system

Hand-off to partner to administer payment plans (post-pay and prepay)

Partner enforces payments and administers collection process

Pilot concept 2 – Enhanced service (more payment and reporting options)

- Build on pilot concept 1
- Recruit private partner to "augment" vehicle registry capabilities by integrating with technology providers and payment plan partners
- Compare user experience, equity, compliance

Potential entry point

Hand off to partner for more mileage reporting methods
- Plug-in device
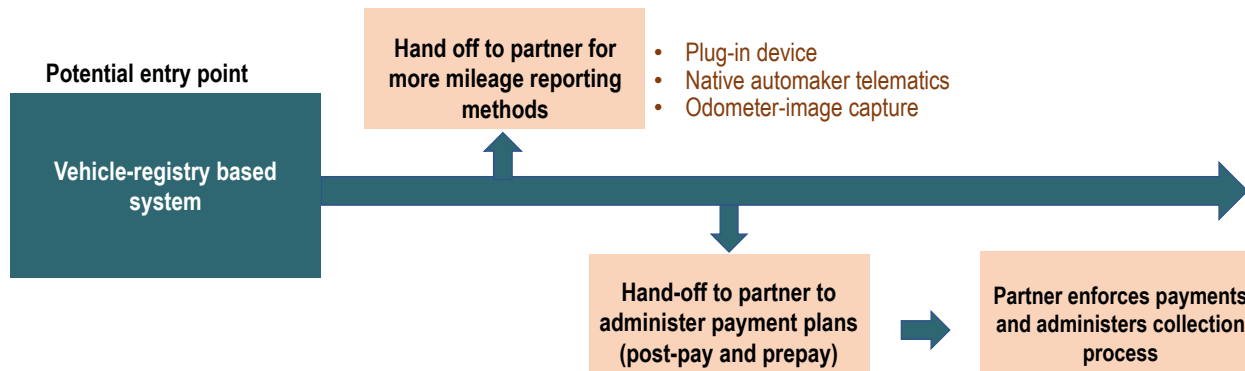- Native automaker telematics
- Odometer-image capture

Vehicle-registry based system

Hand-off to partner to administer payment plans (post-pay and prepay)

Partner enforces payments and administers collection process

Potential pilot approach: Compare services from minimum viable to enhanced services

Actors involved	Minimum Viable RUC Service (self-reporting)	Enhanced RUC Service (payment +)	Enhanced RUC Service (payment +, reporting +)
	• Vehicle registry	• Vehicle registry • Payment plan partner	• Vehicle registry • Payment plan partner • Odo-capture tech provider • Private partner to integrate services
Equity	●●●	●●●	●●●
User experience	●●●	●●●	●●●
Cost of Collection	●●●	●●●	●●●

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Feedback on types of pilot tests

- **Testing mileage report methods**
  - (Tested) Smartphone apps (odometer image capture and MileMapper)
  - (Tested) Plug-in device
  - Self reporting
  - Automaker telematics
- **Testing payment systems**
  - Partnerships with retail
  - Tolling
- **Test end-to-end RUC service**
  - (Tested) Account-based service
  - Vehicle-registry based service

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Next Steps

Travis Dunn
CDM Smith

Upcoming Steering Committee Virtual Activities

November 3   9-10:30am   Cost of Collection Spotlight

November 23   9-10:30am   Equity Spotlight

December 13   10am-2:30pm   Steering Committee Meeting

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THANK YOU

Consultant support provided by:

Milestone Solutions

BERK CDM Smith ei enviroissues Yates Consulting Group

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