



WASHINGTON STATE ROAD USAGE CHARGE

Forward Drive Project Update

December 14, 2021

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Washington State
Transportation Commission

Agenda

Research update

- RUC financial analysis

- Equity analysis and outreach

- Cost reduction

- RUC innovation

2022 demonstration plans

Next steps

End of year report to legislature

RUC Financial Analysis

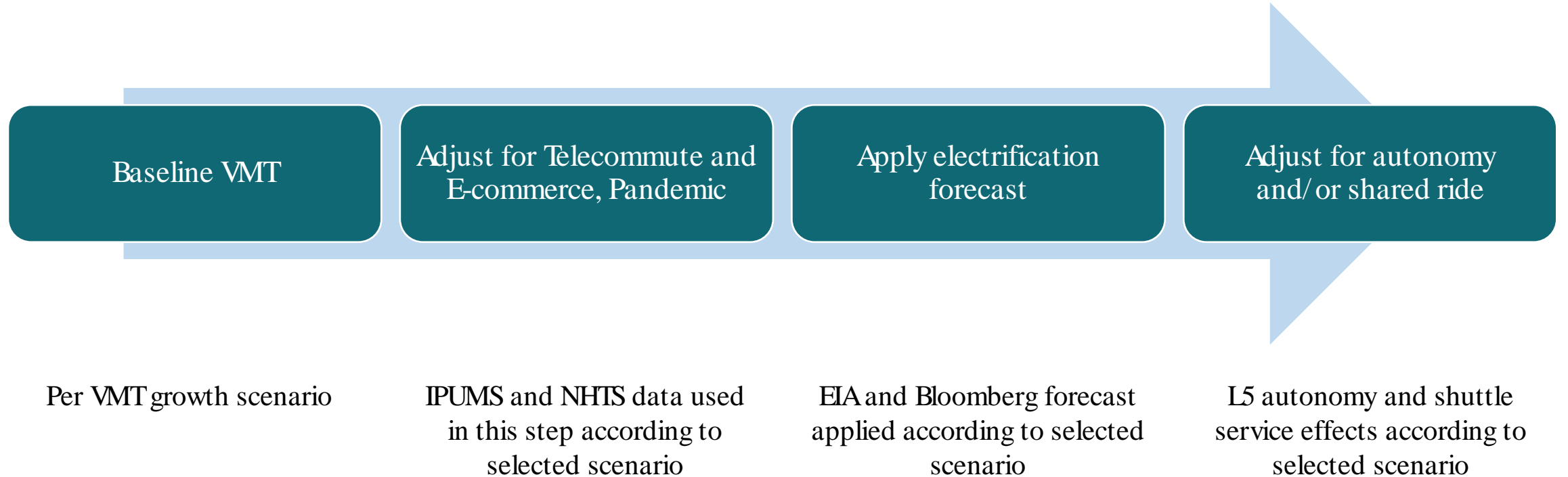
Overall Project Status

- ✓ Data collection and analysis
- ✓ Financial model development
- ✓ Scenario development
- ✓ Scenario analysis
- ✓ Revenue projections
- ✓ Analytical tool development

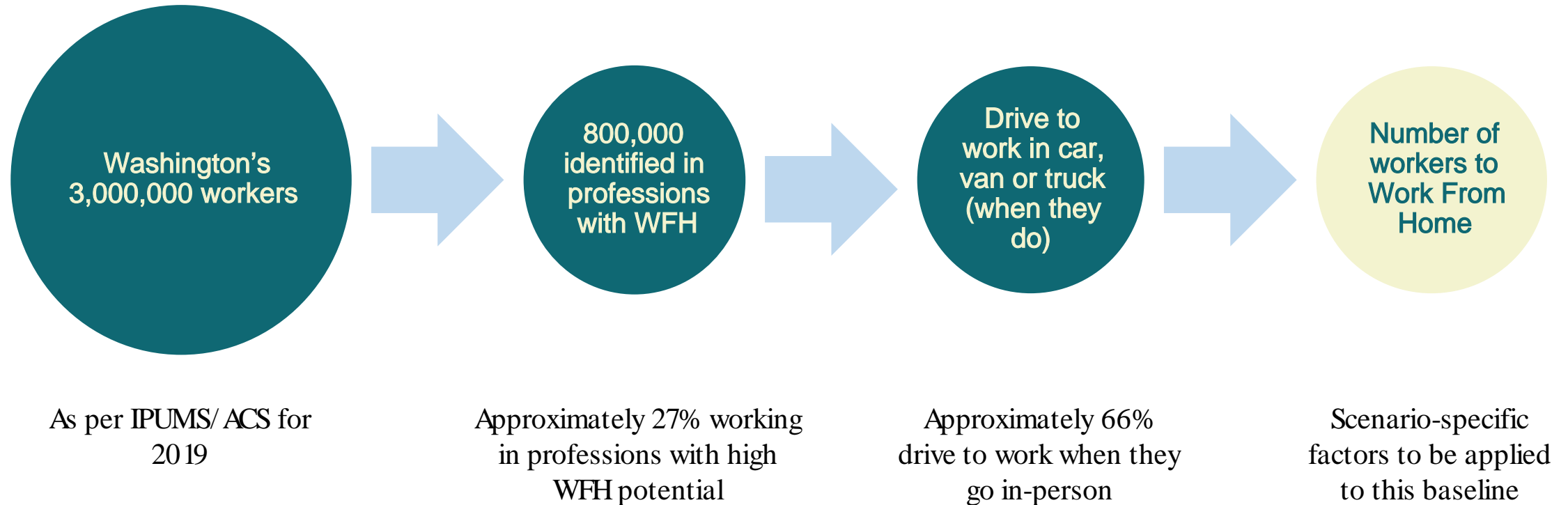
Analytical Approach

- Develop updated financial model
- Identify factors potentially affecting travel
- Develop an integrated framework to incorporate the factors
- Analyze illustrative scenarios
- Perform scenario planning using the framework

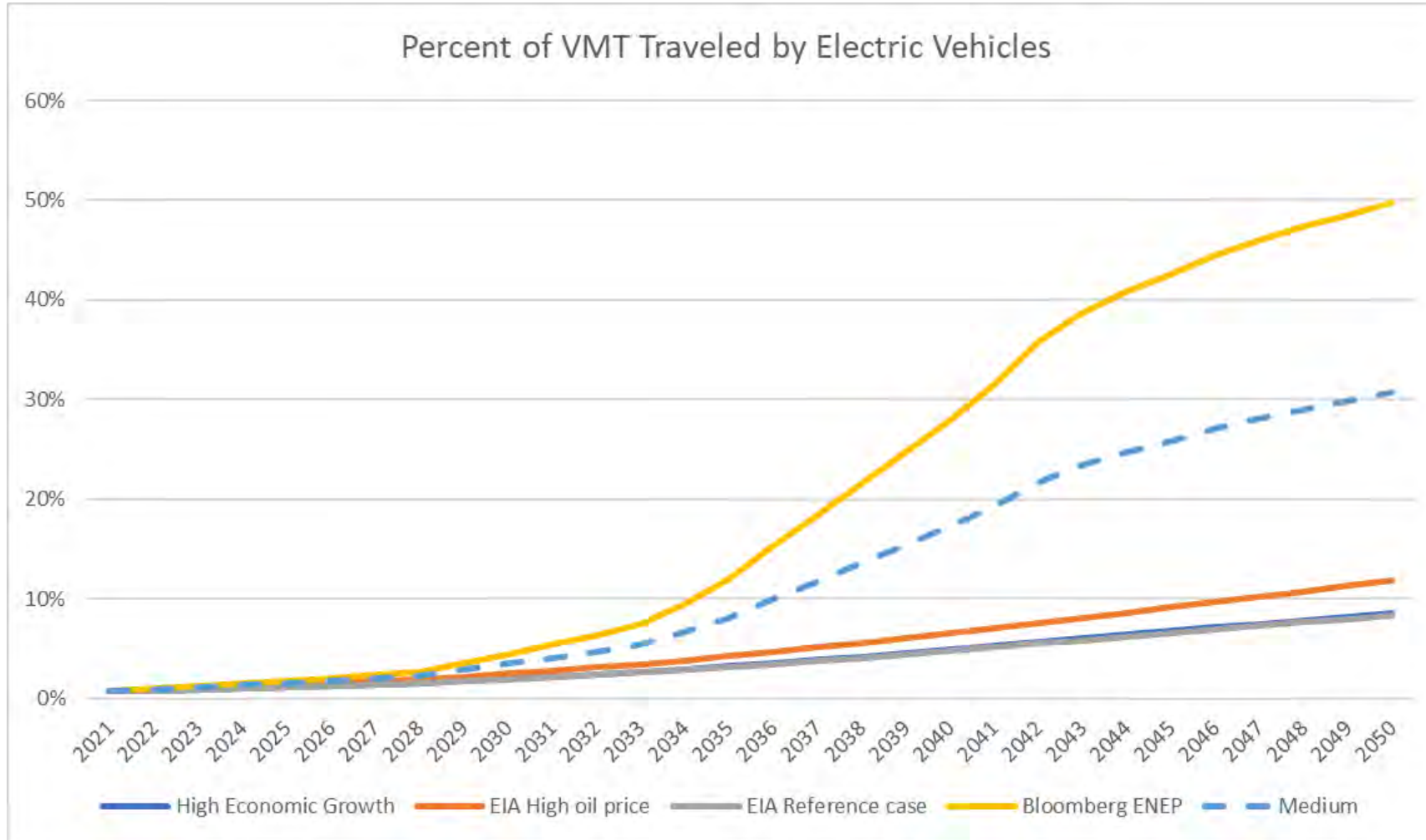
Adjustments to VMT



Identifying Workers/Occupations Expected to Continue Working from Home



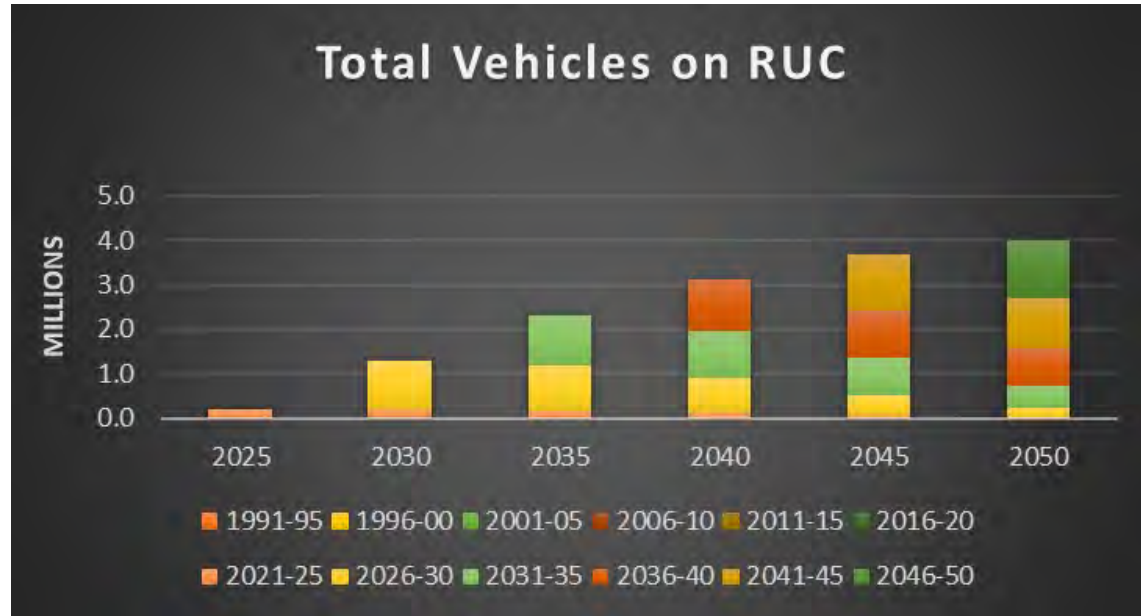
Electrification Forecasts



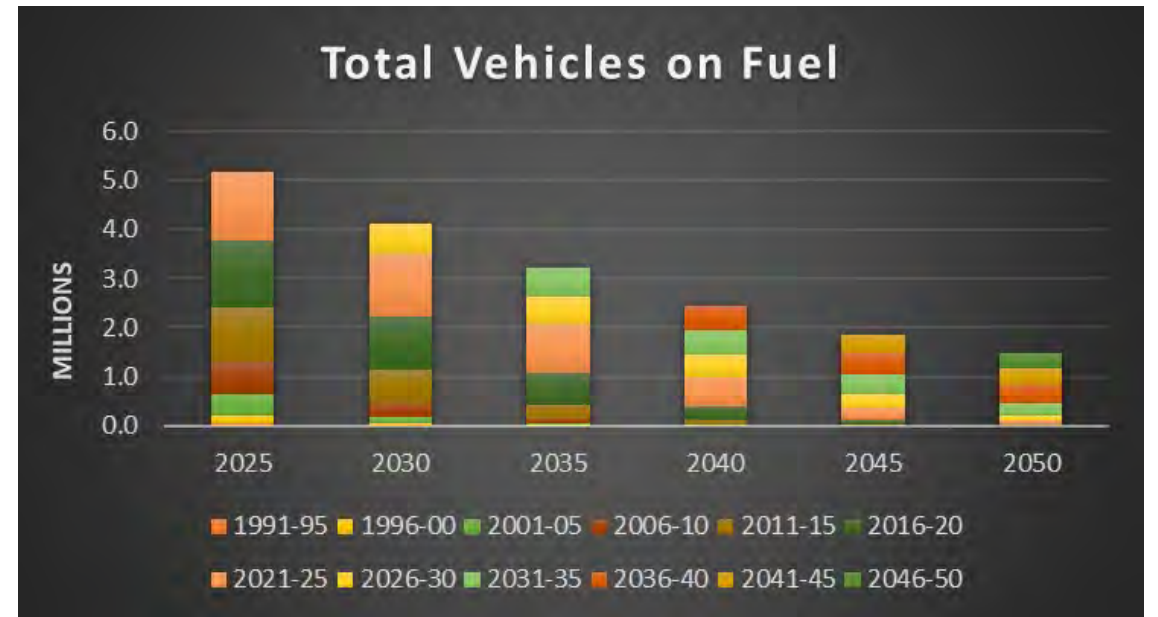
Vehicle Fleet Composition Using DOL Data

- Department of License (DOL) data containing Vehicles' ID Numbers (VIN) (6.7 million)
- VIN decoding performed on the dataset (6.1 million)
- Algorithm developed to estimate fuel efficiency using VIN
- Data used to develop fleet composition by model year and fuel efficiency (miles per gallon)
- Analysis output used to forecast fleet composition and fuel efficiency

Vehicle Fleet Composition Using DOL Data



(Illustrative examples based on Over Drive scenario)



Scenario Planning Vs. Traditional Planning

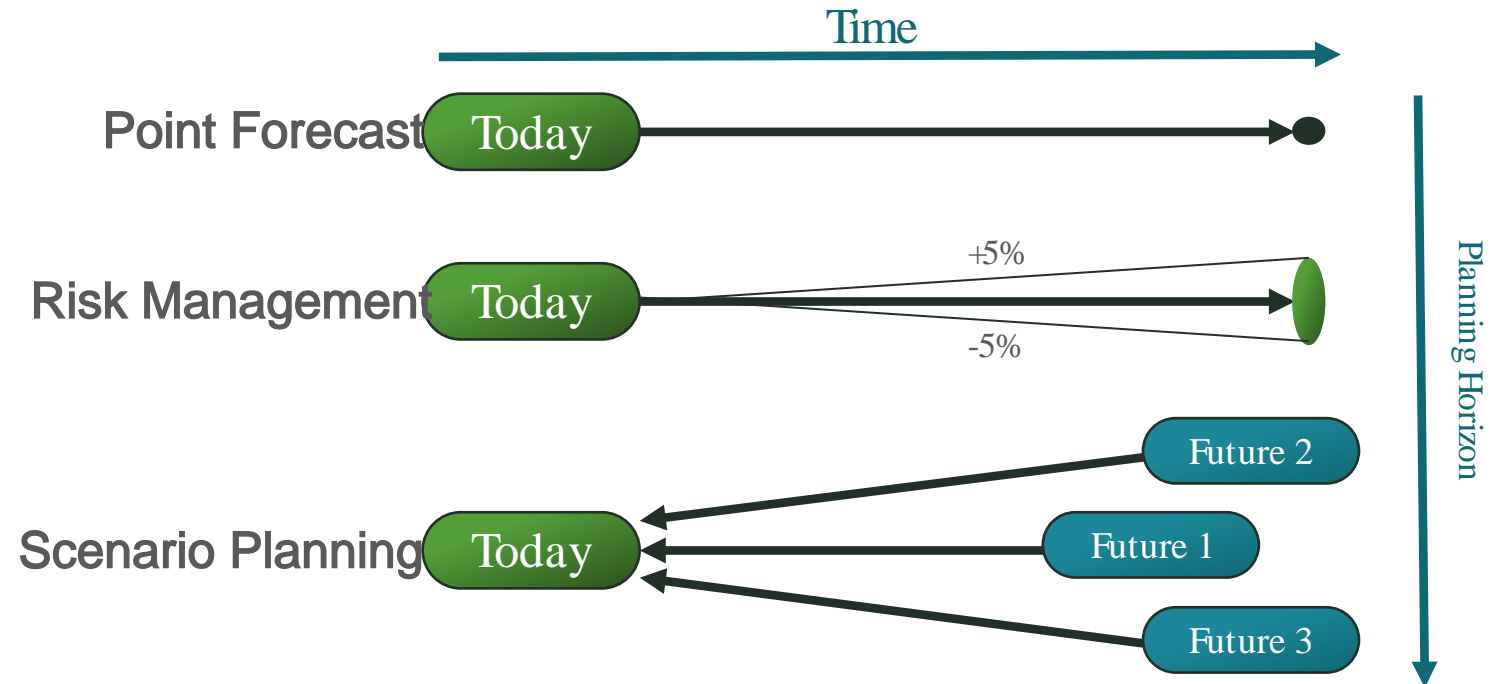
Planning Techniques

Traditional planning techniques generally focus on point forecasts

Risk Analysis generally looks at ranges of results

Scenario planning techniques shift from forecasting the future to preparing for potential depictions of future

Planning Methods



Multiple scenarios are developed and used as depictions of future

Approach to Scenario Development

- Scenarios cannot be defined in “isolation” using just a single factor, e.g., “Low Economic Growth”
- Analyzing ALL possible combinations of the factors is not practical
- Define a “Baseline Scenario” using appropriate factors’ ranges
- Identify 5 “plausible” combinations to develop a reasonable number of preliminary scenarios to analyze
- Select 3 scenarios to be analyzed in detail

Factors Defining RUC Scenarios

- VMT/ Economic growth
- Covid/ Pandemic outlook
- Telecommuting impacts
- E-Commerce impacts
- Technology adoption outlook (electrification)
- Autonomy and Shared Mobility impacts

Scenario Names and Descriptions

- **Neutral:** Represents a continuation of “past” growth and passive technology adoption
- **Cruise Control:** Represents a “moderate” increase of growth and slightly faster autonomous vehicles compared to Neutral
- **Overdrive:** Represents an “aggressive” economic growth and high electrification and technology adoption
- **Shared Drive:** Variant of Overdrive, with more adoption of shared mobility while still including aggressive growth
- **Low Gear:** Represents slow growth among electric vehicles, autonomous vehicles and shared mobility

Scenario Definition

Factors		Neutral	Cruise Control	Over Drive	Shared Drive	Low Gear
VMT Growth		Yellow	Yellow	Red	Red	Green
Pandemic Risk		Green	Green	Green	Green	Orange
Telecommuting Increase		Yellow	Orange	Red	Orange	Green
E-Commerce		Yellow	Orange	Orange	Orange	Green
Electrification		Green	Orange	Red	Red	Green
Autonomy	Traditional Vehicles	Yellow	Green	Green	Green	Red
	Private L5 Vehicles	Green	Yellow	Red	Orange	Green
	Shared Mobility	Green	Yellow	Orange	Red	Green

Low	Medium	Moderate	High
Green	Yellow	Orange	Red

Model User Interface

Washington State Transportation Commission

Welcome to WARUC Scenario Analysis Program
(Please select parameter values and click Apply Selections. Alternatively, click any Named Scenario)

VMT Growth: Low

Fuel Type & Electrification: EIA Reference

Commute Shifts: 25% Increase

Pandemic Scenario: Return to Normal

E-Commerce Impact: 25%

RUC Transition Approach: MPG and/or Year

Gas Tax Scenario: No Change

RUC Rate (\$/mile): 0.024

Average Commute Length: 10

Apply Selections

Slide for Miles Per Gallon Transition: 25

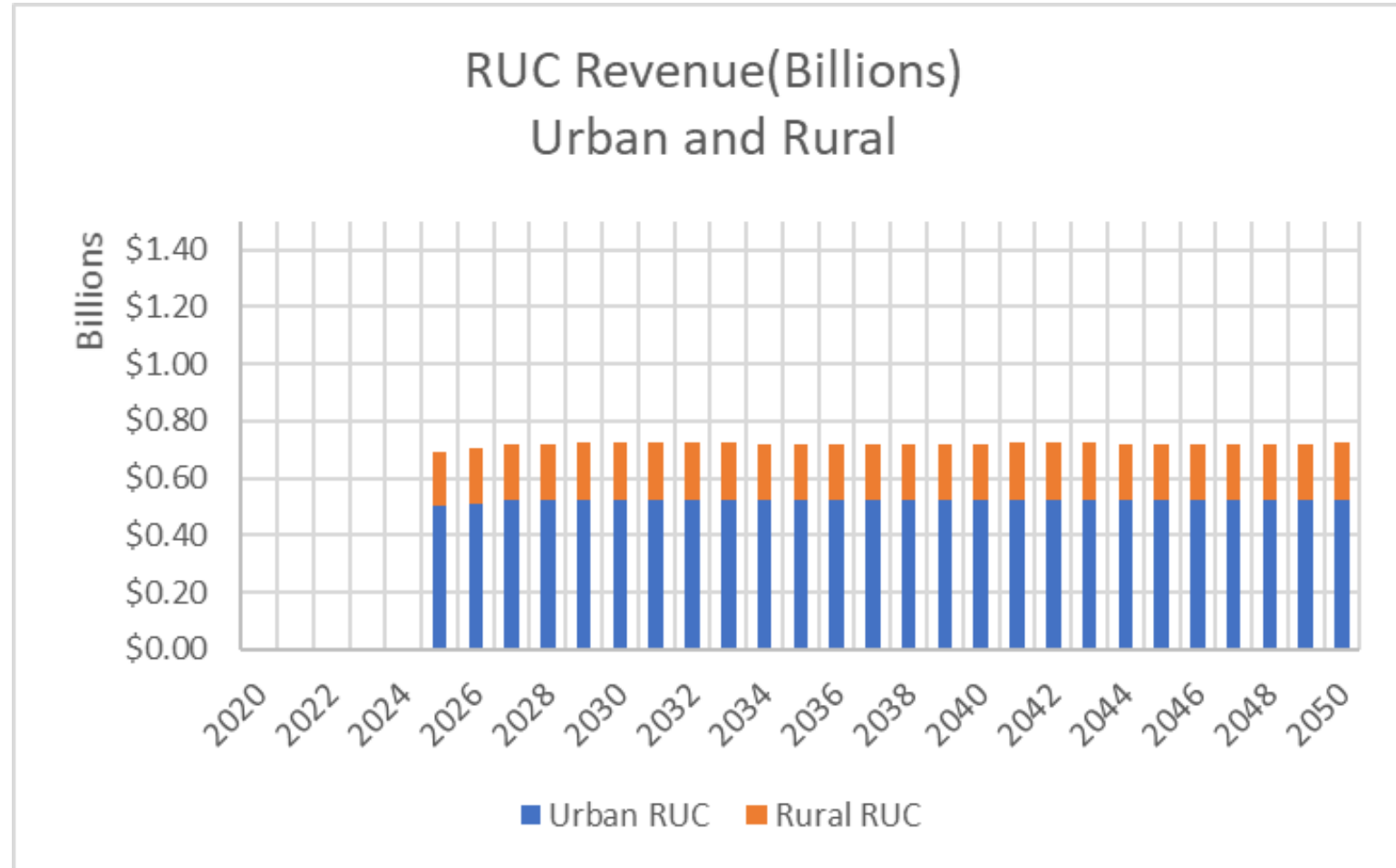
Slide for Transition Year: 2020

NAMED SCENARIOS:

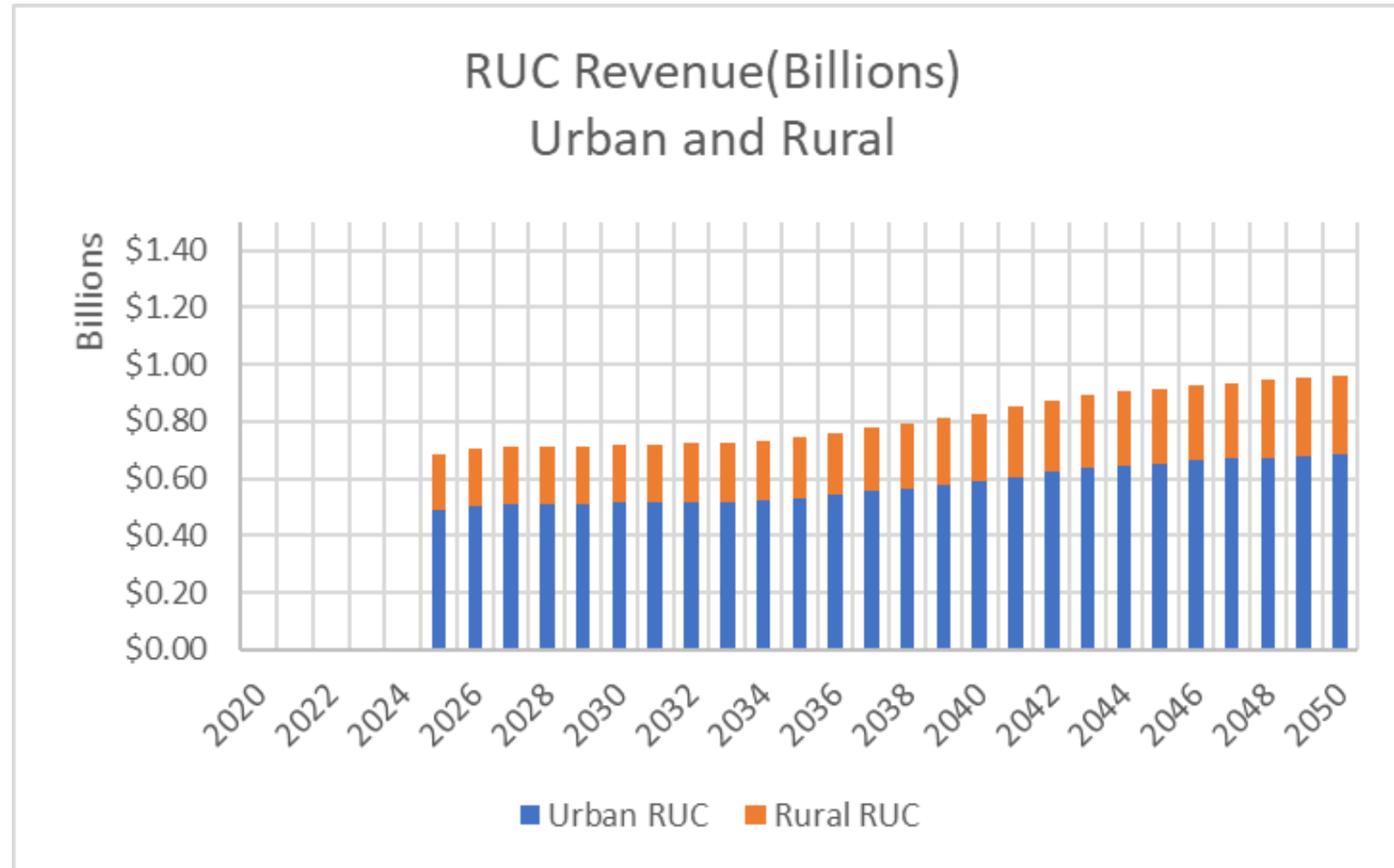
Neutral Cruise Control Over Drive

Shared Drive Low Gear

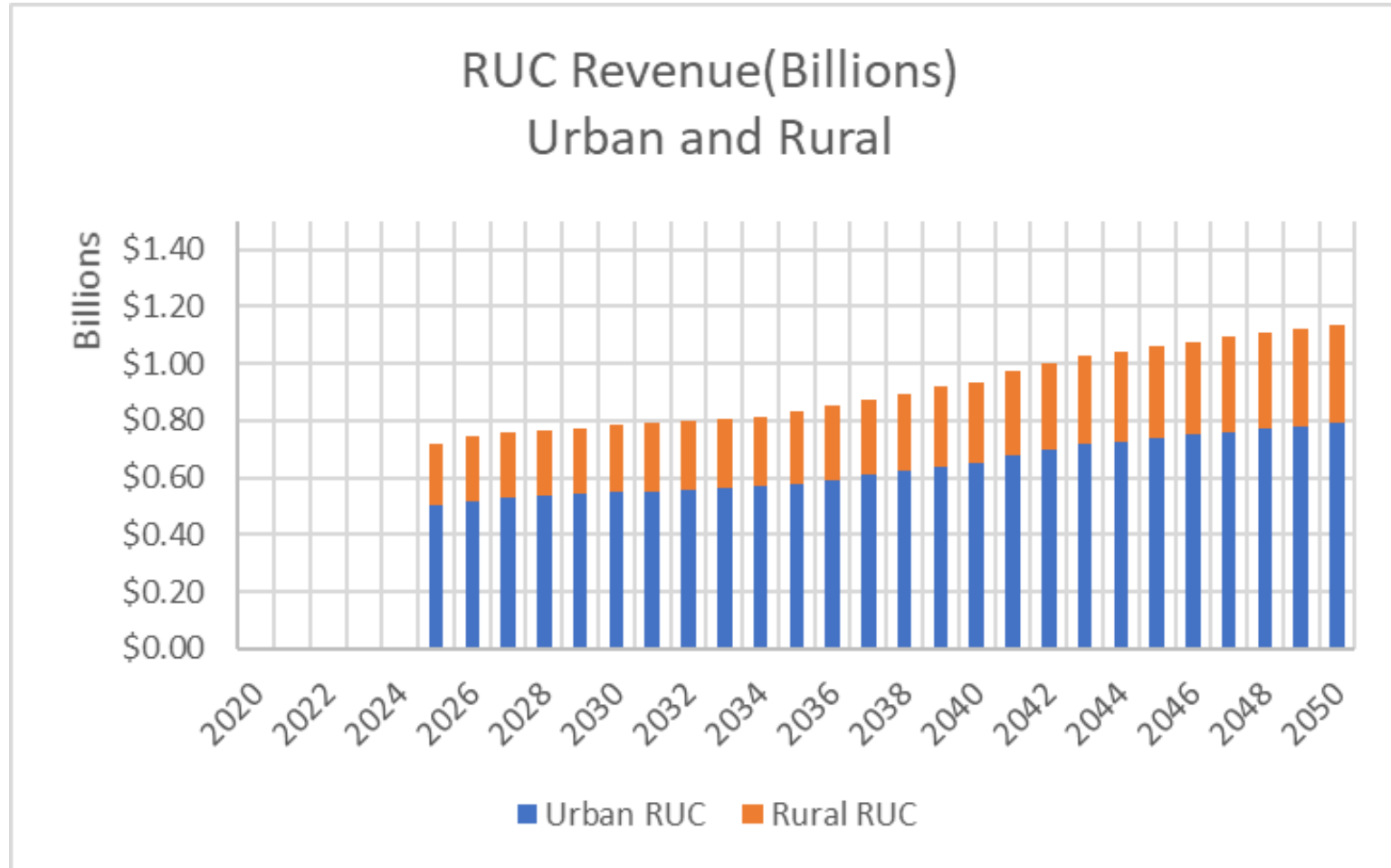
RUC Revenue (Neutral)



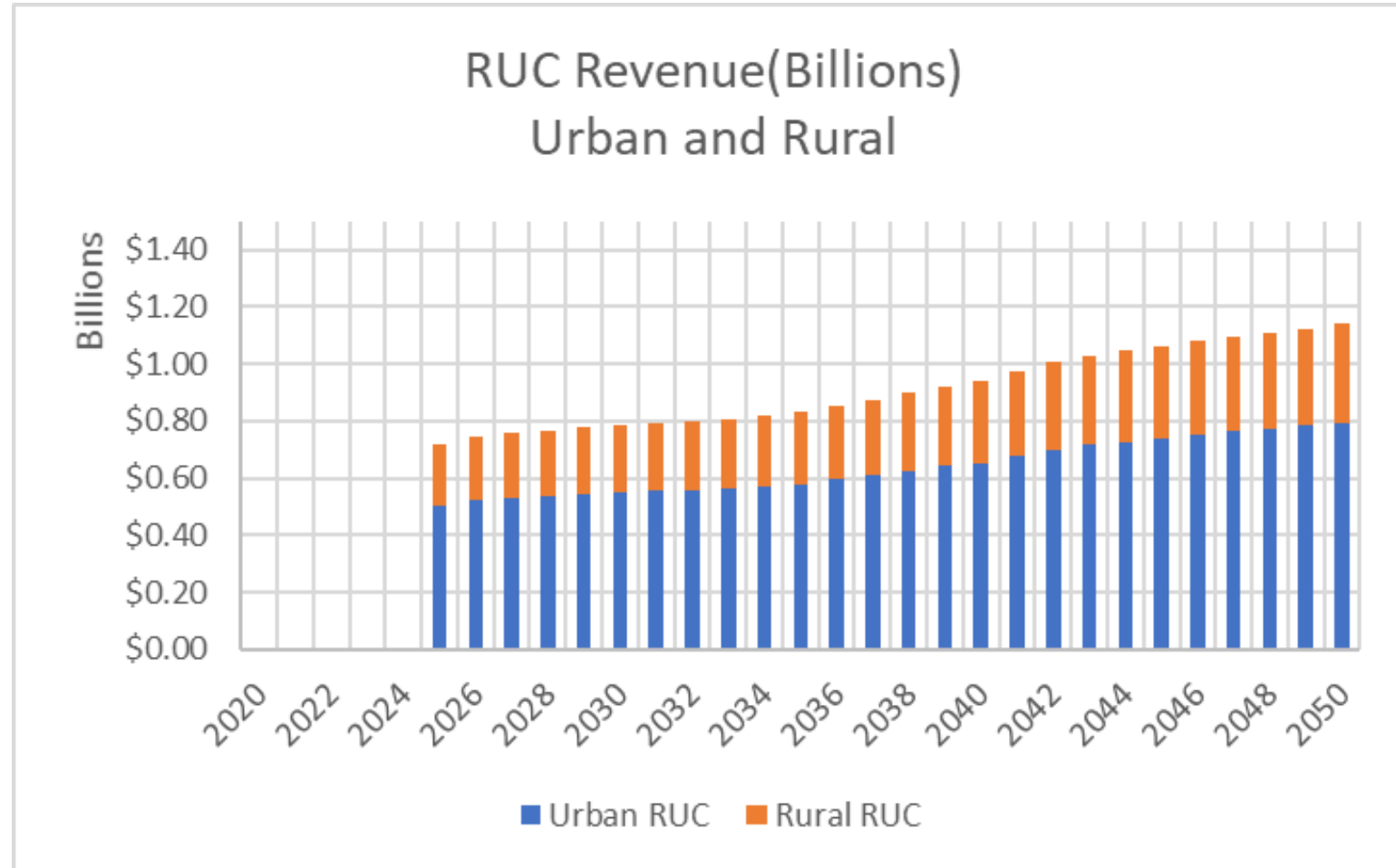
RUC Revenue (Cruise Control)



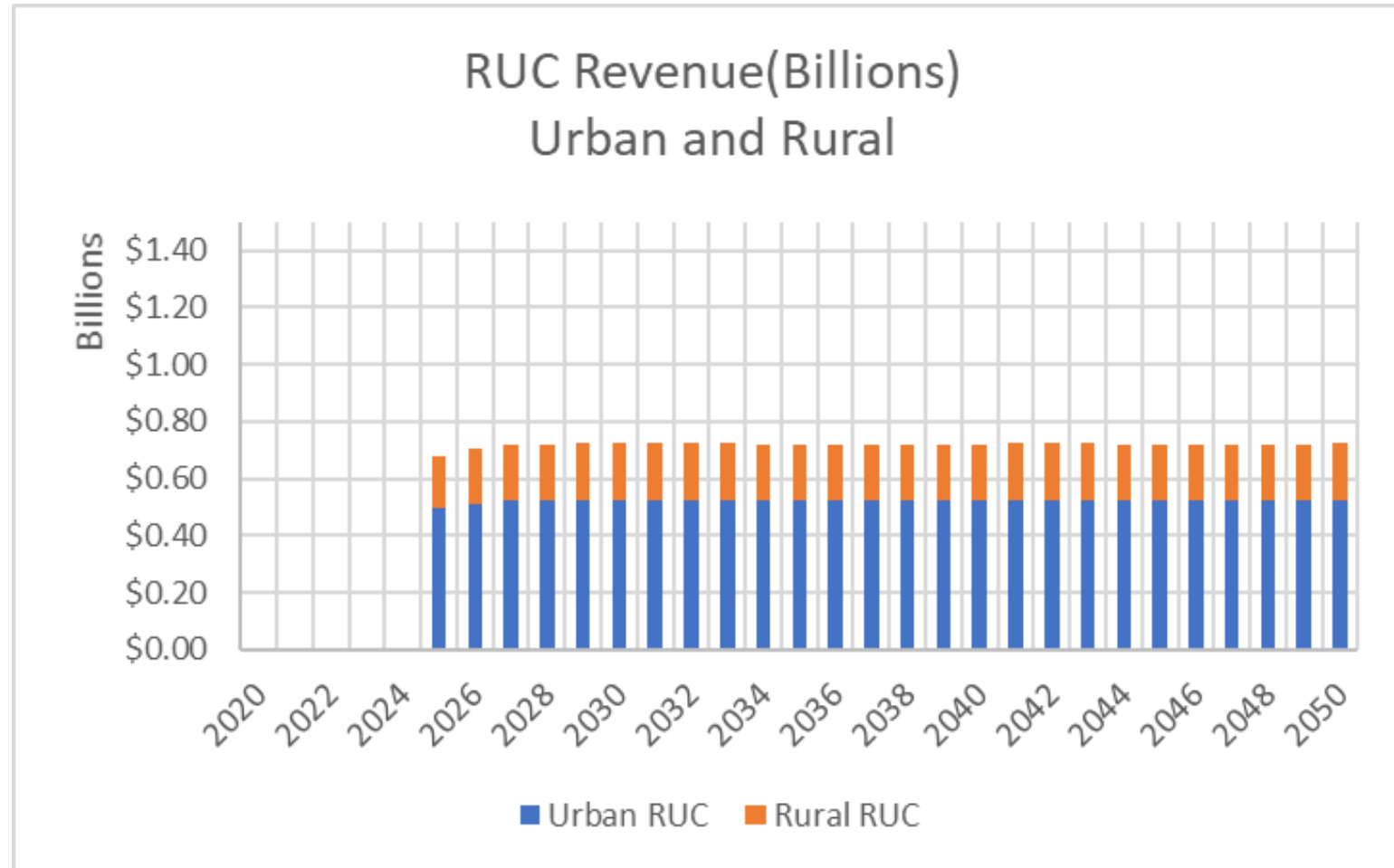
RUC Revenue (Over Drive)



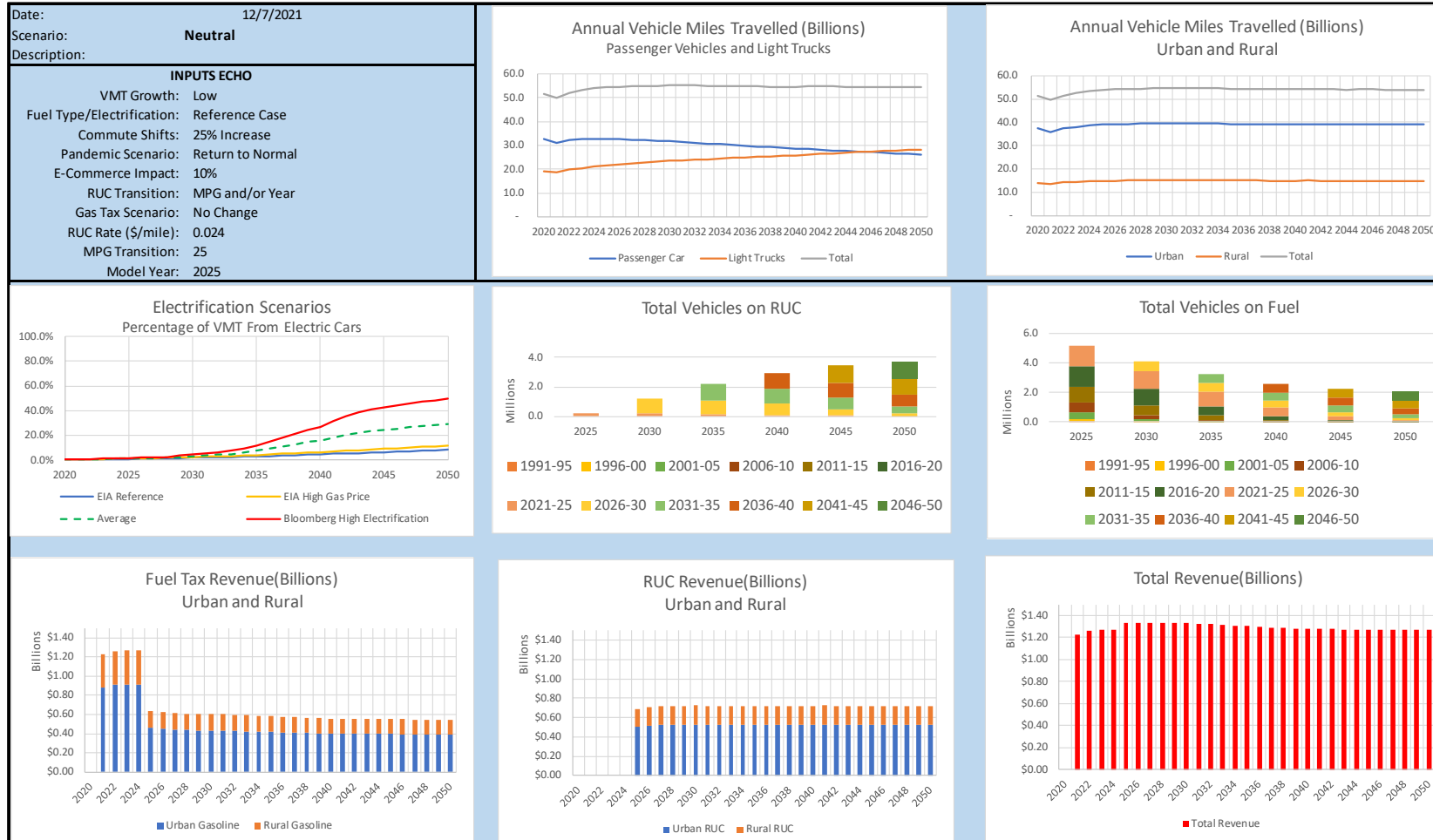
RUC Revenue (Shared Drive)



RUC Revenue (Low Gear)



Sample Output From Dashboard

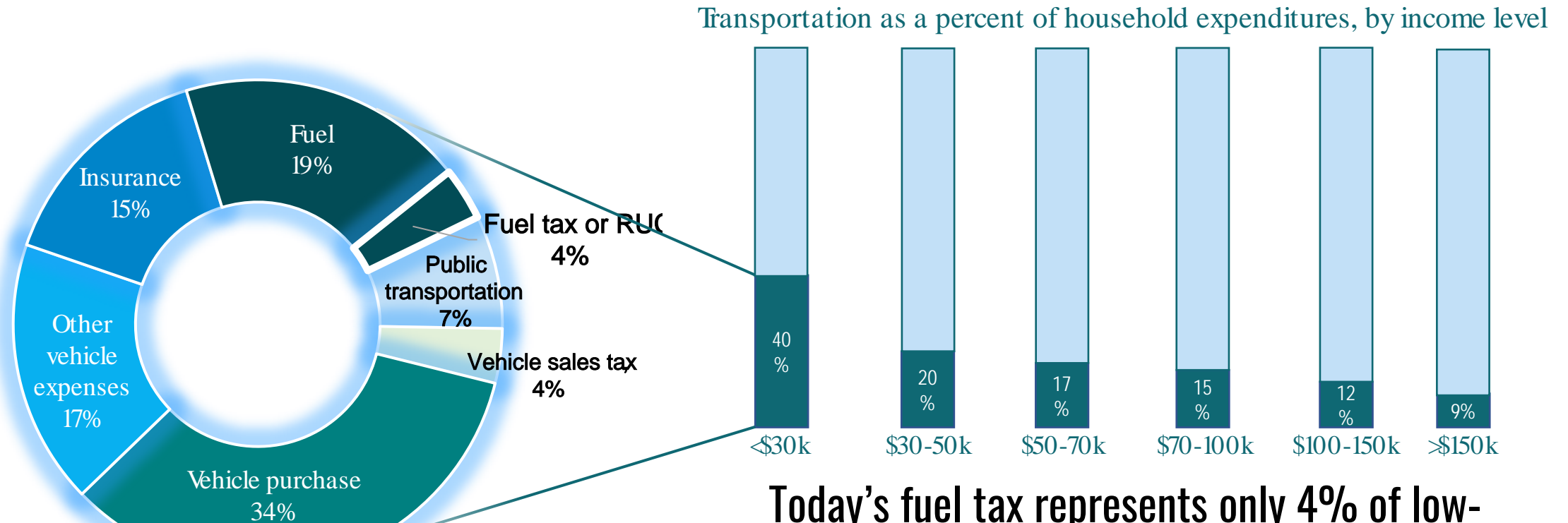


Next Steps

- Finalize the modeling tool
- Develop a final report and user guide for the model
- Transfer knowledge to WSTC staff
- Utilize the modeling tool to support Commission, Steering Committee, and legislative requests regarding future revenue scenarios

Equity Analysis & Outreach

Transportation Taxes are Small as a Proportion of Household Expenditures



Today's fuel tax represents only 4% of low-income household transportation expenditures but will increase as fuel taxes increase.

On Average, Lower Income Households Pay Higher Fuel Taxes Per Mile Driven

Census tract average household income	Census tract average MPG	Fuel Tax per 10,000 miles driven
Less than \$50k	20.0	\$247
\$50-75k	20.1	\$246
\$75-100k	20.5	\$241
\$100-150k	21.4	\$231
Over \$150k	22.6	\$219

Under RUC, All Households Would Pay the Same Per Mile Driven

Census tract average household income	Census tract average MP	RUC per 10,000 miles driven (2.4¢/mile)
Less than \$50k	20.0	\$240
\$50-75k	20.1	\$240
\$75-100k	20.5	\$240
\$100-150k	21.4	\$240
Over \$150k	22.6	\$240

Under RUC, Higher Income Households Would Generally Pay More in Fuel Taxes Over the Course of a Year

This is because higher income households drive more miles, on average, over the course of a year.

Estimated average amount paid ~~i~~RUC per year



Note: The lower number of miles driven in the highest income group is likely to the small number of households in this group in the WA State sample. In the national data, the highest income group drives the most miles, on average.

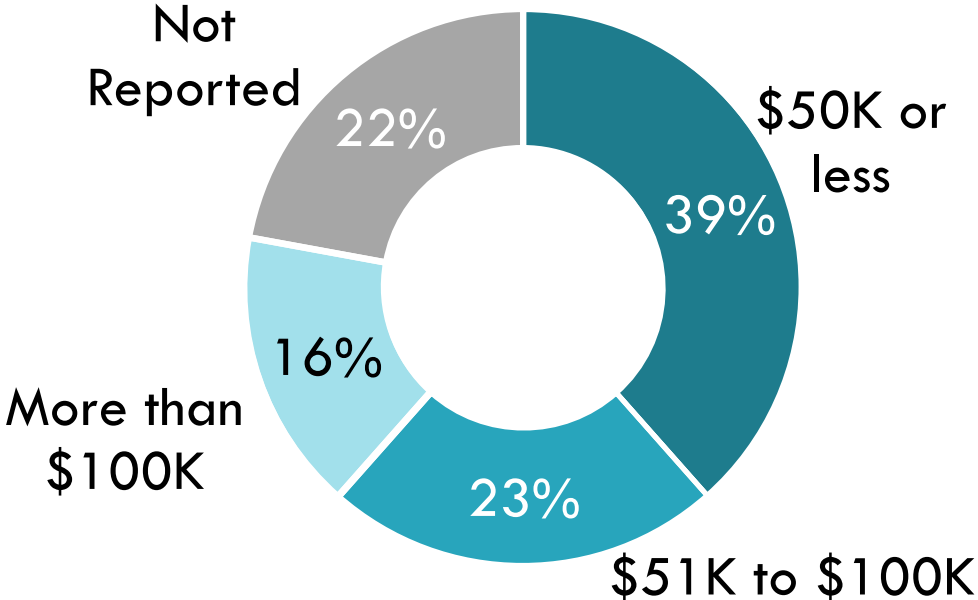
Focus Group Participants

Organization/Group	Number of Participants	% of Total Participants
Ahora Construction	5	5%
Arab Festival	4	4%
Bremerton NAACP	7	7%
Coalition of Immigrants Refugees & Communities of Color	4	4%
COVID-19 Community Response Fund Alliance	7	7%
Disability Rights Washington	9	9%
Filipino Chamber of Commerce of the Pacific Northwest	8	8%
India Association of Western Washington	8	8%
Kent/Renton African American Group	9	9%
Legacy of Equality Leadership & Organizing	7	7%
Neighborhood House	7	7%
Refugee Women's Alliance	10	10%
Yakima County Development Association	19	18%
Total	104	100%

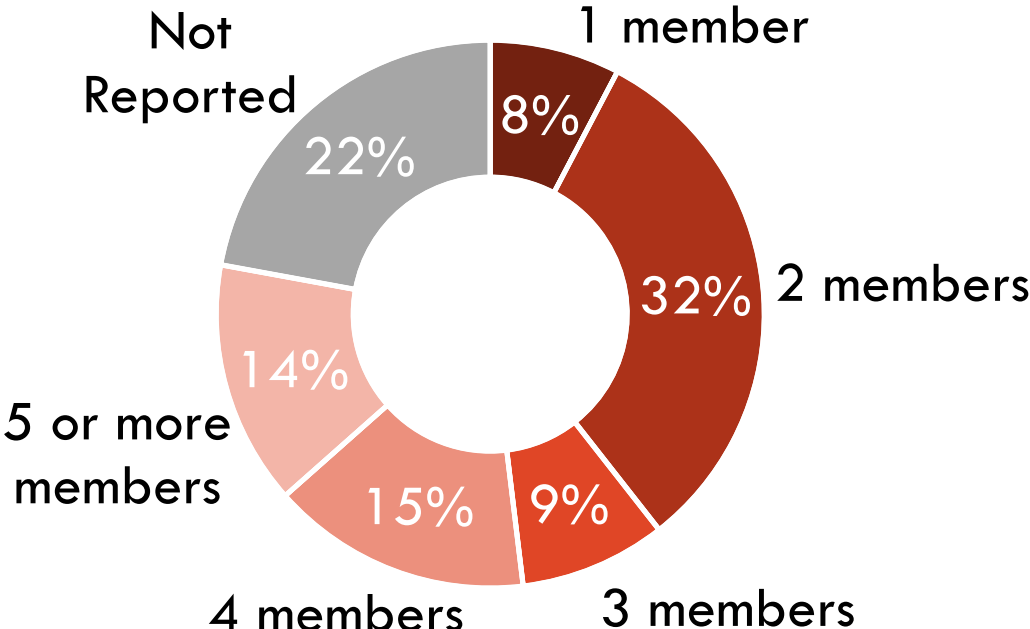
Note: The charts on the following slides summarize information that was self-reported by focus group participants. The “Not Reported” category indicates participants that did not submit this information.

Focus Group Participants: Income and Household Size

Income

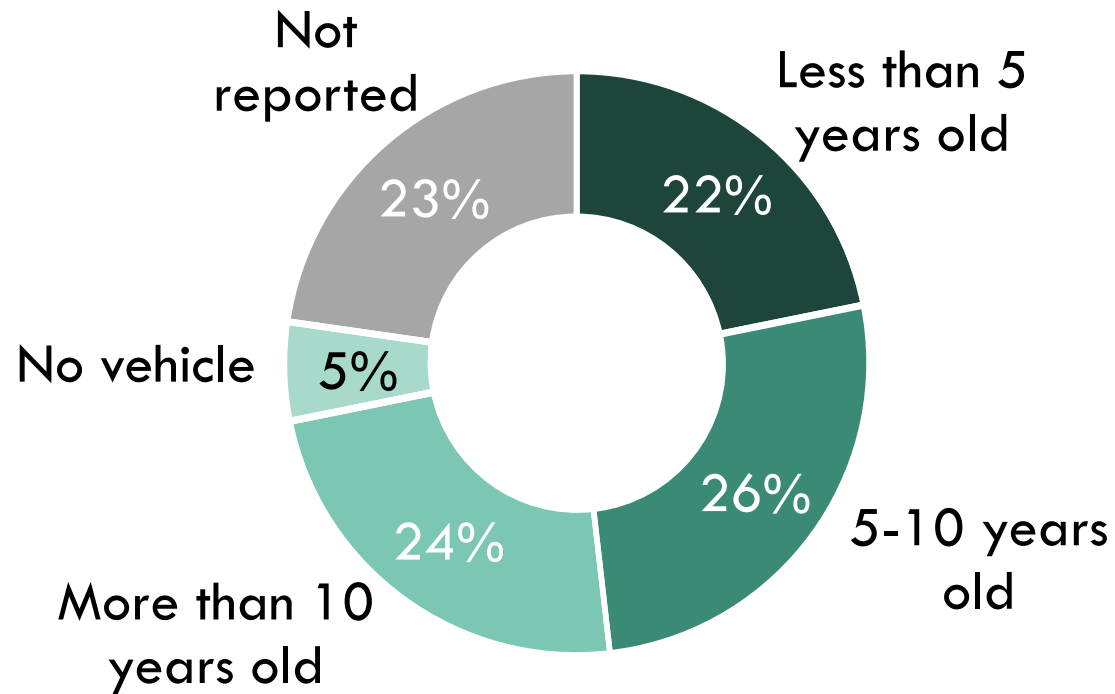


Household Size

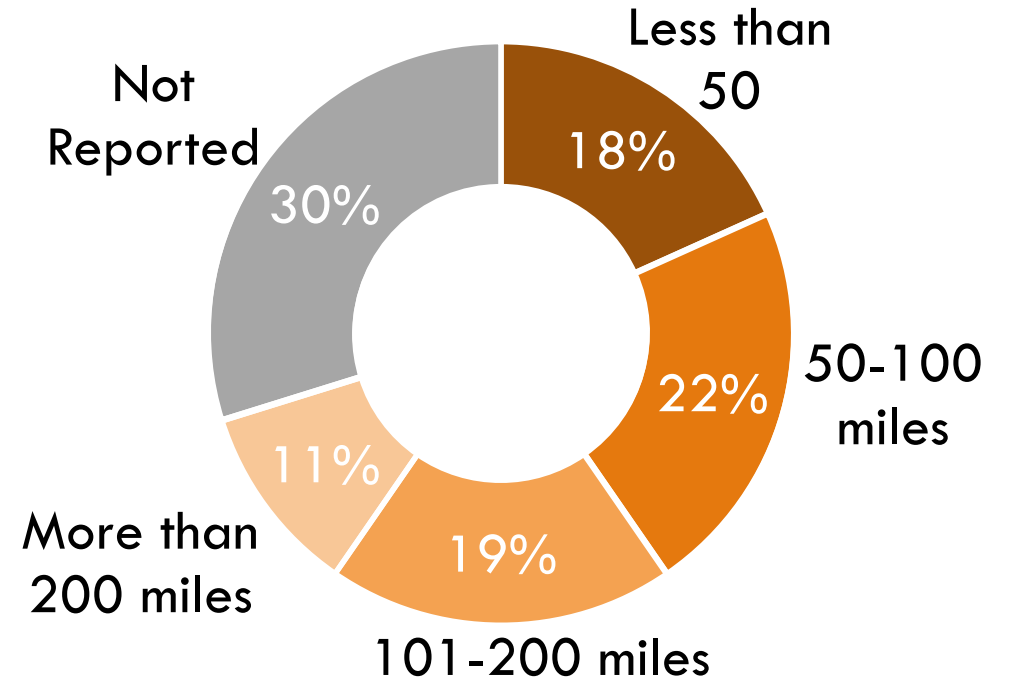


Focus Group Participants: Vehicle Age and Weekly Mileage

Vehicle Age



Miles Driven per Week

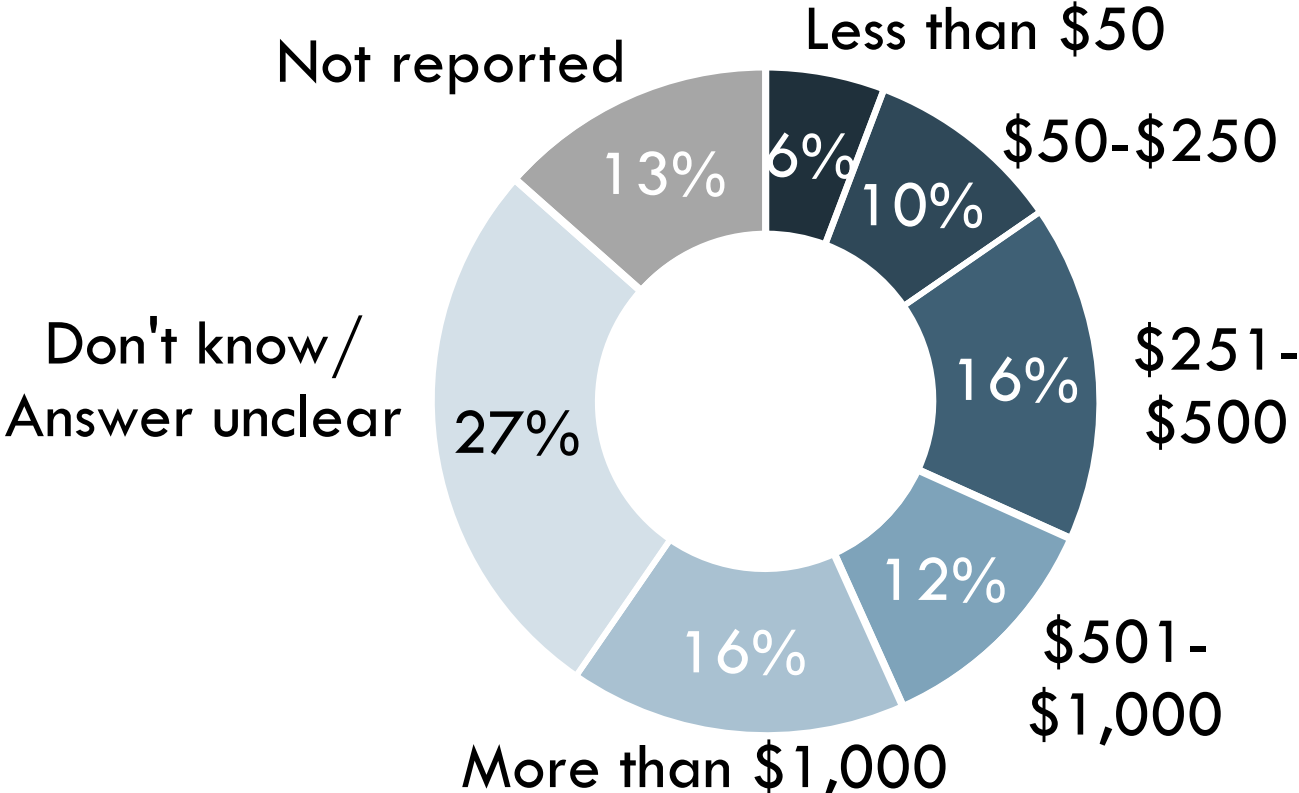


How Familiar are you with How Roads are Paid for in the State?

- 38% were unfamiliar or did not respond (15%)
 - Many who were unfamiliar offered taxes as their guess
 - Federal and state government were also listed
- For those who were familiar, taxes, car tabs, and tolls were most often cited

How Much do you Pay Yearly in Gas Tax?

Estimate of Gas Tax Paid per Year



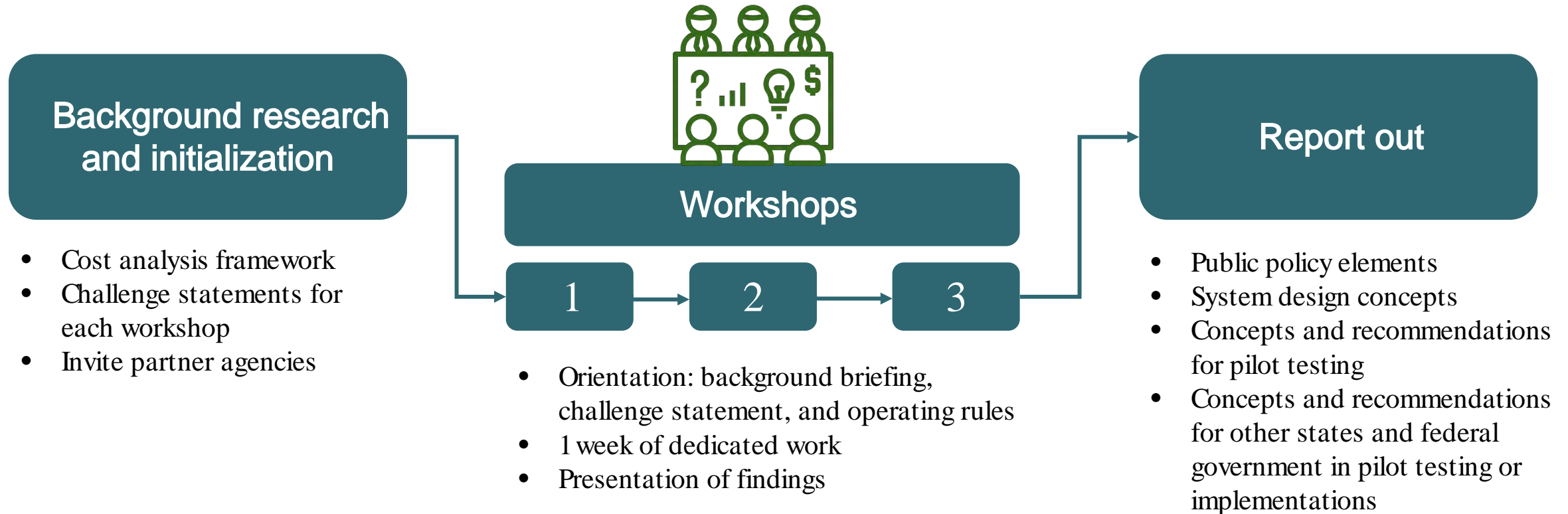
The answers shown here reflect respondents' estimates of how much they pay in gas tax over the course of the year. Some respondents answered in formats that could not be translated into a dollar amount per year (e.g., a percentage). These are included under the "Don't know/ Answer unclear" category, which also includes respondents who said they didn't know how much they paid in gas tax.

Next Steps

- Interviews with community leaders
- Electronic survey to Groups for broader distribution
 - Questions would be same as those asked in Focus Groups
- Reach back out to participants about pilot participation

RUC Cost Reduction

Cost of Collection Reduction Workshop Approach



Schedule of Topics

- Week of September 13: **Customer Service**
- Week of September 27: **Enforcement**
- Week of October 11: **Procurement & Certification**

Participation



Washington State
Transportation Commission



WASHINGTON STATE DEPARTMENT OF
LICENSING



OReGO

Customer service challenge statement

Design a customer service center at low cost of operations.

Procurement & certification challenge statement

Design a regional procurement and certification process for RUC vendors with a market contract accessible by multiple states through service level agreements.

Enforcement Challenge Statement

Design a low-cost enforcement regime that captures a relatively high percentage of violation events.

Next Steps

- Report-out in Q1 2022
 - Public policy elements
 - System design concepts
 - Concepts and recommendations for pilot testing
 - Concepts and recommendations for other states and federal government in pilot testing or implementations
- Pilot concepts to carry forward

RUC Innovation

RUC Innovation Objectives

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

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 Guiding Principles

User experience

- A RUC system should be simple, convenient, transparent to the user
- Compliance should not create an undue burden and should be encouraged by design

Cost-effectiveness

- Administration of a RUC system should be cost efficient
- Define common terminology to make it easier to compare costs of RUC systems

Equity through user choice

- Consumer choices should be considered to address typical “user situations”
- A RUC system provides relevant choices to drivers for not only how they report their miles but also how and when they pay and to which entity

Systems & operational Equity

- Offer simple, accessible and convenient options
- Create user-friendly privacy policies
- Design systems to make it easy to comply
- Assist users with decision making

Research Approach in Three Steps

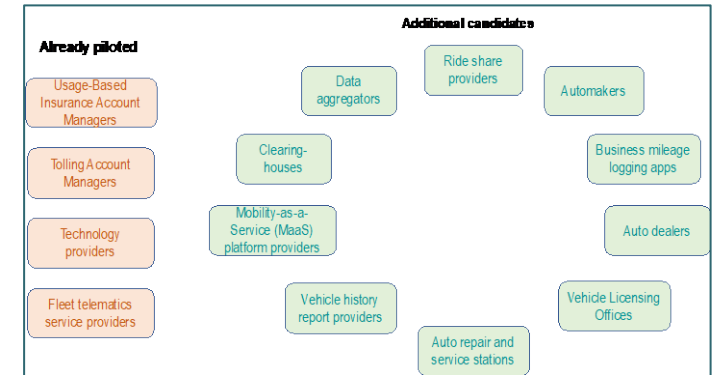
1. Break down RUC into core function

	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

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

3. Identify compatible business models



Key Research Outcomes: More Reporting Choices

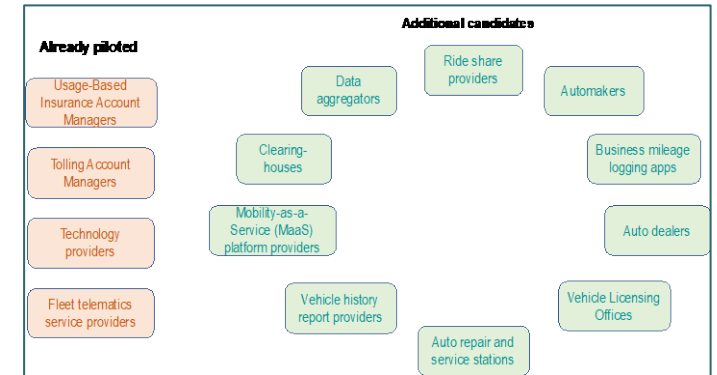
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2. Identify new mileage reporting and payment choices

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

3. Identify compatible business models












Reporting choices supported by a range of business partners:







- MaaS technology platform providers
- Vehicle-registry system operators
- Data aggregators
- Retail partners
- Automakers

Key Research Outcomes: Service Improvement

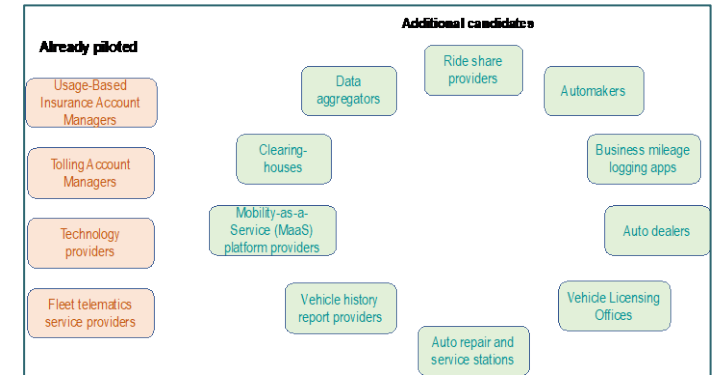
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2. Identify new mileage reporting and payment choices

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

3. Identify compatible business models



RUC service improvement opportunities

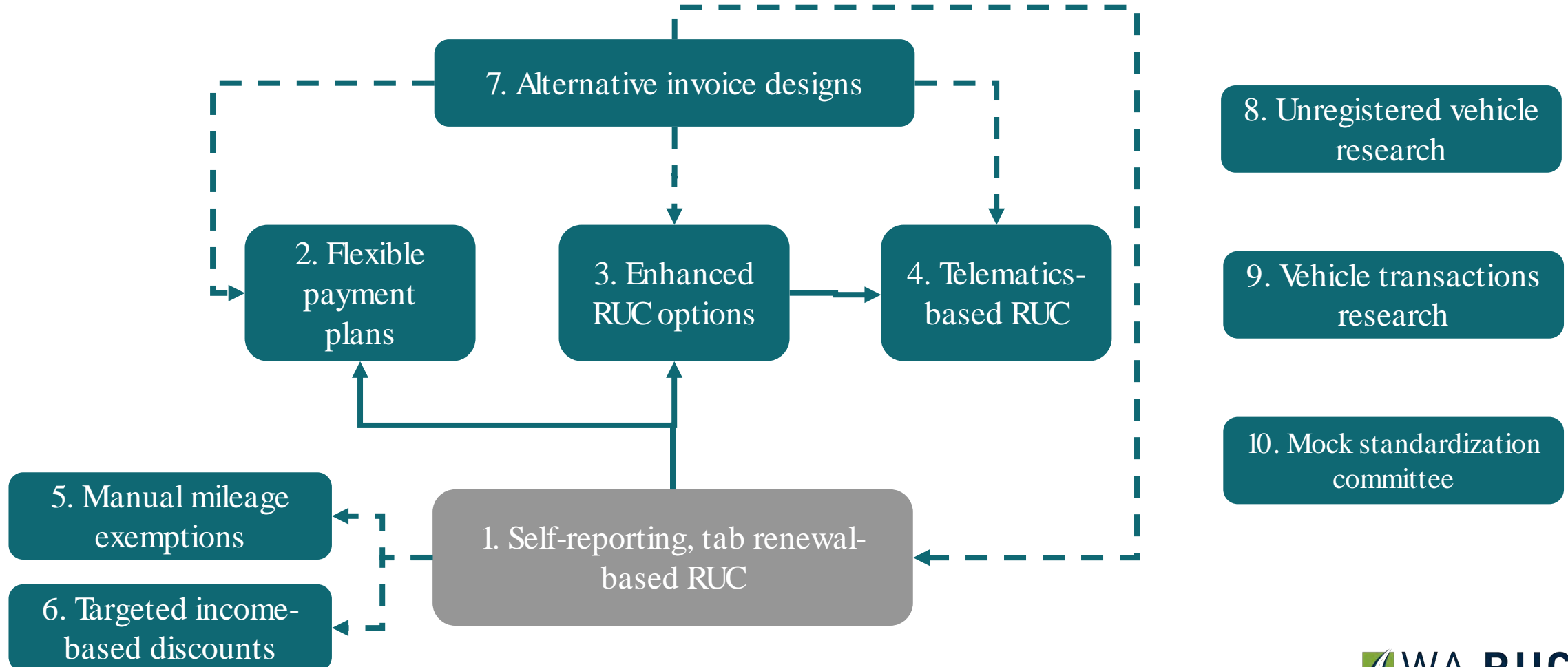


2022 RUC Demonstration Plans

Concepts for 2022 Mini-Pilot Tests

#	Concept	Type	Equity	Cost effectiveness	User experience
1.	Self-reporting, tab renewal-based RUC	Prototype testing		X	X
2.	Flexible payment plans	Pilot	X		X
3.	Enhanced RUC options	Pilot			X
4.	Native automaker telematics-based RUC	Pilot		X	X
5.	Manual mileage exemptions	Prototype testing			X
6.	Targeted income-based discounts	Prototype testing	X		X
7.	Alternative invoice designs	Prototype testing		X	X
8.	Unregistered vehicle research	Field research/ pilot		X	X
9.	Vehicle transactions research	Field research		X	X
10.	Mock standards committee	Simulation		X	X

Concepts for 2022 Mini-Pilot Tests



Next Steps

Outline: End of Year Report to Legislature

- 1. Background on RUC research to date in Washington *Forward Drive* project**
 - Original motivation
 - Brief RUC Steering Committee history
 - 2018-2019 pilot summary
 - 2020 Commission recommendations
 - Forward Drive research proposal and scope
- 2. Research task results summary**
 - Financial analysis methodology and results
 - Equity analysis and outreach methodology and results
 - Cost reduction methodology and results
 - RUC innovation methodology and results
 - Next steps for concluding research tasks

Outline: End of Year Report to Legislature (continued)

3. 2022 demonstration plan

- Summary of pilot concepts
- High-level pilot plan
- High-level evaluation plan
- Next steps for final design, setup, and testing

Upcoming Pilot-Related Activities

Project Activities

Q1-Q2 2022

Pilot planning

- Final designs
- Evaluation planning
- System development and testing
- Participant recruitment

Summer 2022

Staggered launch of mini-pilots

Q3-Q4 2022

Operation of mini-pilots
Ongoing evaluation of mini-pilots

Steering Committee Activities

April-May: Spotlight sessions

- The mini-pilot user experience
- Evaluation plan
- Recruitment and participation

July: Meeting to review launch of mini-pilots
Member enrollment/ participation

December Meeting to report on pilot progress

THANK YOU

Consultant support provided by:

