

**Road Usage Charging (RUC):
Sustainable transportation
funding in the era of eco-
friendly cars**

Matthew Dorfman
Partner, Milestone Solutions



**International best practices to
promote eco-friendly cars**

January 25-26, 2021



Agenda

- Why RUC?
- How RUC?
- RUC policy issues
- Roadway to RUC
- What's next?

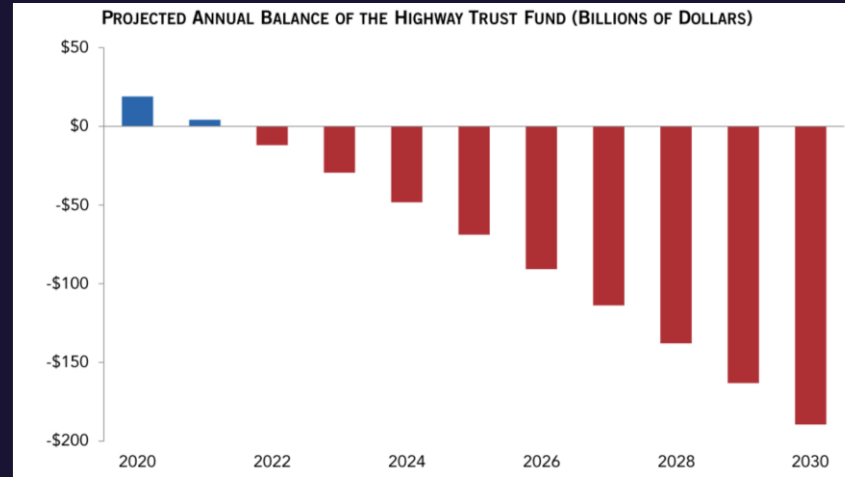
Why RUC?

Fuel tax revenues are eroding

Fuel taxes are the primary source of funding for highway construction and maintenance in the US at the state and federal levels

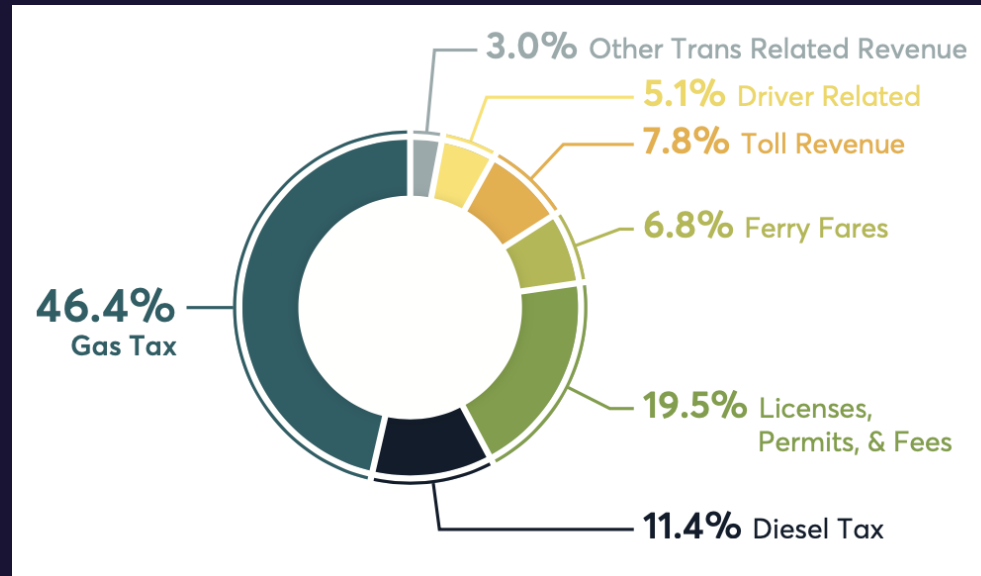
US Federal Highway Trust Fund (Billions)

Source: US Congressional Budget Office



Washington State Transportation Funding Sources

Source: Washington Transportation Revenue Forecast Council



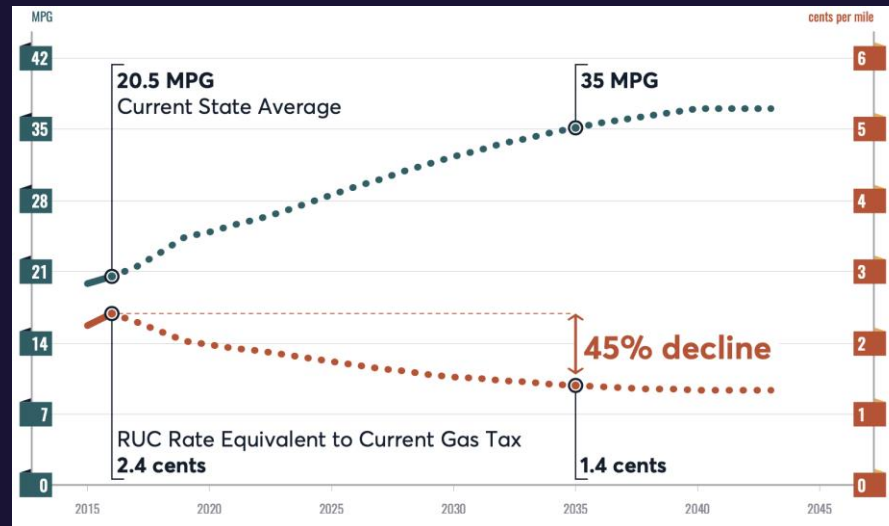
The main reason for the erosion is changes in the vehicle fleet

Some countries are even planning to ban the sale of liquid fuel vehicles in 2035

Electric vehicles are rapidly gaining market share



Fuel tax revenues decline as fleet fuel efficiency improves



Fuel taxes were a proxy for user pays funding

“Pay for what you use”

- Fuel taxes were a fair and efficient way of charging
 - Pay for what you use seems fair to most people
 - Until the 1990s, most light vehicles got about 20 mpg (12L/100km), but no longer
 - Low cost to collect (reported as 1% of revenue)
- Direct user charging (toll collection) was operationally expensive
 - Manual toll collection ~30% of revenue on busy highways
 - Electronic toll collection ~10% of revenue on busy highways
- Policy intent of fuel taxes was to fund roads, not reduce carbon emissions

Fuel taxes in the US and international contexts

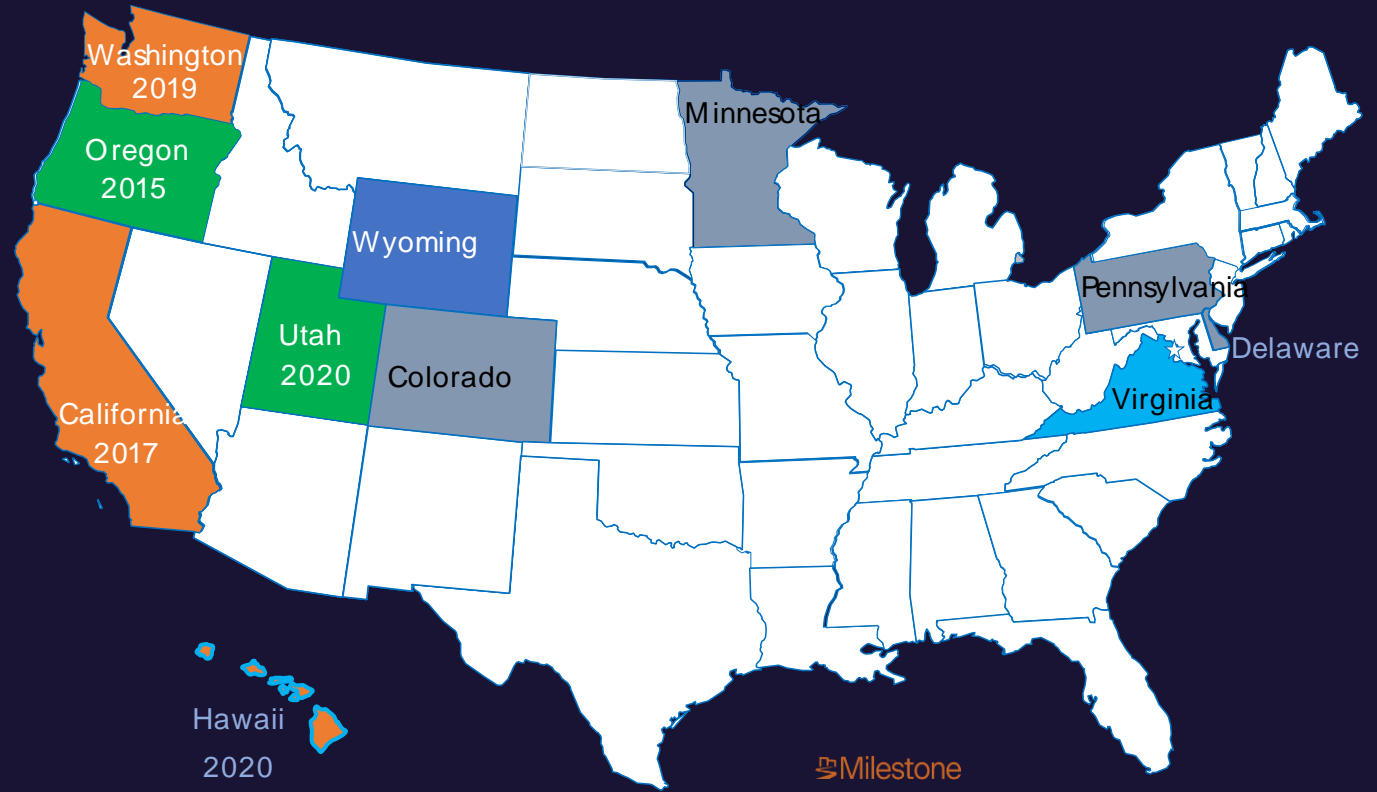
- US
 - Separate state and federal fuel taxes, sometimes local
 - Fuel tax revenue dedicated to road funding
 - For major roads (local roads from property & sales taxes)
 - Makes funding more steady, less political
 - Needed to ensure funds spent correctly
- International
 - Generally one tax (not federal/state/local)
 - Little dedication of revenues
 - Revenue still eroding
 - In fact, more revenue loss because tax levels higher






RUC: user pays in the era of efficient fleets

Distance-based charging, also called a vehicle miles travelled (VMT) tax or a Mileage-based User Fee (MBUF)

- What RUC is:
 - Either location-based (miles by state, on/off road) or non-location-based (total miles)
 - Single per mile/km rate for all light vehicles, does not vary by time
 - Generally coupled with fuel tax refund (fuel use measured or estimated)
- What RUC is not:
 - Tolling
 - Congestion charging
 - Carbon tax
- Trying to achieve too many policy goals can lead to political failure
- However, some RUC collection technology can support these other types of charges in addition to RUC
- So far RUC rates have been set to be equivalent to gas taxes for to avoid appearance of raising taxes (~1-2.5 cents/mile)

State-level RUC initiatives in the U.S.



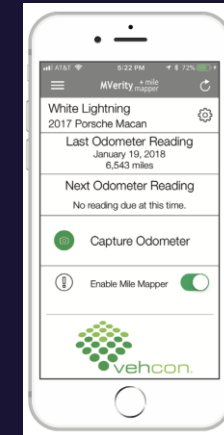
-  Operational opt-in RUC program
-  Large, Statewide RUC pilot
-  RUC legislation passed
-  Considering RUC Legislation now
-  Targeted RUC pilot

How RUC?

How RUC can be collected

No single dominant method

- **Plug-in Device** (vehicle tester / onboard diagnostics port)
- **Odometer photo**
- **Native automaker telematics**
- **Vehicle inspection** (manual odometer reading)
- **Options generally found to be undesirable**
 - Pay-at-the-pump / kiosk
 - Smartphone app with location



RUC policy issues

Privacy

Especially privacy of location data. Concerns with “Big Brother” have followed RUC since the start.



- Roadblock to early RUC research, especially in US
- Approaches to combat privacy concerns:
 - User choice of mileage reporting methods
 - Offer private management of data, with state oversight
 - User choice of account managers (open market)
 - Offering a non-location-based method. Drawback: does not enable congestion charging or other location-based charges.

Other policy issues

- **Urban/rural**
- **Cost of collection**
- **Transition path**
- **Out of state vehicles**
- **Enforcement**

- **Urban/rural**
 - Belief that rural residents would be disproportionately harmed by RUC
 - But rural residents pay more in gas tax too
 - Data shows they generally do not have more fuel-efficient cars: in fact, RUC improves their situation slightly
- **Cost of collection**
 - High for small programs
 - Decreasing, and specific work ongoing
 - Likely will never be as low cost as gas tax. Perhaps 5% of revenue feasible at large scale operation.
- **Transition Path:** unwise to switch all vehicles to RUC in the same year
- **Out of state vehicles** not equipped to pay RUC. Solutions: fuel tax in operation until transition completed; vignettes.
- **Enforcement methods:** currently being developed

Adjacent issue: Heavy vehicle RUC

Used in various countries around the world



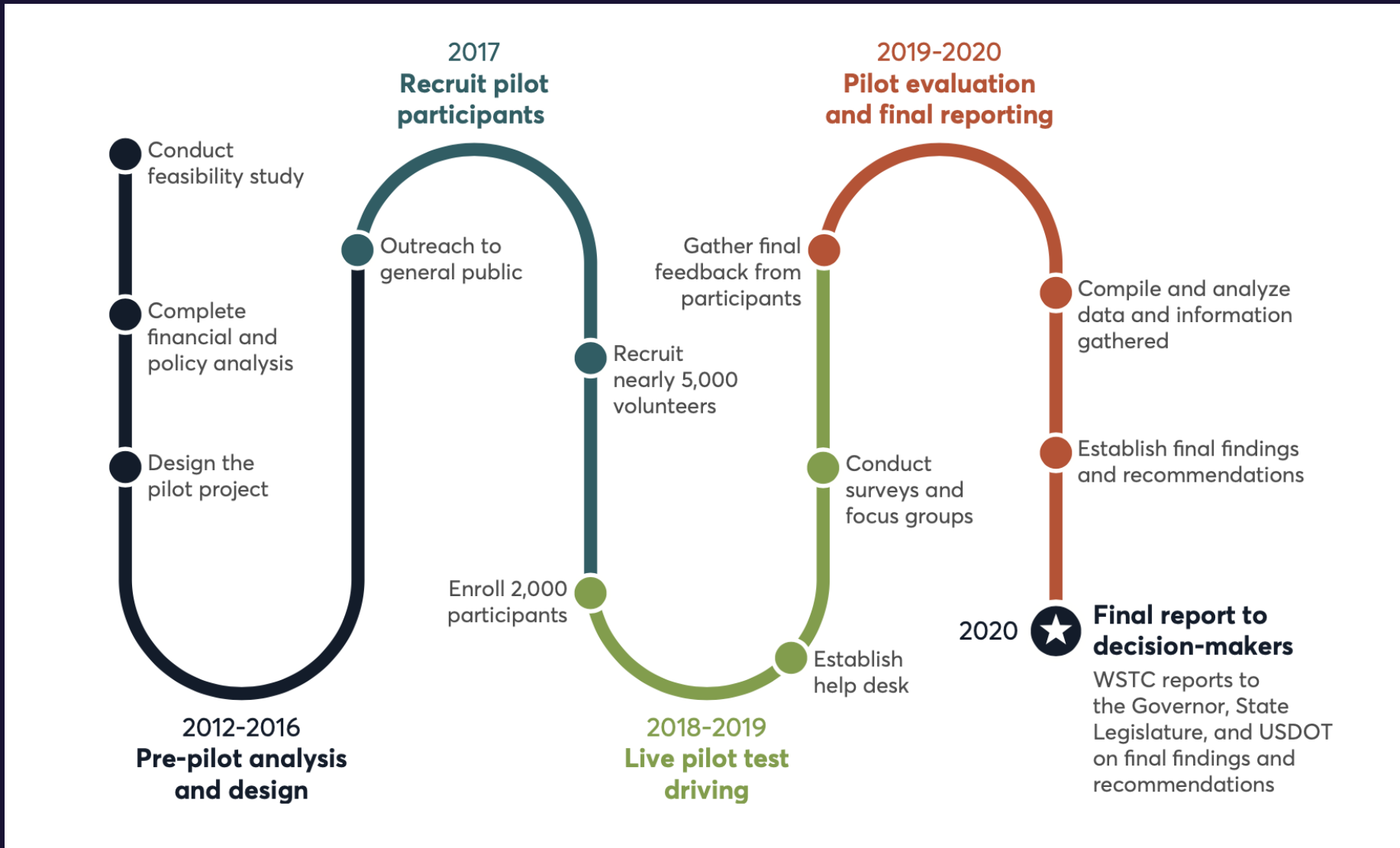
- Exists in a variety of countries, including:
 - New Zealand
 - Germany
 - Switzerland
 - Czech Republic
 - Etc.
- Rates generally based on:
 - weight
 - vehicle configuration (number of trailers and axles)
- In US, heavy vehicles charged based on fuel tax except in four states
- A distinct political issue from light vehicle RUC

Roadway to RUC

Pre-legislative activities

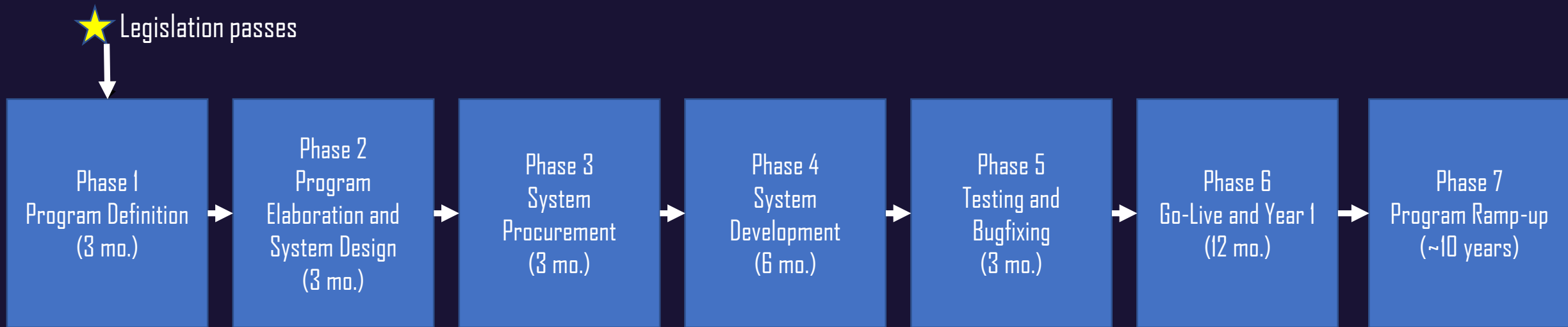
- **Feasibility study** (early projects only)
- Form **steering committee**: government and community leaders to ensure views heard
- **Communications**: public outreach and surveys
- **Financial analysis**: demonstrate need with local numbers
- **Policy analysis**: focus on local issues
- **System design**: choose mileage reporting, account management
- **Pilot design**: a policy demonstration, not a technology proof-of-concept

RUC Roadmap (Washington State)



Post Legislation: A Path to Go-Live

- This chart illustrates an 18-month path to go-live
- Probably the minimum time to achieve a low-risk program start



What's Next?

What's next?

- Grow existing state programs
 - Oregon
 - Utah
- New state programs
 - Virginia
- International growth
- Biggest challenges
 - Automaker integration for native automaker telematics
 - Cost of collection

Matthew Dorfman

Partner, Milestone Solutions

Matthew.Dorfman@reachmilestone.com

Questions and Answers

