



## COLORADO Department of Transportation

Division of Transportation Development  
Multimodal Planning Branch  
4201 E. Arkansas Ave, Shumate Bldg.  
Denver, CO 80222

DATE: July 20, 2016  
TO: Transportation Commission  
FROM: Debra Perkins-Smith, Director, Division of Transportation Development  
SUBJECT: Road Usage Charge

### Purpose

To familiarize the Transportation Commission with the Department's upcoming CDOT Road Usage Charge (RUC) Pilot Program.

### Action

Informational Item.

### Background

The automotive industry has made significant improvements in vehicle fuel efficiency during the last decade. It's great news for consumers who are looking to spend less on fuel costs. It's also outstanding progress for our environment in terms of auto emissions and our reliance on fossil fuels. But as the average fuel economy of the American vehicle fleet continues to improve in accordance with Corporate Average Fuel Economy (CAFE) standards and the emerging fleet of electric vehicles (EV) and plug-in hybrid electric vehicles (PHEVs), it's clear that the current gas tax model – the primary source of funding for our nation's critical transportation infrastructure needs – is not a sustainable solution for future infrastructure funding.

Colorado's annual funding for transportation can no longer keep pace with the costs of operating, maintaining, and improving the statewide transportation system. A recent needs and gaps analysis conducted as part of the 2040 Statewide Transportation Plan showed an estimated gap of \$1 billion annually over the next 25 years. An alternative funding method is required. One such alternative is a Road Usage Charge (RUC) system. Under a RUC, highway users are charged their equitable share of using the road, instead of by the amount of fuel consumed.

### Details

#### *Other States*

Colorado is not alone in researching RUC as alternative funding mechanism. In recent years several other states, with the support and funding from their respective legislatures, have begun to test RUC as an alternative funding mechanism. Widely considered a leader in RUC systems, Oregon has been refining their RUC system for nearly a decade. Starting in 2007, Oregon launched the first of three legislatively mandated pilot programs that have taken place within the state. Since 2012, based on legislative direction, Washington has been evaluating the feasibility of RUC. In January 2016, the Washington State Road Usage Charge Assessment final report was submitted to the governor and legislature, summarizing the results of initial analysis and laying the foundation for implementing a pilot project. In 2012, Oregon, along with Washington and Nevada, launched an 88-person multi-state pilot program that assessed the cost effectiveness of mileage reporting and account management when states work together. Currently, Hawaii is conducting a feasibility study for implementing a statewide RUC to research and analyze all aspects of the current fuel tax issue. On September 29, 2014, California approved legislation that created the California Road Charge Pilot Program. Since then CalTrans has been developing the program structure and communication strategy for the deployment of its 5,000-person statewide pilot demonstration. The California Road Charge Pilot Program is slated for launch in July 2016.

#### *RUC West*

The RUC West, formerly known as the Western Road Usage Charge Consortium (WRUCC), is a multi-state research consortium of western state DOTs. Participation is voluntary and states work together to undertake collaborative research into systems and policy development of a potential new transportation funding method that would collect a RUC from drivers based on actual road use. CDOT has been a member of RUC West since 2014. Member states



include: Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, Texas, Utah and Washington.

On March 22<sup>nd</sup>, 2016, FHWA released a solicitation for proposals on the FAST Act Surface Transportation System Funding Alternatives (STSFA) grant program. The STSFA grant program's purpose is to provide grants to States to demonstrate user based alternative revenue mechanisms that utilize a user fee structure to maintain the long-term solvency of the Highway Trust Fund. The STSFA grant program is only available to States, or groups of States, and requires a State DOT to be the lead for purposes of receiving funds. In May 2016 RUC West submitted a STSFA grant to develop and implement a multi-state per-mile charge pilot research program.

#### *Colorado Road Usage Charging Pilot Program*

In December 2015, CDOT submitted an internal research proposal to test the viability of a RUC system in an operational environment in Colorado. The Colorado RUC Pilot Program will develop, implement, and evaluate a RUC system for passenger vehicles in Colorado based on current operating environments and available technology. The pilot will recruit approximately 100 participants for a period of four months and will evaluate a range of mileage collection methods.

The Colorado RUC Pilot Program will take 100 participants recruited from around the state through the full arc of RUC activities during a four-month operational pilot. Participants will create an account and register vehicle(s) with an account manager, select a mileage reporting option (GPS-enabled, Non-GPS-enabled, and Odometer Reading), install a mileage reporting device (if applicable to the reporting option chosen), report mileage on a periodic basis, receive/review invoices, and submit mock payments. At the conclusion of the pilot, the research team will prepare a final report that provides a summary of the pilot, lessons learned, and recommendations for future pilots and implementation.

#### *Pilot Program Purpose*

1. Create a sandbox environment in which legislators, CDOT administrators, policy-makers, can experience elements of an operational RUC.
2. Identify and evaluate potential issues related to implementation of a full system.
3. Test the feasibility and acceptability of various mileage reporting methods/technologies for Colorado.
4. Solicit feedback from pilot participants for future system design.

#### Next Steps

- July 2016 - August 2016 - Public Opinion Research for Baseline
- July 2016 - October 2016 - Pilot Participant Recruitment
- November 2016 - Internal Soft Launch
- December 2016 - April 2017 - Pilot
- July 2017 - Final Report and Briefing

#### Attachments

- Attachment A: RUC Talking Points
- Attachment B: RUC Presentation
- Attachment C: California RUC Pilot Program Article



## **COLORADO Road Usage Charge (RUC) Pilot Talking Points – July 20, 2016**

### **Why**

- Need a sustainable funding source (increased fuel efficiency results in less revenue from gas tax)
- Fairness issue – electric and other vehicles don't pay a gas tax but do use the roads

### **Approach**

- Research Project with FHWA funds (this is different than Oregon and Washington, which received funding from legislature)
- Pilot Program follows on from a research study and research funded focus groups. (interestingly the focus groups revealed a complete lack of understanding on transportation funding)

### **Pilot Program Purpose – what do we hope to accomplish? PROOF OF CONCEPT**

1. Create a **sandbox environment** in which legislators, CDOT administrators, policy-makers, can experience elements of an operational RUC.
2. Identify and evaluate **potential issues** related to implementation of a full system.
3. Test the **feasibility and acceptability of various mileage reporting methods/technologies** for Colorado.
4. Solicit **feedback** from pilot participants **for future system design**.

### **Pilot Program Design – keep it simple, provide choices**

- 100 participants (urban, rural, varying fuel efficiency, local government officials, etc.)
- Several mileage reporting methods
  1. Manual self-report odometer reading (no in-vehicle technology)
  2. Basic (Non-GPS) mileage reporting from OBD2 port
  3. Advanced GPS mileage reporting from OBD2 port (can distinguish between public/non-public roads)
  4. Smartphone App
- Dummy mileage rate at 1.5 cents per mile (real rate would be set by legislature based on policy)
- Simulated invoice with fuel tax credited against RUC
- Soft launch by CDOT staff first to pre-test
- Executive Steering Committee (influencers and affected parties) and a Technical Advisory Committee
- Emphasis on Statewide Public Education and Recruitment Campaign
- Revenue and Operational Feasibility Reports for Decision-makers – i.e. State Legislature

### **Pilot Program Schedule**

July 2016 – August 2016 - Public Opinion Research for Baseline

July 2016 – October 2016 - Pilot Participant Recruitment

November 2016 – Internal Soft Launch

December 2016 – April 2017 - Pilot

July 2017 - Final Report and Briefing



**COLORADO**

Department of  
Transportation

# The Colorado Road Usage Charge Pilot

*July 20, 2016*



# Agenda

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- Why is an alternative funding mechanism needed?
- What is a Road Usage Charge (RUC)?
- The Colorado Road Usage Charge Pilot

# Why is an alternative funding mechanism needed?



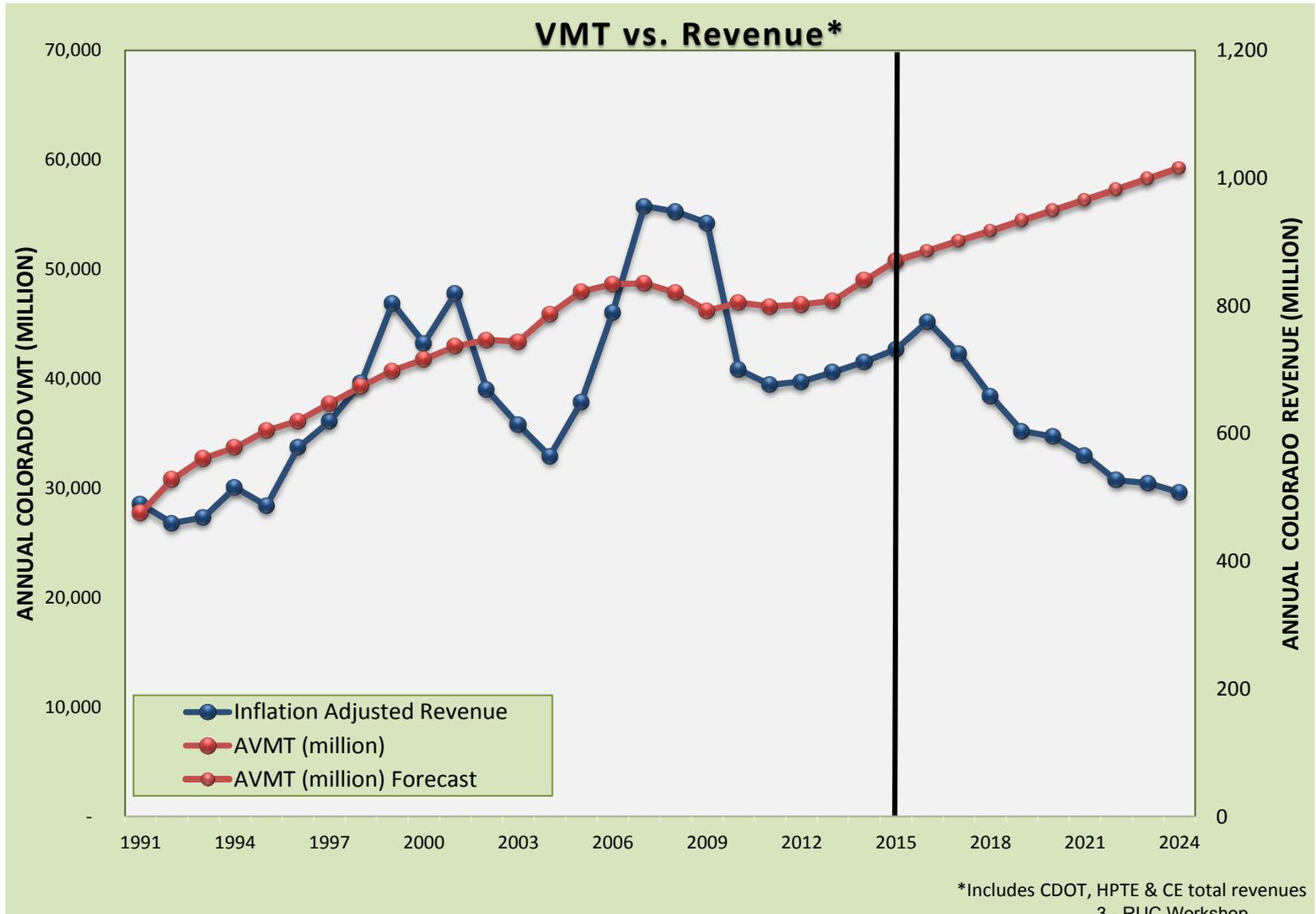
# Funding Mechanisms to Close the Funding Gap

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- Colorado Transportation Finance and Implementation Panel (2008)
- 39 Options Considered – 5 Final
  - Highway and Bridge User Fee
  - Vehicle Rental Fee
  - Motor Fuel Tax Increase/Indexed
  - Sales and Use Tax Increase
  - Severance Tax increase
- Vehicle Miles Traveled (VMT) Fee
  - Otherwise known as Road Usage Charging (RUC)



# Colorado VMT vs. Revenue



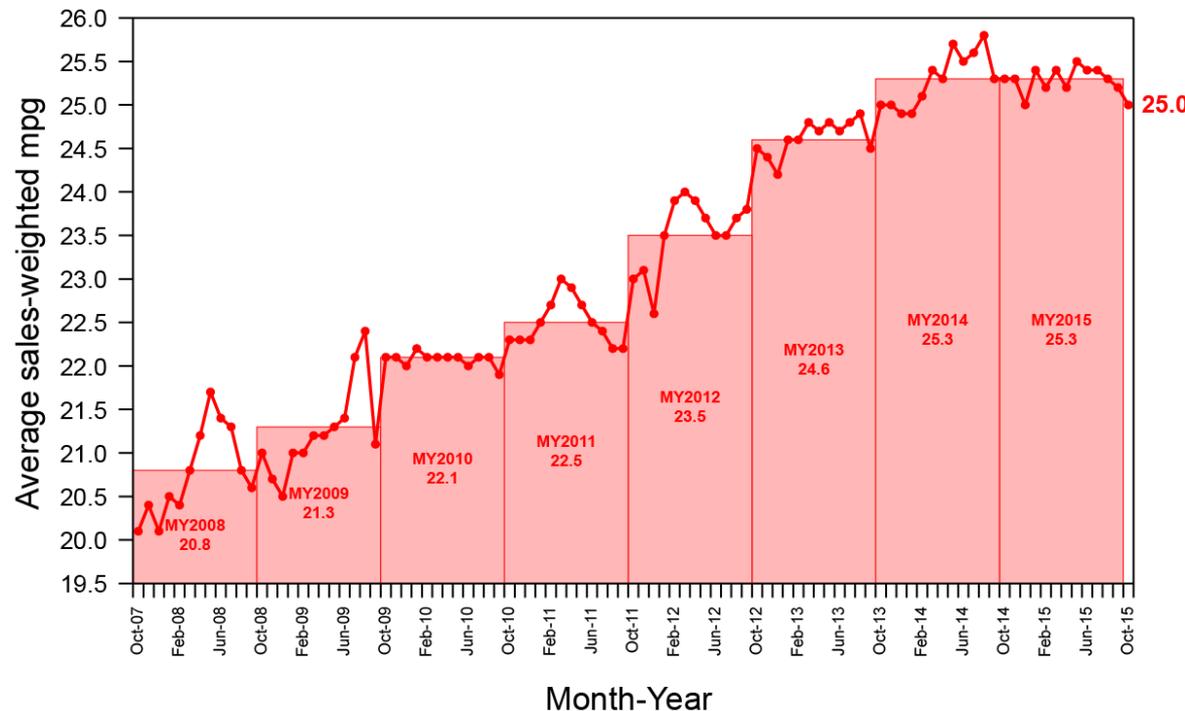
\*Includes CDOT, HPTE & CE total revenues  
3 - RUC Workshop

Source: CDOT 2016



## Increased Vehicle Fuel Efficiency has made the Gas Tax Funding Model Unsustainable

- Increased fuel efficiency of vehicles
  - New CAFE standards (average 35.5 mpg in 2016; average 54.4 mpg in 2025)
- Emerging fleet of electric vehicles and plug-in hybrids
  - Pay little or no fuel tax



Michael Sivak and Brandon Schoettle  
University of Michigan Transportation Research Institute

# What is a Road Usage Charge?



# What is a Road Usage Charge (RUC)?

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- Charge based on miles traveled
  - Also called Road Usage Fee (RUF), Mileage Based User Fee (MBUF), or Vehicle Miles Traveled (VMT Fee)
  - Treats roads like utilities (pay what you use)
  - Traveled miles are reported and fees paid
  - Replaces the fuel tax

# The Colorado Road Usage Charge Pilot



# Colorado Road Usage Charge Pilot

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- Pilot Program Purpose (Proof of Concept)
  1. Create a **sandbox environment** in which legislators, CDOT administrators, policy-makers, can experience elements of an operational RUC
  2. Identify and evaluate **potential issues** related to implementation of a full system
  3. Test the **feasibility and acceptability of various mileage reporting methods/technologies** for Colorado
  4. Solicit **feedback** from pilot participants **for future system design.**



# Colorado Road Usage Charge Pilot

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- Framework
  - 4-Month Statewide Pilot (December 2016 – April 2017)
  - 100-participants consisting of transportation leaders, officials, media, and general public
  - Geographic (Urban/Rural) and Vehicular (MPG) stratification
  - Payments and associated revenues will be simulated
  - Communication and Advisory Committees



# Reporting Options

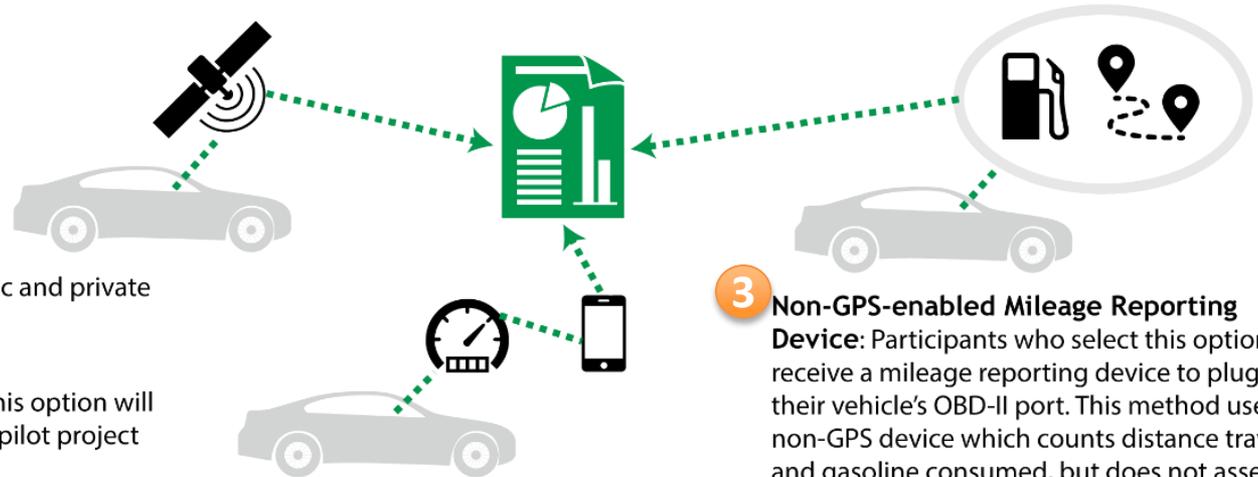
1

## GPS-enabled Mileage Reporting Device:

Participants who select this option will receive a mileage reporting device to plug into their vehicle's OBD-II port. This method uses location-based data to calculate total miles driven with differentiation between public and private or in-state and out-of-state roads.

**Odometer Reading:** Participants who select this option will report their vehicle's odometer reading via the pilot project website, or mobile app.

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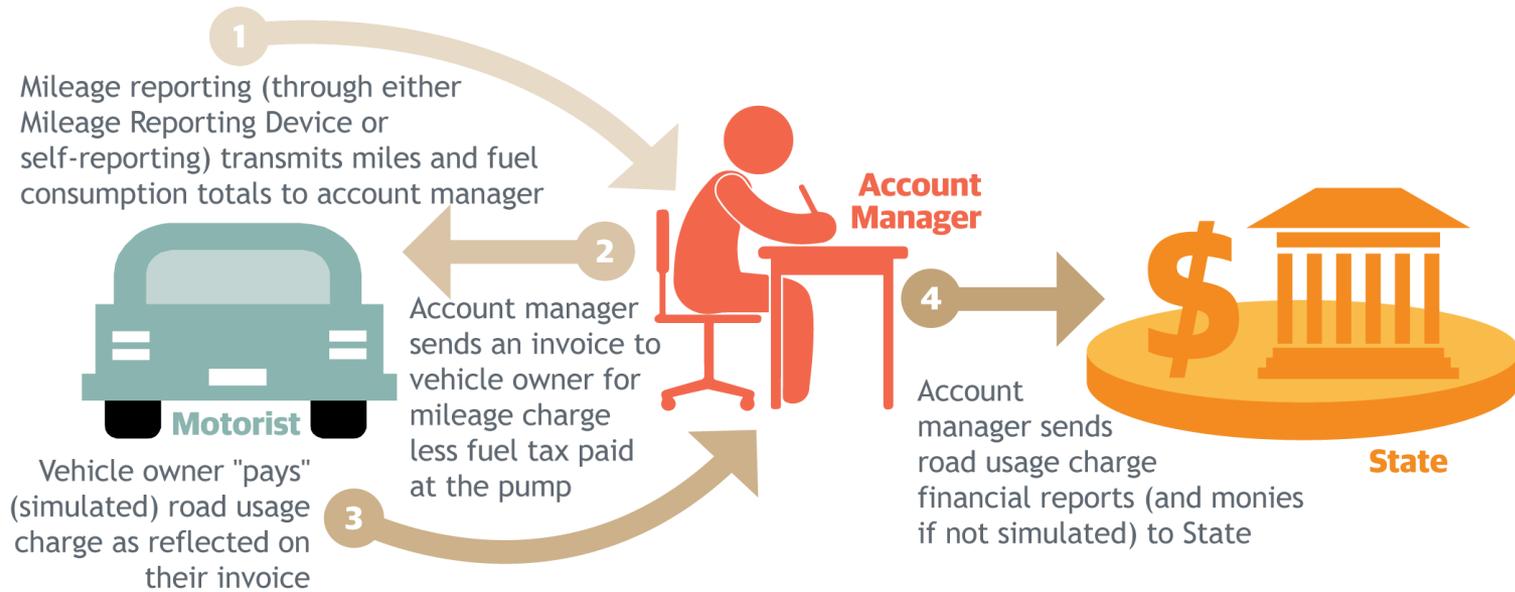
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## Non-GPS-enabled Mileage Reporting Device:

Participants who select this option will receive a mileage reporting device to plug into their vehicle's OBD-II port. This method uses a non-GPS device which counts distance traveled and gasoline consumed, but does not assess location.



# RUC Programs Revolve Around the Motorist and the Account Manager





# Advisory Committees

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## Executive Steering Committee

- Department of Revenue
- ACLU
- Legislative Representation
- Colorado Contractors Association
- Colorado Municipal League
- Statewide Transportation Advisory Committee (STAC)
- Environmental Organizations
- Denver Metro Chamber of Commerce

## Technical Advisory Committee

- Data Privacy Expert
- Department of Revenue
- Public Engagement Expert
- Toll Operations Expert
- Intelligent Transportation Systems Expert
- CDOT Staff



# Communications

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- External
  - Pilot Website
  - Media (stories, press releases, etc.)
  - Informational Brochures
- Participants
  - Blog
- CDOT
  - Existing communications platforms
  - The Loop
  - Intranet
  - In Motion Magazine
- Transportation Commission
  - Periodic Project Updates



# Common Misconceptions about RUC

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- RUC is another tax charged by the government
  - Merely changes the mechanism
  - Restores equity that all users pay, instead of only gasoline or diesel vehicles
- Driver privacy is sacrificed
  - User has a choice of multiple methods for mileage measurement
    - From basic mileage counting to advanced GPS devices
  - Regardless of the option selected, privacy can be protected
- Rural drivers are unfairly penalized as they drive longer distances
  - If a gas tax refund is proposed, then rural drivers may actually pay less under a RUC
  - Road users currently pay taxes based on fuel consumed. Therefore, users who have less fuel efficient vehicles are paying higher taxes.



# Schedule

Key Milestone	Proposed Date
Planning Workshop	6/30/16
Recruiting Plan Complete	7/8/16
Public Opinion Research for Baseline	7/11/16 - 8/2/16
Recruitment	7/11/16 – 10/15/16
Soft Launch	11/1/16 – 11/19/16
Pilot	12/5/16 – 4/21/17
Final Report & Briefing	7/14/17

# As gas tax wanes, California tests pay-by-mile replacement

By Kate Galbraith | July 1, 2016 | Updated: July 1, 2016 4:43pm



Photo: Liz Hafalia, The Chronicle

Daly City Assistant City Manager Julie Underwood shows how she records mileage on an app being used by the pilot program.

The surge of electric cars on California's roadways has created a conundrum for policymakers. While the vehicles reduce pollution, their drivers don't pay any gasoline tax, a vital source of

Attachment C: California RUC Pilot Program Article funding for road repairs.

This week, the state launched a **pilot program** called California Road Charge that could lead to a radical alteration of the way the state pays for roadway upkeep. Thousands of volunteers are testing different ways to pay fees by the mile, rather than being taxed at the pump. It's an acknowledgment that over the coming decades, gas-tax revenue **will dwindle** as fuel-efficient and electric cars proliferate.

“The whole purpose of the pilot is to really be a learning experience for the state, as we recognize the gasoline tax is no longer going to be a reliable source of funding,” said Jim Madaffer, who chairs the advisory committee that developed the program.

Volunteers in 5,000 vehicles will use a range of high- and low-tech methods to test the pay-by-mile system. They will not use real money, however. The exercise, lasting nine months, is designed to gauge how the technology works and what concerns arise. Lawmakers will evaluate the results to determine how and whether to move forward with a formal program.

Oregon is the only state with a pay-by-mile system already in place, in which people pay actual money — 1.5 cents per mile. OreGo accounts factor in credits for gas-tax payments that drivers make when buying gas. But participation is voluntary. So far, only about 1,000 Oregonians have signed up.

Some California participants, like Julie Underwood of Cupertino, will use smartphones to

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#### MORE BUSINESS

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**Tesla's autopilot death: Are self-driving cars coming too fast?**



**Testing the clean-energy logic of a Tesla-SolarCity merger**



**Tesla's million-car goal: too ambitious?**

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Attachment C: California RUC Pilot Program Article

photograph their odometers each month. It's a relatively simple method of keeping tabs on mileage and does not transmit information on where the car has traveled.

Others will plug a small device, roughly the size of a few matchboxes, into a slot in the front of their car. Some of the devices, called dongles, are provided by Azuga, a San Jose company that also helps the Oregon program. It can track where the car is going (though this is optional) as well as mileage.



Photo: Michael Noble Jr., The Chronicle

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Deborah Garland of San Francisco explains the charging process for her 2014 Nissan Leaf.

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Still others can opt for an even more basic method, with a simple permit, displayed on the windshield or bumper, that states the total mileage that the car owner has “bought.” Even simpler is a permit for unlimited driving for a given time period — a week, month or year.

The price per mile in California’s pilot program will be around 1.8 cents, Madaffer said. At that rate, commuting fees would amount to about \$1.44 per day for Underwood, who drives a hybrid 40 miles each way to her job as assistant city manager of Daly City.

Attachment C: California RUC Pilot Program Article

The pay-by-mile system “seems like a creative approach,” said Underwood, who notes that with her commute, she puts plenty of wear and tear on California’s roadways. “I’m curious to see whether the greater public ... would be agreeable to the model.”

The need is growing. Electric cars accounted for about 1.4 percent of new-car sales in the first quarter of this year, according to the California New Car Dealers Association, and hybrids and plug-in hybrids together account for another 6.2 percent. Stricter federal fuel-efficiency standards should also reduce gas consumption.

Meanwhile, road-repair budgets are suffering as lawmakers hesitate to raise the gas tax. In January, the California Transportation Commission **cut its five-year funding projection** for a major state transportation program by \$754 million, citing reduced gas-tax revenue. The gas tax, part of which is linked to gas prices, dropped further this month, by 2.2 cents per gallon. (As of April 1, Californians paid more than 40 cents per gallon in total state taxes and fees, according to the American Petroleum Institute.)

Certain issues in California’s pay-by-mile test program will prove especially tricky, like how to know when a car travels out of state. In Oregon, the Azuga device can track out-of-state travel and omit it from charges. But as cars become more technologically sophisticated, such hurdles may be easier to overcome.

Madaffer’s car, for example, has built-in hardware and software that can transmit mileage information without even the need for a separate device.



Photo: Liz Hafalia, The Chronicle

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Assistant city manager Julie Underwood volunteered for a pilot program to have electric car drivers measure their mileage on her Lexus hybrid's odometer on Friday, July 1, 2016, in Daly City, Calif.

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Attachment C: California RUC Pilot Program Article



Photo: Michael Noble Jr., The Chronicle

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IMAGE 1 OF 3

Deborah Garland of San Francisco plugs in her 2014 Nissan Leaf to a charging point in San Francisco.

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“I think that’s the way of the future,” he said.

But the potential proliferation of location data could cause political hand-wringing.

In developing the pilot program, “everything revolved around privacy, privacy and privacy,” he said.

Ultimately, the biggest hurdle to pay-by-mile aspirations could be getting people to pay real money into state coffers — a challenge that Oregon has experienced. OreGo’s 1,000 participants aren’t much in a state with 3.4 million registered vehicles.

“If California were to expand further, they would actually have to test that final aspect,” said Michelle Godfrey, a representative of the Oregon Department of Transportation.

Attachment C: California RUC Pilot Program Article

*Kate Galbraith is The San Francisco Chronicle assistant business editor. Email: [kgalbraith@sfchronicle.com](mailto:kgalbraith@sfchronicle.com). Twitter: [@kategalbraith](https://twitter.com/kategalbraith)*



**Kate Galbraith**

Assistant Business  
Editor

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