

Road Usage Charging (RUC)

Teddy Forscher, Alexandre Bayen, PhD, and Susan Shaheen, PhD

tsrc.berkeley.edu • innovativemobility.org

KEY TAKEAWAYS

Direct transportation users fees are well studied and have been implemented both in the U.S. and worldwide.

RUC, a form of direct user fees, is gaining momentum at the state and federal levels.

RUC is one of a few options to create sustainable infrastructure funding sources in a fast-changing transportation future.

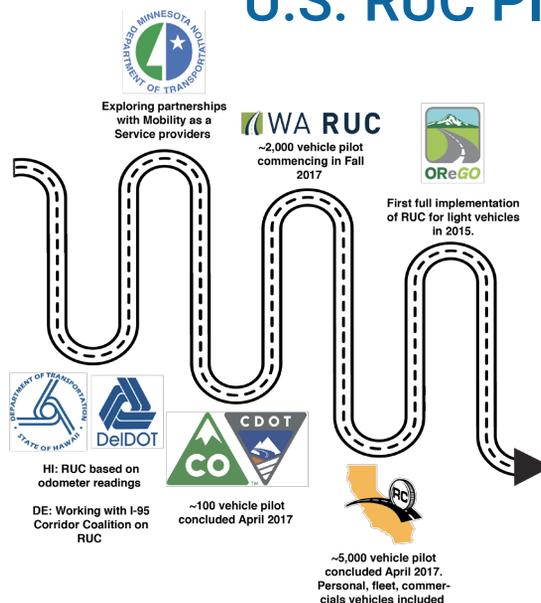
Policy flexibility is critical for any future dynamic pricing implementation.

“RUC offers promising opportunities for agencies to move beyond funding for roadway and public transit infrastructure and to use direct user fees to achieve positive societal outcomes.”

TOPIC/ISSUE

Pricing transportation infrastructure, either to achieve a desired outcome or to raise revenue, is a concept that has been present in economics and transportation since the early to mid-20th century. Different approaches to pricing (e.g., area-wide pricing, vehicle miles traveled, express lanes, etc.) have been adopted in parts of Europe and Asia; some strategies cover all road users, some only passenger vehicles, and others only commercial and goods movement vehicles. Pricing, as a revenue source, has recently gained momentum in the U.S., driven by federal legislation (MAP-21; FAST Act) and state-run pilot programs (CADOT, ODOT, MNDOT, CODOT, WADOT). The time is ripe to scale pricing strategies, not only to create a sustainable source of funding for infrastructure and public transit, but also to ensure that all road users contribute direct user fees.

U.S. RUC PILOTS & OBJECTIVES



Recent advancements in RUC by U.S. States

Based upon ongoing pilot monitoring, academic work on the topic, and inclusion of other literature, we highlight topics of interest as the pilot programs produce data sets for analysis below.

Pricing Structures

- The effectiveness and impacts of static, tiered static, and dynamic pricing have been studied but not using real populations.
 - The pilots offer a unique opportunity to investigate the behavioral effects of dynamic and/or tiered pricing structures.
- Some states, such as Minnesota have studied, static, variable, geography-based pricing.
- How should pricing be determined? The structure will likely be different for personal and commercial travel/goods movement.
- For personal travel, options include:
 - Flat, geographic location of the user, volume/capacity ratio of a street, vehicle occupancy, vehicle emissions, vehicle mile per gallon equivalent, vehicle drivetrain, and vehicle value
- For goods movement/commercial travel, options include:
 - All of the items listed above, plus revenue-generating vs. deadheading miles, full truckload vs. less than truckload miles

U.S. RUC PILOTS & OBJECTIVES

User Interface & Experience

- States have examined different payment collection technology:
 - Pay at the pump; account managers (location enabled and disabled); time and/or mileage permits
- Payment and pricing structures can have notable impacts on user ability to pay, particularly for those who pay a higher percentage of income toward travel.
- Understanding public perceptions of RUC as funding mechanism compared to the gas tax, before, during, and after the pilot will illuminate opportunities and barriers.
- User perception of privacy protection appears to increase with system exposure.

Costs of Implementation & Value-Added Services

- In some states, account managers are serving as intermediaries similar to the main payers of the fuel excise tax, which cuts implementation costs.
 - This can increase efficiency of collection and allows these managers to offer value-added services (e.g., use-based insurance).
- However, the fuel excise tax is currently still cheaper to collect due to the small number of payees.
- Some states are investigating partnerships with shared mobility service providers (e.g., Lyft, Uber) to serve as revenue collectors.

APPROACH

UC Berkeley researchers used primary source analysis, literature reviews, and expert interviews to identify the most pressing issues regarding RUC implementation. This work evolved from a Masters Thesis in Transportation Engineering & City Planning focused on urban goods movement. We identified key actors and geographic scales most fitting to tackle these issues and suggested next steps. Future work considers revenue reinvestment and equity implications.

MOVING FORWARD

RUC is in its infancy in the U.S., but it offers promising opportunities to move beyond funding for roadway and public transit infrastructure and to use direct user fees to achieve positive societal outcomes. The means by which marginal pricing is passed onto roadway users constrains the set of realizable outcomes. By employing short-, medium-, and long-term data-driven policy development, procedural and group equity can be maintained, sustainable revenue sources can be established, and pricing can be used as a mechanism to move the country toward a more efficient future.

Short term:

- States must investigate institutional reform and legal barriers to RUC.
 - In California, CVC 3.6.3 9400.8 prohibits assessing new charges for use of existing streets and roads.
- Other legal barriers include incorporating a new tax into future revenues and phasing out an existing tax.
- Public agencies need to develop resources to enable spatio-temporally dynamic RUC.
- Static and dynamic pricing scenarios could be studied through future pilots.
- Public participation and input is key for determining possible equity implications and for ensuring procedural equity.
- Clear messaging strategies must be developed to inform the public of the needs for, and benefits of, RUC.

Medium term:

- Interstate, Federal-state, and State-regional jurisdictional issues should be resolved.
- Partnerships with private information and mobility providers should be investigated to maximize efficiency and ensure optimal system control.
- Public interest, at the state levels, should be evaluated to understand barriers and opportunity areas.

Long term:

- Policy should be considered to enable appropriate entities to implement RUC.
- Desired technological approaches should be assessed, as well as pricing structures.

This policy brief was generously funded by the State of California Public Transportation Account.



Image courtesy of Linda Davidson/The Washington Post