

The NC FIRST Commission was created in March 2019 to evaluate North Carolina’s transportation investment needs. Their job is to advise the Secretary of Transportation of new or better ways to ensure that critical financial resources are available in the future. As part of this process, we’ll be looking for input from you, the people of North Carolina! This brief discusses the feasibility of charging drivers a fee based on the number of miles driven.

Mileage-Based User Fees

Overview

Increased fuel efficiency standards, the expected rise in electric and hybrid vehicles, and changes in driver behavior will impact the sustainability of motor fuels tax revenues. A mileage-based user fee (MBUF), also referred to as a Road User Charge (RUC) or a Vehicle Miles Traveled (VMT) fee, is viewed by many as the most viable alternative to the motor fuels tax. Under an MBUF system, the driver pays a fee based on the number of miles driven.

Surveys show some citizens are concerned about implementing an MBUF program. The four most common issues cited against using an MBUF are privacy, disparities in the amount paid between rural and urban drivers and between income levels, not paying for mileage driven out of state, and double taxation. MBUF supporters believe it is fairer to tax by the mile since all vehicle types will pay the same amount.

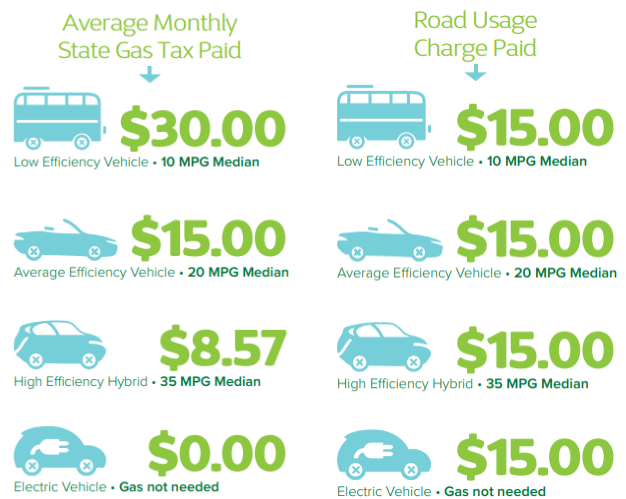
This brief will analyze the benefits and challenges to implementation, review how MBUFs are being used in other states and nations, and consider how federal policy supports the study, piloting, and implementation of state MBUF programs.

What is an MBUF?

Like the gas tax, an MBUF is a user fee, meaning, you pay for how much you use the roads. Gas taxes collected by the federal government and by North Carolina are based on flat per-gallon amounts. More fuel-efficient cars need less gasoline to operate and therefore less tax is collected, but the car’s weight impacts the road condition the same as a like-model vehicle. As shown in **Figure 1**, unlike the gas tax, an MBUF can equalize the amount paid by vehicle, thus creating fairer, sustainable, and reliable revenues.

Several options exist to track miles traveled, such as an electronic collection of data, radio-frequency identification (RFID) readers, inspection station odometer reporting, gas pump conversion, or self-reporting. A fee may be uniformly applied, or it may be set at different rates to reduce disparities, manage congestion, or differentiate road types. Pricing may also be used to control pollution, encourage the use of alternative forms of transportation, and improve travel time reliability.

Figure 1: Comparison of Amounts Paid¹



¹ Paid amounts are calculated assuming 1,000 miles traveled per month. Road usage charge based on 1.5 cents per mile. Graphics obtained from Oregon Department of Transportation.

Will the federal gas tax be replaced by an MBUF?

Not only are federal gas tax revenues impacted by rising fuel economy and more electric and hybrid cars, but with no inflationary adjustment or change to the base rate of 18.4 cents per gallon since 1993, \$140 billion in general fund transfers and \$3.7 billion in Leaking Underground Storage Tank transfers have been necessary to sustain the Highway Trust Fund. Since increasing the federal gas tax is currently viewed as politically infeasible, members of Congress are actively seeking new revenue sources. The 2015 Fixing America's Surface and Transportation (FAST) Act included \$15 million for FY 2016 and \$20 million for each FY from 2017 to 2020 in state grants to demonstrate alternative user fee revenue mechanisms. Moving forward, some Congressional leaders are seeking an expansion of these state efforts. House Committee on Transportation and Infrastructure Chair Peter DeFazio (D-Ore.) is seeking a national MBUF pilot program in the next transportation authorization bill, though much opposition remains.

The FAST Act's Surface Transportation System Funding Alternatives Program grants have accelerated other state MBUF efforts. Grants have been awarded to 10 states (California, Colorado, Delaware, Hawaii, Minnesota, Missouri, New Hampshire, Oregon, Utah, and Washington) and multi-state efforts by the Western Road User Charge Consortium and the I-95 Corridor Coalition. In total, 19 states have participated in coalition studies, conducted pilots, or implemented programs (see Figure 2 on next page).

Where have MBUFs been implemented?

Mileage-based fees are commonly charged internationally, mainly for heavy vehicles. New Zealand began collecting a road usage charge in 1978. The program, netting NZ\$1.55 billion² in FY 2017/18, applies an MBUF to vehicles over 3.5 metric tons and lighter vehicles that use diesel or other fuel types not otherwise taxed at the source.³ Several European Union countries also apply various forms of MBUF programs to heavy vehicles, some of which vary the fee by vehicle weight, with total EU collections generating approximately \$44 billion annually⁴ from mileage-based fees.⁵

Variations to a mileage-based program include countries that charge fees based on the amount of time spent on roadways. A time-based fee, like in Estonia and the Netherlands, requires truck drivers to pay a fee for unlimited road use during a specified time period. For example, in Estonia, "in the case of a 12-ton vehicle the daily fee is 9 euros, 30-days fee is 50 euros and 365-days fee is 500 euros. For vehicles over 12 tons, the daily fee is 10-12 euros, 30-days fee is 60-130 euros and 365-days fee is 600-1,300 euros."⁶

In the U.S., Oregon and Utah operate the only permanent programs for light vehicles. Following two pilots in 2006 and 2012, the Oregon legislature authorized the creation of the OReGo program, launching it on July 1, 2015. Today, the program is open to any passenger vehicle that has a rating of at least 20 miles per gallon.⁷ Electric vehicle drivers who participate are exempt from special registration fees and fuel-powered vehicle drivers can receive a credit for fuel tax and for emissions testing.⁸ Implemented on January 1, 2020, Utah's voluntary program for electric and hybrid vehicles guarantees participants they will pay no more in per-mile charges than they would otherwise pay in special registration fees. While the Oregon and Utah programs apply to passenger vehicles, four states (Kentucky, New Mexico, New York, and Oregon), like some European countries, collect weight- and distance-based fees from heavy trucks.

² Approximately \$1.05 billion in U.S. dollars based on the June 30, 2018, exchange rate

³ www.nzta.govt.nz/vehicles/licensing-rego/road-user-charges/about-ruc/

⁴ In U.S. dollars

⁵ mbufa.org/images/2019-conference/MBUFA%20Annual%20Conference%202019_final%20presentation_Coretex_EROAD_lofi.pdf

⁶ www.koda.ee/en/news/1-january-2018-road-use-fee-be-paid-estonia#:~:text=In%20Estonia%2C%20the%20fee%20has,well%20as%20those%20registered%20abroad

⁷ Or. Rev. Stat. §§319.883 et seq.

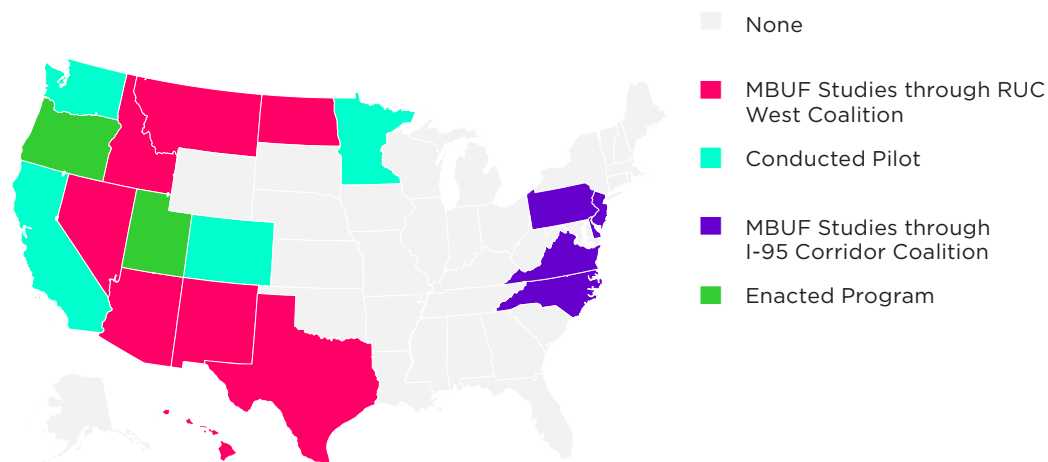
⁸ www.myorego.org/

Several states have conducted mileage-based pilots. These include:

- Guided by a Road Charge Technical Advisory Commission,⁹ California's voluntary pilot in 2016 and 2017 included more than 5,000 commercial and personal vehicles tracking mileage over nine months. Participants could choose among six reporting methods: a plug-in device, smartphone, telematics, time permit, mileage permit, or odometer readings.¹⁰
- Colorado's four-month pilot program in 2016 and 2017 had 100 participants (including legislators) that used three reporting methods: non-GPS plug-in, GPS plug-in, and odometer readings. The program included gas, hybrid, and electric passenger vehicles.¹¹
- Minnesota's pilot used GPS-enabled smartphones for the collection and transmission of mileage data in 2011 and 2012. Fee rates varied based on where and when participants traveled.¹²
- Washington's 2,000-plus pilot participants tested a mock pay-per-mile system from 2018 to 2019. The pilot included personal vehicles of varied fuel types and reporting options that ranged from odometer readings to smartphones and plug-in devices.¹³

In addition, Nevada conducted a mini-field test from 2010 to 2012 to evaluate a “pay-at-the-pump” model that did not rely on the collection of any location data. Instead, pump sensors read participants' vehicle odometers each time they went to purchase fuel, then applied the calculated mileage-based fee to the price of gasoline at the pump.¹⁴ In 2019, Nevada lawmakers took the next step toward exploring a revenue option based on miles traveled by requiring the Department of Motor Vehicles to collect annual odometer readings through 2026 on certain vehicles registered in the state.¹⁵ Various other states, including those in partnership with the I-95 Corridor and RUC West coalitions, are also actively researching how to conduct an MBUF pilot project.

Figure 2: States Participating in MBUF Studies, Pilots, and Programs



⁹ “The TAC consists of 15 volunteer members who are representative of the telecommunications industry, highway user groups, data security and privacy industry, privacy rights advocacy organizations, the equity community, regional transportation agencies, national research and policymaking bodies including, members of the Legislature, and other relevant stakeholders.” Source: dot.ca.gov/programs/road-charge/

¹⁰ dot.ca.gov/-/media/dot-media/programs/road-charge/documents/highlights-brochure-a11y.pdf

¹¹ www.codot.gov/programs/ruc/faq

¹² tti.tamu.edu/documents/PRC-14-02-P.pdf

¹³ waroadusagecharge.org/

¹⁴ www.nevadadot.com/home/showdocument?id=2405

¹⁵ 2019 Nevada Assembly Bill 483 (www.leg.state.nv.us/App/NELIS/REL/80th2019/Bill/6933/Text); dmv.nv.com/odometer.htm

Why do some citizens oppose an MBUF?

Citizens generally do not like the concept of any new taxes and fees, but MBUF opponents raise concerns largely about privacy and fairness. However, studies have shown that the data is secure, and the fee structure can be graduated based on inequities.

- **Privacy.** The lack of privacy is often cited as the primary reason to oppose an MBUF. Geographic tracking will ensure that the fee is applied to the correct jurisdictions, but some individuals don't want the government to be able to track them. These same individuals routinely use services provided by public and private entities, like GPS programs or fitness trackers, and on toll roads. States can implement additional requirements to secure one's privacy, such as routinely purging driver information. All data collected through Oregon's program, for example, is destroyed within 30 days of payment processing.¹⁶
- **Equity.** Citizens may also be concerned about disparities among who pays, both geographically and by income level. Rural residents generally pay more in gas taxes than urban residents because the average vehicle fleet operating in rural counties is less fuel efficient. Rural citizens also have lower incomes than urban citizens. However, multiple state studies have consistently shown that rural drivers (see Figure 3) and lower income citizens pay less under a MBUF system than the gas tax.¹⁷
- **Tracking out-of-state mileage.** State efforts using GPS-enabled tracking systems have confirmed that existing technologies can accurately detect geographic boundaries so that out-of-state travel is not charged. However, as the country moves to a national model, more regional analyses and multi-state programs will ensure miles traveled are accurately reported. Additionally, motor carriers have successfully tracked mileage across state lines through the International Fuel Tax Agreement since 1996.¹⁹
- **Double taxation.** MBUF opponents are concerned that users will pay tax on gasoline and on miles traveled—as N.C. toll road users pay both a toll and a gas tax. While national discussions focus on examining MBUFs as a gas tax replacement, legislatures must decide which taxes and fees will be collected to support transportation systems. Notably, the two states that have ongoing MBUF programs have chosen to offset other costs for drivers through exemptions from special registration fees and, in Oregon, fuel tax credits.

Figure 3: Percent Savings with RUC¹⁸

	Urban	Mixed	Rural
Arizona	-0.7%	1.7%	6.1%
California	-0.3%	2.4%	6.3%
Idaho	-1.0%	0.9%	3.1%
Montana	-1.4%	-0.4%	1.9%
Oregon	-1.0%	2.9%	4.8%
Texas	-0.5%	1.6%	3.1%
Utah	-0.6%	3.4%	5.5%
Washington	-1.0%	3.6%	4.8%

Positive numbers show a savings with RUC, in the Rural and Mixed columns.

What are the key challenges to implementing an MBUF?

Educating the public about the need to replace the gas tax and dispelling myths about MBUFs are among the greatest challenges to implementation. Technology and operating challenges can also be a barrier to implementation, such as:

- **Administrative and collection costs.** Unlike gas tax collections, MBUFs have a high collection cost. While it costs less than one percent to administer the gas tax, estimates suggest MBUF collection costs to be 5 to 13 percent of fee collections.²⁰ These costs are driven by technology, electronic billing, credit card and bank fees, and enforcement. Until administrative costs decrease, implementing a large scale MBUF program is not recommended. But pilot projects are necessary to develop the most cost-efficient collection processes.
- **Unbanked users.** Technology will enable user fee payments to be remitted electronically, but a 2017 FDIC survey found that 6.5 percent of U.S. households did not have a banking account and only 7.2 percent of the unbanked households had a credit card.²¹ Mechanisms will need to be developed to allow for cash or other forms of payment.

¹⁶ www.myorego.org/get-started/#faq

¹⁷ www.rand.org/pubs/research_briefs/RB9576.html; publicpolicy.stanford.edu/publications/going-forward-prospects-transitioning-gas-taxes-vehicle-miles-traveled-fees

¹⁸ www.rucwest.org/wp-content/uploads/2018/07/RUC_RuralDrivers_folio_final-LTR.pdf

¹⁹ www.etrucks.com/the-history-of-ifta/

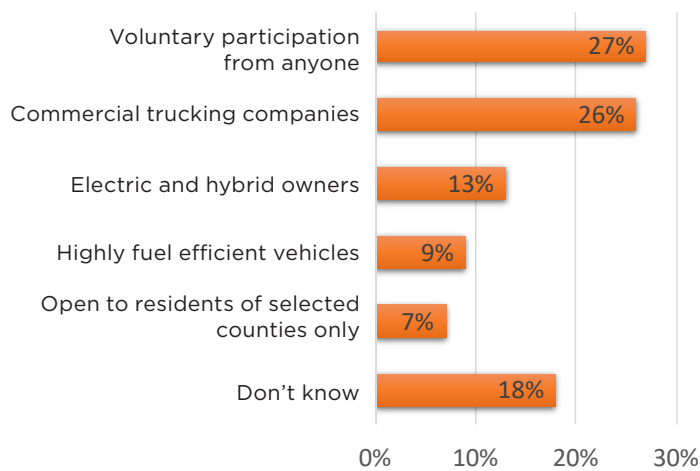
²⁰ fas.org/sgp/crs/misc/R44540.pdf

²¹ www.fdic.gov/householdsurvey/2017/2017execsumm.pdf

Should North Carolina implement an MBUF?

Replacing the gas tax with an MBUF is not considered practical right now but steps are being taken to study how these fees might work in practice. NCDOT is participating in the I-95 Corridor Coalition's Phase 3 pilot. Beginning in August 2020, 200 participants will install either a GPS or non-location tracker for four months to test the system and gather feedback on how it works. Moving forward, legislators may choose to start with a small pilot to test the various options to track mileage. A recent survey of North Carolina residents found that many respondents prefer participants who join a pilot be volunteers (see Figure 4). Like Utah and Oregon, legislators may also consider a voluntary pilot of electric and hybrid owners or seek other participants.

Figure 4: Who should participate in an MBUF pilot?



Summary

MBUFs are as controversial as they are misunderstood but unless the fee can be studied and tested, it won't be known if it should be considered as a gas tax replacement. What is known is that NCDOT revenues are not diverse, modern, or sustainable. While other options, such as increased tolling, electricity taxes, or property taxes, can be studied, MBUFs are the leading solution being studied and implemented by states, the federal government, and internationally.

²² DHM Research, April 2020