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FREQUENTLY ASKED QUESTIONS: MILEAGE-BASED USER FEES

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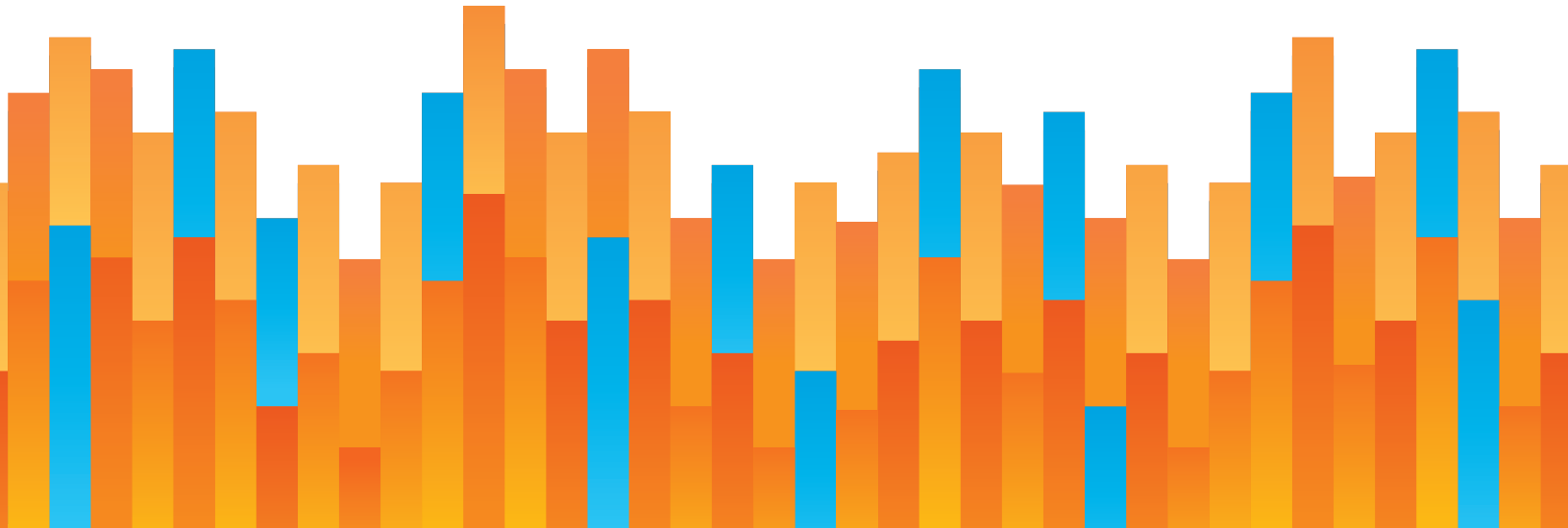

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INTRODUCTION

Using the gas tax as the main highway funding source is becoming increasingly unsustainable. First, the purchasing power of the fuel tax is declining due to the growing number of electric and hybrid vehicles as well as the increasing fuel efficiency of conventional vehicles. Second, highways have suffered, as many U.S. states and localities have diverted specific fees and taxes designed to fund them. The lost revenue from diversions and the decline in purchasing power result in increased congestion, additional traffic accidents and shorter vehicle lifespans due to poor pavement conditions.

While the per-gallon fuel tax served the country well for decades as the nation's primary highway funding source, its shortcomings have become more apparent over time. Often fuel tax increases are not politically palatable, and even when implemented fall short of providing the needed funding. The diversion of highway funds to non-highway sources intensifies the problem.

To more effectively and equitably fund our nation's roadways, transportation agencies need to adopt a stronger users-pay/users-benefit approach that does not depend on fuel use and that strengthens the link between where revenues are obtained and where they are spent.

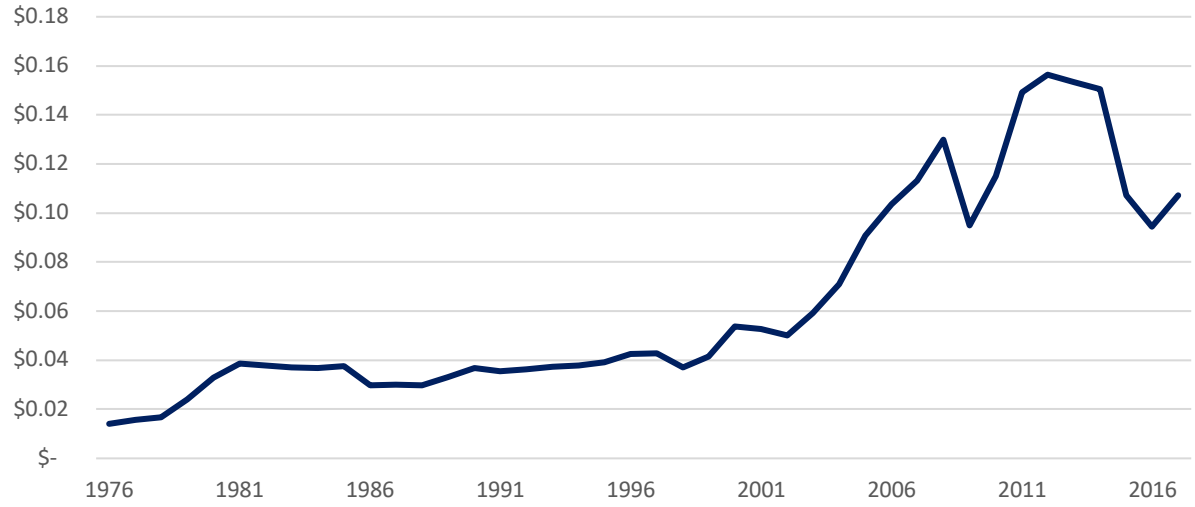
Policymakers are examining mileage-based user fees (MBUF) as a more sustainable revenue source than the gas tax. Using MBUFs as the main funding source is fairer, more reliable and more transparent, and better equips transportation agencies to face continued changes in vehicle propulsion.

FREQUENTLY ASKED QUESTIONS

1. WHY USE PER-MILE FEES WHEN FUEL TAXES HAVE WORKED WELL?

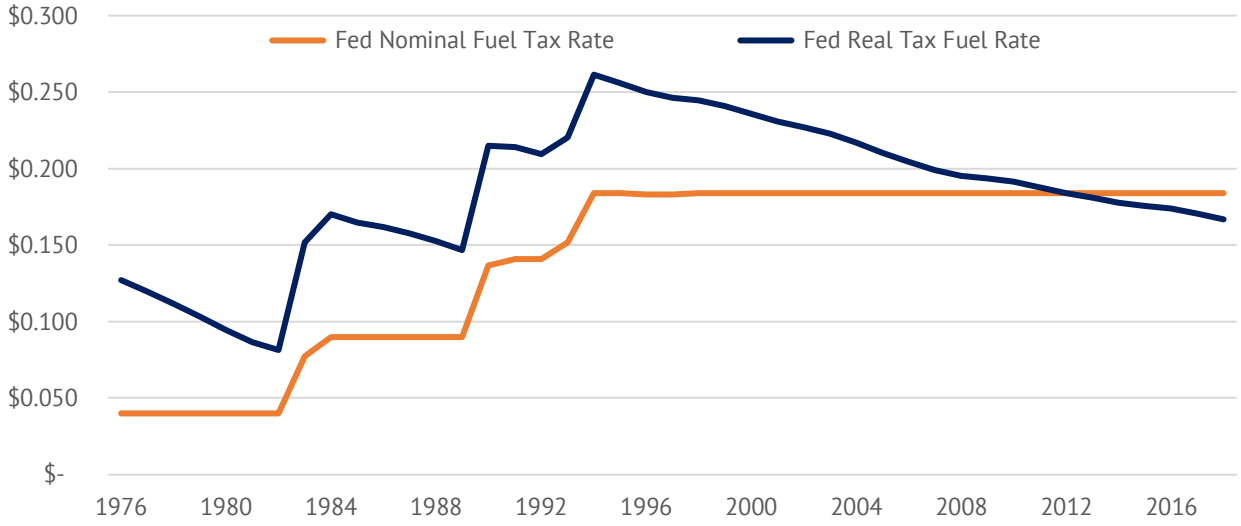
For 100 years, when virtually all vehicles were powered by gasoline engines and had similar fuel economies, the gas tax was a good proxy for road usage. However, a series of changes has weakened the link. As vehicle fuel economy improves, less tax revenue is generated per mile traveled by vehicles with internal combustion engines, since less fuel is needed to propel a vehicle over the same distance. As a result, the cost of operating a vehicle, which did get more expensive in the early part of last decade, has fallen sharply since. Figure 1 displays the per-mile fuel costs of light-duty vehicles between 1976 and 2017.

FIGURE 1: PER-MILE FUEL COSTS, LIGHT-DUTY, SHORT WHEELBASE VEHICLES, 1976–2017 (2012 DOLLARS, SEASONALLY ADJUSTED)



Federal fuel taxes provide one illustration of this trend: While federal fuel taxes were increased in 1983 and 1990, the last increase was in 1993—more than 25 years ago. When combined with the increasing number of vehicles on the road and miles traveled, federal fuel taxes generated per vehicle-mile traveled show a steady trend since the fuel tax rate was last increased. However, when adjusted for inflation, over the last 25 years federal fuel tax revenue generated per mile has decreased more than 50%, as shown by Figure 2.

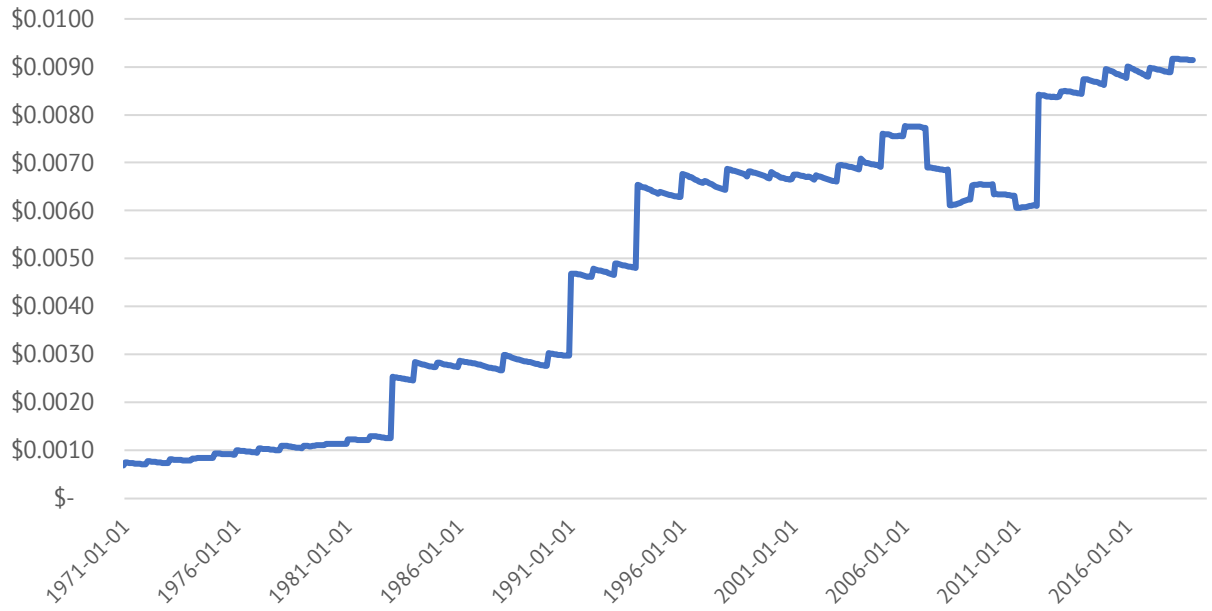
FIGURE 2: NOMINAL AND REAL FEDERAL FUEL EXCISE TAX RATES, 1976–2018 (2012 DOLLARS)



Source: ***U.S. Energy Information Administration***

As a result, the Highway Trust Fund faces an expected cumulative shortfall of $97 billion by 2026, sourced by a fuel tax that hasn't been raised in nearly three decades.[1] Figure 3 displays the federal fuel tax revenue per vehicle-mile traveled between 1970 and 2018.

FIGURE 3: FEDERAL FUEL TAX REVENUE PER VEHICLE-MILE TRAVELED (2012 DOLLARS, SEASONALLY ADJUSTED)



In addition, new vehicle fuel economy differs between vehicles significantly. A new Ford F-350 averages 12 miles per gallon while a new Mitsubishi Mirage averages 40 miles per gallon. Since these vehicles wear out pavement at about the same rate (the main difference in road wear is between light- and heavy-duty vehicles), there is no reason for the Ford driver to pay more than three times as much to use the highways.

Alternative fuel vehicles make funding roads even more difficult. While many states now charge electric and hybrid vehicles some kind of annual fee, annual flat-fee assessments result in a much weaker link than fuel taxes to a vehicle's impact on roads. Operators of the same model of an alternative fuel vehicle could drive their respective vehicles zero miles and 20,000 miles in a year, and both would pay the same annual fee (even though one didn't use any roads).

Per-mile fees allow all vehicles—regardless of propulsion technology—to pay according to the relative impact they make on the roads they use, which more clearly connects road funding to road use.

2. ARE MBUFS INTENDED TO ADD TO FUEL TAXES OR TO REPLACE THEM?

Since MBUFs are designed to serve as a sole-source funding mechanism for road management, they should *replace* fuel taxes rather than charge drivers in addition to fuel taxes. Some politicians envision MBUFs as an additional source of funding, but this would limit public support for the needed transition.

3. SINCE DRIVERS ALREADY PAY TAXES ON FUEL, WOULDN'T MBUFS REPRESENT A DOUBLE TAXATION ON MOTORISTS?

If an agency were to implement MBUF without rebating the driver's fuel taxes, that *would* be double taxation (or at least double charging in the form of a tax and a user fee for the same purpose). MBUF programs should ensure that participating drivers get compensated for fuel taxes paid or implement some arrangement to avoid drivers paying for road usage fees and fuel taxes simultaneously. For example, Oregon's mileage-based user fee program refunds the fuel tax to all users. New York has a similar refund program for tractor-trailer drivers on the New York State Thruway to refund gas taxes on toll roads.

4. WOULD THE MBUF BE A FEE OR A TAX?

MBUFs should be defined legally (as the name states) as a user fee and not a tax. Taxes are a compulsory payment, whereas a fee is a payment for a specific service. There is a long legal history that distinguishes between taxes and user fees. The Virginia Supreme Court decided in a 2013 case concerning a new tolled bridge and tunnel crossing the Elizabeth River in Virginia's Tidewater region, that since the tolls paid by users (1) result in a benefit paid to toll payers not enjoyed by non-payers (2) are voluntary and (3) provide funding specifically for the operation of the tolled facilities, they should not be considered as "taxes," which apply to everyone, regardless of benefits received.[2]

MBUFs are similar to tolls in that they are a payment for a specific service. Gas taxes are a general revenue source that are often diverted to non-roadway purposes. Even further, there is no link between where the tax is collected and where it is used. MBUFs, similar to tolls, can be dedicated to a specific roadway.

5. HOW ARE MBUFS CALCULATED?

Firms have developed several technologies capable of recording mileage. MBUF pilot programs have embraced multiple ways for users to participate in the programs. Manual reporting mechanisms include time permits, mileage permits and annual odometer readings. Time permits allow the driver to pre-pay for an unlimited amount of driving during a fixed time period. Mileage permits allow the driver to pre-pay based on a fixed number of miles. The odometer reading charges a single, yearly fee based on the rate per mile multiplied by the number of miles traveled within the program's state.

Other approaches use devices that link to the vehicle's onboard computer via its diagnostic port, or use cellphone or GPS technology to track distance and road type for programs that include such distinctions. These include automated recording without location-determination technology and with location-determination technology such as by GPS.

6. HOW ARE MBUF DATA COLLECTED? DOESN'T THE TECHNOLOGY USED TO CALCULATE MBUFS REPRESENT A MAJOR PRIVACY INFRINGEMENT?

Regardless of the method described above, all approaches offer the security of all data being recorded and stored inside the vehicle. Even where device installation is required, the systems just report distance traveled and road type. The data either go back to agencies, or to a private company contracted by an agency to handle account management of the program. While more-intrusive technologies could provide locational and tracking data, agencies should only go so far as allowing—never mandating—individuals to use such services if they wish.

Many drivers will want to take advantage of the benefits provided by the enhanced technologies, as they provide many value-added services that motorists find useful. These service packers include technology that can provide all data needed for MBUF. By not having to rely on an additional provider, the programs have three major advantages. First, they reduce overhead costs; second, insurers offer discounts when travelers use devices that collect more-comprehensive driver and vehicle use data; and third, on-demand assistance providers, such as General Motors' OnStar, provide enhanced roadside assistance and other services for motorists in a variety of situations. Drivers themselves can also benefit from feedback that helps curtail gas use, in addition to instilling better skills to help improve driver safety and vehicle life.

Private sector providers are better positioned than the government to offer value-added services, though agencies must ensure privacy protections are in place that dissuade any private organization from breaching user privacy. In Oregon, the protections include the prohibition of storing or transmitting locational data and the limitation of on-board devices used for the program to ones using short-range communications exclusively. The only data stored were for identifying vehicles, the number of miles driven in broad geographic zones, and fuel purchase totals (for the purposes of refunding gas taxes paid).[3] Contracts with private entities can be structured to assess financial penalties for failing to protect privacy.

As technology improves, private firms will be forced to change and adapt. By contracting with private providers, states can provide drivers with various MBUF participation options such as account management and vehicle diagnostics. According to Oregon's DOT, in the absence of private sector participation such choice, competition and innovation "would otherwise be limited by government-only administration," which "would not have provided the extra services, volunteer choices, or innovation that the private sector brought to the program."[4]

But for the purposes of an MBUF program, the only data that need to be reported are mileage and, where needed, subtotals broken down by road type or other considerations. Also, if gas taxes are to be refunded to drivers (as they should, to avoid double-taxing) then aggregate fuel purchase data will likely be needed, too.

7. ARE THERE ANY ADDED BENEFITS TO MBUF PROGRAM PARTICIPATION?

As introduced above, the value-added services provided to individuals by private firms offer additional benefits. Drivers can use a variety of diagnostic tools to help monitor their vehicles' health, as well as lower their insurance bills, with the same technology used in an MBUF program.

The Oregon experience shows that value-added services are highly important to the viability and the success of the program: Not only did the service attract customers to the program, the authors of the 2017 study saw the continued growth of value-added services as providing a path forward to lower agency costs.[5]

In addition, unlike fuel taxes MBUFs can reduce highway congestion. After the transition to MBUF from fuel taxes is complete and the system is proven, congestion pricing will become more feasible. Variable per-mile charges can help manage congestion by charging

higher rates during peak travel periods and lower rates for off-peak travel. While most feasible for freeways, variably priced tolls have proven the most effective way to ensure free-flowing traffic on congested highways.

MBUFs can vary based on the type of roadway. While fuel tax rates can be increased, drivers pay the same rate to use urban freeways, rural highways and subdivision streets. Yet freeways cost much more to build, maintain and operate than subdivision streets. MBUFs allow roadway operators to charge varying rates based on the type of roadway.

8. WILL MBUFS BE COLLECTED AT THE FEDERAL, STATE OR LOCAL GOVERNMENT LEVEL?

MBUFs could be collected at different levels of government. Some MBUF researchers recommend separate MBUF collection mechanisms for federal, state and in some cases local governments. Others think that since most highways are owned and funded by states, states are the best level of government to collect MBUFs.

State and local governments own all public roads and highways in the U.S. except for park service roads and private subdivision streets. By providing "laboratories of democracy," states can explore many forms of implementing and operating MBUF systems, from which best practices and technologies can develop. While the federal government currently provides a considerable portion of highway construction funding, state and local governments are more directly accountable to voters and have a greater incentive to make changes when needed.

The federal government has several potential advantages over state and local governments, though. Some argue that such a massive, and far-reaching transformation requires the scale (for economies of scale and to encourage initial prospects) and reach (for consistency and interoperability purposes) of the federal government to implement effectively. The federal government created (and provided 90% of the capital funding for) the Interstate System because of the challenge of traveling from the east coast to the west coast by roadway. Proponents of a federal system envision MBUFs being implemented in a single, nationwide system that collects revenue at the federal level and distributes that funding back to states (similar to fuel taxes). Other advocates of the federal government taking the lead suggest that, once a federal MBUF is in place, states could piggy-back on that mechanism, adding their own MBUF. A 2019 study by the Information Technology & Innovation Fund calls for a federally led transition while Reason Foundation's Bob Poole released a paper earlier this year that focuses on a state-level transition to MBUF.[6]

9. HOW CAN WE ENSURE THAT MBUF REVENUE IS DEDICATED TO ROADWAYS?

The MBUF transition should be designed explicitly to ensure road user fee revenues are dedicated to roadways only. Diversions increase the rate of per-mile fee needed to rebuild, operate and maintain highways in a state of good repair. Diversions also make MBUFs a tax not a user fee. Diverting MBUF revenue weakens the link between the highway users and fees paid (since the fees would fund services other than road use).

10. I'M CONCERNED ABOUT THE GOVERNMENT HAVING ACCESS TO MY INFORMATION. WHO COLLECTS THE DATA AND HOW LONG IS IT STORED?

As noted above, collected MBUF data are limited and include locational data if auto owners voluntarily opt to share it only. Lawmakers and agencies decide how long recipients keep the data, as well as who receives it. In MBUF pilot projects, states have contracted with private firms to collect and safeguard the data. The private partner has a greater incentive to avoid breaches and unauthorized data collection. Strong privacy provisions are critical to the success of any MBUF program.

11. HAVE ANY PLACES ATTEMPTED TO IMPLEMENT AN MBUF SYSTEM?

While a number of state MBUF pilot projects have been implemented in recent years, Oregon's OReGO program, established in 2015, is the only permanent MBUF program in the U.S. A 2017 report on OReGO and the state's two previous MBUF pilot projects concluded that its MBUF (called a "road usage charge") system works.[7] The report also provided insight on how the status quo of fuel tax funding "negatively affects rural Oregonians (who are more likely to own less fuel efficient vehicles) and those who can't afford fuel efficient vehicles to shoulder more of the responsibility for funding Oregon's transportation system."[8]

The Oregon report found that using private sector account managers reduces administrative costs of the program, especially through the provision of the aforementioned value-added services that make vendor/driver relationships more valuable to the contractor and to the customer.

In a 2016 survey, OReGO participants found the system's components easy to use and the billing and distance accounting systems reliable. After participating in the OReGO program, 69% supported MBUF as a concept and almost half (48%) were more supportive of MBUFs than before their participation; only 6% of participants were less favorable after

the OReGO experience.[9] In 2019, Oregon's governor signed legislation extending the program statewide to nearly all motor vehicles, up from the 5,000-vehicle limit previously specified.[10] A restriction on vehicles greater than 10,000 pounds was also lifted, though new vehicles must get a minimum 20 miles per gallon on average to participate, slightly up from the previous 17 miles per gallon minimum. (Heavy Duty Trucks in Oregon pay a weight-distance tax and are not eligible for OReGO.)

12. I LIVE IN A RURAL AREA. WILL I PAY MORE UNDER AN MBUF SYSTEM?

Overall rural residents should expect to pay somewhat less in MBUFs than urban and suburban residents. Further, rural residents will pay an equivalent amount in MBUFs as they pay in gas taxes. The exact difference rests on many factors: characteristics of the current vehicle, number of miles traveled, and MBUF rate(s) per mile among them. As verified by the OReGO program, rural drivers tend to own older, lower-mpg vehicles (e.g., pickup trucks) that use more fuel per year than urban drivers of newer, higher-mpg vehicles, so rural drivers tend to pay more in fuel taxes than urban drivers.

Even still, the most common objection raised during the program was its perceived negative impact on rural drivers. The results of OReGO show that concerns about rural drivers paying more are mostly unfounded. As the 2017 report on OReGO concluded:

> *The main public concern about per-mile charging is the perceived unfairness for rural drivers who have to drive long distances. But this perception is inaccurate. An Oregon State University study of Oregonians' driving patterns and vehicle ownership found that rural drivers would not be negatively impacted by a road charge. Drivers of high-efficiency vehicles, since they pay very little in fuel tax, would pay more road charge regardless of how far they travel…Rural drivers, who tend to drive less fuel efficient vehicles, would most often pay about the same as they do in fuel tax.*[11]

The Oregon State study referred to in the quotation also found that drivers in most of the rural parts of the state would tend to pay less on average, whereas drivers in Portland and its suburbs to the south would pay more.[12] Despite the evidence from Oregon's programs, the authors of the 2017 report found that its citizens still believed that rural drivers would pay more under an MBUF than urban drivers.[13]

13. I DRIVE A HYBRID OR ELECTRIC VEHICLE. HOW WILL MBUFS AFFECT ME?

With per-mile charges, hybrid and electric vehicles will pay the same rate per mile as other light-duty vehicles. With current revenue based on the fuel tax, drivers of vehicles with internal combustion engines subsidize roadways for hybrid and electric vehicle drivers, since the latter groups pay much less (or in the case of all-electric vehicles often nothing at all). While governments can substitute annual fees for EVs and hybrids to compensate for the lack of fuel tax revenues collected from their use, such ad-hoc arrangements provide virtually no correlation between monies paid and miles traveled, and are even less dynamic and effective than fuel taxes in linking road funding to road use.

CONCLUSION

Funding roadways through fuel taxes served the nation well for most of the 20th century, but increased fuel economy, coupled with the increase in electric and hybrid vehicles, has made fuel taxes an unreliable revenue source. Even while many states have managed to raise fuel tax rates to compensate for some of the funding problem, the decline in overall fuel tax revenues is projected to worsen considerably in coming decades. Without a change in funding method, the fuel tax will become increasingly unsustainable.

While per-mile charging was not a viable alternative in previous decades, technological advances and a decreasing ability to fund roads and highways adequately have made user fee models such as MBUFs and tolling more attractive. Oregon's experience has already proven that a MBUF system can work effectively and gain public acceptance.
Charging users based on the miles they drive will continue to face public skepticism, and the transition from per-gallon to per-mile funding will be substantial. But the various state pilot projects show that concerns over privacy and fairness have been (so far) unfounded. And while the concept does require some adjustments for drivers, participants appear to have easily adapted to them.

From an agency standpoint, operating under a mileage-based funding arrangement appears to deliver the least headaches: Everyone pays for what they use, no one avoids paying for what they use, and formulas can be designed and tweaked to ensure that sufficient funds are available to properly maintain roads. By avoiding fuel taxes' inherent and increasing problems, MBUFs offer the best path forward to ensure roads and highways receive the most effective funding through an approach that is fairer, more reliable and more sustainable.

ABOUT THE AUTHORS

Baruch Feigenbaum is assistant director of transportation policy at Reason Foundation, a non-profit think tank advancing free minds and free markets. Feigenbaum has a diverse background researching and implementing transportation issues, including revenue and finance, public-private partnerships, highways, transit, high-speed rail, ports, intelligent transportation systems, land use and local policymaking.

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Prior to joining Reason, Feigenbaum handled transportation issues on Capitol Hill for Representative Lynn Westmoreland. He earned his master's degree in transportation planning from the Georgia Institute of Technology.

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ENDNOTES

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