

Potential Impact of Electric Vehicle Integration on Michigan Transportation Fund Revenue

Legislative Mandate

The Fiscal-2023 omnibus budget bill (P.A. 166 of 2022, HB 5783) requires the Michigan Department of Transportation to

Sec. 602. From the funds appropriated in Part 1, the Department shall study the potential impact of electric vehicle (EV) integration on Michigan transportation fund revenue. The study shall include an analysis of the feasibility of alternate user-based systems as funding sources for the Michigan transportation fund. The department shall report its findings to the house and senate appropriations subcommittees on transportation, the house and senate fiscal agencies, and the state budget office no later than September 30, 2023.

Michigan's Electric-Vehicle Registration Surtax

Subsections 801(7) and (8) of the Michigan Vehicle Code took effect on January 1, 2017, and impose a surtax on top of Michigan's usual registration fees for vehicles using battery power. The surtax is based on the rate of the fuel tax, and works this way:

For pure-electric light vehicles (8,000 lbs. or less), the *ad valorem* registration tax is increased by \$100, plus \$5 for each 1 cent of the fuel tax above 19 cents per gallon. Michigan's motor fuel tax rate is indexed to the Consumer Price Index, so the registration surtax changes with the fuel tax every January 1, but never more than 5 percent. The current fuel tax is \$0.28.6/gallon. In Calendar 2023, the electric-car surtax is **\$148/year**.

For light plug-in hybrids, the *ad valorem* registration tax is increased by \$30, plus \$2.50 for each 1 cent of the fuel tax above 19 cents per gallon. In Calendar 2023, the surtax for a plug-in hybrid car is **\$54/year**.

For pure electric trucks (over 8,000 lbs.), the weight-based registration tax is increased by \$200, plus \$5 for each 1 cent of the fuel tax above 19 cents per gallon. In Calendar 2023, the surtax for an electric truck is **\$248/year**.

For plug-in-hybrid trucks (over 8,000 lbs.), the weight-based registration tax is increased by \$100, plus \$2.50 for each 1 cent of the fuel tax above 19 cents per gallon. In Calendar 2023, the surtax for a plug-in hybrid truck is **\$124/year**.

Impact of Electric-Vehicle Adoption

Adoption of electric vehicles will inevitably reduce motor-fuel-tax revenues. The rate of this reduction will depend on these variables:

- Size of passenger-vehicle and truck fleets
- Miles traveled by each class of vehicle
- Pure-electric-vehicle market penetration

- Plug-in-hybrid market penetration
- Share of plug-in-hybrid miles traveled on petroleum power
- Petroleum-fueled fleet efficiency
- Inflation in Consumer Price Index (affects fuel tax and registration surtax)

None of these variables can be predicted. The Michigan Department of Transportation (MDOT) engaged the assistance of The Michigan Department of Treasury (Treasury) to assist with an assessment of the impacts of the conversion to EVs. Overall, Treasury estimates that Michigan Transportation Fund tax and registration revenues will grow at a modest pace over the next two decades. However, this rate is unlikely to keep pace with inflation or road construction costs and will not fill the existing gap in road funding needs.

Due to policy changes in 2015, the adoption of EVs does not materially change the outlook for revenue to the Michigan Transportation Fund. New fees enacted in 2015 will limit the impact of the adoption of electric vehicles on Michigan Transportation Fund tax revenue. EVs pay a surtax in addition to usual registration fees, offsetting much of the loss in state motor fuel taxes. The additional registration fees paid by plug-in hybrid cars and electric trucks do not offset the loss in motor-fuel taxes paid by those vehicles.

In addition to the negligible impacts to the MTF, it should be mentioned what the impacts to other users of transportation funds will experience:

Impact on other State Transportation Tax Revenue

The Comprehensive Transportation Fund (CTF) will be impacted from the transition to electric vehicles. A small portion (4.65 percent) of the sales tax on transportation related items is earmarked the CTF.

The loss of sales tax from the declining purchases of motor fuel due to EV adoptions will affect the CTF negatively. Initially, the loss will be small but will grow as the adoption of EVs increase. The FY 2022 CTF sales tax transfer totaled \$138.0 million. The sales tax portion from motor fuel purchases/gasoline stations accounted for \$60.9 million of the total transfer. By 2030, the impact of EVs will decrease total sales tax about \$60 million and the CTF sales tax transfer by approximately \$3 million. The CTF sales tax transfer will continue to decline over time as a greater share of new cars purchased are EVs and the vehicle fleet uses less motor fuel.

Impact on Federal Gas Tax Revenue

The increased usage of EVs could affect Michigan's transportation revenue received from the federal Highway Trust Fund. Aside from the MTF, there is substantial risk in other funding. Federal road funding is structurally unbalanced, and the transition to a more fuel-efficient fleet, combined with electrification, is going to further increase the structural deficit in the federal Highway Trust Fund.

Distributions from the Highway Trust Fund are based on a number of factors. Current law includes a guarantee that each state receives 95 percent of the tax that comes from the state. However, the whole fund has been structurally unbalanced for nearly two decades. The revenue distributed to Michigan is not directly tied to the gas tax

collection in the state. The federal government has transferred other funds into the trust fund since 2008.

It is unknown how the additional loss of federal revenue would impact the overall distributions to every state and the specific amounts to Michigan.

Pilot Projects to Date

At least 37 states have some research under way into mileage-based fees, singly or in multi-state coalitions.

Oregon was the first state to implement a MBUF pilot program, for voluntary enrollees. It waives Oregon's EV surtax, and now excludes gas cars getting 20 mpg or less.

Utah's pilot program admits only electric or "alternative" automobiles. It has been suggested that it be made mandatory for such vehicles in the near future.

Virginia imposes an efficiency surtax on electric vehicles and cars getting over 25 mpg. The surtax is waived for owners who enroll in Virginia's Mileage Choice Program.

Washington conducted a Road User Charge (RUC) pilot program for voluntary enrollees.

The Eastern Transportation Coalition grew out of a plan to impose tax or fee increases along I-95 on the east coast and has 19 member states studying alternative fee approaches.

The Road User Charge West Consortium is composed of 14 states that have banded together to build on the OReGO pilot project in Oregon.

These tests are aimed at:

- Gauging citizens' acceptance of the idea, relative to the fuel tax
- Determining which classes of users would pay more or less relative to the fuel tax
- Testing billing systems, ease of use, and users' satisfaction
- Testing GPS-based or mileage-recording hardware
- Acclimating voters and legislators to the MBUF idea

Some of the tests are pure simulations, with no cash transactions. Others collect actual payment, with refunds of the state fuel tax.

None of the tests have been large enough to yield data on how much it would cost to set up and operate a MBUF system with millions of users. But larger and nationwide test programs are under way.

Permanent Programs

Four states have permanent MBUF programs as of August 2023: Hawaii, Oregon, Utah, and Virginia. These programs are limited to electric vehicles.

Federal Grant Programs

Surface Transportation System Funding Alternative Grants

The FAST Act of 2016 created this pilot program. Since 2016, 31 states and the District of Columbia were awarded STSFA grants for conducting research into alternative user-fee systems, including MBUF. See [Surface Transportation System Funding Alternatives \(STSFA\) Program - FHWA Office of Operations \(dot.gov\)](#)

- Among the approaches, issues, and technologies being researched are:
- Multi-state and Canadian interoperability
- Usage-based insurance
- Pay-at-the-pump per-mile charges
- Use of vehicles' embedded telematics
- Manual and automated odometer readings at registration or inspection stations
- Digital mapping of road networks for user fee collection and apportionment
- Impacts on intra- and interstate freight
- Mobility-as-a-service and shared mobility providers
- Data security
- Effects on rural residents and the agriculture sector
- Alternative vehicle-registration fees
- Smartphone-based road-user charges
- Data-collection mechanisms
- Accommodation of multiple fee rates and taxing jurisdictions
- Local-agency piggybacking on state-level mileage-based fee systems
- Use of blockchain technology
- Customer-service improvements, collection of user feedback
- Interoperability with tolled and priced managed lanes
- Education of the public
- Evasion mitigation

These pilot projects and studies are generating a large body of findings and reports. The pilots show that several alternative systems are workable. A lot has been learned about the operations of the different styles of MBUFs, and about public attitudes toward the system, but less about the cost of the system if scaled up to a statewide vehicle fleet. At least two synthesis reports on the work to date are expected in 2023. The National Cooperative Highway Research Program (NCHRP) will make a web-based data library on MBUF around the time this report appears.

The STSFA was amended by the Infrastructure Investment and Jobs Act (IIJA). The IIJA includes funding for two mileage-based user-fee pilot programs: additional grants for state-level pilots, and a new national program.

Strategic Innovation for Revenue Collection—\$75 million over 5 years

This updated version of the STSFA in IIJA Sec. 13001 provides grants for state-level user-fee pilots, expanding eligibility from state DOTs to local governments and metropolitan planning organizations. The new version of the grant increases the federal share for new projects to 80%, with a 70% share for recipients who received STSFA grant money. IIJA Sec. 1301 requires USDOT to submit a report to Congress in 2024

with recommendations on a national alternative revenue mechanism based on results from the state pilots.

National Motor Vehicle Per-mile User Fee Pilot—\$50 million over 5 years

This new program under IJJA Sec. 13002 directs USDOT to carry out a nationwide pilot, soliciting volunteer participants from all states, including commercial and passenger vehicles. The law requires the pilot program to offer different methods for participants to record their mileage and make payment to the Treasury and directs USDOT to set per-mile fees for different types of vehicles. A Federal System Funding Alternative Advisory Board—state transportation officials, STSFA recipients, industry representatives, advocates, and academics—will provide recommendations for the pilot program and a public-awareness campaign. One year after participants begin the federal pilot program, USDOT and Treasury will submit their first annual report to Congress. Design of this test by FHWA is delayed and it is unclear how it will be conducted. It is unknown how the test will interact with federal fuel and truck taxes, and how the revenue collected will be apportioned back to the states.

Michigan Tests of Mileage-Based Fees

In January 2023, Michigan was awarded \$2,588,542 to cover part of the cost of a test of a combined payment system for mileage-based user fees and transit fares. The project description reads:

“Perceptions and Implications of Road Use Charges: This project has two parts. First, it will seek to understand Michiganders’ perceptions of RUC via a large-scale, statistically representative statewide survey. Second, it will assess the impact of charging for roads on raising revenue, reducing vehicular congestion, and mitigating environmental damage, via a RUC demonstration designed to provide a reliable source of revenue, smooth the demand for roadways thus mitigating peak-time congestion, and offer participants information about, and alternatives to their single occupancy vehicle trips.”

Section 615 of the fiscal year 2024 budget act requires the Department to apply for a MBUF pilot-study grant from the national motor vehicle per-mile user fee pilot program in Sec. 13002 of the IJ Act.

Sources and Reports

Since 2000, there have been a large volume of publications having to do with per-mile road-use fees. This is only a sampling:

[ITS America, Road Usage Charge Program Principles \(recommended national standards\) \[https://itsa.org/wp-content/uploads/2021/09/ITS-America-RUC-Program-Principles_Final.pdf\]\(https://itsa.org/wp-content/uploads/2021/09/ITS-America-RUC-Program-Principles_Final.pdf\)](https://itsa.org/wp-content/uploads/2021/09/ITS-America-RUC-Program-Principles_Final.pdf)

FHWA Table of Awards under Surface Transportation System Funding Alternatives (STSFA) Program

[Surface Transportation System Funding Alternatives \(STSFA\) Program - Recipients and Partners - FHWA Office of Operations \(dot.gov\)](https://www.fhwa.dot.gov/operations/2019/09/20190901-stsfa-program-recipients-and-partners/)

Bipartisan Policy Center, Mileage-based User Fee Pilot Programs and the IJJA <https://bipartisanpolicy.org/blog/mileage-based-user-fee-pilot-programs-and-the-ijja/>

Senate Fiscal Agency report on alternative funding approaches.

National Cooperative Highway Research Program Project 19-18, Transitioning Fuel-tax Assessments to a Road-user Charge, CDM Smith: synthesis of information from MBUF pilot projects, to be published on the internet in 2023. Contact: Ging Ging Fernandez.

Eno Foundation paper on MBUF practices for IIJA national pilot.

MITA report on impacts of electric vehicles on funding.

Reason Foundation background paper, Mileage based user fees & sustainable transportation Funding, Dr. Adrian Moore, 2017. [Mileage Based User Fees and Sustainable Transportation Funding \(Moore\) \(utah.gov\)](#)

Testimony of Peter J. Basso, Chairman of the Mileage-based user Fee Alliance, before the U.S. Senate Committee on Environment and Public Works, April 14, 2021. [72804BF298F122050629260551308F3C.04-14-2021-basso-testimony.pdf \(senate.gov\)](#)

Senate Fiscal Agency report [State Notes - Fall 2022 - Charging Ahead: Sustainable Transportation Revenue in the Age of Electric Vehicles \(michigan.gov\)](#)