

REPORT TO THE LEGISLATURE PURSUANT TO ACT 62 OF 2023, SECTION 30

Report on Status of the Vermont Mileage-Based User Fee

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Submitted to

The Vermont House and Senate Committees on Transportation, the House Committee on Ways and Means, and the Senate Committee on Finance

Vermont Agency of Transportation

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1 Background & Introduction

Pursuant to Act 62, Section 30 (2023), the Agency of Transportation is pleased to present this report outlining an implementation plan for a mileage-based user fee (MBUF) in Vermont.

As vehicles become more fuel efficient and the adoption of electric vehicles increases, drivers are purchasing less gasoline. Although the reduction in gasoline consumption is good for the environment and consumers, it has resulted in declining fuel tax revenue, hampering the ability of states to generate sufficient revenue to invest in their transportation systems. While the challenge exists in every state, it is especially acute in Vermont, which is legally required to reduce greenhouse gas emissions under the Global Warming Solutions Act and is relying heavily upon transitioning the motor vehicle fleet to zero-emission vehicles (ZEVs) to achieve those in the transportation sector.

Vermont also participates in Advanced Clean Cars II and Advanced Clean Trucks, the California-led ZEV programs enabled through Section 177 of the federal Clean Air Act. This requires auto manufacturers to sell increasing shares of EVs over time as the regulation grows increasingly stringent. Many automakers have also made significant investments and set their own goals for electrification of new vehicles. This could include all-electric and plug-in hybrid options. Vermonters have already demonstrated significant interest in EV purchases as the share of new vehicle purchases in the state has already risen to 10% market share in 2023, above the national average. With the market share of EVs in Vermont still projected to reach 15% by 2025, the loss of fuel tax revenue will only worsen. As a result, many states, including Vermont, are exploring funding alternatives such as a mileage-based user fee (MBUF) to replace the fuel tax as the primary user fee to fund roads and bridges and the transportation system generally.

MBUF is a per-mile fee assessed to a vehicle owner based on the number of miles driven instead of based on the amount fuel consumed. Four states have enacted MBUF: Oregon, Utah, Virginia, and Hawaii. While the four states differ in their programs' size, scope, and policy approach, with all four voluntary to date, these mark an intent to begin the transition to a direct user-pay system based on the number of miles driven instead of the number of gallons of fuel consumed.

Vermont has also recognized the need to begin such a transition. Since 2021, the Vermont Agency on Transportation (AOT)—the Department of Motor Vehicles (DMV) in coordination with the Policy, Planning and Intermodal Development Division (PPAID)—has been studying how MBUF could work in the state. The first phase of this work involved a feasibility study, including an analysis of how such a fee could be implemented in Vermont along with developing rate-setting criteria. Based on this work, AOT is continuing to evaluate the potential implementation of MBUF in Vermont to fill the funding gaps created by vehicle electrification. However, while some states are contemplating how to transition to an MBUF program as a replacement for the fuel tax fleetwide, AOT has chosen to focus its efforts on implementing MBUF for all-electric vehicles as it transitions the fleet itself to fully electric over the next couple of decades.

In 2023, the Vermont Legislature enacted Act No. 62 (H. 479), which provides legislative intent to implement MBUF in 2025. Specifically, the legislation calls for the State to begin collecting an MBUF on electric vehicles beginning July 1, 2025; assessing an annual or biennial registration fee on hybrid vehicles beginning July 1, 2025; and to continue exploring a per-kWh fee on public vehicle charging equipment.

Although the legislation points to a planned implementation date of an MBUF program in Vermont by July 1, 2025, it requires further legislation to codify a program in statute and begin collecting the fee. It also requires substantial federal funding to help defray the upfront cost of designing, testing, launching and administering the system. Last year, the Legislature authorized \$350,000 for one-half of the state match required for a competitive grant award through the Strategic Innovation in Revenue Collection program to support MBUF implementation, which for a first-time participating state, could be as low as 20% state funding, 80% federal. Despite the federal program's authorization in November 2021, however, a Notice of Funding Opportunity has not yet been announced. More recent estimates by the Federal Highway Administration (FHWA) point to a Spring 2024 notice, which may not result in an award and access to sufficient funds until early in State Fiscal Year 2026 and in turn postpone the proposed launch date of July 2025.

The Legislature has requested a report on the elements required to implement an MBUF in Vermont. Accordingly, on behalf of the Secretary of Transportation and the Commissioner of Motor Vehicles, the Agency of Transportation is pleased to submit this report to the House and Senate Committees on Transportation, the House Committee on Ways and Means, and the Senate Committee on Finance, on the design and implementation of an MBUF in Vermont.

2 MBUF Statutory Language

To begin collecting an MBUF from vehicle owners, the Vermont legislature must provide statutory authorization to do so. Legislation establishing an MBUF program should incorporate numerous provisions, including rate-setting, mileage reporting, subject vehicles, authorized administering agency, consideration of privacy protection, potential rulemaking and, finally, how to transition the program.

2.1 Elements of statutory language

2.1.1 Rate calculation

Like the fuel tax, an MBUF must have a base rate; however, instead of a cents-per-gallon rate, the MBUF rate would be a cents-per-mile-driven rate. Determining the rate depends on the overall goals of the MBUF program. Generally, states that have enacted an MBUF have set the rate so that it is roughly equivalent to what the average vehicle pays in state gasoline excise taxes used to fund transportation investments and maintenance. This sets the state on a path to collect nearly the same amount from the vehicle owner that it would have collected had the driver paid fuel taxes.

There are other policy choices in addition to the base rate. For example, Vermont could assess the MBUF based on road system investment needs, by calculating a cost per mile driven and assessing the rate accordingly. Regardless, as the program grows, it is expected that modest adjustments to the rate will be needed to achieve sustainable revenue sufficient to maintain the state's transportation infrastructure due to inflation and other cost factors. Financial modeling that incorporates factors such as traffic levels, road investment needs, and MBUF program expansion to cover more vehicles can help to develop an approximate rate that will serve as a solid baseline with which to begin an MBUF program.

Recommended Approach to Vermont Mileage-based User Fee Rate Setting

Setting a per-mile rate for a mileage-based user fee (MBUF) requires deciding the following two methodological approaches:

- **Choosing a basis for the rate.** For purposes of initial rate-setting, the recommended approach is to establish a per-mile rate equal to the amount of gasoline taxes paid by a light-duty vehicle in Vermont at today's gasoline tax rate (32.61 cents per gallon) with statewide average fuel economy at the time of enactment of the last gasoline tax increase in 2013 (estimated 19 miles per gallon, or MPG). This approach gives a **base rate of 1.72 cents per mile**, calculated by dividing the gasoline tax rate of 32.61 cents per gallon by the average fuel economy of 19 MPG.
- **Applying any rate adjustment factors.** An adjustment factor is recommended to account for the expected ongoing operational costs to administer and collect MBUF. The recommended basis for this adjustment is the incremental cost of collecting MBUF, or the additional cost to the Department of Motor Vehicles (DMV) for new or additive

functions beyond existing operations, which is estimated at approximately 3.6 percent upon program launch, declining gradually over time to about 2.5 percent. Using **3.6 percent as the adjustment factor**, this results in an MBUF rate of 1.78 cents per mile, calculated by adding 3.6 percent to the base rate of 1.72 cents.

Based on the above choices, the recommended MBUF rate would be **1.78 cents per mile**.

MBUF Rate Basis Determination

As of Q1 2024, the rate of motor fuel tax in Vermont is 32.61 cents per gallon of gasoline. The rate fluctuates quarterly based on the tax-adjusted retail price of gasoline. However, according to the statutory history of Vermont's motor fuel tax, the most recent increase and restructuring of the rate of taxation was enacted in 2013.¹ This is the last time that the Legislature raised the gas tax to account for anticipated revenue needs, and it is therefore the recommendation of the Agency that the initial MBUF is determined by the fuel economy then in place, before a decade of increasing fuel economy for the fleet and inflation pressures eroded both revenue and purchasing power.

Several approaches exist for determining the average fuel economy of light-duty vehicles at the time of the last statutory gasoline tax change, 2013. Vermont's 2021 *Transportation Energy Profile* provides summaries of vehicle fleet data.² The report offers two approaches for computing light-duty fleet fuel economy:

- The **first approach** is to determine the combined city/highway U.S. Environmental Protection Agency (EPA) MPG rating of each vehicle in the state's vehicle registry through a process of decoding Vehicle Identification Numbers (VINs). This approach yielded MPG ratings for 86% of the state's 550,000 vehicles with an average MPG of 20.9 and a standard deviation of 6.5. It appears this approach calculated the arithmetic mean MPG. However, since MPG is an inverse metric, determining the actual average number of miles driven per gallon requires computing the harmonic mean. It is possible to estimate the harmonic mean by generating a normal distribution of MPG around a mean of 20.9 and standard deviation of 6.5. Using a range of 8 to 34 MPG yields an arithmetic mean of 20.9 which matches the value in the *Transportation Energy Profile*. This range yields a harmonic mean of **19.16 MPG**.
- The **second approach** is to estimate actual on-road fuel economy by dividing total vehicle miles traveled (VMT) by total gallons consumed. Using Federal Highway Administration (FHWA) VMT data and the state's taxable gallons of gasoline from the Joint Fiscal Office, this approach yielded an on-road MPG of 18.7. This methodology was recreated using 2013 FHWA Highway Statistics data (Tables VM-2 and VM-4)³, but

¹ [Vermont Statutes, Title 23, Chapter 28, Section 3106.](#)

² [Agency of Transportation, Vermont Transportation Energy Profile, 2021.](#)

³ [Federal Highway Administration, Highway Statistics Series, 2013.](#)

adjusting the resulting sample to remove proportional VMT for non-gasoline light-duty vehicles as reported in the *Transportation Energy Profile*. By making this adjustment, the estimated fuel economy is **18.83 MPG**.

Given the proximity of these two disparate methodologies, the Agency recommends averaging the two to produce an average on-road fuel economy estimate for light-duty vehicles in Vermont in 2013 of **19 MPG**.

The per-mile rate can be calculated by dividing the gasoline tax rate by the average fuel economy: 32.61 divided by 19 equals **1.72 cents per mile**.

Rate Adjustment to Account for MBUF Administrative Costs

It is likewise important to account for the costs to administer an MBUF program. An odometer-based program, although more cost-effective than technology-intensive solutions (relying on in-vehicle telematics or location aware on-board devices, for example), is still more expensive to administer than the gas tax where collection costs are relatively nominal. The recommendation is therefore to incorporate an adjustment factor to account for the cost of administering MBUF so that net revenues would largely mirror what might be obtained through fossil-fueled equivalents. In Vermont, the DMV administers vehicle fees and taxes as well as motor fuel taxes. The DMV will also administer the MBUF program. Two approaches to recovering administrative costs include:

- **Incremental cost allocation.** Under this approach, only the incremental or marginal cost of operating the MBUF program would be recovered through MBUF rates. This would exclude all costs of operating and administering DMV's program as it exists prior to the enactment of MBUF and include only those additional costs attributable to administering MBUF, such as additional personnel, transaction costs, and overhead. In cost modeling conducted in the first phase of Vermont's MBUF research program, these costs were estimated at 3.6 percent of revenue for a program reliant entirely on odometer readings already collected at state safety inspections as the basis for determining miles driven in an MBUF program. Over time, these costs are estimated to decline to 2.5 percent by 2040.
- **Revenue-based cost allocation.** Under this approach, all DMV costs would be pooled, and a flat adjustment factor would be applied to all DMV tax and fee rates to cover those costs. In FY 2023, DMV was budgeted for \$43.8 million. In FY 2024, the DMV was expected to collect \$369.9 million.⁴ At those levels, by dividing \$43.8 million by \$369.9 million, costs represent 11.8 percent of revenue at launch. Should MBUF be applied only to electric vehicles (EVs), it is estimated to generate an additional \$43 million in 2040 at an incremental cost of \$1.1 million. Adding these figures, the calculation is now \$44.9 million divided by \$412.9 million, showing costs would decline to **10.9 percent of**

⁴ [Vermont DMV 2023 Budget](#)

revenue at scale. This method gives a cost factor that depends on the total expected revenue collected by the DMV, which may fluctuate over time and is largely independent of MBUF. This potential cost ratio volatility is independent of the cost efficiency of MBUF and the amount of revenue collected for MBUF. Moreover, this method pools cost ratios for fees that are regulatory in nature (such as driver licensing) with taxes that are designed to generate road funding (such as fuel taxes). Such pooling results in cross-subsidies across payers for disparate revenue collection purposes.

Summary

The table below summarizes the key values used to determine a recommended MBUF rate. Based on an average light-duty fleet MPG of 19 as of 2013, the gasoline tax rate as of 2024, and cost adjustment factors ranging from 2.5 percent to 11.8 percent, the MBUF rates considered range from 1.76 to 1.92 cents per mile.

Item	Value
Gasoline tax rate per gallon as of January 1, 2024	\$ 0.3261
Year of last statutory changes to gasoline tax rate/formula	2013
Recommended Vermont light-duty vehicle fleet MPG in 2013	19
Equivalent MBUF base rate	\$ 0.0172
A. Revenue-based cost allocation at launch (2025)	
	11.8%
B. Revenue-based cost allocation at scale (2040)	
	10.9%
C. Incremental cost allocation at launch (2025)	
	3.6%
D. Incremental cost allocation at scale (2040)	
	2.5%
Potential per-mile MBUF rate range	A. \$ 0.0192
	B. \$ 0.0191
	C. \$ 0.0178
	D. \$ 0.0176

Given that many of DMV’s costs are related to enforcement of regulations and not simply revenue collection, the incremental cost allocation approach appears to provide a superior methodology for determining a rate adjustment factor. Therefore, adjusting the MBUF base rate of 1.72 cents by a factor of 3.6 percent leads to the recommended MBUF rate in 2025 of **1.78 cents per mile.**

MBUF Rate-Setting Approaches in Other States

Four states have enacted MBUF programs. Each one has followed a similar model as recommended for Vermont of setting the per-mile rate equal to approximately what the average gasoline powered vehicle pays in state fuel taxes. Although no state has yet included an explicit adjustment factor for the cost of administration, it has been discussed and debated in several

states such as special MBUF task forces in California and Washington, as an idea worthy of consideration.

Oregon

When Oregon enacted its MBUF program in 2015, the Legislature chose a rate of 1.5 cents per mile. This rate was negotiated by lawmakers in the process of crafting the enabling legislation. In a previous session, the Legislature and ODOT had identified 1.56 cents per mile as the “revenue neutral” rate, or the rate that generates the same amount of revenue as state gas taxes on a per-mile basis.

The per-mile rate in Oregon’s program changed pursuant to subsequent legislation, most recently in 2019. Currently, the MBUF rate in cents per mile is prescribed in Oregon law as 5 percent of the value of the state motor fuel tax rate in cents per gallon. For example, the motor fuel tax increased from 38 to 40 cents per gallon on January 1, 2024. At the same time, the per-mile MBUF rate increased from 1.9 cents to 2 cents per gallon (5 percent of 38 and 40, respectively). This has the effect of anchoring the per-mile MBUF rate to the amount a 20-MPG vehicle pays in state fuel taxes, which was approximately the average fuel economy upon enactment of the program in 2015.

Utah

Utah’s MBUF program does not replace state motor fuel taxes. Instead, the MBUF program applies only to alternative fuel vehicles (largely EVs) in lieu of flat annual vehicle surcharges. The original MBUF rate of 1.5 cents per mile was designed to equate with what the average vehicle paid in state gasoline taxes at the time (noting the state gasoline tax had been increased an indexed to inflation at the same time as the creation of the MBUF program). Legislation later reduced the MBUF rate to 1 cent per mile along with an increase in the cost of the flat annual surcharge. These rate changes were designed to encourage more vehicle owners to enroll in the MBUF program.

Hawaii

Hawaii’s MBUF program was enacted as a replacement to the state fuel tax. The program will begin with EVs on July 1, 2025. For the first three years, EV owners will have the choice of paying a flat annual fee of \$50 or an MBUF of 0.8 cents per mile capped at \$50.

In determining its MBUF rate, Hawaii calculated a rate based on the average fleet fuel economy (as determined by research conducted between 2018 and 2021) of approximately 21 MPG and a state motor fuel tax rate of 16 cents per gallon. This yielded a rate of 0.76 cents per mile, rounded up for purposes of enabling legislation to the nearest tenth of one cent to 0.8 cents per mile. Adjusting for the cost of administration was not explicitly considered or included in the enabling legislation.

Virginia

The approach to MBUF in Virginia differs from the other three existing programs. In Virginia, all vehicles rated 25 MPG and higher must either enroll in MBUF or pay an annual registration surcharge. The annual registration surcharge increases with the combined MPG rating of the

vehicle and is designed to partially fill the gap of gasoline taxes that those vehicles avoid. The formula calls for an annual surcharge equal to 85 percent of the difference between the gas taxes paid by the subject vehicle and a vehicle rated 23.7 MPG, assuming the vehicle drives the Virginia average of 11,600 miles per year. For example, a vehicle rated 30 MPG would pay \$101 in gas tax. A vehicle rated 23.7 MPG would pay \$128. The annual registration surcharge for the 30 MPG vehicle is 85 percent of the different, or 85 percent of \$27, which equals approximately \$23.

The MBUF rate is determined by dividing the annual registration surcharge by the average number of miles driven. For example, the MBUF rate for the 30 MPG vehicle would be \$23 divided by 11,600, or 0.2 cents per mile. The choice of 23.7 MPG was not identified in statute or DMV's literature as an average fuel economy for Virginia.

To start, statute must simply identify the base rate for subject vehicles (EVs only) and how this rate will evolve over time. Additional adjustments can be incorporated into ongoing program evaluation by AOT/DMV.

2.1.2 Mileage reporting

In order to collect an MBUF, the Agency charged with administering the program must know the number of miles a vehicle has traveled. Pursuant to H.479 (Act 62), Vermont intends to utilize the annual motor vehicle safety inspection as the basis for reporting the number of miles driven annually. Therefore, at each annual inspection, an inspection mechanic will continue to record the mileage of the vehicle and report it to the DMV. The DMV will compare the most recent odometer reading to that of the year prior and multiply it by the MBUF rate, thereby determining the MBUF owed by the driver. Utilizing the inspection process as the basis for mileage reporting leverages an existing process to reduce administrative costs, allowing more of the fee to be used for actual transportation needs. This also has the added effect of making the process of paying the fee easier for the driver, thereby increasing support for MBUF.

2.1.3 Subject vehicles

The MBUF legislation should specify which vehicles are subject to the MBUF. Pursuant to H.479 (Act 62), battery electric vehicles (EVs) will be the first cohort of vehicles in the state to be subject to an MBUF. Beginning with a small subset of vehicles allows the program to begin small, providing an opportunity to implement the program while working out some of the administrative or technical challenges associated with the startup of any program. As the processes associated with the MBUF are established, the State whether to modify the program in any way.

2.1.4 Administering agency

One or more state agencies or departments must have the authority and responsibility to administer the MBUF program. Pursuant to H.479 (Act 62), the DMV will have the primary

responsibility of administering the MBUF program. The DMV will be the agency responsible for collecting the MBUF at the time of vehicle registration since it has the requisite information and mechanisms necessary for calculation and collection of the fee. In Vermont, the DMV is the optimal agency to administer this program because it also already has in place many of the other processes and procedures necessary for mileage reporting and fee administration. This reduces administrative costs and provides for a more seamless process for vehicle owners.

2.1.5 Privacy Protections

The MBUF as designed will not collect any information that is not already collected by the DMV. Therefore, by default, the MBUF has built-in privacy protections. However, protection of personal information is critical in any MBUF program. Referencing existing privacy protections or incorporating provisions into the law that provide them can ensure public confidence that the state will not misuse the data collected. The extent of the privacy and personal information protection provisions is a decision left to the Vermont Legislature. Provisions can range from modest to sweeping; however, most states have included some privacy provisions into MBUF enabling law. It may be prudent for the Legislature to identify Vermonters' key privacy concerns and build protections into the law that address those concerns. For now, however, the DMV can apply the existing laws and rules regarding the protection of data that DMV handles. The Legislature may consider additional safeguards as a part of a broader look at data and security privacy.

The statute should apply existing laws and rules governing the protection of personal information and data the DMV already collects.

2.1.6 Rules

The law should incorporate a provision to permit the DMV/AOT charged with administering and collecting the MBUF, to implement and manage the program as needed to achieve goals. While the MBUF law should clearly define the requirements and processes to operate an MBUF program, there may be some elements of an MBUF program that are best left to the DMV to define due to the specific expertise it holds as it relates to efficiently and effectively administering a program.

To be clear about the authority to administer the MBUF program, the statute should include sufficient detail to direct the agency charged with implementing and administering the program, while also providing flexibility to DMV leadership to evolve the program as necessary without necessarily creating a rulemaking process.

2.1.7 Transition plan

The rationale for developing a MBUF is, in part, that it can serve as a sustainable long-term replacement for the fuel tax as a transportation user fee. To best accomplish this, many or all vehicles would become subject to an MBUF at some point in the future. Most MBUF programs, however, begin with a small subset of the statewide vehicle fleet. As the program matures, as

policymakers resolve the policy challenges inherent in a new system, and as administrators resolve technical challenges inherent in a new system, an MBUF can be applied to more vehicles. Therefore, the transition is gradual, allowing for incorporation of more vehicles into an MBUF program over time. This may be done in many ways, including incorporating a specific transition timeline in statute. Alternatively, the legislation may not specify a precise transition timeline, but instead require the administering agency (or agencies) to return to the Legislature at a future date with a recommendation for a transition plan based on an analysis of the initial program.

Ultimately, the transition plan for Vermont will be guided a bit differently, in that the plan is to incorporate more vehicles by rapidly electrifying the fleet, rather than changing which vehicle types are subject to the fee.

2.2 Mileage-Based User Fee Rate

2.2.1 Calculation of the MBUF Rate

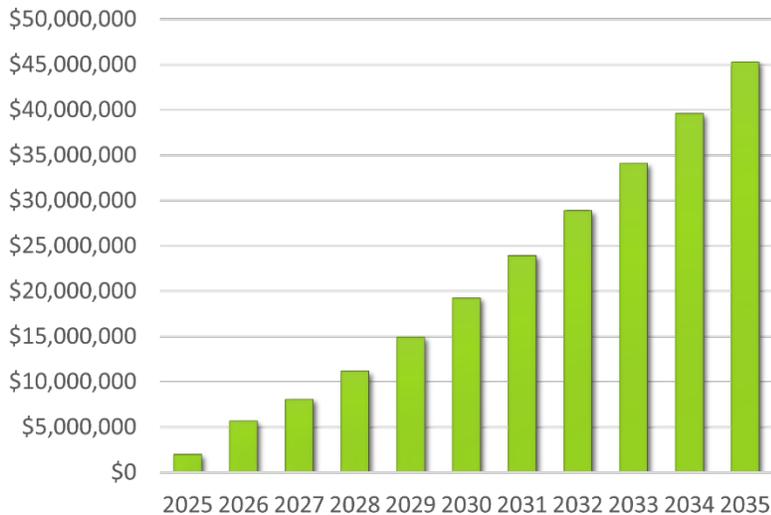
Because the MBUF is a replacement for the fuel tax, the rate is designed to generate comparable revenue as the fuel tax. A rate of 1.78 cents per mile would generate the equivalent of what the current gasoline tax of 32.61 cent per tax yields for a light-duty vehicle with an average combined on-road fuel economy of 19 mpg. **Accordingly, the rate of 1.78 cents per mile is the recommended rate with which to begin an MBUF program for light-duty EVs in Vermont.**

2.2.2 Estimated Annual MBUF Yield

The per-mile rate of 1.78 cents per mile on EVs could yield approximately \$5 million in gross revenue for AOT in Fiscal year 2026, the first full year of MBUF following launch of the program on July 1, 2025. This figure assumes an EV adoption scenario aligned with modeling performed for the Climate Action Plan for a total of approximately 24,000 AEVs in Vermont driving an average of 12,000 miles per year. Subsequent totals are illustrated below along with the estimated number of EVs. The average annual miles driven per vehicle of 12,000 is assumed to remain constant. These assumptions will be revisited, and estimates refined as the program launches, data and revenue are collected, and EV registration trends become clearer.

Fiscal Year	Number of Registered AEVs (Thousands)	MBUF Revenue (Millions)
2026	24	\$5.1
2027	35	\$7.5
2028	50	\$10.7
2029	70	\$15.0
2030	94	\$20.1

Potential Revenue from MBUF + Flat Fee



2.2.3 Comparison of MBUF and gasoline tax

The table below summarizes amounts paid for various types of vehicles based on annual miles driven. Under an MBUF at 1.78 cents per mile, all electric vehicles would pay the same per mile:

- A vehicle driving 5,000 miles per year would pay \$89.
- A vehicle driving the Vermont average of 12,000 miles per year would pay \$214.
- A vehicle driving above average at 20,000 miles per year would pay \$356.

By contrast, under the gasoline tax, an EV would pay nothing in all three miles driven scenarios. A below average MPG vehicle such as a pickup truck would pay more: \$109, \$261, and \$435, respectively. An above average MPG hybrid would pay less: \$41, \$98, and \$163.

Vehicle type	Average on-road MPG	Gasoline tax paid			MBUF		
		Low (5,000 miles)	Medium (12,000 miles)	High (20,000 miles)	Low (5,000 miles)	Medium (12,000 miles)	High (20,000 miles)
Pickup	15	\$109	\$261	\$435			
Average VT car	20	\$82	\$196	\$326			
Sedan	30	\$54	\$130	\$217			
Hybrid	40	\$41	\$98	\$163			
PHEV	80	\$20	\$49	\$82			
EV	∞	\$0	\$0	\$0	\$89	\$214	\$356

A plug-in hybrid electric vehicle (PHEV) averaging 40 MPG would pay \$98 in gas taxes per 12,000 miles driven, about \$98 less than the statewide average. A PHEV averaging 80 MPG would pay \$49 in gas taxes per 12,000 miles driven, about \$147 less than the statewide average. A flat fee to capture avoided gas taxes by a PHEV compared to the average vehicle, based on the average of 12,000 miles driven, could therefore range from \$49 to over \$147 *per year*. The Agency's proposal to subject plug-in hybrids to an increased registration fee currently in statute (1.75 times the fee for other "specialized fuels"), would result in a \$57 surcharge within the lower end of that range. This initial rate has the benefit of a lower additional cost at the point of registration, a fairer amount for those who travel fewer miles on average or drive a less efficient vehicle, and financial incentive for vehicle owners to plug their plug-ins in to reduce their combined annual road usage charges.

3 Implementation Guidelines

A law establishing a mileage-based user fee program should clearly define the requirements and processes to administer an MBUF program; however, there may be some processes or procedures that are best left to the expertise of an agency to develop. Whether a requirement or process is defined by statute or rule depends on its complexity as well as the preferences of policymakers and those charged with implementing the program. The following sections identify rules that may be needed for key MBUF processes.

3.1 Calculation and reporting of annual vehicle miles traveled by BEVs

When calculating an MBUF owed by a driver, there are three critical components: the per-mile rate a driver is assessed; the recording of the number of miles driven annually; and what calculation is needed to assess the final MBUF owed by the driver.

First, setting the per-mile rate is a relatively simple process and can be easily defined in law. This is a policy choice driven by policymakers and guided by the overall needs of the transportation system. Second, the collection and reporting of the number of miles driven is slightly more complex but can also be defined in statute. Since Vermont will use data from vehicle safety inspections as a basis for mileage reporting, the number of miles driven between inspections can be collected by a mechanic at the annual inspection. The mechanic can be required to record the current odometer reading at the inspection and the system can compare the current odometer reading to the reading from the previous inspection to get the number of miles driven in the prior year. This number can then be reported electronically to the DMV.

Finally, based on this information, when a driver visits the DMV to register their car, the DMV can calculate the MBUF owed by multiplying the per-mile rate by the number of miles driven in the last year (between the two most recent inspections). This calculation is straightforward and can be established by statute. Therefore, there may be no need to establish agency rules for this process.

3.2 Payment methods

The core processes and procedures related to how and when a driver pays a MBUF may generally be established in statute; however, given the administrative nature of these processes, the ability for the DMV to develop some rules to effectively collect payment may be prudent.

One of the key differences between payment of fuel tax and a MBUF lies in when it is paid. The fuel tax is paid periodically—when someone fills up their car with gas. Conversely, paying the MBUF as you go is more challenging and costly. During Vermont’s Road Usage Charge study and stakeholder process, it was determined for equity reasons that there ought to be the ability to pay on a more frequent basis than annually when a driver registers their car. Though the MBUF is a relatively low fee not expected to provide any disincentive, concerns nevertheless exist about the impact on drivers of paying a large sum at one time. As a result, some states are exploring different payment options and methods, including providing periodic payments or the ability for

drivers to pre-pay parts of their MBUF. While these payment options and methods are often straightforward and incorporated into statute, there may be some administrative components of these processes and procedures that make development of rules by the administering agency prudent. Given that the DMV already collects various fees from drivers, some of the processes or systems already used may also be used to collect an MBUF, minimizing duplication and reducing the need for alternative procedures.

3.3 Standards for mileage reporting mechanisms for an owner or lessee of a BEV to report vehicle miles traveled throughout the year;

Reporting the number of miles driven every year is one of the three critical pieces of information needed in order for the DMV to calculate the MBUF owed by a driver. Some states have considered providing multiple options for reporting miles, such as through an odometer reading or with the use of technology. Other states, like Hawaii, only allow for reporting of miles through the annual safety inspection process. Because the reporting of miles is one of the most critical components of a MBUF program, the methods for which a driver (or responsible party) may report miles ought to be defined in statute. In Vermont, the MBUF program builds upon existing contracts and processes to collect and transmit odometer readings during annual vehicle safety inspections. For example, the DMV may want to develop rules that require a mechanic to submit the number of miles driven within a 24-hour period. Or the DMV may require an inspection station to follow a certain process when collecting mileage data. These more intricate, process-oriented policies are better suited for DMV decision-making authority than incorporation into statute.

3.4 Security and Protection of Personal Information and Data

For many drivers, an MBUF system raises concerns about privacy due to the potential use of personal information and data. Because of the important privacy questions these issues raise, many states have developed solutions to mitigate or even eliminate the privacy issues inherent in an MBUF system. These protections can be built into an MBUF system through both policy choices and technical requirements.

Because the concerns around privacy and protection of personal information are paramount, the most significant privacy protections should be referenced or incorporated into the MBUF law. Policy choices built into statute can also mitigate or eliminate privacy concerns. For example, Vermont will utilize manual odometer reporting as the method to report annual miles driven. This manual approach dramatically reduces privacy issues because it does not involve the use of location data.

The primary technical means of ensuring privacy is through enacting robust data security measures, requiring that every actor in the MBUF system—both the State and any private vendors—have robust information technology security practices. These technical requirements of a program can go a long way towards mitigating or eliminating privacy issues.

Regardless of the efforts to mitigate or eliminate privacy concerns, the State could benefit from a comprehensive privacy policy that can govern the use of private or personal information in the context of an MBUF program. Because of the growing importance of privacy, states are developing comprehensive policies for more than just MBUF programs; however, because of the important privacy considerations raised by an MBUF program, the development of a comprehensive policy can be a valuable privacy and data protection tool. While there may be a need for some technical rules that can mitigate privacy concerns, most of the privacy protections in an MBUF should be built into the law.

3.5 Penalty and appeal procedures

To maintain a sustainable and effective MBUF program, there must be a mechanism for the State to enforce payment of an MBUF. As a result, penalties and enforcement associated with non-compliance will need to be built into the program. For criminal penalties, state law generally governs the adjudication and enforcement process. For administrative procedures, the Administrative Procedures Act generally guides procedural requirements and rules. The same is true in the context of an MBUF program. Initial consequences for minor infractions may include a warning letter or a financial penalty. Significant consequences for prolonged or high-value violations may include registration holds, which should provide a backstop in case of serious violations. Other significant consequences could include the use of collections agencies or even wage garnishment. Here, many of the enforcement mechanisms can be built into the law; however, like other components of an MBUF law, it may be prudent to provide DMV authority so that the department can effectively and efficiently enforce payment. This issue may be mitigated by duplicating and building off existing DMV processes and procedures.

3.6 Third-party oversight

When a state agency utilizes a third-party entity to help administer a program such as a mileage-based user fee, it is incumbent upon the government to provide effective oversight to ensure the third-party follows the law and all appropriate procedures. This includes, but is not limited to, ensuring protection of personal information and the ability to audit financial and other records related to administration of the mileage-based user fee. Because the DMV already uses third party entities to accomplish some of its duties, oversight rules and standards are already in place, reducing the need for further rules or regulations. However, there may be some additional safeguards needed to ensure proper oversight of third-party entities is conducted.

Much of the oversight overlaps with the parallel policy goals of ensuring driver privacy and that personal information is protected. Thus, if statutory requirements that govern privacy and protection of personal information are incorporated into MBUF legislation, many of these components will not need further rulemaking. However, like most of the above provisions, the final determination on the need for rules or standards adopted by the Department rests with the policy decisions and design of the MBUF program. Accordingly, much of the oversight may be built in the statutory framework that governs the MBUF program to ensure that the oversight responsibility of the third-party entity is fully conducted.

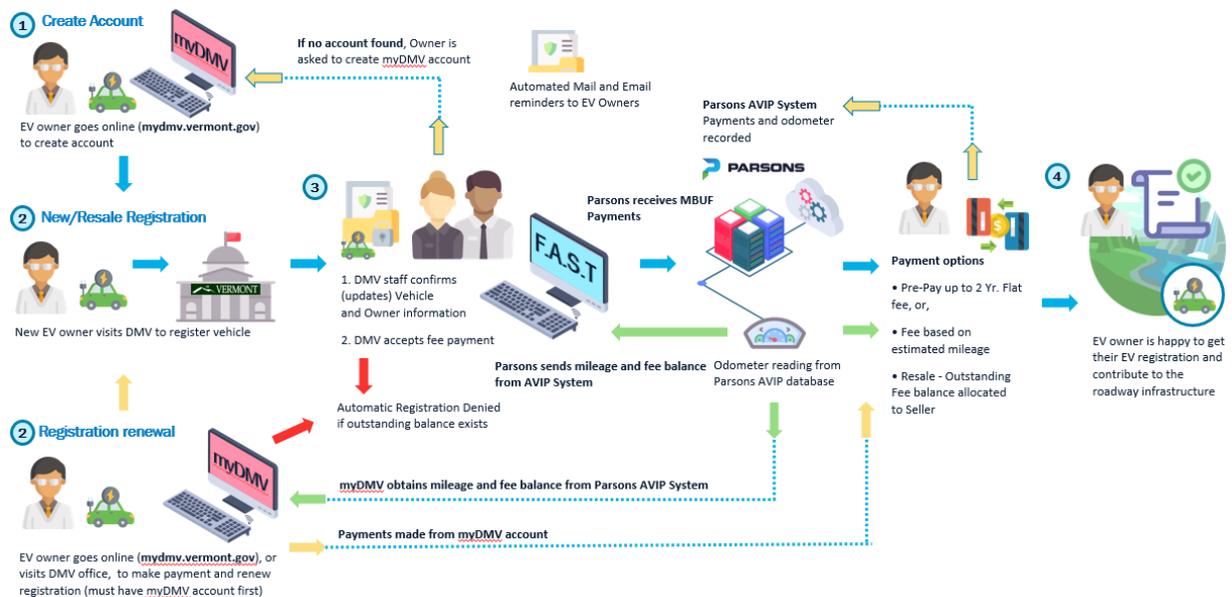
4 MBUF Implementation Plan

The process for implementing a statewide MBUF is akin to a dial being turned slowly, rather than a switch that is thrown at one time. Because of the new collection method, and the new procedures and processes an MBUF requires, an effective implementation plan must be put in place to ensure a smooth transition. Implementation of an MBUF program for Vermont follows several steps sequentially:

1. Enactment of authorizing legislation for AOT/DMV to administer the program and collect the fee (see Section 2).
2. Rules, system implementation, and communication in parallel:
 - Guidelines designed by the agency for the administration of the program (see Section 3).
 - **System implementation by the agency including design, development, testing, and launch**
 - **Communication with customers by the agency.**
3. Program evaluation by the Agency (see Section 5).

The remainder of this section constitutes a draft implementation plan, covering the key steps associated with program implementation (bolded above): program design, development, testing, launch, and communication with customers. The final implementation plan will be developed contingent upon final policy decisions and a timeline decided on by AOT/DMV.

POTENTIAL SYSTEM WORKFLOW



4.1 Program Design

Initial concepts for MBUF implementation were explored in earlier phases of research by AOT. AOT/DMV is now working toward final program design, which encompasses the following elements:

- Enrollment in MBUF
- Mileage reporting
- Payment choices and mechanisms
- Privacy protection and data security
- Compliance and enforcement
- Third-party oversight

4.2 Enrollment in MBUF

At a high level there are two approaches for enrollment: vehicle-based and account-based. **The currently preferred approach is vehicle-based.** In addition to being consistent with the approach to vehicle regulation, vehicle-based MBUF enrollment provides more transparency related to private vehicle sales (i.e., making it easier to identify outstanding MBUF balances or issues during vehicle transactions that occur outside the annual registration cycle). It also simplifies management of personally identifiable information (i.e., allowing the system to focus on vehicle data rather than owner data). Enrollment can be encouraged through the registration process by flagging subject vehicles at that time and using the opportunity to educate EV owners and share information about enrolling the vehicle in the MBUF program. Registration renewal processes will further ensure enrollment in MBUF by preventing registration of vehicles which have not been enrolled or have not had their MBUF paid in full.

4.3 Mileage reporting

As identified during earlier research, **mileage reporting will occur by leveraging the existing annual vehicle safety inspection process which includes collection of odometer readings.**

The basic process involves collecting the odometer reading and subtracting the previous year's reading to determine the miles driven by the vehicle since the prior inspection. MBUF is determined by multiplying the per mile rate as set in law by the number of miles driven.

Currently, inspections happen after vehicle registrations, which means collecting an odometer reading, determining miles driven, and calculating and collecting MBUF could only happen after the vehicle owner pays for registration. There are several approaches for addressing this process, but the preferred option is to collect an estimated MBUF amount or fixed amount at registration, then reconcile it the following year based on the odometer reading reported at safety inspection the prior year.

Another issue is how to address odometer readings that are unavailable (for lack of a valid state inspection). One option is to default these vehicles to a flat fee set at a higher percentile of

annual miles driven, in order to encourage obtaining an actual odometer reading through the annual vehicle safety inspection process.

Another issue to consider is how an MBUF balance is handled with change of ownership.

- One option is to require sellers to pay MBUF at the time of title transfer. MBUF due would be based on the difference between odometer value reported as part of the title transfer and the most recent odometer value reported as part of an MBUF transaction (for example, reported and paid at the previous inspection and registration renewal). This approach would allow buyers to pay MBUF based only on the miles they drove after taking ownership of the car.
- AOT/DMV is exploring how unpaid balances or fees would carry with the previous vehicle owner so that the new owner is not assuming an outstanding liability. True odometer readings are required when a vehicle is resold, but as of yet, there is no method to independently verify the accuracy of odometer statements. Here again, a default flat fee could be assigned to the prior owner unless a voluntary vehicle inspection is performed as part of the transaction.

4.4 Payment choices and mechanisms

DMV will utilize the same payment choices and mechanisms that are utilized for payment of other vehicle registration fees. Payment channels include online (via credit or debit card), in person (via cash, check, credit or debit card), or through postal mail (via check or money order).

In addition to the option of paying the entire MBUF for a year at one time, some states are offering the option to pre-pay for anticipated MBUF, with the ability to “true-up” their payments at a future date. This may involve payment of a pre-determined amount, or an amount based on the previous year’s MBUF. Other options include payment of MBUF in installments on a monthly, quarterly, or annual basis. As has been planned from the outset, vehicle owners will be able to select a payment frequency (monthly) to spread the financial impact of the fee throughout the year, rather than cause the possible hardship for vulnerable Vermonters of a lump sum annual payment.

Ultimately, the goal is for all drivers to pay the fee for the use of the road over the course of a year. If payment plans help a driver do that, it ensures a reliable source of revenue needed for the maintenance of the transportation system. These payment methods can provide flexibility to the driver, ensuring that the fee does not end up delinquent. Privacy protection and data security

Although some drivers may have concerns about privacy, it is important to note that no new information is being collected in Vermont’s MBUF program. Existing DMV procedures for privacy protection and data security should apply to MBUF transactions.

4.4.1 Compliance and enforcement

Enforcing payment of an MBUF can rely on the same procedures as those already existing for other vehicle registration taxes and fees. **The currently preferred enforcement approach is to apply a registration hold** to enforce reporting and payment of MBUF (and enrollment, if necessary), until MBUF is assessed and paid during annual (or bi-annual) vehicle registration renewal. This is consistent with existing practice for other registration fees.

If the odometer reading is unavailable, the preferred approach is to assess a flat fee set at the 98th percentile of annual miles driven. This percentile can be determined based on the odometer readings reported by compliant vehicles, but is estimated at approximately 30,000 miles, which equates to \$534 at 1.78 cents per mile.

For fraud such as misreporting or tampering with the MBUF program, the preferred approach is to rely on existing statute and rules that allows DMV to suspend or revoke registration in cases when the owner of the vehicle has perpetrated some fraud on the department.

- Third party oversight

AOT/DMV may involve third parties including its IT contractor and inspection system contractor in the development and operations of the MBUF system. DMV will apply its existing authority and discretion to the oversight of such third parties, including enforcement of data security provisions and privacy protection protocols for handling personal information such as vehicle owner identities and contact information, vehicle information including odometer readings, and financial information including credit card numbers.

4.5 Development, Testing, and Launch

Once the final program design decisions are made, DMV will reduce them to writing in the form of system specifications, business rules, and process and procedure updates. Next, DMV will work with its internal staff and vendors to implement the changes through a series of development and testing which includes several elements:

- Implementation of system changes including internal code and vendor software updates
- Implementation of process changes including procedures followed by staff, including customer service staff and partners (most importantly dealerships). This step includes working with staff and partners to communicate the changes, address questions, and ensure understanding and readiness.

Once the changes are implemented, the agency will test the processes and systems to ensure readiness for launch with customers. **Testing involves a series of transactions with test vehicles (simulated or real, such as using Agency vehicles or vehicles of staff and partners to test system readiness).** By identifying issues, errors and gaps, the Agency can correct them prior to launch.

Finally, once the Commissioner deems the program ready for launch, the program can go live on the statutory authorized date, with customers enrolling their vehicles upon purchase or registration renewal and paying MBUF with registration or thereafter, depending on the design choices made.

4.6 Communication with Customers

A key element of implementation is proactive communication with affected customers, so they understand the program changes and any expectations of them. Proactive communication helps to avoid customer surprise, misunderstanding, and frustration at launch. By letting customers know in advance what they will experience and how it differs from the normal registration and/or renewal process, they can be better prepared to facilitate smoother transactions without creating customer service backlogs for DMV. This communication includes proactive communication with partners such as dealerships who handle most original registrations to ensure their understanding and ability to address customer questions about the program on DMV's behalf.

5 Program Reporting and Evaluation

As implementation begins, it is important to collect critical data that will inform any potential future expansion of the program. This data will help to inform policymakers of needed changes in the program. The most important data to collect includes the amount of revenue collected in MBUF; the average MBUF collected along with vehicle miles traveled; amount of fuel tax collected with vehicle miles traveled; number and size of delinquent MBUFs; number of outstanding payments for delinquent MBUFs; cost to collect MBUF; and the rate of adoption of ZEVs and other non-internal combustion engine vehicles.

5.1 Revenue collection

The total amount of revenue collected in MBUF for the prior fiscal year and an estimate of the total amount of revenue anticipated to be collected in MBUF during the subsequent fiscal year should be collected. Because an MBUF is intended to be a sustainable replacement for the fuel tax, it should be able to generate a comparable amount of revenue. As such, analyzing how much revenue is being generated by an MBUF can be an indicator of how an MBUF is performing against expectations as well as how it may perform as the program transitions to include more vehicles.

5.2 Average MBUF collected

The average MBUF collected for EVs with low, medium, and high annual vehicle miles traveled in the prior fiscal year will provide useful data on the average fee collected each year and the distribution of fees collected across the population of EVs. Additionally, data on the ranges of miles traveled by vehicles will aid analysts and policymakers trying to determine how the MBUF fares with respect to the fuel tax and lead to better estimates on how the expansion of the program could work.

5.3 Fuel tax collected for non-EVs

Similarly, an estimate of the average amount in motor fuel tax revenue that was collected for a vehicle along low, medium, and high annual vehicle miles traveled provides data on the revenue-generating capacity of the fuel tax and how it compares to the hypothetical revenue yield if fuel efficiency were to remain unchanged.

5.4 Fuel tax collected for PHEV

An estimate of the average amount in motor fuel tax revenue and increased registration fee that was collected for a pleasure car that is a plug-in hybrid electric vehicle (PHEV) along with low, medium, and high annual vehicle miles traveled will provide actionable information on PHEVs. PHEVs may be the next logical cohort of vehicles to include in an MBUF program, making the data on how much fuel tax revenue they generate useful for program-expansion purposes. PHEVs differ from conventional hybrids in that they can travel on pure battery electricity for some distance (some up to 40 miles) before switching to gasoline consumption. Conventional hybrid vehicles require some gasoline consumption at all times for vehicle motive power.

5.5 Delinquent MBUF

The total number of delinquent MBUF in the prior fiscal year will provide helpful information in at least two respects. First, it can help the DMV adapt their processes and policies to accommodate the needs of fee-paying drivers. As noted above, MBUF is generally collected at one time, making the payment of a lump-sum more difficult than paying periodically. The DMV can potentially adapt payment policies based on the number and extent. Secondly, the number of delinquent fees will impact transportation revenue. As a result, it is critical for policymakers to know the extent to which delinquent payments are a reality in an MBUF program so they can plan accordingly and modify enforcement mechanisms if deemed necessary.

5.6 Outstanding payment plans

As noted above, motorists will likely MBUF less frequently than they pay fuel taxes (e.g., once per year compared with once or twice per month). Therefore, the amounts of the payments are higher. Agencies are sensitive to this fact, and other states have explored the possibility of providing drivers payment plans as Vermont has committed to. If a driver elects to pay via a DMV-approved payment plan, and the payments are still late, this will provide important information to those implementing the program to better structure the payment plans so that drivers can pay the fee on time. Because Vermont will provide payment plans, the total number of outstanding payment plans for delinquent MBUF will be useful to evaluate how best to structure the plans so that they are of best use to drivers.

5.7 Cost of collection

The cost to collect MBUF is a critical component of the MBUF program. Any revenue used for overhead or administrative costs is revenue not being used for funding Vermont's transportation system. Collecting miles driven data in an accurate, reliable, unintrusive, way that respects privacy of the vehicle owner and does not unduly burden either the vehicle owner or the state government has stood as one of the central challenges of MBUF research and implementation. Vermont's status as a state with annual vehicle inspections offers an opportunity to utilize a simple method of collecting miles driven data from vehicle owners: by having a certified inspector look at the odometer once per year and record the number in a database owned by the state. This alone dramatically reduces the cost of collection; however, the cost of collection remains nonetheless higher than that of the fuel tax. As a result, collecting data that can help inform further administrative efficiencies to reduce overhead costs, or to approach accounting for administrative costs using a different methodology, can be important to ensuring that the MBUF program is a sustainable road usage charge.

6 National Trends in Transportation Funding

As vehicles become more fuel efficient and the adoption rate of electric vehicles increases, every state is experiencing declining fuel tax revenue. As a result, many states are studying ways to generate long-term, sustainable revenue to fund road and bridge maintenance. Some states have even enacted legislation to increase revenue over the short and medium terms. The states that have enacted funding increases have relied on traditional means of revenue generation, such as increases in the fuel tax and other registration fees as well as new mechanisms, such as delivery fees and mileage-based user fees.

State funding is also hampered by inaction at the federal level. In addition to the reliance on their own fuel tax, states have also relied on the federal government for substantial funding for road and bridge maintenance; however, the federal government has not raised the gas tax since 1993. Given the decline in the federal fuel tax revenue, Congress now regularly relies on transfers from the general fund to fulfill its obligations to the states and fill the federal Highway Trust Fund. States have therefore been largely left on their own to find alternative revenue mechanisms to maintain their transportation infrastructure and they have taken different paths to accomplish this objective.

6.1 State transportation funding commissions/studies

As states face widening gaps between available resources and the needs of their transportation system, some have formed study groups or commissions to identify long-term funding solutions. The study groups or commissions are designed to provide input from a broad cohort of stakeholders. For example, in 2019, the Maine Legislature established the Blue Ribbon Commission to Study Funding Solutions for the State's Transportation System.⁵ The Commission brought together stakeholders to identify the funding need and recommend solutions. In 2023, the work of the commission led the Maine Legislature to enact a short-term fix for the state's transportation infrastructure.⁶ Additionally, in 2023, the New Hampshire General Court established a commission to study revenue alternatives to the gas tax for the funding of improvements to the state's highways and bridges and their resulting improvements.⁷ The Commission completed its work and submitted a Final Report, recommending further study

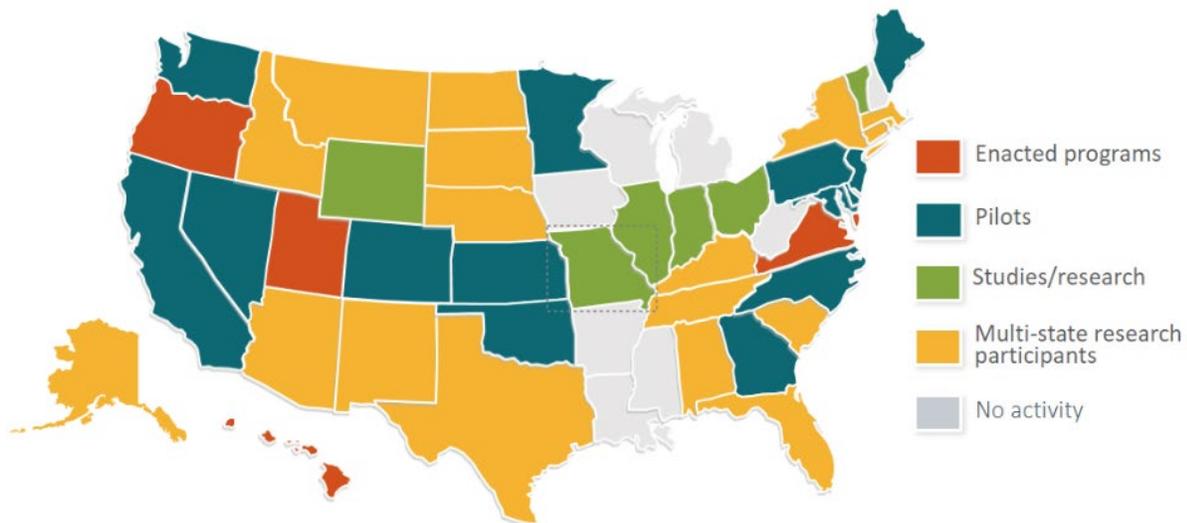
⁵ <https://legislature.maine.gov/blue-ribbon-commission-to-study-funding-solutions>

⁶ <https://www.maine.gov/governor/mills/news/governor-mills-signs-highway-fund-budget-law-creating-new-sustainable-source-funding>

⁷ <https://www.gencourt.state.nh.us/statstudcomm/details.aspx?id=1649%20&rbl=1&txtkeyword=road%20toll>

and analysis.⁸ Study commissions have also been established around the country, too, in states such as Nevada,⁹ and Ohio.¹⁰

Most of these states are exploring a range of possible solutions—from short term fixes to studying long-term alternatives. The commissions have identified both traditional means of transportation funding, including increases in the fuel tax and usage-related taxes such as license and registration fees. Additionally, many states are looking at new means to raise revenue through mileage-based user fees, parcel delivery fees or taxes assessed on electricity. In most states, the fuel tax is the most significant generator of revenue for transportation; however, it remains only leg of a multi-leg funding stool. There are many other sources of revenue that fund states' transportation systems. Therefore, even though many states have identified mileage-based user fees as a viable replacement for the fuel tax, these states are still undertaking studies of the entire transportation funding pie to ensure it can keep up with the demands of the transportation system while being a fair and equitable way to fund transportation.



6.2 State legislation

Several states have enacted comprehensive funding packages. For example, in 2021, Colorado enacted a transportation funding bill that is expected to raise \$5.4 billion over ten years.¹¹ The funding will largely come from increases in the fuel tax as well as a host of new fees on ride-hailing services, electric vehicles, car rentals and a new type of fee on retail deliveries.¹² In 2023,

⁸ <https://www.gencourt.state.nh.us/statstudcomm/reports/1649.pdf>

⁹ <https://www.dot.nv.gov/doing-business/nevada-sustainable-transportation-funding-study-and-advisory-working-group>

¹⁰ <https://ohioroadfunding.com/about-us/>

¹¹ <https://leg.colorado.gov/sb21-260-bill-summary>

¹² <https://www.denverpost.com/2021/06/17/colorado-transportation-funding-law-fees-polis/>

Minnesota enacted similar legislation. The funding bill in Minnesota is estimated to generate more than \$1.3 billion for Minnesota’s transportation needs.¹³ The legislation is funded by a fuel tax increase as well as the indexing of the fuel tax to inflation. Additionally, there are increases in other fees, including the tab fee, sales tax on vehicles as well as a new fee the retail deliveries.¹⁴ While the legislation is expected to be a significant investment in the state’s transportation infrastructure, many leaders acknowledge that it will not solve the state’s long-term funding challenge. In recent years, other states have enacted funding packages, including Missouri¹⁵ and Ohio,¹⁶ which largely been funded by an increase in the fuel tax. A more comprehensive list of the activity of all the states can be found on the website of the National Conference of State Legislatures.¹⁷

6.3 Federal transportation funding

In 2021, Congress passed the Investment in Infrastructure and Jobs Act (IIJA) or Bipartisan Infrastructure Law (BIL). The legislation represented the largest investment in transportation infrastructure in decades. While this investment is significant, it only represents a short-term boost to federal transportation funding due to the way the BIL is funded.

SEC. 13001. STRATEGIC INNOVATION FOR REVENUE COLLECTION.

(a) **IN GENERAL.**—The Secretary shall establish a program to test the feasibility of a road usage fee and other user-based alternative revenue mechanisms (referred to in this section as “user-based alternative revenue mechanisms”) to help maintain the long-term solvency of the Highway Trust Fund, through pilot projects at the State, local, and regional level.

Historically, the federal Highway Trust Fund (HTF), the fund through which most federal transportation funding flows, has been funded through the federal gas tax. However, the federal fuel tax has not been raised since 1993, placing strain on the solvency of the Highway Trust Fund. Thus, as revenue from the fuel tax has declined over the last two decades, it has become commonplace for Congress to fill the gap in the HTF with transfers from the General Fund. Such was the case with the BIL. As such, the HTF is insolvent and any transportation funding bill results in only short-term funding due to the reliance on regular General Fund transfers. The BIL will expire in 2026 and Congress will once again have to deal with an insolvent HTF.

While the federal government has not identified long-term sustainable funding, it has nonetheless provided funding for states to explore long-term funding solutions. Congress realizes it can no

¹³ <https://www.startribune.com/minnesota-legislature-set-to-approve-1-3b-transportation-deal-with-gas-tax-hike-delivery-fee-roads/600276657/>

¹⁴ <https://www.revisor.mn.gov/bills/bill.php?b=House&f=HF2887&ssn=0&y=2023>

¹⁵ <https://www.kansascity.com/news/politics-government/article251341958.html>

¹⁶ <https://www.daytondailynews.com/news/local/ohio-drivers-set-pay-cents-per-gallon-gas-tax-increase/58FYUkaPpHgIF1PSIMuj9M/>

¹⁷ <https://www.ncsl.org/transportation/transportation-funding-and-finance-state-bill-tracking-database>

longer rely on the fuel tax as a revenue source in the future. To help states explore solutions, they created the Strategic Innovation for Revenue Collection (SIRC) grant program in the BIL. This grant program is similar to its predecessor, the Surface Transportation System Funding Alternatives (STSFA) program. Since 2015, the United States Department of Transportation has granted millions of dollars to states to explore various alternatives to the fuel tax. The states have largely focused their efforts on the potential of a mileage-based user fee, exploring ways an MBUF could work in individual states and studying the policy challenges and opportunities associated with this fuel tax replacement.

States have had tremendous success examining and developing solutions for the various policy issues, including how to ensure driver privacy, protection of personal information, interstate interoperability, collection of revenue and enforcement, public outreach and more. To date, thirteen (13) states and two multi-state coalitions have received funding to explore mileage-based user fees. Four states have gone on to enact small scale, voluntary MBUF programs, including Utah, Oregon Virginia and Hawaii.

Under the BIL, the SIRC program has expanded grant eligibility to make it easier for state and regional governments to take advantage of this funding to explore sustainable alternatives to the fuel tax and expand on the research, analysis and outreach that has been conducted in many other states. While

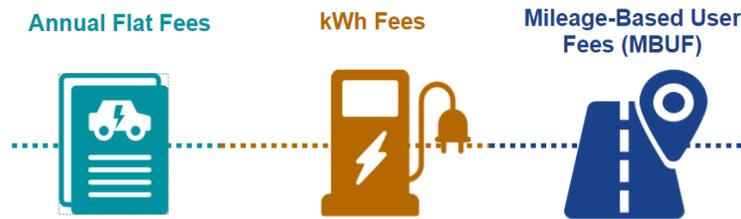
7 Conclusion

As electric vehicle registrations continue to grow and fuel economy standards rise for all vehicles, fuel tax revenue will continue to decline, hastening the need to find a long-term alternative to the fuel tax. Because of significant, multi-year investments, Vermont is making great progress towards reducing greenhouse gas emissions from the transportation sector and transitioning its motor vehicle fleet to electricity as a source of energy. However, a sustainable transportation system is one that can draw upon consistent funding to invest and reinvest in not only roads and bridges, but accessible public transit and shared mobility options, active transportation and EV charging infrastructure, and more. An underfunded transportation system cannot remain resilient in the face of repeat damages. As EV adoption becomes mainstream, requiring electric vehicles to pay for their fair share of road usage thus represents progress toward financial, social and environmental sustainability. While more decisions must be made regarding implementation, including further analysis, public outreach and program design, this report provides a high-level plan for the introduction of a mileage-based user fee for electric vehicles.

8 Appendix

8.1 kWh fees at Public EVSE

Section 23 of 2023 Act 62 (2023 Transportation Bill) also directs the Agency to further investigate collection of a per kilowatt hour (kWh) fee at public charging stations in Vermont. The following discussion provides the current status of that effort to establish a road usage charge for out-of-state EV drivers and challenges associated with implementing the fee.



One of the most significant drawbacks to a mileage-based user fee for electric vehicles registered in Vermont is that it cannot now capture revenue from the significant number of EVs driven in Vermont but registered elsewhere. Policymakers in other states are looking at utilizing a per-kWh fee to fund transportation because it is conceptually similar to that of gasoline— it is a tax imposed for every unit purchased or consumed. However, for reasons outlined below, charging a per-kWh fee on electricity is practically different than collecting a tax on a gallon of gasoline, creating policy challenges for states hoping to implement per-kWh fees and likely replicating in the future funding issues similar to our current predicament.

Seven states have enacted per-kWh fees on the charging of electric vehicles. While there are slight variations from state to state, most of the legislation imposes a fee at public charging stations. This means that when a driver pulls up to a public charging station to charge their vehicle, a tax is applied for every kWh of electricity used to charge the vehicle. In some states this fee is also imposed at charging stations operated by private enterprises. No state has imposed a per-kWh tax on electricity used to charge a vehicle at residential buildings, which is where most charging of electric vehicles takes place.

8.2 Survey of States

As of June 2023, seven states have enacted per-kWh fees on electric vehicles; and several more have considered per-kWh fee legislation. The states that have enacted the fee have not begun collecting the fee and are at various stages of implementation. As a result, there is no data to

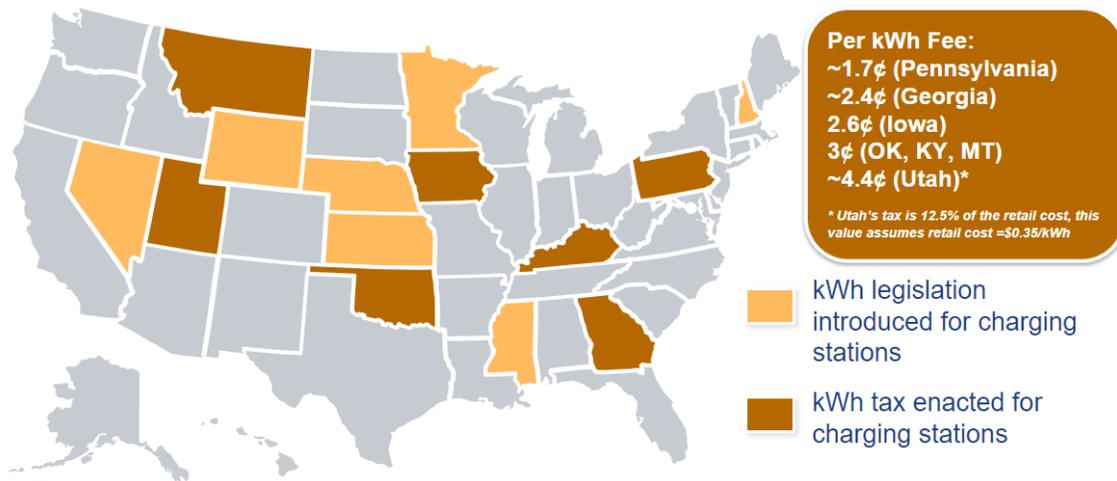
evaluate how the fee is working. The following is a summary of state laws or proposed legislation.

Enacted per-kWh legislation

- **Iowa** enacted [HF 767](#) in 2019. It imposes a \$0.026/kWh tax on all non-residential electric vehicle charging (i.e. public and private charging stations) beginning July 1, 2023. The law requires collection of this new fee at the point-of-sale and paid by licensed electric fuel dealers and users. The state is still working out how to allow apartment residents to charge at home without being subject to the tax. Under this law, there is no mechanism to enforce the reporting of the tax.
- **Oklahoma** enacted [HB 2234](#) in 2021. It sets a \$0.030/kWh tax on electricity used for EV charging at public charging stations beginning January 1, 2024. It does not apply to residential charging. The per-kWh tax is collected at point of sale and the charging station owner provides notice of the tax on an invoice to electric vehicle owners charging at the station, collects the tax and remits the tax to the state tax commission monthly. The law requires public charging stations to use a metering system capable of imposing the cost for the charging service using a unit per kilowatt hour or a comparable measurement.
- **Kentucky** enacted [HB 8](#) in 2022. It imposes a \$0.030/kWh excise tax on power used to charge electric vehicles and an additional \$0.030 surtax for stations on state land, beginning January 1, 2024. The taxes apply only to public charging stations. The tax rate will be adjusted based on changes in the National Highway Construction Cost Index (NHCCI). The revenue from these taxes will be deposited into the state's road fund.
- **Pennsylvania** [law](#) imposes a tax that applies to alternative fuels and technically applies to EV charging. It took effect in 1997 and is meant to create an equivalence to gas tax revenues, using comparable BTUs. The rate is computed annually by the Department of Revenue to identify the equivalent rate as the tax applied to a gallon of gas. The current rate is \$.0172/kWh.
- **Utah** enacted [HB 301](#) in 2023. This legislation lowers the tax on motor vehicle fuel and implements a 12.5% tax on retail electric vehicle charging. The EV charging tax applies per kWh, per hour, per subscription fee, or to any combination of the three, and the revenue from this tax goes into the Transportation Fund. Charging station operators must provide customers with itemized receipts, breaking out the rate, volume and tax applied. The legislation takes effect January 1, 2024.

- **Georgia** enacted [SB 146](#) in 2023, which imposes a fee on electricity at public charging stations. The rate is \$0.0284/kWh.
- **Montana** enacted [HB 55](#) in 2023, which imposes a fee on electricity at charging stations. The rate is \$0.030/kWh. The legislation specifically excludes charging facilities at residential locations.

Kilowatt Hour Tax (kWh) Fee in 2023



8.3 Challenges of kWh fees in Vermont

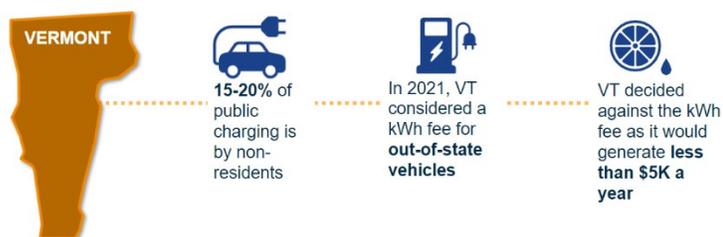
In 2013, Vermont studied the impacts and feasibility of alternative road funding mechanisms. The Vermont Department of Public Service published an evaluation of these different mechanisms, including a per-kWh tax that would apply to all forms of EV charging (both private residential and public). The state estimated that a tax of \$0.034/kWh would be sufficient to replace lost gas tax revenues. The document highlighted the challenges of implementing the tax, given the need to include residential charging to cover the lost fuel tax revenues: dedicated meters are seen as a substantial cost burden which may disincentivize EV uptake; smart meters do not appear to have adequate technological capabilities; vehicle data may not be precise enough or indicate usage in state.

In 2021, The Vermont Agency on Transportation undertook an additional analysis of the current value of establishing a per-kWh fee for non-residents to pay at Vermont charging stations. The analysis found that using conservative estimates a per-kWh on electricity transferred to non-resident vehicles would generate approximately \$5,000 in revenue per year. The Agency of Transportation concluded that there is little value in establishing a per-kWh fee for drivers at this

time. The report noted that a future analysis of per-kWh fees may be warranted based on several factors:

1. **The adoption rate for EVs in surrounding states.** Increased adoption of EVs in neighboring states will impact the amount of charging necessary for visitors to Vermont.
2. **Impact on gas tax revenues.** The number of non-resident EVs may result in a decline in state gas tax sales from out of state vehicles. At some point, the revenue loss will become significant enough to warrant some method of capturing revenue from out-of-state impacts to the transportation system.
3. **Setting the per-kWh fee rate for non-resident vehicles.** Since the 3.4 cents per-kWh rate was based on electricity usage by Vermont vehicles, the agency should gather the additional information to determine whether a different, higher rate for non-resident vehicles would be warranted for recharging non-resident vehicles based on the relative impact of their driving on the state's road system.
4. **Capability of existing and future public charging stations.** To determine the capability of public charging stations to accurately collect a per-kWh fee, the agency should evaluate the current and future plans for public charging infrastructure in the state.
5. **Resident exemptions from the per-kWh fee.** While non-resident drivers of EVs may not pay anything for the use of Vermont roads, it is also true that resident drivers of EVs pay nothing. Vermont should evaluate whether its residents should be exempt from paying a per-kWh fee at public charging stations. A specific exemption for residents, however, may run up against legal challenges, including potential conflicts with the Commerce Clause, which protect against state laws restricting interstate commerce, or the Privileges and Immunities Clause, which protects against state laws restricting travel from other states.

Charging the charger:
The juice isn't worth the squeeze.



Regardless of whether a per-kWh fee is charged to residents or non-residents, or both, policy challenges exist with the implementation of per-kWh Fees, including issues related to technology, equity, financial sustainability and privacy.

First, taxing fuel to pay for roadway use is a special challenge, given emerging vehicle technologies. Each new engine technology, or fuel source, will require new, complicated calculations of “energy equivalency” to travel a certain distance. Each time a new fuel source or technology emerges, new legislation attempting to capture road use is required. For example, hydrogen fuel cell vehicles are EVs, but they generate their electricity on-board – not from the grid. Other vehicles, such as a hybrid air vehicle that would use compressed air as a motor fuel, are also under development. Taxing electricity for roadway use is a surrogate twice removed – it is a derivation of the fuel tax rate, which itself is an indirect tax for road usage. Taxing electricity creates the need to “chase” each new engine technology with new variations of fuel tax legislation.

Second, a kWh tax disproportionately impacts a significant number of EV drivers. The EV industry estimates that 75-80% of all EV charging takes place at a person’s residence. By taxing only “public charging,” people who must rely on shared charging stations (at multi-family apartment complexes, workplaces, or other public-access charging stations), could be disproportionately taxed while the other 80% of EV owners, who own a home, won’t pay the tax. Exempting residential charging raises important tax equity issues, since the kWh tax will disproportionately fall on people who don’t own homes. Vermont must also consider that some drivers from other New England states and New York may be traveling less than 200 miles round trip daily and therefore likely to be charging their vehicles at their own homes out of state – not at public charging stations – and are unlikely to pay a kWh tax.

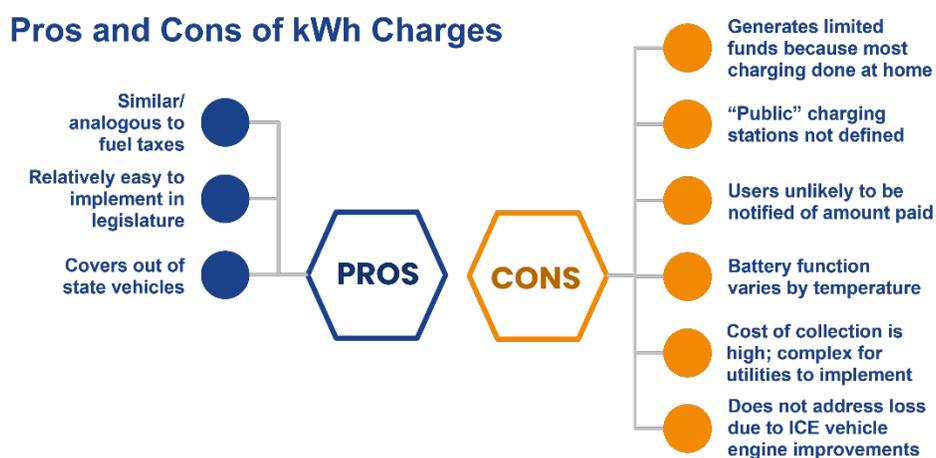
Third, while Vermont does not currently impose any registration surcharges on electric or hybrid vehicles, some states do, creating a question of whether a per-kWh amounts to double taxation. Should Vermont elect to impose a registration surcharge on electric and/or hybrid vehicles as well as a mileage-base user fee, a kWh tax appears to be taxing these drivers twice for the same roadway use.

Fourth, a large number of non-residential charging stations lack the technology required to administer a kWh tax. Many public charging stations (and most residential charging stations) are not metered. Thus, there is no method of measuring how much electricity is being delivered to the EV. Furthermore, many public charging stations are not networked, meaning there is no capability to upload or transmit charging station data so that a kWh tax could be assessed. Technology isn’t the only challenge here; there could be privacy concerns. Should a per-kWh tax be applied to residential locations, it may result in requiring the resident of the home to acquire certain technology to measure the amount of electricity being used for EV charging. Many homeowners may object to this.

Fifth, there is no established revenue-grade standard to measure electricity dispensed at public DC fast charging stations – and there may not be for some time. The National Institute of Standards and Technology (NIST) is developing industry standards (under their Weights and Measures program) that would require revenue-grade accuracy for measuring electricity dispensed at EV charging stations.

Sixth, charging a per-kWh fee does not necessarily address the issue of out of state drivers using Vermont roads. Because Vermont is a relatively small state, it is possible to travel through the state without stopping to charge the vehicle battery. As a result, a driver from a nearby state may enter Vermont with a full battery, use Vermont roads and never stop to charge their vehicle.

Finally, many owner/operators provide EV charging as a free amenity and have no interest in collecting fees from EV drivers. As of 2023, Vermont has 350 public access charging stations. Many of the locations offering Level 2 charging services provide it as a free amenity for customers. Examples include car dealerships, hotels, retail stores, and more. Locations that provide these services for free may be unlikely to invest in point-of-sale equipment and networking software just so they can pass along a kWh tax to EV drivers. This raises the issue of whether a kWh tax would cause many owner/operators to discontinue their EV charging stations when faced with increased electricity costs.



8.4 Conclusion

While per-kWh fees are conceptually similar to that of the gas tax, implementing the per-kWh fee remains practically different. Some states will begin implementing per-kWh fees this year; however, numerous policy challenges associated with its implementation exist. These states will be the first to identify the efficacy of per-kWh fees and discover their drawbacks. Most importantly, as states search for a sufficient and sustainable replacement for the fuel tax, states will be able to assess the revenue-generating ability of this fee, especially compared to other methods of usage fees such as a mileage-based user fee. Accordingly, the Agency will continue to track these developments and explore alternative methods for assessing road usage charges on out-of-state vehicles as we await a more national solution.

8.5 2023 Act 62, Section 28: MBUF Report

Attached below is a copy of the legislative language establishing the MBUF program as a state priority and detailing the elements of this legislative report.