Mileage-based User Fee for EVs

SENATE TRANSPORTATION COMMITTEE, FEBRUARY 23, 2023

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Transportation Funding in Vermont

**Transportation Fund Revenues (FY23 Forecast)**
- **Miscellaneous Revenue**: 21.1% (7%)
- **Gasoline Tax and Assessment (MFTA)**: 78.2% (26%)
- **DMV Fees**: 87.8% (29%)
- **Diesel**: 18.8% (6%)
- **Purchase & Use Tax**: 94.2% (32%)

Total: $300.1 million

Data from July 2022 Consensus Revenue Forecast

**TIB Fund Revenues (FY23 Forecast)**
- **TIB Diesel Assessment and Other**: 2.0% (8%)
- **TIB Gasoline Assessment (MFTIA)**: 21.6% (92%)

Total: $23.6 million

Data from July 2022 Consensus Revenue Forecast
Transportation Funding in Vermont

Majority of decreased consumption due to increasing fuel efficiency of overall fleet

Source: epa.gov
EV Adoption in Vermont

Vermont Electric Vehicle Registrations

- All-Electric Vehicles
- Plug-in Hybrid Electric Vehicles

8,875 ZEVs:
- 4,099 PHEVs
- 4,776 AEVs

As of Jan 2023
4,776 All-Electric
4,099 Plug-in Hybrid
8,875 Total

EV Registrations in ZIP Code
- 1 - 9
- 10 - 24
- 25 - 40
- 50 - 199
- 200 - 525
EV Adoption in Vermont

How many vehicles does Vermont need to electrify?

Graph showing EV adoption from 2013 to 2030 with a marked increase in 2025 to reach a goal of 126,000 EVs by 2030.
EV Adoption in Vermont

35% of new vehicle sales by 2026

Vermont’s Low and Zero Vehicle Regulation

The new regulation accelerates requirements that automakers deliver an increasing number of zero-emission light-duty vehicles each year beginning in model year 2026. Sales of new ZEVs and PHEVs will start with 35% that year, build to 68% in 2030, and reach 100% in 2035.
Private sector also leading: trends in auto industry point to rapid increase in EV adoption

Toyota is going big on EVs, with plans to spend $35 billion and roll out 30 models by end of decade

Honda to spend billions on Fayette County battery plant
Hondas has picked Fayette County for a $3.5 billion battery plant it is developing with South Korean battery maker LG.

G.M. will spend $7 billion on Michigan plants to further its electric-vehicle aims.
The automaker will build a battery plant and overhaul an existing factory to produce electric pickup trucks, creating 4,000 jobs.

Stellantis, Samsung to invest $2.5B, create 1,400 jobs at Indiana EV battery plant

Ford Fortifies EV Bet With Four New Factories in Tennessee and Kentucky
Combined $11.4 billion investment with SK Innovation aims to accelerate electric push, create 15,000 new jobs.
EV Adoption in Vermont

![Graph showing EV adoption in Vermont](image-url)

### Estimated Alternative Powertrain Market Share
(includes hybrid and electric vehicles)

**Market Share by Engine Type**
(YTD ‘22 thru November)

<table>
<thead>
<tr>
<th>Engine Type</th>
<th>YTD ‘21</th>
<th>YTD ‘22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid</td>
<td>7.7%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Electric (BEV)</td>
<td>2.8%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Plug In Hybrid (PHEV)</td>
<td>2.4%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>
Potential Revenue Losses due to Electrification
Climate Action Plan Modeling and MBUF Projections

Projected EV Adoption in CAP Modeling

Potential Revenue from MBUF + Flat Fee
Projected Vehicle Price Parity

**Figure 1.** Sales-weighted average conventional and electric vehicle prices applied in this analysis

Source: January 2023 [ICCT Report](#)
Projected Vehicle Price Parity with IRA

Vehicle Price Parity factoring in Inflation Reduction Act tax credits 2023-2025

Source: January 2023 ICCT Report

Figure 4. Sales-weighted average new ICE and BEV prices with IRA incentives and tax credits applied
What is a road usage charge?

A **road usage charge** is a fee on vehicle use of the public road system.

Examples:
- A mileage-based user fee (MBUF)
- An annual flat fee
- A per kilowatt hour fee

**Basis of MBUF**: A roadway consumption tax, with distance, stated in miles, as the measure of consumption.

An **annual flat fee** is collected at vehicle registration.
Where are mileage-based user fees happening in US?

### Mileage-based user fee

- Manual reporting of odometer reading, and/or
- Automatic reporting of actual miles driven via technologies installed or embedded in vehicle.
- Payment made to government agency and/or private account manager.

#### Map:
- **3** Enacted programs
- **13** Pilots/demonstrations
- **13** Research
Where are annual flat fees happening in US?

Annual flat fee

Billed and collected by government agency as part of vehicle registration.

*Per National Conference of State Legislatures 12/1/2020
Where are per kWh fees happening in US?

**Per kilowatt hour fee**

- Assessed on electricity transferred at public charging stations.
- Collected and remitted by station owner/operator.

★ Program enacted in 2021, but not yet implemented

*Per National Conference of State Legislatures 12/1/2020*
MBUF collection systems in the United States

Three MBUF collection systems have undergone extensive system development.

As of 2021, only the odometer reading system and the account-based open system have proven viability.

**State odometer reading system**
- State annually collects odometer readings and issues invoice for MBUF
- **Where tested**: Washington, Hawaii

**Pay-at-the-pump system**
- MBUF collected along with fuel purchase at fuel pump
- **Where tested**: Oregon, California

**Account-based open system**
- State sets standards for private entities to collect MBUF periodically based on real-time mileage reporting
- **Where applied**: Oregon, Utah
Road Usage Charge Study

Road Usage Charge Advisory Committee and subcommittees convened stakeholders several times in Fall 2021 to consider impacts of a variety of policy scenarios and alignment with shared goals:

- Vermont needs to develop long-term, sustainable revenue to maintain our roads and bridges

- Future funding must be fair where all drivers contribute to the maintenance of the road network

- Any funding policy must be aligned with Vermont's Climate Action Plan
MBUF in Vermont

Road Usage Charge Study Advisory Committee recommended in its final report a mileage-based user fee for plug-in electric vehicles:

- Best opportunity to align sustainable transportation revenue and climate goals
- Cost-effectively utilizes existing inspection process with odometer reading
- Flexible payment options/frequencies
- Fairness: drivers only pay for what they use
- Avoids privacy concerns of reporting devices
- Federal money can be leveraged to assist with implementation
MBUF + Flat fee in Vermont

**Mileage-based User Fee for All-Electric Vehicles (AEVs)**

- Create new fee based on annual miles traveled for AEVs as collected at the annual vehicle inspection, with rate to approximate equivalent gas tax ($0.013/mile --$150/yr)
- Vehicle owners pay on a selected frequency (monthly, annually) to a third-party account manager
- DMV to ensure compliance with MBUF program through existing policies and practices

**Flat Fee for Plug-in Hybrids (PHEVs):**

- Use existing “other specialized fuels” language for 1.75 x registration fee for PHEVs
- 1.75 X $76 annual registration fee (**$57 additional fee** vs. $72 estimated in report)

**RUC Study Advisory Committee Survey**

<table>
<thead>
<tr>
<th>What is your initial reaction to introducing mileage-based user fees for fully electric, plug-in hybrid electric, or other highly fuel-efficient Vermont registered vehicles?</th>
<th>Percent</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Supportive</td>
<td>30%</td>
<td>116</td>
</tr>
<tr>
<td>Somewhat Supportive</td>
<td>30%</td>
<td>116</td>
</tr>
<tr>
<td>Somewhat Opposed</td>
<td>15%</td>
<td>58</td>
</tr>
<tr>
<td>Very Opposed</td>
<td>22%</td>
<td>85</td>
</tr>
<tr>
<td>No Opinion</td>
<td>2%</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>384</td>
</tr>
</tbody>
</table>
MBUF + Flat fee in Vermont

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**RUC Study Advisory Committee Survey**

Table 6. EV Purchase Likelihood with Road Usage Fees

<table>
<thead>
<tr>
<th>If mileage-based fees or flat fees are implemented in the state of Vermont for electric vehicles and highly efficient fuel vehicles, how likely are you to purchase an electric vehicle in the next few years?</th>
<th>Percent</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>More likely</td>
<td>6%</td>
<td>8</td>
</tr>
<tr>
<td>About the same</td>
<td>78%</td>
<td>109</td>
</tr>
<tr>
<td>Less likely</td>
<td>16%</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>139</td>
</tr>
</tbody>
</table>
Proposed Language

1) The Agency shall design and implement a process to collect a mileage-based user fee based on the annual vehicle miles traveled by BEVs registered in the State.

2) It is the intent of the General Assembly that starting on July 1, 2025 PHEVs that are a pleasure car, as defined in 23 V.S.A. § 4(28), shall be subject to an annual or a biennial registration fee that is one and three-quarters times the amount of the annual or biennial fee for a pleasure car pursuant to 23 V.S.A. § 361 and the State’s gas tax but shall not be subject to a mileage-based user fee.
Mileage-based User Fee vs. Cost of Ownership

### Estimated annual savings

The annual cost comparison shown below is based on the above cost and efficiency information combined with estimated annual vehicle use of 12,000 miles per year.

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline Vehicle</td>
<td>$1,795 a year</td>
</tr>
<tr>
<td>Electric Vehicle</td>
<td>$830 a year</td>
</tr>
</tbody>
</table>

### EV savings over 5 years

Savings add up! The following cost and savings estimates are based on the information provided above multiplied over 5 years. Think of all the things you could do with potential savings like this!

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Cost over 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline Vehicle</td>
<td>$8,975 over 5 years</td>
</tr>
<tr>
<td>Electric Vehicle</td>
<td>$4,148 over 5 years</td>
</tr>
</tbody>
</table>

### Fees designed to achieve parity with state gas tax for fossil-fueled vehicles – i.e. no net-costs or savings

**Estimated Annual MBUF payment**

<table>
<thead>
<tr>
<th></th>
<th>Annual Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>$965</td>
<td></td>
</tr>
</tbody>
</table>

**Switch to electric and save big on fuel. Estimated annual savings.**

**$4,827**

**Switch to an EV and your 5 year savings could look like this.**

**$780**

**($485)**

**Federal taxes avoided**

**$156**

**($97)**

**Federal taxes avoided**
Mileage-Based User Fee for Battery-Electric Vehicles

The MBUF rate is intended to be revenue-neutral relative to the gas tax, and is calculated as the state gas tax rate divided by the combined average miles per gallon (MPG) per light-duty vehicle in Vermont:

\[
\frac{0.30 \text{ per gallon}}{22.7 \text{ miles per gallon}} = 0.013 \text{ per mile}
\]

This is an approximation and not necessarily the proposed rate.

\[
\frac{0.184}{22.7} = 0.008 \text{ per mile avoided in federal taxes}
\]
Flat Fee for Plug-In Hybrid Electric Vehicles

$76 registration fee x .75 = $57 annually

25% Electric miles: Total road usage charge = $117 gas tax + $57 flat fee = $174 ($24 federal tax avoided)

50% Electric miles: Total road usage charge = $78 gas tax + $57 flat fee = $135 ($48 federal tax avoided)

75% Electric miles: Total road usage charge = $39 gas tax + $57 flat fee = $96 ($72 federal tax avoided)

Based on 12,000 mile average
Per kWh Fee for Out-of-state Plug-In Electric Vehicles

Estimated 2021 Revenue from Out-of-state PEVs

<table>
<thead>
<tr>
<th>Usage per Year per Station (kWh)</th>
<th>1,650</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Public Charging Stations 2021</td>
<td>311</td>
</tr>
<tr>
<td>Total Usage (kWh)</td>
<td>513,150</td>
</tr>
<tr>
<td>Percent Out of Stater Drivers</td>
<td>25%</td>
</tr>
<tr>
<td>Total Usage by Out of Stater Drivers</td>
<td>128,288</td>
</tr>
<tr>
<td>Per-kWh Fee Rate</td>
<td>$0.034</td>
</tr>
<tr>
<td>Total Estimated Revenue Generated in 2021</td>
<td>$4,362</td>
</tr>
</tbody>
</table>

Assumptions:

- **1650 kWh transferred to vehicles annually on average per public charging station in Vermont.** This is the combined average of annual usage per public charging station for Green Mountain Power (GMP) and Burlington Electric Department (BED). The combined average is based on the average of BED’s 17 stations of 4,610 kWh per year and the average of GMP’s 81 charging stations of 972 kWh per year. BED’s charging stations are located primarily in the Burlington area; whereas GMP charging stations are located throughout the state in smaller cities. \((17 \times 4610) + (81 \times 972) = 1603\).

- **311 public charging stations where a per-kWh fee can be collected.** This was the current number of public charging stations shown on the Drive Electric website. This analysis assumes it is technically possible to collect a fee at all these stations, a status which was unknown at that point, but improbable.

- **25 percent of nonresident drivers currently using public charging stations in Vermont.** This analysis uses 25 percent because it is consistent with reported gasoline sales by non-Vermonters based on credit card receipts. This assumption is greater than the percentage of nonresident drivers using public charging stations owned by GMP (13 percent) and BED (16 percent), but the consumption of electricity by nonresident drivers in Vermont may come up to par with current gasoline purchases.

- **3.4 cents per kWh is the assumed per-kWh fee rate.** This is the fee rate identified in Act 12: Section 28 Report (2013). A Study on Replacing Motor Fuel Tax Revenues Not Collected from Plug-In Electric Vehicles.

These assumptions were made by the Vermont Agency of Transportation in November 2021.
The Road Ahead

The MBUF Assessment is evaluating how Vermont can build a cost-effective system. AOT is considering:

- Implementation and long-term operational/staffing costs
- System design and processes
- Rate-setting, rulemaking elements
- Transition timeline
- Federal grant application to US DOT
Strategic Innovation for Revenue Collection (SRIC)

Authorized by IIJA:

To test the design, acceptance, equity, and implementation of user-based alternative revenue mechanisms, including among—

(i) differing income groups; and
(ii) rural and urban drivers, as applicable.

FEDERAL SHARE.—The Federal share of the cost of a pilot project carried out under this section may not exceed 80 percent of the total cost of a project carried out by an eligible entity that has not otherwise received a grant

Current Project Implementation Cost Estimate: $3.5 million
Project & Federal Grant Timeline

- **Early 2023**
  - Completion of Project Discovery Phase
- **March 2023**
  - Expected release of SIRC NOFO
- **May 2023**
  - Estimated due date for SIRC grant applications
- **January 2024**
  - Estimated announcement of SIRC grant recipients
  - USDOT announcement of Federal SIRC grantees varies from cycle to cycle. January 2024 may be an optimistic date
- **January 31, 2024**
  - Report to the Legislature on implementation plan
- **Spring 2024**
  - Begin work on Project Execution Phase
  - Launch of MBUF System for BEVs and registration fee for PHEVs
- **July 1, 2025**
  - Expected release of SIRC NOFO
  - Completion of Project Discovery Phase

*Gap in project funding*
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