

APPENDIX D

101 Guide to MBUF Pilots



1. 101 Guide to MBUF Pilots

1.1. Purpose of Passenger Vehicle Pilots

MBUF pilots are short-term demonstrations of pay-by-mile fee systems conducted for a limited period (typically 4-6 months) with a select group of participants (generally between 50-500). The main purpose of MBUF pilots is to give people firsthand experience with this alternative revenue mechanism and assess how this system works in both policy and operational contexts, generating insights that guide refinements and improvements before a full-scale implementation. Participants may include key stakeholders (i.e., individuals who influence policy or hold decision-making authority), members of the general public, or specific groups such as owners of specific vehicle types. The Coalition has conducted several pilots over the years and has completed pilot studies targeting each of these user groups:

- **Key stakeholders**— Include officials from state Departments of Transportation, governments, or transportation-affiliated organizations. The Georgia and Maryland pilots in TETC's Phase 5 work were key stakeholder pilots.
- **Specific groups**— Include members of the public expected to be heavily impacted by MBUF, for example, Electric Vehicle owners. The New Jersey pilot conducted in Phase 5 was this variety.
- **General public**— Open to all vehicle owners. No general public pilots were held in this phase.

After participants opt into an MBUF pilot, they enroll a vehicle, activate their mileage reporting option, drive as usual, and receive simulated MBUF statements (typically monthly) for a period, and then deactivate their mileage reporting option at the end of the demonstration. Each simulated statement shows participants what they would have paid if an MBUF program was in operation and compares it to current transportation fees (e.g. fuel tax or EV registration fees). Throughout the pilots, the Coalition collects data on the operational performance and participant experience using surveys and focus groups. This appendix explains passenger vehicle MBUF pilots in greater detail.

1.2. How Passenger Vehicle Pilots Function

The Coalition works with each state to set up pilot parameters (e.g., target user group, number of participants, duration). The Coalition contracts with an account management vendor to provide the technology, including the website and the mileage reporting options.

The Coalition recruits pilot participants through a variety of outreach activities discussed in the next section. Interested individuals receive an email invitation and follow a link to enroll in the pilot and set up an account with the account manager. After agreeing to the participant terms, individuals enroll their vehicle and choose a mileage reporting option (discussed below). They then take a pre-pilot survey, to record their thoughts on MBUF policy and operations before they have participated in the pilot.

After participants enroll in the pilot, they drive as they normally would and report their miles through their chosen reporting option. They receive simulated monthly statements summarizing their driving activity and the associated MBUF charges in comparison to what they pay under

the current scenario (e.g. how much in fuel tax they paid for that period, or the monthly amount for an EV registration if relevant). The Coalition sends occasional newsletters to participants to share updates about the pilot and Coalition activities (typically, two newsletters are sent during a four month pilot).

At the end of the pilot, participants conclude their participation by deactivating their mileage reporting option (removing a plug-in device or submitting a final odometer photo). They then complete a post-pilot survey to record their thoughts on MBUF policy and operations after the pilot experience. In some pilots, they may be invited to join a focus group to record their thoughts in greater detail.

Depending on the partner state, participants may be offered an incentive (for example, a \$100 gift card) for completing all pilot activities, including pre- and post-pilot surveys and consistently reporting miles driven according to their reporting option. Government employees are typically ineligible to receive such rewards.

1.3. Recruitment

The Coalition uses multiple recruitment strategies to ensure the passenger vehicle pilots meet the targets and goals established for each state. These tactics include engaging directly with state transportation agency staff, local government representatives, and stakeholder organizations to leverage their networks and member outreach capabilities. While the nature of pilot recruitment varies somewhat by the target group (i.e., key stakeholder, general public, or specific group), it generally includes the following elements:

- **Pilot Landing Page.** A website to provide pilot information and link to an enrollment page.



The Electric Vehicle Perspective
Did you know that as of 2024, EV drivers pay an annual \$100 New Jersey transportation funding fee? This is a key element of the state's transportation funding system. In this video, Trish Henderson, a member of the Transportation Coalition, shares her perspective on the impact of this fee on EV drivers and the state's transportation system. This video is part of a series of videos that will be released throughout the pilot.



CONTACT INFORMATION
Have questions or need help? Call or email a team member.
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- **Recruitment Video.** video from the Executive Director of the Coalition to explain the MBUF concept and how the pilot would work.
- **Overview Flyer.** One-page summary of Pilot goals, participation steps, and contact details.
- **FAQ.** Document addressing common questions about enrollment, participation, privacy, and incentives.
- **Incentive Flyer.** Guide outlining incentive eligibility, earning criteria, and distribution timeline.
- **Recruitment presentation.** Slide deck used in stakeholder meetings to explain the Pilot and encourage participation.

The Coalition engages potential participants through direct email outreach to individuals within eligible groups or those who have expressed interest, inviting them to enroll in the pilot. Additional engagement occurs at events, including staffing tables at in-person gatherings and participating in live web-based meetings.

1.4. Mileage Reporting Options

The mileage reporting options offered during the Phase 5 pilots are listed below grouped by whether or not they used GPS location data.

No location data	OBD Plug-in Device. This option allows participants to record their mileage by plugging a small device into their vehicle's On-Board Diagnostic (OBD-II) port and leaving it throughout the pilot. If this option is selected, a physical device is mailed to the participant soon after enrollment is completed with instructions on how to install the device. The OBD Plug-in Device automatically uploads trip data to a participant's pilot account online. This MRO was available in the New Jersey, Maryland, and Georgia pilots.
	Odometer Capture on App. This option allows participants to use a dedicated smartphone app to upload photos of their odometer reading every month to record their mileage during the pilot. To set up this MRO, participants are asked to download the app on the Apple Store or Google Play, then capture a photo of their odometer while the app is connected to the vehicle via Bluetooth. This MRO was available in the New Jersey and Maryland pilots.
Location data	Smart Mobile App. This option allows participants to use a smartphone app to record their mileage during the pilot. To set up this MRO, participants are asked to download the app on the Apple Store or Google Play. After the initial setup, the application manages all anonymized trip (location) data on the device. This MRO was available in the New Jersey and Maryland pilots.

THE EASTERN TRANSPORTATION COALITION MBUF WORK

MILEAGE-REPORTING OPTIONS (MROs)

MROs WITH GPS CAPABILITIES

- Smart Mobile App**
This option allows participants to use the MBUF NJ Pilot smartphone app to track their mileage during the Pilot. To set up this MRO, participants will be asked to download the easy-to-use MBUF NJ Pilot app on the Apple Store or Google Play. After a quick initial setup, the application will manage all anonymized trip (location) data on the device.
- In-Vehicle Telematics**
Participants that select this option will record mileage through their In-Vehicle Telematics account. This option is available for newer vehicles that have a connected vehicle account through the auto manufacturer. If you don't currently have an account on your vehicle, you may be able to contact the brand and activate their service.
- OBD Plug-in Device**
This option will allow participants to track their mileage by plugging a small device into their vehicle's On-Board Diagnostic (OBD-II) port and leaving it throughout the Pilot. If this option is selected, a physical device will be mailed to the participant soon after enrollment is completed with instructions on how to install the device. The OBD Plug-in Device will automatically upload trip data to a participant's Pilot account online.

MRO WITHOUT GPS CAPABILITIES

- Odometer Capture on App**
This option allows participants to use the MBUF NJ Pilot smartphone app to upload photos of their odometer reading every month to track their mileage during the Pilot. To set up this MRO, participants will be asked to download the easy-to-use MBUF NJ Pilot app on the Apple Store or Google Play, then capture a photo of their odometer while the app is connected to the vehicle via Bluetooth.

How to Enroll

- Enroll** - Fill out the enrollment form by clicking the [link](#) on the Pilot website.
- Activate** - Choose from one of four mileage-reporting options (MROs):
 - MROs with GPS Capabilities:
 - Smart Mobile App
 - In-Vehicle Telematics
 - OBD Plug-in Device
 - MRO without GPS Capabilities:
 - Odometer Capture on App
- Drive** - Drive as you normally would.
- Deactivate** - After the Pilot ends on January 31, 2025, mail back your OBD Plug-in Device, disable your In-Vehicle Telematics, or remove the Smart Mobile App from your phone.

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	In-Vehicle Telematics. Participants that select this option record mileage through their In-Vehicle Telematics account. This option is available for newer vehicles that have a connected vehicle account through the auto manufacturer. <i>Although this option did include occasional provision of GPS data, the data was insufficient to accurately distinguish miles by state.</i> This MRO was available in the New Jersey, Maryland, and Georgia pilots.
	OBD Plug-in Device. This is identical to the OBD Plug-in Device described above but uses GPS data to charge users different rates by state in which the miles are driven. This MRO was available in the New Jersey, Maryland, and Georgia pilots.

1.5. Rate-setting

The per-mile rates and fuel tax credits used for calculating the MBUF are based on the concept of “net revenue neutral.” For traditionally fueled vehicles in the pilot, a vehicle operating at the national average of 23 miles per gallon (MPG) would pay an MBUF that is equal to the amount paid for the state fuel taxes.

The per-mile rate calculation for each Coalition state is:

$$\text{Per-Mile Rate} = (\text{State Fuel tax} / \text{National Fuel Economy Average of 23 MPG})$$

The New Jersey pilot was exclusively focused on fully electric vehicles (EVs). Therefore, the MBUF rate for the pilot was tied to New Jersey’s newly implemented EV registration surcharge, which took effect on July 1, 2024, and was set at \$250 at the time of the study. The per-mile rate calculation for the New Jersey pilot is:

$$\text{Per-Mile Rate} = (\text{NJ 2024 EV fee} / \text{average annual VMT}) = \$250 / 12,263 = \$0.02/\text{mile}.$$

The account management systems collected mileage data from the mileage reporting option and processed it to determine the applicable MBUF and fuel tax credits for each participant. All mileage driven and recorded during the pilot was used to estimate the MBUF and then compared to the fuel tax or EV fee.

For participants using location-based devices (i.e., Smart Mobile App and OBD-II Plug-in device with location), mileage data was differentiated by the state where the driving occurred. The net mileage fee was based on each state’s per-mile rate, less a credit for the state fuel tax for the estimated gas consumed in each state. For participants without location-based devices (i.e., OBD Plug-in Device without GPS, Odometer Capture on App, and In-Vehicle Telematics), mileage was charged at the rate of their home state. The per-mile rates and state fuel tax amounts for each Coalition state are shown in **Table 1**.

Table 1 BUF Gross Revenue-Neutral Rates State Per Mile Rates and Gas Taxes Used in the Maryland and Georgia Phase 5 MBUF Pilots

State	Location Gas Tax Rate* (cents per gallon)	Location Per Mile Rate (MBUF Rate) (cents per mile)
Alabama	31.00	1.35

State	Location Gas Tax Rate* (cents per gallon)	Location Per Mile Rate (MBUF Rate) (cents per mile)
Connecticut	49.64	2.16
Delaware	23.00	1.00
District of Columbia	34.20	1.49
Florida	38.30	1.67
Georgia	31.95	1.50
Kentucky	30.10	1.31
Maine	31.40	1.37
Maryland	47.00	2.04
Massachusetts	27.20	1.18
New Hampshire	23.83	1.04
New Jersey	42.30	1.84
New York	42.10	1.83
North Carolina	40.75	1.80
Pennsylvania	62.20	2.70
Rhode Island	38.12	1.66
South Carolina	28.75	1.25
Tennessee	27.40	1.19
Vermont	32.52	1.41
Virginia	39.10	1.70

1.6. Evaluation

Passenger vehicle pilot evaluation involved analyzing two types of data: operational data and participant-provided data. Operational data includes metrics such as miles driven, MRO activations, help desk inquiries, and MBUF charges assessed. The account management vendors provided monthly summaries of miles driven (by state for those participants who used an MRO with location), and associated MBUF charges.

Participant-provided data was gathered from surveys and focus groups. Surveys included 10-20 questions in which participants would rate various statements about perceptions, priorities and experiences, and a few opportunities for free form answers. Surveys were conducted before and after the pilot, allowing the Coalition to measure changes in opinion from the pilot experience. Not all pilots included focus groups, but for the ones that did, one or two online sessions with six to eight participants were scheduled at a specific time. A moderator guided each group through a series of questions exploring the pilot experience from a policy and operational perspective. Findings gleaned from pilot data are detailed in the Phase 5 STSFA Grant Report, specifically in the sections titled *MBUF Simulated Pilot*, *The First EV Pilot*, and *Stakeholder Pilots*.



Statement Period: Oct 1 - Oct 28
Vehicle: 2016 MERCEDES-BENZ GLC300
VIN: XXXXXXXXXXXXXXXXXXXX
Home State: GA
Device Option: OBDII DEVICE w/ GPS

Hello XXXX,

Here is your statement for this month. For guidance on understanding your statement, including information on terminology and the various rates for each state, see the *Understanding Your Statement* section. The statement may also be downloaded from your participant dashboard in the **Statements** tab. Please submit any inquiries to the **Support** tab.

Your Monthly Summary

General Overview

Total Miles Driven (mi) ¹	30.49
Mileage-Based User Fee (MBUF) (mi) ²	30.49
Fuel Used (gal)	1.28

Your Fuel Tax and MBUF Compared

Transportation Costs ³	Current Gas Tax Costs	Costs with an MBUF
Fuel Costs	\$7.73	\$7.73
Mileage-Based User Fee (MBUF)	\$0.00	\$0.32
State Fuel Tax	\$0.25	\$0.00
Federal Fuel Tax	\$0.24	\$0.24
Total Cost	\$8.22	\$8.29
With an MBUF You Would Pay (Net Difference)	\$0.07	

Added Fees and Adjustments

Mileage Adjusted from Previous Statements ⁴	0
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¹ If you selected a recording device with GPS, we are only calculating an MBUF rate when the vehicle is driving through a state that is a part of The Eastern Transportation Coalition. If you chose a device without GPS, all miles driven are included in the total, regardless of where those miles were driven.

² Miles driven within The Eastern Transportation Coalition region states and charged a mileage-based user fee (per-mile rate) for this Study.

³ All costs are estimated. Details are provided in the Understanding Your Statement section of this statement.

⁴ Miles adjusted on previous statement based on submitted user inquiry.

Please note that all charges on this statement are simulated. No amount of monetary value will be exchanged.

Mileage-Based User Fee Details¹

2016 MERCEDES-BENZ GLC300

Georgia

Mileage Driven (mi)	30.49	MBUF Charged	\$0.32
Fuel Used (gal)	1.28	State Fuel Tax	-\$0.25
Net Difference			\$0.07

¹ All calculations are estimated and based on mileage driven inside Coalition region states. If you are using a plug-in device with GPS capability, your mileage in each state is directly measured and reported. Mileage driven outside of the Coalition region states are not included when calculating your mileage-based user fee.

Your Billing Summary

General Overview

Total Fees Billed ¹	\$0.00
Total Paid ¹	\$0.00

Your Transactions Log

No Record

Your Trip Log

2016 MERCEDES-BENZ GLC300

Trip Date	State	Mileage (mi)	Fuel Usage (gal)	Mileage Fees	Fuel Tax Credit	MBUF
Oct 19 20:32 PM	GA	1.55	0.07	\$0.02	-\$0.01	\$0.01
Oct 20 10:53 AM	GA	5.9	0.25	\$0.06	-\$0.05	\$0.01
Oct 20 11:23 AM	GA	5.59	0.23	\$0.06	-\$0.05	\$0.01
Oct 20 11:40 AM	GA	0.12	0.01	\$0.00	\$0.00	\$0.00
Oct 20 12:19 PM	GA	8.82	0.37	\$0.09	-\$0.07	\$0.02
Oct 20 13:25 PM	GA	2.67	0.11	\$0.03	-\$0.02	\$0.01
Oct 20 14:36 PM	GA	2.67	0.11	\$0.03	-\$0.02	\$0.01
Oct 23 17:08 PM	GA	1.49	0.06	\$0.01	-\$0.01	\$0.00
Oct 23 17:17 PM	GA	0.62	0.03	\$0.01	-\$0.01	\$0.00
Oct 23 17:29 PM	GA	1.06	0.04	\$0.01	-\$0.01	\$0.00

Understanding Your Statement

Transportation Funding 101

Americans pay for transportation infrastructure primarily through a tax on fuel each time they fill their tanks. As fuel efficiency and the adoption of electric vehicles increases, cars are going further on less gas (or no gas). Therefore, the average amount per mile that motorists pay to use our transportation system is declining.

The resulting problem is while the cost to build, maintain and operate our roads and bridges is increasing, the funding for these needed investments is not keeping up, which has led policymakers to explore options for alternative funding sources for transportation infrastructure.

One option being explored is a mileage-based user fee (MBUF) - a pay for what you use approach - as a potential alternative to the fuel tax. This model means that drivers, regardless of vehicle type or efficiency, pay for the miles they drive. Your participation in this study will help policymakers understand how an MBUF could work and what challenges need to be addressed.

Definitions

The Eastern Transportation Coalition Region: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Georgia and Florida.

Federal Fuel Tax: The federal fuel tax is 18.4 cents per gallon on gasoline. This tax is included in the per gallon price of fuel you see at the pump.

Fuel Cost: The estimated cost of the fuel purchased, not including the state and federal fuel taxes paid at the pump. It is based on the estimated number of gallons used times the average mid-month fuel price in your home state. Average state-wide fuel prices are obtained from AAA (<https://gasprices.aaa.com/>).

Gallons of Fuel Used: Fuel consumed by the vehicle for billable mileage only. This may be collected by the vehicle computer or estimated using the EPA combined rating (e.g., hybrid vehicles).

Mileage-Based User Fee (MBUF): A fee paid for each mile driven. For the purpose of this statement, it is the number of miles driven times the per mile rate for your home state.

Net Difference: The state-specific MBUF rates were based on the fuel tax in each state and a national average of 23 MPG. These initial "revenue neutral" are such that a car getting 23 MPG will pay the same amount in MBUF as in state fuel tax -- a net difference of 0. A car that gets more than 23 MPG pays more MBUF than fuel tax; a car that gets less than 23 MPG pays less MBUF than fuel tax resulting in a negative net difference.

Non-Billable Mileage: Mileage driven on roads outside of The Eastern Transportation Coalition region. For vehicles using devices without GPS, all mileage are considered billable.



Account # : [REDACTED]

Report Period : 01/1/2025 to 02/16/2025

Vehicle : 2023 Tesla Model Y

VIN : [REDACTED]

Mileage Reporting Option : Smart Mobile App

Hello [REDACTED]

Here is your monthly mileage report. It compares a potential mileage-based user fee with the current annual EV registration surcharge, which has been divided into twelve equal monthly payments.

Your Monthly Summary

Total Miles	Monthly EV registration surcharge equivalent	Potential MBUF	Net Difference
2072.1 mi	\$20.83	\$41.44	\$20.61

Under a MBUF system, your monthly state charges would be \$20.61 more than the current EV Registration Surcharge Tax structure.

Added Fees and Adjustments

Mileage Adjusted from Previous Statements ¹	\$0.00
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Why MBUF

Americans pay for transportation infrastructure primarily through a tax on fuel each time they fill their tanks. As fuel efficiency and the adoption of electric vehicles increases, vehicles are going further on less gas (or no gas).Therefore, the average amount per mile that motorists pay to use our transportation system is declining.

The resulting problem is while the cost to build, maintain and operate our roads and bridges is increasing, the funding for these needed investments is not keeping up, which has led policymakers to explore options for alternative funding sources for transportation infrastructure.

As of July 1, 2024, electric vehicle drivers pay an additional annual EV fee on top of their regular yearly vehicle registration fee to support transportation funding in New Jersey. The additional fee is currently set at \$250 from July 1, 2024, through June 30, 2025. The fee is intended as a substitute for the fuel tax that drivers of gas-powered vehicles pay at the pump. This money will be put toward the New Jersey Transportation Trust Fund.

An MBUF could be an option available to drivers of EVs in lieu of the annual electric vehicle fee. Under an MBUF, EV drivers would contribute based on the number of miles they drive.

Please note that all charges on this statement are simulated. No actual money will be exchanged.

Mileage-Based User Fee Details²

2023 Tesla Model Y

Delaware

Mileage Driven (mi)	44.9	MBUF Charged	\$0.90
		EV Registration Surcharge	\$0.00
Net Difference			\$0.90

New Jersey

Mileage Driven (mi)	2027.2	MBUF Charged	\$40.54
		EV Registration Surcharge	\$20.83
Net Difference			\$19.71

Your Billing Summary

General Overview

Total Fees Billed	\$0.00
Total Paid	\$0.00

Understanding Your Statement

Definitions

Mileage-Based User Fee (MBUF): A fee paid for each mile driven. For the purposes of this monthly mileage report, it is the number of miles driven times the per mile rate for your home state. The annual fee for electric vehicles in New Jersey is currently \$250. For this MBUF study, a per-mile charge of 2 cents is applied.

¹Miles adjusted on previous statement based on submitted user inquiry.

²If you are using a mileage reporting option with GPS capability, your mileage in each state is directly measured and reported.