

— THE EASTERN  
TRANSPORTATION  
COALITION —

CONNECTING FOR SOLUTIONS



# Mileage-Based User Fees: 2022 International Truck Pilot

**Final Report**  
September 12, 2023

Prepared by



The Eastern Transportation Coalition is a partnership of 17 states and the District of Columbia focused on connecting public agencies across modes of travel to increase safety and efficiency. Additional information on the Coalition, including other reports, can be found on the Coalition's website: <https://tetcoalitionmbuf.org>

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## Acronyms and Abbreviations

Acronyms and Abbreviations	
AL	Alabama
ATA	American Trucking Association
CA	California
CMV	Commercial Motor Vehicle
Coalition / TETC	The Eastern Transportation Coalition
CpM	Cents per Mile
DOT	Department of Transport
FMCSA	Federal Motor Carrier Safety Administration
GCW	Gross combination weight
GCWR	Combined gross weight rating
Group	MCWG Rate Setting Working Group
GVWR	Gross vehicle weight rating
IDR	IRP Data Repository
IFTA	International Fuel Tax Agreement
IFTACH	IFTA Clearinghouse
IRP	International Registration Plan
ITP	International Truck Pilot
MBUF	Mileage-Based User Fee
MCWG	Motor Carrier Working Group
MPG	Miles per Gallon
OOIDA	Owner-Operator's Independent Driver's Association
OReGO	Oregon's Mileage Based User Fee Program
PA	Pennsylvania
PoC	Proof of Concept
STSFA	Surface Transportation System Funding Alternative Program
TCA	Truckload Carriers Association
U.S.	United States of America
WDT	Weight Distance Tax
WMT	Weight Mileage Tax

# 1 Executive Summary

## Introduction

America's transportation infrastructure is funded through fuel tax. Once a good approximation for road usage, the technological advances in fuel efficiency and the transition to electric vehicles mean that revenue per mile is decreasing and some vehicles are not using any fuel at all. To re-establish the connection between how much a driver uses the road and how much they pay for it, state and federal governments are exploring a distance-based approach to transportation funding as an alternative to the fuel tax – referred to as a mileage-based user fee (MBUF) and also known as a road usage charge (RUC).

Since 2018, the Eastern Transportation Coalition (Coalition) has been dedicated to advocating for the inclusion of the trucking industry's voice in the national exploration of MBUF. The motor carrier industry significantly contributes to and financially supports the transportation system, making it essential to involve them in these discussions. Moreover, trucking serves as a crucial component of our daily lives, as it plays a vital role in meeting our basic needs, while also being a driving force in the U.S. economy.

In addition to its undeniable importance, the motor carrier industry operates within a highly regulated and complex environment. Therefore, any proposed changes to the current regulatory and fee payment system must be approached with utmost care and thoughtful consideration. The Coalition recognizes the need to strike a balance between modernization and maintaining the efficiency and stability of the current transportation framework, while at the same time recognizing that there is a desire of the motor carrier industry to remove complexity in the current system. Thus, the Coalition is committed to collaborating with relevant stakeholders, policymakers, and industry experts to develop well-informed and comprehensive strategies.

The Coalition, under the U.S. Department of Transportation's Surface Transportation Systems Funding Alternative (STSFA) program, has brought the motor carrier community to the table under three grant cycles which included real world pilots with motor carriers to examine the issues, challenges and needs of the motor carrier industry that must be considered in developing and implementing a MBUF program. **This report focuses on the Phase IV Grant program work.**

The Coalition's primary objective is to ensure that any potential shifts in the transportation funding model prioritize fairness, sustainability, and the long-term interests of all parties involved. To achieve this, the Coalition continuously aims to foster open dialogue and transparency throughout the decision-making process. Through a collaborative approach, we believe we can identify innovative solutions that address the challenges faced by the trucking industry and the broader transportation network.

As a leader in the exploration of MBUF for motor carriers, the Coalition seeks to provide decision makers with data and analysis that will lead to a robust, adaptable, and future-proof transportation system that caters to the evolving needs of the nation. We invite all stakeholders to engage in this crucial conversation, understanding that only by working together can we develop a comprehensive and effective framework for the future. The Coalition is neutral on whether or not MBUF is the best solution to provide our country with a sustainable transportation funding source, but believes that real-world pilot projects and data will serve to inform and advance the evaluation process.

Pilot Overview

The International Truck Pilot (ITP) was the Coalition’s 3<sup>rd</sup> pilot project focusing on trucks.

The ITP ran for six months from June 1, 2022, to November 30, 2022, recording more than 8 million miles from over 250 trucks, covering all 48 contiguous U.S. states and four Canadian Provinces (Figure 1-1).

For this pilot, technology and research partner EROAD’s system was installed as the mileage-recording device, details of which are explained in Appendix 3.

During the project, the Coalition collected and analyzed the truck pilot data, generating a simulated statement for each of the 14 companies participating in the pilot.

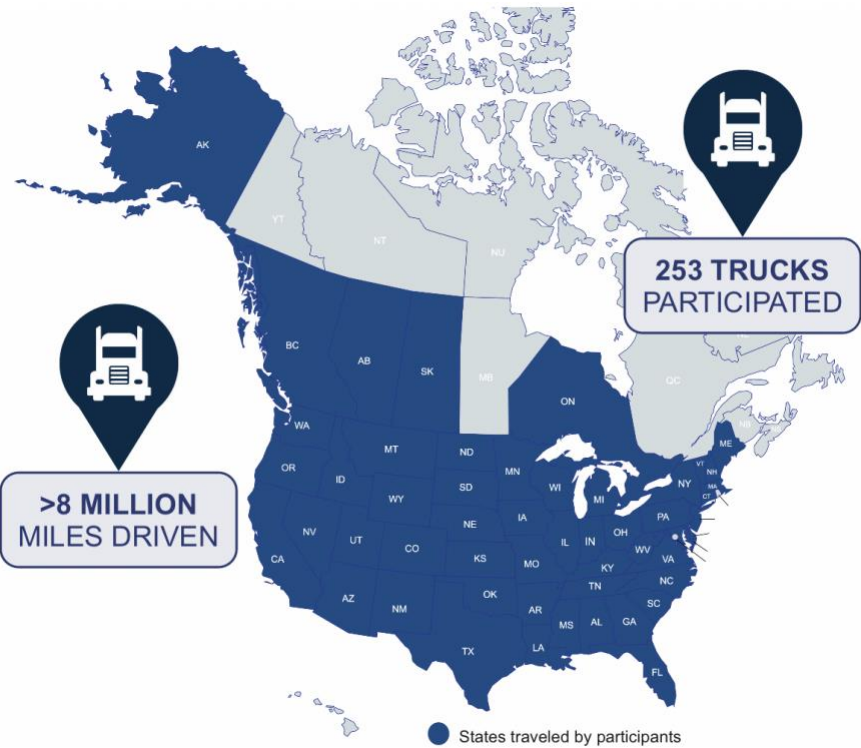


Figure 1-1: ITP

The work was guided by a Steering Committee and the Motor Carrier Working Group (MCWG), built on previous work and aimed to test the technical feasibility of a MBUF as a potential transportation funding solution replacing the fuel tax.

It focused on four key themes with the goals as shown in Figure 1-2.

Table 1-1: Goals	
Expand the diversity of the pilot fleet to assess technical feasibility of including all CMVs into current reporting structure.	Develop, test and analyze a scalable, weight-based rate setting approach, that can be uniformly applied to motor carriers operating in any jurisdiction.
Explore the impact of uniformity on states' sovereignty.	Assess the technical feasibility of leveraging existing Clearinghouses for data processing and exchange.

## Key Findings

### **# 1 | MBUF Can Be Applied to All Commercial Vehicles Regardless of Weight, Fuel Type, International Travel, and Type of Operation.**

With some modifications and/or modernization, the current framework used by motor carriers to report travel and reconcile fuel tax in a jurisdiction can be adapted for MBUF application, regardless of fuel type, interstate, intrastate, or international travel, and considering multiple weight categories, as long as a uniform standard is applied consistently within each jurisdiction.

However, incorporating all CMVs into MBUF would necessitate intrastate operators and companies with vehicles under 26,001 pounds to maintain distance records, file and report operations not currently required in most jurisdictions for these vehicle types.

Moreover, many of these companies with lighter CMVs or those operating solely intrastate register their vehicles with a different agency within their jurisdiction. Therefore, it is crucial to assess the impact on both motor carriers and jurisdictional agencies before extending the existing framework to cover all CMVs.

Incorporating these additional CMVs into the International Fuel Tax Agreement (IFTA) and the International Registration Plan (IRP) would also require amending the respective governing documents through the ballot approval process, which necessitates agreement from Canadian jurisdictions as well.

For effective progress, involving all affected stakeholders and appropriate jurisdictional representatives in future pilots is imperative. This inclusive approach will provide a comprehensive understanding of the impact on intrastate and international operations and ensure well-informed decision-making for a potential MBUF implementation.

### **# 2 | A Weight-Based MBUF has the Potential to Provide a More Transparent Link Between Usage and Cost of Road Use.**

State and federal roads and bridges are funded through a combination of sources, including fuel excise tax, registration fees, and various taxes and fees specific to CMVs. The current system relies heavily on fuel consumption, with the tax serving as the primary source of funding. However, other fees assessed based on factors like vehicle age, value, weight, or a combination of weight and miles driven make it challenging to determine the actual cost per mile for road use.

A case study conducted with a participant in the ITP demonstrated the significant variances in the cost per mile paid for road use based on fuel consumption. This highlights the lack of transparency in the current approach to highway funding, as the actual costs of using the highway are not clearly reflected.

Stakeholders prioritize a simple and easily verifiable uniform application for CMVs to achieve uniformity, interoperability, and scalability, rather than tracking individual truck configurations and fluctuating weights, to minimize administrative or compliance burdens on motor carriers.

An MBUF approach, utilizing weight, can provide a more transparent and accurate cost for road use, as it directly correlates with the actual mileage traveled. If MBUF has the capability to absorb other taxes and fees into the road use rates, it could potentially provide consumers with a clearer understanding of the true cost of highway usage.



### **#3 | Uniformity Does Not Have to be Identical to be Scalable and Has the Potential to Substantially Decrease Administrative Costs on Both the Motor Carrier and Agency Sides.**

Uniformity, simplicity, and scalability are crucial factors in the development of a successful rate setting and reporting approach, ensuring cost-effectiveness, efficiency, compliance, and transparency in highway funding. However, the project showed that uniformity does not necessarily mean identical rates across jurisdictions, but rather a consistent framework that can significantly reduce administrative costs for both motor carriers and agencies.

The current complexity of different reporting requirements in various jurisdictions is a key concern, and the goal should be to achieve as much consistency and interoperability as possible to avoid overwhelming compliance costs. Additionally, the findings emphasize the need for simplicity in the rate setting approach to ensure scalability and ease of compliance, as complex requirements often lead to non-compliance and increased evasion potential.

The pilot project demonstrated the benefits of a uniform weight-based approach in achieving sustainable funding for highways. The uniform application of rates in MBUF systems simplifies reporting and administration, promoting transparency in highway funding. The work also suggests that a uniform approach to rate setting could potentially absorb other defined costs, such as weight-distance taxes, thereby eliminating the need for separate tax return filings and additional highway funding programs. While it is important to maintain jurisdictional sovereignty, the initial costs and administrative burdens of various funding sources emphasize the need for an interoperable and scalable long-term highway funding solution.

### **#4 | Clearinghouse Frameworks Can be Adapted to Handle MBUF But Roles and Responsibilities Need to be Clearly Defined.**

The prescriptive test with the IFTA Clearinghouse (IFTACH) demonstrated that, with some modifications, MBUF can be handled through the existing IFTACH process.

The non-prescriptive PoC utilizing the IFTA, IRP and ClearRoad Clearinghouses, showcased all three Clearinghouse's ability to validate incoming data from a 3<sup>rd</sup> party, accurately calculating the amounts to be distributed to the jurisdictions and perform these tasks without intervention from the pilot participants, jurisdictions, or account manager. This highlights the adaptability and effectiveness of a range of Clearinghouses in streamlining the MBUF reporting and distribution process.

The Clearinghouse PoC tests demonstrated the potential for technology advancements to capture and report individual unit data for calculating MBUF amounts. It showcased the feasibility of summarizing this data into a single file that can be netted back to the jurisdictions without requiring separate reporting by motor carriers or jurisdictions. However, further testing is needed with multiple data sources and scenarios to fully understand the roles and responsibilities associated with reporting.

Addressing stakeholder concerns regarding data integrity and privacy is crucial. Collaborative policy and governance decisions at various levels are required to establish uniform certification and data privacy requirements. These requirements would ensure the security of taxpayer data and the performance of systems, providing compliance and data protection for motor carriers. This topic remains an important area for exploration and requires establishing structures that safeguard data while meeting the needs of a MBUF system.

## Next Steps

The pilot demonstrated the **capability** of existing frameworks to receive and process MBUF transactions. However, it also shed light on various areas that require further attention and investigation before considering implementation. To progress effectively and make informed decisions, the next phase of this exploratory MBUF work should focus on the key areas as shown in Figure 1-2, in collaboration with affected stakeholders, jurisdictional representatives, and dedicated focus groups.

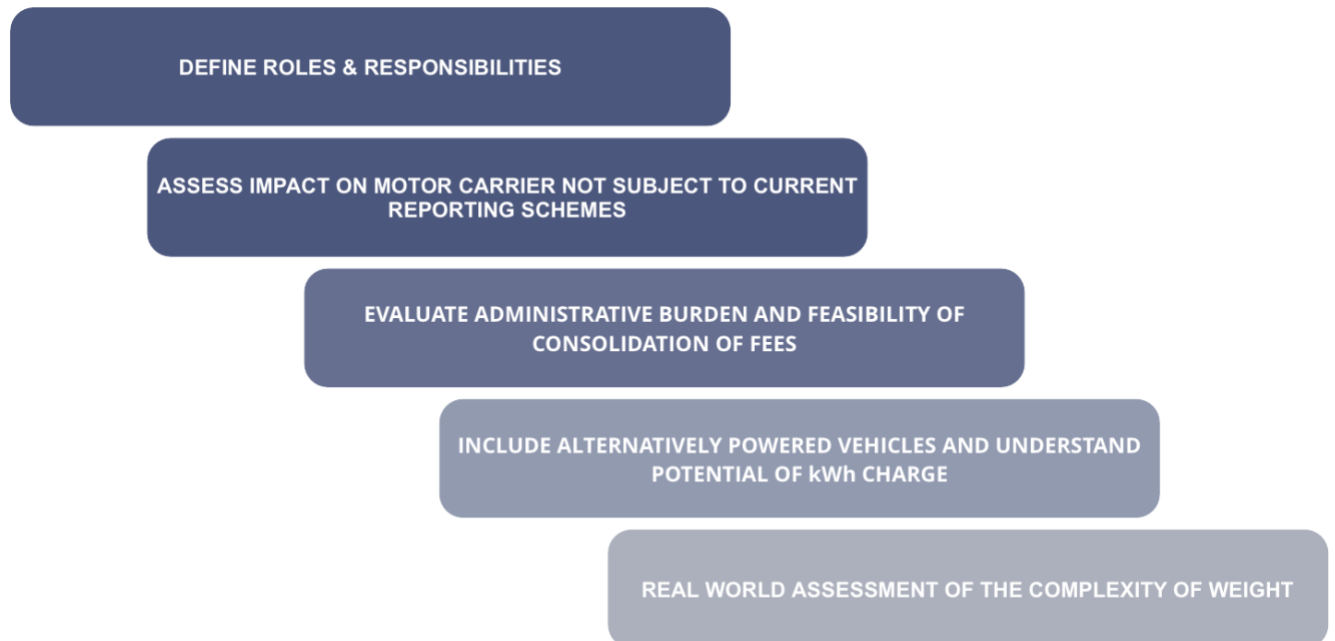


Figure 1-2: Key Future Work Areas





## 2 2022 International Truck MBUF Pilot

### 2.1. Overview of previous Pilot Projects and Stakeholder

Since 2018, the Coalition has actively advocated for the trucking industry’s inclusion in the national MBUF exploration. Trucking is a significant user and funder of transportation, vital for meeting our daily needs and boosting the U.S. economy. However, due to the industry’s complex and regulated nature, any system change requires careful consideration.

Prior to the ITP, the Coalition conducted two pilot projects focused on trucks under the STSFA program. Table 2-1 summarizes the key findings.

Table 2-1: Key Findings   Previous Pilot Projects	
Multi-State Truck Pilot 2018/19	National Truck Pilot 2020/21
1. Bringing the Trucking Industry’s Voice to the Table is Essential	1. Understanding the complexity of the user matters.
2. Trucks Cannot Simply be Treated as Big Cars in an MBUF System	2. Real-World Pilots Reduce Privacy Concerns
3. Existing Regulations Provide Guidance for MBUF Implementation	3. Leveraging Technology Creates Solutions
4. One Rate for All Trucks Doesn’t Work	4. A Tiered Rate Based on MPG Doesn’t Work
5. Further Need for Education and Outreach	5. Customized Outreach Needed to Move MBUF Forward

### Key Stakeholders

Strategic stakeholder engagement provides an opportunity to address misconceptions and concerns about MBUF, build important connections with policymakers and other transportation stakeholders, and support a dialogue with different user groups.

The Coalition’s outreach and engagement efforts included multiple presentations, hearings, meetings, media outreach including radio shows and print; and focus group meetings with target stakeholders. Notably, the Coalition received numerous requests to present to various groups, committees, agencies, and conferences. These presentations, as well as the Coalition’s media outreach, demonstrate that interest in MBUF extends well beyond transportation stakeholders and demonstrates the need for continued education and outreach efforts.

## Motor Carrier Working Group (MCWG)



Figure 2-1: MCWG

The MCWG serves as a critical stakeholder group, offering valuable guidance and input on trucking needs and issues while informing commercial vehicle pilot concepts. Established by the Coalition during the 2018-19 Multi-state Truck Pilot, this group is instrumental in raising and evaluating diverse viewpoints, concerns, and recommendations about MBUF.

To ensure a comprehensive representation of opinions, the MCWG includes members from various sectors, such as trucking

associations, individual carriers of different sizes, truck manufacturers, and major users of commercial vehicles engaged in nationwide goods transportation. Additionally, state DOTs and regulatory entities are also part of this important group. Due to the sensitive nature of changing transportation funding, the discussions and identities of individual members are kept confidential (Figure 2-1).

Comprising approximately 25 stakeholders, the MCWG includes representatives from major trucking associations, shippers, regulators, trucking companies, and trucking manufacturers. Notable members include the American Trucking Association (ATA), Truckload Carriers Association (TCA), Owner-Operator's Independent Drivers Association (OOIDA), Coalition State motor transport agencies, International Registration Plan (IRP), International Fuel Tax Agreement (IFTA), and motor carrier companies, encompassing rental, leasing, and logistics companies.

Throughout 2022, the MCWG convened three times to address pertinent matters. Further information on the meetings can be found in Appendix 1.

## TETC MBUF Steering Committee

The Coalition's MBUF Steering Committee was established in Phase I of the STSFA grants to direct and support the exploration of future funding approaches for both passenger vehicles and CMVs. Members of the Committee include Coalition members states interested in MBUF, national organizations that have a vested interest in sustainable transportation funding, and organizations that would be integral to implementation of an MBUF program.

The Committee meets twice per year and offers input, feedback and direction on the Coalition's MBUF work.

2.2. Themes, Goals & Objectives

The pilot project’s themes, goals and objectives were crafted collaboratively with the Steering Committee and the MCWG, drawing insights from past pilot initiatives. During all phases the aim was, and continues to be, to gradually address the key issues identified and to put proposed solutions to a practical test.

While previous work has demonstrated the viability of MBUF as a transportation funding solution, it is important to consider the difference between capability and readiness. The ITP mostly focused on testing the technical feasibility.

The ITP centered around four Themes:

- 1. Expand Diversity of Pilot Fleet
- 2. Weight-Based Rate Setting and Transparency
- 3. Impact of Uniformity on State Sovereignty
- 4. Clearinghouse Proof of Concept

Table 2-2 shows the goals of the pilot project.

Table 2-2: Goals	
Expand the diversity of the pilot fleet to assess technical feasibility of including all CMVs into current reporting structure.	Develop, test and analyze a scalable, weight-based rate setting approach, that can be uniformly applied to motor carriers operating in any jurisdiction.
Explore the impact of uniformity on states' sovereignty.	Assess the technical feasibility of leveraging existing Clearinghouses for data processing and exchange.

THEME 1: Expand Diversity of Pilot Fleet

Motor carriers’ operations are highly diverse. Most fleets currently consist of vehicles under 26,000 pounds, which are not subject to reporting under existing schemes. Implementing a future MBUF for all vehicles could create complexities for motor carriers reporting under multiple schemes.

Cross-border operations between Canada and the U.S. add to the complexities, as compliance with any new MBUF scheme would be required for all travelers in the respective jurisdiction.

Understanding the implications of introducing MBUF requires assessing its impact on all trucking industry segments. Expanding the vehicle fleet diversity in the pilot study aimed to explore the technical feasibility of existing schemes in managing such an expansion. Objectives are shown in Table 2-3.

Table 2-3: Theme 1 Objectives

Target recruitment to increase diversity (all CMVs, intra/interstate, various sizes, international travel).
Identify and assess any technical limitations in including all CMVs and international vehicles within the existing framework.

THEME 2: Weight-Based Rate Setting and Transparency

Previous grant phases have explored different rate setting approaches, such as utilizing one rate and average fleet MPG or MPG bands. However, these approaches have proven ineffective as they ended up penalizing more efficient vehicles while rewarding less efficient ones, essentially reversing the current situation.

Recognizing that the weight of a vehicle is a crucial factor in assessing the strain it imposes on the transportation network, the MCWG has recommended to explore incorporating weight as a significant consideration in rate setting. Objectives are shown in Table 2-4.

Table 2-4: Theme 2 Objectives

Determine weight-based rate setting methodology.
Assess the potential for a weight-based rate setting approach to enhance the transparency of transportation costs.

THEME 3: Impact of Uniformity on State Sovereignty

Motor carriers face numerous transportation taxes and fees, which lead to a complex landscape of compliance and reporting requirements. Operating under different schemes with varying rules create significant challenges for motor carriers, as they grapple with the administrative tasks associated with each system.

This complexity not only adds to the operational burden but also contributes to substantial costs for motor carriers. Streamlining and consolidating transportation fees would alleviate these challenges, simplifying the administrative process and reducing the financial burden on motor carriers. However, states' sovereignty in rate setting, as well as in when, and if, they would be moving to an MBUF system is critical to be maintained. The ITP aimed to explore the technical feasibility of this model. Objectives are shown in Table 2-5.

Table 2-5: Theme 3 Objectives

Assess the value and benefits of consolidating transportation taxes and fees into a unified rate structure.
Investigate the impact on states' sovereignty when a uniform weight-based approach is used for rate setting.

THEME 4: Clearinghouse Proof of Concept (PoC)

Previous phases evaluated processes used by the motor carrier industry looking for opportunities to leverage existing frameworks should MBUF become a future path forward. Focus was on understanding the set-up and operational processes.

During that analysis, it was evident that the IFTA and IRP Clearinghouse process was worth exploring further to determine its technical viability for MBUF processing, which was done as part of the ITP. Through a partnership with ClearRoad, the ITP further evaluated a purpose-built MBUF Clearinghouse. Objectives are shown in Table 2-6.

Table 2-6: Theme 4 Objectives

Evaluate the technical feasibility of utilizing existing Clearinghouse frameworks for MBUF processing.
Assess the capabilities of the current frameworks and systems in receiving and effectively processing MBUF transactions.



## 2.3. Pilot Project Description

The Coalition's 1<sup>st</sup> International Truck Pilot (ITP) ran for six months from June 1, 2022 – November 30, 2022, with over 250 trucks participating and traveling more than 8,000,000 miles (Figure 2-2). The work was funded through the U.S. Department of Transportation STSFA program.

Table 2-7: Pilot Overview

<b>14</b>	<b>253</b>	<b>48</b>	<b>4</b>	<b>6</b>
MOTOR CARRIER	PARTICIPATING TRUCKS	U.S. STATES	CANADIAN PROVINCES	MONTHS

During the pilot the participating trucks traveled in all 48 contiguous U.S. States, DC, Alaska and four Canadian Provinces (Alberta, British Columbia, Ontario, and Saskatchewan).

Twelve (12) different base jurisdictions were represented, including six (6) Coalition states<sup>1</sup>.

During the pilot, the Coalition collected and analyzed the truck pilot data, generating a faux statement for each of the 14 companies participating in the pilot (Table 2-7).



## Recruitment

Recruitment was done in collaboration with state and national trucking associations, as well as participating DOTs, and was specifically targeted to increase diversity (Figure 2-3). Detailed information about the recruitment targets and outcomes can be found in the Theme 1 section of the report.



Figure 2-3: Pilot Participants

<sup>1</sup> Coalition States with one or more participants include: Maine, New Jersey, North Carolina, Pennsylvania, Virginia, and Kentucky.



## Mileage Reporting

All pilot vehicles were equipped with EROAD telematics devices. Throughout the period of pilot operations, the participants had their EROAD service fee waived as an incentive to participate in the pilot.

All data collected for the pilot was recorded from EROAD devices. The use of this data is solely for research and will not be shared or maintained for any other purpose. Any references made in this document to actual events occurring as part of this pilot are anonymized to protect the identity of EROAD's customers and their participation in this research. A signed Pilot Agreement between EROAD and its customer outlined the terms and conditions of participation and the use of data by EROAD.

More information on EROADs system and services can be found in the Appendix 3 – EROAD Overview.

While in a real-world scenario, users would likely have the option to choose between several service providers, all pilot participants were existing EROAD customers, to reduce costs as no additional installations needed to take place.

## Rate Setting

A weight-based rate-setting approach has been used for the pilot, utilizing four (4) weight categories.

The uniform parameters used for the pilot consisted of three **defined elements**:

1. **registered weights** (from IRP Cab Card),
2. **tax rates** by Jurisdiction for gasoline, diesel, and four MBUF weight categories, and
3. **application** of the rates using predefined weight categories.

For the consumption-based application in the Canadian jurisdictions the fuel tax rates were applied exactly as they are today through IFTA. The average fleet Kilometer Per Liter (KPL) was used to determine the number of liters consumed<sup>2</sup> in each Canadian Jurisdiction, multiplied by the posted IFTA rate of tax per liter; and, for the distance-based application the taxable distance traveled in each U.S jurisdiction by each CMV was multiplied by the established MBUF rate for that vehicle's weight class and jurisdiction.

Detailed information about Rate Setting can be found in the Theme 2 section of this report and the rate table can be found in the Appendix 2.

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<sup>2</sup> This is determined by dividing the total liters of fuel purchased by all reported vehicles during the reporting period by the number of kilometers traveled by those same vehicles during the same period. The average KPL is then divided into the total kilometers traveled in each jurisdiction to determine the number of liters consumed.

# 3

## THEME 1|

### Expand the Diversity of the Pilot Fleet

#### 3.1. Objectives

- Target recruitment to increase diversity (all CMVs, intra/interstate, various sizes, international travel).
- Identify and assess any technical limitations in including all CMVs and international vehicles within the existing framework.

#### 3.2. Rationale & Significance

The need to expand the diversity of pilot fleets arises from the recognition that motor carriers' fleets and operations are highly diverse. Although both IFTA and IRP use 26,001 pounds as the basis for CMV eligibility, both programs were mandated in the mid-1990's when recordkeeping was still a manual process. Technology has changed both the recordkeeping and the capture of data, improving the simplicity, accuracy, and efficiency of reporting.

Currently, most fleets comprise vehicles weighing under 26,000 pounds, which are not subject to reporting under existing schemes like IFTA and IRP. These vehicles pay fuel taxes at the pump and pay registration fees on a per vehicle basis, without further reconciliation by state. If a future MBUF scenario is implemented for all vehicles, to ensure everyone pays for using the transportation system, there is a concern about the potential complexity that motor carriers may face by having to report under multiple schemes.

Moreover, many motor carriers operating under IFTA and IRP have cross-border operations that involve travel between Canada and the U.S. Since any new MBUF scheme impacts anyone traveling in the respective jurisdiction, international travelers will also have to comply with the scheme and fulfill reporting and recordkeeping requirements. To fully understand the implications of introducing an alternative funding approach like MBUF in the U.S., it is crucial to assess its impact on this specific segment of the trucking industry.

Therefore, the recommendation to expand the diversity of the vehicle fleet in the pilot study was made by the MCWG and the Steering Committee to explore the technical feasibility of current schemes in coping with such an expansion.

#### 3.4. Methodology

Recruitment of the ITP carriers and fleets was specifically targeted to expand diversity to include vehicles with varying weight, operations, and fuel type. Additionally, to ensure representative comparisons **between** various weight categories and operations the types of companies participating in the ITP were also expanded to ensure representation from owner/operators, mega carriers, freight haulers, and construction companies, among others.

To meet the objective of including all CMVs, the Federal Motor Carrier Safety Administration's (FMCSA) definition of a CMV was used.

A Commercial Motor Vehicle is defined in the FMCSA Regulations as a vehicle used on a highway in interstate commerce that meets any one of the following criteria:

1. Has a gross vehicle weight rating (GVWR) or combined gross weight rating (GCWR), or gross vehicle weight (GVW) or gross combination weight (GCW) of 10,001 pounds<sup>3</sup> or more, whichever is greater;
2. Is designed to transport more than 8 passengers (including the driver) for compensation;
3. Is designed to transport 16 or more people including the driver, and is not used to transport passengers for compensation; or
4. Is transporting hazardous materials in quantities requiring the vehicle to be placarded.

All pilot vehicles were subsequently included in all further testing, including the Clearinghouse tests, which explored the technical feasibility of inclusion of additional vehicle types.

This approach allowed for a comprehensive evaluation of potential challenges and solutions that may arise when implementing a more inclusive funding system.

### 3.4. Results & Learnings

#### Targeted Recruitment to Increase Diversity (all CMVs, intra/interstate, various sizes, international travel)

Having greater diversity among vehicle and company types was necessary to begin analyzing operational differences that impact highway use. Having this diversity clearly revealed vast differences in the amount of travel accrued among various operations.

Table 3-1 shows the recruitment targets and outcomes.

Carriers of all sizes		Canadian Travel	All fuel types		Inter- and Intrastate operations		All commercial trucks	
Mega Carrier	✓	✓	Diesel	✓	Intrastate	✓	> 10,000 lbs	✓
Large Carrier	✓		CNG	✗	Interstate	✓	> 26,000 lbs	✓
Midsize Carrier	✓		Gasoline	✓	Mixed	✓	> 80,000 lbs	✓
Small Carrier	✓		Electric	✗				
Owner Operator	✓		Hydrogen	✗				

Although great effort was made to capture a company with an electric or hydrogen CMV, we found the companies we reached out to were still conducting their own investigations and did not want to participate at this time. It is recommended to address this in future pilots.

<sup>3</sup> Both IRP and IFTA use 26,001 pounds as the basis for eligibility.

Table 3-2 provides an overview of the pilot fleets by size, fuel type and weight.

Table 3-2: Overview Pilot Fleets										
SIZE OF OPERATION	MEGA CARRIERS (400+ trucks)		LARGE CARRIERS (51 - 399 trucks)		MIDSIZE CARRIERS (11 - 50 trucks)		SMALL CARRIERS (3 - 10 trucks)		OWNER OPERATOR (2 or fewer trucks)	
TYPE OF CARGO CARRIED	Consumable Grocery, Intermodal, Agriculture, Farm, Supplies, Garbage		Rock, Sand, Gravel, Drive/Tow away, General freight, Water testing / Well equipment		Construction / Building materials, Machinery, Cranes, Construction, General Freight, Metal, Machinery		General Freight		General Freight	
NUMBER OF PILOT CARRIERS	2		5		4		2		1	
NUMBER OF PILOT VEHICLES	40		110		95		6		2	
WEIGHT	> 10,000 lbs	✓	> 10,000 lbs	✓	> 10,000 lbs	✗	> 10,000 lbs	✗	> 10,000 lbs	✗
	> 26,000 lbs	✓	> 26,000 lbs	✓	> 26,000 lbs	✓	> 26,000 lbs	✓	> 26,000 lbs	✓
	> 80,000 lbs	✗	> 80,000 lbs	✗	> 80,000 lbs	✗	> 80,000 lbs	✗	> 80,000 lbs	✗

Two of the companies provided light-weight gasoline powered trucks, two of the companies had international cross-border travel, several had intrastate only operations.

Each of the participating companies have one or more CMV registered with IRP and licensed through IFTA for interstate operations. This is important to note as it emphasizes the relevance and effectiveness of uniform regulatory requirements already in place, such as IFTA and IRP, which enabled a real-world test of MBUFs scalability and interoperability across state and international cross-border jurisdictions.

## Identify and Assess any Technical Limitations in Including All CMVs and International Vehicles Within the Existing Framework

The ITP included a sampling of CMV's with varying weight, operations, and fuel types.

Motor Carriers operating a CMV greater than 26,000 pounds and traveling in two or more U.S. jurisdictions or Canadian Provinces register and license their CMV's through IFTA and IRP. Under IFTA and IRP, registration fees and fuel taxes are collected by the jurisdiction where the carrier has an established place of business or residency. All transactions and corresponding fees collected by that jurisdiction for the month are summarized and sent to the respective clearinghouse for netting and redistribution to all affected jurisdictions.

Motor carriers with intrastate operations and/or who operate CMVs under 26,001 pounds are not currently required to report in most jurisdictions.

Although the international cross-border recruitment was limited to companies with trucks traveling from the U.S. into Canada, it did not pose any reporting issues, nor does it appear there would be any reporting issues if the motor carrier is based in a Canadian Province.

However, this was not tested as part of the pilot as it involves the conversion of miles to kilometers and gallons to liters, as well as a conversion of Canadian funds to U.S dollars. Given the complexity of the conversions **with no changes in how IFTA functions** between U.S. and Canadian reporting, it was recommended by IFTA that the PoC testing focuses on the ability of the clearinghouse to properly handle cross-border transactions with different methods of taxation, understanding the **process** does not change even if a company is based in Canada.

For example: A Canadian based company traveling in the U.S. would report in kilometers, liters and Canadian dollars to their base jurisdiction and that data would be converted to gallons, miles, and U.S dollars before being transmitted to the Clearinghouse. The current fuel tax reporting process is shown in Figure 3-1.

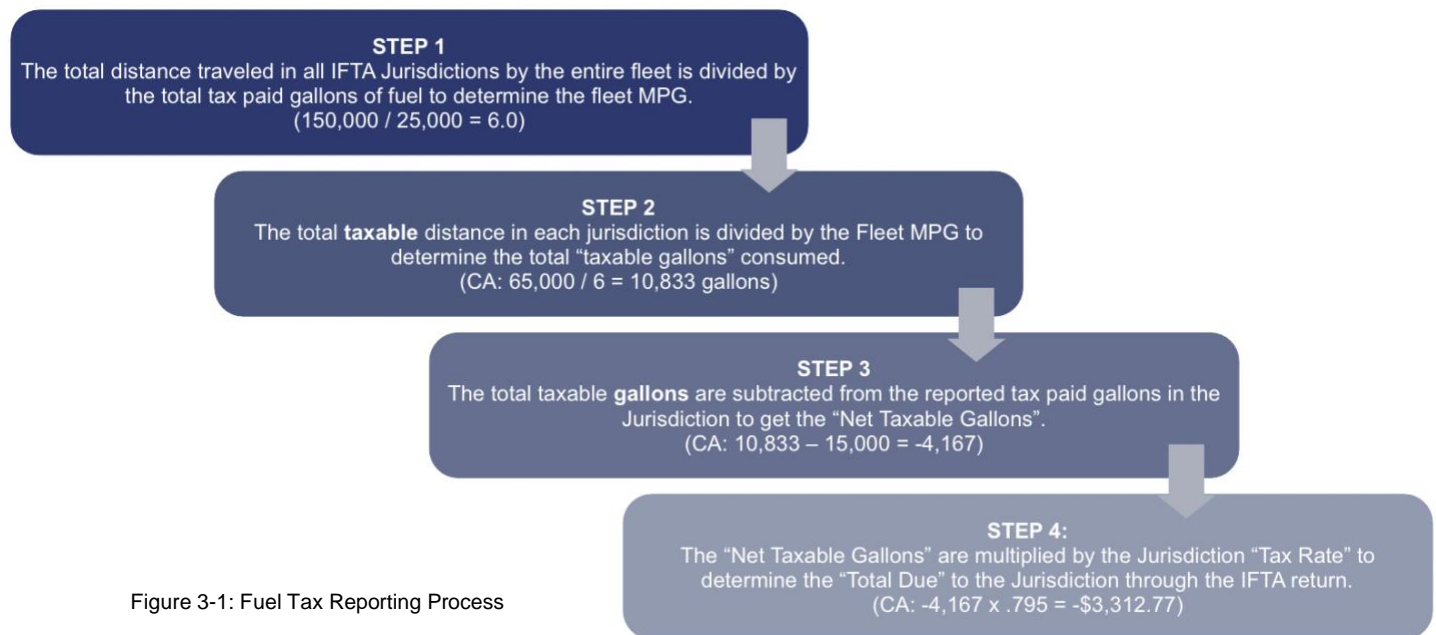


Figure 3-1: Fuel Tax Reporting Process

This process is completed for each jurisdiction on the return. Once all the values are entered, the Total Due column is calculated to determine whether the carrier owes or has a credit. In the example in Table 3-3, more fuel was purchased in the higher tax state (CA) than was consumed, so the underpayments in the other jurisdictions are made whole from the overpayment in CA and the net difference results in a credit of \$2,320.75 back to the Carrier.

			MPG: 6.0						
State	Fuel Type	Tax Rate	Total Distance in IFTA Jurisdiction	Taxable Gallons	Tax Paid Gallons	Net Taxable Gallons	Tax Due	Interest Due	Total Due
AZ	DI	0.2600	22,500	22,250	3,500	208	\$54.08		\$54.08
CA	DI	0.7950	67,500	65,000	15,000	-4,167	(\$3,312.77)		(\$3,312.77)
NV	DI	0.2600	30,000	30,000	2,500	2,500	\$650.00		\$650.00
OR	DI	0.0000	15,000	14,750	2,500	-42	\$0.00		\$0.00
UT	DI	0.3140	15,000	14,500	1,500	917	\$287.94		\$287.94
TOTALS			150,000	146,500	25,000	-584	(\$2,320.75)	\$0.00	(\$2,320.75)

Under MBUF, the taxable distance in each jurisdiction is multiplied by the MBUF rate to determine the amount due for the highway use (CA: 65,000 x .1325 = \$8,612.50). Additionally, the “taxable gallons paid” in Table 3-4 for CA is reflected as a fuel tax credit, demonstrating the same framework used to collect the fuel tax today could also be used to apply the tax credit without requiring a separate refund program should a jurisdiction move to MBUF.

Table 3-4: Hypothetical IFTA Return with MBUF and Fuel Tax Credits

State	Fuel Type	Tax Rate	Total Distance in IFTA Jurisdiction	Taxable Distance in IFTA Jurisdiction	Taxable Gallons	Taxable Gallons Paid	Net Taxable Gallons	Tax Paid Credit	MBUF Due	Net Difference	Interest Due	Total Due
AZ	DI	0.2600	22,500	22,250	3,708	3,500	208	\$54.08		\$54.08	\$0.00	\$54.08
CA	DI	0.7950	67,500	0	0	15,000	-15,000	(\$11,925.00)		(\$11,925.00)	\$0.00	(\$11,925.00)
CA	MBUF	0.1325	0	65,000	0	0	0	\$0.00	\$8,612.50	\$8,612.50	\$0.00	\$8,612.50
NV	DI	0.2600	30,000	30,000	5,000	2,500	2,500	\$650.00		\$650.00	\$0.00	\$650.00
OR	DI	0.0000	15,000	14,750	2,458	2,500	-42	\$0.00		\$0.00	\$0.00	\$0.00
UT	DI	0.3140	15,000	14,500	2,417	1,500	917	\$287.94		\$287.94	\$0.00	\$287.94
<b>TOTALS</b>			<b>150,000</b>	<b>146,500</b>	<b>13,583</b>	<b>25,000</b>	<b>-11,417</b>	<b>(\$10,932.98)</b>	<b>\$8,612.50</b>	<b>(\$2,320.48)</b>	<b>\$0.00</b>	<b>(\$2,320.28)</b>

For CA MBUF rate, the .795 cent fuel tax was divided by 6 MPG to get an equivalent rate charged by the fuel tax. This rate is strictly for comparative purposes.

It is important to note that although IFTA reporting is the summary of all a motor carrier’s vehicles on their account for the reporting period, the total fuel purchased and miles driven for each CMV in the fleet is maintained by the company on an individual vehicle basis and retained for audit purposes.

This showed that with some modification and/or modernization the existing framework used by motor carriers to **report their travel** and reconcile the fuel tax consumed in a jurisdiction with the fuel tax paid can also be used for MBUF regardless of fuel type, interstate, intrastate, or international travel, or multiple weight categories, provided a uniform standard is consistently applied.

Additionally, by utilizing the existing fuel tax reporting model (IFTA) for Canadian travel and calculating a weight-based Cents per Mile (CpM) rate<sup>4</sup> for U.S. jurisdictional travel concurrently, the ITP demonstrated the potential for one jurisdiction to have a different highway funding method than another, validating the scalability of the existing framework to adapt to different forms of taxation. This is further described in the Theme 3 section of this report.

However, incorporating **all** CMV’s into MBUF would require **intrastate** operators and companies with vehicles **under** 26,001 pounds to maintain distance records, file and report operations that are **not currently required** in most jurisdictions for these vehicle types.

Additionally, many of these companies with lighter CMV’s or those with intrastate only operations register their vehicles with an entirely different agency within their jurisdiction. Therefore, it is recommended that the impact to both motor carriers and jurisdictional agencies be explored before expanding the existing framework to all CMV’s.

To incorporate these additional CMV’s into IFTA and IRP would also require changes to the corresponding governing documents through the ballot approval process. **This means Canadian jurisdictions would also have to agree to the changes.**

Therefore, it is imperative that affected stakeholders and appropriate jurisdictional representatives are brought into future pilots to understand the impact to intrastate and international operations.

<sup>4</sup> See rate matrix in Appendix 2 for U.S. jurisdictions.



### 3.5. Key Finding # 1

#### **MBUF Can Be Applied to All Commercial Vehicles Regardless of Weight, Fuel Type, International Travel, and Type of Operation.**

With some modifications and/or modernization, the current framework used by motor carriers to report travel and reconcile fuel tax in a jurisdiction can be adapted for MBUF application, regardless of fuel type, interstate, intrastate, or international travel, and considering multiple weight categories, as long as a uniform standard is applied consistently within each jurisdiction.

However, incorporating all CMVs into MBUF would necessitate intrastate operators and companies with vehicles under 26,001 pounds to maintain distance records, file and report operations not currently required in most jurisdictions for these vehicle types.

Moreover, many of these companies with lighter CMVs or those operating solely intrastate register their vehicles with a different agency within their jurisdiction. Therefore, it is crucial to assess the impact on both motor carriers and jurisdictional agencies before extending the existing framework to cover all CMVs.

Incorporating these additional CMVs into IFTA and IRP would also require amending the respective governing documents through the ballot approval process, which necessitates agreement from Canadian jurisdictions as well.

For effective progress, involving all affected stakeholders and appropriate jurisdictional representatives in future pilots is imperative. This inclusive approach will provide a comprehensive understanding of the impact on intrastate and international operations and ensure well-informed decision-making for a potential MBUF implementation.



# 4 THEME 2 |

## Weight-Based Rate Setting Approach

### 4.1. Objectives

- Determine weight-based rate setting methodology.
- Assess the potential for a weight-based rate setting approach to enhance the transparency of transportation costs.

### 4.2. Rationale & Significance

Previous grant phases have explored different rate setting approaches, such as utilizing average fleet MPG or MPG bands. However, these approaches have proven ineffective as they ended up penalizing more efficient vehicles while rewarding less efficient ones, essentially reversing the current consumption based situation. It has been determined that basing rates on MPG alone doesn't work.

Recognizing that the weight of a vehicle is a crucial factor in assessing the strain it imposes on the transportation network, the MCWG has recommended to explore incorporating weight as a significant consideration in rate setting.

Further, an analysis of the current situation has been deemed valuable for the ITP. Evaluating real-world data for at least one company and state played a vital role in the ITP research, as it aimed to identify and comprehend disparities between consumption-based approaches, like fuel tax, and mileage-based strategies for sustainable highway funding.

### 4.3. Methodology

Overall, the methodology involved a comprehensive assessment of a weight basis, rate setting methodology, and a real-world comparison of consumption-based and mileage-based approaches to achieve transparent and scalable highway funding.

#### Development of Weight-Based Rates

The methodology for developing and testing a scalable rate-setting approach, including weight, for motor carriers operating in any jurisdiction involved several key steps.

1. The complexity of the topic of weight was first recognized, and discussions with the MCWG. A workshop and survey were conducted to determine the weight basis used for rate setting in the ITP.
2. To establish weight categories for the pilot, the initial step was to identify the number of weight categories. Considerations were given to existing transportation taxes and fees in operation to ensure the rates were transparent and scalable while reducing the burden for motor carriers and government officials.
3. A rate matrix was created to establish a single CpM rate for each of the four MBUF weight categories in each U.S. IFTA jurisdiction.

Compare Fuel Tax and MBUF Approach

A case study served to gain deeper insights into how fuel usage varies among individual and comparable vehicles within a company’s fleet, using a practical example. To enable a real-world comparison between consumption-based highway funding (fuel tax) and a mileage-based approach, one pilot carrier was selected. The study focused on individual and comparable vehicles within the company’s fleet, analyzing detailed data on distance traveled, MPG, fuel consumed, and corresponding fuel tax paid for each truck to evaluate any inconsistencies in highway use costs.

4.4. Results & Learnings

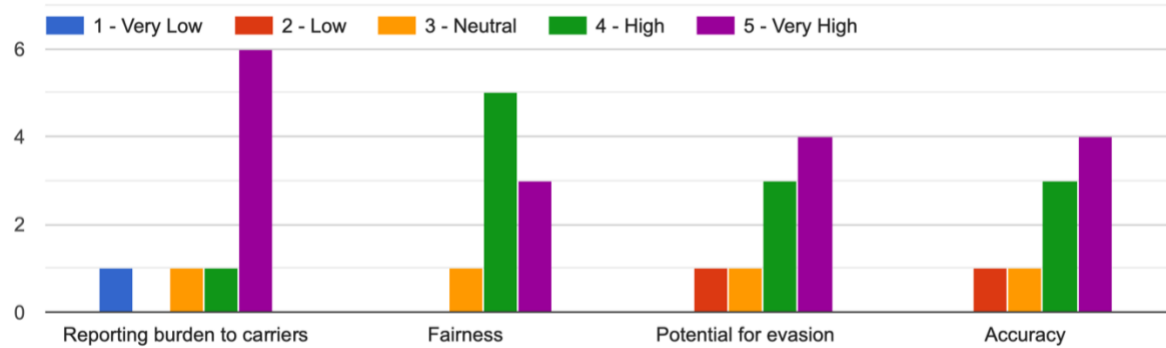
Determine Weight-Based Rate Setting Methodology

Selecting Weight Basis

There are several types of weight used to classify trucks. This is an important consideration, as a key aspect of achieving interoperability within systems is to ensure that a consistent uniform basis is being used. An overview of different weight classifications is shown in Table 4-1.

Table 4-1: Overview of Different Weight Classifications			
UNLADEN WEIGHT	GROSS VEHICLE WEIGHT RATING (GVWR)	GROSS COMBINATION WEIGHT RATING (GCWR)	ACTUAL WEIGHT
Also known as Tare weight, it represents the weight of a vehicle when it is empty or carrying no load, including the weight of the vehicle itself, fluids, and standard equipment.	The maximum weight that a vehicle is designed to carry, including the weight of the vehicle itself, passengers, cargo, and fuel; excluding trailers.	The maximum allowable weight of a combination of vehicles, such as a truck and trailer, including the loaded weight of both the vehicle and the trailer.	Weight of real time operation. Continually fluctuates based upon use of vehicle at the time vehicle is weighed. i.e. deadhead, loaded, type of load carried, etc.
= Registered Weight based on the IRP Cab Card and shown on the registration documents.			

The MCWG members were asked to rank factors related to weight on a scale from 1-5 (Figure 4-1).



(Question asked: Please rank your concern(s) specifically related to including weight as a factor in MBUF on a scale from 1-5.)

Figure 4-1: Survey results on concerns related to weight

The MCWG has consistently advised to keep things simple, aligning with the survey results, which indicate that the primary concern among carriers is the reporting burden.

During the National Truck Pilot a Rate Setting Working Group (Group) was formed with stakeholders from the MCWG. The primary objective of this Group was to explore rate setting options and to conduct a comprehensive analysis of states with existing Weight Distance Taxes (WDT). The aim was to identify successful practices and to highlight areas that require improvement.

The Group determined the Kentucky model is the most simple, scalable, and efficient WDT for the following reasons:

- It is applied evenly to all CMV's beginning at the registered (also known as licensed) weight of 60,000 pounds.
- The commercial vehicle registration document<sup>5</sup> for the vehicle identifies the vehicle's registered weight, making it easier for both law enforcement and the Commonwealth of Kentucky to confirm which CMV's qualify for the tax, without requiring the motor carriers to track configurations, loaded or empty weights, or any of the other more complicated requirements found in other WDT models.
- The flat 2.85 cents per mile on CMV's registered to operate at 60,000 pounds or more makes it easy for anyone to identify a qualified vehicle, calculate the tax due, and report the tax back to Kentucky.

The Group further concluded that registered weight should be used for rate setting and weight categories limited to four (4) for the pilot. The results of the Group were presented to the full MCWG, followed by an exercise and survey to get consensus on which elements should be considered and tested (Table 4-2).

Table 4-2: MCWG Survey results

	Registered weight is the preferred basis for MBUF rate	Number of axles add too much complexity and should be avoided	Do not use vehicle class to set rates as it adds too much complexity and it not easily verifiable	Multiple weight categories are ok to define fleets, if consistent and uniform among jurisdictions	Include all CMVs, including vehicles 10,001 - 26,000 pounds and intrastate vehicles
AGREE	90%	90%	80%	80%	80%
DISAGREE	0%	0%	0%	0%	0%
NEED MORE INFO	10%	10%	20%	20%	20%

<sup>5</sup> IRP Cab Card or state issued vehicle registration document.



While a CMV only operates a fraction of the time at its registered weight, there is a balance to be found between precision and complexity.

**The consensus of the MWCG was that it is more important to have a simple uniform application that is easily verifiable and does not place an additional administrative or compliance burden on the motor carrier to track individual truck configurations and fluctuating weights at any given time.**

By “Keeping it Simple” rates can be set accordingly making uniformity, interoperability and scalability more achievable within and across multiple jurisdictions.

Following the recommendations of the MCWG and the premises of keeping it simple, yet scalable, a modified version of the Kentucky model was applied utilizing four (4) weight categories.

The registered weight of the truck, as displayed on the IRP Cab Card was used as the uniform basis. For intrastate CMV’s or those under 26,000 pounds without an **IRP Cab Card**, the weight indicated on the **registration document** was used.

*‘You can’t argue about what the registered weight is.’*  
Member of the  
Motor Carrier Working Group

**Note:** There has been no comparison done on what the different options would really mean for the motor carrier, which may be a valuable topic to address in future work, to identify any unintended consequences and to ensure the simplest option is being used.

**Defining Weight Categories**

When selecting the categories, considerations were given to the categories of other transportation taxes and fees already in operation. This provided an understanding of whether the entire highway transportation funding related to CMV’s could be improved through MBUF with the aim to reduce the cost and burden for motor carriers to comply and government officials to administer.

Different options were presented to the MCWG to choose from, results are shown in Table 4-3.

Table 4-3: Options Presented and MCWG Survey Results		
4 Weight Categories	1,000 Pound Increments	Other
70%	10%	20%

The categories established are shown in Table 4-4.






































Table 4-4: MBUF Weight Category Established			
MBUF Weight Category 1	MBUF Weight Category 2	MBUF Weight Category 3	MBUF Weight Category 4
10,001 – 26,000 pounds Lightweight CMV’s, typically intrastate and not registered through IRP or IFTA.	26,001 – 40,000 pounds Class 7 and some lighter Class 8 trucks.	40,001 – 54,999 pounds Class 8 and higher trucks that are not required to pay the HVUT	55,000 pounds and above CMV’s which are also subject to HVUT

## Developing Rates

Recognizing that if MBUF becomes a path forward, jurisdictions will retain rate-setting sovereignty, the methodology used to create the rates was simply to apply a consistent weight-based **formula** to each jurisdiction and weight category to ensure all tax rates were transparent and scalable.

A rate matrix was created to establish a single CpM rate for each of the four MBUF weight categories in each of the U.S. IFTA jurisdictions. This approach was used to provide a comparative mileage-based highway use tax that could be uniformly applied to every CMV participating in the pilot.

Table: 4-5: Weight Matrix

<b>Class 1</b> Motorcycles		<b>Class 7</b> Four or more axle, single unit	
<b>Class 2</b> Passenger cars		<b>Class 8</b> Four or less axle, single trailer	
			
			
			
<b>Class 3</b> Four tire, single unit		<b>Class 9</b> 5-Axle tractor semitrailer	
			
			
<b>Class 4</b> Buses		<b>Class 10</b> Six or more axle, single trailer	
			
			
<b>Class 5</b> Two axle, six tire, single unit		<b>Class 11</b> Five or less axle, multi-trailer	
			
			
<b>Class 6</b> Three axle, single unit		<b>Class 12</b> Six axle, multi-trailer	
			
			
			
		<b>Class 13</b> Seven or more axle, multi-trailer	

While MPG wasn't used as a sole rate setting factor, it still formed part of the rate setting itself to arrive at a comparable rate. The Bureau of Transportation Statistics (BTS) reported a Class 8<sup>6</sup> truck is deemed to have an average consumption rate of 6.1 miles per gallon. Although the Class 8 truck starts at 33,001 pounds, the *MBUF 3* category (40,001 – 54,999) was chosen as the “median weight” for establishing rates as it is assumed all trucks registered at this weight meet the Class 8 definition of a 4 or less axles, single trailer trucks (Table 4-5: Weight Matrix).

Using weight classes to determine MBUF rates creates confusion as there are no established parameters for the actual weight of the vehicle.

For example, as previously discussed, a Class 8 vehicle begins at 33,000 pounds, but by adding a different trailer or multiple trailers to that same vehicle

the Class changes from 8 to the class of the “configuration” being operated.

Rather than calculating MBUF based on configuration which is much more difficult, if not impossible, to validate when auditing a return, weight categories were set using a range of the “registered weight” of the vehicle.

The formula used to determine the equivalent CpM diesel tax rate based on an average Class 8 MPG of 6.1 is as follows:

$$\text{Equivalent CpM Diesel Tax Rate} = \text{Diesel Tax Rate} / 6.1$$

<sup>6</sup> 4 or less axle, single trailer trucks with a Gross Vehicle Weight beginning at 33,001 pounds per the Federal Highway Administration 13-vehicle category classification system.



It was also necessary to apply the direct weight correlation between the MBUF rate groups to have an transparent, yet scalable, approach to rate setting as shown in Table 4-6.

Table 4-6: Rate Percentage Calculations		
MBUF Rate Percentage Calculations		
MBUF 1	10,001/40,001	25.0019%
MBUF 2	26,001/40,001	65.0009%
MBUF 3	40,001/40,001	100.00%
MBUF 4	40,001/80,000	150.0013%

For MBUF 1 and 2 this was accomplished by dividing the beginning category weight by the beginning weight of the MBUF 3 category to determine the percent of weight difference.

For the MBUF 4 rate, the beginning MBUF 3 weight of 40,001 was divided by 80,000 as it is half of the 40,001 beginning MBUF 3 weight, and the additional amount added to the MBUF 3 rate for a 150.0013% increase.

The example in Table 4-7 shows **how** the MBUF Rate Percentage Calculations above are applied to Alabama's (AL) diesel tax of .29 cents per gallon to determine the CpM for each weight category. To set the MBUF rates, the same methodology for each weight is applied to each jurisdiction's tax rate and is rounded to 4 decimal places for consistency. The entire MBUF rate matrix used for the ITP can be found in Appendix 2.

Table 4-7: Alabama Example	
Step 1	Determine the MBUF 3 Tax Rates
Formula	State Diesel Rate divided by 6.1 = MBUF 3
Example	$.29/6.1 = .0475$ (AL MBUF 3 rate)
STEP 2	Determine the MBUF 1 rates
Formula	MBUF 3 rate for each state x MBUF 1 percentage
Example	$.0475 * .250019 = .0119$ (AL MBUF 1 rate)
STEP 3	Determine the MBUF 2 tax rates
Formula	MBUF 3 rate for each state x MBUF 2 percentage
Example	$.0475 * .650009 = .0309$ (AL MBUF 2 rate)
STEP 4	Determine the MBUF 4 tax rates
Formula	MBUF 3 rate for each state x MBUF 4 percentage
Example	$.0475 * 1.500013 = .0713$ (AL MBUF 4 rate)

## Compare Fuel Tax (consumption-based) and MBUF (distance-based) Approach

To explore this approach, a Case Study focused on one pilot participant fleet (Table 4-8), which was selected at the beginning of the ITP, was conducted. The selection process ensured that the company had comprehensive records of each fuel purchase made by their fleet, as well as distance data captured during the pilot. This enabled a real-world comparison between consumption-based highway funding (fuel tax) and a mileage-based approach without adding any extra burden on the participants.

Table 4-8: Case Study Overview

<b>STATE SELECTED FOR ANALYSIS</b>	Pennsylvania	<b>FUEL REPORTING</b>	The Company has bulk diesel storage tanks on their premises and trucks are primarily fueled at this location. The bulk tank logs are reconciled weekly and the fuel placed in the corresponding CMV is entered by the Company into their tax program maintained by EROAD.
<b>TYPE OF TRUCKS</b>	All trucks are Peterbilt's ranging in model years from 2018 – 2022 and operated with 5 axles at registered weights of 80,000 pounds.	<b>DISTANCE REPORTING</b>	EROAD Telematics Device (GPS based)

Additionally, particular attention was given to comparing vehicles with similar characteristics to assess potential differences.

The study analyzed detailed data on distance traveled, MPG, fuel consumed, and the corresponding fuel tax paid for each truck in one sample state to evaluate any inconsistencies in highway use costs among the vehicles. This was done to better understand how fuel use varies among both individual and similar vehicles in a company's fleet.

To understand the actual cost per mile traveled and paid through the fuel excise tax, the actual distances recorded by EROAD's telematics devices on the vehicles were divided by the total tax paid (as reported by the Pilot Participant) on the fuel consumed during the six-month period.

This exercise provided valuable insights into variations in highway use costs from month to month and allowed for comparisons among the individual participating pilot vehicles.

Evaluating the detailed data revealed that despite similar distances traveled, the fuel consumed and tax paid varied greatly, showing inconsistency in highway use cost.

### Variance of fuel tax in CpM between like trucks reveals inconsistency.

The study revealed significant variations in the equivalent<sup>7</sup> CpM cost of operations among the company's trucks, even though they traveled similar distances.

<sup>7</sup> Equivalent CpM is calculated by taking the total state fuel tax actually paid by the company and dividing by the total actual miles traveled.

The average MPG was compared on a 6-month average, as well as on a monthly average. The scenarios represented in Table 4-9 reveal the total distance recorded in PA for each of the comparisons is similar, but the total fuel consumed, and corresponding fuel tax paid by the Company for the road use by truck varies greatly.

Table 4-9: PA Results

Consumption Comparisons	Total Distance in PA	Average Vehicle MPG	Total Fuel Consumed in Gallons	Fuel Tax Paid	Equivalent Fuel Tax Cents per Mile	% of Difference
Highest Six-Month Avg MPG	40,515	5.91	6,881	\$5,099	\$0.1256	
Lowest Six-Month Avg MPG	40,339	4.29	9,415	\$6,977	\$0.1733	38%
Highest One-month MPG (July)	1,664	7.83	213	\$158	\$0.0948	
Lowest One-month MPG (June)	1,434	3.59	399	\$296	\$0.2062	118%

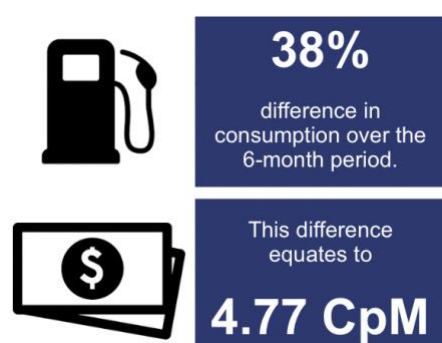


Figure 4-2: Difference Over 6-Month Period

The highest and lowest MPG trucks showed a 38% difference in highway use costs during the six-month pilot (Figure 4-2).

This difference in consumption between the two trucks resulted in the Company paying<sup>8</sup> **\$1,877 more** in PA fuel tax for one truck to operate 176 miles less on the highways in PA than they paid for another during the same six-month period.

Over a single month the variance between the highest and lowest MPG trucks showed a difference of 118%.

This difference in consumption resulted in the Company paying 20.62 CpM in PA for one truck, which was **11.14 CpM more** for road use than they paid for another to travel those same miles (Figure 4-3).

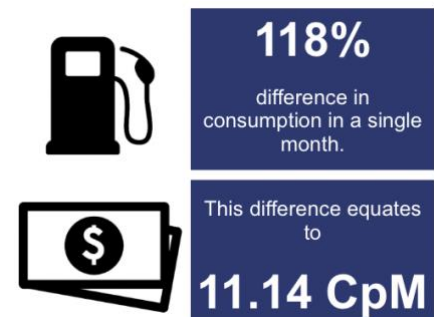


Figure 4-3: Difference in Single Month

**The amount paid by a carrier for road use is not consistent among its vehicles, regardless of weight.**

<sup>8</sup> This difference equates to 4.77 CpM traveled.

**Variance of fuel tax in CpM per vehicle shows inconsistency.**

When analyzing the variance in the per vehicle data and analyzing the consumption from month-to-month revealed the amount paid in PA varies from 11.9 – 13 CpM, equating to a 9% increase in per mile costs. (Table 4-10).

Table 4-10: Per Vehicle Data Variance (Highest Average MPG)

Truck w/ Highest Avg MPG	Total Distance in PA	Average Vehicle MPG	Total Fuel Consumed	Fuel Tax Paid	Equivalent Fuel Tax Cents per Mile	% of Difference
June	6,758	6.23	1,085	\$ 804	\$ 0.1190	
July	7,609	5.91	1,287	\$ 954	\$ 0.1253	
Aug	8,590	5.81	1,478	\$ 1,095	\$ 0.1275	
Sept	8,329	5.7	1,461	\$ 1,083	\$ 0.1300	9%
Oct	9,229	5.88	1,570	\$ 1,163	\$ 0.1261	
Nov	0	0	0	\$ -	\$ -	
<b>Totals/Averages</b>	<b>40,515</b>	<b>5.91</b>	<b>6,881</b>	<b>\$ 5,099</b>	<b>\$ 0.1256</b>	

The same analysis of the consumption variance of another truck from month-to-month ranges from 15.8 – 18.43 CpM, equating to a **17% increase** in per mile costs (Table 4-11).

Table 4-11: Per Vehicle Data Variance (Lowest Average MPG)

Truck w/ Lowest Avg MPG	Total Distance in PA	Average Vehicle MPG	Total Fuel Consumed	Fuel Tax Paid	Equivalent Fuel Tax Cents per Mile	% of Difference
June	6,861	4.69	1,463	\$ 1,084	\$ 0.1580	
July	6,585	4.49	1,467	\$ 1,087	\$ 0.1651	
Aug	6,701	4.02	1,667	\$ 1,235	\$ 0.1843	17%
Sept	7,466	4.12	1,812	\$ 1,343	\$ 0.1798	
Oct	7,790	4.33	1,799	\$ 1,333	\$ 0.1711	
Nov	4,936	4.09	1,207	\$ 894	\$ 0.1812	
<b>Totals/Averages</b>	<b>40,339</b>	<b>4.29</b>	<b>9,415</b>	<b>\$ 6,976</b>	<b>\$ 0.1733</b>	<b>38%</b>

This increase in per mile cost jumps to 55% when comparing the highest to the lowest CpM paid by the Company for these two trucks, which ranges from 11.90 to 18.43 CpM (Table 4-12).

The difference in cost of 6.53 CpM identified between these two trucks operating in the same state with similar vehicle characteristics and the same registered weights equates to \$431 in additional PA state fuel tax paid to operate one truck vs. another in a single month (Figure 4-4).

Although the analysis in this report focuses only on the miles traveled in Pennsylvania and the fuel consumption reported was not audited for accuracy, under a consumption-based approach to highway funding it is the truck's (fleet) MPG that determines how much fuel tax is due in every jurisdiction the vehicle travels in, the variances in the cost per mile apply to every jurisdiction the vehicle travels.



One truck paid  
**\$431 more**  
than another in State Fuel Tax for  
the same distance

Figure 4-4: Comparing State Fuel Tax

Table 4-12: Cost per Mile Comparison

Cost per mile comparison	Total Distance in PA	Average Vehicle MPG	Total Fuel Consumed	Fuel Tax Paid	Equivalent Fuel Tax Cents per Mile	% of Difference
Truck w/ Lowest CPM June	6,758	6.23	1,085	\$ 804	\$ 0.1190	
Truck w/ Highest CPM Aug	6,701	4.02	1,667	\$1,235	\$ 0.1843	55%
<b>Difference</b>	<b>57</b>	<b>2.21</b>	<b>582</b>	<b>\$ 431</b>	<b>\$ 0.0653</b>	

For example, as highlighted in Table 4-12, the difference between two trucks is 582 gallons consumed. Therefore, based on reported values, in addition to the state tax, one truck paid \$142 more in Federal<sup>9</sup> taxes than another for those same PA miles (Figure 4-5). Although the distance traveled is continuously recorded by the telematic device and reconciled with the odometer, without auditing the reported fuel, there is no way to determine the accuracy of the tax return.



One truck paid  
**\$142 more**  
than another in Federal Fuel Tax  
for the same distance

Figure 4-5: Comparing Federal Fuel Tax

### No Variance of CpM using Weight-Based MBUF approach.

Since all the Company's vehicles are registered at 80,000 pounds, under the ITP's weight-based approach to rate setting, the CpM charged to each vehicle for road use in PA was the same as every other 80,000-pound vehicle in the pilot, eliminating the discrepancy between the trucks completely and basing the road use on verifiable travel.

The case study provided insights into the potential differences between consumption-based and mileage-based highway funding and the impact of MPG variations on highway use costs.

<sup>9</sup>Additional 582 gallons consumed in PA x Fed Diesel Excise Tax rate of .244 per gallon.

## 4.5. Key Finding # 2

### **A Weight-Based MBUF has the Potential to Provide a More Transparent Link Between Usage and Cost of Road Use.**

State and federal roads and bridges are funded through a combination of sources, including fuel excise tax, registration fees, and various taxes and fees specific to CMVs. The current system relies heavily on fuel consumption, with the excise tax serving as the primary source of funding. However, other fees assessed based on factors like vehicle age, value, weight, or a combination of weight and miles driven make it challenging to determine the actual cost per mile for road use.

A case study conducted with a participant in the ITP demonstrated the significant variances in the cost per mile paid for road use based on fuel consumption. This highlights the lack of transparency in the current approach to highway funding, as the actual costs of using the highway are not clearly reflected.

Stakeholders prioritize a simple and easily verifiable uniform application for CMVs to achieve uniformity, interoperability, and scalability, rather than tracking individual truck configurations and fluctuating weights, to minimize administrative or compliance burdens on motor carriers.

An MBUF approach, utilizing weight, can provide a more transparent and accurate cost for road use, as it directly correlates with the actual mileage traveled. If MBUF has the capability to absorb other taxes and fees into the road use rates, it could potentially provide consumers with a clearer understanding of the true cost of highway usage.





# 5

## THEME 3 | Impact of Uniformity on States Sovereignty

### 5.1. Objectives

- Investigate the impact on states' sovereignty when a uniform weight-based approach is used for rate setting.
- Assess the value and benefits of consolidating transportation taxes and fees into a unified rate structure.

### 5.2. Rationale & Significance

Motor carriers face numerous transportation taxes and fees, which lead to a complex landscape of compliance and reporting requirements. Operating under different schemes with varying rules creates significant challenges for motor carriers, as they grapple with the administrative tasks associated with each system.

This complexity not only adds to the operational burden but also contributes to substantial costs for motor carriers. Streamlining and consolidating transportation fees would alleviate these challenges, simplifying the administrative process and reducing the financial burden on motor carriers. However, states' sovereignty in rate setting, as well as when, if and how they would be moving to an MBUF system is critical to be maintained.

The probability of the U.S. and Canada transitioning from fuel tax to MBUF at the same time is extremely low. As there is often a several year implementation period to allow for legislative changes, programming, and other administrative changes, it is also improbable that individual U.S. states would transition to MBUF concurrently even with a federal mandate. Therefore, it was important to test how reporting cross-border operations by CMVs would be impacted should any jurisdiction choose to transition, while others don't.

### 5.3. Methodology

Overall, the methodology encompassed a comprehensive evaluation of existing tax schemes, a real-world Case Study, technical feasibility testing, investigation into state sovereignty concerns, risk identification and mitigation strategies. These steps provided a solid foundation for the subsequent analysis and conclusions regarding the potential value and benefits of consolidating transportation taxes and fees into a unified rate structure.

The technical feasibility of reporting both fuel tax and MBUF together was analyzed, considering scenarios where some jurisdictions have adopted MBUF.

A thorough review of existing Weight Distance schemes was conducted to assess the value and benefits of consolidating transportation taxes into a unified rate structure, aiming to identify areas that hinder uniform reporting.

To understand the complexities in a real-life scenario, a Case Study was conducted involving a pilot carrier subject to the Oregon Weight Mileage Tax (WMT). The study also investigated the potential impact on states' sovereignty by using a uniform weight-based approach for rate setting in transportation taxes.

## 5.4. Results & Learnings

### Testing the technical feasibility of reporting fuel tax and MBUF simultaneously

To test the scenario where some states have MBUF and others remain with the fuel tax, weight-based MBUF rates were calculated for all U.S. jurisdictions and fuel tax for Canadian jurisdictions as shown in table 5-1.

Table 5-1: Fuel Tax and MBUF calculations

Jurisdiction	Method	Basis of Calculations	How Applied to Jurisdiction
Canadian	Fuel Tax	KPL (Kilometer per Liter)	Tax rate per Liter Consumed

Under the existing fuel tax model, rates are independently set by each jurisdiction using a uniform definition and measurement for each fuel type. Whether using “gallon” or another form of diesel or gasoline “gallon equivalent” the measurement and the applicable tax rate for that unit of measurement is consistent and uniformly applied between all jurisdictions. This allows the tax to be easily reconciled and reported regardless of where the motor carrier is based, operates, or purchases their fuel.

The uniform parameters used for the pilot consisted of three **defined** elements:

1. **registered weights** (from IRP Cab Card),
2. **tax rates** by jurisdiction for gasoline, diesel, and four MBUF weight categories, and
3. **application** of the rates using predefined weight categories.

For the consumption-based application in the Canadian jurisdictions with travel the fuel tax rates were applied exactly as they are today through IFTA. The average fleet KPL was used to determine the number of liters **consumed**<sup>10</sup> in each Canadian jurisdiction, multiplied by the posted IFTA rate of tax per liter. For the distance-based application the taxable **distance traveled** in each U.S jurisdiction by each CMV was multiplied by the established MBUF rate for that vehicle weight class and jurisdiction (Table 5-2).

<sup>10</sup> This is determined by dividing the total liters of fuel purchased by all reported vehicles during the reporting period by the number of kilometers traveled by those same vehicles during the same period. The average KPL is then divided into the total kilometers traveled in each jurisdiction to determine the number of liters consumed.

Table 5-2: Fuel Tax and MBUF Calculation Examples

		IFTA 2022/1		Weight Categories			
Fuel Type -->		Diesel	Gasoline	10,001 - 26,000	26,001 - 40,000	40,001 - 54,999	55,000 - 80,000
Jurisdiction	Rate	\$ / Gal	\$ / Gal	\$ / Mile	\$ / Mile	\$ / Mile	\$ / Mile
ALBERTA (AB)	U.S.	0.3803	0.3803	0	0	0	0
BRITISH COLUMBIA (BC)	U.S.	0.7812	0.7154	0	0	0	0
ALABAMA (AL)	U.S.	0.29	0.28	0.0119	0.0309	0.0475	0.0713
ALASKA (AK)	U.S.	0.0895	0.0895	0.0037	0.0096	0.0147	0.0221
ARIZONA (AZ)	U.S.	0.26	0.18	0.0107	0.0277	0.0426	0.0639

To test the scalability of weight-based rates further, EROAD established a second “rate matrix” using the same methodology applied to the four (4) MBUF weight categories as shown in Table 5-3.

The second matrix simply used 1,000-pound increments to set rates rather than using specific weight categories as used in the pilot. The purpose was to test whether a jurisdiction could choose to set rates like some of the WDT’s, where the rates are set to align more closely with the damage to pavement, even if another jurisdiction chose to use MBUF weight categories or simply continue with the fuel tax.

By utilizing the same **uniform measurement** to calculate the tax due, it was determined whether a jurisdiction uses gallons/liters to calculate the fuel tax or a defined weight to calculate the highway use tax, the rules for each jurisdiction can be applied and reported simultaneously **if** they are applied across each jurisdiction uniformly.

Table 5-3: Rate Matrix 1,000-Pound Increments

	MBUF Weight Range		% of 40,000	Jurisdiction			
	Diesel	Beginning	Ending	AL	AK	CA	CO
				0.2900	0.0895	0.7270	0.2050
MBUF1	10,001	11,000	0.25001875	0.0119	0.0370	0.0298	0.0084
	11,001	12,000	0.27501812	0.0131	0.0040	0.0328	0.0092
	12,001	13,000	0.30001750	0.0143	0.0044	0.0358	0.0101
	13,001	14,000	0.32501687	0.0154	0.0048	0.0387	0.0109
	14,001	15,000	0.35001625	0.0166	0.0051	0.0417	0.0118
	15,001	16,000	0.37501562	0.0178	0.0055	0.0447	0.0126
	16,001	17,000	0.40001500	0.0190	0.0059	0.0477	0.0134
	17,001	18,000	0.42501437	0.0202	0.0062	0.0507	0.0143
	18,001	19,000	0.45001375	0.0214	0.0066	0.0536	0.0151
	19,001	20,000	0.47501312	0.0226	0.0070	0.0566	0.0160
	20,001	21,000	0.50001250	0.0238	0.0074	0.0596	0.0168
	21,001	22,000	0.52501187	0.0249	0.0077	0.0626	0.0176
	22,001	23,000	0.55001125	0.0261	0.0081	0.0656	0.0185
	23,001	24,000	0.57501062	0.0273	0.0085	0.0685	0.0193
	24,001	25,000	0.60001000	0.0285	0.0088	0.0715	0.0202
	25,001	26,000	0.62500937	0.0297	0.0092	0.0745	0.0210
MBUF2	26,001	27,000	0.65000875	0.0309	0.0096	0.0775	0.0218

**Applying a uniform approach, fuel tax and MBUF can be reported simultaneously, demonstrating scalability without the method of taxation being identical.**

Table 5-4 shows that the states can retain sovereignty on how rates are being set. State A chose to have a very granular rate setting approach, whereby a different rate is being set per 1,000-pound increments, State B chooses to set the rates based on weight bands and State C charges one rate for all.

Table 5-4: Different Rate Setting Approaches by State

DIESEL	Beginning	Ending	State A	State B	State C
MBUF 1	10.001	11.000	1	1	1
	11.001	12.000	2	1	1
	12.001	13.000	3	1	1
	13.001	14.000	4	1	1
	14.001	15.000	5	1	1
	15.001	16.000	6	1	1
	16.001	17.000	7	1	1
	17.001	18.000	8	1	1
	18.001	19.000	9	1	1
	19.001	20.000	10	1	1
	20.001	21.000	11	1	1
	21.001	22.000	12	1	1
	22.001	23.000	13	1	1
	23.001	24.000	14	1	1
	24.001	25.000	15	1	1
	25.001	26.000	16	1	1
MBUF 2	26.001	27.000	17	2	1
	27.001	28.000	18	2	1
	28.001	29.000	10	2	1



## Assessing the Value and Benefits of Consolidating Different Transportation Taxes and Fees into a Unified Rate Structure

During the 2020-2021 National Truck Pilot, the MCWG agreed that temporary or independent state solutions threaten the ease of interstate commerce that IFTA and IRP have established and pose the biggest risk to the motor carrier industry.

As of January 1, 2023, there are now five (5) U.S. States with stand-alone Weight Distance requirements for CMV's traveling in or through their state. This equates to more than 10% of the contiguous United States. Several others are exploring the topic.

Table 5-5 provides a comparison of the WDT requirements, which vary from one program to another. The differences in weight application, rate factors, filing frequency, application of rates, and exemptions are some of the many reasons these programs are not scalable with existing reciprocity programs.

Table 5-5: WDT Requirements

State	Weight Application	Rates Based On	Filing Requirement	Application of Rates	Exemptions	Permits	Other
Kentucky	> 59,999	CGW or licensed	Quarterly	Number of miles x rate per mile	Yes, Farm vehicles	Yes, one-time use	Fuel Surcharge
New Mexico	> 26,000	Weights 1-way/2-way hauling based on operations when loaded	Quarterly	Highest GVW or CGVW operated	Yes, Off-highway, school buses, buses used for religious/charitable events; CMV's within 10 miles of Mexico border	Yes, different (significantly higher) rates applied if paid at Port of Entry. Good up to 72 hours.	Must file/pay electronically. Strict penalties for under-reporting WDT due.
New York	> 18,000 gross; or > 8,000 Truck > 4,000 Tractor Unloaded	Gross or Unloaded method (Carrier chooses preference)	Quarterly, year one. Monthly if more than \$4,000 due in prior year. Annual if \$250 or less.	Number of miles less toll-paid NY roads x rate method chosen	Yes, Government, farming, special use vehicles, etc	Yes, up to 3 days	Except for buses, exempt vehicles cannot be used to deliver passengers or vehicles
Oregon	> 26,000	Highest Actual weight per configuration during the reporting period	Mostly Monthly (some quarterly/annually)	Number of miles x rate for weight class. Chart A 26,001 - 80,000 and Chart B over 80,000 pounds	Yes, private roads, etc.	Yes, single trip or short term, not to exceed 10 days or 5 passes in 12 month period.	Presumptive fine \$440 if not enrolled or no permit and traveling in OR.
Connecticut - As of 1/1/2023	Class 8 through 13 beginning at 26,000 pounds	Gross Weight (light weight plus weight of load) 4 or more axles.	Monthly, electronically	Variable from 2.5 to 10 cents per mile for vehicles up to 80,000; 17.5 cents per mile over 80,000 pounds	Yes, Government, and motor vehicles transporting milk or dairy product to/from dairy farm	Annual Heavy Use Tax (HUT) permit	Must file/pay electronically. \$1,000 fine for knowingly violating HUT provision. Must carry any HUT permit for every vehicle

Additionally, two of the WDT programs do not allow for “**registrant designation**” meaning the “owner<sup>11</sup>” of the asset is responsible for registering and complying with the program even though they are not the vehicle operator.

<sup>11</sup> This occurs in a Lessee/Lessor relationship where the Lessor owns the asset, but the Lessee is responsible for the vehicle registration and operation of the vehicle.



This analysis demonstrates the differences in how each jurisdiction defines the “weight” or class of vehicle at which time the WDT applies. These programs are difficult to administer, validate, and comply with, making misreporting and evasion highly prevalent.

Due to the lack of uniformity and application, WDT’s are not scalable and cannot be combined with existing reporting platforms such as IFTA and IRP. Therefore, each state with a WDT requires the motor carrier to apply (register) and file separate individual returns, and comply with the administrative requirements of the jurisdiction’s program.

In some instances, it means they must track the CMV configurations on every one of their vehicles and calculate the amount due for activity based on how the CMV was operated at a given point in time during the reporting period.

### Highlighting complexity through a real-world case study

To demonstrate the complexity of a real-world WDT model with multiple tiers of taxation and recordkeeping, a case study was conducted with one of the pilot carriers.<sup>12</sup> This carrier (Table 5-6) was subject to OR WDT and agreed to allow EROAD to use their data to highlight the complexities of their OR WDT as part of the ITP evaluation.

Table 5-6: OR WDT August 2022 Summary	
Total OR WDT Unique Entries	184
Number of CMV's Reported	153
Number of CMV's Operating >1 Declared Weight	31
Total Different Declared Weights Reported	7
Declared Weight Ranges	28,000 - 105,500

The carrier is required to file a **monthly** WDT return with OR identifying the total miles traveled in OR by a CMV exceeding 26,000 pounds, **segregated** by the total miles operated at each declared weight to comply.

This means that in addition to the recordkeeping requirements of IFTA and IRP, the company must track the movement of every CMV registered for travel in OR and

- 1) record and report the number of miles operated during the month regardless of where the miles were accrued;
- 2) report and pay OR for the miles operated at **each** of their seven (7) different declared operating weights, regardless of the number of miles traveled at that weight.

Their August 2022 WDT filing with the State of OR prepared by EROAD on their behalf reveals 153 of their CMVs met OR’s WDT filing requirements.

<sup>12</sup> This mega-carrier company operates under multiple DBA’s but files a single MCS-150 for all of their CMV’s and distance traveled. For this illustration, the focus is on the fleet participating in the ITP.

Table 5-7 shows the OR WDT filing for the 6 participating CMVs. In this example, CMV 1 through CMV 4 each report the total distance traveled for the month, but since there were no miles traveled in OR, there was no fee associated with the entry. CMV 5 and CMV 6 had OR travel and paid the corresponding WDT fees of \$189.12 on the return.

Table 5-7: OR WMT Filing

SECTION 1											
A	B	C	D	E	MONTHLY ODOMETER READINGS		H	I	J	K	L
LICENSE PLATE OR PASS NUMBER	STATE / PROV.	UNIT NUMBER	MAKE OF VEHICLE	DECLARED WEIGHTS	F BEGINNING	G ENDING	TOTAL MILES OPERATED	OREGON TAXABLE MILES	NO. OF AXLES IF USING TABLE "B"	TAX RATE PER MILE	OREGON HIGHWAY USE TAX
ORA104	OR	CMV 1	PTRB	28,000	63,144	65,878	2,734	0		.0720	0.00
ORA716	OR	CMV 2	PTRB		175,463	179,898	4,435	0			0.00
ORA312	OR	CMV 3	INTL	80,000	40,086	42,517	2,431	0		.2370	0.00
ORA718	OR	CMV 4	PTRB		281,500	292,905	11,404	0			0.00
ORAL310	OR	CMV 5	INTL	80,000	26,845	33,903	7,058	212		.2370	50.24
ORA101	OR	CMV 6	INTL	80,000	100,408	107,229	6,821	586		.2370	138.88

During the month of August 2022, 31 of the 153 vehicles **operated at more than one** declared weight during the month. Therefore, a separate line item was reported on the OR return to identify the number of miles traveled **in each of the declared weight categories** to ensure the proper CpM was charged for the miles traveled at that declared weight, regardless of the number of miles traveled **at** each weight.

Table 5-8 and 5-9 below provide examples of two CMVs (EX2 and EX3) which were operated at more than one declared weight during the month. Additionally, when a CMV operates at a declared weight in excess of 80,000 pounds, the **number of axles** must also be reported, and a separate rate chart must be used to calculate the road use tax.

Table 5-8: Unit Ex2

A	B	C	D	E	MONTHLY ODOMETER READINGS		H	I	J	K	L
					F BEGINNING	G ENDING					
LICENSE PLATE OR PASS NUMBER	STATE / PROV.	UNIT NUMBER	MAKE OF VEHICLE	DECLARED WEIGHTS			TOTAL MILES OPERATED	OREGON TAXABLE MILES	NO. OF AXLES IF USING TABLE "B"	TAX RATE PER MILE	OREGON HIGHWAY USE TAX
ORA629	OR	EX2	PTRB	80,000	12,701	13,043	342	63		0.2370	14.93
ORA629	OR	EX2	PTRB	102,500				266	7	0.2552	67.88
ORA629	OR	EX2	PTRB	105,500				2	7	0.2620	0.52

Table 5-9: Unit Ex3

A	B	C	D	E	MONTHLY ODOMETER READINGS		H	I	J	K	L
					F BEGINNING	G ENDING					
LICENSE PLATE OR PASS NUMBER	STATE / PROV.	UNIT NUMBER	MAKE OF VEHICLE	DECLARED WEIGHTS			TOTAL MILES OPERATED	OREGON TAXABLE MILES	NO. OF AXLES IF USING TABLE "B"	TAX RATE PER MILE	OREGON HIGHWAY USE TAX
ORA623	OR	EX3	PTRB	28,000	43,156	44,527	1,371	1		0.0720	0.07
ORA623	OR	EX3	PTRB	80,000				202		0.2370	47.87
ORA623	OR	EX3	PTRB	105,500				1,134	7	0.2620	297.11

Using an automated solution eases compliance for motor carriers with multiple vehicles but **still requires drivers to accurately record** the operating weight at the beginning of each trip, manually. Even with automation, the driver's recorded weight cannot be validated without a verifiable record of the actual weight, like a weight ticket from a scale. To address misreporting and fraud, weight sensors on axles along with global positioning data could help, but it comes with added costs for the motor carrier.

### WDT models demonstrate the need for MBUF application to be uniform.

If companies have to follow different rules in each state they pass through, reporting for motor carriers would resemble the early 1990s when each state had standalone requirements. The introduction of new WDT schemes with varying rules makes them non-scalable or operable with existing funding mechanisms, leading to increased costs, complexity, and higher risks of non-compliance. However, the ITP showed that **standardizing the process for collecting road use charges enables a uniform and achievable approach.**

The next two tables, while not fully representative of the overall OR WDT revenue, illustrate a “keep it simple” approach suggested by the MCWG. This approach allows for state sovereignty in rate setting and application while maintaining ease of roadside validation and audits. Table 5-10 uses the average CpM of the sample vehicles displayed in the first three diagrams above and applies a single CpM rate to all OR miles.

Table 5-10: Average CpM Calculation

Calculations with Same Vehicles using an average CpM for all Registered Weights										
STATE ID	BASE JURISDICTION	TRUCK #	TYPE	REGISTER ED WEIGHT	BEGINNING ODOMETER	ENDING ODOMETER	TOTAL MILES OPERATED	TOTAL OR MILES	TAX RATE PER MILE	OREGON HIGHWAY USE TAX
xxxx	OR	CMV 1	PTRB	28,000	63,144	65,878	2,734	0	0.2504	\$ -
xxxx	OR	CMV 2	PTRB	80,000	175,463	179,898	4,435	0	0.2504	\$ -
xxxx	OR	CMV 3	INTL	80,000	40,086	42,517	2,431	0	0.2504	\$ -
xxxx	OR	CMV 4	PTRB	80,000	281,500	292,905	11,404	0	0.2504	\$ -
xxxx	OR	CMV 5	INTL	80,000	26,845	33,903	7,058	212	0.2504	\$ 53.08
xxxx	OR	CMV 6	INTL	80,000	100,408	107,229	6,821	586	0.2504	\$ 146.73
xxxx	OR	EX2	PTRB	102,500	12,701	13,043	342	331	0.2504	\$ 82.88
xxxx	OR	EX3	PTRB	102,500	43,156	44,527	1,371	1,337	0.2504	\$ 334.78
<b>Totals</b>							<b>36,596</b>	<b>2,466</b>		<b>\$ 617.49</b>

Table B is only used when the declared "operated" weight exceeds 80,000 pounds

Total Distance Traveled in OR	2,466
Total OR WDT paid	\$ 617.50
Average CpM	\$ 0.2504

Table 5-11 uses tiered weight-based rates for the same vehicles and distance. The baseline is set at an “average” truck weight of 80,000 pounds, and rates are adjusted based on the truck's registered weight. This allows jurisdictions to apply a single rate per mile according to the declared weight by the motor carrier. While it might result in slightly higher per-mile payments for motor carriers than the current method, it simplifies rate setting, reporting, and compliance.

Jurisdictions can still choose to adjust rates based on the actual average percentage of time a vehicle registered at 80,000 pounds operates at that weight.

Table 5-11: Tiered Weight-Based Rates

Eliminate Table B and consolidate all distance under the rate for the registered weight of the vehicle										
STATE ID	BASE JURISDICTION	TRUCK #	TYPE	REGISTER ED WEIGHT	BEGINNING ODOMETER	ENDING ODOMETER	TOTAL MILES OPERATED	TOTAL OR MILES	TAX RATE PER MILE	OREGON HIGHWAY USE TAX
xxxx	OR	CMV 1	PTRB	28,000	63,144	65,878	2,734	0	0.0823	\$ -
xxxx	OR	CMV 2	PTRB	80,000	175,463	179,898	4,435	0	0.2370	\$ -
xxxx	OR	CMV 3	INTL	80,000	40,086	42,517	2,431	0	0.2370	\$ -
xxxx	OR	CMV 4	PTRB	80,000	281,500	292,905	11,404	0	0.2370	\$ -
xxxx	OR	CMV 5	INTL	80,000	26,845	33,903	7,058	212	0.2370	\$ 50.24
xxxx	OR	CMV 6	INTL	80,000	100,408	107,229	6,821	586	0.2370	\$ 138.88
xxxx	OR	EX2	PTRB	102,500	12,701	13,043	342	331	0.2631	\$ 87.08
xxxx	OR	EX3	PTRB	102,500	43,156	44,527	1,371	1,337	0.2678	\$ 358.06
<b>Totals</b>							<b>36,596</b>	<b>2,466</b>		<b>\$ 634.26</b>

OR Rate per mile for 80,000 pounds 0.2370

Registered Weight	% of .2370	Tax Rate
% of 80,000 (28,000 / 80,000)	0.35	\$0.0830
% of 80,000 (80,000 / 80,000)	1	\$0.2370
.02370 + .05% for every additional 2,000 lb	1.11	\$0.2631
.02370 + .05% for every additional 2,000 lb	1.13	\$0.2678

Unfortunately, with each new WDT imposed, the rules are different and are therefore not scalable or interoperable with existing funding mechanisms, adding costs, complexity, and greater risks of non-compliance. The ITP demonstrated that, **when the process for collecting road use charges is standardized**, a uniform approach is attainable.

Additionally, when the application is uniform, it appears the mileage-based method of taxation could easily absorb other defined costs, such as the Kentucky WDT tax which assesses \$0.0285 per mile for vehicles above 59,999 pounds. By adding the additional CpM fee to the established MBUF rate in Kentucky for vehicles weighing 60,000 pounds or more, both the MBUF and the Kentucky WDT could theoretically be calculated and collected simultaneously by every jurisdiction through the established CpM rates applied to the distance accrued in Kentucky and Oregon rather than requiring a separate filing in each jurisdiction.

**By keeping it simple, the ITP demonstrated a uniform weight-based approach to sustainable funding could be scalable and administered with modifications to existing frameworks without disruption to the jurisdictions or the motor carrier.**

As you will read in the Theme 4 Clearinghouse PoC findings, our research partner EROAD demonstrated their ability to calculate MBUF due by vehicle for each jurisdiction and transmit directly to the various Clearinghouse entities without contacting the motor carrier or jurisdiction for information or assistance. This is contrary to the administrative and compliance challenges found in single state WDT models. It demonstrates the ability of technology and uniform reporting to simplify the future of highway funding.

Review Risks Associated with Complexity and Identified Mitigations

Each time a Jurisdiction looks for a way to increase their highway revenue outside of the existing uniform approaches such as fuel tax rate hikes, surcharges, or ad-valorem fees and implements a form of MBUF that does not align with the uniform framework already established for motor carriers to report their operations, it requires the jurisdiction to develop a stand-alone program to administer the new fee and a new program for the motor carrier to comply with.

These stand-alone programs are not only costly for a jurisdiction to administer and enforce, but they also add additional complexity and costs for the motor carriers to comply. The more complicated the requirements, the greater the risk of misreporting and evasion.

Complexity drives non-compliance and increases evasion potential

In 2017, ATRI released a report that analyzed New York’s “ton-mile” tax. The report stated that in NY alone, “it is estimated a motor carrier could potentially be subject to over 50 different tax rates depending upon the method they choose to file, the characteristics of their fleet and cargo, and their operating location.” The report goes on to say evasion in New York was estimated “in the range of 32 – 44 percent.”

Table 5-12 shows a few of the obstacles that prevent stand-alone programs, such as WDTs from being incorporated into the cooperative agreements in place by the jurisdictions.

Table 5-12: Obstacles for Consolidation			
DIFFERENT REPORTING PERIODS	DIFFERENT RECORDKEEPING REQUIREMENTS	DIFFERENT DEFINITIONS OR APPLICATION OF RATES	ACTUAL WEIGHT
Monthly Quarterly Annually	Weights by configuration Number of Axles Record retention	Unladen vs. Laden Actual weight vs Registered Weight Difficult to report and validate 'point in time configurations that vary from day to day or jurisdiction to another etc	Weight of real time operation. Continually fluctuates based upon use of vehicle at the time vehicle is weighed. i.e. deadhead, loaded, type of load carried, etc.
Complexity not only adds administrative costs on the motor carrier side, but also additional costs for programming, auditing, compliance and enforcement.			

Complexity adds risks when the application of rates and fees are not scalable.

As discussed earlier, some programs have different rates for variable configurations, laden/unladen weights, or other interchangeable operations, and therefore records must be maintained to support the CMV’s actual weight or configuration at a particular point in time to validate what they reported on their return.

Under IFTA and IRP, jurisdictions must audit the records of 3% of all companies based in their jurisdiction each year, but they must also audit on behalf of all jurisdictions the company travels in, which may include all 58 member jurisdictions. The uniform recordkeeping and reporting requirements in place through these programs make that task possible.



However, ensuring the proper rate was paid for a configuration, weight, or other interchangeable operation at a particular point in time in a single jurisdiction can be incredibly challenging during an audit, possibly leading to additional assessments to the motor carrier that may not be valid.

Auditors would also have to be trained on every jurisdiction's stand-alone program to conduct a viable audit. Performing that task for every jurisdiction where travel occurs would not only be unreasonably time-consuming, the likelihood of validating or enforcing the activity with any level of confidence is statistically unlikely.

Using technology allowing the driver to record the operation at the time of the event simplifies the recordkeeping but it does not **validate the accuracy** of the entry. To validate, secondary weight sensors on the axles, weight scale tickets, or some other form of **validation** would be needed to confirm the driver's entry is accurate.

While it is possible to achieve with today's technology, the cost of accurately capturing and reporting the activity likely outweighs the benefits. Additional equipment costs, programming, and data plan services would place an additional burden on smaller businesses to purchase or use technology that is not otherwise necessary or required.

### **Uniformity minimizes complexity while providing scalability and maintaining jurisdictional sovereignty.**

When IFTA and IRP were adopted in the mid-1990's, it was important for all the stakeholders to have solutions that provided reciprocity among jurisdictions and promoted the safe and effective use of the highway system with minimal disruption. It was also important to ensure Jurisdictions retained their sovereignty regarding rate setting and identifying exemptions. These objectives were met and today both programs continue to epitomize collaborative scalability and interoperability among jurisdiction and various vendor systems while maintaining jurisdictional sovereignty in all North America.

As guided by members of the MCWG, the ITP focused on "Keeping it Simple." Stakeholders believe it is more important to develop a funding solution that is easy to understand, comply with, and administer than to focus on complex formulas, variable configurations or similar options that make compliance challenging. Simply stated, they value simplicity.

By keeping it simple they believe it provides a greater opportunity for a solution to be accepted by stakeholders, scalable, interoperable, and easy to comply with even during a transition period. They recognize it would likely mean paying a slightly higher CpM rate if always using their registered weight to calculate the MBUF due, than to pay less when they are operating at a lower weight and continually track their configurations and operating weights to determine the MBUF due. However, they recognize the more complex a program is, the greater the risk and cost becomes to comply.

The ITP used a uniform approach to rate setting and application of rates. As a result, replacing the fuel tax with MBUF did not present any reporting challenges.

If the goal for a long-term highway funding alternative includes a national approach with **interoperability, scalability and sustainability**, many stakeholders share the opinion that the costs and administrative burdens associated with **all** the various state and federal highway funding sources should also be evaluated. Heavy Vehicle Use Taxes, WDT's, Federal Excise Tax, and Uniform Commercial Registration fees are just a few of the funding sources that could potentially be consolidated or absorbed into a single uniform mileage-based approach.

Regardless of the method chosen, our work shows it is important to ensure any transition to an alternative highway transportation funding solution is interoperable, scalable, and respects a jurisdiction's right to establish who and how to tax its constituents.

The ITP has demonstrated the uniformity of a mileage-based approach may not only protect jurisdictional sovereignty, but also provide additional flexibility within the jurisdiction to incorporate other fees into the MBUF rates, potentially eliminating the need for separate tax return filings and possibly other highway funding programs. Using a uniform approach to the application of rates demonstrated MBUF can be simple, scalable, and sovereign.



## 5.5. Key Finding #3

### **Uniformity Does Not Have to be Identical to be Scalable and Has the Potential to Substantially Decrease Administrative Costs for Both the Motor Carriers and Agencies.**

Uniformity, simplicity, and scalability are crucial factors in the development of a successful rate setting and reporting approach, ensuring cost-effectiveness, compliance, and transparency in highway funding.

Uniformity is crucial to develop a scalable and efficient rate setting approach for motor carriers. However, the project showed that uniformity does not necessarily mean identical rates across jurisdictions, but rather a consistent framework that can significantly reduce administrative costs for both motor carriers and agencies.

The current complexity of different reporting requirements in various jurisdictions is a key concern, and the goal should be to achieve as much consistency and interoperability as possible to avoid overwhelming compliance costs. Additionally, the findings emphasize the need for simplicity in the rate setting approach to ensure scalability and ease of compliance, as complex requirements often lead to non-compliance and increased evasion potential.

The focus was on demonstrating the benefits of a uniform weight-based approach in achieving sustainable funding for highways. The uniform application of rates in MBUF systems simplifies reporting and administration, promoting transparency in highway funding. The research also suggests that a uniform approach to rate setting could potentially absorb other defined costs, such as weight-distance taxes, thereby eliminating the need for separate tax return filings and additional highway funding programs. While it is important to maintain jurisdictional sovereignty, the initial costs and administrative burdens of various funding sources emphasize the need for an interoperable and scalable long-term highway funding solution.



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# 6

## THEME 4| Clearinghouse Proof of Concept (PoC)

### 6.1. Objectives

- Assess the capabilities of the current frameworks and systems in receiving and effectively processing MBUF transactions.
- Evaluate the technical feasibility of utilizing existing Clearinghouse frameworks for MBUF processing.

### 6.2. Background & Rationale

The National Truck Pilot (2020-2021) evaluated processes used by the motor carrier industry looking for opportunities to leverage existing frameworks should MBUF become a future path forward. During that analysis, it was evident the IFTA and IRP Clearinghouse processes were worth exploring to better understand if the framework in place for more than two decades by these organizations, could potentially be modernized to include MBUF; and if so, how. A third entity with experience processing Oregon's Mileage Based User Fee program (OreGO) was selected to analyze the Clearinghouse framework outside the current motor carrier environment.

Prior to IFTA and IRP in the early to mid-1990's, commercial transportation highway funding required motor carriers to register and file fuel use taxes in every state where travel occurred. The inception of IFTA and IRP changed those requirements by offering reciprocity through a single point of registration and fuel tax filing using a "base state" approach. Since these programs are international, each participating U.S. State and Canadian Province is referred to as a "member jurisdiction"

However, even after the inception of IFTA and IRP, jurisdictions still had to send and receive paper checks to each other to distribute the funds collected from their motor carriers. Although it was much more efficient than requiring motor carriers to register and file with each jurisdiction separately, it was still a very burdensome task on the jurisdictions.

With the development of the Clearinghouses through IFTA and IRP, the transactions each month are now summarized by each jurisdiction and sent to the respective Clearinghouse where the funds are netted and re-distributed back to the jurisdictions, eliminating the need to cut, process and track paper checks.



### 6.3. Methodology

A multi-faceted Clearinghouse PoC was conducted to assess the technical feasibility of using existing Clearinghouse processes and frameworks for MBUF administration (Figure 6-1).

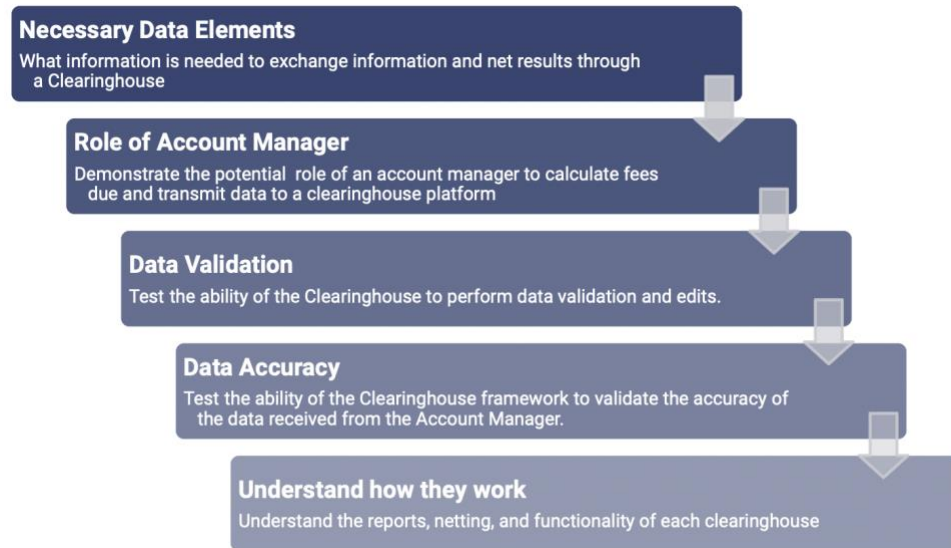


Figure 6-1: Clearinghouse PoC

The three entities participating in the Clearinghouse PoC were:

1. IFTA Clearinghouse (IFTACH) – Developed in 1998 to facilitate the exchange of data and fuel use tax revenue funds collected between the member jurisdictions<sup>13</sup> of IFTA.
2. IRP Data Repository (IDR) – Developed in 1997 and redesigned in 2021 to facilitate the exchange of data and registration fees collected between the member jurisdictions<sup>14</sup> of IRP.
3. ClearRoad – Developed in 2017 to cater to a gap in services and solutions available to implement effective road pricing, including MBUF. ClearRoad’s Clearinghouse is used as part of the MBUF program, OreGO<sup>15</sup>, of the Oregon Department of Transportation.

An overview of the three Clearinghouses can be found in the Appendix 5.

The Clearinghouse test, conducted by EROAD, focused on two scenarios, the **Prescriptive** and the **Non-Prescriptive**. The prescriptive test focused on the current IFTA procedures, with as little modification as possible; the non-Prescriptive scenario focussed on understanding the role a Clearinghouse could play in future MBUF scenario.

The purpose of expanding this test was to understand the scalability of a Clearinghouse to integrate and process data received directly from a telematics provider without pre-calculated values.

<sup>13</sup> IFTA Member jurisdictions include all 48 continental U.S states and 10 Canadian Provinces.

<sup>14</sup> Member jurisdictions of IRP include all 48 continental U.S states, the District of Columbia, and 10 Canadian Provinces.

<sup>15</sup> Currently applies to passenger vehicles. More information can be found at <https://www.myorego.org/>



- 1) **Prescriptive Test using IFTACH:** The IFTACH PoC began with a “prescriptive” test where the IFTACH requirements used by the jurisdictions to submit monthly transmittals were given to EROAD by IFTA, Inc. EROAD in turn provided anonymized participant data in IFTA’s pre-defined format to test the “as-is” IFTA Clearinghouse functionality and identify what modifications may be necessary to **process** the MBUF data. The PoC also tested whether IFTA could be used to provide fuel tax credits to motor carriers in lieu of separate refund processing by the jurisdictions.
- 2) **Non-Prescriptive Test using ClearRoad, IFTA and IRP Clearinghouses:** To further understand the role a Clearinghouse could play in future MBUF collections and fund distributions, the PoC was expanded to conduct a “non-prescriptive” test of the Clearinghouse functionality. Anonymized participant “trip data”<sup>16</sup> obtained directly from EROAD’s system without any special formatting or calculations was provided to the three Clearinghouse entities participating in the PoC.

The objective of the non-prescriptive test was to evaluate whether anonymized trip data could be transmitted directly from a telematics (or other) provider in an “as is” file to a Clearinghouse entity for validation, calculation, and processing without a prepared tax return, prescriptive format, or intervention from either the motor carrier or the base jurisdiction.

Overall, the methodology involved testing the existing IFTACH functionality with the predefined format and making necessary modifications to process MBUF data. It also explored the possibility of processing data directly from telematics providers without pre-calculated values or prescriptive formats, assessing scalability and outcomes related to MBUF calculations and jurisdictional netting.



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<sup>16</sup> Trip data did not include GPS longitude or latitude positions.

## 6.4. Results & Learnings

### Prescriptive Test

Under the existing IFTACH framework, **demographic** data is uploaded daily which allows their membership and law enforcement to access certain data elements used to validate account status, confirm the base jurisdiction, and provide other basic information about the Licensee. **Transmittal** data contains all related summary and detailed information for every IFTA tax return filed and processed for every carrier in each of the 58 jurisdictions. Information is compiled from the IFTA tax returns received in each jurisdiction and includes distance data, fuel purchased, consumption factor (MPG/KPL), taxes or credits due, and any applicable interest accrued. **Funds netting** is run monthly and is the process used to determine the amount each member either owes or is owed for that month's activities, including audits, amended returns and other transactions processed by a member jurisdiction.

#### How IFTA and IRP works:

The taxpayer registers with their base jurisdiction, the reports are filed with the base jurisdiction, the jurisdictions nets the reports of all tax payers and sends the cumulative information to the IFTA or IRP Clearinghouse, which in turn nets the amount by state and reports back.

Once all the taxpayer return are submitted, audits processed, or any other return related events occurring that month have been filed and paid, the jurisdiction "nets" the amount due from, or to, each of the relevant Jurisdictions and remits the transmittal to IFTA. Once all transmittals are received from the Member jurisdictions, IFTA "nets" the transmittals to determine whether a jurisdiction is due money for the quarter or owes money for the quarter.

The results are sent to the member jurisdictions and they must either pay what is due or will receive an EFT from IFTA once all the funds for the month have been collected. Transmittals are processed monthly.

EROAD was provided a list of data fields and formats IFTA needed to process a Clearinghouse file. EROAD worked with IFTA's information technology expert to identify the proper formats and data fields used by the jurisdictions to send their summary data and transmittals to the Clearinghouse on a monthly basis.

The first part of the test was conducted using anonymized June trip data provided by EROAD. As expected, the EROAD file could not be processed "as-is" because it contained data elements not currently required, defined in the dataset rules, or captured by IFTA. EROAD worked with IFTA to identify how the new data elements could be added to the IFTA test environment without a significant change to the IFTA process.

The following changes were made by IFTA to accommodate the new data:

- Added "MBUF 1 – 4" as four (4) new fuel types to coincide with each of the MBUF weight categories.
- Added "U.S." as a new jurisdiction to accept and include transactions for the Federal MBUF to be included.

By adding the four MBUF categories as new fuel types, an MBUF CpM rate could be associated directly with each weight category, such as it is today with diesel and gasoline having their own separate tax rates and line on the return to post the values.

Adding "U.S." as a jurisdiction also allowed transactions for the Federal government to be included with the test data. The ability to easily add or remove a jurisdiction is part of the original Clearinghouse framework.

Lastly, no adjustment to the Clearinghouse was needed to post the fuel tax credits, as the IFTA Clearinghouse **in its current form** only uses the summarized “**values**” provided by the jurisdictions for each of the data elements and does not perform actual calculations<sup>17</sup>. As MBUF is explored as a replacement of the fuel tax, it was important to understand if the refunds could be processed by IFTA in lieu of separate refund processing by the jurisdictions.

Although not part of the prescriptive test, a similar process is used by IRP for the **apportioned registration** of CMV’s. The distance traveled in each jurisdiction is also summarized and reported at a fleet level irrespective of whether the fleet represents one or 10,000 vehicles. However, the IRP Data Repository (IDR) also captures vehicle specific information including VIN, registered weight, make and model, and other pertinent information which is made available for use by law enforcement.

MBUF calculations were done on a per vehicle basis, however the reporting was done on a fleet basis. This is similar to the way reporting is currently done for IFTA and IRP (quarterly reporting is also the preferred reporting period from the MCWG’s perspective). This limits the amount of data that is being shared between the account manager and the Clearinghouse/state and therefore reduces the data transmittal costs (and emission) and adds a privacy layer.

**This PoC demonstrated the flexibility of the existing framework to adapt to various forms of taxation with some modifications.**

### Non-Prescriptive Test

For this test, EROAD provided the three Clearinghouse entities with a “data dump” which included all the trip data captured for the pilot vehicles during the month of August along with a list of the desired outcomes. The file included the various data elements necessary to ensure the entities had what they needed to process the data and complete the calculations by vehicle, company, and jurisdiction. The file did not include the MBUF amount due or any other “calculated” values or prescriptive formats.

The trip data was provided in columns with the following headers:

- Pseudo Company Names
- Year of Activity
- Month of Activity
- EROAD assigned Fleet Number
- MBUF Weight Category
- Equipment Name
- Base Jurisdiction
- Travel Jurisdiction
- Total Distance
- Taxable Distance

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<sup>17</sup> Although there are data validations in place to catch various reporting errors, anomalies, or discrepancies, the validations do not include any calculated values. Therefore, to test the ability to apply fuel tax credits through the IFTA process, all calculations were completed by EROAD and values were populated into the “tax due” data column as a credit based on the number of total gallons purchased multiplied by the tax rate for each jurisdiction where fuel was purchased. (e.g. if the carrier purchased 100 gallons of diesel fuel in Alabama (AL), 100 was multiplied by the AL diesel rate of \$0.29 and a \$29.00 credit was applied to offset the MBUF fees due.)

EROAD also provided the MBUF rate matrix used to calculate the MBUF fees for each of the MBUF weight categories. The data dump was sent in a CSV format and the rate matrix was an “Excel” file.

The Clearinghouse entities were asked to take the data from this file and present the outcomes as shown in Figure 6-2.

The purpose of these tests was to understand whether a Clearinghouse could validate “3<sup>rd</sup> party” calculations and the amounts due to or from a jurisdiction without intervention from the motor carrier or a jurisdiction.

1

The amount of MBUF due from each participating **company**, broken out by each jurisdiction where travel occurred.  
(This test represented the Motor Carrier filing an IFTA return directly from the data received from the telematics provider to the Clearinghouse instead of to their base Jurisdiction.)

2

The total MBUF due from each **base jurisdiction** represented in the pilot to each of the jurisdictions where the accounts based in their Jurisdiction traveled.  
(This test represented a Jurisdiction filing their transmittal data with IFTA to be netted against the transmittals received from all Jurisdictions. This test demonstrates the possibility of using a consolidated file for multiple jurisdictions using an account manager.)

3

The **netted** MBUF totals for each Jurisdiction.  
(This test represented the “Funds Netting” process)

Figure 6-2: Required Outcomes PoC

In the first test, EROAD compared the total distance and MBUF calculations received from each of the Clearinghouses to its calculations for accuracy as shown in Table 6-1.

Table 6-1: Clearinghouse PoC Test Results

Anonymized vehicle info to MBUF Clearinghouse through Account Manager (Transmittal/Fleet)								
Company	Total Distance	Taxable Distance	MBUF State	MBUF Fed	Total MBUF Due	IFTA	ClearRoad	IRP
Co 1	37,891	37,849	\$ 3,562.89	\$ 2,032.46	\$ 5,595.35	passed	passed	passed
Co 2	96,864	96,370	\$ 9,993.97	\$ 5,811.84	\$ 15,805.81	passed	passed	passed
Co 3	307,070	306,650	\$ 26,625.94	\$ 18,424.20	\$ 45,050.14	passed	passed	passed
Co 4	141,815	141,587	\$ 13,253.43	\$ 8,236.12	\$ 21,489.55	passed	passed	passed
Co 5	37,254	37,079	\$ 3,032.40	\$ 1,856.34	\$ 4,888.74	passed	passed	passed
Co 6	74,977	74,968	\$ 5,321.35	\$ 3,786.19	\$ 9,107.54	passed	passed	passed
Co 7	199,704	199,701	\$ 19,667.70	\$ 11,982.24	\$ 31,649.94	passed	passed	passed
Co 8	36,443	36,081	\$ 4,502.83	\$ 2,186.58	\$ 6,689.41	passed	passed	passed
Co 9	259,233	258,870	\$ 36,215.15	\$ 15,553.98	\$ 51,769.13	passed	passed	passed
Co 10	7,280	7,280	\$ 538.36	\$ 436.80	\$ 975.16	passed	passed	passed
Co 11	25,718	25,718	\$ 1,758.20	\$ 1,543.08	\$ 3,301.28	passed	passed	passed
Co 12	33,158	33,060	\$ 2,139.61	\$ 1,989.48	\$ 4,129.09	passed	passed	passed
Co 13	128,916	128,702	\$ 21,348.12	\$ 7,734.96	\$ 29,083.08	passed	passed	passed
Co 14	49,832	49,616	\$ 1,273.93	\$ 1,413.27	\$ 2,687.20	passed	passed	passed
Totals	1,436,155	1,433,531	\$ 149,233.88	\$ 82,987.54	\$ 232,221.42	passed	passed	passed

This test was followed up by validating individual vehicle details which also passed regardless of the vehicle type or operation.

The second test comparing the “Netted Funds to jurisdictions from MBUF” was also successful as shown in Table 6-2. This test determined whether the Clearinghouse could establish rules to net the funds.

Table 6-2: Clearinghouse PoC Test Results Continued

Netted funds to jurisdictions from MBUF Clearinghouse (Summary)								
Base Jurisdiction	Travel Jurisdiction	Total Distance	State MBUF	Fed MBUF	Total MBUF	IFTA	ClearRoad	IRP
CO	CO	5,921	\$ 198.95	\$ 236.84	\$ 435.79	passed	passed	passed
	NM	200	\$ 6.88	\$ 8.00	\$ 14.88	passed	passed	passed
	NV	1,678	\$ 74.34	\$ 67.12	\$ 141.46	passed	passed	passed
	TX	3,713	\$ 121.78	\$ 148.52	\$ 270.30	passed	passed	passed
	UT	677	\$ 34.87	\$ 27.08	\$ 61.95	passed	passed	passed
	WY	23	\$ 0.90	\$ 0.92	\$ 1.82	passed	passed	passed

All three of the Clearinghouse entities successfully completed and delivered the requested output using only the data dump received by EROAD.

**The PoC demonstrated the ability of a Clearinghouse to validate incoming data from a 3<sup>rd</sup> party and accurately calculate the amounts to be distributed to the jurisdictions without intervention from the Pilot Participants, any of the jurisdictions, nor EROAD.**

Note: The test was limited in scope to a single data source using EROAD's technology and needs additional testing with multiple data sources and scenarios to fully understand the roles and responsibilities associated with reporting.





## 6.5. Key Finding #4

### **Clearinghouse Frameworks Can be Adapted to Handle MBUF But Roles and Responsibilities Need to be Clearly Defined.**

The prescriptive test with the IFTACH demonstrated that, with some modifications, MBUF can be handled through the existing IFTACH process.

The non-prescriptive PoC utilizing the IFTA, IRP and ClearRoad Clearinghouses, showcased all three Clearinghouses ability to validate incoming data from a 3<sup>rd</sup> party, accurately calculating the amounts to be distributed to the jurisdictions and perform these tasks without intervention from the pilot participants, jurisdictions, or account manager. This highlights the adaptability and effectiveness of the Clearinghouse in streamlining the MBUF reporting and distribution process.

The Clearinghouse PoC tests demonstrated the potential for technology advancements to capture and report individual unit data for calculating MBUF amounts. It showcased the feasibility of summarizing this data into a single file that can be netted back to the jurisdictions without requiring separate reporting by motor carriers or jurisdictions. However, further testing is needed with multiple data sources and scenarios to fully understand the roles and responsibilities associated with reporting.

Addressing stakeholder concerns regarding data integrity and privacy is crucial. Collaborative policy and governance decisions at various levels are required to establish uniform certification and data privacy requirements. These requirements would ensure the security of taxpayer data and the performance of systems, providing compliance and data protection for motor carriers. This topic remains an important area for exploration and requires establishing structures that safeguard data while meeting the needs of the MBUF system.



## 7 NEXT STEPS

The ITP demonstrated the **capability** of existing frameworks to receive and process MBUF transactions. However, it also shed light on various areas that require further attention and investigation before considering **implementation**.

### 1. Roles & Responsibilities

Moving forward, all affected stakeholders and relevant jurisdictional representatives should be actively involved. The need to conduct a comprehensive review of the roles and responsibilities in an MBUF system, involving a state agency as a case study to gain practical insights into operational processes, procedures, and governance will be beneficial. This inclusive approach will provide valuable insights into the impact on various stakeholders and allow well-informed decisions regarding potential MBUF implementation.

### 2. Impact on Motor Carrier Not Subject to Current Reporting Schemes

The ITP identified potential challenges in incorporating all CMVs into the MBUF system, particularly intrastate operators and companies with vehicles under 26,001 pounds. Before considering the expansion of existing frameworks, it is essential to assess the impact on both Motor Carriers and Jurisdictional Agencies. Future pilots should involve all affected stakeholders and jurisdictional representatives to understand the implications for intrastate and international operations.

### 3. Evaluating Administrative Burdens and Feasibility of Consolidation of Fees

For a long-term highway funding alternative, it is essential to evaluate the costs and administrative burdens associated with various state and federal highway funding sources. Consolidating or absorbing multiple funding sources into a single uniform mileage-based approach could enhance interoperability and scalability and has been strongly suggested by the MCWG. While the ITP established that it is technically feasible to consolidate several fees and taxes into one rate, an evaluation on the feasibility from all stakeholder's perspectives is a crucial next step to ensure a well-informed decision-making process.

### 4. Weight Complexity

Weight definitions are critical for interoperability, and utilizing registered weight as the basis for rate setting has been recommended. However, the complexity of weight for stakeholders needs to be addressed, and real-life data demonstrations are required to assess the impact on motor carriers' administrative costs. Investigating weight fluctuation in real-life operations and assessing the impact of charging based on actual weight versus registered weight on motor carriers and agencies. Ensure that any proposed solution aligns with the goal of simplicity versus precision.

### 5. Alternatively Powered CMVs

Despite efforts to involve companies with electric or hydrogen-powered CMVs, participation in the ITP was not achieved due to ongoing research by those companies. To address this, future pilots should continue to explore ways to engage these industry players and encourage their participation. Furthermore, considering the emergence of electric trucks, a consumption-based charge on electricity (kWh charge) is gaining attention as a potential solution for infrastructure funding. It is essential to explore the feasibility, challenges, and opportunities associated with this approach and compare it to a distance-based MBUF system.

To progress effectively and make informed decisions, the next phase of this exploratory work should focus on these key areas in collaboration with affected stakeholders, jurisdictional representatives, and dedicated focus groups. By conducting thorough reviews, data demonstrations, and exploring alternative approaches, the progress can be made towards a comprehensive and viable MBUF system for the future.

## Acknowledgements

### Project Partners

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### Technology and Research partners



**Special thanks to our MCWG for their input  
and guidance to this pilot.**

## **APPENDIX 1 | Motor Carrier Working Group (MCWG)**

### **Summary of MCWG Meetings in 2022**

The MCWG met three times over the course of 2022. All meetings provided valuable insights and considerations for the Coalition to ensure the exploration provides maximum value to all stakeholders involved.

#### **February 2022**

The meeting focused on two main objectives: first, to recap the findings from the 2020/21 national truck pilot and its associated report. Secondly, the meeting centered around discussions and validations on the themes and objectives of the upcoming International Truck Pilot (ITP). During the session, targeted recruitment was discussed and brainstormed, recruitment support from the MCWG was requested to ensure successful participation and implementation of the international pilot program.

#### **May 2022**

The MCWG was provided with a recap of the recruitment goals set for the ITP and members provided an update on the recruitment process.

Feedback and key points received from the MCWG members were recapped and discussed ensuring that all relevant perspectives were considered.

The meeting also involved a thorough review of the key themes and objectives of the ITP. The development of the methodology that would guide the implementation of the pilot program was shared and reviewed, ensuring transparency, and understanding among all stakeholders involved. This review aimed to ensure that the ITP's framework and approach were well-defined and aligned with the goals set during the earlier discussions.

#### **September 2022**

The MCWG was provided with a comprehensive update on the ITP to date. Details about the demographics of pilot participants were shared, including the number of vehicles, the states covered, and the diversity of the participating fleets. Examples of pilot statements were presented that compared the fuel taxes paid by participants with the costs associated with MBUF.

The meeting also included a summary of MBUF rate calculations, specifically using weight categories as a basis. Additionally, detailed information on the Clearinghouse frameworks being tested for MBUF reporting were shared and discussed, highlighting three entities (IFTA, IRP, and CleaRoad) as part of the POC.

During the discussions, the MCWG focused on various aspects related to MBUF implementation. The need for uniformity and compacts in the context of the Clearinghouse were explored. The group also discussed rate setting flexibility, considering the potential use of a unique identifier to accurately capture weight information.

Furthermore, the discussions encompassed the topics of interoperability, state sovereignty, compliance, and enforcement regarding MBUF. The MCWG evaluated the progress of the Coalitions MBUF exploration, providing a favorable assessment and emphasizing the necessity for education, outreach, and engagement with jurisdictions to ensure successful implementation and acceptance of the program.



## APPENDIX 2 | Rate Table

Jurisdiction	IFTA Tax Rate	Per Mile Rate - All Vehicles in Weight Class			
	Diesel	10,001 - 26,000	26,001 - 40,000	40,001 - 54,999	55,000 - 80,000
	\$ / gal	\$ / mile	\$ / mile	\$ / mile	\$ / mile
ALBERTA (AB)	0.1300	0.0000	0.0000	0.0000	0.0000
BRITISH COLUMBIA (BC)	0.2671	0.0000	0.0000	0.0000	0.0000
MANITOBA (MB)	0.1400	0.0000	0.0000	0.0000	0.0000
NEW BRUNSWICK (NB)	0.2618	0.0000	0.0000	0.0000	0.0000
NEWFOUNDLAND (NL)	0.2723	0.0000	0.0000	0.0000	0.0000
NOVA SCOTIA (NS)	0.1540	0.0000	0.0000	0.0000	0.0000
ONTARIO (ON)	0.1430	0.0000	0.0000	0.0000	0.0000
PRINCE EDWARD ISLAND (PE)	0.2220	0.0000	0.0000	0.0000	0.0000
QUEBEC (QB)	0.2020	0.0000	0.0000	0.0000	0.0000
SASKATCHEWAN (SK)	0.1500	0.0000	0.0000	0.0000	0.0000
YUKON TERRITORY (YT)	0.0000	0.0000	0.0000	0.0000	0.0000
ALASKA (AK)	0.0000	0.0037	0.0096	0.0147	0.0221
ALABAMA (AL)	0.2900	0.0119	0.0309	0.0475	0.0713
ARIZONA (AZ)	0.2600	0.0107	0.0277	0.0426	0.0639
ARKANSAS (AR)	0.2850	0.0117	0.0304	0.0467	0.0701
CALIFORNIA (CA)	0.7270	0.0298	0.0775	0.1192	0.1788
COLORADO (CO)	0.2050	0.0084	0.0218	0.0336	0.0504
CONNECTICUT (CT)	0.4010	0.0164	0.0427	0.0657	0.0986
DISTRICT OF COLUMBIA (DC)	0.0000	0.0139	0.0360	0.0554	0.0831
DELAWARE (DE)	0.2200	0.0090	0.0235	0.0361	0.0542
FLORIDA (FL)	0.3637	0.0149	0.0387	0.0596	0.0894
GEORGIA (GA)	0.3260	0.0132	0.0343	0.0528	0.0792
IDAHO (ID)	0.3200	0.0131	0.0341	0.0525	0.0788
ILLINOIS (IL)	0.6270	0.0240	0.0625	0.0961	0.1442
INDIANA (IN)	0.5300	0.0217	0.0565	0.0869	0.1304
IOWA (IA)	0.3250	0.0133	0.0346	0.0533	0.0800
KANSAS (KS)	0.2600	0.0107	0.0277	0.0426	0.0639
KENTUCKY (KY)	0.3180	0.0131	0.0339	0.0521	0.0782
LOUISIANA (LA)	0.2000	0.0082	0.0213	0.0328	0.0492
MAINE (ME)	0.3120	0.0128	0.0332	0.0511	0.0767
MARYLAND (MD)	0.3685	0.0151	0.0393	0.0604	0.0906
MASSACHUSETTS (MA)	0.2400	0.0098	0.0255	0.0393	0.0590
MICHIGAN (MI)	0.4680	0.0186	0.0483	0.0743	0.1115
MINNESOTA (MN)	0.2850	0.0117	0.0304	0.0467	0.0701
MISSISSIPPI (MS)	0.1800	0.0074	0.0192	0.0295	0.0443
MISSOURI (MO)	0.1950	0.0080	0.0208	0.0320	0.0480
MONTANA (MT)	0.2955	0.0121	0.0315	0.0484	0.0726
NEBRASKA (NE)	0.2480	0.0102	0.0265	0.0407	0.0611
NEVADA (NV)	0.2700	0.0111	0.0288	0.0443	0.0665
NEW HAMPSHIRE (NH)	0.2220	0.0091	0.0237	0.0364	0.0546
NEW JERSEY (NJ)	0.4940	0.0203	0.0527	0.0810	0.1215
NEW MEXICO (NM)	0.2100	0.0086	0.0224	0.0344	0.0516
NEW YORK (NY)	0.3955	0.0159	0.0414	0.0637	0.0956
NORTH CAROLINA (NC)	0.3850	0.0158	0.0410	0.0631	0.0947
NORTH DAKOTA (ND)	0.2300	0.0094	0.0245	0.0377	0.0566
OHIO (OH)	0.4700	0.0193	0.0501	0.0770	0.1155
OKLAHOMA (OK)	0.1900	0.0078	0.0202	0.0311	0.0467
OREGON (OR)	0.0000	0.0156	0.0405	0.0623	0.0935
PENNSYLVANIA (PA)	0.7410	0.0304	0.0790	0.1215	0.1823
RHODE ISLAND (RI)	0.3400	0.0139	0.0362	0.0557	0.0836
SOUTH CAROLINA (SC)	0.2600	0.0107	0.0277	0.0426	0.0639
SOUTH DAKOTA (SD)	0.2800	0.0115	0.0298	0.0459	0.0689
TENNESSEE (TN)	0.2700	0.0111	0.0288	0.0443	0.0665
TEXAS (TX)	0.2000	0.0082	0.0213	0.0328	0.0492
UTAH (UT)	0.3190	0.0129	0.0335	0.0515	0.0773
VERMONT (VT)	0.3100	0.0127	0.0330	0.0508	0.0762
VIRGINIA (VA)	0.4090	0.0153	0.0436	0.0671	0.1007
WASHINGTON (WA)	0.4940	0.0203	0.0527	0.0810	0.1215



Jurisdiction	IFTA Tax Rate	Per Mile Rate - All Vehicles in Weight Class			
	Diesel	10,001 - 26,000	26,001 - 40,000	40,001 - 54,999	55,000 - 80,000
	\$ / gal	\$ / mile	\$ / mile	\$ / mile	\$ / mile
WEST VIRGINIA (WV)	0.3570	0.0146	0.0380	0.0585	0.0878
WISCONSIN (WI)	0.3290	0.0135	0.0350	0.0539	0.0809
WYOMING (WY)	0.2400	0.0098	0.0255	0.0393	0.0590
CANADA (CN)	0.0000	0.0000	0.0000	0.0000	0.0000
UNITED STATES (US)	0.2440	0.0100	0.0260	0.0400	0.0600

## APPENDIX 3 | EROAD Ltd

### The Company

EROAD's purpose is to deliver intelligence you can trust, for a better world tomorrow.

EROAD is a specialist provider of technology and services to support carriers with fleet and driver management and to more easily meet a range of regulatory requirements. In North America, EROAD now supports over 100,000 connected vehicles with services like:

- Hours of service monitoring (ELD)
- electronic International Fuel Tax Agreement (IFTA) and International Registration Plan (IRP) recordkeeping
- electronic Weight Distance Tax (WDT) reporting
- improving safety through driver insights, speeding alerts and fleet safety scores
- supporting driver coaching, controlling insurance costs, and defeating wrongful lawsuits through inward- and outward-facing dashcams
- monitoring and reducing fuel use including through riddling and fuel management reporting and a route optimization toolset.



Figure A3-1: EROAD Ehubo2 Device

All pilot participants had access to the full range of value-added services provided by EROAD.

EROAD is an expert in applying technology to taking the pain out of mileage-based user fee or 'road user charges' systems for its customers. While EROAD's electronic Weight Mile Tax solution has been commercially operational in North America since 2014, EROAD's 'electronic Road User Charges' (eRUC) system has been in large scale commercial use in light and heavy vehicles in New Zealand since 2010. On average EROAD monitors 117 million miles of vehicle travel per month, collecting roughly US\$40 million per month in road user charges for the New Zealand government, including 51% of all heavy commercial vehicle taxes. By creating a digital means for delivering what is usually a manual process, EROAD has helped reduce the economic cost of the system by a third and delivered an estimated 77% of the direct savings achieved by road tax payers.

### The Technology

The core element of EROAD's system is the Ehubo2 secure on-board unit (Figure A3-1). This multi-function device uses multiple sensors and other inputs, including global navigation satellite systems like GPS, to accurately track and verify vehicle location and movement and derive distances and routes travelled. Designed with tax compliance in mind, the device is robust, secure, monitored, and tamper-evident.

The Ehubo2 continually monitors vehicle position, and the data is converted to physical locations (City State) with distance between points calculated in  $1/10^{\text{th}}$ s of miles. The Ehubo2 regularly reports its data back to EROAD's system through a secure connection. The standard frequency of reporting is once every 10-12 seconds, or an average of once every 250 meters traveled, and when any significant event occurs. These events include power on or off, ignition on or off, harsh braking and accelerating, and harsh cornering. If out of cellular coverage, the Ehubo2 can store up to six months' worth of event data.

Events only get deleted once the Ehubo2 receives a confirmation message from the server that the message has been processed and the data stored successfully. Distance measurement is accurate to within less than +/-2%, and usually to within +/-1% of a calibrated instrument.

EROAD defines a trip as an “engine on/engine off” event. All distance travelled within the event is captured. It is then able to be apportioned to the relevant geographic jurisdictions and further classified as taxable or non-taxable through reference to the underlying map set and any geofences set up by EROAD or a customer for this purpose. These geofences are auditable.

Customers access their driver, vehicle and fleet information and related reports and services online through a secure account.

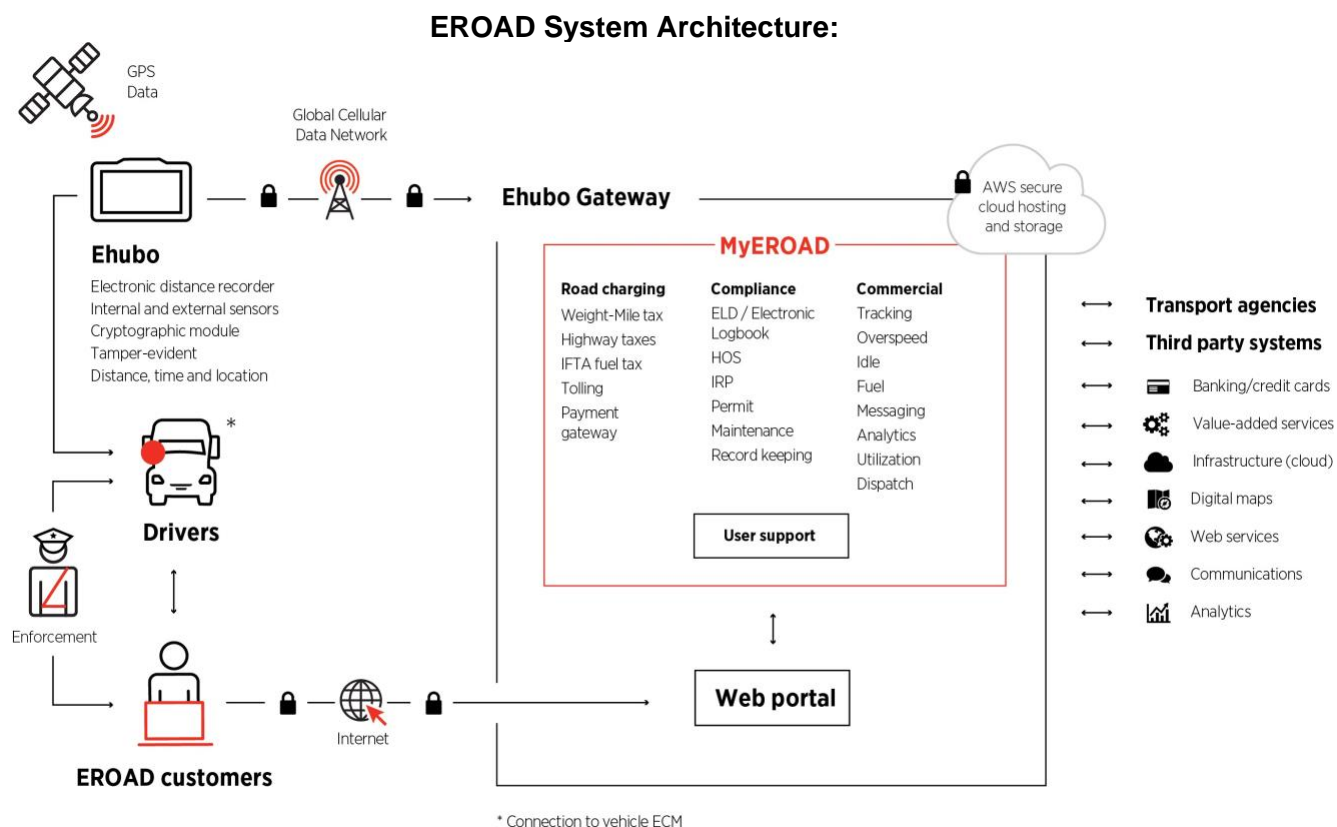


Figure A3-2: EROAD System Architecture

## The Pilot

EROAD takes the privacy and security of customer data and information seriously.

The terms and conditions of participation and the use of data by EROAD was agreed between EROAD and each participating customer and documented in a signed Pilot Agreement.

All data collected for the pilot and the Clearinghouse PoC was recorded from the EHUBO device. The use of this data is solely for research and will not be shared or maintained for any other purpose.

Any references made in this document to actual events occurring as part of this pilot are anonymized to protect the identity of EROAD’s customers and their participation in this research.

## APPENDIX 4 | Pilot Participant Statement



### MBUF Pilot Statement October 2022

Company 9

#### Fleet Information <sup>1</sup>

Fleet Number	Fuel Type	Weight Category	# Trucks	# All Jurisdictions Traveled
904	DI	55,000 - 80,000	29	22

#### Summary Data by Fleet

Fleet Number	Total All Miles	Total MBUF Miles (State)	Total MBUF Miles (Federal)	Total Gallons of Fuel	Fleet MPG
904	221,899	221,633	221,899	43,955	5.05

#### Comparative Costs <sup>2</sup>

Fleet Number	Fuel Tax Paid (State)	Fuel Tax Paid (Federal)	Total Fuel Tax Paid	MBUF (State)	MBUF (Federal)	Total MBUF
904	\$ 27,865.47	\$ 10,725.02	\$ 38,590.49	\$ 32,157.97	\$ 13,313.94	\$ 45,471.91
Total fuel tax paid			\$ 38,590.49	Total MBUF Costs		\$ 45,471.91
				Fuel Tax Credit		(\$ 38,590.49)
				Difference		\$ 6,881.42

<sup>1</sup> For the purpose of the pilot, fleets are categorized by weight and may not reflect the fleet numbering used by your company.

<sup>2</sup> All charges on this statement are simulated for comparison purposes only. MBUF rates are hypothetical for comparison and analysis and no actual funds will be exchanged as part of this pilot.

Disclaimer: The Eastern Transportation Coalition (ETEC) and EROAD are committed to working with stakeholders in the ongoing research needed to find an equitable, long-term alternative transportation funding mechanism to replace the fuel tax. While MBUF may be viable, there is still much to learn. Real-world pilots that can be used for research, education and outreach are key to a successful outcome and your participation is vital. Our research is not an endorsement of MBUF.



## Jurisdiction Summary Information by Fleet

Jurisdiction	Fleet Number	Miles Traveled		Total Fuel	Fuel Tax Rates		MBUF Rates	
		Total Miles Driven	Total MBUF		\$ / gal	\$	\$ / mile	\$
CT	904	11,415	11,415	1,450	0.4010	\$ 581.45	0.0986	\$ 1,125.52
	Summary for CT	11,415	11,415	1,450		\$ 581.45		\$ 1,125.52
DE	904	115	115	0	0.2200	\$ 0.00	0.0542	\$ 6.23
	Summary for DE	115	115	0		\$ 0.00		\$ 6.23
IA	904	1,320	1,320	493	0.3250	\$ 160.23	0.0800	\$ 105.60
	Summary for IA	1,320	1,320	493		\$ 160.23		\$ 105.60
IL	904	2,854	2,854	0	0.6270	\$ 0.00	0.1442	\$ 411.55
	Summary for IL	2,854	2,854	0		\$ 0.00		\$ 411.55
IN	904	5,946	5,946	985	0.5300	\$ 522.05	0.1304	\$ 775.36
	Summary for IN	5,946	5,946	985		\$ 522.05		\$ 775.36
KS	904	513	513	75	0.2600	\$ 19.50	0.0639	\$ 32.78
	Summary for KS	513	513	75		\$ 19.50		\$ 32.78
MA	904	3,161	3,019	0	0.2400	\$ 0.00	0.0590	\$ 178.12
	Summary for MA	3,161	3,019	0		\$ 0.00		\$ 178.12
MD	904	15,102	15,102	734	0.3685	\$ 270.48	0.0906	\$ 1,368.24
	Summary for MD	15,102	15,102	734		\$ 270.48		\$ 1,368.24
MI	904	953	953	0	0.4680	\$ 0.00	0.1115	\$ 106.26
	Summary for MI	953	953	0		\$ 0.00		\$ 106.26
MO	904	728	728	195	0.1950	\$ 38.03	0.0480	\$ 34.94
	Summary for MO	728	728	195		\$ 38.03		\$ 34.94
NC	904	4,066	4,066	0	0.3850	\$ 0.00	0.0947	\$ 385.05
	Summary for NC	4,066	4,066	0		\$ 0.00		\$ 385.05
NE	904	170	170	0	0.2480	\$ 0.00	0.0611	\$ 10.39
	Summary for NE	170	170	0		\$ 0.00		\$ 10.39
NH	904	94	94	149	0.2220	\$ 33.08	0.0546	\$ 5.13
	Summary for NH	94	94	149		\$ 33.08		\$ 5.13
NJ	904	1,750	1,750	122	0.4940	\$ 60.27	0.1215	\$ 212.63
	Summary for NJ	1,750	1,750	122		\$ 60.27		\$ 212.63
NY	904	9,552	9,552	325	0.3955	\$ 128.54	0.0956	\$ 913.17
	Summary for NY	9,552	9,552	325		\$ 128.54		\$ 913.17
OH	904	30,243	30,120	5,336	0.4700	\$ 2,507.92	0.1155	\$ 3,478.86
	Summary for OH	30,243	30,120	5,336		\$ 2,507.92		\$ 3,478.86
PA	904	118,915	118,915	29,257	0.7410	\$ 21,679.44	0.1823	\$ 21,678.20
	Summary for PA	118,915	118,915	29,257		\$ 21,679.44		\$ 21,678.20
RI	904	3,556	3,556	1,456	0.3400	\$ 495.04	0.0836	\$ 297.28
	Summary for RI	3,556	3,556	1,456		\$ 495.04		\$ 297.28
SC	904	600	600	0	0.2600	\$ 0.00	0.0639	\$ 38.34
	Summary for SC	600	600	0		\$ 0.00		\$ 38.34
VA	904	3,354	3,354	3,144	0.4090	\$ 1,285.90	0.1007	\$ 337.75
	Summary for VA	3,354	3,354	3,144		\$ 1,285.90		\$ 337.75
WI	904	166	165	0	0.3290	\$ 0.00	0.0809	\$ 13.35
	Summary for WI	166	165	0		\$ 0.00		\$ 13.35
WV	904	7,326	7,326	234	0.3570	\$ 83.54	0.0878	\$ 643.22
	Summary for WV	7,326	7,326	234		\$ 83.54		\$ 643.22
	Jurisdiction Subtotal	221,899	221,633	43,955		\$ 27,865.47		\$ 32,157.97
US	904	221,899	221,899	43,955	0.2440	\$ 10,725.02	0.0600	\$ 13,313.94
	Summary for US	221,899	221,899	43,955		\$ 10,725.02		\$ 13,313.94
Combined Totals						\$ 38,590.49		\$ 45,471.91

Disclaimer: The Eastern Transportation Coalition (TETC) and EROAD are committed to working with stakeholders in the ongoing research needed to find an equitable, long-term alternative transportation funding mechanism to replace the fuel tax. While MBUF may be viable, there is still much to learn. Real-world pilots that can be used for research, education and outreach are key to a successful outcome and your participation is vital. Our research is not an endorsement of MBUF.





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

## Transportation Funding Challenges 101

Americans pay for transportation infrastructure - such as roads and bridges - primarily through state and federal taxes on fuel each time they fill their tanks. As fuel efficiency increases and more electric vehicles are on the road, motorists contribute less in fuel taxes for every mile driven. That dynamic, coupled with an expected increase in miles driven, inflation, and rising costs to build and maintain roads, has led to a growing shortfall in transportation funding.

Having less money to maintain and manage roadways means the transportation system will continue to worsen each year, which has a significant impact on the trucking industry. Recognizing the fuel tax is not a viable, long-term sustainable funding source policymaker at the federal and state levels are exploring alternative funding methods, including a mileage-based user fee (MBUF) - a pay for what you use approach - as a potential replacement of the fuel tax.

The aim of this project is to ensure that the unique perspective of the trucking industry is included in the national debate about potential MBUF solutions, acknowledging that motor carriers are both major users and funders of the transportation system.

The diversity of the pilot fleet, the international reach of this project, and your participation will provide key insights into the impact a MBUF system would have on the trucking sector and provide meaningful information to policymakers as sustainable transportation funding options are explored.

We value your opinion and are available for questions. Please contact us via [TETC\\_pilot@eroad.com](mailto:TETC_pilot@eroad.com) mail-link if you have any comments or suggestions.

## UNDERSTANDING YOUR STATEMENT

### Fleet Information

**Fleet Number** – Fleet numbers are assigned by EROAD to coincide with the weight category and fuel type of the vehicle. Depending upon the diversity of the pilot vehicles you provided, you may see more than one fleet on your statement.

**Fuel Type** – The fuel type of all vehicles in that fleet.

**Weight Category** – The registered weight category of all vehicles in that fleet.

**# Trucks** – Number of trucks in Fleet.

**# Jurisdictions Traveled** – The number of Jurisdictions the fleet traveled in during the month.

### Summary Data by Fleet

**Fleet Number** - Fleet numbers are assigned by EROAD to coincide with the weight category and fuel type of the vehicle. Depending upon the diversity of the pilot vehicles you provided, you may see more than one fleet on your statement.

**Total All Miles** - The summary of the total miles driven by this fleet.

**Total MBUF Miles** - The summary of the total miles less the IFTA exempt miles driven by the fleet. IFTA exemption rules per state, can be found at: <https://www.iftach.org/exempt/view/fuel2020n.php>

**Total Gallons of Fuel** – The total gallons purchased by the fleet during the reporting period.

NOTE: If the fuel information for these vehicles was not available a Fleet MPG\* was assigned by EROAD for use during the pilot. When the average Fleet MPG is used, total gallons of fuel in this column are estimated and not actual.

**Fleet MPG** – Total all miles traveled / total gallons of fuel purchased by the fleet.

NOTE: If the fuel information for the fleet has not been provided, an average fleet MPG based on the averages from the Bureau of Transportation Statistics will be assigned to each of the vehicles in the fleet based on the weight category.

Averages used	
10,001 – 26,000 lbs	10.50
26,001 – 40,000 lbs	7.50
40,001 – 54,999 lbs	6.60
55,000 lbs and above	6.00

Disclaimer: The Eastern Transportation Coalition (TETC) and EROAD are committed to working with stakeholders in the ongoing research needed to find an equitable, long-term alternative transportation funding mechanism to replace the fuel tax. While MBUF may be viable, there is still much to learn. Real-world pilots that can be used for research, education and outreach are key to a successful outcome and your participation is vital. Our research is not an endorsement of MBUF.



## Comparative Costs Table

**Fleet Number** – Fleet numbers are assigned by EROAD to coincide with the weight category and fuel type of the vehicle. Depending upon the diversity of the pilot vehicles you provided, you may see more than one fleet on your statement.

**Fuel Tax Paid (State)** – The summary of all jurisdictional fuel taxes paid by all pilot vehicles.

**Fuel Tax Paid (Federal)** – The summary of the federal tax paid on the fuel purchased by all pilot vehicles.

**Total Fuel Tax Paid** – The summary of all fuel tax paid by the fleet.

**MBUF (State)** – The summary of MBUF calculated based on the taxable number of miles and rates in each jurisdiction where travel occurred.

**MBUF (Federal)** – The summary of the MBUF calculated based on the total miles traveled in the US.

**Total MBUF** – The summary of the calculated MBUF for the total miles traveled by the fleet.

**Fuel Tax Credit** – Amount of fuel tax credit for fuel tax paid at the pump. This amount will off-set the calculated MBUF costs.

**Difference** – This difference compares the costs you currently pay at the pump with the estimated cost of an MBUF. If the difference is in (brackets) it is the amount you would be refunded under an MBUF model. If it is not in brackets, the difference is the amount you would owe under an MBUF model.

## Jurisdiction Summary Information by Fleet

**Jurisdiction**<sup>3</sup> – Two digit abbreviation of jurisdiction.

**Fleet Number** – Fleet numbers are assigned by EROAD to coincide with the weight category and fuel type of the vehicle. Depending upon the diversity of the pilot vehicles you provided, you may see more than one fleet on your statement.

**Miles Traveled Total** – Total of all miles traveled by jurisdiction and fleet.

**Miles Traveled Total MBUF** – The total of all miles traveled by jurisdiction and fleet, less any exempt IFTA miles traveled.

**Total Fuel** – The total gallons purchased in each jurisdiction.

**Fuel Tax Rates (\$ / gal)** – IFTA fuel tax rate for that jurisdiction by fuel type of the fleet.

**Fuel Tax (\$)** – Total fuel tax paid in that jurisdiction.

**MBUF Rates (\$ / mile)** – MBUF rate established exclusively for the Pilot for the weight category and fuel type of the fleet in that jurisdiction.

**MBUF Rates (\$)** – Total MBUF calculated for the fleet based on the MBUF distance traveled in that jurisdiction multiplied by the MBUF rate for the weight category.

## MBUF Rates and Calculation Explanation

MBUF rates for each state are calculated using a multi-step formula; first, the IFTA fuel tax rate per state is converted to a per mile rate using the national average MPG. This rate is then being adjusted to reflect the four different weight categories.

Notable mention: This is just real-world test of how weight categories can be used and throughout this project analysis will be done to test different ways rates could be calculated. The purpose of this work is to understand impact of different options and to inform considerations working towards fair and transparent rate setting. This work will be informed by the Motor Carrier Working group and we encourage you to contact us at [TETC\\_pilot@eroad.com](mailto:TETC_pilot@eroad.com) mail-link if you have thoughts on what should be considered.

<sup>3</sup> **NOTE:** There is a "new" Jurisdiction listed at US. This is the US Federal tax on fuel and is separated out by fleet. Different rates apply to different fuel types as designated by the fleet numbering.



## MBUF RATES

Jurisdiction	IFTA Tax Rate	Per Mile Rate - All Vehicles in Weight Class			
	Diesel	10,001 - 26,000	26,001 - 40,000	40,001 - 54,999	55,000 - 80,000
	\$ / gal	\$ / mile	\$ / mile	\$ / mile	\$ / mile
ALBERTA (AB)	0.1300	0.0000	0.0000	0.0000	0.0000
BRITISH COLUMBIA (BC)	0.2671	0.0000	0.0000	0.0000	0.0000
MANITOBA (MB)	0.1400	0.0000	0.0000	0.0000	0.0000
NEW BRUNSWICK (NB)	0.2618	0.0000	0.0000	0.0000	0.0000
NEWFOUNDLAND (NL)	0.2723	0.0000	0.0000	0.0000	0.0000
NOVA SCOTIA (NS)	0.1540	0.0000	0.0000	0.0000	0.0000
ONTARIO (ON)	0.1430	0.0000	0.0000	0.0000	0.0000
PRINCE EDWARD ISLAND (PE)	0.2220	0.0000	0.0000	0.0000	0.0000
QUEBEC (QC)	0.2020	0.0000	0.0000	0.0000	0.0000
SASKATCHEWAN (SK)	0.1500	0.0000	0.0000	0.0000	0.0000
YUKON TERRITORY (YT)	0.0000	0.0000	0.0000	0.0000	0.0000
ALASKA (AK)	0.0000	0.0037	0.0096	0.0147	0.0221
ALABAMA (AL)	0.2900	0.0119	0.0309	0.0475	0.0713
ARIZONA (AZ)	0.2600	0.0107	0.0277	0.0426	0.0639
ARKANSAS (AR)	0.2850	0.0117	0.0304	0.0467	0.0701
CALIFORNIA (CA)	0.7270	0.0298	0.0775	0.1192	0.1788
COLORADO (CO)	0.2050	0.0084	0.0218	0.0336	0.0504
CONNECTICUT (CT)	0.4010	0.0164	0.0427	0.0657	0.0986
DISTRICT OF COLUMBIA (DC)	0.0000	0.0139	0.0360	0.0554	0.0831
DELAWARE (DE)	0.2200	0.0090	0.0235	0.0361	0.0542
FLORIDA (FL)	0.3637	0.0149	0.0387	0.0596	0.0894
GEORGIA (GA)	0.3260	0.0132	0.0343	0.0528	0.0792
IDAHO (ID)	0.3200	0.0131	0.0341	0.0525	0.0788
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IOWA (IA)	0.3250	0.0133	0.0346	0.0533	0.0800
KANSAS (KS)	0.2600	0.0107	0.0277	0.0426	0.0639
KENTUCKY (KY)	0.3180	0.0131	0.0339	0.0521	0.0782
LOUISIANA (LA)	0.2000	0.0082	0.0213	0.0328	0.0492
MAINE (ME)	0.3120	0.0128	0.0332	0.0511	0.0767
MARYLAND (MD)	0.3685	0.0151	0.0393	0.0604	0.0906
MASSACHUSETTS (MA)	0.2400	0.0098	0.0255	0.0393	0.0590
MICHIGAN (MI)	0.4680	0.0186	0.0483	0.0743	0.1115
MINNESOTA (MN)	0.2850	0.0117	0.0304	0.0467	0.0701
MISSISSIPPI (MS)	0.1800	0.0074	0.0192	0.0295	0.0443
MISSOURI (MO)	0.1950	0.0080	0.0208	0.0320	0.0480
MONTANA (MT)	0.2955	0.0121	0.0315	0.0484	0.0726
NEBRASKA (NE)	0.2480	0.0102	0.0265	0.0407	0.0611
NEVADA (NV)	0.2700	0.0111	0.0288	0.0443	0.0665
NEW HAMPSHIRE (NH)	0.2220	0.0091	0.0237	0.0364	0.0546
NEW JERSEY (NJ)	0.4940	0.0203	0.0527	0.0810	0.1215
NEW MEXICO (NM)	0.2100	0.0086	0.0224	0.0344	0.0516
NEW YORK (NY)	0.3955	0.0159	0.0414	0.0637	0.0956
NORTH CAROLINA (NC)	0.3850	0.0158	0.0410	0.0631	0.0947
NORTH DAKOTA (ND)	0.2300	0.0094	0.0245	0.0377	0.0566
OHIO (OH)	0.4700	0.0193	0.0501	0.0770	0.1155
OKLAHOMA (OK)	0.1900	0.0078	0.0202	0.0311	0.0467
OREGON (OR)	0.0000	0.0156	0.0405	0.0623	0.0935
PENNSYLVANIA (PA)	0.7410	0.0304	0.0790	0.1215	0.1823
RHODE ISLAND (RI)	0.3400	0.0139	0.0362	0.0557	0.0836
SOUTH CAROLINA (SC)	0.2600	0.0107	0.0277	0.0426	0.0639
SOUTH DAKOTA (SD)	0.2800	0.0115	0.0298	0.0459	0.0689
TENNESSEE (TN)	0.2700	0.0111	0.0288	0.0443	0.0665
TEXAS (TX)	0.2000	0.0082	0.0213	0.0328	0.0492
UTAH (UT)	0.3190	0.0129	0.0335	0.0515	0.0773
VERMONT (VT)	0.3100	0.0127	0.0330	0.0508	0.0762
VIRGINIA (VA)	0.4090	0.0153	0.0436	0.0671	0.1007
WASHINGTON (WA)	0.4940	0.0203	0.0527	0.0810	0.1215

Disclaimer: The Eastern Transportation Coalition (TETC) and EROAD are committed to working with stakeholders in the ongoing research needed to find an equitable, long-term alternative transportation funding mechanism to replace the fuel tax. While MBUF may be viable, there is still much to learn. Real-world pilots that can be used for research, education and outreach are key to a successful outcome and your participation is vital. Our research is not an endorsement of MBUF.



Jurisdiction	IFTA Tax Rate	Per Mile Rate - All Vehicles in Weight Class			
	Diesel	10,001 - 26,000	26,001 - 40,000	40,001 - 54,999	55,000 - 80,000
	\$ / gal	\$ / mile	\$ / mile	\$ / mile	\$ / mile
WEST VIRGINIA (WV)	0.3570	0.0146	0.0380	0.0585	0.0878
WISCONSIN (WI)	0.3290	0.0135	0.0350	0.0539	0.0809
WYOMING (WY)	0.2400	0.0098	0.0255	0.0393	0.0590
CANADA (CN)	0.0000	0.0000	0.0000	0.0000	0.0000
UNITED STATES (US)	0.2440	0.0100	0.0260	0.0400	0.0600

Disclaimer: The Eastern Transportation Coalition (ETC) and EROAD are committed to working with stakeholders in the ongoing research needed to find an equitable, long-term alternative transportation funding mechanism to replace the fuel tax. While MBUF may be viable, there is still much to learn. Real-world pilots that can be used for research, education and outreach are key to a successful outcome and your participation is vital. Our research is not an endorsement of MBUF.



## APPENDIX 5 | Clearinghouses

Three entities participating in the Clearinghouse POC, IFTA Inc., IRP Inc. and ClearRoad Inc. The following provides a description of these Clearinghouses.

### IFTA Clearinghouse Description



The IFTA, Inc. Clearinghouse (hereafter known as IFTACH) was first developed in 1998 as a result of the passage of IFTA Ballot 11-1998, effective October 23, 1998. The regulatory standards for IFTACH are enumerated in Article R2100 of the IFTA Articles of Agreement.

#### Purpose

The purpose of the IFTACH is to facilitate the exchange of data and fuel use tax revenue funds collected between member jurisdictions of the International Fuel Tax Agreement. Member jurisdictions' participation as a member of the IFTACH centers on an executed Clearinghouse Access Agreement which sets forth the roles, responsibilities, and rules governing a participant in the IFTACH. There are three major components to the IFTACH: Licensee Demographic Data, Transmittal Data, and the Interjurisdictional Audit Reports. Components of the system satisfy the needs of a variety of stakeholders through authorized access including member jurisdictions and law enforcement agencies.

Data is viewed in an environment that is very close to "real time". Demographic data is updated daily, and transmittal information can be viewed upon the data entry or upload of same. Rules exist for the timely posting of transmittal data and there are specific data validation rules that apply to postings to ensure compliance with data integrity standards established.

#### Demographic Data

The IFTACH database contains certain data elements that allows the membership, including law enforcement, to access information about carriers to determine account status, base jurisdiction, and other basic information about the entity (licensee). The data is uploaded to the IFTACH by member jurisdictions daily.

#### Transmittal Data

The IFTACH database contains data related to summary and detailed information for every IFTA tax return filed and processed for every carrier in each of the 58 member jurisdictions. This information includes distance data, fuel purchased, consumption factor (MPG/KPL), taxes or credits due, and any applicable interest accrued.

#### Funds Netting

Through a series of algorithms, the IFTACH examines each participating member's transmittals to determine what the net effect is for funds due from or to other participating members. Thus, a net amount of funds is due during each transmittal period. The entire process is based on a calendar set each year by IFTA, Inc. to establish when transmittal data is due to be posted in the IFTACH, when a "settlement report" (the amount each member owes or is owed by fellow members and in summary) is run, and when such net funds must be transmitted.



### Roadside Enforcement

Through a series of web services, law enforcement may access the demographics region of the IFTACH (read only) to examine a licensee's demographic data to determine whether the subject licensee is operating legally under the IFTA Agreement (e.g. license status). This includes law enforcement access platforms such as FMCSA, SAFER, and NLETS.

### Report Generation

The IFTACH has several built in reports and queries on both the Demographics and Transmittals pages of the system. The authorized user can perform a search based on certain criteria or request a "universal" report based on certain data elements residing in the IFTACH.

### Audit Adjustments

The completion of an audit is handled through two different areas within the IFTACH. First, an Audited Return is created (labeled "AU") which is associated with the base jurisdiction and contains all audited data for each jurisdiction for the subject return period (quarter). The audited return(s) is part of the monthly transmittal data upload. The second area is for maintaining all Interjurisdictional Audit Reports. The contents of such reports are within the IFTA Audit Manual Article A460. The IFTACH maintains an interjurisdictional email platform whereby affected jurisdictions are notified of an audit conducted in its behalf by another member jurisdiction of the Association.

### IFTACH Scalability and Future Components

The IFTCH is built to provide increased scale and scope for the following:

- a) Additional fuel types
- b) Additional jurisdictions
- c) Addition of additional commercial motor vehicles (e.g. >10,000 lb GVW, <26,001 lb GVW)
- d) Addition of passenger motor vehicles
- e) Introduction and implementation of a vehicle mileage tax
- f) Maintenance and calculation of fuel use tax credits offsetting vehicle mileage taxes due

It should be noted that IFTA, Inc. is currently working on a test environment that permits the continuation of administering and collecting fuel use tax while permitting the implementation of a mileage-based tax with credit offsets for fuel use taxes accrued and paid.

There are several areas and potential solutions IFTA, Inc. is currently examining and evaluating for however the future is determined. The IFTACH will be able to accommodate jurisdictions at different levels based on where they are in the transition to MBUF.

The IFTACH can expand its current database schema to provide extra data elements while maintaining legacy components as jurisdictions make the transition. In addition, the IFTACH need only provide new 'fuel types' and tax rates which can be incorporated into the current model with no further changes needed. Or the IFTACH can add data elements to the current schema to include data elements not yet thought of for commercial carriers. The IFTACH for the Public Sector has the option of including additional data in the Commercial model. Or, as an alternative, two models could be created. One for the commercial sector and a public model. A public model could include additional data elements such as License Plate and VIN Numbers and would focus on individual car owners.

## IRP Clearinghouse Description



The IRP Data Repository (IDR) is a system developed by IRP, Inc. to facilitate the electronic exchange and hosting of interstate commercial motor vehicle data between the 49 US and 10 Canadian IRP jurisdictions.

### Purpose

The purpose of the IDR is to provide a system to host member jurisdictional IRP data and to facilitate the exchange of data and registration fees collected between member jurisdictions of the International Registration Plan (IRP). Within the IDR is a Clearinghouse functionality that facilitates the monthly data exchange, netting of fees between jurisdictions and the distribution of fees to the proper jurisdictions. Over \$1.35 billion dollars are passed through the IDR process each year. The netting process is a monthly process required by the IRP Agreement or Plan. Each jurisdiction can comply with the monthly requirements using the IRP clearinghouse process. Currently all 59 jurisdictions participate in the IDR Clearinghouse processes. The IDR is a new system developed over the past 2 years. The original IRP Clearinghouse system was developed and implemented in the late 1990's and had been in use for the electronic exchange of data and netting of fees for approximately 25 years.

### The IDR System

The new IDR system is a state-of-the-art AWS gov-cloud based solution that has been developed to provide a much more efficient, secure and expandable solution for the IRP membership. In addition to the Clearinghouse functionality, the IDR provides for many other functions, some complete and in production and some still being developed. Currently the IDR provides:

- Monthly Clearinghouse functions
  - This includes the receipt of all recap and transmittal data from each jurisdiction
    - This data includes all required data elements for validation of fees collected, which includes all vehicle data for each CMV in the IRP fleet, jurisdictions operated and the distance in each jurisdiction, all necessary fee data and registered weights along with all motor carrier data to identify the registrant.
  - All of the financial data is reconciled, and fees netted to determine the funds due each jurisdiction based on the netting process.
  - Gained efficiencies have been measured showing great improvement in data loading and processing. With the old Clearinghouse system, some jurisdiction monthly data uploads would take 8 to 10 hours to complete due the enormous amount of data being uploaded. In the new IDR, the largest uploads are now being completed within of 10 minutes. Processing of the netting process that used to take 3 to 4 hours is now happening in less than 10 minutes as well.
- The receipt and processing of daily registration files from each jurisdiction
  - Under the Plan, each jurisdiction is required to submit their transaction data to the repository at least daily. The data files received are processed and forward on to the Federal Motor Carrier Safety Administration's (FMCSA)

- SAFER system for use in roadside enforcement efforts.
- Through the IDR, very thorough and comprehensive screening of the data is done to ensure that accurate and quality data is being uploaded to SAFER.
- Comprehensive reporting is provided through various standard reports.
  - Additional reporting capabilities are being developed through an Ad Hoc reporting tool that will be available later in 2023.
- Various other functions are under development or review, currently including:
  - An audit module for the exchange and reconciliation of jurisdictional IRP audits findings.
  - A Uniform centralized fee calculator.
  - Direct interface with other commercial motor vehicle credentialing functions (like UCR, etc.).
  - A direct interface for use by law enforcement.

The IDR system has been developed in a manner to allow for easy adaptation of new processes or interfaces for various possibilities in the future.

It should be noted as well that IRP has instituted a very high level of security features to ensure the protection of the data. The amount of PII has been limited in the system by not allowing and storing SSN or FEIN in the system. IRP has incorporated processes and procedures to meet the NIST 800-53 standards and is currently working with a security consultant to ensure all processes are up to these high standards. While this may seem like a little overkill due to the lack of major PII in the system, it is felt that as much as possible must be done to ensure the security of any data in the system.

### Commercial Motor Carrier and Vehicle Enforcement

IRP is working very closely with FMCSA to provide timely, accurate and high-quality data to the SAFER system which provides vehicle registration status to law enforcement both at roadside for access in the officer's cruiser and to both fixed and mobile weigh stations. The IDR contains all the pertinent motor carrier and motor vehicle data needed for law enforcement to verify the current registration status of the motor carrier and the specific vehicle. As stated above, work is under way to allow for direct access by law enforcement when SAFER is not available or when the particular agency prefers to not use SAFER and get the registration information directly from the IDR.

### IDR Flexibility and Expandability

There are several areas and potential solutions that are being considered by the IRP Board of Directors. First it must be noted that the IDR is a product developed for the use of the IRP membership and to help reduce burden on the membership. Jurisdictions hold the authority on the data in the IDR and have the authority over how the data may be used and who it may be shared with. The system has been developed to easily allow the jurisdictions to authorize different accesses to the data by various entities.

The IDR which contains all the required data elements for IRP motor carriers, vehicle data elements and up to date status sets us ready to provide access to whatever is needed to verify the validity of the registration of a commercial motor vehicle in a very timely and accurate manner.

Additionally, the IDR has been developed using the most up to date technology which allows for easy modification or expansion to meet the need. The IRP Board is considering and ready to consider many options of new processes that will greatly benefit the IRP membership. Additionally, IRP Inc. is looking at options outside of the primary IRP membership to expand to providing services for such programs as:

- Supporting additional federal programs where the data would be beneficial in improving highway safety.
- Supporting CMV inspection programs such as the Level VIII wireless inspection initiative with CVSA.
- Providing support to the FMCSA PRISM program to expand into intrastate commercial motor vehicle compliance.
- Providing support to future programs currently under consideration in many states and by the Federal government such as mileage-based user fees or vehicle mileages taxes.
  - The IDR has been designed to be able to easily adapt new processes like this or to easily play a supporting role.

IRP, Inc. and the Board of Directors are open to discussions with the various related entities on how the IDR system can provide solutions on various issues facing both the governmental and the motor carrier industry.

## ClearRoad, Inc. Clearinghouse



ClearRoad, Inc. developed its Clearinghouse in 2017 in order to cater to a gap in services and solutions available to implement effective road pricing, including MBUF. ClearRoad's Clearinghouse is being used as part of the MBUF program, OReGO, of the Oregon Department of Transportation.

### Purpose

The purpose of the ClearRoad Clearinghouse is to create a centralized ledger for complex or varied MBUF programs. This allows for a common interoperability standard between states and local governments, Commercial Account Managers (CAMs), and Mileage Recording Options (MROs). ClearRoad's Clearinghouse provides DOTs with an interface where they are able to access and manage relevant MBUF program information, based on predefined roles and authorized access.

ClearRoad's Clearinghouse has three main functions:

1. consolidates and standardizes mileage and trip data;
2. serves as a repository for the publishing of applicable MBUF policy and rules; and
3. reconciles financial information in a many-to-many ecosystem.

### Demographic Data

Data-separated and secure dashboards for each MBUF program are created to minimize the risk of improper personal data sharing and access, while still allowing for authorized users to view relevant information and program performance. ClearRoad's Clearinghouse also allows different MBUF programs to integrate passenger car and commercial vehicle data into a single system and dashboard.

### Transmittal Data

ClearRoad's Clearinghouse consolidates data elements from a variety of MROs and separate account managers into a single repository of mileage, trips, and charges for reconciliation and auditing. It serves as an MRO standardizer, with accommodations for future MROs, as long as it meets necessary data accuracy, security, and reporting requirements. ClearRoad's Clearinghouse ensures that account managers are publishing data according to necessary specifications.

### Funds Netting

ClearRoad's Clearinghouse simplifies financial information flows of complex, many-to-many ecosystems for transactions traceability and integrity. Calculations are run to determine MBUF rates, including any intra-state reconciliations to allow for proper transmittal. The information also enables program operators and states to see missed and potential revenue from out-of-state vehicles.

### Enforcement

ClearRoad's Clearinghouse can easily be paired with automated enforcement mechanisms through web services in order to verify the validity of the data reported to ClearRoad Clearinghouse. The enforcement mechanism could be a combination of roadside cameras, geolocation data sampling or law enforcement inspection.

### Report Generation

ClearRoad's Clearinghouse dashboards allows for insight on program performance including summary reporting or specific queries on demographic, transmittal, and financial information. Reports can be done regularly or whenever needed. Separate dashboards for MBUF programs and access authorization ensure that only relevant data can be accessed and reflected in each MBUF program's report.

### Audit Adjustments

ClearRoad's Clearinghouse ensures full traceability and transparency from the vehicle or the fleet level up to clearing transactions between Account Managers and States. It further provides a series of recurrent reports aligned with ODOT specification for MBUF programs. It also has the ability to provide ad hoc reports upon state agency requests.

### CLEARROAD Clearinghouse Scalability

The simplified and interoperable ClearRoad Clearinghouse allows for the rapid scaling of MBUF programs while maintaining consistency in reporting and dashboard interfaces. It is ready to support a variety of current and future MROs and data elements.

ClearRoad's Clearinghouse enables expansion to non-state agencies by enabling differentiated MBUF policies both within and across States, and can also be expanded to include and facilitate transmittal between other road pricing programs such as tolling for a centralized Clearinghouse and interface.



It can be adapted for future policy and rule changes, allowing MBUF pricing variations for account managers that may adjust MBUF rates based on other variables such as time-of-day, roadway ownership, and vehicle characteristics and usage such as weight, drive train, fuel consumption, and climate impacts.

### **Security Features**

Security features of the ClearRoad Clearinghouse ensure data integrity and improper data access and sharing include:

- Data anonymization
- Data-separated dashboards
- Access authorization controls
- Data validation tools / alternative reporting options