



# Utah Road Usage Charge Report

## As required by Senate Bill 150

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**Final**

**May 2021**



## Acknowledgments

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## Acronyms and Abbreviations

CAM	commercial account manager
CPI	Consumer Price Index
DMV	Utah Division of Motor Vehicles
DOT	Department of Transportation
EV	electric vehicle
GPS	global positioning system
MBUF	mileage-based user fee
MPG	mile(s) per gallon
OBD-II	on-board diagnostics II
OEM	original equipment manufacturer
RUC	road usage charge
RUC West	Western Road Usage Charge Consortium, a research body consisting of 17 member states in the Western U.S.
SB	Senate Bill
U.S.	United States
UDOT	Utah Department of Transportation

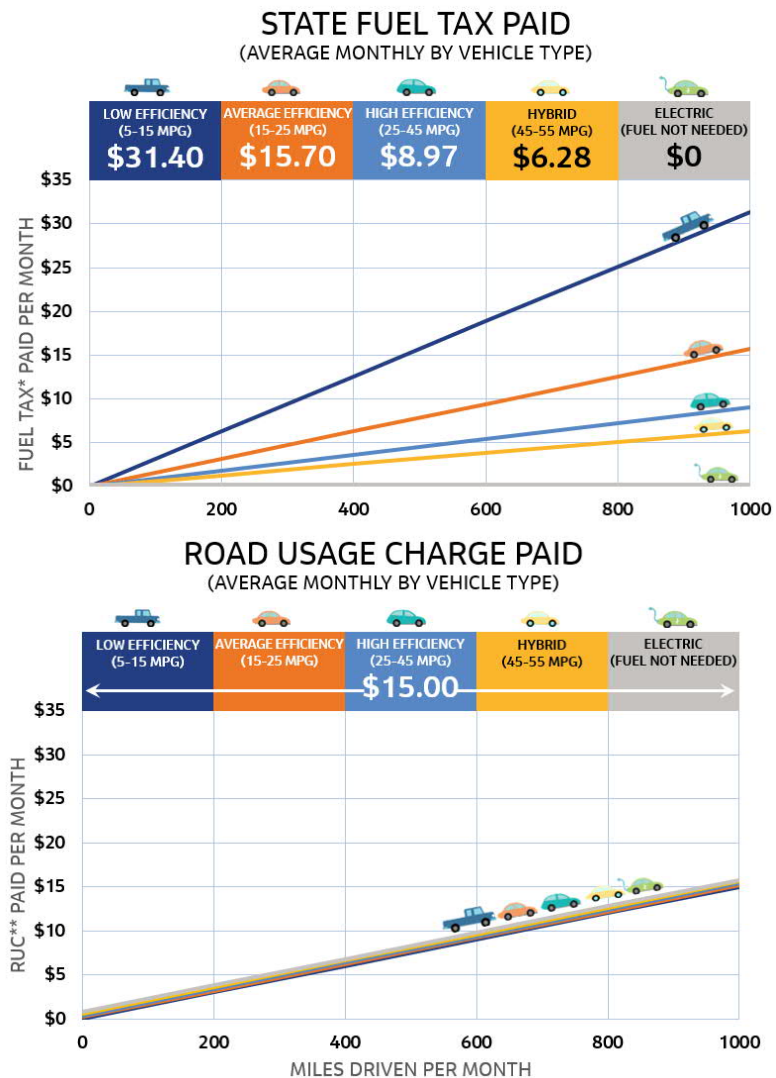
# 1. Introduction

Sustainable funding is vital to the health of Utah’s transportation infrastructure. For years, this health has been in jeopardy as the state fuel tax, which helps fund Utah’s transportation system, fails to keep up with funding needs. In addition to inflation, the growth of electric vehicles (EVs) and highly fuel-efficient vehicles, including gas hybrids and plug-in electric hybrids, has led to the decline of revenues per mile driven. These factors have left the fuel tax incapable of producing enough revenue to support adequate investments in the transportation system. As a result, Utah established its Utah Road Usage Charge Program in January 2020 as an alternative to the state fuel tax to create more sustainable funding for the Utah transportation system (Figure 1).

The Utah Road Usage Charge Program is based on a user-pays principle, charging drivers a fee based on miles driven rather than fuel purchased. In this way, the program mirrors how residents pay for other utilities, such as electricity (kilowatt-hours used) or water (gallons used). To address infrastructure needs and keep pace with funding requirements, Utah recognized the need to expand this program and provide for the future health of Utah’s roads and bridges.

The Utah State Legislature asked the Utah Department of Transportation (UDOT) to prepare a report with a plan to enroll all registered vehicles throughout the state in the Utah Road Usage Charge Program by December 31, 2031, excluding authorized carriers (vehicles pursuant to both the International Registration Plan and the International Fuel Tax Agreement).<sup>1</sup> In this report, the term “qualified vehicles” refers to those vehicles subject to this legislation.

Figure 1. State Fuel Tax Compared to Road Usage Charge



\*Calculations are based on 2021 state fuel tax rate of 31.4 cents per gallon for Utah.

\*\*Calculations are based on current 1.5 cents per mile road usage charge (RUC) rate for Utah.

<sup>1</sup> Utah State Legislature. 2020. *S.B. 150 Transportation Governance and Funding Amendments*. Accessed December 23, 2020. <https://le.utah.gov/~2020/bills/static/SB0150.html>.

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This legislative report fulfills the Utah State Legislature's request and explores the appropriate pace of expansion for the current Utah Road Usage Charge Program. It also provides a menu of options for policymakers, including the opportunities and challenges of different implementation scenarios, and serves as a policy roadmap and toolbox rather than a business case. Two distinct expansion scenarios are presented:

1. Scenario A – Mass Implementation with Manual Odometer Reading Only
2. Scenario B - Phased Implementation with Technology-Reliant Mileage Reporting

The discussion of each scenario examines the following:

- Pace of expansion for the Utah Road Usage Charge Program
- Pace of revenue generation
- Public acceptance
- Policy flexibility and adaptability

Each scenario results in a different vision for the future of the Utah Road Usage Charge Program and demonstrates a pathway to achieving the target of having all qualified vehicles enrolled in the program by December 31, 2031.

*The purpose of this legislative report is to provide a menu of options for policymakers, including opportunities and challenges of different expansion scenarios, and to serve as a policy roadmap and toolbox.*

## 2. Background

### 2.1 Legislation

In 2018, the Utah State Legislature adopted Senate Bill (SB) 136, Transportation Governance Amendments.<sup>2</sup> This legislation directed UDOT to establish a Road Usage Charge Advisory Committee and provide a road usage charge in lieu of a statutory flat fee imposed on EVs, plug-in electric hybrids, and gas hybrids. The Utah State Legislature also asked UDOT to consider privacy, methods for reporting road usage, and options for administering the system. The legislation mandated the initial implementation of the system by January 1, 2020.

In 2019, the Utah State Legislature granted rule-making authority to UDOT and the Transportation Commission through SB 72, which built upon SB 136.<sup>3</sup> In SB 72, UDOT was directed to give consideration to privacy and security protections as well as information sharing between UDOT and the Utah Division of Motor Vehicles (DMV). The legislation also allowed owners and lessees to opt into a road usage charge program or pay an annual fee. In addition, SB 72 gave the Utah Transportation Commission purview over the process for setting road usage charge rates. Finally, the legislation granted UDOT the authority to contract a commercial account manager (CAM); to administer the program; and to implement enforcement mechanisms, such as a registration hold for unpaid road usage charges. Utah Transportation Commission Administrative Rules Title R940 (Transportation Commission, Administration) and Title R940-8-6 (Road Usage Charge Rate) were the result of the legislation.

In 2020, the Utah State Legislature adopted SB 150, Transportation Governance and Funding Amendments, directing UDOT to prepare a plan to enroll all vehicles registered in the state in the Utah Road Usage Charge Program by December 31, 2031, excluding authorized carriers (vehicles pursuant to both the International Registration Plan and the International Fuel Tax Agreement).<sup>4</sup> This report responds to that legislation.

### 2.2 Advisory Committee for Initial Utah Road Usage Charge Program

Per SB 136, UDOT was instructed to convene a Road Usage Charge Advisory Committee to further study a road usage charge system. This Road Usage Charge Advisory Committee was established in 2018 and included the following diverse stakeholders who brought different perspectives:

- | <u>State Representation</u>  | <u>Non-State Representation</u>   |
|--|---|
| <ul style="list-style-type: none"> <li>▪ Utah Division of Motor Vehicles</li> <li>▪ Utah Department of Technology Services</li> <li>▪ Utah Department of Transportation</li> <li>▪ Utah Governor's Office</li> <li>▪ Utah House of Representatives</li> <li>▪ Utah Insurance Office</li> <li>▪ Utah Senate</li> <li>▪ Utah Tax Commission</li> <li>▪ Utah Transportation Commission</li> </ul> | <ul style="list-style-type: none"> <li>▪ American Civil Liberties Union</li> <li>▪ Federal Highway Administration – Utah Division</li> <li>▪ Layton City Mayor</li> <li>▪ Mountainland Association of Governments</li> <li>▪ RUC West</li> <li>▪ Salt Lake Chamber of Commerce</li> <li>▪ Uber</li> <li>▪ Utah Clean Energy</li> <li>▪ Utah Farm Bureau</li> <li>▪ Utah Taxpayers Association</li> <li>▪ Utah Trucking Association</li> </ul> |

<sup>2</sup> Utah State Legislature. 2018. *S.B. 136 Transportation Governance Amendments*. Accessed December 23, 2020. <https://le.utah.gov/~2018/bills/static/SB0136.html>.

<sup>3</sup> Utah State Legislature. 2019. *S.B. 72 Transportation Governance and Funding Revisions*. Accessed December 23, 2020. <https://le.utah.gov/~2019/bills/static/SB0072.html>.

<sup>4</sup> Utah State Legislature. 2020. *S.B. 150 Transportation Governance and Funding Amendments*. Accessed December 23, 2020. <https://le.utah.gov/~2020/bills/static/SB0150.html>.

The Road Usage Charge Advisory Committee met three times from May to November 2018. Committee members self-selected into five technical working groups: (1) Policy, Legislation, and Governance; (2) Privacy and Security; (3) Compliance and Enforcement; (4) Data Collection Technology; and (5) Communication (Figure 2). Members of those groups discussed issues pertaining to their subject areas and developed recommendations for UDOT to consider.

The committee presented the following recommendations at its November 2018 meeting. Each of the recommendations were incorporated in the authorizing legislation or rules adopted by UDOT:

- Annual road usage charge fee cap tied to flat fee amounts
- Revenue-neutral<sup>5</sup> road usage charge rate which is raised at the same rate as state fuel tax (indexed to inflation)
- Online enrollment synced with DMV registration
- Prepaid “wallet” for driver payments
- Location-based mileage reporting
- Odometer reading application for initial enrollment, annual “true up”, and dispute resolution
- DMV registration hold as an enforcement last resort

Figure 2. Utah Road Usage Charge Advisory Committee Technical Working Groups



### 2.3 Current Program

The Utah Road Usage Charge Program is voluntary, and owners of EVs, plug-in electric hybrid vehicles, and gas hybrid vehicles may opt into the program instead of paying an annual flat fee during the vehicle registration process. Table 1 shows the annual flat fee schedule that eligible vehicles pay in addition to annual vehicle registration fees.

Table 1. Annual Flat Fee Schedule

Alternative Fuel Vehicle Type	2019	2020	2021
Electric	\$60.00	\$90.00	\$120.00
Plug-in Electric Hybrid	\$26.00	\$39.00	\$52.00
Gas Hybrid	\$10.00	\$15.00	\$20.00

Source: UDOT (2020)

<sup>5</sup> Revenue neutral - Owners who enroll their vehicles in the Utah Road Usage Charge Program would pay the same amount of fuel tax per mile driven as owners of vehicles that get the average fuel economy compared to the Utah fleet (currently 20 MPG).



The Utah Road Usage Charge Program launched in January 2020, and participation requires drivers to:

- Enroll with a CAM that collects and reports miles driven via embedded telematics or a small plug-in device to the vehicle's on-board diagnostics II (OBD-II) port
- Pay the per-mile fee<sup>6</sup> established by the Transportation Commission<sup>7</sup> (participants won't pay more than the annual flat fee)
- Use a credit card to set up a prepaid wallet from which mileage fees are deducted

At the end of 2020, there were a total of 3,648 drivers enrolled in the Utah Road Usage Charge Program (Figure 3), and Utah collected \$42,016 in revenue.

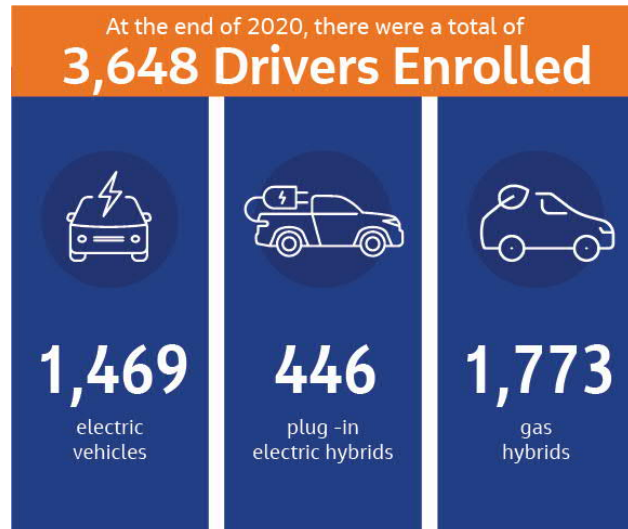
## 2.4 Other State Efforts and Research

Road usage charging has been studied and demonstrated in several states over the past 15 years, and interest in this funding approach continues to grow across the United States (U.S.). Utah, Oregon, and Virginia have already enacted legislation to implement voluntary road usage charge programs for EVs and hybrid vehicles, highly fuel-efficient vehicles, or some combination of the three. A number of states have conducted road usage charge pilot programs or other road usage charge-related studies, and additional states are researching the topic, as shown in Figure 4.

These pilots and studies have explored a variety of different issues and topics, including:

- Privacy and data security
- Road usage charge administration costs, including enforcement
- Mileage accrued by out-of-state drivers
- Mileage reporting options and technologies
- Urban and rural impacts
- Income equity
- Highly fuel-efficient vehicles and EVs
- Local option road usage charge
- Synergies with tolling
- Value-pricing options
- Variable per-mile rates
- Leveraging of annual safety inspection program (and odometer readings) with road usage charge
- Multistate truck movement
- Regional road usage charge systems
- Road usage charge and autonomous vehicle integration
- Road usage charge and transportation network companies

Figure 3. Utah Road Usage Charge Program Enrollment

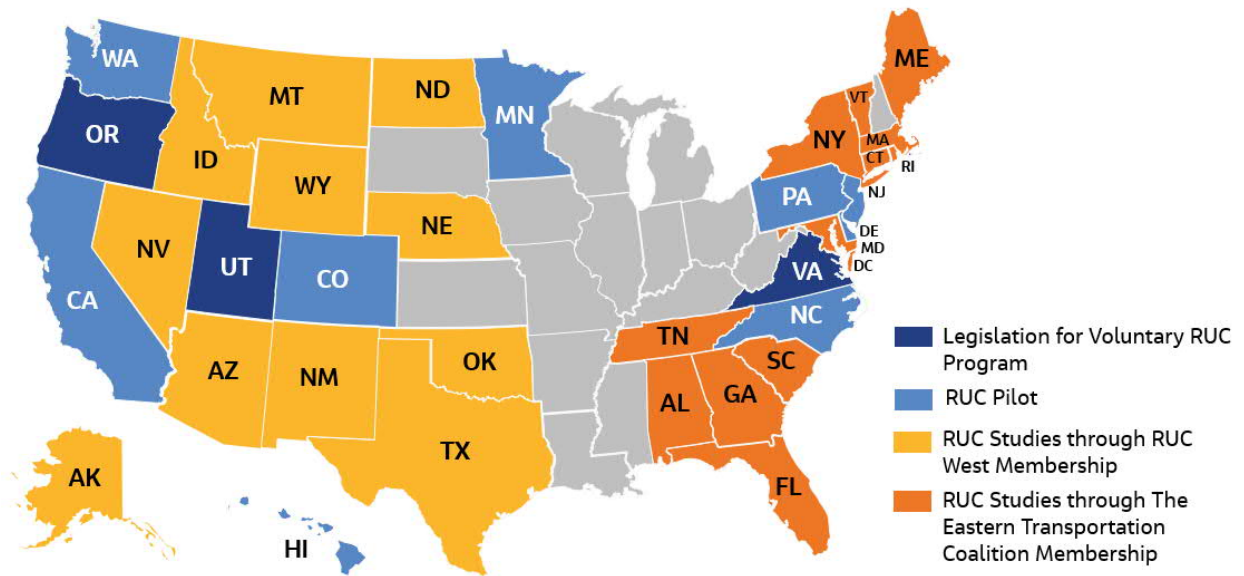


Source: Utah Road Usage Charge Program Team, 2021

<sup>6</sup> The current per-mile fee is 1.5 cents per mile. This calculation is based on 2019 Utah state fuel tax (30.0 cents per gallon) divided by average MPG of Utah's passenger vehicle fleet (currently 20 MPG).

<sup>7</sup> Per R940-8-6, the road usage charge rate will adjust annually on January 1 equal to the percentage change during the previous fiscal year in the Consumer Price Index (CPI), as determined by the Utah Tax Commission.

Figure 4. Road Usage Charge (RUC) Efforts Across the U.S.\*



\* As of March 2021  
Source: Jacobs 2021

### 3. Evaluation Methodology

The purpose of this legislative report is to provide a menu of policy options for policymakers to expand the Utah Road Usage Charge Program. This report does not define all elements of the Utah Road Usage Charge Program over the next 10 years but provides a toolbox to help advance ideas, and to highlight the best practices, opportunities, and challenges of different policy choices. Evaluation criteria and key baseline assumptions were developed for the analysis of scenarios that will result in expanding the Utah Road Usage Charge Program to include all qualified vehicles by December 31, 2031. This section provides information regarding the evaluation methodology for the program expansion.

#### 3.1 Baseline Assumptions

This report makes the assumption that all qualified vehicles are enrolled in the Utah Road Usage Charge Program by December 31, 2031. However, to meet this 10-year timeline, some type of policy action that fosters enrollment into the Utah Road Usage Charge Program will be necessary. This might include an enrollment mandate or incentives to enroll in the program, such as increased flat fees for alternative fuel vehicles and specified fuel efficiency ratings.

*Some type of policy action that fosters enrollment into the Utah Road Usage Charge Program will be necessary to meet the 10-year timeline.*

In addition, several baseline assumptions were developed for the analysis of expansion scenarios, including:

- 100% of Utah's qualified vehicles are eligible and will be enrolled<sup>8</sup> in the Utah Road Usage Charge Program by December 31, 2031.
- Expansion begins in 2024 to allow UDOT, DMV, and other necessary agencies a two-year period to develop and test mileage reporting approaches, secure data linkages between DMV and CAMs, and prepare for the rapid increase in vehicles added to the Utah Road Usage Charge Program, with the following details:
  - The existing program continues to grow gradually over the two-year ramp-up period as more alternative fuel and hybrid vehicles enter the market.
  - Both scenarios assume data linkages between the CAM and the DMV database of registered vehicles to verify eligibility and enrollment, and to assist with compliance and enforcement.
- CAMs continue supporting road usage charge data collection and processing.
- Parties responsible for road usage charge collection (e.g., CAMs) continue to follow privacy protection and data security provisions of Utah state law; privacy and data security requirements are consistent for both scenarios.
- There is a revenue-neutral rate, with the following details:
  - Rate calculation is based on the fuel tax divided by average MPG of the fleet.
  - The road usage charge rate is dynamic, adjusting annually based on the Consumer Price Index (CPI), reflecting rules adopted by the Utah Transportation Commission.<sup>9</sup>

<sup>8</sup> This will be dependent on the policy decisions used to foster enrollment (e.g., legislative mandates or incentives, such as increased registration or flat fees).

<sup>9</sup> The road usage charge rates are based on the current 1.5 cents per mile rate and were increased over the 10-year period based on the CPI forecasts (annual increase) provided to Jacobs by the Utah State Tax Commission.

- Fuel tax rate continues to adjust annually based on the CPI but will not exceed the maximum tax of 40 cents per gallon, as required in state code.<sup>10</sup>
- The Utah Road Usage Charge Program *replaces* the state fuel tax, with the following details:
  - In-state drivers enrolled in the Utah Road Usage Charge Program receive credits for fuel tax paid (no refunds if the fuel tax credit is greater than the road usage charge amount). *Only qualified vehicles registered in Utah are included in the financial analysis.*
  - Out-of-state drivers and heavy vehicles registered with both the International Registration Plan and the International Fuel Tax Agreement continue to pay the fuel tax. *These vehicles are not included in the financial analysis.*

### 3.2 Evaluation Criteria

When assessing the opportunities and challenges of each scenario, the analysis incorporated the evaluation criteria presented in Table 2.

Table 2. Evaluation Criteria

#	Criteria	Description
1	Pace of Program Expansion	<ul style="list-style-type: none"> <li>▪ The rate at which vehicles enter the system</li> <li>▪ The ability of the system to handle the pace of expansion, and the time provided to develop and test the required road usage charge systems</li> </ul>
2	Pace of Revenue Generation	<ul style="list-style-type: none"> <li>▪ The rate at which road usage charge revenues are collected in the initial implementation period</li> </ul>
3	Public Acceptance	<ul style="list-style-type: none"> <li>▪ The time provided for comprehensive public education and outreach before vehicles are eligible for the Utah Road Usage Charge Program</li> <li>▪ The ability for drivers to select between multiple mileage reporting technology options (including potential manual options)</li> <li>▪ The ability for drivers to access and use various payment options</li> </ul>
4	Policy Flexibility and Adaptability	<ul style="list-style-type: none"> <li>▪ The ability of the system to build off the current Utah Road Usage Charge Program and leverage technology to support other State initiatives (i.e., tolling, congestion pricing, local options)</li> <li>▪ The ability of the program to respond to new and emerging technology trends, rate setting, market conditions, and industry standards</li> </ul>

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<sup>10</sup> The fuel tax rates forecasted over the 10-year period are based on consensus revenue forecasts from the Utah State Tax Commission Forecast.

## 4. Expansion Scenarios

There are a number of possibilities for expanding Utah's Road Usage Charge Program so that all Utah-registered vehicles enroll in the program by December 31, 2031. To develop and explore different expansion scenarios, UDOT hosted a workshop on February 6, 2020, in Salt Lake City called *Future of Road Usage Charge Workshop* (Figure 5).

Workshop participants included members of the Utah Road Usage Charge Program Team and related personnel, its consultant team and advisers, and representatives from Utah DMV. The workshop included examination of a base scenario plus an additional six scenarios for acceleration of transition to a full Utah Road Usage Charge Program.

The base scenario assumed Utah's current program will grow organically as alternative fuel vehicles replace conventional gas and diesel cars over time. To transition all qualified vehicles into the Utah Road Usage Charge Program by the desired December 31, 2031 timeframe, planning and additional legislation will be required.<sup>11</sup>

Figure 5. Future of Road Usage Charge Workshop, February 2020



*UDOT workshop to discuss expansion of the Utah Road Usage Charge Program*

This report includes analysis of two expansion scenarios that were heavily influenced by findings from the workshop. These two scenarios include one of the more rapid expansion scenarios and one of the more gradual expansion scenarios (Figure 6). Both scenarios assume a continuation of the existing program until 2024 to allow for preparation of the rapid growth of vehicles added to the program. What happens after 2024 depends on policy decisions related to the preferred expansion scenario.

The two expansion scenarios evaluated in this report are outlined below:

- Scenario A - Mass Implementation with Manual Odometer Reporting Only:
  - Mileage reporting is accomplished with manual odometer readings annually (likely at the time of annual registration).
  - Beginning in 2024, all qualified vehicles rated over 20 MPG<sup>12</sup>, as well as EVs, plug-in electric hybrid vehicles, and gas hybrid vehicles are eligible to enroll in the Utah Road Usage Charge Program.
- Scenario B - Phased Implementation with Technology-Reliant Mileage Reporting
  - Mileage reporting is accomplished with various technology options, including in-vehicle telematics and aftermarket plug-in devices (OBD-II), coupled with manual odometer readings.




<sup>11</sup> For a detailed summary of the *Future of the Road Usage Charge Workshop* visit <https://drive.google.com/file/d/1zLYNWQRx8jv3fDavOhRWSqPrVY1587n/view>

<sup>12</sup> The per-mile rate in Utah is based on the average MPG of Utah's passenger vehicle fleet, which is currently 20 MPG. Vehicles below the average MPG are paying more in fuel tax than they would under the Utah Road Usage Charge Program. Therefore, it does not make financial sense for them to pay the road usage charge instead of the fuel tax, as Utah would receive less revenues from these vehicles.

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- Beginning in 2024, all qualified vehicles rated over 30 MPG, as well as EVs, plug-in electric hybrid vehicles, and gas hybrid vehicles are eligible to enroll in the Utah Road Usage Charge Program; additional vehicles become eligible every two years based on increasing MPG ranges.
- All new qualified vehicles purchased in 2026 or later are eligible to enroll in the Utah Road Usage Charge Program.

Figure 6. Utah Road Usage Charge Program Expansion Scenarios

Scenario Comparison Features		
	SCENARIO A	SCENARIO B
 Mileage Reporting	Annual odometer reading	Real-time, technology-based, and odometer reading
 Payment Options	Lump sum at registration renewal	Pay as you go
 Eligibility	All qualified vehicles rated 20+ MPG eligible in 2024	Vehicles rated 30+ MPG eligible in 2024. Eligibility expands every two years thereafter

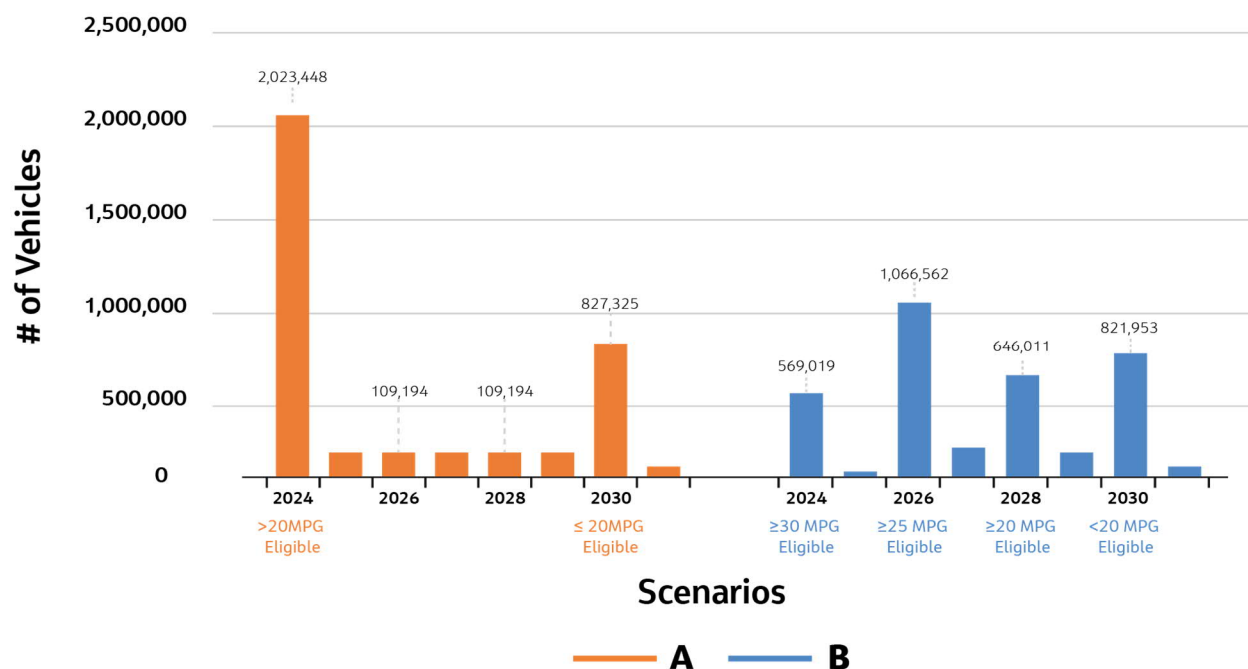
## 5. Evaluation Results

This section summarizes the results of the evaluation, with a section for each criterion. This evaluation assumes both expansion scenarios achieve maximum enrollment of eligible, qualified vehicles into the Utah Road Usage Charge Program by December 31, 2031. However, actual enrollment rates will be dependent on the policy decisions used to foster enrollment (e.g., mandatory versus incentives, such as the state’s existing flat fees). A summary table of the overall evaluation results is provided at the end of this section.

### 5.1 Pace of Program Expansion

The pace of program expansion criterion focuses on the rate at which vehicles enter the Utah Road Usage Charge Program over the 10-year period and the ability of the system to handle the pace of expansion. This rate varies between the scenarios, and Figure 7 shows the number of vehicles entering the Utah Road Usage Charge Program each year by scenario.

Figure 7. Annual Vehicle Enrollment by Scenario



The rate of program expansion for each scenario is summarized as follows:

- Scenario A – Implementation of the expanded Utah Road Usage Charge Program will start in 2024 to allow UDOT, DMV, and other necessary agencies to further develop and test the manual odometer reading approach and prepare for the rapid increase in vehicles. Under this scenario, initial eligibility in 2024 will include all qualified vehicles with an average fuel economy greater than Utah’s average of 20 MPG. Assuming all of these vehicles enroll in the Utah Road Usage Charge Program, 2 million qualified vehicles will enter the program in 2024. At the time of annual registration renewal, annual odometer readings will be used for mileage reporting, allowing for a rapid pace of implementation.

From 2025 through 2030, the Utah Road Usage Charge Program will grow by roughly 109,000 vehicles per year. Vehicles with an average fuel economy of 20 MPG or less will not enroll in the program until 2030, which results in an additional 827,000 vehicles entering that year. These vehicles are below the

average MPG on which the per-mile rate is based, and are paying more in fuel tax than they would under the Utah Road Usage Charge Program. Therefore, it does not make financial sense for them to pay the road usage charge instead of the fuel tax as Utah would receive fewer revenues from these vehicles.

- Scenario B – Implementation of the Utah Road Usage Charge Program is delayed until 2024 to allow time to further develop and expand the existing program and prepare for additional vehicles and mileage reporting methods. Under this scenario, initial eligibility in 2024 will include all qualified vehicles with an average fuel economy greater than 30 MPG, which includes 570,000 vehicles. The program will continue to expand every two years based on MPG rating. The largest single-year increase takes place in 2026, with an estimated 1 million vehicles added to the program under the “25 or greater” MPG rating.

The primary difference between Scenarios A and B is the timing of when larger numbers of qualified vehicles are brought into the program. Scenario A will experience more vehicle enrollment early in the program, while Scenario B will see a more consistent number of vehicles enrolling over the 8-year program expansion period. Scenario B’s moderate expansion approach allows enrollment to grow gradually over time compared to Scenario A’s more rapid growth approach.

Under the current fuel tax system, alternative fuel and highly fuel-efficient vehicles are either not paying any fuel tax or are paying very little. To help stabilize revenues, these vehicles should be enrolled in the Utah Road Usage Charge Program as early as possible. On the other hand, low fuel-efficient vehicles (less than 20 MPG) are currently paying more in fuel tax than they would in the program, and should be enrolled later to avoid higher program costs and reduced revenues.

### 5.2 Pace of Revenue Generation

A high-level financial analysis was completed for each scenario to determine the rate at which road usage charge revenues will be collected over the 8-year implementation period. Each scenario compares the annual net revenues against the projected fuel tax revenues if a road usage charge program is not implemented (baseline scenario). This analysis was completed using fleet and revenue data provided by the Utah Tax Commission and includes assumptions that both the road usage charge rate and fuel tax change over the 8-year period.<sup>13</sup> The analysis also assumed the average MPG of the fleet (currently 20 MPG) continues to increase each year based on national trends and corporate average fuel economy standards.<sup>14</sup> Administrative costs were not included in the financial analysis conducted for this report as there are many outstanding programmatic and policy decisions as well as other variables that could impact these costs.

Table 3 summarizes the results of the high-level analysis, and Figure 8 shows the net revenues across both scenarios. The net revenues represent road usage charge revenues minus fuel taxes. This assumes that all vehicles enrolled in the program would receive a credit for any fuel taxes paid. Appendix A provides a detailed summary of the financial analysis.

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<sup>13</sup> The fuel tax rates forecasted over the 8-year period are based on consensus revenue forecasts from the State Tax Commission Forecast. The road usage charge rates are based on the current 1.5 cents per mile rate and were increased over the 8-year period based on the CPI forecasts (annual increase) provided by the Utah State Tax Commission.

<sup>14</sup> U.S. Department of Energy. 2020. “Maps and Data. *Alternative Fuels Data Center*. <https://afdc.energy.gov/data/search?q=cafe>.



The pace of revenue generation for each scenario is summarized as follows:

- Scenario A – Due to the large number of vehicles initially enrolled in the program (2 million in 2024), Scenario A collects revenues more quickly compared to Scenario B during initial implementation. This scenario generates \$7 billion in total revenue between 2024 and 2031. Scenario A essentially maximizes the initial revenue stream through a rapid growth implementation schedule. As noted in Section 5.3, Public Acceptance, this initial revenue burst comes with other policy trade-offs for state officials.
- Scenario B – Due to the moderate number of vehicles initially enrolled in the Utah Road Usage Charge Program (570,000 in 2024), Scenario B collects revenues less quickly than Scenario A during initial implementation. Between 2024 and 2031, Scenario B generates \$6.85 billion in revenues, only 2.6% less revenue over the 8 years compared to Scenario A. By 2030, Scenario B is operating at an equal pace of revenue generation; thereafter, it is collecting the same annual revenue as Scenario A.

Table 3. Summary of Financial Analysis Results

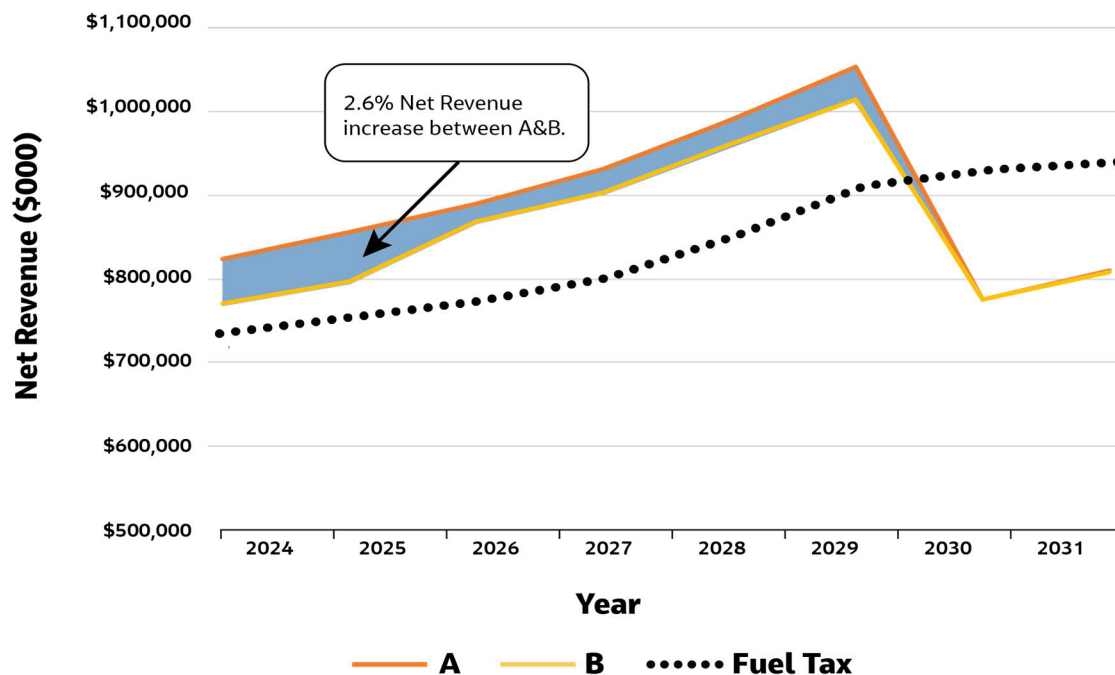
Year	Scenario A			Scenario B		
	Net RUC Revenue* (\$ million)	Fuel Tax Revenue (\$ million)	Total Revenue (\$ million)	Net RUC Revenue* (\$ million)	Fuel Tax Revenue (\$ million)	Total Revenue (\$ million)
2024	\$379.5	\$435.8	\$815.3	\$106.7	\$657.1	\$763.8
2025	\$405.2	\$441.0	\$846.2	\$117.9	\$672.7	\$790.6
2026	\$432.3	\$446.1	\$878.5	\$326.8	\$536.6	\$863.4
2027	\$461.5	\$456.6	\$918.0	\$359.7	\$538.7	\$898.4
2028	\$492.5	\$481.2	\$973.7	\$497.7	\$459.3	\$957.0
2029	\$524.8	\$510.8	\$1,035.6	\$531.8	\$479.8	\$1,011.6
2030	\$768.6	\$0	\$768.6	\$768.6	\$0	\$768.6
2031	\$801.9	\$0	\$801.9	\$801.9	\$0	\$801.9
Cumulative	\$7,037,800,000			\$6,855,300,000		

Note: This analysis is based on qualified vehicles registered in Utah. It does not include fuel tax revenues from out-of-state drivers and heavy vehicles registered with both the International Registration Plan and the International Fuel Tax Agreement.

Revenue projections do not include administrative costs associated with the Utah Road Usage Charge Program.

\*Net RUC revenue = road usage charge collected minus fuel tax credits.

Figure 8. Annual Net Revenue by Scenario



Scenario A generates more revenue than Scenario B from 2024 to 2030 due to the large influx of vehicles with 20 MPG or less that will not enter the program under Scenario B until 2030. However, by 2030, each scenario is generating an equal amount of revenue, and the cumulative difference in revenue over the 8-year implementation period is \$182.5 million, or approximately 2.6%.

### 5.3 Public Acceptance

A road usage charge program is an enormous change for the average Utah driver. To ease the transition, providing a public outreach and education effort as well as user choices will be vital. These elements are essential to the success of the Utah Road Usage Charge Program, as the public is likely to reject a program that lacks user choice and does not provide sufficient public education to explain the need for a new funding mechanism.

Both expansion scenarios start in 2024, allowing a two-year period to develop and deploy communication strategies with the public, agencies, and stakeholders. When evaluating the scenarios for public acceptance, several sub criteria were used as part of the analysis:

- Public Education – The time provided for comprehensive public education and outreach before vehicles are eligible for the Utah Road Usage Charge Program
- Technology Options – The ability for drivers to select between multiple mileage reporting technology options (including potential manual options)
- Payment Options – The ability for drivers to access various payment options (e.g., annual or monthly payment plans)

The scenario evaluation is summarized as follows:

- Scenario A – Given the accelerated pace of expansion under Scenario A, as noted in Section 5.1, the addition of 2 million vehicles in 2024 will require extensive engagement with the general public to provide comprehensive education about the Utah Road Usage Charge Program, vehicle eligibility, and enrollment information. It will be incumbent upon the State to reach millions of drivers through multiple media platforms to educate the public. This equates to approximately 3.5 times the outreach needed for Scenario B by 2024.

Looking beyond education is the element of choice, a pillar of any successful road usage charge program. Scenario A only provides drivers with one method of reporting mileage: an annual odometer reading. The lack of choice might become a point of contention with the general public and could decrease overall acceptance of the program.

Moreover, with the sole choice of the annual odometer reading, the driver will have to pay a lump sum road usage charge amount in addition to their annual vehicle registration fees. This could make the program unpopular with the public, as drivers will transition from (in most cases) not understanding how much fuel tax they pay to suddenly having a new annual expense. This annual lump sum payment could be burdensome for some vehicle owners, certainly for low-income households, likely requiring that monthly or quarterly payment plans be established.

- Scenario B – The tempered approach to enrollment under this scenario, as noted in Section 5.1, allows additional time for education and outreach for most drivers of qualified vehicles (570,000 in 2024) before they are eligible for the program. This allows for a less aggressive and, if desired, multistage public education campaign to present aspects of the program to the Utah driving public.

Critically, Scenario B also provides drivers with multiple choices for reporting mileage: a manual odometer reading, an aftermarket plug-in device (OBD-II), in-vehicle telematics, and other emerging technologies and data sources.

This scenario also allows for more payment options (e.g., monthly) and avoids a large lump sum payment at the time of vehicle registration. Providing various technology options will provide both mileage reporting and payment choices to vehicle owners, better addressing privacy concerns and needs across various income levels. Those with significant privacy concerns can select a low- or no-technology mileage reporting option, such as odometer reporting, while those who are more comfortable with technology can select a global positioning system (GPS)-enabled mileage reporting option.

In addition, for vehicle owners with older vehicles that are not compatible with the aftermarket plug-in devices or that do not have in-vehicle telematics, this lack of choice and access to technology options could be a point of contention, as they would have to rely solely on annual odometer readings. This could create varying levels of satisfaction with the program based on income levels and the ability to access technology options.

To maximize enrollment, public outreach and communication strategies will need to be targeted toward eligible vehicles. In Scenario A, this would require extensive public engagement by 2024 to successfully educate and enroll the 2 million eligible vehicles. Scenario B allows for more time to reach target audiences with 570,000 eligible vehicles in 2024 and more gradual expansion over the 8 years.

Scenario A limits user choice in mileage reporting options and could burden users with another annual fee in addition to their current annual vehicle registration fee. Scenario B, on the other hand, provides users choice in their mileage reporting options and could provide more flexibility with payment options. Providing users with choices on technology, mileage reporting, and payments will likely result in more public acceptance.

In addition, Scenario B gives drivers a choice between different mileage reporting options (e.g., technology or no-technology, GPS or non-GPS), which can help address privacy and data security preferences and likely increase overall acceptance of the Utah Road Usage Charge Program. The flexibility and range of mileage reporting and payment options for drivers under this scenario may be perceived as fairer to drivers across all income levels and demographics, increasing the likelihood of long-term program success.

### 5.4 Policy Flexibility and Adaptability

Many recent road usage charge pilots, programs, and studies are exploring the intersection of road usage charging and other transportation technologies and tools. The ever-changing nature of technology has created the impetus for flexibility and adaptability within the policy domain. The policy flexibility and adaptability criterion therefore examines:

- The ability of the Utah transportation system to build off the current Utah Road Usage Charge Program, as well as leverage technology to support other State initiatives (e.g., tolling, congestion pricing, and local options)
- The ability of the Utah Road Usage Charge Program to respond to new and emerging technology trends, rate setting, market conditions, and industry standards

The policy flexibility and adaptability evaluation results by scenario are summarized as follows:

- Scenario A – Due to the lack of technology options in Scenario A (i.e., annual odometer reading only), the ability of the transportation system to build off the Utah Road Usage Charge Program and leverage technology to support other State initiatives would be severely limited or nonexistent. Moreover, the lack of options limits the program's ability to respond to new and emerging technology trends, market conditions, and industry standards. *Scenario A's technological limitations would result in a lack of policy options for decision makers to consider as the Utah transportation system evolves.*
- Scenario B – The deployment of various technology options in Scenario B leverages current institutional knowledge and progress; builds off the current Utah Road Usage Charge Program; and increases the number of available future policy levers, such as congestion pricing, tolling, local options, and demand management. Moreover, it would put Utah in an advantageous position when responding to new and emerging technology trends, market conditions, and industry standards. *Scenario B's technological advantages would result in a full suite of policy options for decision makers to consider as the Utah transportation system evolves.*

The lack of technology options provided in Scenario A will severely limit the flexibility and adaptability of the Utah transportation system. Scenario B offers a diversity of technology options that will provide the type of policy flexibility and adaptability that preserve future policy levers for decision makers, including the most critical issues of which drivers are paying, how much, and when. Scenario A requires an overhaul of the current program and changes the previously determined policy direction. In contrast, Scenario B has the advantage of building on the current Utah Road Usage Charge Program and provides progress toward established policy goals.

## 5.5 Overall Results

This section summarizes the evaluation results for the Utah Road Usage Charge Program expansion scenarios. Table 4 provides the overall results for each criterion included in the evaluation.

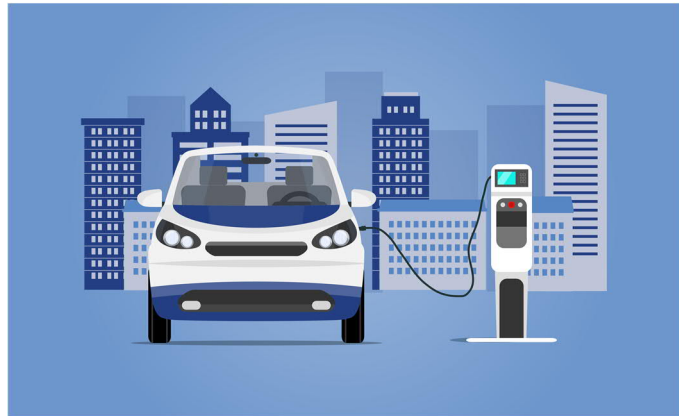
Table 4. Summary of Evaluation Results

#	Criteria	Description	Main Findings
1	Pace of Program Expansion	<ul style="list-style-type: none"> <li>The rate at which vehicles enter the system</li> <li>The ability of the system to handle the pace of expansion, and the time provided to develop and test the required road usage charge systems</li> </ul>	<ul style="list-style-type: none"> <li>Scenario A will experience more vehicle enrollment early in the program (2 million vehicles in 2024).</li> <li>Scenario B will see more steady vehicle enrollment over the 8-year period (570,000 in 2024).</li> <li>Scenario B's moderate expansion approach is unlikely to overwhelm the Utah Road Usage Charge Program.</li> </ul>
2	Pace of Revenue Generation	<ul style="list-style-type: none"> <li>The rate at which road usage charge revenues are collected in the initial implementation period</li> </ul>	<ul style="list-style-type: none"> <li>Scenario A generates more revenue from 2024 - 2030.</li> <li>By 2030, each scenario is generating an equal amount of annual revenue.</li> <li>Cumulative difference in revenue over the 8 years is \$182.5 million, or 2.6%.</li> </ul>
3	Public Acceptance	<ul style="list-style-type: none"> <li>The time provided for comprehensive public education and outreach before vehicles are eligible for the Utah Road Usage Charge Program</li> <li>The ability for drivers to select between multiple mileage reporting technology options (including potential manual options)</li> <li>The ability for drivers to access various payment options</li> </ul>	<ul style="list-style-type: none"> <li>Scenario A would require extensive public engagement by 2024 to successfully educate and enroll the 2 million eligible vehicles.</li> <li>Scenario B allows for more time to reach the target vehicle owners, with 570,000 eligible vehicles in 2024 and more gradual expansion over 8 years.</li> <li>Scenario B provides users with choices on technology, mileage reporting, and payments, which will likely increase overall Utah Road Usage Charge Program acceptance.</li> <li>The flexibility and range of mileage reporting and payment options for drivers under Scenario B may be perceived as more fair to drivers across all income levels and demographics, increasing the likelihood of long-term program success.</li> </ul>
4	Policy Flexibility and Adaptability	<ul style="list-style-type: none"> <li>The ability of the system to build off the current Utah Road Usage Charge Program and leverage technology to support other State initiatives (i.e., tolling, congestion pricing, local options)</li> <li>The ability of the program to respond to new and emerging technology trends, rate setting, market conditions, and industry standards</li> </ul>	<ul style="list-style-type: none"> <li>Scenario A's lack of technology options will severely limit the flexibility and adaptability of the Utah Road Usage Charge Program.</li> <li>Scenario B's technology options will provide the type of policy flexibility and adaptability that preserve future policy levers.</li> </ul>

## 6. Additional Policy Considerations

### 6.1 Fuel-Efficient Vehicles and Electric Vehicles

The number of EVs, plug-in electric hybrid vehicles, and other highly fuel-efficient vehicles is growing rapidly in Utah and nationwide, leading to less consumption of fuel and therefore less collection of fuel taxes. The fuel tax has been a major contributor to transportation funding both nationally and at the state level. Transportation funding pays for services that all vehicle types utilize and benefit from. Electric, plug-in electric hybrid, gas hybrid and gas-powered vehicles all contribute to congestion, travel delays, and wear and tear to roads. Statewide research in Utah<sup>15</sup> and other road usage charge studies across the country have shown that most people agree that every driver should pay their fair share.



Surveys have shown that EV, plug-in electric hybrid and gas hybrid vehicle drivers report their motivations for choosing a highly fuel-efficient vehicle include convenient charging stations, a love for high-technology, and environmental reasons. Drivers of highly fuel-efficient or alternative fuel vehicles still save on the overall cost of fuel (including the electrical costs of vehicle charging). An electric vehicle driver pays about 75% less than the average 20 MPG vehicle owner, primarily because of fuel cost savings. While financial savings are a factor, these savings are often not the primary reason people purchase these vehicles. A National Governors Association Institute report noted that a "nationwide survey by the University of California Institute of Transportation Studies (UC ITS) found that even a \$100 annual EV registration fee reduced consumers' likelihood of purchasing a battery- powered EV by 11%; it reduced their likelihood of purchase by 18%."<sup>16</sup>

### 6.2 Rural Equity

One of the most common misconceptions with road usage charge systems is that rural drivers will pay more under a road usage charge system because they typically drive more miles than their urban counterparts. However, regional studies have demonstrated that under a road usage charge system, rural drivers are likely to pay less than they pay under the current fuel tax system (assuming a single revenue-neutral rate applied to all vehicles). It is estimated that rural households in Utah will pay 5.5% less, and urban households will pay 0.6% more.<sup>17</sup>

According to the Economic Development Research Group's research, while rural drivers in Western states do take longer trips, they make fewer such trips. Their urban counterparts take more trips, but each trip is fewer miles (Figure 9). In addition, urban drivers tend to have more fuel-efficient vehicles than drivers in

<sup>15</sup> Lighthouse Research & Development Inc. 2019. *UDOT Road Usage Charge Focus Group Report*; Lighthouse Research & Development Inc. 2019. *UDOT Road Usage Charge Telephone Survey Report*.

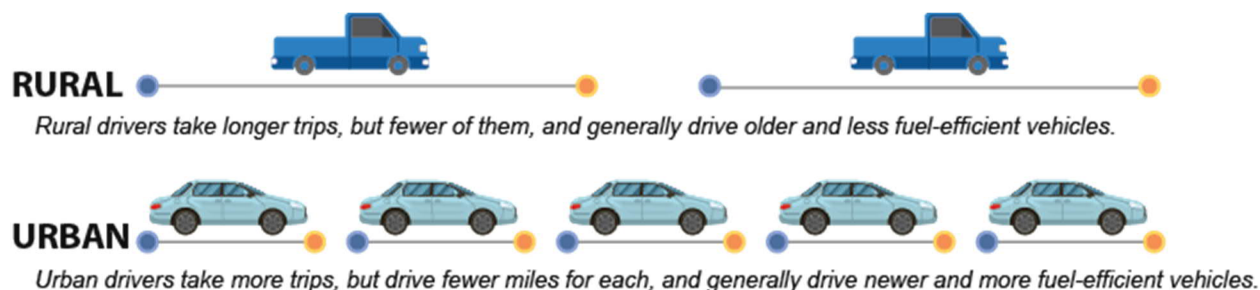
<sup>16</sup> National Governors Association. 2019. *Planning for State Transportation Revenue in a Coming Era of Electric Vehicles*. Accessed April 21, 2021. <https://www.nga.org/files/assets/publications/White-Paper-Planning-for-State-Transportation-Revenue-in-a-Coming-Era-of-Electric-Vehicles.pdf>.

<sup>17</sup> Economic Development Research Group, Inc. 2018. *Financial Impacts of Road User Charges on Urban and Rural Households*. Prepared for the Western Road User Charge Consortium (RUC West). [https://www.ebp-us.com/sites/default/files/project/uploads/FINAL-REPORT---Financial-Impacts-of-RUC-on-Urban-and-Rural-Households\\_Corrected.pdf](https://www.ebp-us.com/sites/default/files/project/uploads/FINAL-REPORT---Financial-Impacts-of-RUC-on-Urban-and-Rural-Households_Corrected.pdf).

rural areas.<sup>18</sup> This means rural drivers generally pay more fuel tax per mile driven than urban drivers under the current fuel tax funding model.

Under a road usage charge system, rural drivers will not be unfairly impacted and would likely pay less than they do now. In addition, road usage charge systems (with an enabled GPS) are capable of charging only for travel on public roads, making miles driven on private farms and ranches free of charge. The experiences of other states have shown that this issue requires a significant public education campaign.

Figure 9. Rural and Urban Equity under a Road Usage Charge Program



### 6.3 Privacy

One of the biggest challenges facing road usage charge implementation is assuring the general public that any data collected on road usage will be protected, and personally identifiable information will not be shared with third parties. In addition, drivers need to be assured they are not being actively monitored by the government when they travel. Providing various mileage reporting and technology options puts more control over privacy into the hands of the drivers. Drivers can choose whether to share their personal driving information through the selection of mileage reporting options (GPS, non-GPS, or odometer reading). Those with significant privacy concerns can select a low-technology mileage reporting option, such as odometer reporting; while those who are more comfortable with technology can select the GPS-enabled mileage option, which often includes several additional premium features offered by CAMs for personal use (e.g., trip logs, driving scores, safe zones) as well as mileage reporting for road usage charge.

In addition to choosing how their data are collected and reported, drivers should also be provided with options on who collects and processes their data. Using third-party vendors (private sector experts) to collect the number of miles driven and manage the data and payments can also help reduce privacy and data security concerns.

Regardless of the technology option chosen, the state only receives aggregated and anonymized data that does not include personally identifiable information. This generally includes the total number of miles driven, the amount of fuel consumed (if applicable), and the net road usage charge amount owed. Additionally, system requirements can also include that all personally identifiable information is purged from the road usage charge system after a stipulated number of days have elapsed following payment of the road usage charge.

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<sup>18</sup> Ibid.

## 6.4 Costs

One argument against road usage charging is that the administrative costs will be too high, especially compared to the relatively low costs to administer the current fuel tax. The collection of the state fuel tax is an efficient process in that the tax is assessed and collected from licensed fuel distributors (companies that receive fuel from bulk storage terminals and then distribute the final product to local gas stations). This means there is a relatively small number of collection points. A road usage charge would need to be collected for each vehicle, likely increasing the cost of collection due to the exponential increase in collection points. Additional administrative costs with a road usage charge system include:

- In-vehicle hardware
- Wireless communications
- Data processing and invoicing
- Road usage charge fund collection
- Enforcement and compliance activities
- Customer support

As such, there is an increasing focus on finding ways to use the private sector as third-party CAMs to help lower the costs of road usage charge system administration and operations. The initial CAM costs for smaller programs will be higher, but these costs are expected to decline over time as technology for measuring and reporting mileage becomes less expensive and as economies of scale are achieved with an increase in the number of vehicles in the program, lowering the costs for collecting and processing mileage data. In addition, collaboration and interoperability with other states can result in multiple CAMs to create a more competitive market which could result in lower administrative costs.

## 6.5 Technology

Technology is always changing, and future pilots and road usage charge systems will need to investigate and be designed to accommodate these technology advancements. Possibilities may include obtaining data from companies offering use-based insurance, and an increasing number of connected and automated vehicles being sold, as well as vehicles with in-vehicle telematics and electronic license plates.

In-vehicle telematics provide the capability to report mileage data directly from the vehicle, replacing the need for aftermarket devices and reducing mileage collection costs. Industry experts believe telematics are the future of mileage reporting for a road usage charge system. However, it is currently a challenge to get access to telematics data, and the data can come at a cost.

A national technology standard that original equipment manufacturers (OEMs) must adhere to could require that new vehicles be equipped with this technology, and that car manufacturers and OEMs provide the necessary data for a road usage charge to states and authorized CAMs (with the vehicle owners' consent), thereby helping to lower costs and minimize driver action (e.g., plugging in a device to the OBD-II port). This standard should also address who owns the data (vehicle owner or OEM).



States continue to explore the future vision for road usage charge systems that will be aided by the advancement of technology. Future technologies could allow for interoperability and integration with other state initiatives, such as express lanes, congestion pricing, and intelligent transportation systems. Road usage charging could also be used as a method to impact travel behavior about mode choices and time of day. As people understand the cost of each trip, they might make different travel decisions.



### 6.6 Public Acceptance

Education and outreach are essential to generating greater public acceptance of any new transportation funding model. Road usage charge pilots and research across the country, including in California, Washington, Oregon, Utah and the Eastern U.S., have found that the concepts of fairness and “pay for what you use” resonate with the public. Additionally, these studies have seen that extensive public education, outreach, and experience can have a noticeable effect on overall attitudes toward road usage charging. Tools such as educational webpages, videos, road usage charge calculators, social media, direct mail, and earned media (any event that results in printed media, radio, television, or social media), are all excellent examples of effective forms of communication for public education.

An effective outreach campaign should begin with closing knowledge gaps among the public. Research conducted across the country<sup>19</sup> has shown that most people don’t know how transportation is funded, how much they currently pay for transportation, and how the current funding model doesn’t meet transportation needs. Public outreach and education can help identify and address these knowledge gaps through statewide surveys or focus groups and can provide agencies with messages that resonate with the general public and stakeholders. Helping these users understand the problem – as well as how a road usage charge could provide a more sustainable transportation revenue stream – can help open minds to the concept.

Easing the transition to a road usage charge for drivers is a must. Because a road usage charge system represents a completely different paradigm for drivers, successful implementation will depend upon a robust transition plan. The current fuel tax system involves costs that are lumped in with the price drivers pay at the pump, resulting in a tax that is nearly invisible to drivers. A road usage charge system provides drivers with a recurring invoice for miles driven, which creates awareness of their contribution to transportation funding.

Providing users with choices can help with the transition; studies show that providing drivers with as many options as possible in a road usage charge system, such as mileage reporting and payment preferences, helps reduce resistance to implementation and builds public support and acceptance.<sup>20</sup> Outreach requires time and focus. An effective campaign should provide sufficient time to both develop the program using input from public opinion surveys and to implement the program over a number of months.

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<sup>19</sup> For example, see: The Eastern Transportation Coalition. 2021. *Mileage-Based User Fee Exploration 2019 Passenger Vehicle Pilot*. <https://tetcoalitionmbuf.org/wp-content/uploads/2021/03/TETC-2019-Passenger-Vehicle-Pilot-Report-1.pdf>.

<sup>20</sup> For example, see: Oregon Department of Transportation. 2017. *Oregon’s Road Usage Charge, The OReGO Program Final Report*. [https://www.oregon.gov/ODOT/Programs/RUF/IP-Road%20Usage%20Evaluation%20Book%20WEB\\_4-26.pdf](https://www.oregon.gov/ODOT/Programs/RUF/IP-Road%20Usage%20Evaluation%20Book%20WEB_4-26.pdf).

## 7. Conclusions

This report provides a high-level analysis of two different Utah Road Usage Charge Program expansion scenarios, resulting in enrollment of all registered qualified vehicles in the Utah Road Usage Charge Program by December 31, 2031. This report is intended to provide a toolbox for policymakers to help them understand the opportunities and challenges of different policy choices, but this report does not define all elements of the Utah Road Usage Charge Program over the next 10 years.

*The Utah Road Usage Charge Program can be successful if implemented at the right pace of expansion.*

These scenarios were evaluated against four main criteria, and additional policy considerations were also discussed. Each scenario's opportunities and challenges are summarized in this section.

- Scenario A - Mass Implementation with Manual Odometer Reporting Only:
  - Is the fastest implementation scenario, collecting the most revenue
  - Does not complement the current Utah Road Usage Charge Program
  - Results in limited future policy levers
  - Has a high risk of pushback from stakeholders and the general public due to lack of choices and annual payment in a lump sum
  - Would require extensive public engagement by 2024 to successfully educate and enroll the 2 million eligible vehicles
- Scenario B - Phased Implementation with Technology-Reliant Mileage Reporting:
  - Is a tempered approach that could prove less risky, both financially and politically
  - Complements the current Utah Road Usage Charge Program
  - Supports other Utah initiatives (tolling, congestion pricing, local options)
  - Has a lower risk of pushback from stakeholders and the general public due to flexibility of technology, mileage reporting, and payment options to better accommodate all income classes
  - Allows more time for education and outreach to reach target vehicle owners with 570,000 eligible vehicles in 2024 and more gradual expansion over the 8 years

The need for a robust public education and outreach program cannot be overemphasized. The expansion of the Utah Road Usage Charge Program should include a two-year ramp-up period. This will allow time to implement communication and engagement strategies with the public and to allow the agencies that will be involved in the program time to prepare for the expansion to minimize operational issues. During this ramp-up period, the current program would continue to grow as the fleet gradually transitions to more alternative fuel vehicles or would continue to increase the flat fees imposed on these vehicles. In addition, this ramp-up period should be used to properly develop and test changes and enhancements to the required road usage charge systems to create a positive user experience and increase overall program success.

## 7.1 Future Policy Decisions

The Utah Road Usage Charge Program can be successful if implemented at the right pace of expansion to allow for a positive user experience centered around flexibility and choice. Based on the selected expansion scenario, there are a number of future policy decisions that will need to be made to define the Utah Road Usage Charge Program, including:

- **Program Enrollment:** To meet the 10-year timeline to have all registered qualified vehicles in the Utah Road Usage Charge Program, policy actions that foster enrollment will be necessary. This could include a mandate to enroll, which could be implemented based on the scenarios presented in this report; or incentives to enroll in the program, such as increased flat fees for alternative fuel vehicles and specified fuel efficiency ratings. Flat fee increases should be set to encourage most drivers to enroll in the Utah Road Usage Charge Program. However, it is unlikely that incentives would achieve 100% enrollment.
- **Current Program:** Utah was the second state in the U.S. to launch a road usage charge program, which launched in January 2020. This program includes over 3,600 alternative fuel vehicles generating additional revenues for Utah transportation. Any expansion scenario should build off the success of this program. Depending on the expansion scenario selected, it will take certain policy decisions that improve the current configuration of the existing program to continue this success. For example, a decision must be made on whether the current program will sunset or whether the current cap on the per-mile charge will be retracted.
- **Fuel Tax Credits:** How fuel tax credits are managed is integral to the overall public acceptance of the program to ensure the public understands they are not being double charged. Vehicles with fuel efficiencies less than the average (20 MPG in Utah) would pay less in road usage charges than they pay in fuel tax, resulting in a negative net road usage charge. One option to consider would be to apply fuel tax credits in the vehicle owner's road usage charge account so the user has a non-refundable credit that carries over each month in their account. In this manner, no actual fuel tax credits would need to be processed and sent to vehicle owners. Another option would be to apply that fuel tax credit to the vehicle owner's annual vehicle registration. However, it should be considered to not make low fuel-efficient vehicles (less than 20 MPG) eligible for the Utah Road Usage Charge Program to avoid losing revenues as the Utah state fleet becomes more fuel efficient.

While this report demonstrates that with the proper legislation, expansion of the Utah Road Usage Charge Program to include all qualified vehicles by December 31, 2031 is feasible, a longer time frame should be considered. Instead of placing a deadline, the expansion could be based on targets, such as fleet transformation to alternative fuels and increases in fuel efficiency or major technology advancements. The success of the program can be greatly improved if it builds off the current program and evolves organically, thereby allowing for a smoother transition.

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Appendix A  
Summary of High-Level Financial Analysis

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Subject Utah Road Usage Charge Report for SB 150 Financial Analysis

Project Name Utah Road Usage Charge Report as required by Senate Bill 150

Attention Tiffany Pocock, Road Usage Charge Program Manager

From Jenny Roberts, Project Manager / RUC Specialist  
Tim Kirby, RUC Specialist  
Neal Cohen, RUC Analyst

Date April 30, 2021

Copies to Eileen Barron, Strategic Communications Manager

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## 1. Introduction

At the direction of the Utah State Legislature, the Utah Department of Transportation (UDOT) was asked to prepare a report with a plan to enroll all registered vehicles in Utah in the Road Usage Charge Program by December 31, 2031, excluding authorized carriers (vehicles pursuant to both the International Registration Plan [IRP] and the International Fuel Tax Agreement [IFTA]).<sup>1</sup> In this technical memorandum, the term “qualified vehicles” refers to those vehicles subject to this legislation.

This technical memo examines the detailed methodology used in the development of the high-level financial analysis for the two scenarios included in the Utah Road Usage Charge Report as required by Senate Bill 150, which were used to determine the rate at which Road Usage Charge (RUC) revenues will be captured over the implementation period ending December 31, 2031. The results were used to apply ratings to each scenario in the Pace of Revenue Generation criteria area. This analysis was completed using fleet and revenue data provided by UDOT and includes assumptions that both the RUC rate and fuel tax change over the period from 2021-2031<sup>2</sup> however, the evaluation period for RUC revenue generation starts in 2024 and concludes at the end of 2031.

The basis of the financial analysis required the incorporation of these key data inputs, which are examined in detail in this appendix. These data inputs include:

- Total number of qualified vehicles paying fuel tax or flat fee
- Total number of qualified vehicles paying RUC
- Total Vehicle Miles of Travel (VMT) driven by qualified vehicles paying fuel tax or flat fee
- Total vehicle miles traveled (VMT) driven by qualified vehicles paying RUC
- Projected fuel tax rates
- Flat fees
- Projected RUC rates
- Total gallons used by qualified vehicles paying fuel tax

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<sup>1</sup> Utah State Legislature. 2020. *S.B. 150 Transportation Governance and Funding Amendments*. Accessed December 23, 2020. <https://le.utah.gov/~2020/bills/static/SB0150.html>

<sup>2</sup> The fuel tax rates forecasted over the 10-year period are based on consensus revenue forecasts from State Tax Commission Forecast. The RUC rates are based on the current 1.5 cent per mile rate and were increased over the 10-year period based on the CPI forecasts (annual increase) provided by the State Tax Commission.

### 2. Assumptions

In the development of the financial analysis, several assumptions were made to complete the analysis of the two expansion scenarios. These include:

- Forecasts of vehicle registrations were based on 2015-2019 vehicle registration data<sup>3</sup> due to classification changes (i.e., elimination of the “Flexible” fuel category, along with pandemic effects);
- Heavy truck forecasts include only those heavy trucks (defined as vehicles with a registered weight of 12,000 pounds or more) that are not registered with IFTA.
- Forecasts of the total number of heavy vehicles registered with IFTA and IRP registered were made based on the increases in registrations from 2015 to 2019 IFTA data;
- Forecasts of the total number of registrations were made based on the increases in registrations from 2015 to 2019 due to the reasons noted above;
- The projected percentage increase in VMT during the forecast period will not necessarily follow that of vehicle registrations;
- Future fuel tax rates, indexed to the consensus consumer price index (CPI) forecast, were as provided by the Utah State Tax Commission;
- Future RUC rates were calculated based on annual percentage changes to the consensus CPI forecast, as provided by the Utah State Tax Commission;
- RUC rates are the same for Light Duty Vehicles and Heavy Trucks;
- RUC revenue forecasts were based on total VMT driven within the state of Utah as estimated by the Federal Highway administration (FHWA) and statistics from the National Household Travel Survey (NHTS) conducted by the FHWA;
- It was assumed that out-of-state vehicles will continue to pay the fuel tax;
- All fuel tax paid by in-state registered vehicles enrolled in the RUC program will be credited (no refunds if the fuel tax credit is greater than the road usage charge amount);
- Year 2021 flat fees are used for all years in which hybrid/electric vehicles are not paying RUC;
- It was assumed that motorists in Utah have vehicles in miles-per-gallon (MPG) mileage bands that are in the same proportion as the national average;
- It was assumed that the average MPG of the fleet (currently 20 mpg) continues to increase each year based on national trends and the Corporate Average Fuel Economy (CAFE) standards as of 2020;
- Heavy trucks mileage never exceed 20 MPG and thus they do not enter the RUC program until the year 2030;
- It was assumed that the VMT by MPG mileage bands for motorists in Utah are in the same proportion as the national average; and
- It was assumed that the forecast number of registered vehicles in 2024 assumes that the pandemic effects will have subsided such that the vehicles registered in the year would be as if the pandemic had not occurred (i.e., full recovery).

### 3. Transition to RUC System

The fuel tax, flat fees, and RUC are major contributors to transportation revenues in Utah. Each of the two expansion scenarios transition to a fully implemented RUC system at a different pace, which also means

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<sup>3</sup> <https://tax.utah.gov/econstats/mv/registrations>

revenue is generated at different rates. The implementation of the program is delayed until 2024 to allow for adequate time to develop, install, and expand the RUC systems that will be required to administer the program.

The implementation of *Scenario A - Mass Implementation with Manual Odometer Reporting Only*, as shown in Table 1, is faster than Scenario B in that the MPG threshold for vehicles paying RUC is lower (i.e., vehicles with an EPA combined city/highway rating of 20 mpg and higher) during the initial implementation years. While the state fuel tax and flat fees continue to play a role in funding the system, by 2030 RUC will be the sole mechanism for revenue generation.

Table 1. Transition to RUC System by Revenue Generation Medium (Scenario A)

Scenario	Fuel Band (MPG)	Year								
		2024	2025	2026	2027	2028	2029	2030	2031	
A	0 - 10	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC
	10 - 15	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC
	15 - 20	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC
	20 - 25	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	25 - 30	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	30 - 35	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	35 - 40	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	40 - 50	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	> 50 (Hybrid)	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	PHEV	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	EV	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	Heavy Trucks	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC

Implementation of RUC in *Scenario B - Phased Implementation with Technology-Reliant Mileage Reporting*, as shown in Table 2. During the initial implementation years, the fuel tax and flat fees are the largest revenue generation mechanisms as RUC is implemented with vehicles rated at 30 mpg or higher, and progressively assumes a larger percentage of revenue generation until full implementation in 2030.

Table 2. Phased Implementation with Technology-Reliant Mileage Reporting by Revenue Generation Medium (Scenario B)

Scenario	Fuel Band (MPG)	Year								
		2024	2025	2026	2027	2028	2029	2030	2031	
B	0 - 10	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC
	10 - 15	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC
	15 - 20	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC
	20 - 25	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC	RUC	RUC	RUC
	25 - 30	Fuel tax	Fuel tax	RUC	RUC	RUC	RUC	RUC	RUC	RUC



Scenario	Fuel Band (MPG)	Year							
		2024	2025	2026	2027	2028	2029	2030	2031
	30 - 35	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	35 - 40	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	40 - 50	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	> 50 (Hybrid)	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	PHEV	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	EV	RUC	RUC	RUC	RUC	RUC	RUC	RUC	RUC
	Heavy Trucks	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	Fuel tax	RUC	RUC

#### 4. Total Qualified Vehicles

To forecast the total number of qualified vehicles, the analysis used the number of vehicles registered in Utah from 2015 to 2019 and subtracted heavy vehicles registered with both IRP and IFTA. For purposes of this analysis, only vehicles that were classified as gasoline-fueled, diesel-fueled, hybrids, plug-in hybrids, or electric-powered were considered. The specific types of vehicles (as defined by the Utah Division of Motor Vehicles) considered were Motorcycle – Standard, Passenger – Standard, Light Truck, and Heavy Truck (except those registered with IRP and IFTA. To forecast total future registrations, the “Forecast Sheet”<sup>4</sup> function in Microsoft Excel utilized the results of the forecast is displayed in Table 3. However, it was assumed that the number of older model (i.e., lower mpg) registered vehicles would decrease and the number of registered higher mileage vehicles, based on existing and forecast CAFE standards, would increase over the forecast period. It is also important to note that it was assumed that the forecast number of registered vehicles in 2024 assumes that the pandemic effects will have subsided such that the vehicles registered in the year would be as if the pandemic had not occurred (i.e., full recovery).

Table 3. Forecast of the Total Number Qualified Vehicles

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	805	778	751	724	697	670	643	611
10 - 15	265,574	256,483	247,392	238,301	229,210	220,119	211,028	201,941
15 - 20	568,466	549,007	529,548	510,089	490,630	471,171	451,712	432,255
20 - 25	596,755	576,328	555,901	535,474	515,047	494,620	474,193	453,763
25 - 30	857,674	935,598	1,013,522	1,091,446	1,169,370	1,247,294	1,325,218	1,403,138
30 - 35	411,274	448,640	486,006	523,372	560,738	598,104	635,470	672,837
35 - 40	28,557	31,151	33,745	36,339	38,933	41,527	44,121	46,719
40 - 50	36,069	39,346	42,623	45,900	49,177	52,454	55,731	59,008

<sup>4</sup> According to Microsoft, “the forecast predicts future values using your existing time-based data and the AAA version of the Exponential Smoothing (ETS) algorithm.” See <https://www.ablebits.com/office-addins-blog/2019/03/20/forecast-excel-linear-exponential-smoothing-forecasting-models/#:~:text=Exponential%20smoothing%20forecasting%20in%20Excel,seasonality%20patterns%20and%20confidence%20interval,s> for further information.

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Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
> 50 (Hybrid)	75,728	82,608	89,488	96,368	103,248	110,128	117,008	123,891
PHEV	6,838	7,459	8,080	8,701	9,322	9,943	10,564	11,186
EV	10,553	11,512	12,471	13,430	14,389	15,348	16,307	17,262
Heavy Trucks	46,690	48,033	49,376	50,719	52,062	53,405	54,748	56,087

Working with Milestone Solutions (<https://reachmilestone.com/>), the next step was to distribute the total number of registrations in 2019 into eight fuel-only mileage bands, hybrids, plug-in hybrids, and electric vehicles (a total of 11 classifications). It should be noted that the mileage bands are based on the Environmental Protection Agency (EPA)<sup>5</sup> combined city/highway MPG values. The mileage band distribution was based on the Utah Division of Motor Vehicles (DMV) database s which includes the specific vehicle model and the respective EPA combined fuel economy rating. The next step was to assume that the proportion of lower MPG vehicles would decrease over time from 2019 to 2031. Thus it was assumed that the proportion of vehicles in the 25 MPG-or-less bands in 2019 (68.19 percent) and the proportion of vehicles in the 30+ MPG bands in 2019 (31.81 percent) would “flip” by 2031 such that the proportion of vehicles in the 25 MPG-or-less bands in 2031 would be 31.81 percent and the proportion of vehicles in the 30+ MPG bands would be 68.19 percent. Within each larger band (25 MPG or less and 30+ MPG) the proportion within the sub-bands (i.e., the MPG bands within the two larger/grouped bands) would remain the same. For example, in 2019 the 30-35 MPG band is 9.17 percent of all bands and 28.83 percent of the 30+ MPG band. The 28.83 percent was then applied to 68.19 percent of the year 2031 30+ MPG bands, resulting in an overall proportion of 19.66 percent of all MPG bands. For the intervening years a linear change was assumed based on the forecasted registrations from 2021 to 2031, with the forecasted number of registrations in 2020 and 2021 adjusted for the actual results in 2020 and 2021, and the forecasted results from 2022 to 2031 adjusted by the ratio of the combined actual results in 2020 and 2021 to the combined forecasted results of 2020 and 2021. The MPG distribution for 2019, 2024 and 2031 is shown in Table 4.

Table 4. Distribution of Utah Qualified Vehicles in 2019, 2024, and 2031

Fuel Band (MPG)		Adjusted Overall Fleet Share		
Low	High	2019	2024	2031
0	10	0.04%	0.03%	0.02%
10	15	12.65%	9.31%	5.90%
15	20	27.08%	19.93%	12.63%
20	25	28.43%	20.92%	13.26%
25	30	19.12%	29.94%	41.00%
30	35	9.17%	14.36%	19.66%
35	40	0.64%	1.00%	1.37%

<sup>5</sup> Combined fuel economy is a weighted average of City and Highway MPG values that is calculated by weighting the City value by 55% and the Highway value by 45%” (<https://www.fueleconomy.gov/feg/label/learn-more-gasoline-label.shtml>).

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Fuel Band (MPG)		Adjusted Overall Fleet Share		
Low	High	2019	2024	2031
40	50	0.80%	1.26%	1.72%
>50		1.69%	2.64%	3.62%
PHEV		0.15%	0.24%	0.33%
EV		0.24%	0.37%	0.50%
Heavy Trucks		N/A – Calculated independently		

### 4.1 Qualified Vehicles Paying Fuel Tax or Flat Fee

Once the percentage distribution of the Utah overall fleet was generated, the projected vehicle registrations could be placed into the appropriate fuel bands and then applied to each scenario. Table 5 and Table 6 show the forecasted total number of qualified vehicles paying fuel tax and flat fees in each scenario.

Table 5. Total Number of Qualified Vehicles paying Fuel Tax or Flat Fee (Scenario A)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	805	778	751	724	697	670	0	0
10 - 15	265,574	256,483	247,392	238,301	229,210	220,119	0	0
15 - 20	568,466	549,007	529,548	510,089	490,630	471,171	0	0
20 - 25	0	0	0	0	0	0	0	0
25 - 30	0	0	0	0	0	0	0	0
30 - 35	0	0	0	0	0	0	0	0
35 - 40	0	0	0	0	0	0	0	0
40 - 50	0	0	0	0	0	0	0	0
> 50 (Hybrid)	0	0	0	0	0	0	0	0
PHEV	0	0	0	0	0	0	0	0
EV	0	0	0	0	0	0	0	0
Heavy Trucks	46,690	48,033	49,376	50,719	52,062	53,405	0	0

Table 6. Total Number of Qualified Vehicles paying Fuel Tax or Flat Fee (Scenario B)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	805	778	751	724	697	670	0	0
10 - 15	265,574	256,483	247,392	238,301	229,210	220,119	0	0
15 - 20	568,466	549,007	529,548	510,089	490,630	471,171	0	0
20 - 25	596,755	576,328	555,901	535,474	0	0	0	0
25 - 30	857,674	935,598	0	0	0	0	0	0
30 - 35	0	0	0	0	0	0	0	0
35 - 40	0	0	0	0	0	0	0	0
40 - 50	0	0	0	0	0	0	0	0
> 50 (Hybrid)	0	0	0	0	0	0	0	0
PHEV	0	0	0	0	0	0	0	0
EV	0	0	0	0	0	0	0	0
Heavy Trucks	46,690	48,033	48,033	48,033	48,033	48,033	0	0

#### 4.2 Qualified Vehicles paying RUC

As noted above, once the percentage distribution of the adjusted Utah overall fleet was generated, projected vehicle registrations could then be placed in the appropriate fuel bands and then applied to each scenario. Table 7 and Table 8 show the forecasted total number of qualified vehicles paying RUC fees in each scenario.

Table 7. Total Number of Qualified Vehicles paying RUC (Scenario A)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	0	0	0	0	0	0	643	611
10 - 15	0	0	0	0	0	0	211,028	201,941
15 - 20	0	0	0	0	0	0	451,712	432,255
20 - 25	596,755	576,328	555,901	535,474	515,047	494,620	474,193	453,763
25 - 30	857,674	935,598	1,013,522	1,091,446	1,169,370	1,247,294	1,325,218	1,403,138
30 - 35	411,274	448,640	486,006	523,372	560,738	598,104	635,470	672,837
35 - 40	28,557	31,151	33,745	36,339	38,933	41,527	44,121	46,719
40 - 50	36,069	39,346	42,623	45,900	49,177	52,454	55,731	59,008
> 50 (Hybrid)	75,728	82,608	89,488	96,368	103,248	110,128	117,008	123,891
PHEV	6,838	7,459	8,080	8,701	9,322	9,943	10,564	11,186

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
EV	10,553	11,512	12,471	13,430	14,389	15,348	16,307	17,262
Heavy Trucks	0	0	0	0	0	0	54,748	56,087

Table 8. Total Number of Qualified Vehicles paying RUC (Scenario B)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	0	0	0	0	0	0	643	611
10 - 15	0	0	0	0	0	0	211,028	201,941
15 - 20	0	0	0	0	0	0	451,712	432,255
20 - 25	0	0	0	0	515,047	494,620	474,193	453,763
25 - 30	0	0	1,013,522	1,091,446	1,169,370	1,247,294	1,325,218	1,403,138
30 - 35	411,274	448,640	486,006	523,372	560,738	598,104	635,470	672,837
35 - 40	28,557	31,151	33,745	36,339	38,933	41,527	44,121	46,719
40 - 50	36,069	39,346	42,623	45,900	49,177	52,454	55,731	59,008
> 50 (Hybrid)	75,728	82,608	89,488	96,368	103,248	110,128	117,008	123,891
PHEV	6,838	7,459	8,080	8,701	9,322	9,943	10,564	11,186
EV	10,553	11,512	12,471	13,430	14,389	15,348	16,307	17,262
Heavy Trucks	0	0	1,343	2,686	4,029	5,372	54,748	56,087

## 5. Vehicle Miles Traveled

Once the estimated number of forecasted vehicles paying the fuel tax/flat fee or RUC was calculated, then the VMT attributable to each mileage band was calculated. To determine this, Milestone Solutions provided the results of the 2017 National Household Travel Survey (NHTS) obtained from the Federal Highway Administration (FHWA)<sup>6</sup>. As the sample-size for Utah was judged to be too small, data for the entire country was used as a proxy. From the survey database, the estimated mean (average) VMT for each mileage band for all vehicles was obtained.

The total VMT, based on the national mean VMT, was calculated by multiplying the number of qualified vehicles in a specific mileage band by the estimated national mean VMT for all vehicles in that same mileage band. The VMT figures were then adjusted to be representative of Utah vehicle fleet by using the FHWA 2018 Traffic Volume Trends<sup>7</sup>, which provides the total VMT by vehicle class. By assuming that the vehicle class proportions in Utah are similar to the vehicle class proportions for the entire country, the

<sup>6</sup> <https://nhts.ornl.gov/>

<sup>7</sup> [https://www.fhwa.dot.gov/policyinformation/travel\\_monitoring/tvt.cfm](https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm)

qualified vehicles were responsible for 90 percent of the total VMT. By taking 90 percent of the total VMT for Utah, the estimated VMT for qualified vehicles in Utah was calculated.

The next step was to convert the VMT for all vehicles, based on the total national mean VMT for all qualified vehicles in Utah, to the estimated Utah VMT using an adjustment factor. The adjustment factor was calculated as the ratio of the Total Utah VMT for qualified vehicles to the Total VMT for all vehicles, based on the National Mean VMT. It should be noted that as the VMT from FHWA was from 2018, the VMT growth was estimated based on growth patterns from 2015 to 2019. Since the VMT growth rate over time is not the same as the forecasted vehicle registration growth rate during the same period, the adjustment ratio changes over time.

The analysis assumed that the vehicle fleet mix, in other words the proportion of the mileage bands to each other, would change so that the overall mileage rate (MPG) would increase over time. With respect to VMT, the analysis assumed that the total VMT would remain the same in each year however, the VMT distribution among the mileage bands would change, as shown in Table 9.

Table 9. Total Vehicles Miles Traveled (000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	9,411	9,050	8,695	8,345	7,999	7,658	7,321	6,930
10 - 15	3,104,730	2,983,596	2,864,280	2,746,640	2,630,549	2,515,892	2,402,565	2,290,520
15 - 20	6,645,731	6,386,447	6,131,054	5,879,249	5,630,759	5,385,338	5,142,765	4,902,862
20 - 25	6,976,448	6,704,264	6,436,166	6,171,834	5,910,983	5,653,353	5,398,713	5,146,817
25 - 30	10,026,758	10,883,553	11,734,456	12,579,927	13,420,379	14,256,184	15,087,678	15,915,125
30 - 35	4,808,056	5,218,905	5,626,929	6,032,347	6,435,359	6,836,143	7,234,860	7,631,669
35 - 40	333,850	362,371	390,696	418,841	446,818	474,641	502,320	529,911
40 - 50	421,670	457,701	493,485	529,040	564,384	599,533	634,500	669,300
> 50 (Hybrid)	885,309	960,956	1,036,083	1,110,731	1,184,935	1,258,729	1,332,142	1,405,237
PHEV	79,941	86,768	93,549	100,287	106,985	113,645	120,272	126,877
EV	123,371	133,916	144,388	154,793	165,137	175,423	185,656	195,795
Heavy Trucks	3,493,173	3,573,903	3,654,633	3,735,362	3,816,092	3,896,822	3,977,552	4,058,282

### 5.1 Miles Driven by Qualified Vehicles Paying Fuel Tax or Flat Fee

Once the total VMT was developed by year and by mileage band, the VMT for vehicles paying the fuel tax or flat fee was calculated based on the ratio of the estimated number of qualified vehicles paying the fuel tax or flat fee to the estimated total number of qualified vehicles by year and mileage band. Table 10 and Table 11 show the estimated VMT for vehicles paying the fuel tax or flat fee, by scenario.

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Table 10. Total Miles Driven by Qualified Vehicles Paying Fuel Tax or Flat Fee (Scenario A) (000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	9,411	9,050	8,695	8,345	7,999	7,658	0	0
10 - 15	3,104,730	2,983,596	2,864,280	2,746,640	2,630,549	2,515,892	0	0
15 - 20	6,645,731	6,386,447	6,131,054	5,879,249	5,630,759	5,385,338	0	0
20 - 25	0	0	0	0	0	0	0	0
25 - 30	0	0	0	0	0	0	0	0
30 - 35	0	0	0	0	0	0	0	0
35 - 40	0	0	0	0	0	0	0	0
40 - 50	0	0	0	0	0	0	0	0
> 50 (Hybrid)	0	0	0	0	0	0	0	0
PHEV	0	0	0	0	0	0	0	0
EV	0	0	0	0	0	0	0	0
Heavy Trucks	3,493,173	3,573,903	3,654,633	3,735,362	3,816,092	3,896,822	0	0

Table 11. Total Miles Driven by Qualified Vehicles Paying Fuel Tax or Flat Fee (Scenario B) (000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	9,411	9,050	8,695	8,345	7,999	7,658	0	0
10 - 15	3,104,730	2,983,596	2,864,280	2,746,640	2,630,549	2,515,892	0	0
15 - 20	6,645,731	6,386,447	6,131,054	5,879,249	5,630,759	5,385,338	0	0
20 - 25	6,976,448	6,704,264	6,436,166	6,171,834	0	0	0	0
25 - 30	10,026,758	10,883,553	0	0	0	0	0	0
30 - 35	0	0	0	0	0	0	0	0
35 - 40	0	0	0	0	0	0	0	0
40 - 50	0	0	0	0	0	0	0	0
> 50 (Hybrid)	0	0	0	0	0	0	0	0
PHEV	0	0	0	0	0	0	0	0
EV	0	0	0	0	0	0	0	0
Heavy trucks	3,493,173	3,573,903	3,555,229	3,537,543	3,520,771	3,504,842	0	0

### 5.2 Miles Driven by Qualified Vehicles paying RUC

Similar to the calculations used to develop the VMT for vehicles paying the fuel tax or flat fee, the VMT for vehicles paying the RUC was calculated based on the ratio of the estimated number of qualified vehicles

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paying the RUC to the estimated total number of qualified vehicles, by year and mileage band. Table 12 and Table 13 show the estimated VMT for vehicles paying the RUC, by scenario.

Table 12. Total Miles Driven by Qualified Vehicles Paying RUC (Scenario A) (000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	0	0	0	0	0	0	7,321	6,930
10 - 15	0	0	0	0	0	0	2,402,565	2,290,520
15 - 20	0	0	0	0	0	0	5,142,765	4,902,862
20 - 25	6,976,448	6,704,264	6,436,166	6,171,834	5,910,983	5,653,353	5,398,713	5,146,817
25 - 30	10,026,758	10,883,553	11,734,456	12,579,927	13,420,379	14,256,184	15,087,678	15,915,125
30 - 35	4,808,056	5,218,905	5,626,929	6,032,347	6,435,359	6,836,143	7,234,860	7,631,669
35 - 40	333,850	362,371	390,696	418,841	446,818	474,641	502,320	529,911
40 - 50	421,670	457,701	493,485	529,040	564,384	599,533	634,500	669,300
> 50 (Hybrid)	885,309	960,956	1,036,083	1,110,731	1,184,935	1,258,729	1,332,142	1,405,237
PHEV	79,941	86,768	93,549	100,287	106,985	113,645	120,272	126,877
EV	123,371	133,916	144,388	154,793	165,137	175,423	185,656	195,795
Heavy Trucks	0	0	0	0	0	0	3,977,552	4,058,282

Table 13. Miles Driven by Qualified Vehicles Paying RUC (Scenario B) (000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	0	0	0	0	0	0	7,321	6,930
10 - 15	0	0	0	0	0	0	2,402,565	2,290,520
15 - 20	0	0	0	0	0	0	5,142,765	4,902,862
20 - 25	0	0	0	0	5,910,983	5,653,353	5,398,713	5,146,817
25 - 30	0	0	11,734,456	12,579,927	13,420,379	14,256,184	15,087,678	15,915,125
30 - 35	4,808,056	5,218,905	5,626,929	6,032,347	6,435,359	6,836,143	7,234,860	7,631,669
35 - 40	333,850	362,371	390,696	418,841	446,818	474,641	502,320	529,911
40 - 50	421,670	457,701	493,485	529,040	564,384	599,533	634,500	669,300
> 50 (Hybrid)	885,309	960,956	1,036,083	1,110,731	1,184,935	1,258,729	1,332,142	1,405,237
PHEV	79,941	86,768	93,549	100,287	106,985	113,645	120,272	126,877
EV	123,371	133,916	144,388	154,793	165,137	175,423	185,656	195,795
Heavy Trucks	0	0	99,404	197,819	295,322	391,981	3,977,552	4,058,282



## 6. Fuel Tax, Flat Fee, and RUC Rates

Fuel tax, flat fees, and road usage charges are major contributors to transportation revenues in Utah . The projected rates for each of the three revenue sources are shown in the next three tables.

Table 14 shows the projected fuel tax rates as calculated and provided by UDOT.

Table 14. Projected Fuel Tax Rates (Cents/Gallon)

Year							
2024	2025	2026	2027	2028	2029	2030	2031
32.8	33.4	34.0	35.0	37.1	39.6	40.1	40.1

Table 15 shows the assumed projected flat fees, as codified by Utah legislation.

Table 15. Flat Fees

Vehicle Type	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
Hybrid	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20
PHEV	\$52	\$52	\$52	\$52	\$52	\$52	\$52	\$52
EV	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120

Table 16 shows the projected RUC rates as codified by Utah legislation and increased by the forecasted CPI, as provided by UDOT.

Table 16. Projected RUC Per Mile Rate (Cents/Mile)

Year							
2024	2025	2026	2027	2028	2029	2030	2031
1.60	1.63	1.67	1.70	1.74	1.79	1.83	1.87

The estimated number of gallons of fuel consumed by gasoline and diesel-powered vehicles was calculated by dividing the mileage driven by mileage band, by the mid-point of the mileage band (e.g., the 10-15 mpg band average is 12.5 mpg). The results for each scenario are shown in Table 17 and Table 18.

Table 17. Total Gallons Used by Qualified Vehicles paying Fuel Tax or Flat Fee (Scenario A)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	1,882,193	1,810,052	1,739,001	1,668,954	1,599,836	1,531,578	0	0
10 - 15	248,378,407	238,687,669	229,142,380	219,731,194	210,443,914	201,271,352	0	0
15 - 20	379,756,085	364,939,812	350,345,921	335,957,062	321,757,645	307,733,622	0	0
20 - 25	0	0	0	0	0	0	0	0
25 - 30	0	0	0	0	0	0	0	0
30 - 35	0	0	0	0	0	0	0	0
35 - 40	0	0	0	0	0	0	0	0
40 - 50	0	0	0	0	0	0	0	0
> 50 (Hybrid)	0	0	0	0	0	0	0	0
PHEV	0	0	0	0	0	0	0	0
EV	0	0	0	0	0	0	0	0
Heavy Trucks	698,634,546	714,780,529	730,926,512	747,072,496	763,218,479	779,364,462	0	0

Table 18. Total Gallons Used by Qualified Vehicles paying Fuel Tax or Flat Fee (Scenario B)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	1,882,193	1,810,052	1,739,001	1,668,954	1,599,836	1,531,578	0	0
10 - 15	248,378,407	238,687,669	229,142,380	219,731,194	210,443,914	201,271,352	0	0
15 - 20	379,756,085	364,939,812	350,345,921	335,957,062	321,757,645	307,733,622	0	0
20 - 25	310,064,356	297,967,305	286,051,822	274,303,744	0	0	0	0
25 - 30	364,609,388	395,765,563	0	0	0	0	0	0
30 - 35	0	0	0	0	0	0	0	0
35 - 40	0	0	0	0	0	0	0	0
40 - 50	0	0	0	0	0	0	0	0
> 50 (Hybrid)	0	0	0	0	0	0	0	0
PHEV	0	0	0	0	0	0	0	0
EV	0	0	0	0	0	0	0	0
Heavy Trucks	698,634,546	714,780,529	711,045,714	707,508,689	704,154,147	700,968,321	0	0

## 6.1 Revenue Generation

Finally, the total annual revenues paid by each mileage band were calculated as follows:

- Non-RUC program vehicles (Table 19 and Table 20)
  - Fuel-burning vehicles: Total gallons of fuel consumed by all qualified vehicles times the fuel tax in effect
  - Hybrid, PHEV, and EV: Flat fee times the number of flat fee-paying vehicles
- RUC program vehicles: Total miles driven by all RUC-paying vehicles times the RUC rate in effect (Table 21 and Table 22)

Table 19. Revenues paid by Qualified Vehicles paying Fuel Tax or Flat Fee (Scenario A) (\$000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	\$617	\$605	\$591	\$584	\$594	\$607	\$0	\$0
10 - 15	\$81,468	\$79,722	\$77,908	\$76,906	\$78,075	\$79,703	\$0	\$0
15 - 20	\$124,560	\$121,890	\$119,118	\$117,585	\$119,372	\$121,863	\$0	\$0
20 - 25	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25 - 30	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30 - 35	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
35 - 40	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
40 - 50	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
> 50 (Hybrid)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PHEV	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EV	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Heavy Trucks	\$229,152	\$238,737	\$248,515	\$261,475	\$283,154	\$308,628	\$0	\$0

Table 20. Revenues paid by Qualified Vehicles paying Fuel Tax or Flat Fee (Scenario B) (\$000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	\$617	\$605	\$591	\$584	\$594	\$607	\$0	\$0
10 - 15	\$81,468	\$79,722	\$77,908	\$76,906	\$78,075	\$79,703	\$0	\$0
15 - 20	\$124,560	\$121,890	\$119,118	\$117,585	\$119,372	\$121,863	\$0	\$0
20 - 25	\$101,701	\$99,521	\$97,258	\$96,006	\$0	\$0	\$0	\$0
25 - 30	\$119,592	\$132,186	\$0	\$0	\$0	\$0	\$0	\$0
30 - 35	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
35 - 40	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
40 - 50	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
> 50 (Hybrid)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

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Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
PHEV	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EV	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Heavy trucks	\$229,152	\$238,737	\$241,756	\$247,628	\$261,241	\$277,583	\$0	\$0

Table 21. Revenues paid by Qualified Vehicles paying RUC (Scenario A) (\$000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	\$0	\$0	\$0	\$0	\$0	\$0	\$134	\$130
10 - 15	\$0	\$0	\$0	\$0	\$0	\$0	\$43,940	\$42,833
15 - 20	\$0	\$0	\$0	\$0	\$0	\$0	\$94,056	\$91,685
20 - 25	\$111,934	\$109,499	\$107,204	\$105,103	\$103,114	\$101,024	\$98,737	\$96,247
25 - 30	\$160,876	\$177,758	\$195,456	\$214,230	\$234,112	\$254,755	\$275,937	\$297,616
30 - 35	\$77,143	\$85,239	\$93,725	\$102,728	\$112,262	\$122,160	\$132,318	\$142,714
35 - 40	\$5,356	\$5,918	\$6,508	\$7,133	\$7,795	\$8,482	\$9,187	\$9,909
40 - 50	\$6,766	\$7,475	\$8,220	\$9,009	\$9,845	\$10,714	\$11,604	\$12,516
> 50 (Hybrid)	\$14,204	\$15,695	\$17,258	\$18,915	\$20,671	\$22,493	\$24,363	\$26,278
PHEV	\$1,283	\$1,417	\$1,558	\$1,708	\$1,866	\$2,031	\$2,200	\$2,373
EV	\$1,979	\$2,187	\$2,405	\$2,636	\$2,881	\$3,135	\$3,395	\$3,661
Heavy Trucks	\$0	\$0	\$0	\$0	\$0	\$0	\$72,745	\$75,891

Table 22. Revenues paid by Qualified Vehicles paying RUC (Scenario B) (\$000s)

Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
0 - 10	\$0	\$0	\$0	\$0	\$0	\$0	\$134	\$130
10 - 15	\$0	\$0	\$0	\$0	\$0	\$0	\$43,940	\$42,833
15 - 20	\$0	\$0	\$0	\$0	\$0	\$0	\$94,056	\$91,685
20 - 25	\$0	\$0	\$0	\$0	\$103,114	\$101,024	\$98,737	\$96,247
25 - 30	\$0	\$0	\$195,456	\$214,230	\$234,112	\$254,755	\$275,937	\$297,616
30 - 35	\$77,143	\$85,239	\$93,725	\$102,728	\$112,262	\$122,160	\$132,318	\$142,714
35 - 40	\$5,356	\$5,918	\$6,508	\$7,133	\$7,795	\$8,482	\$9,187	\$9,909
40 - 50	\$6,766	\$7,475	\$8,220	\$9,009	\$9,845	\$10,714	\$11,604	\$12,516

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Fuel Band (MPG)	Year							
	2024	2025	2026	2027	2028	2029	2030	2031
> 50 (Hybrid)	\$14,204	\$15,695	\$17,258	\$18,915	\$20,671	\$22,493	\$24,363	\$26,278
PHEV	\$1,283	\$1,417	\$1,558	\$1,708	\$1,866	\$2,031	\$2,200	\$2,373
EV	\$1,979	\$2,187	\$2,405	\$2,636	\$2,881	\$3,135	\$3,395	\$3,661
Heavy Trucks	\$0	\$0	\$1,656	\$3,369	\$5,152	\$7,005	\$72,745	\$75,891

Table 23 summarizes the total revenues by year for each scenario, broken down by revenue source, along with the estimated cumulative revenues collected over the 8-year period from 2024 to 2031.

Table 23. Summary of Financial Analysis Results (\$M)

Year	Scenario A			Scenario B		
	Net RUC Revenue	Fuel Tax Revenue	Total Revenue	Net RUC Revenue	Fuel Tax Revenue	Total Revenue
2024	\$379.5	\$435.8	\$815.3	\$106.7	\$657.1	\$763.8
2025	\$405.2	\$441.0	\$846.1	\$117.9	\$672.7	\$790.6
2026	\$432.3	\$446.1	\$878.5	\$326.8	\$536.6	\$863.4
2027	\$461.5	\$456.6	\$918.0	\$359.7	\$538.7	\$898.4
2028	\$492.5	\$481.2	\$973.7	\$497.7	\$459.3	\$957.0
2029	\$524.8	\$510.8	\$1,035.6	\$531.8	\$479.8	\$1,011.6
2030	\$768.6	\$0.0	\$768.6	\$768.6	\$0.0	\$768.6
2031	\$801.9	\$0.0	\$801.9	\$801.9	\$0.0	\$801.9
Cumulative	\$7,037,800,000			\$6,855,300,000		