HiRUC
HAWAII ROAD USAGE CHARGE DEMONSTRATION

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

RUC COMPLIANCE AND ENFORCEMENT

February 2022

Milestone

CDM Smith

Contents

Figures

Preface

Hawaii pays for the repair and upkeep of its state roads and bridges from taxes and fees paid by highway users. Funding sources for this repair and upkeep include vehicle registration fees, weight taxes, rental car surcharges, and motor fuel taxes. Historically, motor fuel taxes have generated the largest share of money for state roads and bridges. At 16 cents per gallon on gasoline and diesel, motor fuel taxes are the only revenue source based on how much drivers use the road network. Hawaii's counties also tax fuel to pay for county roads, at rates that vary from 16.5 to 23 cents per gallon. Additionally, the federal government funds the Highway Trust Fund using a federal tax of 18.4 cents per gallon of gasoline and 24.4 cents per gallon of diesel.

As Hawaii residents purchase new cars that consume either less fuel or none at all, the amount of county, state, and federal funding available for roads in Hawaii from the fuel taxes declines. Moreover, the historical link between how much people drive and how much they pay to use the roads is fading. Although declining motor fuel consumption is a welcome trend for meeting energy and environmental goals, the Hawaii Department of Transportation (HDOT) has identified it as a risk to the sustainable and equitable funding of its roads and bridges.

In 2016, HDOT commissioned a feasibility study of transitioning from taxation of fuels to taxation of miles driven as the basis of revenue for road funding. The study concluded that a per-mile road usage charge (RUC) is feasible for Hawaii. RUC is a concept in which roads are funded by charging vehicle owners an amount based on how much they use those roads.

Before RUC can be enacted into law or implemented, there are many details that need further analysis and consideration.

In 2017, HDOT secured federal funding to perform more in-depth research into RUC. From 2018 to 2019, HDOT conducted this research, which included conducting a statewide telephone survey of residents, holding a series of focus groups, hosting 13 public meetings across all six islands, broadcasting an online virtual public meeting, and meeting with dozens of stakeholders (including county officials, neighborhood boards, civic groups, environmental organizations, chambers of commerce, etc.). Building on the earlier feasibility study, this "discovery" phase of RUC research revealed several community concerns regarding the potential transition from the "taxing of fuel" model to a "fee based on miles driven" model (RUC).

HDOT and its team of Hawaii Road Usage Charge Demonstration (HiRUC) researchers reviewed these concerns carefully to fully understand their meaning, origin, and degree of urgency. Broadly speaking, the concerns fall into the following three categories:

- Often, public **perceptions** are expressed as concerns. For example, some members of the public believe that a RUC system will unfairly burden rural residents. To address perception-based concerns, HDOT conducted research to determine whether there was a factual basis for these assertions and, if so, what approaches exist to address these claims through policy or system design adjustments.
- Operational **challenges** that a RUC system will face are also often identified as concerns. For example, some stakeholders and members of the public worry that a RUC system would be costly to administer, as compared to the current system of fuel taxation. To address these operational and technical challenges, HDOT conducted research to better understand and improve the RUC system design.

- Sometimes, a policy **choice** is expressed as a concern. Lawmakers and system designers will have to make many choices when creating a RUC program. For example, they must choose a rate, which can be a simple flat rate per mile for all cars or a rate that can vary based on the type of vehicle. Some members of the public would prefer a RUC system that incorporates vehicle weight, or vehicle emissions, as a factor in the rate. HDOT conducted research into the various policy choices available, as well as the relative impacts, strengths, and weaknesses of each approach.

Given the varying concerns and topics they span, HDOT decided to structure further research into these topic areas. For each topic area, a "policy paper" was initiated to summarize the nature of the concern (or concerns) within the topic area, the results of research, the analysis into the concerns, and the implications of the research on RUC policy or system design.

The purpose of these policy papers is not to contain recommendations or clear answers on what precisely HDOT or the legislature should do. The purpose of each policy paper is to provide adequate background and analysis on topics of importance to the public, lawmakers, and HDOT.

Executive Summary

Road usage charge (RUC) is a potential replacement for the declining fuel tax as a source of revenue for the repair and maintenance of the bridges and roads in Hawaii. The fuel tax requires little active enforcement because it is collected from fewer than 30 fuel distributors. A RUC would be collected from each individual vehicle owner in the state. This could be done with the existing vehicle inspection and vehicle registration system.

During the public outreach and engagement phase of the Hawaii Road Usage Charge Demonstration (HiRUC), people expressed concerns about whether RUC introduced more opportunities for evasion and whether it could be effectively enforced. Many believe that with the introduction of RUC, odometer rollback would increase. Others noted that RUC would be evaded by drivers who currently do not renew their vehicle registration.

This paper addresses the policies and the design of the RUC program that can affect the compliance rate and required enforcement. An assessment of ways to evade RUC and studies of vehicle registration compliance rates in other states suggest that RUC should not suffer from substantial evasion. What is more likely than intentional evasion is noncompliance through missed mileage reporting, missed payments, and inability to pay. Attempting to force proper payment of RUC through enforcement actions before addressing unintentional noncompliance could result in lowering public acceptance for the program and adversely impacting those in underrepresented communities.

Two important strategies can be adopted early to improve the likelihood of success, well before the legislature implements a RUC system. First, for those who want to pay their RUCs but are having difficulty, a user-centered approach to designing the RUC system — one that places a premium on ease-of-use — can help these drivers meet and maintain RUC payment compliance. The RUC program must be easy to understand with good payment options available. Second, sound policy design choices can minimize any financial incentives drivers might have for evading their RUC payments in the first place. If these two strategies are successfully implemented during the policy and system design phase, the number of vehicle owners who might face enforcement actions in a RUC system will be greatly reduced.

Additionally, the fuel tax is likely to remain in place for several years at the start of a RUC program. While both programs are in place, RUC payers can receive credits for fuel taxes paid against RUC charges, so they do not need to pay both a RUC and fuel tax. During this period, the state will have several years to develop, implement, and operate effective RUC enforcement policies. As long as the fuel tax remains in place, there is little incentive or opportunity for evasion to occur. During this period, the state can implement and refine enforcement policies and procedures, so that when fuel taxes are eventually removed, an effective enforcement regime is in place, and there are few losses due to evasion.

For this reason, RUC pilots in the United States are currently emphasizing the need of a well-balanced compliance and enforcement program that focuses on the first strategy—supporting the process of converting noncompliant individuals into compliance. The second strategy, which is to minimize any financial incentives for evading RUC, which will come into play more as RUC matures and grows in the United States, requires an assessment of the ways an individual can be noncompliant or evade RUC so that the policy and program can be designed to prevent or identify and penalize such activity.

Definitions & Abbreviations

TERM/ABBREVIATION	DEFINITION/DESCRIPTION	REMARKS
CAM	Commercial Account Manager	
DMV	Department of Motor Vehicle	
DoTAX	Department of Taxation	
HDOT	Hawaii Department of Transportation	
HiRUC	Hawaii Road Usage Charge Demonstration	
MPG	miles per gallon	
PID	plug-in device	
PMVI	periodic motor vehicle Inspection	
RUC	road usage charge	
VIN	Vehicle Identification Number	

1. Introduction

Today, one of the primary sources of roadway funding in Hawaii is the fuel tax. Fuel taxes do not require significant enforcement policy and are not operationally complex. That is because it is collected at the refinery fuel rack, and fuel sold at gas stations is already taxed. As a result, the fuel tax is not obvious to most taxpayers. Most taxpayers are either unaware how much they are paying or unaware they are paying it at all, because no indication of the fuel tax is given on fuel purchase receipts. Because of this structure, the fuel tax is very hard to avoid or evade, intentionally or unintentionally. That is true everywhere, but it is especially true in Hawaii in which no unobserved interstate or even interisland travel is likely. Thus, minimal enforcement and effort is sufficient for the fuel tax to function well in Hawaii.

By contrast, road usage charge (RUC) payments require vehicle owners to take some action to pay it, at least once a year. Unlike the fuel tax, it would be possible to operate a vehicle without paying RUC, either intentionally or unintentionally. During the public outreach and engagement phase of the Hawaii Road Usage Charge Demonstration (HiRUC), people expressed concerns about whether RUC introduced more opportunities for evasion and whether it could be enforced. Many believe that with the introduction of RUC, odometer rollback would increase. Others noted that RUC would be evaded by drivers who currently do not renew their vehicle registration.

If a RUC is implemented, transportation revenue becomes even more dependent on owners keeping their vehicle registrations active and providing accurate details. Additional enforcement such as police enforcement of registration and, consequently, RUC violations would increase the cost of administration.

The underlying concerns about evasion and enforcement are about fairness and the ability of RUC to bring in the expected transportation revenue. Taxpayers should be confident that most drivers are compliant and tax revenues are being collected, there is monitoring and enforcement in place, and there are consequences for those who are not compliant.

The most efficient way of collecting a tax is when a high level of compliance can be achieved voluntarily, where taxpayers remit their taxes on time without significant enforcement or monitoring required by the government. Hawaii residents pay income taxes and their vehicle registration fees largely under the principle of voluntary compliance. The government does not, because it does not have the resources to, audit 100 percent of income taxes or vehicles. Checks and balances are in place, such as income audits and police enforcement of vehicle registration. However, enforcement is generally conducted on a small fraction of the population.[1]

This paper explores strategies for encouraging compliance and mitigating evasion through policies and the design and enforcement of the RUC program. The research looks at noncompliance factors or causes of noncompliance and how to address them. It then presents methods for RUC enforcement by mileage reporting method. The research offers approaches to consider for RUC compliance and enforcement for Hawaii that balances voluntary compliance with enforcement that ensures that there are equitable consequences for intentional evasion.

[1] Manhire, J.T. “What Does Voluntary Tax Compliance Mean?: A Government Perspective.” U. Pa. L. Rev. Online 164 (2015): 14. Accessed November 29, 2020, https://scholarship.law.upenn.edu/penn_law_review_online/vol164/iss1/2.

- Note: Throughout this document, the individuals paying RUC are described as “vehicle owners.” In the case of vehicles being leased, the individuals paying RUC will almost certainly be the vehicle lessees, because they are the ones in whose name the vehicle is registered. As used in this document, the term “vehicle owners” is inclusive of lessees.

2. Making it Easy for Drivers to Meet all Road Usage Charge System Requirements

When first introducing a RUC, the main cause of nonpayment of RUC will likely result from drivers' confusion about what is required to report mileage and make their payment. Because RUC is new to Hawaii (and the United States more generally), many people are unfamiliar with the requirements. If new procedures are required and the drivers make an error in any of the required steps, they may inadvertently fall out of compliance without any intention of evading their RUC obligation. Or, if the steps to properly report their mileage or pay are too confusing, time-consuming, or simply irritating — drivers may become frustrated and defer further action, also leading to noncompliance. This may also include fear that making a mistake may alert authorities to the mistake, and result in a penalty, when it is simpler to not draw attention to oneself.

If serious attention is given to creating the best possible user experience during the initial RUC system design phase, many of the potential obstacles to achieve compliance can be avoided. Simply put, the easier it is to follow the requirements of the RUC system, the higher the payment compliance rate will be. This is why user-centered design is a critical strategy for improving RUC compliance, therefore reducing the need for after-the-fact remedies such as payment assistance programs or, perhaps, enforcement actions.

The most simplistic design strategies would minimize the need for vehicle owners to do anything new. For this reason, leveraging vehicle inspection as the predominant mileage reporting method and keeping the current gas tax in place as a prepayment for RUC not only helps drivers better manage the cost impacts of RUC, but it also minimizes the need for users to learn about new methods for mileage reporting and paying, except perhaps once per year, at the time of vehicle registration renewal.

2.1. Minimizing Financial Incentives for Evading Road Usage Charge

Either motivated by greed or by necessity, some taxpayers will seek to gain a financial advantage by "cheating the system," that is, intentionally evading their tax payments. For simplicity, this group will be referred to as tax evaders.

For drivers motivated to gain a financial advantage by evading RUC, the first strategy is to reduce their ability to profit from tax evasion in the first place. If the potential upside to be gained from fraud or evasion remains small, the tax evader may conclude that any financial gain is not worth the risk of being caught and subjected to civil and/or criminal penalties. To be clear, this strategy is about reducing the tax evaders' potential profit from fraud or evasion; this is not about making the penalties for nonpayment harsh.[2]

In Hawaii, an average driver pays about $160[3] per year in state and county fuel taxes. Assuming RUC is crafted as a revenue-neutral replacement for the gas tax, the average financial advantage to be gained is, therefore, $160 per year. Compared to federal income taxes (where taxpayers with household incomes of $75,000 per year owe about $9,500), or even compared to typical electricity bills o

[2] Penalties are an important component of an enforcement regime and are discussed later in this paper. However, this first strategy is about reducing the financial incentive to evade taxes — making the carrot smaller, not making the stick bigger.
[3] Assumes a vehicle with a miles per gallon (MPG) rating of 20.3, driving 10,000 miles per year on Oahu.

f $205 per month for the average household in Hawaii,[4] the RUC amount owed would be modest (around $13 per month for the average vehicle). The lower overall cost of RUC relative to other household taxes or utilities owed helps lower the financial incentive to evade payment, as long as the effort involved in evasion added to the risk of being caught (and the resulting penalty) is not worth the potential savings.

For tax evaders who act out of perceived necessity (e.g., they do not have the money owed and therefore feel compelled to evade payment), if they are financially disadvantaged, policies can be implemented to lower RUCs for these people. Under federal law, public utilities (water, electricity, telephone, internet, etc.) can offer specialized rate discounts for qualified low-income households.[5] For example, Hawaiian Telecom offers "lifeline" rates for high-speed internet service. Hawaiian Electric[6] offers similar low-income lifeline rate programs for electricity bills. This is currently not available for taxes on fuel.

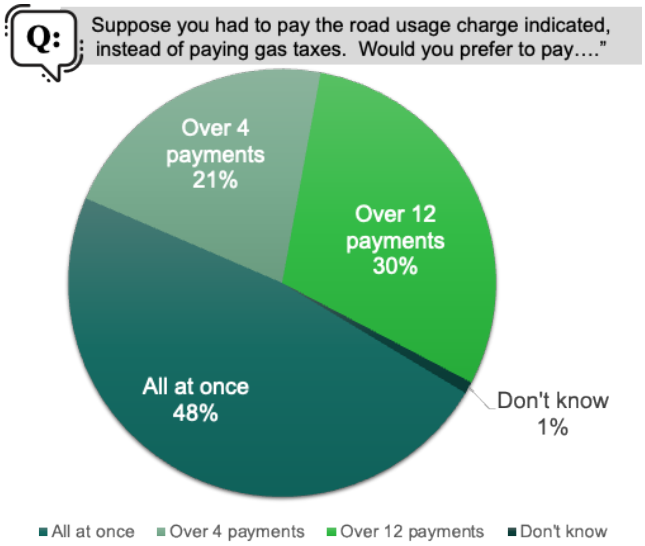
For those who may have fallen behind in their RUC payments and need only temporary accommodations, both the public utility industry and transportation industry (especially toll authorities) have programs designed to help folks get caught up with their payments. Again, Hawaiian Electric has several different payment options to choose from, ranging from level-payment plans that allow customers to make predictable payments on their electricity bill over the course of a year, to one-time assistance grants used to help the customer pay off their outstanding bill.

There is a third category of people who may evade payment, including committing fraud. These people are not necessarily motivated by greed or need, but rather out of their own unique philosophies. A very small number of people (mischief makers, civic renegades, or thrill seekers) may attempt to evade RUC either to make a statement about their willingness to comply with the state law or because they enjoy trying to "defeat" an institutional system. Although few in number, these people could have an outsized ability to undermine public confidence in RUC (or in government itself), as these mischief-makers often seek to publicize their evasion. Enforcement measures – including vigorous pursuit of fraudsters and criminal penalties – may be the only effective means of deterring such behavior. Such evaders may not be readily identified as to their purpose, but repeated evasion categorizes such users.

While RUC will likely be a modest amount owed each year compared to other taxes or bills for basic public services, RUC nonetheless represents a new large, lump sum payment that drivers must come up with when they register their vehicle. Roughly 50 percent of respondents to the Driving Report indicated a preference to pay more frequently than annually, i.e., monthly or quarterly (see Figure 1). One way to mitigate the cost impact is to allow drivers to pay RUC in smaller increments periodically, spread over time. (This is an option for vehicle registration fees in some other jurisdictions.) Again, this option should be considered early in the policy and system design phase — before RUC is authorized — rather than developed as an after-the-fact remedy only available to people once they fall behind with their payment.

[4] Roberts, M. "Why are Hawai'i's Electricity Prices so High?," Accessed January 2022, https://uhero.hawaii.edu/why-are-hawaiis-electricity-prices-so-high/.
[5] Hawaii Department of Commerce and Consumer Affairs, "Low Cost Home Internet Service for Residents," Accessed January 2022, https://cca.hawaii.gov/broadband/lowcostinternet/.
[6] Hawaiian Electric, "Payment Assistance," February 2022, https://www.hawaiianelectric.com/billing-and-payment/payment-assistance/low-income-programs.

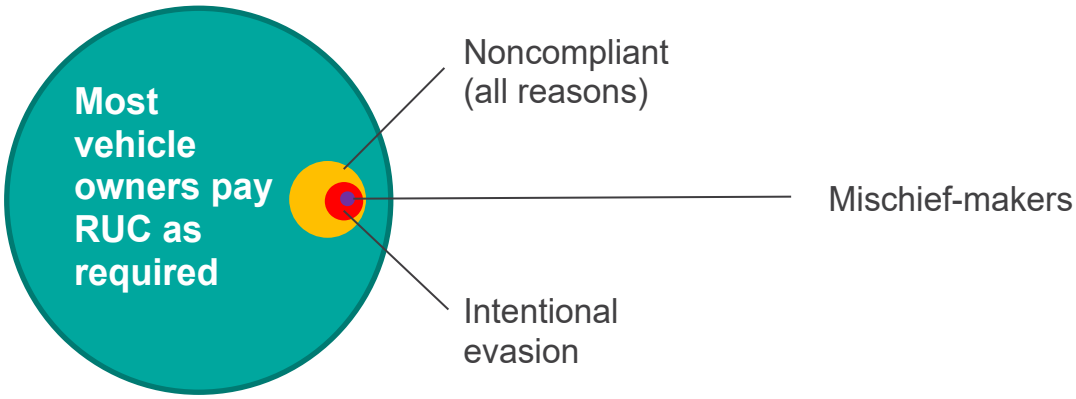
Figure 1. Road Usage Charge Payment Frequency Preferences



Hawaii's RUC system could also enable periodic mileage reporting and RUC payment by allowing drivers to choose a plug-in device (PID) for their vehicle that automatically calculates and reports mileage on a monthly basis. This method was recently tested in the HiRUC pilot project. More research is needed on whether this automated mileage reporting and periodic payment would be valued by Hawaii drivers.

Recognizing that intentional evasion is uncommon but exists (see Figure 2), there is another alternative to allow drivers to pay smaller amounts more frequently, thereby lowering the amount owed (if any) when renewing their vehicle registration. Keep the current gas tax in place, but apply the amounts paid at the fuel pump toward drivers' RUC bills. This strategy is discussed further below.

Figure 2. Intentional Evasion is Uncommon, But Exists



2.2. A Simple Solution: Treating Gas Tax Payments as Prepayments of Road Usage Charge

While the gas tax itself may be an unsustainable funding mechanism for the long-term funding of public roadways, the method of collecting a roadway tax from drivers — paying at the pump in small amounts each time they refuel — has several benefits, especially for a RUC system. First, by collecting at least some of the roadway taxes up front, the total amount of RUC owed by a driver at the end of the vehicle's registration period would be significantly less or even fully covered. If drivers have already prepaid 75 percent of their RUC throughout the year, the cost impact of paying the remaining balance owed is significantly reduced. Second, for those few people who try to evade paying their RUC bill, the state and county will have already collected most of the money anyway. The financial advantage to be gained from evading or defrauding the RUC system will be relatively small and not worth the risk of being caught. Third, keeping the gas tax in place as a prepayment mechanism for RUC should significantly reduce the need for more expensive compliance programs or harsher (and expensive) enforcement measures the state might have to implement. And fourth, pre-collection of RUC (through the gas tax) provides better cash flow for state and county treasuries that otherwise need to wait until the driver pays their RUC bill in full. In this way, the gas-tax-as-prepayment-for-RUC acts somewhat like federal income tax withholdings — the government collects at least some of the tax as income is accrued, with a true up at the end of the tax year.

Over time, collecting the gas tax as prepayment for RUC will become less helpful as more and more vehicles become electric (or high miles per gallon [MPG]). For vehicles that fuel up infrequently (or with electric vehicles, not at all), using the gas tax as a prepayment mechanism will not result in a lower RUC bill at the end of the vehicle registration year, since these vehicles will not have paid much in gas tax. A longer-term alternative would be to offer prepaid RUC permits, where RUC must be purchased in advance in as little as 1,000-mile increments and compliance is checked at vehicle inspection by verifying the odometer has not exceeded the permit amount. During a transition period, however, where at least 95 percent of vehicles in Hawaii are still powered by gasoline, repurposing the gas tax as prepayment for RUC can be an effective strategy for lower cost impacts, reducing any incentive to evade RUC, and simplifying the process of paying RUC bills. This could provide Hawaii ample time to conduct outreach and education, and for new vehicle owners to learn about RUC. It also allows Hawaii sufficient time to monitor RUC compliance as the program grows and to adjust the program design and implement any new enforcement needs. If RUC is easier to use and pay, more people will remain in compliance, further lessening the need to resort to enforcement actions.

As noted, there will always be a select few individuals who will try to evade or defraud their taxes, and RUC will be no different. Section 9 of this paper describes ways to deal with this small minority of mischief-makers.

3. Elements of a Compliance and Enforcement Program

- RUC is a charge that is collected per vehicle; therefore, it must be enforced by vehicle. State and local governments have well-established polices and processes in place for enforcement of the vehicle inspection and vehicle registration. Residents and law enforcement are aware and familiar with the timing and requirement for vehicle inspections and the consequences for noncompliance.[7] Driving Report surveys confirmed resident's comfort level with the vehicle inspection as a simple process for mileage reporting. Leveraging existing systems and processes for RUC invoicing and payment minimizes administrative costs while offering interfaces they are already familiar with, including vehicle registration reminders, customer service channels, and payment timing and methods.
- Over the past few years, increasing attention has been on equitable enforcement and the disproportionate impact of enforcement on different communities. A transition from gas taxes to RUC shifts incremental payments for usage to larger and more frequent payments, which could prove more difficult for low-income individuals. This shift could make keeping vehicle registrations up-to-date more difficult. Even with no changes to enforcement policies and practices, this could increase the number of fines and penalties issued, vehicle registration suspensions, and vehicle towing incidences. These penalties can snowball into increased debt, loss of mobility essential for employment, and loss of residences. A study in California found that once towed, the cost of retrieving a car are so high that up to half of vehicles towed are never recovered.[8]
- *Compliance* for a RUC refers to timely reporting of mileage and making RUC payments by the deadline. *Enforcement* is the activity of detecting actions that are noncompliant with a given policy or program and applying penalties to the appropriate parties to incite them to become compliant. Key components on which an equitable compliance and enforcement program can be built include:[9]
  - Simple-to-understand RUC program with a range of payers
  - Readily available program information
  - Proactive program outreach and education
  - Affordable payment options (installments and payment locations for underbanked/unbanked)
  - Processes for noncompliant individuals to come into compliance (e.g., one-time waivers or fee reductions)
  - Program monitoring of noncompliance rates, sources of noncompliance, and impacts on disadvantaged and underrepresented communities
  - Empowered customer service channels for responding to customer inquiries, with formal adjudication for individuals to contest penalties
  - Minimal use of punitive measures until solutions for unintentional noncompliance have been fully explored and implemented (e.g., notifications of tax liability to noncompliant users)
  - Enforcement activities focused on egregious and repeat violators

[7] In Hawaii, a citation for an expired or missing safety check sticker or delinquent vehicle tax is a civil traffic infraction.
[8] J. Alvarado, et al. 2019. "Towed Into Debt: How Towing Practices in California Punish Poor People." Fines & Fees Justice Center. https://finesandfeesjusticecenter.org/articles/towing-in-california-punish-the-poor/.
[9] Milestone Solutions. 2021. "RUC Evasion, Prevention, and Enforcement." RUC West.

- Enforcement activities, as applied to RUC, are explained in detail in Sections 6 through 9 of this report. RUC, as demonstrated in the HiRUC pilot and other pilots and programs worldwide, features multiple mileage reporting methods. The exact enforcement procedures vary by mileage reporting method. The following three mileage reporting methods, which are featured in HiRUC, and their payment procedures are explained in the next section:
  - Safety inspection-based reporting
  - PID
  - OdoFoto

Section 9 provides a detailed explanation of the enforcement procedures for each of these mileage reporting methods.

4. Road Usage Charge Reporting Options, Possible Payment Procedures, and Coexistence with Fuel Taxes

This section explains the RUC reporting options that were demonstrated in the HiRUC pilot—which are candidate reporting options for a potential future RUC program in Hawaii—as well as the payment procedures that could be applied to them in a potential future operational RUC program in Hawaii (no real payment was required in the HiRUC pilot). Payment procedures impact the detection of noncompliance and can contribute to preventing noncompliance, so this section also explains possible payment details of each option.

RUC reporting options demonstrated in the HiRUC program include the following:

- Safety inspection–based reporting
- Two technology-based reporting approaches
  - PIDs plug into vehicle data ports.
  - OdoFoto, a smartphone app, allows vehicle owners to capture and submit pictures of vehicle odometers.

These methods and their possible payment procedures are explained subsequently.

The section concludes with a detailed explanation of why the fuel tax is likely to remain in place for a period at the start of a RUC program, why the motivation to evade remains low while the fuel tax is in place, and how the period of the RUC program that occurs while the fuel tax in place will allow the state to develop an effective RUC enforcement regime.

4.1. Safety Inspection–based Reporting

Safety inspection–based reporting uses the odometer reading recorded at safety inspections, which are required annually for most passenger vehicles in Hawaii. In this reporting method, vehicle owners do not need to take any actions beyond what they are accustomed to doing, aside from paying the RUC.

The design of safety inspection–based RUC reporting for Hawaii includes making two related policy choices: the type of payment (prepayment or post-payment) and the timing of the payment (at the time of registration or at the time of the safety inspection or separately). These policy choices are explained below.

4.1.1. Type of Payment

There are two primary payment types for any service: prepayment and post-payment. Prepayment means the user pays before using the service (i.e., driving on the road), while post-payment means the user pays after the using the service.

The current vehicle-related payments in Hawaii—vehicle registration, weight tax, and fuel tax—are both prepayments. Vehicle owners pay for their vehicle registration and weigh tax in advance which gives them the legal right to operate the vehicle on public highway for one year. Fuel taxes for driving on a certain amount of fuel are paid for at the time the fuel is purchased, before the miles are driven. However, it is also common in household utilities, such as electricity, to use post-payment. In other areas, such as wireless communications, both pre-pay and post-pay models exist, and consumers can choose which one they prefer. Both prepayment and post-payment models are possible for RUC. It also

may be possible to offer both prepayment and post-payment options, depending on the reporting method or user characteristics.

The advantages of prepayment are as follows:

- It functions like the fuel tax does today, so the funds go to state coffers before the service is provided, giving the state cash flow advantages.
- There are fewer opportunities for noncompliance, because drivers cannot avoid paying at least some of the amount owed.
- It avoids the situation in which drivers find themselves unable to pay for what they have already consumed.

Disadvantages of prepayment are as follows:

- The prepayment process may be more complicated to understand for the consumer than post-payment.
- Prepayment may require the consumer to pay more up-front than is the case today with the fuel tax.
- Prepayment in advance of any rate increases may result in consumers paying more up front to avoid paying a higher rate (depending on how prepayment is structured, as miles or simply dollar value).
- Change of vehicle ownership or removal of a vehicle from the registry may require complex arrangements to transfer the value of prepayment.
- The advantages and disadvantages of post-payment are exactly the opposite of those of prepayment.
- Post-payment operates in a simple manner. The vehicle owner simply receives an invoice after the miles are driven and reported at a safety inspection. The vehicle owner is then obliged to pay that invoice, either in whole or through a payment installment plan.
- The operation of prepayment is somewhat more complicated. At the start of the RUC payment year, the vehicle owner prepays some amount. That amount could be any combination of the following:
  - A standard number of miles (e.g., 10,000 miles, or the average number of miles driven by private vehicles in Hawaii in the most recent year for which data are available, or the average number of miles driven by vehicles in the county where the vehicle is registered for the most recent year for which data are available). This standard number of miles could be required only for the first year a vehicle is owned in Hawaii, after which one of the alternatives below could be used, or a standard number of miles could be required every year.
  - The number of miles driven using the given vehicle in the previous year, if it was owned by the same person.
  - A three-year running average of the number of miles driven using the vehicle.
  - A fraction of the average number of miles of all vehicles owned by the given vehicle owner (e.g., if the owner has four registered vehicles, the amount for each vehicle could be one-fourth of the total of the miles of all four vehicles at the previous registration cycle).
  - Any number of miles chosen by the vehicle owner, in at least a minimum standard increment (e.g., 1,000 miles and any amount beyond that).
  - A dollar value that is a credit toward future miles driven.

- When the vehicle owner has the vehicle's odometer read at the next safety inspection (typically the following year), the actual number of miles driven is recorded and a "true-up" process is performed. In the true-up process, if the vehicle was driven less than the number of miles that the vehicle owner prepaid, the extra miles paid for are credited against the RUC owed for the following year. If the vehicle was driven more than the number of miles that the vehicle owner prepaid, the extra miles paid are charged in addition to the RUC owed for the following year. This process continues until the vehicle is junked, at which time there is a final true-up performed for the vehicle.

4.1.2. Frequency of Payment

- While gas taxes are in place, the amount owed for RUC for an average fuel efficiency vehicle will be $0. However, for owners of highly fuel-efficient vehicles or electric vehicles who drive a lot, this amount could more than double the amount owed at the time of vehicle registration. In Honolulu and Kauai Counties, the combined county and state rate is 1.6 cents per mile. In Maui and Hawaii Counties, the combined per mile rate is 1.9 cents per mile. If the average vehicle in Hawaii is driven 10,000 miles per year, that means the amount for RUC owed for a year would be $160 and $190.
- For these vehicle owners, payment plans may be desirable—either for RUC alone or for the combined RUC and registration fees. Payment plans could be offered allowing drivers to pay biannually, quarterly, or at some other frequency. Roughly half of the respondents to the Driving Report survey indicated a preference to pay quarterly or monthly as opposed to annually.
- Each payment will incur a payment charge such as credit card processing fees, cash handling fees, and other associated costs; therefore, the more frequent the payment plan, the more administrative costs will be incurred. In the event a vehicle owner choose a payment plan, surcharges to cover only the extra transaction costs could be added to the bill, or the government could absorb some or all of this extra cost.

4.1.3. Timing of Payment

The simplest way to implement a RUC payment would be to require RUC payment at the time of vehicle registration or registration renewal. It would be relatively straightforward to add the additional charge on to the registration bill. In the case of prepayment, payment would be for the year ahead. In the case of post-payment, nothing would be charged at the time of initial registration. Then, for future renewals, the RUC amount for the previous year would be added at the time of renewal.

The disadvantage of RUC payment at the time of registration/registration renewal is that the odometer reading available may not be especially recent. That is because, currently in Hawaii, the timing of a vehicle's safety inspection is decoupled from the timing of registration renewal. As long as the vehicle has a valid safety inspection, it can be renewed, and safety inspections are valid for 12 months. Thus, the odometer reading available at the time of registration renewal could be nearly 12 months old. In the case of post-payment, that means that vehicle owners could owe RUC on miles driven nearly two years ago. That is quite a long lag, and it means the state could be owed a significant amount of funds, perhaps as much as $400 for a vehicle.

An option is that the timing of safety inspections could be required to more closely coincide with registration renewals, e.g., a registration renewal must be completed within 1 to 2 months of a safety inspection, or a new safety inspection is required. This approach is followed in some other states that require safety inspections.

Alternatively, RUC charges could be owed as soon as a safety inspection is processed, regardless of the time of registration. This would require the state to implement a new payment instance, separate from vehicle registration. This payment could be due at the time of the safety inspection or could use

the same channels as those used for registration (including online, by mail, in person at the Department of Motor Vehicles (DMV), or at a DMV kiosk). But the payment would be owed at a separate time, which could be required to occur shortly after vehicle inspection. However, this method adds an additional required touchpoint, which can be inconvenient to the customer and an additional cost to administration.

4.2. Technology-based Reporting

Technology-based reporting methods use some technology method to report miles traveled, which can be done at a greater frequency than once per year. The HiRUC pilot included the following two technology-based reporting methods:

- **Plug-in devices** are devices that plug into a vehicle's data port (sometimes referred to as the OBD-II port) to read data from the vehicle and report it. Such devices are commonly used in the usage-based insurance industry. In the HiRUC pilot, PIDs are available both with and without location information. Devices that use location information have a technology like GPS to determine which island the vehicle is on (or if it is outside of Hawaii altogether), as well as whether the vehicle is off-road (or in some cases, on a private road) to charge the most appropriate rate. Those that do not use location information do not contain any location determination technology to provide the user automatic mileage reporting while minimizing the user's exposure of potentially sensitive or private data. All miles recorded by a device without location are charged for all miles at the rate in the county the vehicle is registered. In the pilot, PID users will receive a Road Usage Report each month that states their simulated RUC owed (no payments were required or accepted in the pilot).
- **OdoFoto** is a smartphone app that allow users to capture and report pictures of their odometer. All miles traveled by vehicles reporting using OdoFoto are charged at the rate for the county in which the vehicle is registered. In the pilot, OdoFoto users may report their odometer at any time, but are asked to do so once per quarter, and they will receive a Road Usage Report each quarter that states their simulated RUC owed.

In the HiRUC pilot, data from these technologies were sent to a private entity called a Service Provider or Commercial Account Manager (CAM) to process, because technology management is a task generally better suited to private industry than to state government. The CAM processes data and runs a portal available on the web and via mobile device that allows users to view details of their driving and RUC owed. Both of these technologies support prepayment and post-payment.

- With the technology options, prepayment could be offered by electronic wallet, like it is for toll collection and transit fare payment systems. Drivers could be required to keep their balance above a certain amount (for example, $25 for a PID or $50 for the quarterly invoiced OdoFoto). This amount would remain in the vehicle owner's wallet until their Road Usage Report is processed, at which time the amount on that report would be deducted from their wallet. When their wallet falls below a minimum amount, a top-up amount is deducted from their payment method on file and added to their wallet. This method is used in Oregon and Utah.
- Post-payment means that payment would be requested when the Road Usage Report is received. Post-payment could require that a valid credit card be kept on file for auto-payments.

4.3. Low Motivation to Evade While Fuel Taxes Remain in Place

For several reasons, the fuel tax will likely need to remain in place after a RUC program begins, possibly for a period of several years. This does not imply double taxation (fuel tax and RUC owed by the same vehicle). Rather, fuel taxes paid can count as credits against RUC owed. Fuel consumed can be recorded automatically by PIDs or can be computed by multiplying miles traveled by the EPA's

combined city-highway fuel economy, so these credits can be assigned to each vehicle with no effort to the driver. Reasons that fuel taxes will need to remain in place for some time after RUC starts are as follows:

- Changing all vehicles from fuel taxes to RUC at the same time is both technically and operationally risky. Vehicle owners need to be educated; account managers need to ramp up their technical and customer service operations. Even with rigorous testing, some errors may occur in a production system, and it is desirable to fix such errors when a program is small. Errors can take weeks or sometimes months to correct, and the press and public can be relentlessly impatient when they do occur. For these reasons, the transition should take place over a period of years.
- In Hawaii, it may make sense for vehicles to switch from gas tax to RUC at the time of a safety inspection, since a baseline odometer reading can be obtained at that time. If all vehicles subject to safety inspections were inspected on time, it would take 24 months to ensure all vehicles received their baseline inspection. However, not all vehicles are inspected on time. Thus, it may be wise to wait longer, likely 3 years or more, to ensure all vehicles have been inspected, to stop charging the gas tax.
- To pay a RUC, any vehicles not currently subject to annual safety inspections will either need to be added to safety inspection, self-report their mileage, or sign up with an account manager and obtain some form of technology, and that process takes time.
- The state requires vehicles arriving in Hawaii to either register in Hawaii or obtain an out-of-state permit until their vehicle registration expires. However, the miles driven between when the vehicle enters the state and when the first vehicle inspection is conducted will need to be reported. The state will also want a method for capturing RUC owed by vehicles departing Hawaii. These processes may not be ready when a RUC program starts.
- Fuel tax provides revenue collection backstop—a means of collecting funds—for all vehicles while a RUC program matures. It may be that some groups of vehicles prove more challenging from which to collect RUC. Leaving the fuel tax in place for a period ensures that the state earns revenue to maintain roadways at that time.

As long as the fuel tax remains in place, the motivation to intentionally evade RUC is low. That is because all except 100-percent electric vehicle are still paying the fuel tax, so if a vehicle owner evades the RUC, that vehicle owner gets a proportionately lower fuel tax refund: if a vehicle attempts to evade RUC, for example, by rolling back the odometer, fewer miles are reported to the state, and less RUC is charged to the vehicle owner; however, less fuel tax credit is awarded to the vehicle owner. For vehicles that would potentially pay less RUC than fuel tax would actually pay more if their owners attempted to evade the RUC in this way. Vehicles that would pay more RUC than fuel tax might end up paying slightly less—perhaps as much as $10 or $20, but so little that the risk of evasion would not be worthwhile for such savings.

During this transition period, the state could implement and refine an enforcement program as described in this document, so that at some point in the future, when the fuel tax is removed, the enforcement program is mature. The program is likely to experience high levels of unintentional noncompliance at the beginning as each subset of vehicles are transitioned from gas tax to RUC. Those who are subject to RUC for the first time may not be aware of the program or that there is payment owed. Others may find technology or saving for payments to be a challenge. The state can choose to be more lenient at the beginning of a program, issuing repeated warnings instead of penalties (but stating that such leniency may not continue after the fuel tax is removed) paired with a public outreach campaign.

5. Hawaii Government Agency Responsibility for Road Usage Charge Collection and Enforcement

This section provides an overview of the potential agency responsibility for RUC collection and enforcement, and what legal provisions would need to be made for RUC enforcement authority in a potential future law enabling a RUC program. The section begins by exploring the question of whether RUC is a fee or a tax, a legal distinction that directly impacts where the final authority for RUC collection and enforcement lies. The section then discusses the implications of this question and other considerations for the final agency responsibility for RUC collection and enforcement.

5.1. Is Road Usage Charge a Fee or a Tax?

By legal precedent, a tax is a compulsory contribution made by a taxpayer for general services. A fee, by contrast, is a voluntary payment required to use a specific service.

Hawaii law gives authority for all taxes to the Department of Taxation (DoTAX). Thus, if RUC is a tax, the ultimate authority and responsibility for collecting it lies with DoTAX. By contrast, if RUC is a fee, the ultimate authority would be the agency that provides the specific service. As the service it would pay for roadways and the authority to collect it would lie with HDOT.

The authors of this paper are not legal experts and cannot speak for the Hawaii courts or legislature. However, the authors find that, most likely, the courts would find RUC to be a tax. The leading case in Hawaii is State v. Medeiros, 89 Haw.361, 973 P.2d 736 (1999), in which the Hawaii Supreme Court was asked to determine whether a fee assessed by the City and County of Honolulu against persons convicted for misdemeanors or felonies was a tax. The fee was intended to defray the costs incurred by the criminal justice system. In that case, the State Supreme Court used the following standard: to be a fee, the assessment (1) must apply to the direct beneficiary of a particular service, (2) must be allocated directly to defraying the costs of providing the service, and (3) must be reasonably proportionate to the benefit received. In the authors' estimation, the courts would most likely find that HiRUC does not pass the final test to qualify as a fee because it is not a regulatory fee or a user fee that benefits the party paying the fee, separate and apart from any benefit conferred to the public at large. The authors expect that funds collected from RUC payments may be used for all road construction and maintenance in the state, or even bike lanes or sidewalks.

The legislation that creates any future RUC needs to specify whether the RUC is a tax or a fee. If the legislation specifies that the RUC is a tax, DoTAX could be asked to use its considerable tax enforcement powers to support HDOT; the legislation likely would not need to create additional enforcement authority as DoTAX already has such authority over taxes. By contrast, if the legislature prefers to characterize HiRUC as a fee, the legislature will need to include substantial enforcement powers for HDOT in the HiRUC enabling legislation. If HiRUC is specified as a fee in legislation, a lawsuit would likely be filed claiming that it is a tax, and such a lawsuit would need to be prepared for from the start of the program.

5.2. Implications for State Government Road Usage Charge Organization

The agency with final legal authority to collect RUC need not be the agency that carries out RUC collection or enforcement. One agency can allow another to execute its responsibilities, so long as a legally binding agreement is made. HDOT could collect the RUC on behalf of DoTAX. Likewise, counties could collect the RUC on behalf of HDOT or DoTAX. However, there are more incentives in

conducting enforcement if the agency responsible for spending the money also collects it or is involved in collecting it.

The clearest operational precedent for RUC collection is vehicle registration, because vehicle registration is a fee collected for each vehicle. Having RUC collection be part of or similar to vehicle registration may be the easiest and most cost-effective means of implementing RUC collection.

Technology-based RUC collection, such as the use of a PID to collect vehicle data or the OdoFoto smartphone app, will require a CAM to implement the collection activity. As such, CAMs are best equipped to administer technology-based collection. However, the RUC collecting operations of such CAMs would need to be overseen by the agency responsible for RUC collection, or another agency delegated with such power.

The role of the county police in RUC collection would be small. Essentially, they would have the same role as they do in collecting vehicle registration. As discussed in the following sections, in severe cases of noncompliance, vehicle registration stoppers could be placed on vehicles until the RUC owed for them is paid off.

Currently, vehicle registration violations are not heavily enforced by the Hawaii County police forces because County police are not incented to perform such enforcement activities. Anecdotally, registration violations are seldom handed out by police as stand-alone offences, but they are generally given as secondary offences (e.g., if a vehicle is caught speeding).

The precise rate of unregistered vehicles driving in Hawaii is uncertain. In other states, like California, between 3 and 6 percent of vehicles are unregistered at any given time.[10] If a RUC is implemented, transportation revenue becomes even more dependent on owners keeping their vehicle registrations active, so it may be desirable to create greater incentive for police forces to enforce registration and, consequently, RUC violations. This could be done by allocating a portion of registration penalty income for the County police force that issued each penalty.

[10] California Air Resources Board. 2002. “Determination of Non-Registration Rates for On-Road Vehicles in California.” ARB Contract No 99-318, https://ww2.arb.ca.gov/sites/default/files/classic//research/apr/past/99-318.pdf.

6. Types of Road Usage Charge Noncompliance and Methods of Detection

Following are four possible types of noncompliance with a RUC program, each of which have distinct methods of detection:

- Non-registered vehicle
- Late or inconsistent reporting
- Late payment
- Fraudulent reporting

Providing clear, easy-to-follow guidance and reminders on reporting and payment should keep the frequency of these noncompliance types very low. Moreover, the motivation to be noncompliant will be quite low for the first few years while the fuel tax remains in place, during which time the state can refine the compliance and enforcement approach, so that when the fuel tax is removed, there is relatively little evasion.

6.1. Non-registered Vehicle

Currently, even vehicles that are not registered or operating with an expired registration are paying the gas tax. Under RUC, these vehicles would be evading not only the vehicle registration fees but also the RUC. Adding a RUC to the annual registration, effectively increasing the amount due at the time of registration renewal, could slightly increase the number of non-registered vehicles. Currently, a delinquent vehicle tax citation carries a fine of roughly $70. Vehicle registration enforcement is carried out by the counties.

It is difficult to quantify the number of non-registered vehicles that are actively being used because vehicles in the DMV database that are listed as inactive also include those that have been junked or totaled, are in storage, or have been shipped out-of-state. Estimates for the percentage of unregistered vehicles range from 6 to 9 percent.[11] However, several studies suggest that most unregistered vehicles are only temporarily unregistered. A study conducted by Younglove, et al., found that the number of chronically unregistered is less than 0.1 percent.[12] This same study found that unregistered vehicles are typically older, are driven fewer miles, and are unregistered due to the inability to test emissions tests. These findings all point to a minimal number of RUC miles being evaded through chronically unregistered vehicles.

Offering payment plans for vehicle registration and RUC could help minimize the impacts on low-income households. Given the increased dependence of transportation revenue on vehicle registration that comes with transitioning to RUC, Hawaii could perform a similar study to gauge and subsequently

[11] Hunstad, L. 1999. “Estimating Uninsured Vehicle & Unregistered Vehicle Rates: Sensitivity to Data and Assumptions.” California Department of Insurance, http://www.insurance.ca.gov/0400-news/0200-studies-reports/0600-research-studies/auto-policy-studies/upload/UninsVehicleRatesSensitivity.pdf.

[12] Younglove, T., et al., 2004 “Unregistered Rates for On-Road Vehicles in California.” *Journal of Transportation and Statistics* 7, no. 2/3. https://www.bts.gov/archive/publications/journal_of_transportation_and_statistics/volume_07_number_23/paper_01/index.

monitor non-registration and lagging registration so mitigation can be put in place to facilitate compliance and appropriately resource non-registration enforcement.

6.2. Late or Inconsistent Reporting

The second type of noncompliance is late or inconsistent reporting. The method of detection varies by reporting method:

- With safety inspection–based reporting, late reporting occurs when vehicle owners fail to take their vehicles for safety inspection in the legally required time frame, which can be detected by software that reviews safety inspection results.
- With a PID, late or inconsistent reporting occurs when a device is unplugged frequently or left unplugged for a long period of time, which is detected by the CAM that administers the devices.
- With OdoFoto, late reporting occurs when vehicle owners fail to submit images on time, which is detected by the account manager that administers the OdoFoto software.

Section 9 presents more detail on the detection of late or inconsistent reporting.

6.3. Late Payment

The third type of RUC noncompliance—late payment—occurs when vehicle owners fail to pay their RUC owed in the specified time frame. Generally, the law enabling RUC will provide vehicle owners a time frame to pay the RUC. If they fail to pay in the specified time frame, they are late, incurring some sort of penalty. Missing payments could be subject to escalating consequences, which should be appropriately set. Unpaid amounts can also be turned over to debt collection agencies. In some jurisdictions, expired vehicle registrations can be impounded or towed.

The detection of the late payment is a simple accounting function—software can check, for each vehicle, whether payment has been received on time. It is the responsibility of the body overseeing the manner of collection to perform this check. It may be the state agency tasked with overseeing RUC, in the case of safety inspection–based reporting, or it may be the CAM, in the case of PIDs or OdoFoto.

6.4. Fraudulent Reporting

The fourth, and likely most severe, type of RUC noncompliance is fraudulent reporting. Following are two main types of fraudulent reporting that can occur in a RUC program:

- Odometer rollback
- Odometer image fraud

6.4.1. Odometer Rollback

Odometer rollback means fraudulently adjusting a vehicle's odometer so it displays a lower value than the number of miles traveled by the vehicle. This has typically been done so used vehicles are sold for greater value than they would have if their actual value were known to the purchaser, or so that leased vehicles do not exceed mileage limitations. Odometer rollback is already a federal crime. However, implementation of a RUC would create a new incentive for odometer rollback.

Mechanical odometer rollback literally involves rolling back the odometer. Mechanical odometers were part of nearly all passenger vehicles built through 1990. Automakers phased out mechanical odometers throughout the 1990s, so that by 2001, nearly all new vehicles sold in the United States had a digital

odometer.[13] As the prevalence of mechanical odometers in the vehicle fleet has declined, so too has the criminal skill set required to roll back such odometers.

Digital odometer rollback involves using software to alter the odometer field in a vehicle's engine control unit, the main computer that operates the engine of modern cars. Digital odometer rollback is possible because all automakers create a software means to alter the odometer field, so that in cases in which an engine control unit is broken or damaged, it can be replaced, and the vehicle can have the same odometer reading as before it was replaced. While automakers attempt to keep this software secure and allow its use only by authorized mechanics, they have traditionally not used the highest electronic security measures possible. In some cases, criminals obtain official automaker diagnostic tools that allow the modification of the odometer field, as well as official credentials that allow them to use such tools and modify the odometer that way. In other cases, criminals hack these diagnostic tools and create unauthorized tools they can duplicate and even sell on online marketplaces. For vehicles from automakers that have implemented fleetwide telematics systems, such as Tesla, digital odometer rollback is virtually impossible. However, for vehicles from most automakers, digital odometer rollback is still a real possibility.

There are two means by which odometer rollback can be detected: inspection and audit. Inspection involves examining the vehicle to detect rollback. For mechanical odometers, this can involve removing the vehicle dashboard or instrument cluster to look for evidence of mechanical rollback. For digital odometers, this can involve downloading the digital odometer history from the vehicle electronics; however, for most vehicle makes and models, this history is not stored. Thus, inspection is generally not a feasible method of observing digital odometer rollback.

Audit means examining the vehicle's records to observe any cases in which the odometer dropped in value from a previous reading. Hawaii could examine records from the periodic motor vehicle inspection (PMVI) to observe large rollback values. In a potential future RUC program, it would be more likely that fraudsters would be aware of the existence of PMVI records and not attempt to roll the odometer back to a value lower than it had in the previous year's safety inspection. Rather, they would choose a value that was a very low increment over the odometer value from the previous year's safety inspection—say, a few hundred miles. This could not be detected from PMVI records.

Instead, the audit could use records from a vehicle identification number (VIN) lookup service such as CarFAX. Such services collect VIN records from mechanic shops, oil change shops, and any official automotive service shop, because they are required to keep odometer records for all vehicles, and some of these readings might be taken at greater frequencies than the annual safety inspection.

6.4.2. Odometer Image Fraud

Odometer image fraud means submitting a false or manipulated odometer image in cases in which the odometer image is the basis for the charge, which is the case with the OdoFoto reporting method. Following are two main ways in which this could be done:

1. A picture of something other than a car's current odometer could be submitted—images of another vehicle or old, historical images of a car's odometer, taken specifically to submit at a later date.

2. An odometer image could be manipulated with software such as Adobe Photoshop.

[13] By 1990, vehicle manufacturers had created mechanical odometers that were both tamper-resistant and tamper-evident—it is very difficult to roll back such odometers, and even if possible, a visible mark would be left on the odometer's exterior.

Odometer image fraud should be minimized through the software implementation of the odometer image capture application. The following security measures were implemented during the HiRUC pilot:

1. Images must be submitted live through the app, not emailed or otherwise chosen from historically taken pictures. This measure prevents old images from being submitted.

2. Images are validated against vehicle dashboard layout. Vehicle models have unique dashboards, so the validity of the image can be checked by verifying that the dashboard layout corresponds to the make/model of the vehicle, as determined from the VIN.

3. Images need to be electronically checked for photomanipulation and other anomalies, and images that score below a certain threshold need to be rejected. Software to observe photoshop manipulations is fairly accurate. This software also can observe other anomalies, like pictures taken of other pictures. In cases in which a suspect image is found, the image should be rejected, and the vehicle owner requested to send a new image. After multiple rejected images, the CAM can reach out to the vehicle owner to discuss the problem.

All these measures should be implemented in any potential future RUC program that uses odometer image capture as a means of mileage reporting. Additional software security measures are available, such as requiring location services be turned on at the time the photo is taken. However, it is still conceivable that fraudulent images could make it past the software checks in rare instances. For that reason, a VIN lookup service audit should be performed in suspect cases.

7. Potential Penalties for Noncompliance

The following are penalties that can be applied in cases of noncompliance, in order from least to most severe. Legislation enabling RUC should specify which penalties the body entrusted with implementing RUC may use.

The agency executing enforcement should mail notifications of penalties to the address at which the vehicle is registered. If a CAM oversees technology mileage reporting options, it will have already sent reminders to become compliant to the vehicle owner at their preferred address, email, and/or phone; such reminders do not indicate penalties, they simply encourage compliance.

- **Notifications or warnings** can be issued for the first instance of late reporting or late payment, and these should be effective at eliminating much noncompliance. Warnings would typically take the form of a postal letter mailed to the vehicle owner reminding him/her of the need to report and/or pay the RUC promptly, and of the potential consequences of not doing so. While email and text message notifications are cheap and immediate, the amount of spam present in both media makes it unlikely that vehicle owners would take warnings over these channels seriously.
- **Compulsory prepayment** is an option in any program where a full year's prepayment is not normally required. Compulsory prepayment is a penalty in which the recipient is required to prepay for one full year (if a full year's prepayment is normally required, it's not really a penalty). This is desirable as a light penalty because it does not force people to pay more in total, just pay more up front.
- **Fines** are a standard penalty of moderate severity. Fines could be a percentage of the RUC due. There also could be multiple tiers of fines, from a small fine (or late fee) approximately the amount of a parking ticket ($25 to $50) to a large fine about equal to the RUC owed for one or two years of vehicle ownership ($250 to $500). The level of fine applied should be proportionate to the degree of crime committed.
- **Vehicle registration stoppers,** which prevent the vehicle from being registered, are significant penalties to be applied in cases in which vehicle owners fail to pay fines or otherwise respond to penalty notifications. Today, the state issues registration stoppers for vehicles with a sufficient number of parking tickets, so this penalty could be extended to RUC.[14] However, not being able to register a vehicle is a significant penalty, so this option may need to be applied only after other options have been exhausted.
- **Vehicle impoundment,** in which the state confiscates the vehicle, is an extreme step that could be used in cases that vehicle registration stoppers are repeatedly ignored.
- **Driver's license suspension** is almost certainly NOT a legally or ethically acceptable penalty for RUC violations. Driver's license suspensions are issued in cases of unsafe driving, and RUC violations do not indicate that. Driver's license suspension could prevent individuals from doing their jobs and thus earning money to pay a fine or RUC owed. If the legislature were to attempt to make a driver's license suspension a penalty for RUC noncompliance, it would likely face major public outcry and could be overturned in court.

[14] Hawaii News Now. 2005. "State Implements Law Leaving Used Car Buyers Left with Parking Tickets." October 3, 2005. https://www.hawaiinewsnow.com/story/3931621/state-implements-law-leaving-used-car-buyers-left-with-parking-tickets/.

8. Adjudication of Penalties

Adjudication is an administrative method of appeal, a means by which individuals who receive violation notices with penalties can file an objection to the penalty and plead for its removal without incurring the cost or time impacts of going to court. Adjudication procedures exist for parking violations in Hawaii and across the country and would most likely need to be extended to RUC. Adjudication provides the state a way to minimize the number of legal cases that are added to the court system due to RUC.

Adjudication would allow for the following:

- Correction of mistakes made during enforcement
- Pleading for unexpected but legitimate, exceptional reasons for noncompliance

Adjudication is typically carried out by a body that is separate from the RUC operating entity. Both could be housed in the same agency (for example, HDOT), but the adjudication body would be in a separate organizational area from the RUC operating body. Adjudication should be a simple appeal process—vehicle owners should only have to provide information about the violation, an explanation why the violation notice was not merited, and any evidence that they can provide to support that statement. Adjudication should be possible in person (for example, at a DMV) as well as online.

In cases in which a vehicle owner is not satisfied with the outcome of the adjudication process, a clear means of appeal to the state court system should be explained. Such an appeal will have cost implications both for the vehicle owner and the state, so the adjudication system should be designed to resolve as many disputes as possible.

9. Enforcement Considerations by Road Usage Charge Reporting Method

This section applies the detection and penalties discussed in Sections 6 and 7 to the three reporting methods used in the HiRUC pilot:

- Safety inspection–based reporting
- PID reporting
- Odometer Image reporting

It also discusses the means of encouraging compliance for each method. Using these means to encourage compliance, both unintentional noncompliance and intentional evasion attempts are expected to be quite rare. The methods of encouraging compliance and the methods of detecting and assigning penalties can be refined in the first few years of a RUC program, while the fuel tax remains in place and motivation to evade is limited.

9.1. Safety Inspection–based Reporting

There are three potential violations of safety inspection–based reporting:

- Late safety inspection
- Late RUC payment
- Inaccurate odometer report

9.1.1. Late Safety Inspection

- Methods of detection: Detection can be performed automatically, by software using the databases available from the Department of Information Technology and the PMVI. Under current Hawaii law, vehicle inspections are valid for 12 months (24 months for brand new vehicles) and are conducted on a schedule independently from the vehicle registration renewal. Requiring that the vehicle inspection be within a 30- to 60-day period prior to the vehicle registration would more closely align miles traveled to payment for the usage and reduce the length of time it would take to detect noncompliance.
- Penalties: The first violation could result in a warning letter. Failure to respond to the warning letter in a certain time period could result in mandatory prepayment for a year of RUC. Continued failure to comply could result in one or two tiers of fines. Long-term noncompliance could result in a vehicle registration stopper.
- Means of encouraging compliance: DMV and safety inspection locations should have posters describing this process. Notifications should be included on HDOT's website and included in mailers reminding drivers of the need to renew vehicle registration (as is currently done today).

9.1.2. Late Road Usage Charge Payment

- Methods of detection: Detection can be performed automatically, with software used by the RUC collecting entity. This could be a CAM in case of technology-based reporting or a public agency in case of safety inspection–based reporting.

- Penalties: The first violation could result in a warning letter. Failure to respond to the warning letter in a certain time period could result in mandatory prepayment for a year of RUC beyond the late payment owed. Continued failure to comply could result in one or two tiers of fines. Long-term noncompliance could result in a vehicle registration stopper.
- Means of encouraging compliance: In terms of notification, the DMV and safety inspection locations should have posters describing this process. Notifications should be included on HDOT's website and included in mailers reminding drivers to renew vehicle registration. The importance of registration renewal reminders should not be underestimated. States that have reduced or eliminated registration renewal reminders have seen significant drops in on-time vehicle registrations. In the Driving Report pilot, many invalid recipient addresses were screened out as invalid, and still an additional 2.9 percent of mail was returned as undeliverable. Further research could be conducted on how to increase the accuracy and validity of the addresses in the vehicle registry.

The CAM should also notify users of the need for regular payment. Beyond notification, the state agency overseeing RUC should make payment easy for the user; specifically, the state agency should offer many payment venues (online, by mail, in person, kiosk) and several payment plans (biannually and/or quarterly) to make payment easy/convenient.

9.1.3. Inaccurate Odometer Report

There are two types of inaccurate odometer reports: misreporting, in which a safety inspector keys in the wrong odometer value, and odometer rollback, in which the vehicle owner falsifies the odometer value. To prevent misreporting, any potential future safety inspection–based RUC program should include an upgrade to the PMVI reporting process that includes odometer image capture, i.e., the safety inspector should not key in the odometer reading but take a picture of the odometer using an app on a tablet or other mobile device. Such systems are already available in other states that have safety inspections. This measure prevents misreporting due to data entry errors, and it prevents situations in which unscrupulous safety inspectors could be convinced to key in the wrong odometer value. Misreporting can basically be prevented by use of such software.

Odometer rollback is handled as follows:

- Methods of detection: Random checks should be made on vehicles with very low odometer increases or large drops in odometer increases (e.g., going from 10,000 miles per year to 100 miles per year). These checks would be made using VIN lookup services such as CarFAX. Requiring such checks is not suspicion of guilt. VIN lookups are available to anyone on any vehicle. Many cases of low mileage increase or drops in mileage increase rate will prove to be legitimate (e.g., individuals who buy a new car but do not dispose of an old one). Using VIN lookups is not a perfect means of detecting odometer rollback—vehicles never serviced at an official mechanic will not be indicated on such checks. In general, the threat of being caught should discourage odometer rollback.
- Penalties: Penalties already exist on the state and federal levels for odometer rollback. Federal fines for odometer rollback are up to $100,000.[15] Hawaii law makes the fine $2,000 or two times the m

[15] "The Federal Odometer Tampering Statutes." 2014. The United States Department of Justice. https://www.justice.gov/civil/case/federal-odometer-tampering-statutes.

onetary gain earned from the rollback, which will mean a $2,000 fine when odometer rollback can be shown.[16] Such a fine seems sufficient, so no new fine may be needed.

- Means of encouraging compliance: Online and in literature, it should be emphasized that odometer rollback checks will be carried out.

9.2. Plug-in Devices

PIDs accurately measure distance traveled by vehicles when they are plugged into the vehicle. However, in general, for vehicles built before 2019, they do not have the actual odometer value. In 2019, 30 percent of new vehicles were required to provide odometer value to the data port. In 2020, 60 percent of new vehicles were required to do so. In 2021, all new vehicles are required to provide odometer value to the data port. When devices are unplugged from vehicles that do not have the odometer value on the data port, miles driven are not recorded until the devices are plugged in again. Thus, frequent and/or long device unplugs could be attempts to underreport miles traveled. However, devices must be unplugged for regular car service, and may be legitimately unplugged in cases of leaving a vehicle in storage (say, for a month or longer). Therefore, one or two brief unplugs is not indicative of fraud.

- Methods of detection: CAMs must be required to detect device unplugs and plug-ins automatically. After a certain amount of time being unplugged, CAMs should notify participants of the need to plug the devices back in. In cases in which devices are frequently unplugged, a user's account could be "trued up" to the odometer value recorded at safety inspections annually.
- Penalties: The first violation could result in a warning letter. Failure to respond to the warning letter in a certain time period could result in mandatory prepayment for a year of RUC beyond the late payment owed.
- Means of encouraging compliance: CAMs should be required to notify users of the importance of keeping their devices plugged in at all times, except when necessary to remove, and should be required to remind users via text message and email to plug their devices back in when they are unplugged.

9.3. Odometer Image Reporting

Following are three types of noncompliance related to odometer image reporting:

- Submitting low quality/questionable images
- Submitting images late
- Rolling back the odometer

Enforcement measures are described below for low quality/questionable image submittals:

- Methods of detection: Software should detect attempts to use a different vehicle make/model to manipulate images (Photoshop), physically cover an odometer with a different reading, and take pictures of pictures. In these cases, the firm providing the analysis software should get a warning of a low-quality image. In this circumstance, the image submitter should simply be required to submit a

[16] Damerville, R.R. 2003. "Odometer Rollback Defendants Plead No Contest." Department of the Attorney General News Release. October 2, 2003. https://ag.hawaii.gov/wp-content/uploads/2012/12/2003-48-ODOMETER-ROLLBACK-DEFENDANTS-PLEAD-NO-CONTEST.pdf.

new, higher-quality image. The user's account could be "trued up" to the odometer value recorded at safety inspections annually.

- Penalties: In general, no penalties are required for low-quality images. Participants should simply be asked to submit a new image until it passes the quality test. Ultimately, this could lead to a penalty through submitting an image late.
- Methods of encouraging compliance: Emphasize in literature that sophisticated detection for fraudulent photos is being executed.

For late image submittals, enforcement measures could include the following:

- Methods of Detection: The image analysis software should provide a series of email and text reminders leading up to the deadline for submission of a given image. If the vehicle owner makes no submission, or submits an image of insufficient quality, then submission is late.
- Penalties: The first violation could result in a warning letter. Failure to respond to the warning letter in a certain time period could result in mandatory prepayment for a year of RUC beyond the late payment owed. Continued failure to comply could result in one or two tiers of fines, and long-term noncompliance could result in a vehicle registration stopper.
- Methods of encouraging compliance: The state should not require image submission too frequently (say, only four times per year). The state should publish a clear calendar of image due dates and require the CAM to provide multiple reminders to submit images through several channels. The state should provide a means by which users can report planned travel and submit an image before the travel and after the travel, and not be in violation. The state could offer a grace period—a period after the published deadline when the image is technically late but is not considered late. The state should also allow resubmission of images after the deadline in cases when a low-quality image is received before deadline.

For odometer rollback, enforcement measures could include:

- Methods of detection: Same as discussed above for safety inspections.
- Penalties: Same as discussed above for safety inspections.
- Methods of encouraging compliance: Same as discussed above for safety inspections.

10. Special Cases

This section provides additional considerations for the following three special cases that may impact RUC collection enforcement activities in Hawaii:

- Changes in vehicle ownership
- Out-of-state permits
- Abandoned vehicles

10.1. Changes in Vehicle Ownership

When vehicles change ownership, the responsibility for who pays the RUC for the vehicle—and who is subject to RUC enforcement activities—also changes. Similar to vehicle registration, RUC paid up until the point of sale could be transferred with ownership. Any remaining due or prepaid RUC could be left up to the buyer and seller to agree on as part of the purchase price. The state could require that RUC is settled as part of the title transfer.

To facilitate a smoother transition of RUC payment, the RUC program could include options for RUC lookup and payment:

1. A vehicle sales smartphone app could let a vehicle odometer be captured either manually or automatically. Optionally payment up to date could be made in the case of vehicle sales in near real time. The app could include odometer image capture, a RUC balance, and a method for payment. This could be used to provide assurance to the buyer that any RUC for miles preceding the image capture either has been paid, or it could allow the buyer and seller to agree on responsibility of RUC.
2. State could also allow a paper form for RUC payment at the point of vehicle transfer. This form requires signature of buyer and seller. The RUC owed on miles prior to the reading on the odometer form is owed by the previous owner. RUC owed on miles after the odometer reading is owed by the new owner. The previous owner may be compelled to pay the RUC owed when the form is filed.

RUC enabling legislation could make it the responsibility of the vehicle buyer to ensure that one of the available methods is used to report the odometer reading at vehicle sale. If a vehicle buyer chooses not to ensure that RUC is paid by one of the aforementioned methods, the buyer assumes responsibility for paying RUC. There is no other way to guarantee RUC payment to the state will be made.

10.2. Out-of-State Permits

Recipients of out-of-state permits should be required to pay the RUC, as they today are required to pay the fuel tax in Hawaii, or the state will miss out on revenue it currently receives. A mechanism by which such drivers pay RUC must be established, and enforcement activities will need to be carried out to verify that vehicles with out-of-state permits are paying all RUC owed. To receive an out-of-state permit today, vehicles must get a safety inspection. The odometer reading recorded at that safety inspection can serve as the base odometer reading for the vehicle in Hawaii.

Since vehicles on out-of-state permits are more likely to be taken back to their state of origin, it would be particularly desirable to require out-of-state permit holders to prepay for a period of time—either a calendar year or the period until they will be required to get a Hawaii plate. This could be required even if others are not required to prepay. The amount of prepay would be a standard value, because the

vehicles will not have a record of what was possible. At the end of their prepaid period, the vehicles would be "trued up"—vehicle owners would get an official odometer reading (either at a safety inspection or by an odometer image capture app. If they drove more than the amount prepaid, they would be invoiced for the difference. If they drove less less than the amount they prepaid, they would be credited the amount of overpayment toward their future RUC owed. As other states such as Oregon have found, cash refunds should not be issued because they are expensive to process.

If a pure post-pay system is established, vehicles with out-of-state permits could pay RUC owed at the time that they are transitioned to Hawaii plates or leave the state. However, this approach could run the risk that vehicles are taken out of state without paying RUC. Currently, a valid registration is required to ship a vehicle out of state. One possible prevention measure would be to require shippers to verify that the driver has paid all RUC before the vehicle is loaded onto ships.

10.3. Abandoned Vehicles

Hawaii has a somewhat uniquely widespread problem of abandoned vehicles. Abandoned vehicles may have outstanding RUC owed at the time they are abandoned. If this RUC is not collected, then it is a loss for the state, because gas taxes are nearly always paid. The addition of RUC could be an argument to put processes in places to prevent vehicle abandonment and for the greater enforcement of fines for vehicle abandonment.

If individuals abandon vehicles and leave the state, the state likely has no mechanism by which to obtain payment from the individual. Requiring some amount of prepayment, at least for safety inspection–based reporting, would go a long way toward covering for this situation.

11. Policy and Program Choices

While the fuel tax is in place and the vast majority of vehicles are still powered by gasoline, the state will have several years to develop, implement, and operate effective RUC enforcement policies. As long as the fuel tax remains in place, there is little incentive or opportunity for evasion to occur. During this period, the state can implement and refine enforcement policies and procedures, so that when fuel taxes are eventually removed, an effective enforcement regime is in place, and there are few losses due to evasion.

Additional research on the pervasiveness of unregistered vehicles would be informative to determine whether sufficient resources are dedicated to vehicle registration enforcement, best practices to increase compliance, and responses to the public's concerns about the fairness of the RUC program.

11.1. Base Assumptions

- Main method of mileage reporting is the safety inspection–based reporting, possibly supplemented by self-reporting, PID, or OdoFoto.
- State administers safety inspection–based reporting directly, using CAM for PIDs and OdoFoto.

11.2. Program Choices for Legislature or State Agencies

Following are compliance and enforcement program choices that will need to be made:

- Is RUC a tax or fee, and who collects and enforces it?
  - Does DoTAX, HDOT, or Cities/Counties perform RUC collection for safety-inspection based reporting?
- Prepay or post-pay (individually, for each reporting method)?
  - If prepayment is used for safety inspection–based reporting, how much should be paid for the first year of a vehicle? How much for subsequent years?
  - If prepayment is used for OdoFoto/PID, is the use of an electronic wallet appropriate? If so, how much should the initial charge be? How much should be charged for subsequent top-ups? What is the minimum threshold to trigger top-ups?
  - For all methods, how long before payment is considered late (30/45/60 days)?
- What reporting and invoicing periods does the program use?
  - For safety inspection–based reporting, should RUC be paid with vehicle registration, or separately, right after safety inspection? Should safety inspections be required closer to registration?
  - For PID and OdoFoto, what are reporting/ invoicing periods?
- What noncompliance detection mechanisms does the program use?
  - Late/inconsistent reporting
    - Should the state detect safety inspection–based reporting and CAM detect for PID and OdoFoto?

- Should true-up payments be required with safety inspection odometer reading for PID and OdoFoto users?

> Late payment

- Should the state detect safety inspection–based reporting and CAM detect for PID and OdoFoto?

> Fraudulent reporting

- Should additional anti-fraud features at safety inspections be upgraded, such as a photo of the odometer?
- What software security requirements be enforced with OdoFoto?
- Audit program for odometer rollback
  - When should VIN lookup be triggered?
  - What should the VIN lookup service be used?
  - What is criteria for prosecuting odometer rollback?

▶ Penalties

> Set penalties by noncompliance type.

▶ Adjudication

> How should adjudication be implemented?

▶ Special cases

> Change of ownership: How should the means of reporting RUC at time of ownership change be implemented?

> Out-of-state permits: How should RUC be collected from vehicles with out-of-state permits?

> Abandoned vehicles: How should enforcement efforts increase to combat RUC loss due to abandoned vehicles?