HAWAII ROAD USAGE
CHARGE DEMONSTRATION
FINAL REPORT

EXECUTIVE SUMMARY // AUGUST 2022
Executive Summary

A fundamental role of government is providing for the safe and efficient movement of people and goods. In Hawaii, the transportation system enhances economic opportunity and quality of life. The Hawaii Department of Transportation (HDOT), to fulfill its mission of providing a safe, reliable, efficient statewide transportation system, depends on reliable and sustainable revenue.
With advances in vehicle and engine technology, fuel efficiency of the overall fleet of vehicles in Hawaii has been steadily increasing. At the same time, the popularity and adoption of alternative fuel vehicles have also increased in recent years. Hawaii ranks second nationally in the adoption rate of electric and alternative-fuel vehicles due to climate objectives that include a zero-emission transportation sector by 2045. Reducing and eventually eliminating fossil fuel consumption have numerous benefits for Hawaii residents, but one unintended consequence is the loss of revenue from taxation of motor vehicle fuels.

State fuel tax revenue peaked between 2010 and 2016, and has trended downward since then, and is expected to continue to do so without any changes. Although the state relies on a mixture of revenue sources including vehicle registration fees, weight taxes, and rental car surcharges, fuel taxation stands as Hawaii’s second largest source of transportation funding, and the only revenue source that relates to road usage.

To address this challenge, HDOT embarked in 2018 on a 3-year research, public outreach, and demonstration effort to examine per-mile road usage charging (RUC) as a fair and sustainable future replacement for fuel taxes. This research concluded with recommendations for how the state can begin a gradual transition toward RUC to preserve usage-based funding for upkeep and repair of the state’s roads and bridges.

In 2015, Hawaii became the first state to set a target year – 2045 – for achieving 100-percent renewable energy. The four county mayors followed by setting a goal of 100-percent renewable ground transportation, also by 2045. With 4 million tons of carbon dioxide tailpipe emissions per year, Hawaii’s transportation sector ranks second among fossil fuel consuming sectors in the state. Electric vehicles, with zero tailpipe emissions, currently account for just over 1 percent of passenger vehicles in Hawaii. Achieving zero emissions from all vehicle tailpipes by 2045 requires turning over the remaining 99 percent, almost the entire vehicle fleet, in one generation.
At the end of 2021, trends pointed in a positive direction for Hawaii to achieve zero-emission transportation. The federal government committed $7.5 billion toward a national network of electric vehicle chargers and instated stricter fuel economy standards for combustion engine vehicles. Meanwhile, automakers announced historic investments in electrification of their fleets. General Motors, the country’s second-largest and the world’s sixth-largest automaker, announced it would only manufacture EVs beginning in 2035. Hawaii’s top-selling brand, Toyota, will offer 15 all-electric models by 2025 alongside 55 hybrid and fuel-cell models. Ford, the nation’s largest automaker, has made major investments in battery production capacity and aims to be fully carbon-neutral by 2050. Honda will phase out all gasoline cars by 2040 and expects 40 percent of its North American sales by 2030 to be electric or hybrid. Early electric pioneer Nissan will offer seven models, in addition to the Leaf, by 2023. And newcomer Tesla continues to gain market share, delivering 1 million electric vehicles globally in 2021.

Top barriers to consumer adoption of electric vehicle include high purchase prices, limited choices of vehicle model, and range anxiety. With the increasing number of vehicle model choices, lower purchase prices, and longer battery ranges, Hawaii consumers are beginning to shift toward all-electric vehicles in substantial numbers. With adoption rates hovering around 1 percent for most of the last decade, the portion of new vehicle registrations in Hawaii that is electric rose to 4 percent in 2020, and to 6 percent in 2021. With industry investment and federal incentives continuing, Hawaii is well-positioned for electric vehicles to achieve 100% market share for new purchases by 2035, if not sooner.

Current trends point toward electric vehicle usage matching or even outpacing usage of internal combustion vehicles. Owing in part to lower per-mile operating costs, some states are seeing average annual electric vehicle mileage exceeding overall annual average vehicle mileage.
To answer Hawaii’s demand for travel, HDOT and the counties maintain a combined 4,500 miles and 9,800 lane-miles of public roads. The system faces congestion and delays along with normal wear and tear from vehicle usage and environmental impacts. The state’s vulnerability to natural disasters and the effects of climate change represent risks the state must continually manage. Hawaii’s 2019 Transportation Asset Management Plan identified $30.2 billion dollars of needs for state-owned transportation improvements across safety, system preservation, capacity, congestion, multimodal, and similar projects from 2014 to 2035. Over the same time frame, the plan identified just $7.0 billion in expected federal, state, and county revenue, leading to a $23.9 billion gap. In light of this large gap between available resources and needs, HDOT follows a performance-based investment strategy to prioritize safety and system preservation. The state continually examines and adjusts how funds are allocated to meet desired performance targets in light of changing specific road conditions, needs, and revenue sources. To respond to these needs, it is increasingly important for HDOT to preserve revenue sources and continually adapt to anticipated changes.

HDOT receives almost all its state funds from user fees. The Highways Division derives funding from taxes on fuel, vehicles, and rental cars. Gasoline and diesel taxes have historically served as the largest source of revenue, nearly half in 2000. Together they are now the second largest source of revenue, generating less than one third of revenue, and declining. As fossil fuel consumption declines, fuel tax revenue will decline accordingly. Already faced with a substantial funding gap, declining revenue from fuel taxes will further strain the ability of HDOT to maintain the state highway system as well as the ability of counties to maintain the county road system. In 2045, with increased adoption of electric vehicles, the fuel tax may need to quadruple to 70 cents per gallon more to fill the revenue gap. Raising the fuel tax to cover the costs places an ever-increasing share of road costs on an ever-shrinking share of residents driving internal combustion engine vehicles, residents who, research shows, disproportionately belong to low-income households and live in rural areas of the state. There are other solutions to this dilemma, and one of them is to transition from reliance on fuel taxes to per-mile RUC.

**HDOT RECEIVES ALMOST ALL ITS STATE FUNDS FROM USER FEES.**
RUC is a policy whereby all vehicles contribute to the cost of roads based on how much they drive. RUC preserves the user equity that the fuel tax intended: drivers who benefit from the usage of the road system pay for it, regardless of engine or fuel type. It also preserves or enhances the social equity of the fuel tax. HDOT began examining RUC in 2014 when it joined the Western Road Usage Charge Consortium, a group of states pooling resources to research gas tax alternatives. In 2016, HDOT completed a feasibility study and in 2018 began work funded by a federal grant to conduct a public demonstration of RUC named HiRUC.

As the largest demonstration of RUC ever conducted in the U.S., HiRUC leveraged HDOT’s existing vehicle inspection process for the collection of odometer mileage from vehicle owners. HiRUC generated and mailed 360,000 custom Driving Reports to Hawaii vehicle owners showing the total miles they drove between their two most recent vehicle inspections, including an estimate of gas taxes paid and an indication of what they would owe under a RUC at a revenue-neutral 0.8 cents per mile.
Over 11% of the Driving Report recipients responded to a survey and indicated high initial levels of understanding and support for RUC. Support among survey respondents increased when told that funds would be dedicated to repair and upkeep of roads and bridges. Large majorities of drivers preferred to report miles at annual safety check as they do today, but half indicated a preference to pay the RUC they owe in periodic installments as opposed to once per year along with other vehicle fees.

HDOT further conducted a voluntary test drive of automated mileage reporting methods with over 2,000 vehicles. Methods tested included odometer image capture via smartphone, plug-in devices with GPS, and plug-in devices without GPS. Odometer image capture proved the most popular among pilot test participants, but participants across all methods expressed high satisfaction with their reporting method. Most participants expressed support for the concept of RUC, and this support grew from the beginning to the end of the 9-month trial period. About half further indicated they would be comfortable reporting miles driven at vehicle inspection in a real RUC system.

Alongside the research and demonstration of RUC systems, HDOT conducted widespread community outreach and stakeholder engagement to surface concerns and issues about the possibility of switching from a fuel tax to a RUC. The top issues reflected concerns and questions about RUC. For example, many residents and stakeholders wanted to understand the impacts of RUC on low-income drivers, rural residents, and adoption of clean vehicles. They expressed concern about the cost and complexity of operating a RUC and a desire for RUC to ensure the visitors pay at least their share of costs for system maintenance. Other questions arose about how RUC would be enforced, how it could apply to heavy vehicles, how it could work for counties to replace their fuel taxes, and how to transition from the gas tax to a RUC. HDOT explored all of these topics through research and analysis to answer questions and present a range of approaches for adjusting policy or system design features to address concerns.
Based on HiRUC research, system development, policy analysis, and outreach, HDOT developed a series of recommended next steps for RUC. First, HDOT believes that any transition to RUC should be gradual, allowing time for development and improvement of systems for collecting this new fee. However, given the fast pace of electric vehicle adoption and the need to transition gradually, HDOT recommends starting a transition without delay. As a first step, HDOT recommends a minimally disruptive approach of assessing a RUC on electric vehicles in lieu of the existing flat fee of $50 per year. HDOT recommends a per-mile rate equal to what the average gas vehicle in Hawaii pays, about 0.8 cents per mile, with an initial cap equal to what the average gas vehicle pays per year, about $70. HDOT recommends the RUC system leverage the state’s existing vehicle inspection program for mileage data collection, creating a seamless experience for customers that maintains an already familiar process. This was the preferred choice expressed by 87% of survey respondents as it minimizes costs for the agency and does not raise privacy concerns.

There are many options for funding critical infrastructure like our state’s roads and bridges. Historically, Hawaii has relied on user-based fees, with fuel taxation as the largest and most important mechanism. With fuel taxes dwindling, RUC offers a way to preserve the user-pay approach to funding in a fair and equitable manner.

**HDOT is committed to our mission of providing safe, efficient, accessible transportation for the residents of our state while also helping the state achieve our clean energy objectives. RUC offers a path forward for achieving both.**