

Panel 1. Coming Clean: Addressing our Emissions Reductions from Transportation¹



The purpose of this brief is to provide background and context for the panel on ground transportation emissions reduction at the 2019 Climate Conference Ha O ke Kai, and to outline issues and actions that need to be taken.

Reducing emissions from ground transportation is one of the two focuses of the Hawaii Climate Change Mitigation and Adaptation Commission's work. The Commission's mission statement promotes ambitious strategies that are clean, equitable and resilient.

First, this brief summarizes the main issues surrounding ground transportation in Hawaii--of high greenhouse gas emissions mainly from single occupancy internal combustion engine vehicles. It summarizes recommendations from recent studies and provides discussion points for

the Commission to help it offer a new paradigm for reducing transportation-generated emissions. Such a paradigm would include: re-thinking development to reduce Vehicle Miles Traveled, increasing fleet efficiency, and putting a price on carbon, while planning for electrification of transportation.

Second, the paper highlights the Commission's statement on transportation, and areas where it believes actions need to be taken. These areas are: putting a price on carbon, modernizing parking policies to achieve state goals, converting public fleets to clean fuels, including EVs--through carshare for government, and amending/strengthening legislation to align with clean transportation priorities.



Background: Hawaii has ambitious goals to tackle climate change.

Hawai'i is the only state in the nation with a mandate to reach 100% renewable electricity by 2045. All four counties' mayors additionally announced the same goal for transportation—100% clean by 2045. These aspirational goals show that Hawaii is doing more than its “fair share” of the U.S.'s climate pledges towards the Paris Agreement.

While the Hawaii Clean Energy Initiative (HCEI) exceeded statutory targets for a clean power sector, goals for the transportation sector equivalent have lagged behind. Greenhouse gas (GHG) emissions from the ground transportation

sector were 5.01 MMT CO₂ eq. in 2007, accounting for 40% of Hawaii's total transportation emissions.² Initiatives undertaken since the HCEI was established in 2008 are comprehensively described in many articles, reports and studies, especially two that are key to this document—Hawaii State Energy Office's *Hawaii Clean Energy Initiative Transportation Energy Analysis* (2015) and the more recent report *Transcending Oil*, Rhodium Group, 2018.^{3,4} This brief synthesizes the recommendations and extends them to the role that the State's Climate Change Commission can play to help catalyze action.

¹Disclaimer: This is a draft document produced for discussion purposes for the 2019 Climate Conference of the State's Climate Commission. Since this is an emerging document, with gaps that need to be filled, if you have any information that would further its intent, please contact its main author, Anukriti Hittle at the following email: Anukriti.s.Hittle@hawaii.gov. Date of latest draft: January 7, 2019.

² Updated Preliminary 1990 GHG Inventory Baseline and Statewide GHG Inventory for 2007. Prepared by ICF for DOH. 2017.

³ Hawaii Clean Energy Initiative Transportation Energy Analysis. Prepared by ICCT for DBEDT, Hawaii State Energy Office. 2015.

⁴ Transcending Oil Hawaii's Path to a Clean Energy Economy. Prepared by Rhodium Group for Elemental Exceleator. 2018



Hawaii must create a new landscape, one that will shrink the fleet, increase its fuel efficiency, and power it with clean, renewable fuel.

Shrink the fleet. Single Occupancy Vehicles—SOVs—are expensive in terms of lost lives, lost productivity from congestion, and increased pollution/emissions.⁵ Worldwide, traffic accidents cause 1.25 million deaths.⁷ In Hawaii, pedestrian fatality rates are the highest in the U.S. – 27% higher than the national average.⁸ Traffic congestion costs \$305 billion in 2017 in the U.S. alone.⁹ While aspirational goals are important to describe intent, given rapid and unpredicted changes in technology, the general recommendation is to work in 3-5 year segments to be most effective in:

- **Reducing SOVs through pricing actions such as the carbon tax.** To reduce the number of SOVs, several actions are listed in the HSEO 2015 report.¹⁰ However, possibly one of the most effective ways of changing behavior is to put a price on carbon through an economy-wide carbon tax that will incentivize for low-carbon choices. The latest

Tax Review Commission’s Report states “In fact, the U.S. Energy Information Administration (EIA) found that if the country had set a carbon tax of \$25 per ton in 2015 and increased it by 5 percent each year, CO2 emissions would have fallen to 32 percent below 2005 levels by 2030.” The Report lists total potential revenue at \$365 million per year from a carbon tax for Hawaii, and this is worth a serious discussion.¹¹

- **Reducing VMTs through better land use and better mobility options.** *Transcending Oil* underscores the need to reduce demand for SOVs through coordinated land use and mobility options in order to reduce oil consumption in transportation. Similarly, according to the HSEO 2015 study, the two biggest categories of actions to decrease GHGs are reduction in Vehicle Miles Traveled (VMT) and increase in fleet efficiency.



Main strategies for reducing petroleum use: Increase efficiency and use clean fuels

- **Increase fuel efficiency.** Along with VMT reductions and land use changes, fuel efficiency is key to emissions reduction as Hawaii transitions to a clean transportation future.

- **Power with clean, renewable fuels for public and private fleets.** A focus on EVs must include plans to move forward with generation of renewable power, and consider the source of the electricity and how it is improving on all the Hawaiian Islands. This, combined with costs of infrastructure needed to support EVs, means planning is essential in reducing emissions now and into the future.^{12 13}

⁵ WRI <http://www.wri.org/blog/2017/01/transforming-transportation-toward-sustainable-mobility-all>

⁶ It’s safer and cheaper, according to the American Public Transport Association. “A person can reduce his or her chance of being in an accident by more than 90% simply by taking public transit as opposed to commuting by car. A household can save nearly \$10,000 by taking public transportation and living with one less car.”

⁷ WRI report, above.

⁸ *Transcending Oil*. P. 15

⁹ <https://www.citylab.com/transportation/2018/02/traffics-mind-boggling-economic-toll/552488/>

¹⁰ The list is a combination of actions cited in the HSEO 2015 study, *Transcending Oil*, and U.S. Climate Alliance actions currently taking place. MIG-1 is the Meeting of the Informal Group on transportation, comprised of subject matter experts, convened by the Climate Coordinator to help inform and support the work of the State Commission

¹¹ State of Hawaii Tax Review Commission: Study of the Hawaii Tax System. Appendix A. pp. 88-90. Report of the PFM Group Consulting, LLC. Nov 2017.

¹² https://www.afdc.energy.gov/vehicles/electric_emissions.php

¹³ HECO’s *Roadmap* models that by 2045 EoT will be at 55%. The HSEO 2015 report projects 43,000 EVs by 2030. A back of the envelope calculation for Hawaii shows the ZEV number, if Hawaii were a part of the multi-state ZEV MOU, would need to be about 80,000 by 2025



Climate Commission's Role and Work.

The State Climate Commission can catalyze the creation of this new landscape.

The Commission can provide the clarity and imagination to conceive that the world could be different, and also coordinate prioritization for concerted efforts that are needed for Hawaii's clean, equitable, and resilient future. The multi-jurisdictional nature of the State Climate Commission makes it ideal for coordinating a real and lasting resolution. To do so, it must address putting a price on carbon to incentivize decarbonizing behavior, re-zoning and Transit-oriented Development to reduce VMT, and increasing vehicle efficiency standards for now, with eventual shift to full electrification of transportation from clean, renewable fuels.

The Commission's statement on transportation includes affirmation of carbon pricing and supporting strategies on parking policies, converting public fleets to cleaner fuels, and amending/strengthening legislation.

At its meeting on November 27th, the Commission deliberated on and issued a strong statement that it hopes will help reduce emissions from ground transportation.¹⁴ It outlined that "putting a price on carbon is the most effective single action that will achieve Hawaii's ambitious and necessary emissions reduction goals." The Commission's full statement included components that would support carbon pricing—a PSA campaign, modernizing parking policies, transforming public fleets, and strengthening existing legislation to make an impact on ground transportation emissions. These are expanded upon in the attached appendix.

Equity issues are front and center of the Commission's statement. Transportation is the second highest expense, after housing, for households in Hawaii. It disproportionately affects cost-burdened households. For this reason, every action taken should address equity issues—in addition to being clean and resilient. Boston and Seattle, among other cities across the US, have specific programs that prioritize affordable transportation options.¹⁵ Seattle established a voter-approved Transportation Equity Program in 2017, which allows \$2 million annually to be used to improve and support access to transit service for income eligible riders.¹⁶ These programs need to be further reviewed for relevance in Hawaii, especially since the State Climate Commission has indicated it would like to champion for equity issues in transportation.

Making a Just Transition. As Hawaii moves forward on its clean energy and climate change goals, it needs to keep in mind the Commission's mission statement, to pursue "...ambitious strategies that are clean, equitable and resilient." These values are echoed in the Global Commission on Economy and the Climate's *New Climate Economy Report 2018* and the COP24's Just Transition declaration. The G20 adopted "strong, sustainable, balanced, and inclusive growth" as its goal. As we move to a net zero carbon economy, a just transition ensures that the harmful impacts are minimized or eliminated. This means taking steps that are politically and morally acceptable to ensure that no one is left behind.

To achieve such a transition, the *New Climate Economy Report* advocates a people-centered approach where gains are shared equitably.

¹⁴ "The Commission believes that putting a price on carbon is the most effective single action that will achieve Hawaii's ambitious and necessary emissions reduction goals. This view is also supported by expert global and local institutions: • The Intergovernmental Panel on Climate Change reports that a price on carbon is central to prompt mitigation, and global emissions of CO2 need to fall by 45% by 2030 and to zero by 2050. • The International Monetary Fund finds that "carbon pricing is crucial in reducing emissions, and carbon taxes are more effective than other mitigation instruments." • State of Hawaii's Report of the 2015-2017 Tax Review Commission recommends consideration of a carbon fee in its review of the state tax structure. • State of Hawaii's Transportation Energy Analysis, August 2015, supports an increase in the barrel tax "to fund government actions to support clean energy, specifically in regards to the bunker taxes in the marine sector and the inclusion of aviation fuel in the barrel tax."

¹⁵ <https://www.boston.gov/departments/resilience-and-racial-equity>

¹⁶ <https://www.seattle.gov/transportation/projects-and-programs/programs/transportation-equity-program>

“We have a remarkable window of opportunity to do so now, given the major structural changes the world faces, notably rapid urbanisation, increasing globalisation, shifts to service-based economies, and increasing automation. The opportunities are great, but so too is the potential for stranded assets, stranded communities, and stranded workers. The transition to a low-carbon, resilient economy is just one part of this broader transformation, which – if managed well – has the potential to deliver more equitable and prosperous growth.”

The Report goes on to recommend that “... all governments should establish zero-emission Energy Transition Plans, working with energy companies, trade unions, and civil society to ensure a just transition for workers and communities.” As Hawaii implements the Paris Agreement, and its own stated goals, its Climate Commission can ensure they are indeed equitable.



Appendix. Carbon pricing and supporting policies for emissions reduction

- 1. Carbon Pricing to influence choice of fuels and help decrease miles travelled.** Much has been written about this topic, and other states have introduced (as of yet, unsuccessful) legislation. However, it is widely acknowledged that putting a price on carbon could change behavior and generate revenue. Panel 3 “All Hands on Deck: Implementing Adaptation” will address the pros and cons of particular mechanisms, and is not the focus of this panel, nor of this brief.

Any carbon pricing mechanism would need to be communicated and supported by a PSA Campaign to address the link between the need for a price on carbon, and clean transportation in Hawaii. This would show how carbon pricing and clean transportation would increase quality of life, and address climate change impacts—by decreasing congestion, commute time and costs, and emissions. The primary audience is Hawaii’s commuters—those who commute alone because they have few transit options, those who commute for multiple jobs, and those who drive vehicles that are inefficient.

- 2. Modernizing Parking Policies to achieve State goals.** Parking subsidies encourage people to drive alone and drive more often. This means increased roadway congestion, vehicle miles traveled (VMT) and emissions. A study by the Federal Highway Administration showed that policies designed to make employer-provided commute incentives mode neutral can lead to a significant reduction in commute-related vehicle trips.¹⁷ They could reduce drive-alone

commute trips by up to 22 percent depending on the policy and city. Six different policy scenarios were modeled in nine different cities.

- 3. Transforming State and county fleets –** especially through EV car share, and supporting EV infrastructure development and deployment. Currently, while electric drive vehicles (EVs) comprise only a small percentage of total vehicles in the state, the Commission must champion zero emission vehicles, including electrification of transportation, in order to reduce emissions on a large scale into the future. Several articles are available on the details of EV adoption in Hawaii, but it is clear that the state has a big role to play in this transformation.¹⁸ For Hawaii, projected benefits are large --the 2015 HSEO/ICCT report proposes that state and county governments implement carsharing programs for public fleets, decreasing VMT and increasing average fuel economy of work trips. The report estimates:

- State and Counties could decrease their fleet by 35%, similar to that of Chicago, which means almost 4,000 vehicles.
- A potential cost saving of \$78.7 million over three years, or \$20,000 per vehicle no longer needed as a result of improved vehicle utilization. Some of this could help fund EV infrastructure development and deployment, or other incentives to bring EVs into the carshare fleet.
- Adding permanent jobs to coordinate carshare of public fleets, to make up for mechanics and maintenance positions no longer needed.

¹⁷ “Transportation Benefits of Parking Cash Out, Pre-Tax Commuter Benefits, and Parking Surtaxes.” Presentation before the Transportation Research Board Annual Meeting, Session 663, Washington, D.C., January 9, 2018.

¹⁸ Coffman, Makena et al. *Electric Vehicle GHG Assessment for Hawaii*. HNEI. 2016.

Coffman, Makena et al. *Electric Vehicle Lifecycle Cost Assessment for Hawaii*. HNEI. 2015.

Coffman, Makena et al. *Factors affecting EV adoption: A literature review and EV forecast for Hawaii*. HNEI. 2015.

McKenzie, Katherine. *Strategic Use of Electric Vehicle Charging to Reduce Renewable Energy Curtailment on Oahu*. HNEI. 2013.

McKenzie, Katherine. *The State of Electric Vehicles in Hawaii: 2016 Update*. HNEI. 2016.

4. Amending laws to better align with clean transportation priorities. While the State has adopted a number of laws to address climate change and clean transportation issues, these laws have not always been as effective as intended. What follows are a few examples, but is by no means a comprehensive analysis of all State laws that could be made more effective in some way—whether by amendment, citizen or agency action, re-issuance of executive directives, or other means.

i. Align State laws with clean transportation priorities. To reflect Hawaii’s clean transportation priorities,¹⁹ laws are needed that remove barriers to the purchase of EVs and clean fuel technology vehicles, over dirty fossil fuel technology vehicles. To make clean vehicles more competitive, and reflect the State’s clean transportation and climate change mitigation priorities, procurement of these vehicles needs a more level playing field. For example, purchasing electric drive vehicles (EVs) for public use by agencies and departments has historically been viewed as more expensive, comparing less favorably with the cost of internal combustion engine vehicles; however, the initial purchase price does not reflect the substantial cost of emissions to society, nor substantial savings for energy, maintenance, and the electric grid over the life of the vehicle.²⁰ This unfairly and inefficiently tilts procurement in favor of internal combustion vehicles. If such procurement were made more level, agencies and departments would be able to purchase

more EVs for their fleets and move in the direction of satisfying the State’s policy calling for the elimination of imported fossil fuels ground transportation.

ii. Streamline the procurement process to create opportunities for joint/bulk procurement. Amending procurement laws to make joint procurement across State and county departments more streamlined would allow for more cost-effective purchasing. For example, for state and county governments to purchase EVs, rather than each government making purchases on its own, if joint procurement were streamlined, it would save resources and time. Counties and State would increase their buying power and therefore, bring competitive pricing to any joint procurement they may do for developing and deploying renewable energy technology. Commonwealth of Virginia’s Energy Plan, released on October 1, 2018, recommends similar “bulk procurement” for use by school and local government fleets to reduce the costs of clean vehicle acquisition.²¹ Currently state procurement laws prohibit “piggybacking” into an existing agreement. Laws should allow for such “piggybacking” into an existing agreement, so agencies do not have to wait until a new agreement is negotiated.

iii. Make room for new technology. In June 2018, the Federal Government’s General Services Administration unrolled a “GSA Express” to bring innovative technology into the procurement process (GSA Procurement Innovation Resources

¹⁹ For example, HRS 226-18 calls for “[i]ncreased energy security and self-sufficiency through the reduction and ultimate elimination of Hawaii’s dependence on imported fuels for electrical generation and ground transportation.”

²⁰ Hawaiian Electric Electrification of Transportation Strategic Roadmap, filed with Public Utilities Commission on March 29, 2018. The plan’s analysis forecasts that “[t]he total state ‘energy wallet’— the money spent on transportation over this period – is expected to decrease with each personal light-duty vehicle replaced with an electric model on retirement. The gasoline and maintenance savings provided by EVs are expected to soon outweigh the costs to buy EVs and charging equipment, make electricity system upgrades, and provide the electricity needed to fuel the vehicles.” In addition, the analysis shows that EV adoption “creates net benefits for all customers,” not just EV drivers. P. 32-39.

²¹ The Commonwealth of Virginia’s 2018 Energy Plan. P. 46. Office of the Secretary of Commerce and Trade, Department of Mines, Minerals and Energy.

Center) and provide a fast track to innovative, lesser known technology companies that may not have an established track record with the Federal Government.²² Conversations through the Climate Commission's informal working group network affirmed the benefits of establishing of some version of this in Hawaii to encourage and incorporate new renewable energy technology.

iv. **Better implementation, enforcement and strengthening of existing laws:**

1. **HRS 196-9, dealing with energy efficiency and environmental standards for state facilities, motor vehicles, and transportation fuel.** It is interesting to note that while there are laws and administrative directives in place that mandate efficiency in fuel and energy use, not all departments are fully implementing HRS 196-9 to make buildings and fleets as efficient as possible. This law needs to be implemented in State departments and agencies, either through issuance of executive directives, assistance to departments, or other suitable means.

2. **HRS 291-71²³ which mandates designation of parking space for EVs and charging systems** is essential to attaining Hawaii's climate change and transportation goals. Currently, many State parking lots do not

adhere to this law, and there is no enforcement or penalties for missing or non-functional chargers.²⁴ Strengthening this law and enforcing it in public and private parking lots will help speed the transition to EV adoption, and therefore, make progress towards stated goals.

3. **HRS 103D-412²⁵ outlines a procurement hierarchy for vehicle purchase that is intended to favor EVs and other clean transportation vehicles.** It is rarely executed, and has been mostly forgotten. Yet, it has been on the books since 2010. Re-issuance of departmental and executive directives, and reporting progress towards State goals is essential for implementation of this law.

Strengthening existing laws, whether by amendment, or other actions, is only a first step towards achieving the State's climate change goals.

²² GSA Procurement Innovation Resource Center (PIRC), Commercial Solutions Opening (CSO) Guide. June 1, 2018. GSA.

²³ "Places of public accommodation with at least one hundred parking spaces available for use by the general public shall have at least one parking space exclusively for electric vehicles and equipped with an electric vehicle charging system located anywhere in the parking structure or lot by July 1, 2012; provided that no parking space designated for electric vehicles shall displace or reduce accessible stalls required by the Americans with Disabilities Act Accessibility Guidelines. Spaces shall be designated, clearly marked, and the exclusive designation enforced."

²⁴ In 2017 the Honolulu Star-Advertiser reported on a survey finding that only 60 of 195 parking lots have complied. *Disregard of law causes EV parking shortage*, February 27, 2017.

²⁵ "The procurement policy for all agencies purchasing or leasing light-duty motor vehicles shall be to reduce dependence on petroleum for transportation energy." "Beginning January 1, 2010, all state and county entities, when purchasing new vehicles, shall seek vehicles with reduced dependence on petroleum-based fuels that meet the needs of the agency. Priority for selecting vehicles shall be as follows:

- (1) Electric or plug-in hybrid electric vehicles;
- (2) Hydrogen or fuel cell vehicles;
- (3) Other alternative fuel vehicles;
- (4) Hybrid electric vehicles; and
- (5) Vehicles that are identified by the United States Environmental Protection Agency in its annual "Fuel Economy Leaders" report as being among the top performers for fuel economy in their class."