Identifying Priorities for Legislative Action to Reduce Ground Transportation Emissions

Supporting Packet for Hawaii Climate Commission's Draft Statement

> "At every level the greatest obstacle to transforming the world is that we lack the clarity and imagination to conceive that it could be different."
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> --Harvard philosopher Roberto Mangabeira Unger[1]

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. Most immediately, the Commission needs to focus on priorities for legislation, but there are several actions it can urge its partners to take.

Summary of Issues:

At its last meeting on September 4, 2018, the Hawaii Climate Change Mitigation and Adaptation Commission heard the findings of its Permitted Interaction Group on ground transportation. At its next meeting, on November 27th, the Commission hopes to deliberate and take action that will help reduce emissions from ground transportation. This packet contains supplementary information for the Climate Commission, to inform this deliberation, and support the draft statement put forward to the Commission. [2] In particular, this packet contains details on:

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. See item 1 in this document for details pertaining to Hawaii.

2. **A PSA Campaign to address the link between the need for a price on carbon, and clean transportation in Hawaii** to 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, and those who commute for multiple jobs. See item 2 in this document for proposed details of what such a program might look like.

3. **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. See item 3 in this document for details on what sorts of studies might be useful for informing such modernization of parking policies and parking management.

[1] Goodell, Jeff. *The Water will come*. 2017. P. 256.

[2] This is a draft document produced by the Hawaii climate coordinator, with input from various colleagues, for purposes of supporting and informing discussion at the Hawaii Climate Change Mitigation and Adaptation Commission's meeting on November 27th, 2018. Please do not quote or cite. For questions, contact: Anukriti.s.hittle@hawaii.gov

4. **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.[3] See item 4 in this document for details on what a car share program might achieve for the State's goals.

5. **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. Item 5 in this document outlines 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.

A note on equity issues: 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.[4] 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.[5] 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.

Using the information in this packet, the State Climate Commission can help identify priorities for the upcoming legislative session to transform transportation and reduce emissions in Hawaii.[6]

[3] 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] https://www.boston.gov/departments/resilience-and-racial-equity
[5] https://www.seattle.gov/transportation/projects-and-programs/programs/transportation-equity-program
[6] Disclaimer: This is a working paper written by the State Climate Change Coordinator to inform the Ground Transportation Permitted Interaction Group of the State Climate Change Commission. August, 2018. Please do not quote or cite without permission. For questions, email Anukriti.s.Hittle@hawaii.gov.

ITEM 1: Carbon Pricing

Recommendation to the Climate Commission: The Climate Commission could issue a statement that it believes putting a price on carbon is the most effective single action that will achieve Hawaii's ambitious and necessary emissions reduction goals, even though it may not have a specific mechanism in mind, it could emphasize the urgent need for one. It should also recognize that any such mechanism must be equitable, practical, and appropriate for the people of Hawaii; and must demonstrate how this is a critical policy tool to protect the future—of Hawaii's keiki and 'āina.

The Tax Review Commission's 2017 report, Appendix A, p. 88 gives a good overview of the basics of a carbon tax, and how much it would add to Hawaii's gas and diesel prices. A summary of FAQs about a carbon tax is listed below.

FAQs : The Carbon Tax:

1. **How much money could Hawaii raise from a carbon tax**? Revenue potential according to the Brookings Institution, a 2016 report estimates that Hawaii could generate more than $360 million annually in revenues. (p.89, appendix A TRC report)[7]
2. **What would be taxed?** Depends. The state would identify which sources and sectors would be taxed. The general wisdom is to have an economy-wide price on carbon, so all fuels with carbon content would be taxed.
3. **What is Point of taxation and is it important**? Point of Taxation is where you place the tax--at the producer, supplier, consumer or some other level. It can be at various levels, but the general wisdom is to place it as upstream as possible. It is important because with taxes, the easier it is to collect, monitor (including with emissions) and report, the better (p.88).
4. **Would this affect cost of living in Hawaii**? Overall outcome: Likely to raise the cost of energy, transportation, and goods produced in Hawaii. (p.89) For example, a carbon tax of $25 per ton of CO2 would convert to about $1 per thousand cubic feet of natural gas. It would add about 24 cents per gallon to the price of gasoline and about 28 cents per gallon to the price of diesel fuel.
5. **Would it be harder on lower income households?** Existing studies show that such a tax would be regressive since lower income households spend a greater proportion of their income on energy, more than double of what upper income households spend. So, this would need to be addressed.

[7] A few caveats from Economist Yoram Bauman who spearheaded the 2016 carbon tax effort in WA state, as noted in his email communication, August 16, 2018:" Caveat #1 is that apparently HI does (or at least did in 2015) have some coal consumption: about 1.5 MMTCO2, almost all for electric power generation. I don't know the details of the electricity sector in HI, but a $20 carbon tax might well be enough to shut down a coal plant, so that's $30m in annual revenue that might not materialize."

"…on page 89 of the appendix it notes that the WA carbon tax started at $15 per ton CO2, and two paragraphs later says that a $20 carbon tax for Hawaii would be "higher than the Washington proposal". This is factually correct, but still a bit misleading: the WA carbon tax did in fact start at $15 per ton CO2 in year 1, but it increased to $25 per ton CO2 in year 2 and then went up at 3.5% plus inflation thereafter (to a max of $100 per ton CO2 in inflation adjusted 2016 dollars). So it would be more correct to say that there was a two-year phase-in of the carbon tax to $25 per ton CO2, and that $25 number (not the $15 number) was the focus of public discussion."

6. **How popular would it be?** According to a report by the Carbon Tax Center, Hawaii has "promising" potential for establishing a carbon tax. Backed by data from the Yale Climate Opinion maps, Hawaii ranks 3rd in the nation for supporting a carbon tax if refunded.[8]
7. **What will it be used for?** Hawaii is suffering the impact of emissions from burning of fossil fuels the world over. To fund its adaptation to deal with impacts such as sea level rise, a carbon tax would be a possible candidate. It has co-benefits—helps change behavior to reduce emissions, and could fund adaptation.
8. **Could it take the place of other taxes so life in Hawaii doesn't get more expensive?** It could also be revenue neutral—in which case it would be harder to fund adaptation, but would still change behavior and therefore, emissions.
9. **What Carbon Tax initiatives have taken place in other states?** Several initiatives have made it to the ballots in other states, but only one has passed-- in Boulder, CO—however, it was not an economy wide tax. Washington state has been in the throes of passing a revenue positive carbon fee (I-1631), starting at $15 per ton CO2, with the money going to fund clean energy, environmental justice, and adaptation programs. Given similar objectives, Hawaii may well want to review the applicability of this initiative to the situation here. The table contained in the Appendix lists summaries of these initiatives.

[8] Bauman, Yoram and Charles Komanoff. *Opportunities for Carbon Taxes at the State level.* A Carbon Tax Center Report. April 2017. https://carbontax.org/Opportunities_for_Carbon_Taxes_at_the_State_Level.pdf

ITEM 2. A Proposal to Develop a PSA Campaign for Clean Commuting in Hawaii

Recommendation to the Climate Commission: The Climate Commission should consider supporting a multi-year education/PSA campaign that addresses the link between the need for a price on carbon, and highlighting the importance of clean transportation in Hawaii—which will increase quality of life, and address climate change impacts by decreasing congestion, commute time and costs, and emissions.

A proposed program may contain the following elements described below.

What: Funds are needed to develop and measure a sustained 3-year behavior change campaign to encourage clean commuting. This includes developing marketing goals, branding strategy, messaging, execution, monitoring, and evaluation.

Why: To increase quality of life, and address climate change impacts--by decreasing congestion, commute time and costs, and emissions.

Target audience: The primary audience is Hawaii's commuters—those who SOV commute because they have few options, and those who commute for multiple jobs. A secondary audience is younger commuters.

How: With the help of these funds, State's Climate Coordinator will work with partners –nonprofit and private—to bring a PSA campaign to life.

HOW DO WE GET TO WORK?

Percentages of Hawaii residents and Americans overall who use various options to commute to work.

	HAWAII	NATION
Drive or Carpool	81.1	85.8
Public Transportation	6.1	5.2
Walk	4.2	2.8
Bikes and Other Means	4.2	1.9
Work at Home	4.4	4.4

*Source: 2013 American Community Survey by the U.S. Census Bureau

The car: A pernicious thing of the past. Single Occupancy Vehicles—SOVs--are expensive in terms of lost lives, lost productivity from congestion, and increased pollution/emissions.[9,10] Worldwide, traffic accidents cause 1.25 million deaths.[11] In Hawaii, pedestrian fatality rates are the highest in the U.S. – 27% higher than the national average.[12] Traffic congestion costs $305 billion in 2017 in the U.S. alone.[13] In Hawaii, two-thirds of all commutes are in a single occupancy vehicle contributing to some of the worst traffic congestion in the US.[14] In Honolulu, motorists spent an average of 50 extra hours in traffic due to congestion alone in 2014, putting the paradisiacal city in the top 20 percent of cities in a study by INRIX.[15] Excess fuel burned cost each auto commuter $1,125 per year, giving the city a rank of 24 in the same study. Hawaii's Blue Planet Foundation says motorists logged more than 11 billion miles in 2012, and if even 5 percent of those miles were walked or biked, the shift would save Hawaii $100 million on gasoline, and 500 million pounds of CO2.[16]

The need for a media campaign. Understandably, then, transportation visionaries see the personal vehicle as a thing of the past--at least, car ownership and the single occupancy vehicle. While an alternative vision for car ownership exists, and technology disruption has given us a glimpse of what the future holds through rideshare (Uber and Lyft) and carshare programs, such visualization needs to be extended out to a wider audience to demonstrate how such a mode-shift is applicable in daily life and commute. A well-designed media campaign could provide this visualization and help change attitude and behavior—and therefore, vehicle miles travelled (VMTs), congestion and emissions. Of course, such a campaign needs to be accompanied with real and viable options for commuting to work—such as rail, large scale carshare, bikeshare, vanpool/carpool, generally increased mobility, and incentives from employers for this mode-shift. These options, along with compact mixed-use development that encourages non-auto travel, will allow Hawaii to meet its clean energy goals.[17]

Commuters are putting more miles on their cars. VMT growth has continued across the U.S., according to federal data, even if it is not growing as fast as it did in previous years.[18],[19] In Hawaii, too, VMT has

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[9] Dalkmann et al. Transforming Transportation: Toward Sustainable Mobility for all. World Resources Institute. 2017.

[10]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."

[11] Dalkmann et al. Transforming Transportation: Toward Sustainable Mobility for all. World Resources Institute. 2017.

[12] Rhodium Group. Transcending Oil. Pg. 16.

[13] Benjamin Schneider. Traffic's Mind-Boggling Economic Toll. CityLab. Feb 7, 2018. The INRIX study cited here includes direct and indirect costs of congestion—fuel burned while idling in traffic, but also the business costs passed onto consumers from trucks idling in traffic.

[14] Rhodium Group report, p. 16.

[15] Schrank, et al. 2015 Urban Mobility Scorecard. Texas A&M and INRIX. August 2017.

[16] Tani, Carlyn. As the Nation Turns, Hawaii is Still Driven. Hawaii Business Magazine. November 13, 2014.

[17] SSTI. Osborne, Beth. May 2018. https://www.ssti.us/2018/05/to-reach-clean-energy-goals-hawaii-needs-to-address-vmt/

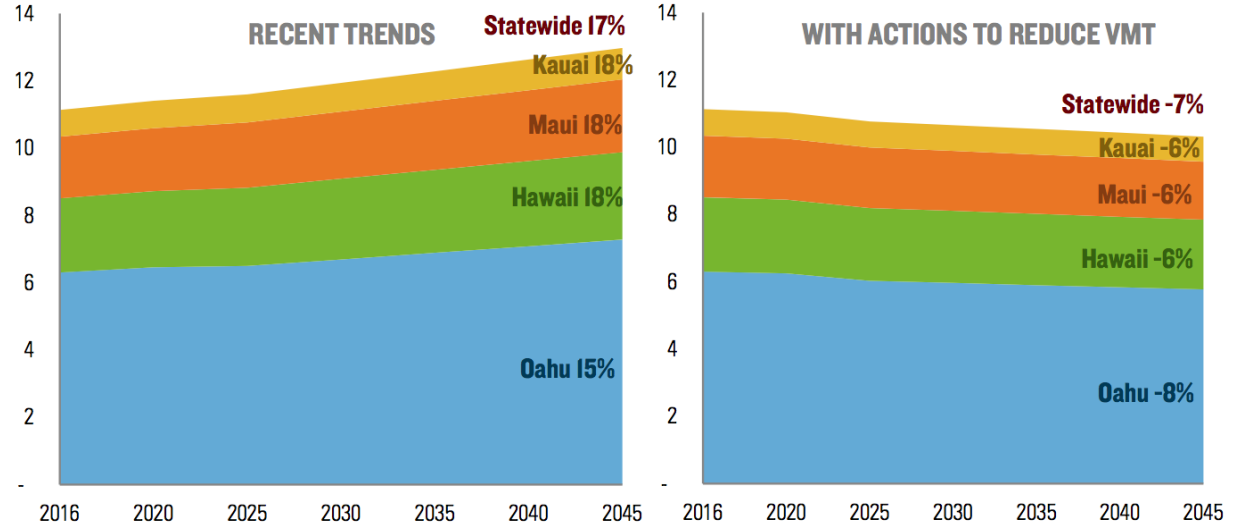
[18] Hecox, Doug. U.S. Driving Increases for Sixth Straight Year, New Federal Data Show. U.S. Department of Transportation. August 29, 2017.

[19] State Smart Transportation Initiative. McCahill, Chris. May 2017. https://www.ssti.us/2017/05/vmt-growth-continued-slowed-in-2016/

risen, and is now about 15 percent higher than in 2009.[20] According to experts at UH, the tourism industry and a thriving economy will continue to increase driving miles in Hawaii.[21]

Figure 3.4: VMT projections by county, 2016-2045

Billion miles traveled

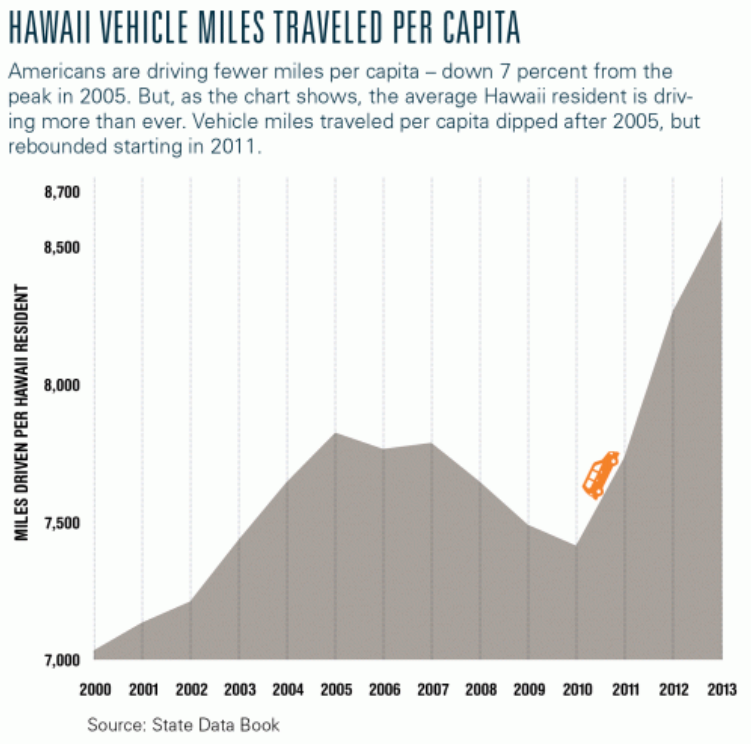


Source: Transcending Oil: Hawaii's Path to a Clean Energy Economy. 2018.[22]

Teens and Millennials are driving less. However, interesting patterns are emerging among today's teens and Millennials (those born between 1983 and 2000)—who are driving less, as a group. According to nationally-representative surveys done annually providing licensure and driving patterns among U.S. teens, "[d]uring 2006–2015, the proportion of high school seniors that reported having a driver's license declined by 9 percentage points (11%) from 81% to 72%." These data also indicate that licensure and driving patterns among U.S. high school seniors have not rebounded since the economic recession.[23],[24] Similarly, Millennials, the nation's largest generation, are less car-focused than previous generations of young people, and than older Americans.[25] Between 2001 and 2009, the average number of miles driven by 16 to 34-year olds dropped by 23 percent. In Hawaii, too, similar trends are being played out—38 percent fewer residents aged 15-19 have driver's licenses now than in 1995, and drivers aged 20-24 went up by less than

[20] Tani, Carlyn. As the Nation Turns, Hawaii is Still Driven. Hawaii Business Magazine. November 13, 2014.
[21] Tani, Carlyn. Hawaii Business Magazine. November 13, 2014. Quotes Panos Prevedouros, civil engineer, UH-Manoa, and Chair, freeway operations simulation subcommittee of the Transportation Research Board, a division of the National Research Council.
[22] Transcending Oil: Hawaii's Path to a Clean Energy Economy. Rhodium Group and Smart Growth America. Elemental Excelerator. 2018.
[23] Ruth A. Shults, and Allan F. Williams. Trends in teen driver licensure, driving patterns and crash involvement in the United States. 2006–2015. Division of Unintentional Injury Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.
[24] Tani, Carlyn. Hawaii Business Magazine. November 13, 2014
[25] Dutzik et a. Millennials in Motion: Changing Habits of Young Americans and the Implications for Public Policy. PIRG and Frontier Group. October 2014.

a percent.[26] These trends, coupled with state policies and laws that steer people towards clean transportation and a mode-shift (such as EV incentives, a change in parking policies, etc.), and a PSA campaign would help bring about a meaningful change in behavior --in how Hawaii residents travel to work.



Timeline.

Three years, weaving together transportation events with partners. With the requested funds, we intend to create and market a state-wide brand over 3 years. Such a brand would include and reinforce all modes of transit being operated by existing partners (bus, bikeshare, carshare, rideshare, vanpool), and establish measures of success and a way to track/monitor metrics. The program would coalesce around transportation events statewide—such as the opening of a new bike lane, or launch of an electric bus; and other programs/policies that State may be putting in place such as carshare/vanpool, and EV infrastructure development and deployment. Each event will contain a preparatory phase (polling, marketing, setting metrics in place), and a follow up phase (evaluation and subsequent actions) to help inform the next event, and thus evolve a creative, attractive brand for clean commuting in Hawaii.

[26] Murray. Meghan M. Teens Say No to Driver's License. Hawaii Business Magazine. September 8, 2016.

Budget.

Exact costs will depend on the details of the campaign. Other states and cities that have undertaken similar campaigns have spent from $200,000 (Knoxville) to $27.4 million (California).[27], [28] Portland's neighborhood programs for transportation cost an average of $645,358 per year.

For communications, education and community engagement, especially with equity issues in mind, a budget of $250,000 is requested each year for three years, to total $750,000. This would include program and metrics development, implementation of the program, and data collection and evaluation each year.

[27] Goffe et al. Marketing Alternative Transportation in the City of Columbus. Smart Tips Groups.
[2828] State of California. Year Two Joint Consumer Action Plan to implement the CPUC's statewide energy efficiency customer engagement initiative. January 14, 2018.

ITEM 3. Modernizing Parking Policies to Achieve State Goals for Emissions Reduction

Recommendation to the Climate Commission: Urge the State to partner with counties to modernize parking policies and parking management, which will reduce overall emissions, congestion and vehicle miles travelled (VMT) from driving, and increase biking, walking, and transit use, in order to achieve State goals.

Parking subsidies encourage people to drive alone and drive more often. This means:

- Increase in roadway congestion
- Increase in vehicle miles traveled (VMT)
- Increase in 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.[29] They could reduce drive-alone commute trips from a low of 1 percent to a high of 22 percent depending on the policy and city. Six different policy scenarios were modeled in nine different cities.

A study specific to Hawaii will help inform State actions to address emissions. A state-funded study on the effects of different parking policies to reduce emissions, VMT, and congestion, and ultimately achieve State goals, will inform further action on the parking issue and how best the State can use parking policies to achieve better mobility for all users, while achieving its climate and greenhouse gas goals. The resulting report can be used as the basis for new legislation and/or executive action.

The outcomes of such a study may include:

- A "menu" of parking policies that are most effective for reducing emissions, VMT and congestion in Hawaii, including parking for car share for government and private use.
- An on-street and off-street parking inventory that includes full characterization of such parking will inform the study.
- A parking tool to help governments determine optimal parking rates, sizes and number of spots in developments.

The study/studies would:

1. Contain an analysis of various parking policies for the entire state, with a focus on commuters;
2. More broadly, also include an analysis of other policies for the entire state, such as registration, insurance and pre-tax benefits, which are focused on all drivers, in addition to commuters;
3. Identify a baseline inventory of all parking spaces (off street and on street) in Hawaii, and develop a tool (such as rightsizeparking.org or http://connect.greentrip.org/) that would be useful to State and counties for smarter planning and decision-making for all users.

[29] "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.

ITEM 4. Transforming State and County fleets –through EV Car Share

Recommendation to the Climate Commission: The Climate Commission could urge State and counties to transform their fleets, especially through EV car share to move to an EV-based fleet, which would lead to wider development and deployment of supporting infrastructure, and accelerate the adoption of EVs in the state.

Dump the old motorpool. The cloud and technology have converged to the point of being able to share everything from houses and cars, to rides, bikes, and tools. Private carshare's major impact is on vehicle ownership, reduction in VMT, and in GHG emissions. Studies done in North America have shown that carshare can result in an average net reduction of at least 0.58 MT CO2e per year per member and that each carshare vehicle likely removes between 9 to 12 private cars off the road. [30] Motorpools, the old version of carshare, are a thing of the past. Government cars are rarely used all day. Because of this intermittent usage, they sit around, costing money as a depreciating asset, and taking up valuable parking space. Because they are expensive to replace, the fleet ages, and turns over in a longer timeframe. This is where car share for government fleets make sense. While the general public's use of carshare may be more familiar, carshare can play a significant role in providing an alternative to the costly and old state model of having a motorpool. Even the federal government's GSA offers car share program to reduce costs, improve efficiency and optimize vehicle use.[31] This section outlines the role of car share for public fleets, with implications for the larger community in VMT reduction, catalyzing EV adoption, and therefore, emissions reduction.

Carshare for public fleets: instead of fleet ownership by government, where vehicles age and are replaced on a longer schedule, having a fleet that is owned and operated by rental car companies can be more cost-effective, and reduce the number of vehicles on the road. A study of the life cycle impacts of car sharing adoption in the US showed GHG emissions reduction by approximately 51 percent. [32] Another study demonstrated that using hybrids and EVs could reduce CO2 emissions by 35 and 65 percent, respectively.[33] Carsharing for government employees also provides public administrators the ability to easily track and manage vehicle use, mileage, and costs. If the state could provide the right incentives (such as streamlining joint procurement with State and counties, and "piggybacking" onto existing agreements nationwide, government carshare could be a catalyst for EV adoption and infrastructure

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[30] http://innovativemobility.org/wp-content/uploads/2015/07/Carsharing-Parking-Policy-Review-of-North-American-Practices-and-San-francisco-California-Bar-Area-Case-Study.pdf According to nine studies done in North America, a carsharing vehicle reduce the need for up to 20 privately owned cars. Thirteen studies also showed that upto 32 percent of carshare participants sold a vehicle after joining a carshare program, and upto to 71 percent delayed or forwent a vehicle purchase. Impact studies have shown a reduction in VMT—and therefore, GHG emissions, averaging 44 percent among carshare members. Because many carshare organizations use lower emissions vehicles, carshares have further reduced GHG emissions.

[31] Car Sharing. U.S. General Services Administration: https://www.gsa.gov/travel/plan-book/transportation-airfare-rates-pov-rates/car-sharing.

[32] Chen, T.D.; Kockelman, K.M. Carsharing's life-cycle impacts on energy use and greenhouse gas emissions. Transp. Res. D 2016, 47, 276–284. [CrossRef]

[33] Baptista, P.; Melo, S.; Rolim, C. Energy, environmental and mobility impacts of carsharing systems. Empirical results from Lisbon, Portugal. Procedia Soc. Behav. Sci. 2014, 111, 28–37. [CrossRef]

development economy-wide, as rental car companies offload their pre-owned vehicles into the larger community.

Chicago's carshare experience: Since 2011, the City of Chicago has worked with ZipCar to reduce the number of city-owned vehicles that are used for administrative purposes through car sharing (used downtown for administrative purposes) and vehicle pooling (used by tradespeople throughout the City when car share's geographical and versatility limitations did not meet a need).[34] Over 1000 city employees use the program. Chicago's fleet has decreased from 35 percent over five years. The reduction of the motor pool through car sharing has yielded roughly $6.2 million in savings since 2011, or a 15% reduction in operating costs every year.

For Hawaii, projected benefits are large too--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.

Potential challenges to carshare:

1. **Getting EVs into the Fleet**. Green vehicles, especially EVs are more expensive, and it will take longer to recoup the costs of the vehicles.
2. **A potential union issue**. Reduction in fleet size will lead to a reduction in the number of mechanics and maintenance positions, a possible union issue.
3. **Change in provider will lead to re-enrollment changes**. When a contract ends, re-enrollment quirks may be a barrier.
4. **Lack of competition**: only one or two providers may service an area, and in Hawaii, even fewer. This can lead to a monopoly situation.
5. **Altering employee behavior**[35]: Chicago found that the main resistance came from employees and departments who were used to having vehicles at their disposal. They had to get accustomed to sharing with 25 other departments.
6. **Parking and use of curb space**. Parking, especially public parking, can be a potential barrier to private carshare because government procurement laws usually cannot favor parking for specific companies. If the law were amended to allow this, and since carshare makes more efficient use of parking, there is substantial opportunity for reducing petroleum use in single occupancy vehicle travel. Cities such as Seattle, Sacramento, and New York have amended their parking laws to allow for private carshare vehicle parking, and this may be something to consider for government and public use carshare.[36]

[34] Municipal fleet management with ZipCar – Chicago, USA: a case study. Uraia: SMART city solutions from an active citizenship. 2017: http://www.uraia.org/en/library/inspiring-practices-catalogue/chicago-municipal-fleet-management-zipcar/

[35] City of Seattle Vehicle Reduction through Car-Sharing Feasibility Study. Finance and Administration Services (FAS). 201.

[36] Where's car share parking? City of Seattle DOT Blog. Nelsonlm. August, 16, 2018

ITEM 5. Amend Laws to Better Align with Clean Transportation Priorities.

Recommendation to the Climate Commission: The Climate Commission should issue a statement urging the legislature to strengthen laws (either through amendments or new legislation) that seek to better align Hawaii's transportation sector with its clean transportation priorities. Similarly, the Climate Commission should appeal to state and county agencies to step up implementation of all clean transportation initiatives.

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. This section outlines a few examples where laws could be strengthened, 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,[37] 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.[38] 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

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[37] 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."

[38] 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.

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.[39] 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 Center) and provide a fast track to innovative, lesser known technology companies that may not have an established track record with the Federal Government. [40] 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 291-71[41] 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.[42] 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.

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[39] The Commonwealth of Virginia's 2018 Energy Plan. P. 46. Office of the Secretary of Commerce and Trade, Department of Mines, Minerals and Energy.

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

[41] "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."

[42] 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.

3. **HRS 103D-412[43] 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.

[43] "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."

APPENDICES

Appendix 1. Carbon tax initiatives, as of September 2018

State	Description
WA	Establishing a carbon pollution tax and investment program to reduce greenhouse gas emissions, facilitate the transition to a clean energy economy, and invest in K-12 education and other vital public services.
WA	Establishing a carbon pollution tax and investment program to reduce greenhouse gas emissions, facilitate the transition to a clean energy economy, and invest in K-12 education and other vital public services.
WA	This measure (I-732) establishes a tax to account for the economic and 34 environmental impacts of carbon pollution. The revenue will 35 facilitate the transition from fossil fuels to clean energy and fund 36 investments that will benefit our businesses, our families, and our 37 communities. It will also invest in adapting to the impacts of 38 climate change and protecting our rural communities and key economic 39 sectors including agriculture, shellfish, and forestry. (NOT PASSED)
MA	(S. 1821) 100% of the revenue would be returned to households, businesses, and institutions. For the CO2 charges paid by people, each state resident would receive an equal share of the total money collected. For charges paid by businesses and other institutions, each would get a rebate in proportion to its share of total employment in Massachusetts. Additional rebates would be provided to households in rural areas and to businesses that are energy-intensive and face stiff out-of-state competition. The fee would start out at $10 per ton of CO2, rising $5 a year until it hits $40 a ton.
MA	80% of the revenue would be returned via rebates to households and employers, while 20% would be used to fund green infrastructure investments in transportation, clean energy, and protection against the impacts of climate change. By rebating a high proportion of the funds through a progressive formula, the bill would ensure that low- and moderate-income households do not come out behind. Because the bill rebates funds to employers based on their number of employees, most business sectors would come out ahead or about even, and there would be a net gain to employment in the state. The fee would begin at $20 per ton of CO2, and rise $5 a year until it hits $40 per ton, the same as in S 1821. (ORGANIZING)
RI	Reduce greenhouse gas emissions 10% by 2020, 45% by 2035, and 80% by 2050 from 1990 levels. H7325 (2016) sets carbon fee of $15/ton increasing at $5/ton/year. (ORGANIZING)
CA	Proposes a carbon tax for California, currently a Cap and Trade state.
VT	Currently a carbon cap and trade state (RGGI). Proposes evaluation of carbon tax options. Looking at models from other regions to move forward with implementation of a carbon tax. (ORGANIZING)
VT	2018 ESSEX Plan: aims to make fossil fuels more expensive while cutting the cost of electricity by up to 27%.

NY	September 2015: Bill A8372 Cahil/S6037 Parker, starts taxing CO2 emissions from coal, oil, natural gas, and biofuels at $35 per ton - increase annually by $15/ton (max $185 per ton). 60% of revenue return to low/moderate-income households, 40% to prepare for CC/renewable energy/build transportation infrastructure. (ORGANIZING)
OR	2015: House Bill 3252, imposes tax on each fuel supplier and utility based on the amount of carbon in carbon-based fuel that is sold by the supplier to the consumer OR used to produce carbon-generated electricity supplied by utility to consumer. $10/ton, rising by 410 a year until ceiling of $60. HB 3252 was, in 2016, pre-empted by Senate Bill 1547 which calls for an increase in solar and wind facilities to supplement hydro-electric. (ORGANIZING)
Boulder, CO	2007: Climate Action Plan tax: Carbon tax per kWh of electricity due to the high consumption of coal based electricity. Residential cost = $.0049/kWh, Commercial cost = $.0009/kWh, Industrial cost = $.0003/kWh. The carbon tax has generated up to $1.8 million a year. Funds go towards Climate Action Plan: public education, public transit, energy audits, rebates. As a result they have achieved one of the highest rates of installed solar. (PASSED/IMPLEMENTED)
FL	2018: $24/ton, rising 2% annually. Eliminate the federal gas tax and implement this carbon tax instead. Looking to gain a 30% reduction in GHG CO2 by 2032. Taxes are applied to coal mine, refinery, processing, industrial facilities, fuel importers, importer or burner of biomass. Money will go to Highway Trust Fund (70%), grants for low income houses (10%), chronic coastal flooding mitigation (5%). (IN PROGRESS- meeting stiff opposition)

Appendix 2. Details of Carshare programs

1. Hui CarShare in Hawaii: https://www.drivehui.com/pricing/
    a. Currently no monthly fees
    b. $9.95/hr or $79.95/day
    c. Hybrids and plug-ins available
2. Enterprise CarShare: https://www.enterprisecarshare.com/us/en/programs/retail/honolulu-waikiki.html
    a. $10/hr and up or $70/day and up.
    b. No hybrid or electric vehicles
3. ZipCar: https://www.zipcar.com/pricing

    c. $9.75/hr included with 180 miles. Complimentary gas card and insurance included
    d. All cars are ICE

Program Details

1. Hui CarShare Program:
Introduction:

Hui Car Share is owned and operated by Servco Hawaii. This local business provides three vehicle classes to the consumer: Toyota Prius and Prius Prime, Toyota Camry XSE, and soon the Lexus RXL.

Checking out a Car:

To use the Hui Car Share the renter must first download the application through their cell phone online. This will serve as their digital key. In order to check out a Car with Hui, the consumer must first reserve the vehicle on the time scale of one hour to an entire day. Once ready to drive, the consumer will use their cell phone as a digital key to unlock the vehicle, power the vehicle on, and be on their way. When returning the vehicle, the vehicle must be parked back in its fixed spot where it was picked up. The vehicle must be returned with at least ¼ tank of gas. After locking and walking away from the vehicle the account will be billed for the time that was booked.

Included with the Vehicle:

With the Hui vehicle comes insurance, gas, maintenance, parking, cleaning, 24/7 help and roadside assistance. This can make these vehicles must cheaper than fleet vehicles when used infrequently.

Rates:

Vehicle	Rates (hourly/daily)
Toyota Prius/ Prius Prime	$9.95/$79.60
Toyota Camry XSE	$13.95/$111.60
Lexus RXL	$19.95/$159.60

2. Enterprise CarShare Program:

Introduction:

Enterprise CarShare is a way for organizations and businesses to have a company fleet without physically owning a single car. This program is ideal for employees that bike, walk or ride transit to work, but still need a vehicle occasionally to reach meetings and appointments. This program could potentially be used for administration vehicles of the DLNR; supplementing the current fleet as is.

Checking out a Car:

Once a member of the program is approved, they then use the mobile app to reserve a vehicle. Their membership card is then used to unlock the vehicle, where the keys are already inside. The vehicle is then returned at the end of the rental duration, the card is used to lock the doors and the keys are left inside.

Feasibility:

The CarShare location for Honolulu is at HPU, approximately a 15 minute walk, 6 minute bike, or 14 minute bus from the SOH Department of Land and Natural Resources Office. A one-time application fee of $25 is required for each member wishing to participate in the program (currently the application fee is waived through 8/31/18).

Rates:

Vehicle	Rates (hourly/daily)
Economic	$10/$70
Sedan	$10/$70
Crossover/SUV	$11/$85
Cargo Van	$12/$85
Minivan	$12/$85
Truck	$12/$85

Benefits:

The rental includes a variety of hybrids and electric vehicles. 56% of the vehicles available average a highway fuel efficiency rating of 28 mpg, and 25% of the vehicles average 32 mpg or better. Carbon offsets can be purchased at $1.25 per rental through terrapass, and enterprise will match each dollar up to $1 million. Renters received unlimited miles, fuel, damage/liability protection and 24/7 member service and roadside assistance.

3. ZipCar Car Share

ZipCar at this time is only available in Honolulu. The two main locations are located at the east end of Waikiki. The vehicles available at this time are, like Enterprise, only internal combustion engines.