



**STATE OF HAWAII**  
**HAWAII CLIMATE CHANGE MITIGATION & ADAPTATION**  
**COMMISSION**  
POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

**Testimony of**  
**ANUKRITI HITTLE**  
**COORDINATOR, HAWAII CLIMATE CHANGE MITIGATION AND ADAPTATION**  
**COMMISSION**

**Before the House Committee on**  
**ENERGY & ENVIRONMENTAL PROTECTION**

**Thursday, January 23, 2020**  
**9:00AM**  
**State Capitol, Conference Room 325**

**In consideration of**  
**HOUSE BILL 555**  
**RELATING TO THE ENVIRONMENT**

House Bill 555 proposes to require state agencies to participate in a carbon offset program to offset carbon emissions caused by their employees' air travel, and proposes to require the Department of Land and Natural Resources to establish and administer a carbon offset program. **I offer the following comments on behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 Session Laws of Hawaii 2017, to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by the Department of Land and Natural Resources and the Office of Planning, it consists of 20 members—four chairs of legislative committees, and executive department heads at the county and state levels.

Given its geography, air travel is a necessity of life in the Hawaiian islands, whether interisland, interstate or international. According to the State’s latest *Greenhouse Gas Emission Report*, Hawaii is on track to meet its emissions goals. However, since this accounting does not include emissions from air travel, which are a significant component of overall transportation emissions in Hawaii, as Hawaii progresses towards its goal to sequester more carbon than it produces by 2045, a carbon offset program will undoubtedly be a crucial component of mitigation. House Bill 555 is an important part of the equation, as it attempts to address some of the emissions from air travel. The Commission, in keeping with promoting ambitious strategies for climate change, encourages the consideration of offsets for all air travel.

Thank you for the opportunity to comment on this measure.



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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committees on  
ENERGY AND ENVIRONMENTAL PROTECTION  
and  
WATER, LAND and HAWAIIAN AFFAIRS**

**Thursday, February 6, 2020  
9:15 AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 1621  
RELATING TO CLIMATE CHANGE**

House Bill 1621 proposes to establish the Honolulu Shoreline Climate Protection Pilot Project. Requires the Hawaii Change Mitigation and Adaptation Commission (Climate Commission) to develop comprehensive plan to protect urban Honolulu from the risk of coastal disaster events. Anticipates use of the plan as a model for the State. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure, provided that its passage does not replace or adversely impact priorities indicted in the Department of Land and Natural Resources' Executive Supplemental Budget.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Adaptation to sea level rise and its impacts are one of two priorities for the Commission, and this measure is a crucial step in addressing this priority.

Thank you for the opportunity to offer comments in support of this measure.

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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committee on  
ENERGY & ENVIRONMENTAL PROTECTION**

**Thursday, January 30, 2020  
8:30AM  
State Capitol, Conference Room 325**

**In consideration of  
HOUSE BILL 1845  
RELATING TO THE ELECTRIC VEHICLE CHARGING STATION REBATE  
PROGRAM**

House Bill 1845 proposes to appropriate funds for the electric vehicles charging systems rebate program. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Transportation (air and ground) is the single largest source of greenhouse gas emissions in Hawaii, which mirrors the trend nationwide (according to EPA, it was the largest source of GHG emissions in 2017). One of the two focuses of the Commission is to reduce emissions from ground transportation, and HB1845 is a crucial component of this effort. The Commission’s statement on ground transportation, issued in November 2018, “supports mechanisms to reduce overall vehicle miles travelled (VMT) as well as converting all remaining vehicle-based ground transportation to renewable, zero-emission fuels and technologies.” Such conversions would include electrification of transportation, and its supporting infrastructure. A rebate program for charging infrastructure would be critical in promoting electrification of transportation.

The Commission's mission statement (above) emphasizes that strategies be equitable, and encourages any rebate program to consider and address infrastructure development in currently underserved areas and populations in an equitable manner.

Thank you for the opportunity to comment on this measure.



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**Before the House Committees on  
ENERGY AND ENVIRONMENTAL PROTECTION  
and  
WATER, LAND and HAWAIIAN AFFAIRS**

**Thursday, February 6, 2020  
9:15 AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 1848  
RELATING TO COASTAL ZONE MANAGEMENT**

House Bill 1848 proposes to require new development to plan for the impacts of projected sea level rise and restricts development in areas significantly affected by projected sea level rise. It amends policies and objectives related to coastal zone management to reduce residential exposure to coastal hazards and protects state and public shoreline access. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, including requesting that all new development, redevelopment, and modifications be directed away from beach areas; urging counties to incorporate the 3.2 foot sea level rise exposure area (SLR-XA) as detailed in the Hawaii Sea Level

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Manager, CZM

Rise Vulnerability and Adaptation Report (Hawaii Sea Level Rise Report) into their general and community plans; and bring resources to assist in planning and implementing for sea level rise and other climate related impacts.

This measure acts on the Commission's priority recommendations, and is a crucial component of Hawaii's adaptation to the impacts of sea level rise.

Thank you for the opportunity to offer comments in support of this measure.

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References:

Habel, S.L., Anderson, T., Fletcher, C.H. and Thompson, P.R., 2019, September. COMPOUNDING MECHANISMS OF SEA LEVEL RISE INDUCED FLOODING PRODUCES DOUBLING OF CRITICAL INFRASTRUCTURE FAILURE IN HONOLULU BY THE 2030S. In *GSA Annual Meeting in Phoenix, Arizona, USA-2019*. GSA.

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McKenzie, T., Habel, S.L. and Dulai, H., 2019, September. INCREASED COASTAL POLLUTION EXPECTED UNDER FUTURE SEA LEVEL STANDS: CHEMICAL EVIDENCE FOR TIDAL GROUNDWATER INUNDATION OF COASTAL WASTEWATER INFRASTRUCTURE. In *GSA Annual Meeting in Phoenix, Arizona, USA-2019*. GSA.



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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committee on  
FINANCE**

**Friday, February 21, 2020  
12:00PM  
State Capitol, Conference Room 308**

**In consideration of  
HOUSE BILL 1856, HOUSE DRAFT 1  
RELATING TO SEA LEVEL RISE**

House Bill 1856, House Draft 1 proposes to direct the Hawaii Climate Change Mitigation and Adaptation Commission, in collaboration with the office of planning CZM program, to conduct certain activities to address the impacts of sea level rise and report to the legislature before the 2022 regular session; and appropriates funds for the commission's activities and extends the lapse date to June 30, 2022. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I appreciate the intent of this measure, and offer the following comments for consideration. I appreciate the appropriation intent as well, provided that its passage does not replace or adversely impact priorities indicted in the Department of Land and Natural Resources' Executive Supplemental Budget.**

The Hawaii Climate Change Mitigation and Adaptation Commission "recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient." The Commission, established by Act 32 SLH 2017 to uphold the United States' pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state's climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, including requesting that all new development, redevelopment, and modifications be directed away from beach areas; urging counties to incorporate the 3.2 foot sea level rise exposure area (SLR-XA) as detailed in the Hawaii Sea Level Rise Vulnerability and Adaptation Report (Hawaii Sea Level Rise Report) into their general and community plans; and bring resources to assist in planning and implementing for sea level rise and other climate related impacts.

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This measure acts on the Commission's priority recommendations, and is a crucial component of Hawaii's adaptation to the impacts of sea level rise. Since several of these components are already being initiated as part of the Commission's "Climate Ready Hawaii" initiative, the following comments are offered to help align legislative and executive action—which is one of the main purposes of the Commission:

1. For item (1), Page 2 Line 14: instead of directing the Commission to conduct said inventory, it might be more appropriate for the Commission, in keeping with its role as a coordinating body, to bring resources to the various agencies and departments in the form of best practices, formulating guidance, and providing a coordinating structure and timeframe within which to work, and I recommend modifying the language in this part to support the Commission's role in assisting agencies and departments in this manner;
2. For item (2), Page 2 Line 20: I believe this task has already been completed with the issuance of the State's Sea Level Rise report, and recommend it be removed from this measure;
3. For item (3) Page 3 Line 3: the Commission's staff is working with partners to operationalize sea level rise exposure areas into county planning and permitting, and can provide a status update in its Annual Report to the Legislature, and it is recommended that the measure's language reflect this;
4. For item (4) Page 3 Line 6: while this measure is helpful in underscoring the need to incorporate sea level rise into various plans, the Commission is working to enhance, uniformize, and support the work of the counties, rather than be seen as "interfering" in their jurisdictions. It is therefore recommended that the current language be replaced with "Work to enhance, uniformize, and support the work of the state and county agencies in their development of sea level rise adaptation plans utilizing the sea level rise vulnerability and adaptation report"; and
5. For item (5) Page 3 Line 9: This task would be an outcome of the previous task, and therefore, perhaps not appropriately placed in this measure—it might be more appropriate as a "Phase 2" task, once the above tasks have been completed; and recommend this be stricken from this measure, and considered at a future time.

**I am, further, supportive of language in Senate Bill 2683 Senate Draft 1 and Senate Bill 2162 Senate Draft 1 for which I provided the following clarification to the Senate Ways and Means Committee:**

"In order to clarify the direction given to the Commission, I recommend replacing the current language of Item 3 (b) with the following (underscored text is new) language: "The Climate Change Mitigation and Adaptation Commission shall research and submit a report on options for a state supplemental insurance program for properties within the State subject to climate change impacts to the Legislature prior to the Regular Session of 2021."

Thank you for the opportunity to offer testimony on this measure.





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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committee on  
ENERGY & ENVIRONMENTAL PROTECTION**

**Thursday, January 30, 2020  
8:30AM  
State Capitol, Conference Room 325**

**In consideration of  
HOUSE BILL 1863  
RELATING TO GREENHOUSE GAS EMISSIONS REDUCTION**

House Bill 1863 proposes to require the Hawaii State Energy Office to conduct a study to provide recommendations for a comprehensive approach to the development of electric vehicle infrastructure. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Transportation (air and ground) is the single largest source of greenhouse gas emissions in Hawaii, which mirrors the trend nationwide (according to EPA, it was the largest source of GHG emissions in 2017). One of the two focuses of the Commission is to reduce emissions from ground transportation, and HB1863 is a crucial component of this effort. The Commission’s statement on ground transportation, issued in November 2018, “supports mechanisms to reduce overall vehicle miles travelled (VMT) as well as converting all remaining vehicle-based ground transportation to renewable, zero-emission fuels and technologies.” Such conversions would include electrification of transportation, and its supporting infrastructure.

The Commission's mission statement (above) emphasizes that strategies be equitable, and that HB 1863 makes reference to ensure that currently underserved areas and populations are considered in this infrastructure development is noteworthy.

Thank you for the opportunity to comment on this measure.



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**Testimony of  
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**Before the House Committee on  
FINANCE**

**Friday, February 21, 2020  
12:00 PM  
State Capitol, Conference Room 308**

**In Support of  
HOUSE BILL 1878, HOUSE DRAFT 1  
RELATING TO REAL PROPERTY TRANSACTIONS**

House Bill 1878, House Draft 1 proposes to require seller disclosure in real property transactions to identify property within the sea level rise exposure area officially designated by the relevant county. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I support this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, **including supporting legislation for disclosure for private property and public offerings in areas with potential exposure to sea level rise.** This measure acts on this priority recommendation, and is a crucial component of Hawaii’s adaptation to sea level rise impacts on coastal property.

In December 2017, the Commission accepted the *Hawaii Sea Level Rise Report* and accompanying *Hawaii Sea Level Rise Viewer*. The Report and Viewer provide maps of a Sea Level Rise Exposure Area (SLR-XA) incorporating models of passive flooding, shoreline erosion, and annual high

wave run-up with 3.2 feet of sea level rise. These map layers are available for download in a variety of formats from the Viewer as well as the Hawaii Statewide GIS Program website.

Recent science summarized in the Report and Viewer points to a likelihood of three feet or more of sea level rise in the second half of this century - within the expected lifespan of most existing and new development. It is critical that sea level rise vulnerabilities are disclosed with the sale of a vulnerable coastal property to support informed decision making by buyers and government agencies, and this measure captures that such disclosure is essential

Thank you for the opportunity to testify on this measure.



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**Before the House Committees on  
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WATER, LAND and HAWAIIAN AFFAIRS**

**Thursday, February 6, 2020  
9:15 AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 2194  
RELATING TO COASTAL ZONE MANAGEMENT**

House Bill 2194 proposes to define “beaches” and “coastal hazards” and include specific references to “coastal dunes” to clarify CZM policies in Chapter 205A, HRS including special management Areas, shoreline setbacks, and variances. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, including requesting that all new development, redevelopment, and modifications be directed away from beach areas; urging counties to incorporate the 3.2 foot sea level rise exposure area (SLR-XA) as detailed in the Hawaii Sea Level Rise Vulnerability and Adaptation Report (Hawaii Sea Level Rise Report) into their general and

community plans; and bring resources to assist in planning and implementing for sea level rise and other climate related impacts.

This measure acts on the Commission's priority recommendations, and is a crucial component of Hawaii's adaptation to the impacts of sea level rise.

Thank you for the opportunity to offer comments in support of this measure.

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References:

Habel, S.L., Anderson, T., Fletcher, C.H. and Thompson, P.R., 2019, September. COMPOUNDING MECHANISMS OF SEA LEVEL RISE INDUCED FLOODING PRODUCES DOUBLING OF CRITICAL INFRASTRUCTURE FAILURE IN HONOLULU BY THE 2030S. In *GSA Annual Meeting in Phoenix, Arizona, USA-2019*. GSA.

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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committee on  
TRANSPORTATION**

**Friday, January 31, 2020  
10:00AM  
State Capitol, Conference Room 423**

**In support of  
HOUSE BILL 2207  
RELATING TO LAND USE**

House Bill 2207 proposes to authorize the office of planning to conduct a land use study for Hauula, Oahu, that assesses the viability and cost of maintain the transit corridor. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Addressing adaptation to address the impacts of climate change in Hawaii is one of the two main focuses of the Commission. In its September 2018 statement identifying strategies, it:

“Encourages agencies and non-governmental utility providers to identify and prioritize assets within the 3.2 feet SLR-XA or more as described in the State’s Sea Level Rise report, identify adaption measures, and to provide a status update on this activity annually to the Climate Commission.”

HB2207’s emphasis on climate adaptation strategy options that address the impact of coastal erosion on coastal highways is noteworthy. This measure also echoes the main message in the

Federal Highway Administration's *Nature-Based Solutions for Coastal Highway Resilience: An Implementation Guide*, August 2019 (FHWA-HEP-19-042) that nature-based solutions provide risk-reduction benefits to coastal highways by reducing coastal flooding, wave heights, and erosion, and can serve as a first line of defense and improve the resilience of coastal highways. Further, the National Institute of Building Sciences' *Natural Hazard Mitigation Saves: 2017 Interim Report* found hazard mitigation funding can save the nation \$6 in future disaster costs for every \$1 spent on hazard mitigation. This supports the idea embodied in HB2207—that a land use study to protect critical infrastructure is essential.

This testimony also encourages such climate adaptation strategy options be identified for the entire state coastal road system.

Thank you for the opportunity to comment in support of this measure.





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and  
WATER, LAND and HAWAIIAN AFFAIRS**

**Thursday, February 6, 2020  
9:15 AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 2266  
RELATING TO SEA LEVEL RISE**

House Bill 2266 proposes to direct the Hawaii Climate Change Mitigation and Adaptation Commission to address areas already impacted by sea level rise, identify vulnerable critical public infrastructure, create a plan for mitigation and adaptation to sea level rise, and provide policy direction to the legislature on funding and strategies to address the impacts of climate change on the state. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure, provided that its passage does not replace or adversely impact priorities indicted in the Department of Land and Natural Resources' Executive Supplemental Budget.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, including requesting that all new development, redevelopment, and modifications be directed away from beach areas; urging counties to

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incorporate the 3.2 foot sea level rise exposure area (SLR-XA) as detailed in the Hawaii Sea Level Rise Vulnerability and Adaptation Report (Hawaii Sea Level Rise Report) into their general and community plans; and bring resources to assist in planning and implementing for sea level rise and other climate related impacts.

This measure acts on the Commission's priority recommendations, and is a crucial component of Hawaii's adaptation to the impacts of sea level rise. Since several of these components are already being initiated as part of the Commission's "Climate Ready Hawaii" initiative, the following comments are offered to help align legislative and executive action—which is one of the main purposes of the Commission:

1. For item (1), Page 2 Line 16: instead of directing the Commission to conduct said inventory, it might be more appropriate for the Commission, in keeping with its role as a coordinating body, to bring resources to the various agencies and departments in the form of best practices, formulating guidance, and providing a coordinating structure and timeframe within which to work, and I recommend modifying the language in this part to support the Commission's role in assisting agencies and departments in this manner;
2. For item (2), Page 3 Line 1: I believe this task has already been completed with the issuance of the State's Sea Level Rise report, and recommend it be removed from this measure;
3. For item (3) Page 3 Line 5: the Commission's staff is working with partners to operationalize sea level rise exposure areas into county planning and permitting, and can provide a status update in its Annual Report to the Legislature, and it is recommended that the measure's language reflect this;
4. For item (4) Page 3 Line 9: while this measure is helpful in underscoring the need to incorporate sea level rise into various plans, the Commission is working to enhance, uniformize, and support the work of the counties, rather than be seen as "interfering" in their jurisdictions. It is therefore recommended that the current language be replaced with "Work to enhance, uniformize, and support the work of the state and county agencies in their development of sea level rise adaptation plans utilizing the sea level rise vulnerability and adaptation report";
5. For item (5) Page 3 Line 12: This task would be an outcome of the previous task, and therefore, perhaps not appropriately placed in this measure—it might be more appropriate as a "Phase 2" task, once the above tasks have been completed; and recommend this be stricken from this measure, and considered at a future time; and
6. For item (6) Page 3 Line 18: this work is considered a baseline for the tasks listed in this measure, and could be formulated into one of the white papers that will emerge from them; I recommend this be reflected in the measure's language somewhere as an output from the tasks above.

Thank you for the opportunity to offer comments in support of this measure.



**STATE OF HAWAII  
HAWAII CLIMATE CHANGE MITIGATION & ADAPTATION  
COMMISSION  
POST OFFICE BOX 621  
HONOLULU, HAWAII 96809**

**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Co-Chairs:**  
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**Before the House Committees on  
ENERGY AND ENVIRONMENTAL PROTECTION  
and  
TRANSPORTATION**

**Tuesday, February 4, 2020  
11:05AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 2398  
RELATING TO ELECTRIC VEHICLES**

House Bill 2398 proposes to establish an income tax credit of \$2,000 for each electric vehicle purchased by the taxpayer, and requires each state agency to purchase electric vehicles to replace existing vehicles as needed, and for all state vehicles to be electric by 2030. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Transportation (air and ground) is the single largest source of greenhouse gas emissions (GHG) in Hawaii, and mirrors a nationwide trend--according to EPA, transportation was the largest source of GHG emissions in 2017. Reducing emissions from ground transportation is one of two major focuses of the Commission, and a transition to clean renewable fueled vehicles is a crucial strategy to achieve state goals. Such conversions include electrification of transportation, and the use of

clean, renewable fuels, and a tax credit program could be critical in promoting this transition to clean transportation.

The Commission's mission statement infers that accelerating supporting EV infrastructure (especially in underserved areas) would provide a further impetus to EV adoption statewide. It is recommended that the measure consider including a reference to such support.

In its November 2018 statement, the Commission also emphasized the conversion of public fleets to "Transform State and county fleets to address VMT reduction, congestion, and emissions—especially through electrification, renewable fuels, carshare, and supporting infrastructure development and deployment." HB2398 is a crucial step in this transformation.

Thank you for the opportunity to comment in support of this measure.



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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committees on  
ENERGY AND ENVIRONMENTAL PROTECTION  
and  
TRANSPORTATION**

**Tuesday, February 4, 2020  
11:05AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 2462  
RELATING TO ELECTRIC VEHICLES**

House Bill 2462 proposes to establish the electric vehicle rebate program of the Public Utilities Commission to award rebates for the purchase of new electric vehicles. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Transportation (air and ground) is the single largest source of greenhouse gas emissions (GHG) in Hawaii, and mirrors a nationwide trend--according to EPA, transportation was the largest source of GHG emissions in 2017. Reducing emissions from ground transportation is one of two major focuses of the Commission, and a transition to clean renewable fueled vehicles is a crucial strategy to achieve state goals. Such conversions include electrification of transportation, and the use of clean, renewable fuels, and a rebate program could be critical in promoting this transition to clean transportation.

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In its November 2018 statement supporting a price on carbon, the Commission emphasized that carbon fee program mechanisms should minimize regressivity. It therefore would urge any rebate program to consider and address currently underserved and vulnerable populations in an equitable manner, and that the measure include reference to such equity.

Thank you for the opportunity to comment in support of this measure.



**STATE OF HAWAII  
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POST OFFICE BOX 621  
HONOLULU, HAWAII 96809**

**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committee on  
FINANCE**

**Monday, February 24, 2020  
1:00 PM  
State Capitol, Conference Room 308**

**In support of  
HOUSE BILL 2462, HOUSE DRAFT 1  
RELATING TO ELECTRIC VEHICLES**

House Bill 2462, House Draft 1 proposes to establish an income tax credit of \$2,500 per new electric vehicle that costs up to \$50,000. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I support this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32, Session Laws of Hawaii 2017, to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by the Department of Land and Natural Resources and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Transportation (air and ground) is the single largest source of greenhouse gas emissions (GHG) in Hawaii, and mirrors a nationwide trend--according to EPA, transportation was the largest source of GHG emissions in 2017. Reducing emissions from ground transportation is one of two major focuses of the Commission, and a transition to clean renewable fueled vehicles is a crucial strategy to achieve state goals. Such conversions include electrification of transportation, and the use of clean, renewable fuels, and a tax credit program could be critical in promoting this transition to clean transportation. This measure, by placing an upper limit on the price of the vehicle that will be eligible for a tax credit, also addresses the Commission’s equity focus.

Thank you for the opportunity to testify on this measure.

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**Before the House Committees on  
TRANSPORTATION  
and  
ENERGY & ENVIRONMENTAL PROTECTION**

**Tuesday, February 4, 2020  
11:00 AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 2493  
RELATING TO CARBON EMISSIONS REDUCTION**

House Bill 2493 proposes to establish a clean vehicle special fund to incentivize the purchase of vehicles that produce less carbon emissions by providing a rebate. It also proposes to create a graduated gasoline-powered vehicle tax to be paid by purchasers of a passenger car or pickup truck that is powered solely by gasoline and obtains only a certain number of miles per gallon. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Transportation (air and ground) is the single largest source of greenhouse gas emissions in Hawaii. This mirrors a nationwide trend--according to EPA, transportation was the largest source of GHG emissions in 2017. Reducing emissions from ground transportation is one of the two focuses of the Commission, and HB2493 is a crucial component of this effort. The Commission’s statement on ground transportation, issued in November 2018, “supports mechanisms to reduce overall



vehicle miles travelled (VMT) as well as converting all remaining vehicle-based ground transportation to renewable, zero-emission fuels and technologies.” Such conversions include electrification of transportation, and the use of clean, renewable fuels.

A rebate program such as the one proposed in this bill can be critical in promoting this transition to clean transportation.

In its November 2018 statement supporting a price on carbon, the Commission emphasized that carbon fee program mechanisms should minimize regressivity. It therefore urges any rebate program to consider and address currently underserved and vulnerable populations in an equitable manner, and that the measure include reference to such equity.

Thank you for the opportunity to comment in support of this measure.



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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committee on  
FINANCE**

**Monday, February 24, 2020  
1:00 PM  
State Capitol, Conference Room 308**

**In support of  
HOUSE BILL 2590, HOUSE DRAFT 2  
RELATING TO AUTONOMOUS VEHICLES**

House Bill 2590, House Draft 2 proposes to establish within the Department of Transportation (DOT) a two-year autonomous vehicle (AV) testing pilot program, requires report to the legislature, and appropriates funds. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I support this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32, Session Laws of Hawaii 2017, to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by the Department of Land and Natural Resources and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Reducing emissions from ground transportation is one of the two main priorities of the Commission.

This measure proposes to enact a two-year pilot program on the viability of autonomous vehicles in Hawaii. Other states have embraced AV vehicles and the potential to decrease noise, pollution,

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and congestion in urbanized areas. So far, 29 states have enacted AV-related legislation, and the number of states considering new legislation increases every year.<sup>1</sup>

According to the UC Davis Institute for Transportation and Development Policy, up to 80% CO<sup>2</sup> emissions can be reduced if cities embrace both automation and electrification in public transportation.<sup>2</sup> AVs could significantly increase both public and private transportation choices in the future by promoting affordability, accessibility and equity in the industry. As long as autonomous vehicles are electric, Hawaii can continue to progress toward its carbon neutrality goals and increase EV infrastructure this way.

Despite widespread implementation of regulatory frameworks in states such as California, there is still a lack of data on the long-term, widespread viability of AV.<sup>3</sup> Therefore, it is critical that legislation reflects the gravity of enacting autonomous vehicle implementation. According to a Princeton report, autonomous vehicles "could increase mobility, improve safety, reduce traffic congestion and make fleet management companies rich, while lowering emissions and reducing energy use. However, poorly managed ones could make things significantly worse on all these fronts."<sup>4</sup>

I defer to DOT on matters of safety, data sharing and oversight to make this a successful pilot. If implemented correctly, AVs represent an important first step in replacing single-operator vehicles and enhancing Hawaii's multimodal transportation infrastructure.

Thank you for the opportunity to testify on this measure.

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<sup>1</sup>"Autonomous Vehicles" (2019) National Conference on State Legislatures, available at: <https://www.ncsl.org/research/transportation/autonomous-vehicles-self-driving-vehicles-enacted-legislation.aspx>

<sup>2</sup> *Three Revolutions in Urban Transportation* (2017) Institute for Transportation and Development Policy, UC Davis.

<sup>3</sup> "On Autonomous Vehicles: Disruption or Status Quo?" (2018) Chris Johnson, California Walks, available at: <https://www.calwalks.org/blog/2018/5/2/avs>

<sup>4</sup> Judith M. Greenwald, Alain Kornhauser. It's up to us: Policies to improve climate outcomes from automated vehicles. *Energy Policy*, 2019; 127: 445 DOI: 10.1016/j.enpol.2018.12.017



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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committees on  
WATER, LAND and HAWAIIAN AFFAIRS  
and  
ENERGY AND ENVIRONMENTAL PROTECTION**

**Wednesday, February 5, 2020  
11:00 AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 2702  
RELATING TO THE DEPARTMENT OF HAWAIIAN HOME LANDS**

House Bill 2702 proposes to appropriate funds for a study by DHHL to plan for water flooding, climate change and redevelopment of twenty parcels of land in the Mapunapuna or Shafter Flats area. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, including:

“Encourage agencies and non-governmental utility providers to identify and prioritize assets within the 3.2 ft SLR-XA or more as described in the State’s Sea Level Rise report, identify adaptation measures, and to provide a status update on this activity annually to the Climate Commission.”

This measure acts on this priority recommendation, and is a crucial component of Hawaii's adaptation to sea level rise impacts on inland property affected by sea level rise.

Studies by local researchers indicate that tidal and sea level rise induced inland flooding represents a greater threat to Honolulu's infrastructure and assets than that caused by direct coastal flooding. In a study by Habel et. al (2019) it was found that less than 3% of sea level rise induced flooding will be caused exclusively by direct coastal flooding, while the remainder is expected to occur by combinations of flood sources including by groundwater inundation and drainage failure. Such flooding is already occurring in the Mapunapuna area during elevated tidal stages, in which floodwaters have been found to be contaminated by harmful pollutants. As sea level continues to rise, inland flooding and associated contamination concerns can be expected to progress in Mapunapuna and other economically valuable parts of Honolulu; so, in keeping with these findings, I believe that the proposed study could provide insights into locally appropriate adaptation solutions, in keeping with the Commission's work and priorities.

However, I defer to DHHL and any other departments directly affected on the feasibility of the actions proposed by this measure.

Thank you for the opportunity to offer comments in support of this measure.

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References:

Habel, S.L., Anderson, T., Fletcher, C.H. and Thompson, P.R., 2019, September. COMPOUNDING MECHANISMS OF SEA LEVEL RISE INDUCED FLOODING PRODUCES DOUBLING OF CRITICAL INFRASTRUCTURE FAILURE IN HONOLULU BY THE 2030S. In *GSA Annual Meeting in Phoenix, Arizona, USA-2019*. GSA.

Habel, S.L., 2019. *SEA-LEVEL RISE FLOODING AND RELATED IMPACTS: PRIMARY URBAN CORE, HONOLULU, HAWAI 'I* (Doctoral dissertation, UNIVERSITY OF HAWAI 'I AT MĀNOA).

McKenzie, T., Habel, S.L. and Dulai, H., 2019, September. INCREASED COASTAL POLLUTION EXPECTED UNDER FUTURE SEA LEVEL STANDS: CHEMICAL EVIDENCE FOR TIDAL GROUNDWATER INUNDATION OF COASTAL WASTEWATER INFRASTRUCTURE. In *GSA Annual Meeting in Phoenix, Arizona, USA-2019*. GSA.



**STATE OF HAWAII  
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**Before the HOUSE COMMITTEES ON  
ENERGY & ENVIRONMENTAL PROTECTION  
and  
HEALTH**

**TUESDAY, February 11, 2020  
8:30AM  
State Capitol, Conference Room 325**

**In support of  
HOUSE BILL 2718  
RELATING TO CLIMATE CHANGE MITIGATION AND ADAPTATION**

House Bill 2718 proposes to establish and appropriate funds for a climate change and human health adaptation coordinator within the department of Health. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure, provided it does not adversely affect the Department of Health's Executive Supplemental Budget.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” It is a high-level multi-jurisdictional body that guides the priorities of the state's climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

This measure acts on the Commission's mandates as established by Act 32 SLH 2017 to uphold the United States' pledges under the Paris Agreement, and is a crucial component of Hawaii's adaptation to the impacts of climate change. Since the Commission is the coordinating body for policies on climate change mitigation and adaptation for the state, I suggest the measure make direct reference to the Commission and its staff, in order to more effectively coordinate and align State priorities and actions on climate change mitigation and adaptation.

Thank you for the opportunity to offer comments in support of this measure.



STATE OF HAWAII  
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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the  
FINANCE**

**Monday, February 24, 2020  
1:00 PM  
State Capitol, Conference Room 308**

**In support of  
HOUSE BILL 2718, HOUSE DRAFT 1  
RELATING TO CLIMATE CHANGE MITIGATION AND ADAPTATION**

House Bill 2718, House Draft 1 proposes to establish and appropriate funds for a climate change and human health adaptation coordinator within the Department of Health. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I support this measure, provided it does not adversely affect the Department of Health's Executive Supplemental Budget.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” It is a high-level multi-jurisdictional body that guides the priorities of the state's climate response. Co-chaired by the Department of Land and Natural Resources and the Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

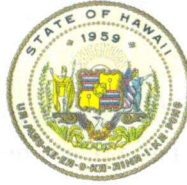
This measure acts on the Commission's mandates as established by Act 32, Session Laws of Hawaii 2017 to uphold the United States' pledges under the Paris Agreement, and is a crucial component of Hawaii's adaptation to the impacts of climate change.

Thank you for the opportunity to offer testimony on this measure.

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**STATE OF HAWAII  
HAWAII CLIMATE CHANGE MITIGATION & ADAPTATION  
COMMISSION  
POST OFFICE BOX 621  
HONOLULU, HAWAII 96809**

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The Adjutant General  
Manager, CZM

**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the House Committees on  
ENERGY & ENVIRONMENTAL PROTECTION  
and  
WATER, LAND & HAWAIIAN AFFAIRS**

**LATE**

**Friday, March 13, 2020  
11:00am  
State Capitol, Conference Room 325**

**In consideration of  
SENATE BILL 2060, SENATE DRAFT 2  
RELATING TO COASTAL ZONE MANAGEMENT**

Senate Bill 2060, Senate Draft 2 proposes to amend coastal zone management laws to further protect against impacts of sea level rise and coastal erosion; and require the Climate Change Mitigation and Adaptation Commission to submit a proposal for a State of Hawaii supplemental insurance program for properties within the State subject to climate change impacts to the Legislature prior to the Regular Session of 2021. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission), I support the intent of this measure, and offer the following comments.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 Session Laws of Hawaii 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the State. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by the Department of Land and Natural Resources and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, including requesting that all new development, redevelopment, and modifications be directed away from beach areas; urging counties to incorporate the 3.2 foot sea level rise exposure area (SLR-XA) as detailed in the Hawaii Sea Level



Rise Vulnerability and Adaptation Report (Hawaii Sea Level Rise Report) into their general and community plans; and bring resources to assist in planning and implementing for sea level rise and other climate related impacts.

For SECTION 12, in order to clarify the direction given to the Commission, I recommend replacing the current language with the following (underscored text is new) language: “The Climate Change Mitigation and Adaptation Commission shall research and submit a report on options for a state supplemental insurance program for properties within the State subject to climate change impacts to the Legislature no later than twenty days before the convening of the Regular Session of 2021.”

Thank you for the opportunity to testify on this measure.



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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the SENATE Committee on  
WAYS AND MEANS**

**Thursday, February 20, 2020  
10:35 AM  
State Capitol, Conference Room 211**

**In support of  
SENATE BILL 2162, SENATE DRAFT 1  
RELATING TO SEA LEVEL RISE**

**Co-Chairs:**  
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Senate Bill 2162, Senate Draft 1 proposes to direct the Hawaii Climate Change Mitigation and Adaptation Commission to address areas already impacted by sea level rise, identify vulnerable critical public infrastructure, create a plan for mitigation and adaptation to sea level rise, and provide policy direction to the legislature on funding and strategies to address the impacts of climate change on the state. It also proposes to appropriate funds. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I support this measure, provided that its passage does not replace or adversely impact priorities indicated in the Department of Land and Natural Resources' Executive Supplemental Budget.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, including requesting that all new development, redevelopment, and modifications be directed away from beach areas; urging counties to incorporate the 3.2 foot sea level rise exposure area (SLR-XA) as detailed in the Hawaii Sea Level Rise Vulnerability and Adaptation Report (Hawaii Sea Level Rise Report) into their general and

community plans; and bring resources to assist in planning and implementing for sea level rise and other climate related impacts.

This measure acts on the Commission's priority recommendations, and is a crucial component of Hawaii's adaptation to the impacts of sea level rise. In Item 3 (b), the measure requires the Climate Change Mitigation and Adaptation Commission to submit a proposal for a State of Hawaii supplemental insurance program for properties within the State subject to climate change impacts to the Legislature prior to the Regular Session of 2021.

In order to clarify the direction given to the Commission, I recommend replacing the current language of Item 3 (b) with the following (underscored text is new) language: "The Climate Change Mitigation and Adaptation Commission shall research and submit a report on options for a state supplemental insurance program for properties within the State subject to climate change impacts to the Legislature prior to the Regular Session of 2021."

I appreciate the amendments made to this draft, and urge the Committee to consider them and this new recommendation favorably.

Thank you for the opportunity to offer testimony on this measure.



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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the Senate Committee on  
WATER and LAND**

**Monday, February 3, 2020  
1:15 PM  
State Capitol, Conference Room 229**

**In support of  
SENATE BILL 2671  
RELATING TO REAL PROPERTY TRANSACTIONS**

Senate Bill 2671 proposes to require that a seller of property to disclose and identify residential real property lying within a sea level rise exposure area officially designated by the Hawaii Climate Change Mitigation and Adaptation Commission. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

In December 2017, the Commission accepted the *Hawaii Sea Level Rise Report* and accompanying *Hawaii Sea Level Rise Viewer*. The Report and Viewer provide maps of a Sea Level Rise Exposure Area which incorporate models of passive flooding, shoreline erosion, and annual high wave run-up with 3.2 feet of sea level rise. These map layers are available for download in a variety of formats from the Viewer as well as the Hawaii Statewide GIS Program website.

**Recent science summarized in the Report and Viewer points to a likelihood of three feet or more of sea level rise in the second half of this century - within the expected lifespan of most**

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**existing and new development.** It is critical that sea level rise vulnerabilities are disclosed with the sale of a vulnerable coastal property to support informed decision making by buyers and government agencies.

As noted in the measure, at its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, **including supporting legislation for disclosure for private property and public offerings in areas with potential exposure to sea level rise.** SB2671 acts on this priority recommendation, and is a crucial component of Hawaii's adaptation response to sea level rise impacts.

Thank you for the opportunity to comment in support of this measure.



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Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

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**Before the SENATE Committees on  
WATER AND LAND  
and  
AGRICULTURE AND ENVIRONMENT**

**FRIDAY, February 7, 2020  
1:35 PM  
State Capitol, Conference Room 224**

**In support of  
SENATE BILL 2683  
RELATING TO SEA LEVEL RISE**

Senate Bill 2683 proposes to appropriate funds for the climate change mitigation and adaptation commission and coordinator. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments in support of this measure. While funds for the Commission and coordinator are in DLNR's base budget, additional funds for ongoing work would be appreciated, provided that this measure's passage does not replace or adversely impact priorities indicted in the Department of Land and Natural Resources' Executive Supplemental Budget.**

The Hawaii Climate Change Mitigation and Adaptation Commission "recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient." The Commission, established by Act 32 SLH 2017 to uphold the United States' pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state's climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

At its September 2018 meeting, the Climate Commission agreed to five priority recommendations for countering impacts of sea level rise, including requesting that all new development, redevelopment, and modifications be directed away from beach areas; urging counties to incorporate the 3.2 foot sea level rise exposure area (SLR-XA) as detailed in the Hawaii Sea Level Rise Vulnerability and Adaptation Report (Hawaii Sea Level Rise Report) into their general and

community plans; and bring resources to assist in planning and implementing for sea level rise and other climate related impacts.

This measure acts on the Commission's priority recommendations, and is a crucial component of Hawaii's adaptation to the impacts of sea level rise. Since several of these components are already being initiated as part of the Commission's "Climate Ready Hawaii" initiative, the following comments are offered to help align legislative and executive action—which is one of the main purposes of the Commission:

1. For item (1), Page 2 Line 17: instead of directing the Commission to conduct said inventory, it might be more appropriate for the Commission, in keeping with its role as a coordinating body, to bring resources to the various agencies and departments in the form of best practices, formulating guidance, and providing a coordinating structure and timeframe within which to work, and I recommend modifying the language in this part to support the Commission's role in assisting agencies and departments in this manner;
2. For item (2), Page 3 Line 3: I believe this task has already been completed with the issuance of the State's Sea Level Rise report, and recommend it be removed from this measure;
3. For item (3) Page 3 Line 7: the Commission's staff is working with partners to operationalize sea level rise exposure areas into county planning and permitting, and can provide a status update in its Annual Report to the Legislature, and it is recommended that the measure's language reflect this;
4. For item (4) Page 3 Line 10: while this measure is helpful in underscoring the need to incorporate sea level rise into various plans, the Commission is working to enhance, uniformize, and support the work of the counties, rather than be seen as "interfering" in their jurisdictions. It is therefore recommended that the current language be replaced with "Work to enhance, uniformize, and support the work of the state and county agencies in their development of sea level rise adaptation plans utilizing the sea level rise vulnerability and adaptation report"; and
5. For item (5) Page 3 Line 13: This task would be an outcome of the previous task, and therefore, perhaps not appropriately placed in this measure—it might be more appropriate as a "Phase 2" task, once the above tasks have been completed; and recommend this be stricken from this measure, and considered at a future time.

Thank you for the opportunity to offer comments in support of this measure.

the tax had reached a level of C\$30 per MT CO<sub>2</sub>e, and covered approximately three-quarters of all greenhouse gas emissions in the province.

On January 21st, Wisconsin Democrats introduced Bill 766 in the Assembly, which requires utilities to assess the social cost of carbon when assessing new projects.<sup>9</sup> While this is not a direct price on carbon that utilities have to pay, it does set a \$50 fee per MT CO<sub>2</sub>e that participating utilities must consider when establishing new projects, and will take into account the impacts that carbon emissions have on society. States of Washington, Minnesota, and Colorado all currently have policies similar to the proposed Wisconsin bill.

**Carbon tax's effect on the economy and emissions.** Jurisdictions worried about what effects carbon pricing has on their economies look again to British Columbia. According to a Nicholas Institute 2015 paper:<sup>10</sup>

- a. Empirical and simulation models suggest that the tax has reduced emissions in the province by 5–15%.
- b. At the same time, models show that the tax has had negligible effects on aggregate economic performance, though certain emissions-intensive sectors have faced challenges.
- c. Studies differ on the effects of the policy on income distribution but agree that they are relatively small.
- d. Finally, polling data show that the public initially opposed the tax but now generally supports it.

However, although one of the longest running carbon tax experiments, BC's example more recently shows that a carbon tax will have to be much higher than its intent to go as high as \$50 per MT to achieve climate goals. According to one source, "while BC's emissions are lower than they would have been without the carbon tax, the fact they have only levelled off underscores that either a higher carbon price or more aggressive complementary measures are needed to achieve the absolute reductions in emissions."<sup>11</sup>

**Justice/Equity issues.** Additionally, I ask the Committees to draw their attention to the Commission's strong focus on equity, in its carbon pricing statement:

While the specific mechanisms behind a carbon fee program are not yet outlined, the Commission emphasized the urgent need for such a program, and supports legislation that endeavors to establish one, but also recognizes that any carbon pricing mechanism:

- Must be equitable, and appropriate for the people of Hawaii.
- Must demonstrate how this is a critical policy tool to protect the future—of

Hawaii's keiki and 'āina.

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<sup>9</sup> "Wisconsin Considers the Social Cost of Carbon" (2020) Carlie Clarq, ClimateXChange, available at: [https://climate-xchange.org/2020/02/06/wisconsin-considers-the-social-cost-of-carbon-with-newly-filed-bill/?mc\\_cid=a5b60cdfa4&mc\\_eid=576365dee0](https://climate-xchange.org/2020/02/06/wisconsin-considers-the-social-cost-of-carbon-with-newly-filed-bill/?mc_cid=a5b60cdfa4&mc_eid=576365dee0)

<sup>10</sup> "British Columbia's Revenue-Neutral Carbon Tax: A Review of the Latest "Grand Experiment" in Environmental Policy". Murray, Brian, et al. (2015) Nicholas Institute of Environmental Policy Solutions, available at: <https://nicholasinstitute.duke.edu/climate/publications/british-columbias-revenue-neutral-carbon-tax-review-latest-grand-experiment>

<sup>11</sup> "Lessons from British Columbia's carbon tax: (July 11, 2019) Kathryn Harrison, Policy Options Politiques, available at: <https://policyoptions.irpp.org/magazines/july-2019/lessons-from-british-columbias-carbon-tax/>



- Must be adequate to change behavior.

The Commission recommends carbon pricing mechanisms that minimize regressivity, which can be pursued through structures such as equity-based tax credits or carbon fee and dividend.

Thank you for the opportunity to offer comments in support of this measure.



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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the Senate Committee on  
WAYS AND MEANS**

**Thursday, February 20, 2020  
10:35AM  
State Capitol, Conference Room 211**

**In support of  
SENATE BILL 3100, SENATE DRAFT 1  
RELATING TO SUSTAINABLE DEVELOPMENT GOALS**

Senate Bill 3100, Senate Draft 1 proposes to codify sustainable development goals based on the United Nations' sustainable development goals and indicators. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I support this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission "recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient." The Commission, established by Act 32 SLH 2017 to uphold the United States' pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state's climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Of the United Nations' seventeen Sustainable Development Goals (SDGs), Goal 13 specifically points to climate action. However, as noted in the measure, these goals are all intricately linked. For this reason, the Commission has identified two priorities as starting points in its work: Reducing emissions from ground transportation, and adapting to the sea level rise and associated impacts. These priorities include a strong focus on climate equity, as Hawaii moves forward to make itself "climate ready." Senate Bill 3100 is crucial to this gargantuan effort. The Commission's work forward will be well supported by this measure's attempt to codify the UN's SDGs into law.

Thank you for the opportunity to testify on this measure.

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**Testimony of  
Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the Senate Committees on  
ENERGY, ECONOMIC DEVELOPMENT AND TOURISM  
and  
TRANSPORTATION**

**Monday, February 3, 2020  
1:16 PM  
State Capitol, Conference Room 225**

**In consideration of  
SENATE BILL 3111  
RELATING TO ELECTRIC VEHICLES**

Senate Bill 3111 attempts to clarify the definition of alternative fuel vehicles. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I offer the following comments on this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Transportation (air and ground) is the single largest source of greenhouse gas emissions (GHG) in Hawaii, and mirrors a nationwide trend--according to EPA, transportation was the largest source of GHG emissions in 2017. Reducing emissions from ground transportation is one of two major focuses of the Commission, and a transition to clean renewable fueled vehicles is a crucial strategy to achieve state goals. While I appreciate SB3111’s attempt to clarify the definition of alternative fuel vehicles, the adoption of such vehicles, provided they are fueled by renewable sources, should be encouraged, not discouraged –by the levy of a surcharge. Further, electric vehicles –provided they are high occupancy vehicles--are a central component of such a transition, and I encourage

the committee to consider repeal of a registration surcharge, as outlined in HB2397 and SB2977 if these bills are heard.

While it may seem that repealing registration surcharges can cause decreased revenue for certain departments, Hawaii's traditional ownership of personal vehicles needs to be reconsidered entirely in order for the state to make progress towards its clean energy and climate change goals. Taking a lesson from Singapore, a land-scarce island country, revenue is generated from vehicle ownership quotas. While such a system sky rockets the price of personal car ownership to four times that paid by consumers in the U.S., it restricts personal vehicle ownership, and therefore the number of cars on the roads. As a result, personal car ownership is only 11 percent in Singapore, as compared to 80 per cent in the U.S., and heavy investments in the public transit system helps alleviate congestion and pollution.<sup>1</sup> Similar measures would allow Hawaii to make headway in addressing its climate change, congestion, and possibly even equity problems.

Thank you for the opportunity to comment on this measure.

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<sup>1</sup>Bloomberg Opinion, "Tesla Unplugged: In Singapore, It's Just Another Unwelcome Car", by Adam Minter, August 17, 2019.



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Anukriti Hittle  
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the Senate Committees on  
TRANSPORTATION  
and  
WATER and LAND**

**Monday, February 10, 2020  
2:00 PM  
State Capitol, Conference Room 229**

**In support of  
SENATE BILL 3132  
RELATING TO SEA LEVEL RISE**

Senate Bill 3132 proposes to direct the department of transportation to address transportation infrastructure already impacted by sea level rise, identify other vulnerable associate public infrastructure, create a plan for mitigating and adopting to sea level rise, and provide policy direction to the legislation on funding and strategies to address the impact of climate change on the State, and appropriates funds. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission), I offer the following comments in support of this measure, deferring to the Department of Transportation regarding funding.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

The Commission has established dealing with sea level rise and its impacts as one of its two focuses, and issued a statement on priority issues. Specifically, the statement pointed to actions that:

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- Encourage agencies and non-governmental utility providers to identify and prioritize assets within the 3.2 ft SLR-XA or more as described in the State's Sea Level Rise report, identify adaptation measures, and to provide a status update on this activity annually to the Climate Commission.
- Support legislation that funds State programs to meet mitigation goals, and to bring resources to assist in planning and implementation for sea level rise and other climate related impacts.

This measure acts on the Commission's priority recommendations, and is a crucial component of Hawaii's adaptation to the impacts of sea level rise.

Thank you for the opportunity to comment in support of this measure.



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Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission**

**Before the Senate Committees on  
AGRICULTURE AND ENVIRONMENT  
and  
ENERGY, ECONOMIC DEVELOPMENT AND TOURISM**

**Wednesday, February 12, 2020  
1:15 PM  
State Capitol, Conference Room 224**

**In support of  
SENATE BILL 3150  
RELATING TO TAXATION**

Senate Bill 3150 proposes to amend the environmental response, energy and food security tax to address carbon emissions, increases the tax rate to effectively set a price of \$40 per metric ton of carbon dioxide emissions in 2021, incrementally increases the tax rate over time so that, in 2030, the tax rate shall be equivalent to a carbon price of \$80 per metric ton of carbon emissions. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I support this measure and offer the following comments.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

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 is backed up by various

expert organizations, including the International Monetary Fund, the Inter-Governmental Panel on Climate Change, and Hawaii's *Transportation Energy Analysis* (2015).<sup>1</sup>

This measure aims to establish a price on carbon dioxide, in order to reflect the full cost of using fuels that produce carbon dioxide, and thereby decrease these emissions.

**Carbon tax and the social cost of carbon.** A carbon tax directly sets a price on carbon by defining a tax rate on greenhouse gas emissions or – more commonly – on the carbon content of fossil fuels. It is different from an Emissions Trading System in that the emission reduction outcome of a carbon tax is not pre-defined, but the carbon price is.<sup>2</sup>

A good carbon pricing mechanism, therefore, sets the carbon tax at the social cost of carbon at the very least, and higher if emissions targets for under 2 degrees warming are to be achieved.

EPA's Social Cost of Carbon (SSC) is defined as “a measure, in dollars, of the long-term damage done by a ton of carbon dioxide (CO<sub>2</sub>) emissions in a given year.”<sup>3</sup> EPA and other federal agencies use estimates of the SSC to value the climate impacts of rulemakings. Per its 2016 Fact Sheet, EPA estimates that the average SSC in 2020 would be \$42 per MT.

**The rate for Hawaii.** Rounding this up, generally accounting for inflation and using the CPI based on UHERO's information, to \$45 in 2020 is a plausible starting point, and puts us at \$15 per barrel.<sup>4</sup> Currently, Hawaii's barrel tax is \$1.05 per barrel, or approximately \$3.15 per MT CO<sub>2</sub>e. SB 3150 aims to set the tax on each barrel or fractional part of a barrel of petroleum product to the amounts in the following table:

While these figures may appear high, they are actually on the low side of the World Bank's recommendations for a carbon tax range from \$40 to \$80 per MT CO<sub>2</sub>e by 2020 and \$50-100 per ton by 2030, according to the High-Level Commission on Carbon Prices, co-chaired by Joseph Stiglitz and Lord Nicholas Stern.<sup>5</sup> The EPA additionally recommends high-impact increases of \$123 by 2020 and \$152 by 2030 per MT CO<sub>2</sub>e.

**Carbon taxes in the real world.** According to the US Climate Leadership Council, an escalating carbon fee offers the most cost-effective climate policy solution<sup>6</sup>. Some may say these estimates are theoretical. However, in reality, more than 74 nations, states, and cities have implemented carbon pricing all over the world<sup>7</sup>. In the US, ten states have implemented SCC carbon pricing in assessing new projects<sup>8</sup>. Even as far back as 2008, the Canadian province of British Columbia (BC) implemented the first comprehensive and substantial carbon tax in North America. By 2012,

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<sup>1</sup> Hawaii Climate Change Mitigation and Adaptation Commission's statement (Nov 2018), available at: <http://climate.hawaii.gov/wp-content/uploads/2018/11/NR-Climate-Commission-Recommend-Urgent-Action-to-Combat-Emissions-Nov.-28-2018.pdf>

<sup>2</sup> See Carbon Pricing Leadership Coalition (CLPC), available at: <https://www.carbonpricingleadership.org/>

<sup>3</sup> EPA Fact Sheet. Environmental Protection Agency (2016), available at: [https://www.epa.gov/sites/production/files/2016-12/documents/social\\_cost\\_of\\_carbon\\_fact\\_sheet.pdf](https://www.epa.gov/sites/production/files/2016-12/documents/social_cost_of_carbon_fact_sheet.pdf)

<sup>4</sup> “UHERO Consumer Price Index” (2020) US Department of Labor, Bureau of Labor Statistics, available at: [https://data.uhero.hawaii.edu/#/series?id=147933&data\\_list\\_id=56&sa=true](https://data.uhero.hawaii.edu/#/series?id=147933&data_list_id=56&sa=true)

<sup>5</sup> “Report of the High-level Commission on Carbon Prices” (2017), Carbon Pricing Leadership Coalition, available at: <https://www.carbonpricingleadership.org/report-of-the-highlevel-commission-on-carbon-prices/>

<sup>6</sup> *A Winning Trade: How Replacing the Obama-Era Climate Regulations with a Carbon Dividends Program Starting at \$40/Ton Would Yield Far Greater Emission Reductions* (2018) David Bailey, US Climate Leadership Council.

<sup>7</sup> *State and Trends of Carbon Pricing 2019* (2019) World Bank Group, Open Knowledge Repository, available at: <https://www.carbonpricingleadership.org/who>

<sup>8</sup> “US State Carbon Pricing Policies”. Center for Climate and Energy Solutions, available at: <https://www.c2es.org/document/us-state-carbon-pricing-policies/>