County of Hawai‘i

Climate Action Plan

First Draft

2020

Prepared by

County of Hawai‘i

Research and Development

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Table of Contents

Acknowledgements **4**

Purpose and Scope **5**

Responsibilities and Commitments for Mitigation **9**

Emissions Inventory, Forecasts, and Targets **9**

- Emissions per capita 11
- Inventory Analysis 12
  - Energy Sector 12
    - Commercial Energy Sector 12
    - Industrial Energy Sector 13
    - Residential Energy Sector 14
    - Transportation Sector 14
  - Solid Waste Sector 15
  - Wastewater Sector 16
  - Agriculture, Forestry, and Other Land Uses (AFOLU) Sector 17
- Emissions Forecasting 18
- Emissions Targets 20

Greenhouse Gas Mitigation and Reduction Policies and Measures **23**

- Methods of Implementing Actions 23
- Energy Emissions 25
- Transportation Emissions 30
- Solid Waste Emissions 37
- Wastewater Emissions 42
- Agriculture, Forestry, and Other Land Use Emissions 44

A Green Economy **48**

How You Can Reduce Your Carbon Footprint **50**

Monitoring and Reporting of Emissions **51**

References **52**

Appendix A **54**

Appendix B **56**

Appendix C **72**

Appendix D **81**

Appendix E **84**

Appendix F **89**

Appendix G **106**

Appendix H **107**

Appendix I **108**

Appendix J **109**

Acknowledgements

Climate Action Plan Stakeholders for Implementing Emission Reduction Strategies

County

- Elected Officials-Legislative
- Office of the Mayor
- Research and Development
- Planning Office
- Civil Defense
- Department of Public Works
- Department of Environmental Management
- Mass Transit
- Finance Department
- Budget Office
- Purchasing Office
- Treasury Office
- OHCD
- Office of Aging

State

- Honolulu CCSR
- Kauai County
- Maui County
- State Climate Commission
- GHG Sequestration Task Force
- Elected Officials-Legislative
- State Sustainability Coordinator
- State Energy Office
- Hawai‘i Department of Health

Federal

- U.S. EPA
- AmeriCorps

Academic

- University of Hawai‘i
- Hawai‘i Natural Energy Institute

Non-Profit Advocacy

- Climate Action Campaign
- Sierra Club
- Big Island Electric Vehicle Association
- Sustainable Transportation Coalition of Hawai‘i
- 350.org
- Blue Planet
- Kupu

Networks

- Hawai‘i Green Growth
- Hawai‘i Energy Policy Forum
- Ulupono

Resources

- USDN
- ICLEI
- NREL

Incubator/Excelerator

- NELHA
- Elemental Excelerator

Utilities

- HECO
- HELCO
- Hawai‘i Gas

Purpose and Scope

Rising CO2 levels in the atmosphere from human activity are creating a global imbalance of greenhouse gas concentration, which is inadvertently causing a major shift in the natural climate cycle. In order to effectively reduce the effects of climate change, greenhouse gas (GHG) emissions will need to be drastically reduced, particularly in the local levels where municipalities have the most control of land use, transportation, and in some cases, energy policies. The United Nations released a report in 2019 titled, "The Emissions Gap Report" that states that the carbon dioxide budget for 2 degrees Celsius will be close to depleted by 2030, and without "enhanced ambition" the global average temperature will be in the 3 to 3.2 degrees Celsius range. Therefore, simply emulating the US Nationally Determined Contribution (NDC) as an emissions target fails to achieve the desired goal of preventing catastrophic climate change. In addition, Hawai'i faces a greater burden because its emissions are currently nearly 3 times the average global resident. The State of Hawai'i and the other counties of Hawai'i need to plan beyond the NDC of the Paris Agreement and take action immediately to aggressively curb GHG emissions starting now.


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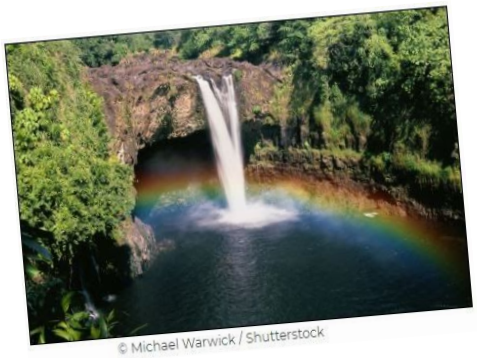
In order to address climate change mitigation, cities have developed "Climate Action Plans" (CAP), which are strategic plans that establish policies or programs for mitigating greenhouse gases and adapting to climate change impacts. The County of Hawai'i needs to implement climate change mitigation strategies by reducing greenhouse gas (GHG) emissions, and advance low-cost, equitable, efficient, renewable and resilient energy systems. The County of Hawai'i can facilitate the changes that need to be implemented in both the public and private sectors in an efficient way through the implementation of a County of Hawai'i Climate Action Plan.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This Climate Action Plan falls under the scope of the Hawai‘i County General Plan. Many of the recommended policies, actions, and strategies come from existing County plans and have considerable impacts on emissions sectors (e.g. Department of Environmental Management’s 2019 Integrated Solid Waste Management Plan and solid waste emissions).

Although climate change is humanity’s greatest threat in the 21st century, it also opens up the greatest opportunity for local governments and communities to create a greener and more sustainable lifestyle and environment. Actions included in Hawai‘i County’s Climate Action Plan reflect the vision and guidelines that are prioritized under the County’s General Plan. The overarching goal of the Climate Action Plan is to reduce our greenhouse gas emissions to create a more sustainable and healthy Hawai‘i Island that is more self sufficient and independent.

This document serves as guidance to identify our emissions-causing activities and local solutions to mitigate them. Although Hawai‘i Island alone will not reverse the harmful impacts of climate change, we can lead by example and set precedent for other island-states to become more sustainable through energy conservation and efficiency, clean transportation, zero waste initiatives, and better management of water, land, and natural resources.

How Hawai‘i Will Be Impacted

As an island-state, Hawai‘i is bound to deal with the brunt of climate change impacts that could disrupt everyday life on our islands. Atmospheric concentrations of greenhouse gasses will continue to increase if no action is taken to reduce global emissions. Impacts from global warming that will affect Hawai‘i Island the most are more extreme weather events, sea level rise, ocean acidification, and an increase in severe storms. The National Climate Assessment in 2014 outlines further impacts from climate change for Hawai‘i:

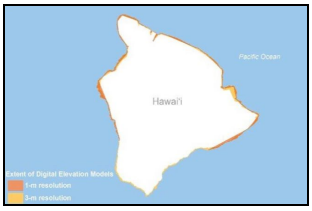
Human Health: Healthy populations depend on healthy environments. As the air we breathe becomes more polluted, respiratory and cardiovascular diseases become more common, affecting our keiki and kupuna at higher rates. The figure to the right examines several human health effects and the link between climate change; disease outbreaks, higher risks of injury, and increases in conflict, migration, and mental health. These problems are common in regions highly affected by climate change.

© CDC / Climate Effects on Health

Increased Stress on Native Plants and Animals: Rising temperatures and increased droughts pose an existential threat to Pacific Island plants and animals, particularly in high elevated ecosystems. Invasive species and disease carrying insects will become more frequent in Hawai‘i, threatening human health.

Changes to Marine Ecosystems: The oceans absorb heat and CO_2, which will begin to add strain on marine ecosystems. As the pacific ocean becomes more acidic, coral growth and health will become disrupted. Increased coral bleaching events, disease outbreaks among coral reefs, and changes in the distribution in local fisheries are predicted, which will affect Hawai‘i’s domestic food security and the environmental aesthetics.

Sea Level Rise: Melting glaciers and ice caps from rising atmospheric and oceanic temperatures will inevitably lead to a rise in sea levels. Hawai‘i Island is predicted to experience incremental increases in coastal flooding and erosion. Although most developed areas on Hawai‘i Island



are at low risk, critical infrastructure and facilities along the coasts are expected to become inundated. Our dependency on imported fuel, food, medicine, and other essential resources via shipping is at risk if our ports and harbours are not resilient to sea level rise and severe natural disasters such as tropical storms or hurricanes.

The [Hawai'i Sea Level Rise and Vulnerability and Adaptation Report], outlines two scenarios of sea level rise and their impacts on all islands. The two scenarios forecast sea level rise at 1.1 feet, and 3.2 feet. Impacts from sea level rise on Hawai'i Island are not as drastic as lower-lying Hawai‘ian islands; however, portions of Hawai'i Island's critical infrastructure, public service facilities, harbors, beach parks, and roads along coastal areas are at risk of flooding and coastal erosion. Other areas prone to disruption from sea level rise consist of Hawai‘ian Homelands, anchialine pools, Hawai‘ian fishponds, and other cultural resources near coastal areas.

Decreasing Freshwater Availability: Freshwater resources, while already constrained, are at risk of becoming contaminated by rising sea levels. As saltwater rises, it can potentially intrude into our freshwater reservoir; and with rising air temperatures, precipitation patterns will become more variant and reduce the quality and quantity of freshwater near coastal aquifers. Sea level rise also threatens estuarine areas which are where freshwater from rivers and streams meet saltwater from the sea. These will become increasingly more salinated bringing changes to endemic marine species and anchialine pools.

Climate change will disproportionately impact lower income households, minority and socially disadvantaged communities, and native indigenous peoples. These impacts, primarily human health, result in higher disease rates, higher costs of living, and lower standards of living. Therefore, any policy or action to mitigate or adapt to climate change must have an equitable focus on those who are economically or socially disadvantaged, and benefits must be equally shared.

Responsibilities and Commitments for Mitigation

The State of Hawai'i and Hawai'i County have made several commitments to act on climate change and address its impacts on our islands. Act 234 of the 2007 Legislature established the foundation for the Hawai'i GHG Program, and on June 30, 2014, Hawai'i Administrative Rules (HRS), Chapter 11-60.1 was amended to adopt the new Hawai'i GHG Program. It declared a policy to reduce GHG emissions state-wide to 1990 levels (13.66 million metric tons per year) by 2020. The State of Hawai'i established a GHG emissions limit (HRS section 342-B-71) and requires that all counties assess climate change vulnerability, set targets to reduce GHG emissions, and develop and implement climate mitigation and adaptation plans (HRS section 226-109).

On June 6, 2017, Governor David Ige signed Act 32 Session Laws of Hawai'i, 2017, making Hawai'i the first state to enact legislation implementing parts of the Paris Agreement in order to limit global temperatures well below 2 degrees Celsius above pre-industrial levels, reduce emissions beginning in 2020 and achieve net zero emission by 2045. In June 2017, Mayor Harry Kim committed to developing and implementing a plan for reducing GHG.

The Hawai'i Climate Change Mitigation and Adaptation Commission (Climate Commission) was established (Act 32 amended HRS Chapter 225P) to provide coordination and planning among state, County and federal agencies, and other partners regarding climate change mitigation, adaptation, resilience strategies, and reduction of greenhouse gases. (See appendices A-J for legislative records.)

The principle plans through which the Climate Action Plan will be implemented are identified below. In order to achieve our climate goals, these plans must be fully funded and implemented.

- ❏ General Plan
- ❏ Mass Transit Master Plan
- ❏ Multi-Hazard Mitigation Plan
- ❏ Shared Use Mobility Roadmap
- ❏ Integrated Solid Waste Management Plan
- ❏ Agricultural Development Plan
- ❏ Economic and Business Development Plan

Emissions Inventory, Forecasts, and Targets

This chapter describes Hawai‘i Island’s emissions inventory from 2015, its predicted forecasted emissions if we continue business as usual, and interim targets to meet before 2045.

The 2015 Greenhouse Gas Inventory accounts for community-wide and County operations emissions. The County of Hawai‘i’s GHG emissions for 2015 is 2,563,228.38 MTCO2e, down 28.6% from 2005. For this report, data is collected from a range of greenhouse gas emission activity occurring within the County of Hawai‘i’s limits or transits between the County, domestic and international destinations. MTCO2e is calculated for the following categories:

- **Transportation & Mobile Sources**: On-road, Off-road, Marine, and Air transportation.
- **Commercial Energy**: Grid Electricity and Stationary Fuel Use
- **Industrial Energy**: Grid Electricity and Electrical Transmission, Stationary Fuel Use, and Distribution, and Substitution of Ozone Depleting Substances
- **Residential Energy**: Grid Electricity and Stationary Fuel Use
- **Agriculture, Forestry, and Other Land Use (AFOLU)**: Sources and Sinks
- **Water & Wastewater**: Wastewater Treatment
- **Solid Waste**: Composting, Flaring of Landfill Gas, In-Jurisdiction Landfills, and Waste Generation

Table 1: County of Hawai‘i Inventory of Greenhouse Gases 2005 vs 2015

Sector	GHG Emissions MTCO2e		GHG Emissions MTCO2e		GHG Emissions MTCO2e	
	2005*	%	2015	%	Δ 2005 to 2015	%
Transportation & Mobile Sources	1,742,209.14	48.55%	1,485,016.48	57.94%	(257,192.66)	-14.76%
Commercial Energy	1,581,426.28	44.07%	967,436.24	37.74%	(613,990.04)	-38.83%
Industrial Energy	97,731.11	2.72%	141,432.76	5.52%	43,701.65	44.72%
Residential Energy	250,094.07	6.97%	145,492.58	5.68%	(104,601.48)	-41.82%
AFOLU	(204,390.64)	-5.70%	(286,616.77)	-11.18%	(82,226.13)	40.23%
Water & Wastewater	16,024.00	0.45%	6,992.00	0.27%	(9,032.00)	-56.37%
Solid Waste	105,489.00	2.94%	103,475.09	4.04%	(2,013.91)	-1.91%
TOTAL	**3,588,582.96**	**100.00%**	**2,563,228.38**	**100.00%**	**(1,025,354.57)**	**-28.57%**

**2007 numbers are used where 2005 records are unavailable.*

Carbon Dioxide (CO_2), a key greenhouse gas, is driving the global climate crisis. The County of Hawai‘i is on track for decreasing emissions for all categories except for

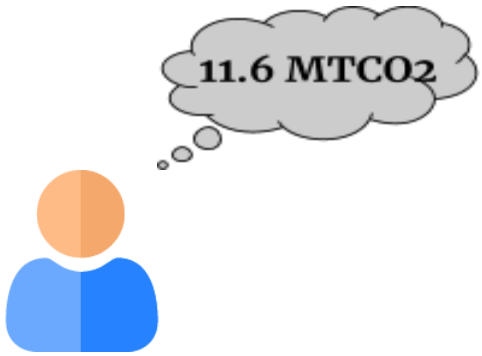
Industrial Energy which has seen an increase in $MTCO_2e$ by 44.72%. Overall, the County has reduced greenhouse gas emissions by 28.57% since 2005.

It should be noted that the United Nations International Panel on Climate Change does not require emissions to be reported from non-originating sources such as incoming flights and imported goods from other states and countries. From a global perspective, this standard of emissions reporting prevents overlap in reporting the same emissions from two different jurisdictions. Hawai'i Island's economy is largely dependent on imported goods and tourism; which means that our carbon footprint is technically higher than what is standard to report. Although these emissions are not accounted for, the economic and social dependency on imported goods and visitors is a systematic behavior that results in higher global emissions.

This can be addressed by focusing efforts to local food and resource production that we typically rely on imports for. It is beneficial to Hawai'i County to emphasize the importance of supporting local businesses, goods, and services to reduce our dependence on shipments, and therefore contributing to reductions in emissions that are not accounted for.

Emissions per capita

Emissions per capita represents the average total emissions of one person in Hawai'i County. According to the Hawai'i Census data, there were an estimated 220,654 residents living in Hawai'i County in 2015. Taking the total amount of greenhouse gases in 2015 and dividing it by the resident population gives us the average amount of emissions one resident contributes. Average emissions per capita were 11.61 $MTCO_2$.



Inventory Analysis

Energy Sector

Hawai'i Island has no natural resource deposits for large scale energy production, so the majority of its electricity is produced by burning imported oil, diesel, and gasoline. The total greenhouse gas emissions from the energy sector is 1,254,361.58 $MTCO_2e$, which makes up 48.94% of Hawai'i County's total emissions.

The GHG Report divided energy emissions into 3 categories: Commercial, Residential, and Industrial. Mitigation strategies in the energy sector are not divided by sector, for each category of energy will have reduced emissions through similar strategies.

Commercial Energy Sector

Commercial energy sector includes government facilities, service-providing facilities and equipment, and other major public/private organizations. Electricity demand for this sector is typically highest during normal business hours throughout the work week, but decreases at night and on weekends.

Table 2: 2005 vs 2015 Commercial Energy Inputs and GHG Emissions

Sector	GHG Emissions MTCO2e		GHG Emissions MTCO2e	
	2005*	%	2015	%
Grid Electricity - Commercial*	368,568.83	23.31%	223,484.74	23.10%
Stationary Fuel Use - Motor Gasoline	944.57	0.06%	15,827.65	1.64%
Stationary Fuel Use - Diesel	1,189,893.73	75.24%	692,960.21	71.63%
Stationary Fuel Use - LPG (HGL)	8,489.30	0.54%	20,448.47	2.11%
Stationary Fuel Use - Natural Gas	13,529.85	0.86%	14,715.17	1.52%
TOTAL	**1,581,426.28**	**100.00%**	**967,436.24**	**100.00%**

2007 numbers are used where 2005 records are unavailable.

The County of Hawai'i has seen a 613,990.04 $MTCO_2e$ decrease in Commercial Energy GHG emissions from 2005 to 2015, a 38.83% total reduction. Stationary Fuel Use - Diesel and Grid Electricity - Commercial reveal the largest reductions in emissions from 2005 to 2015, but continue to dominate the Commercial Energy sector in GHG emission production. Other Stationary Fuel Use categories saw a rise in emissions, a

total of 28,027.57 $MTCO_2e$. These are, Motor Gasoline, Liquefied Petroleum Gas (LPG) Hydrocarbon Gas Liquid (HGL), and Natural Gas

Industrial Energy Sector

The industrial energy sector represents larger facilities or complexes that use electricity for assembling, processing, producing, and manufacturing goods. Energy demands within the industrial sector tend not to fluctuate as much as residential or commercial, as many of these facilities work around the clock, and steadily throughout the week.

Table 3: 2005 vs 2015 Industrial Energy Inputs and GHG Emissions

Sector	GHG Emissions MTCO2e		GHG Emissions MTCO2e	
	2005*	%	2015	%
Grid Electricity Used by Electric Utility Stations*	13,861.14	14.18%	7,842.37	5.54%
Stationary Fuel Use - Natural Gas	3,376.94	3.46%	3,402.04	2.41%
Stationary Fuel Use - Motor Gasoline	6,593.33	6.75%	13,810.08	9.76%
Stationary Fuel Use - LPG (HGL)	457.86	0.47%	308.26	0.22%
Electrical Transmission and Distribution*	2,670.61	2.73%	1,398.43	0.99%
Cement Production	0.00	0.00%	0.00	0.00%
Substitution of Ozone Depleting Substances*	70,771.23	72.41%	114,671.58	81.08%
TOTAL	**97,731.11**	**100.00%**	**141,432.76**	**100.00%**

**2007 numbers are used where 2005 records are unavailable.*

The Industrial Energy Sector grew in GHG emissions by 43,701.65 $MTCO_2e$, or 48.50%. Most growth occurred in two categories; Substitution of Ozone Depleting Substances at 62.03% and Stationary Fuel Use - Motor Gasoline at 109.46%. Natural Gas saw minimal growth at 0.74%. Three categories shrank in total emissions, but only represent about 20% or less of total emissions: Grid Electricity Used by Electric Utility Stations, Electrical Transmission and Distribution, and Stationary Fuel Use - LPG (HGL). Cement remains at 0% as it is not produced on the Island.

Residential Energy Sector

Table 4: 2005 vs 2015 Residential Energy Inputs and GHG Emissions

Sector	GHG Emissions MTCO2e		GHG Emissions MTCO2e	
	2005*	%	2015	%
Grid Electricity*	235,394.03	94.12%	129,244.52	88.83%
Stationary Fuel Use - Natural Gas	3,798.49	1.52%	4,410.74	3.03%
Stationary Fuel Use - Diesel	5,807.97	2.32%	7,391.98	5.08%
Stationary Fuel Use - LPG (HGL)	5,093.58	2.04%	4,445.34	3.06%
TOTAL	**250,094.07**	**100.00%**	**145,492.58**	**100.00%**

**2007 numbers are used where 2005 records are unavailable.*

The County of Hawai'i experienced a notable reduction in emissions for the Residential Energy Sector, specifically in the Grid Electricity category, which accounts for more than 80% of the sector. Grid Electricity saw a reduction in emissions of 45.09% or (106,149.51) $MTCO_2e$. Stationary Fuel Use - LPG (HGL) added to the overall reduction by 648.24 $MTCO_2e$. The other two categories in Stationary Fuel Use saw a slight rise in emissions. Diesel rose 1,584.01 $MTCO_2e$ and Natural Gas rose by 612.25 $MTCO_2e$

Transportation Sector

The transportation sector in the County of Hawai'i accounted for 57.94% percent of total GHG emissions in 2015. Therefore, reducing transportation emissions alone will significantly lower the total GHG emissions of the County of Hawai'i. As a result, reducing transportation energy demand and shifting to non-fossil energy sources will require long-term, concerted efforts. In the short-term, the County of Hawai'i should organize its actions around mass transit system improvements, County-wide transportation laws and regulations, and County vehicles and operations. Additionally, the County can take steps to promote the adoption of new and better vehicles that consume little or no fossil fuel.

Table 6: 2005 vs 2015 Transportation Inputs and GHG Emissions

Sector	GHG Emissions MTCO2e		GHG Emissions MTCO2e	
	2005*	%	2015	%
Air Transportation	889,910.62	51.08%	762,640.80	51.35%
On Road Transportation	594,306.70	34.11%	607,177.24	40.88%
Off Road Transportation	18,737.64	1.07%	18,390.42	1.24%
Marine Transportation	239,254.18	13.74%	96,808.02	6.52%
TOTAL	**1,742,209.14**	**100.00%**	**1,485,016.48**	**100.00%**

**2007 numbers are used where 2005 records are unavailable.*

The County of Hawai'i has four transportation energy input categories; On-Road, Off-Road, Air, and Marine. On-road vehicles are categorized as trucks, cars, SUVs, or any personal and commercial vehicles driven on public roads. Off-road vehicles are categorized as agricultural or construction equipment, military vehicles, or recreational vehicles like ATVs or dirt bikes. Aviation includes emissions from airplanes and helicopters; and marine transportation emissions refers to recreational motor boats and domestic ships.

For the years 2005 and 2015, the majority of GHG emissions in the County of Hawai'i are from Aviation, which makes just over half of emissions for the transportation sector.

Solid Waste Sector

The solid waste sector of emissions is caused by the break-down and decomposition of Hawai'i Island's trash and waste that goes to landfills.

Table 7: 2005 vs 2015 Solid Waste Inputs and GHG Emissions

Sector	GHG Emissions MTCO2e		GHG Emissions MTCO2e	
	2005*	%	2015	%
Composting*	2,670.50	2.53%	2,800.00	2.71%
Flaring of Landfill Gas	0.00	0.00%	0.09	0.00%
In-Jurisdiction Landfills*	102,818.50	97.47%	100,675.00	97.29%
Waste Generation (2019)	0.00	0.00%	0.00	0.00%
TOTAL	**105,489.00**	**100.00%**	**103,475.09**	**100.00%**

**2007 numbers are used where 2005 records are unavailable.*

In the County of Hawai'i, In-Jurisdiction Landfills accounts for most GHG emissions in the Solid Waste Sector. However, over the past ten years, there has been a -2.08% change in In-Jurisdiction Landfill emissions from 102,818.50 $MTCO_2e$ in 2005 to 100,675.00 $MTCO_2e$ in 2015. Two categories, Flaring of Landfill Gas and Composting, have experienced modest increases in emissions. Waste Generation has nothing to report but should be considered in future GHG Inventory reports (Refer to Tab. 9).

Wastewater Sector

The Department of Environmental Management's Wastewater Division is primarily responsible for the management and operations of treating Hawai'i County's wastewater. Emissions from this sector come from the electricity used to power the treatment facilities.

Table 5: 2005 vs 2015 Water & Wastewater Inputs and GHG Emissions

Sector	GHG Emissions MTCO2e		GHG Emissions MTCO2e	
	2005*	%	2015	%
Wastewater Treatment*	16,024.00	100.00%	6,992.00	100.00%
TOTAL	**16,024.00**	**100.00%**	**6,992.00**	**100.00%**

**2007 numbers are used where 2005 records are unavailable.*

For the County of Hawai'i, Wastewater GHG emissions decreased by over half (56.37%), from 16,024 $MTCO_2e$ in 2005 to 6,992 $MTCO_2e$ in 2015. This is a total reduction of 9,032 $MTCO_2e$ in eight years (Refer to Tab. 8). This reduction comes from the Wastewater Division retrofitting their pumps to operate at lower levels when there is less water being treated. By retrofitting the water pumps, these facilities became more energy efficient by only using the amount of electricity needed at variant times rather than operating the pumps at a constant rate.

Agriculture, Forestry, and Other Land Uses (AFOLU) Sector

The Agriculture, Forestry, and Other Land Uses sector of emissions encapsulates Hawai'i County's land use practices, and how agriculture and land management emit greenhouse gasses. A major aspect of this sector is also carbon sequestration; how natural ecosystem services are able to capture and store carbon dioxide from the environment into the soil and organic material that grows. In order for Hawai'i County to reach its goal of carbon neutrality by 2045, carbon sequestration will play a large role in balancing out any emissions that are near impossible to mitigate (e.g. domestic airline travel). The inventory is split between two factors: sinks and sources. A carbon sink absorbs carbon dioxide; whereas a source is a cause of carbon dioxide emissions.

Table 8: 2005 vs 2015 AFOLU Inputs and GHG Emissions

Sector	GHG Emissions MTCO2e		GHG Emissions MTCO2e	
	2005*	%	2015	%
Sink - Forest Carbon	(337,127.10)	164.94%	(361,794.94)	126.23%
Sink- Landfilled Yard Trimmings and Food Scraps	(5,873.29)	2.87%	(5,873.29)	2.05%
Sink - Urban Trees	(43,462.38)	21.26%	(46,986.36)	16.39%
Source - Forest Fires Emissions	66,955.56	-32.76%	12,921.25	-4.51%
Source - Agricultural Soil Carbon Emissions	56,383.63	-27.59%	65,780.90	-22.95%
Source - Agricultural Soil Management Emissions	18,794.54	-9.20%	16,445.22	-5.74%
Source - Enteric Fermentation Emissions	34,065.11	-16.67%	28,191.81	-9.84%
Source - Manure Management Emissions	5,873.29	-2.87%	4,698.64	-1.64%
TOTAL	**(204,390.64)**	**100.00%**	**(286,616.77)**	**100.00%**

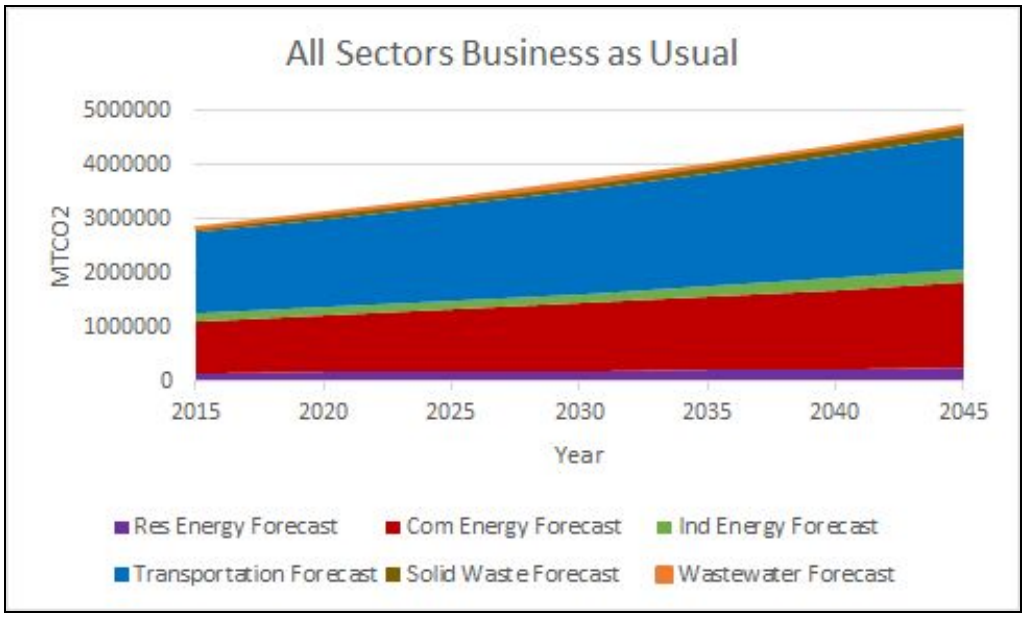
**2007 numbers are used where 2005 records are unavailable.*

The County of Hawai'i experienced a reduction in the AFOLU sector in 2015 from 2005. Sinks, a medium that absorbs carbon, contributed to the overall offset of emissions from sources. A total of 128,037.82 $MTCO_2$ were emitted from Hawai'i Island's Agricultural sector. Agricultural soil carbon, enteric fermentation, and forest fires are the largest emitters of carbon. Through carbon capture and sequestration, a total of 414,654.59 $MTCO_2e$ was absorbed in 2015. Sinks considered in this inventory are Landfilled Yard Trimmings and Food Scraps, Urban Trees, and Forests. Forests are the largest mediums for absorbing carbon. (Refer to Tab. 8). Overall, Hawai'i

Island's agriculture, forestry, and other land uses sector absorbs a total of 286,616.77 $MTCO_2$, making it the only negative emissions sector to offset emissions.

Emissions Forecasting

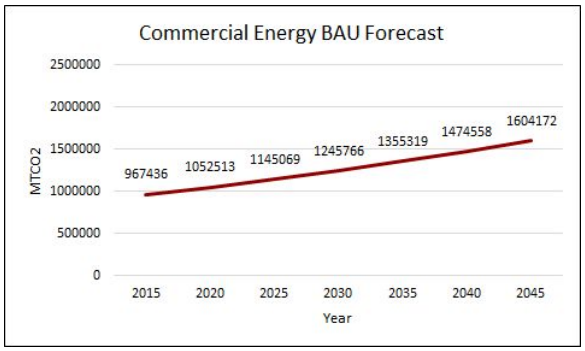
This section forecasts emissions for each sector if the County continues to have a "business as usual" approach to operations. If no actions are taken to mitigate greenhouse gases in each sector, Hawai'i Island will see a significant rise in its GHG emissions, and continue to contribute to global climate change. Without implementation of a Climate Action Plan, our GHG emissions are forecasted to reach over 4.5 million $MTCO_2$ by 2045.



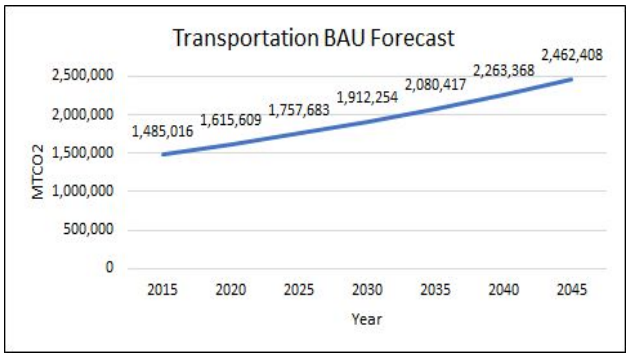
For calculating forecasts, growth rates were based on estimated population growth for Hawai'i County from 2015 to 2045. Population growth rates were determined from the Office of Planning Trends and Forecasts Report published in 2016, which shows a 1.7% increase in total population over the next 20 year period. Using the ICLEI ClearPath Tool to record emissions, the 2015 emissions serve as the baseline year and correspond with the 1.7% population growth per annum to determine a "business as usual" (BAU) forecast, which is the forecasted emissions scenario for the County if no mitigation strategies are implemented.

Agriculture, Forestry, and Other Land Use emissions were not forecasted based on community population growth. Data is needed for livestock population growth and estimated crop yields. Due to limited available data and growth estimates, an AFOLU business as usual scenario was not forecasted.

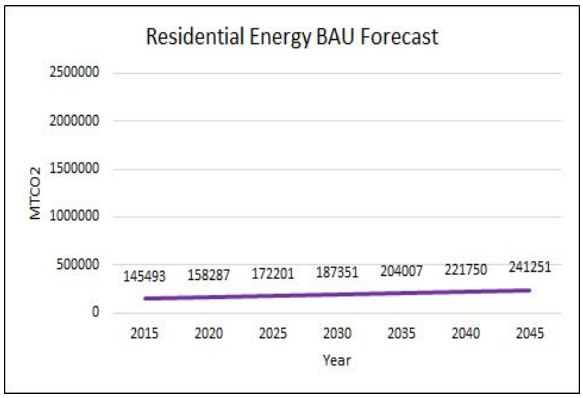
Commercial Energy Business as Usual



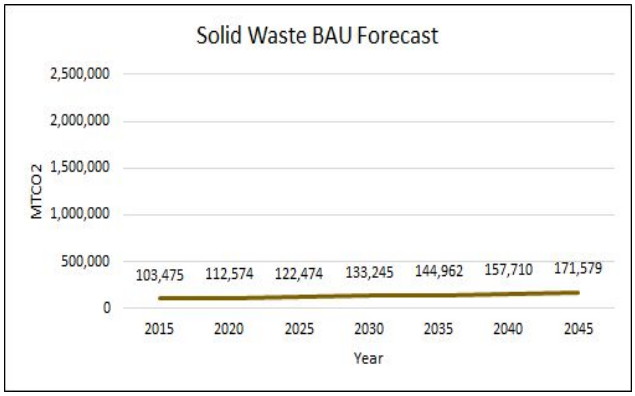
Transportation Business as Usual



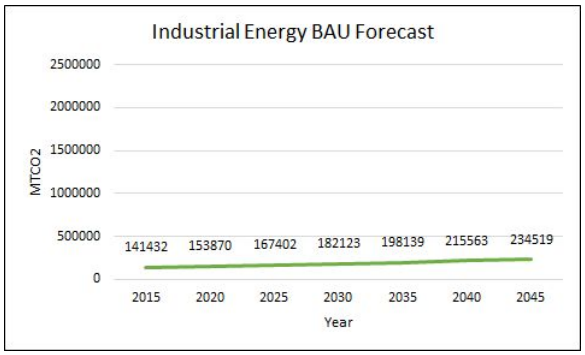
Residential Energy Business as Usual



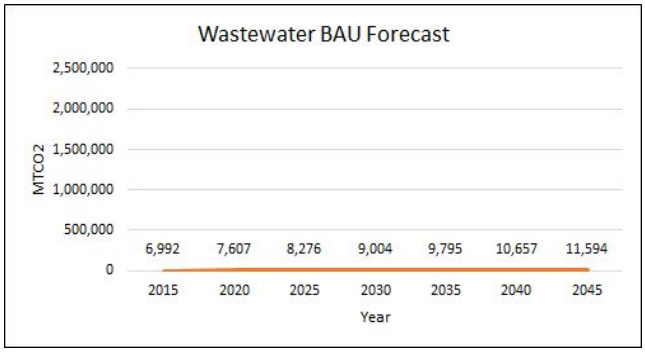
Solid Waste Business as Usual



Industrial Energy Business as Usual



Wastewater Business as Usual



Emissions Targets

This plan is centered around two main targets: 1) to generate power and electricity from 100% renewable energy sources by the year 2045, and 2) to become carbon neutral by 2045 through absorbing/sequestering more carbon than we are emitting. These targets are in line with standards set forth by the The UN Intergovernmental Panel on Climate Change (IPCC).

To reach carbon neutrality by 2045, Hawai'i County must set more specific emissions targets to guide us towards our goal. The following targets are progressive and use 2015 emissions as the baseline year, and take into consideration the time of strategy implementation and costs associated with each strategy in this plan:

2020: **below 1990 emissions level**

2025: **35% reduction from 2015 emissions level**
Max emissions < 1,852,399 MTCO2

2035: **70% reduction from 2015 emissions level**
Max emissions < 854,953 MTCO2

2045: **100% reduction from 2015 emissions level**
(or to have remaining emissions offset through carbon sequestration/storage)

Certain emissions sources will be near impossible to completely mitigate, such as aviation and marine transportation. These emissions will have to be offset by an increase in carbon sinks and carbon sequestration in the agriculture, forestry, and other land use sector.

> The business as usual forecast estimates aviation and marine transportation emissions to be 1,345,866 $MTCO_2$ by 2045. Unless all aviation and marine fuel is completely renewable or zero emissions, this is the minimum amount of emissions Hawai'i County must be capable of sequestering, given that all other sectors reduce their emissions by 100%.

Energy

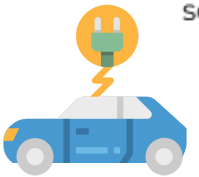
The state has a renewable portfolio standard (RPS) goal of reaching 100% renewable energy by 2045. In order for an economically feasible transition, there are several targets to meet along the way to achieving our goals. In compliance with HB 623 passed in 2015, the State of Hawai'i has set the following Renewable Energy Targets:

30% RPS by 2020
40% RPS by 2030
70% RPS by 2040
100% RPS by 2045

Transportation

On December 12, 2017, Mayor Harry Kim signed a proclamation of commitment pledging to "transform Hawai'i's ground transportation to 100 percent renewable fuel sources by ensuring that all public and private ground transportation is fueled by renewable energy by 2045." It should be noted that as a proclamation, there is no legal obligation bound by these goals.

Private and public ground transportation fueled by renewable sources by 2045



Zero emissions County fleet by 2035

Solid Waste

In 2007, Hawai'i County Council adopted Resolution 356-07 which encourages the County to "embrace and adopt the principles of zero waste." The resolution was followed by the Integrated Solid Waste Management Plan outlining steps to guide Hawai'i County's waste management. This plan is currently being reviewed and updated on a ten year basis. The Department of Environmental Management's Solid Waste Division has a long term goal for Hawai'i County to achieve zero waste.

Achieve zero waste by 2045

Agriculture, Forestry, and Other Land Uses

No specific goals have been set that explicitly mention agriculture, forestry, and other land use; however, the goal set forth in HB 2182 commits the state to achieving carbon neutrality by 2045. This will inherently rely on land use management and policies that increase carbon sequestration potential of natural sinks and expanding our conservation and preservation areas.

Greenhouse Gas Mitigation and Reduction Policies and Measures

Methods of Implementing Actions

The County can implement the actions and policies of the Plan through many tools and activities that can be grouped according to the six categories listed below.

- **New Ordinances**. Several of the actions in the Plan are implemented through new regulations adopted by the County. New ordinances will ensure that County requirements are in place to further the objectives of the Plan. The County has set several goals that are non binding; in order to be held accountable for our goals, the County should pursue more legally mandated goals.
- **Code Updates.** Similar to adopting new ordinances, the County's existing codes will be updated to implement the Plan
- **Financing and Incentives.** Providing mechanisms for funding and allocating resources will help ensure that the Plan is successfully implemented by the County, residents, and businesses.
- **Education and Outreach.** Education efforts on the objectives of the Plan and methods of implementation, and outreach to residents to include them in implementation efforts, such as energy efficiency and transportation, will create support for the Plan and involve the community in its implementation.
- **Changes to County Services.** The County is able to change its operations to directly align with the goals set forth in the Climate Action Plan and to lead by example for the community to follow.
- **Community and Individual Action.** Although the County is capable of pushing forward climate change mitigation policies and strategies, lack of resources and political will are still obstacles Hawai'i Island has to overcome. Rather than waiting on government action, local communities and individuals are still able to make small yet effective contributions to mitigate their own emissions through daily lifestyle changes.

Mitigating greenhouse gas emissions not only reduces our contribution to global climate change, it also brings several sustainable benefits to the community, environment, and economy.

The following chart lays out each co-benefit from implementing CAP strategies. For future updates and a more economic cost benefit analysis, it is recommended that the County contract out a feasibility study of each action.

Co-benefits of GHG emissions reduction strategies include the following:			
Cost Savings		Quality of Life Improvement	
Energy Conservation		Job Creation	
Public Health Benefits		Local Community Development	
Water Conservation		Energy Security	
Air Quality Improvement		Green Space and Recreation Improvement	
Water Quality Improvement		Clean Transportation and Mobility	
Increase Equity		Reduce Traffic Congestion	
Reduce Waste		Improved Land Management	
Public Safety		Promote Biodiversity	

There are several plans within the County that take sustainability and environmental impacts into consideration; however, current plans do not explicitly connect their goals to greenhouse gas emissions mitigation. The strategies, policies, actions, and recommendations in existing plans are categorized below in this Climate Action Plan by which sector of emissions they impact, and what particular behavior needs to be addressed for effective emissions mitigation. This document, if adopted, will serve to prioritize new and existing practices, policies, and strategies needed to reduce our contribution to global climate change and create a more sustainable Hawai'i County.

Energy Emissions

Background

Energy is how we power our homes, electronics, critical infrastructure, public facilities and electricity. As an island, Hawai'i County predominantly relies on imported fossil fuels for our energy, which makes us dependent and reliant on global fuel markets and outside sources of energy. Because of the relatively young age and location of Hawai'i Island, we do not have any domestic supplies of fossil fuel reserves to depend on. Although this has disadvantaged us by making us rely on outside sources for our energy, it also provides opportunity and necessity to convert our energy dependence on renewable, clean energy. In order to become a more energy secure and self sufficient island, Hawai'i County should focus on on-site energy production through renewable sources; which can be produced domestically with our natural abundance of sunlight, tradewinds, rivers, streams, high geothermal potential, and strong ocean tides and currents.

Mitigation Strategies

In order for the County to reach its goals of 100% renewable energy, the following policies and actions must be implemented and pursued for impactful emissions reductions. Mitigation strategies for the energy sector are defined through three categories:

- ➔ **Strategy 1:** Invest in more green buildings and infrastructure
  - 
- ➔ **Strategy 2:** Incentivize energy efficiency and conservation
  - 
- ➔ **Strategy 3:** Promote renewable energy growth
  - 

Measures:

- # of buildings retrofitted
- MW/hrs of renewable energy added
- Electricity rates
- # LED lights installed
- Energy costs

Strategy 1: Invest in more green buildings and infrastructure - Green buildings and infrastructure can reduce their environmental impacts and emissions by using their environmental settings to their advantage. "Green" buildings and infrastructure uses or replicates natural processes to achieve a desired outcome. This could mean using bioswales or rain gardens to replenish groundwater rather than diverting it with gutters or drainage pipes; or buildings with transparent walls that take advantage of natural light and heat to reduce electricity demand for light bulbs and HVAC systems. This type of “green thinking” reduces energy demand for buildings and helps improve their local environments.

- Incorporate green building and climate resilient specifications into competitive bids. (General Plan Draft)
    - What operations and maintenance processes or mechanisms need to be put in place to ensure ongoing sustainable design?
- Develop a Green Building Incentive Program that incentivizes voluntary projects with high performance green building standards (i.e. LEED)
    - What types of incentives would encourage you to implement energy efficient/green living?
    - What obstacles are you currently facing?
- Develop or participate in programs for improving consumer energy efficiency and conservation through advanced metering infrastructure installations (smart meters) (General Plan Draft)
- To encourage the use of electric vehicles, the County shall install electric vehicle chargers at community facilities in urban centers, for both County and public vehicles (General Plan Draft)
- Require all buildings and facilities to install exterior electrical outlets to improve the ease of using electrical landscaping equipment rather than gas powered equipment
- Encourage the industrial sector to participate in co-generation programs, if feasible

Strategy 2: Incentivize energy efficiency and conservation - Improving energy efficiency is also a major and effective tool to reduce GHG emissions. By becoming more energy efficient, the County of Hawai'i can reduce its demand for electricity produced by non-renewable sources which can lead to lower electricity costs. A 2010 energy audit estimated that the County of Hawai'i Hilo Wastewater Treatment Plant could save over $500,000 annually through improved energy efficiency. For example, Carbon and Payment for Ecosystem (PES) markets could increase energy efficiency and generate income and savings through voluntary offsets, carbon tax and cap and trade compliance. Economic revenue and justice opportunities such as Energy Storage Programs could generate revenue for low-income populations and ensure they have access to affordable energy services. Furthermore, County energy efficiency could be achieved through the Climate Mayors Electric Vehicle Procurement Platform with access to more competitive EV pricing and improved ability to capture the value of tax credits and streamlined procurement process. Finally, the Hawai'i Energy Continuous Energy Improvement (CEI) Program can help the County install energy efficient infrastructure to reduce energy costs.

- Energy efficiency programs for residential, commercial and industrial facilities (General Plan Draft)
- Adopt and maintain strong building energy codes to incentivize energy efficiency (General Plan Draft)
- Create a building energy performance rating and disclosure program (General Plan Draft)
- Create a energy projects reinvestment account to capture energy cost savings for reinvestment in sustainable projects (General Plan Draft)
- Conduct energy service performance contracting for County facilities (General Plan Draft)
- Establish efficiency standards for County equipment purchases (General Plan Draft)
- The County shall increase its energy efficiency by upgrading its vehicle fleet to alternative energy/electric vehicles (General Plan Draft)
- Require energy efficiency designs in all new County facilities and upgrade existing facilities with energy efficient systems as practical.

- Remove barriers for energy systems that improve resiliency, such as microgrids, combined heat and power (CHP), backup generation and storage, and other decentralized electricity systems (General Plan Draft)
- Release a master request for proposals for renewable energy generation and energy efficiency for all public facilities (General Plan Draft)
- Develop a County purchasing policy that incorporates energy saving principles for its own buildings, facilities, and services. (General Plan Draft)

Strategy 3: Promoting renewable energy generation - The 2018-2019 HELCO Sustainability Report concludes that the County of Hawai'i gets 44% of its energy production from current and planned renewable energy sources. The Puna Geothermal Venture facility makes up 10% of Hawai'i Island's renewable energy mix; however, after the 2018 Kilauea Eruption, the plant was closed down due to damaged wells from the lava flow. It is expected to resume operations in 2020. 13.3% of our energy mix comes from customer-sited solar panels, and 0.4% comes from grid-scale solar panels. Two wind farms on the North and South ends of Hawai'i Island produce 14% of our total energy mix. Hydro-electric plants are responsible for 6% of the County's energy mix. By 2022, Hawai'ian Electric Light Company (HELCO) plans to install an additional 70 MW of renewable energy production. If PGV were online and generating the same amount of electricity as it did in 2017, Hawai'i County's renewable energy mix would account for 64% of power produced. The following strategies, if implemented, will help advance implementation of renewable energy generation.

- Institute a County-level review process for geothermal exploration and development that ensures a project is not materially detrimental to the public welfare and include a public hearing (General Plan Draft)
- Maintain tax incentives for renewable energy improvements and continue to revise incentives as energy technology progresses (General Plan Draft)
- The County shall advocate the Public Utility Commission in support of the following types of strategies and initiatives:

    - Programs and fee structures that promote renewable energy;
    - Consumer incentives to utilize renewable alternatives;
    - Social Equity analysis of proposed energy projects to ensure residents are protected as energy consumers in regards to rates, grid planning, utility compensation, and energy project siting (General Plan Draft)
- Coordinate with energy providers to encourage investments that increase reliable, equitable, efficient, and affordable energy for Hawai‘i residents and businesses. (General Plan Draft)
- Support innovative heating and cooling technologies such as sea water cooling, heat pump technology, and low carbon systems that serve multiple buildings. (General Plan Draft)
- Support the development of commercially produced energy to meet the needs of the County of Hawai‘i in a culturally sensitive manner. (General Plan Draft)
- Define appropriate criteria for renewable energy resource zones for commercially produced energy. These could include but are not limited to:
    - Solar farms
    - Wind farms
    - Hydroelectric sources
    - Wave energy locations
    - Geothermal sources
    - (General Plan Draft)
- Conduct a feasibility report for using renewable energy sources to generate power for public water system infrastructure (General Plan Draft)
- Public utilities shall be designed to complement adjacent land uses and minimize conflict with the natural environment and minimize pollution (General Plan Draft)

Transportation Emissions

Background

Transportation on Hawai'i Island plays a critical role in our daily lives. Picking up groceries, going to the doctor, and commuting to work all require access to transportation. As transportation makes up over half of all Hawai'i County greenhouse gas emissions, our current transportation system mostly depends on fossil fuels like gasoline and diesel fuel.

As we aim to become a zero emissions transportation sector, the County and community should prioritize more means of clean transportation through battery electric vehicles, fuel cell vehicles, bio-fuels, improved public mass transit, and bicycle and pedestrian friendly route designs. The County also has a General Plan Objective to achieve a reliable mass transit system that attracts a 50% increase in ridership

Mitigation Strategies

The County has several specific powers related transportation planning and regulation that can be leveraged to promote a sustainable and efficient use of energy in transportation. The recommended strategies are sorted into four categories of avenues the County can take to reduce transportation emissions:

- ➔ **Strategy 4.** Improve infrastructure design and development
  - 
- ➔ **Strategy 5.** Improve mass transit;
  - 
- ➔ **Strategy 6.** Reduce VMT through shared mobility and multi-modal options
  - 
- ➔ **Strategy 7.** Incentivize Clean Vehicles
  - 

Measures:

- Avg. VMT
- # of EV chargers installed
- Registration of Clean Vehicles
- Miles of bike lanes added
- Mass transit/shared use ridership

Strategy 4: Improve infrastructure design and development - The development design and infrastructure for transportation has a major impact on all forms of transportation and their related emissions. The accessibility of roadways, sidewalks, and bicycle paths are major determinants of how people get to where they need to be. By focusing on "complete streets," the County can provide safe and efficient routes by expanding curbs and roadways, adding bus and bike lanes, repairing and adding sidewalks and crosswalks, and accessible pedestrian signs. These elements of complete streets can be subjective to community context, and aid in promoting alternative modes of transportation. Proper and strategic County planning is necessary to ensure goods and services can be equally accessed by all transportation options. Not only does proper design and development of infrastructure benefit the environment through mitigating emissions; it makes transportation more safe and feasible for all communities, especially low-income or socially disadvantaged, while also improving physical health for the public.

- Roadway designs and improvements shall accommodate pedestrian friendly, multimodal design and landscaping (General Plan Draft)
- Incorporate bicycle routes, lanes, and paths within road right-of-way in conformance with The Bikeway Plan for the County of Hawai'i (General Plan Draft)
- Implement "complete streets" design into existing and planned road projects and prioritize old degraded roads and development in high density population areas (General Plan Draft)
- Establish bicycle, pedestrian, and equestrian travel ways to link up communities while also establishing alternative travel ways within individual communities (General Plan Draft)
- Create transportation hubs and bus stops with amenities that provide riders comfort and safety and that help support community and village gathering places (General Plan Draft)
- Identify locations, design, and services to be provided at the major transit hubs and stations (General Plan Draft)
- Revise code to require new thresholds for, and/or incentivize, electric vehicle charging stations. Incentives may include reducing minimum parking requirements in exchange for the development of charging stations in high use areas, multi-family residential

developments, or in areas identified as underserved in the network maps. (General Plan Draft)
- Enforce the state law requiring large parking lots to provide electric vehicle parking and charging (General Plan Draft)
- Encourage improvements for pedestrian access to and around schools and between residential areas, schools, and library facilities (General Plan Draft)
- Increase lanes in high traffic areas to reduce congestion and idling for commutes

Strategy 5: Improve public mass transit - By focusing on mass transit options, the County can provide transportation to the majority of residents on-island. The Mass Transit Agency and Department of Research and Development are currently pursuing options to upgrade our mass transit fleet to all electric or hydrogen fueled vehicles. If our mass transit is overhauled to a zero emissions fleet, we can provide the community clean, affordable, and accessible transportation.

- Prioritize expansions to the paratransit and shared ride taxi programs for the growing elderly and disabled populations to ensure equitable access to services are available for all (General Plan Draft)
- Coordinate mass transit schedules and routes so as to accommodate school schedules for after school activities and sports (General Plan Draft)
- Public transportation is improved and expanded in communities with the highest socioeconomic needs, according to Hawai‘i Health Matters (General Plan Draft)
- Assure that the County’s public transit system accommodates redeployment for emergency evacuations (General Plan Draft)
- Expand staff of the Mass Transit Agency to provide greater support for public relations, route planning and coordination, technical operations, and fleet management (General Plan Draft)
- Provide alternative services, such as park-and-ride service, express commuter routes, shuttle vans, circulation routes, flex service, zone paratransit service, and hub and spoke service. (General Plan Draft)
- Upgrade equipment on all buses, such as bicycle racks and technology for transit mobile application (General Plan Draft)

- Implement technology to provide real time mass transit information (General Plan Draft)
- Increase the user-friendliness of Hele-On bus information for riders (General Plan Draft)
- Reduce individual vehicle miles traveled (VMT) by 3% by facilitating walking, biking, and other energy efficient and safe alternative modes of transportation (General Plan Draft)
- Launch a public education campaign promoting transit services, tailoring them to target populations such as youth, commuters, and the elderly. (General Plan Draft)

Strategy 6: Reduce VMT through shared mobility and multi-modal options - Vehicle miles traveled (VMT) refer to the total amount of miles driven for any vehicle. Because nearly all on-island transportation requires gasoline or diesel fuel, more VMT means more greenhouse gas emissions. The uneven terrain and topography of our island is shaped by 5 mountains; which means fuel efficiency is lower for most vehicles as they transverse high gradient routes. Expanding Hawai'i County's shared mobility and multi-modal options can help provide affordable transportation options to residents. The concept of shared mobility/multi-modal transportation is changing our way of thinking from owning personal transportation to having access to various forms of transportation. This helps lower transportation costs, reduce traffic congestion, provide more mobility choices and equitable access to transportation.

- Prioritize transportation investment to expand the multi-modal transportation system (General Plan Draft)
- Work with various non-profit agencies to coordinate transportation and multimodal opportunities (General Plan Draft)
- Amend the County code to increase bicycle and pedestrian-friendly development (General Plan Draft)
- Develop alternative means of transportation to provide alternative mobility for minors, non-licensed adults, low-income, elderly, and people with disabilities. (General Plan Draft)
- Develop intermodal connections to facilitate the transfer between modes of travel, such as Automobile/Transit and Bike/Transit Transfer. Transit stations or transit hubs and nearby park and ride facilities (General Plan Draft)

- Fully fund and implement the Hawai'i Island Shared Mobility Roadmap focusing on foundational strategies (FS) and targeted strategies (TS):
    - **FS1: Mobility Management Framework** - Build internal capacity to guide mobility policy and implementation through a Mobility Management Framework and dedicated staff.
    - **FS2: Pilots and Partnerships** - Create a Mobility Innovation Partnership (MIP) program to identify, test, and evaluate mobility pilot projects.
    - **FS3: Scaling and Integration** - Create opportunities for transit riders to conveniently connect with shared mobility services through multi-modal integration platforms.
    - **FS4: Stakeholder Engagement** - Engage diverse stakeholders in shared mobility planning and implementation
    - **FS5: Community Outreach** - Develop a sustained community outreach campaign that builds understanding and support for transportation options.
    - **FS6: Funding** - Optimize existing County revenue allocations and pursue additional new sources of funding.
    - **FS7: Reliable Transit** - Restore and expand reliable mainline bus service.
    - **FS8: Clean Fleets** - Incorporate ZEVs into existing shared mobility services, and ensure new County-supported services are zero-emission.
    - **FS9: Urban Form** - Pursue housing, land use, and urban design approaches that increase mobility options for residents.
    - **TS1: Bikesharing in Town Centers** - Continue bikeshare expansion with an emphasis on populations who are currently unserved or unable to use the system.
    - **TS2: Carsharing Partnerships** - Develop creative partnerships to deploy carsharing services in select locations.
    - **TS3: Pooled Rides for Long Trips** - Build on early success in carpooling and vanpooling to expand the availability of shared rides for longer trips.
    - **TS4: Employer-led Initiatives** - Pursue County Transportation Demand Management (TDM) programs and employer-led initiatives to incentivize using shared mobility options.

- **TS5: Mobility Options for Tourism** - Develop mobility options to provide more flexibility to visitors in meeting different types of tourism-related travel needs.
- **TS6: Visitor Education** - Communicate the availability of multi-modal mobility options to the hospitality industry, and work with the industry to help educate visitors.
- **TS7: Services to Increase Mobility** - Pursue innovative partnerships to expand mobility services for seniors and disabled populations.
- **TS8: Improve Student Mobility** - Address student mobility challenges and school trips' ripple effect throughout Hawai'i Island's transportation system.
- **TS9: Infrastructure for Shared Mobility** - Develop "quick-build" infrastructure and right-of-way improvements that improve safety and efficiency for shared mobility.

Strategy 7: Incentivize alternative fuels, fuel cells, and electric vehicles - gasoline and diesel fuel are not the only means of powering transportation; alternative fuels such as biofuels, hydrogen fuel cells, and lithium-ion battery technology are becoming more and more economically feasible and competitive against fossil fuels. Being dependent on volatile oil markets and importing fuel puts Hawai'i Island at a disadvantage regarding energy security. The County has several opportunities to produce its own biofuels, and hydrogen for fuel cells; and charging electric vehicles will not contribute to our greenhouse gas emissions once our grid is powered by 100% renewable energy.

- Identify and evaluate transportation strategies to address energy and climate issues (General Plan Draft)
- Develop a program to replace all fossil-fuel vehicles in the mass transit fleet with renewable energy alternatives
    - Electric Vehicles (Fleet Electrification and EV Charging)
    - Cleaner Fuels (Electric, Hydrogen) (General Plan Draft)
- Establish a County-wide priority policy for alternative fuels (General Plan Draft)
- Adopt or develop a biofuels evaluation framework to support County decision-making and advocacy that addresses the specific needs of the island (General Plan Draft)

- Reduce fossil-fuel consumption in the County fleet through vehicle purchasing and fleet management system (General Plan Draft)
- Institute a ban on idling for fuel engine vehicles
- Create a property tax credit for electric vehicle charging stations (General Plan Draft)
- Develop a framework for increasing the fuel tax on fossil fuels at a future date (General Plan Draft)
- Provide grant funding to vehicle dealers and repair businesses to acquire and install electric vehicle servicing equipment (General Plan Draft)
- Investigate various methods of funding transportation improvements, including private sector participation, to meet the growing transportation needs of the island. (Including but not limited to impact fees, taxes, fare adjustments, dedicated sources of funding, improvement districts, and assessments) (General Plan Draft)
- Reevaluate vehicle charging station requirements in the code to determine if the parking lot threshold for requirements should be lowered, and determine if additional requirements or incentives are warranted to facilitate electric vehicle use. (General Plan Draft)
- Implement a ban on importing fossil fuel vehicles to Hawai'i Island
- Conduct a heatmap study of popular driving routes and estimate energy demand for a renewable EV charging infrastructure

Solid Waste Emissions

Background

Our current waste management system is set up to deliver all discarded solid waste to the West-Hawai'i landfill from the 22 recycling and transfer stations dispersed throughout the island. According to the Department of Environmental Management's Solid Waste Division, the West Hawai'i Sanitary Landfill has a projected capacity to last another 100 years. Strategies to mitigate solid waste emissions focus primarily on reducing and diverting the amount of waste we throw away. There is currently an objective in the General Plan to reach a 50% diversion rate for solid waste. The County currently has an Integrated Solid Waste Management Plan that outlines strategies to reach our goal of adopting zero waste principles.

Mitigation Strategies

- ➔ **Strategy 8.** Solid Waste Reduction
  - 
- ➔ **Strategy 9.** Recycling
  - 
- ➔ **Strategy 10.** Promoting green and biodegradable products
  - 
- ➔ **Strategy 11.** Waste to Energy
  - 

Measures

- Diversion rate
- mWh Generated

Strategy 8: Solid Waste Reduction

- The County shall proactively pursue funding that will ensure continued progression towards zero-waste goals (General Plan Draft)
- Optimize recoverable material diversion from landfill disposal by increasing percentage rates for diversion through waste reduction, recycling, and reuse (General Plan Draft)
- Continue to study the feasibility of waste to energy technology (General Plan Draft)
- Promote opportunities for a circular economy (General Plan Draft)
- Evaluate and amend Hawai‘i County Code as appropriate with the following strategies to maximize landfill diversion and deal with materials:
    - Codify prohibition of organic material (green waste) disposal at the landfill.
    - Construction & Demolition (C & D) Recycling Ordinance
    - Develop an E-Scrap ordinance: all electronic discards should be designated as reuse items which essentially bans anything with a plug from being landfilled.
    - Codify County facility ordinance to require recycling at all County offices, facilities, and base yards
    - Transition to eliminate the sale or use of styrofoam and single use plastic food containers and other single-use plastics(General Plan Draft)
- Develop programs to require advance disposal fees for specific products such as e-waste and new vehicles purchased in or shipped to Hawai‘i - the fees should be used to fund resource management and disposal costs (General Plan Draft)
- Conduct pilot studies to facilitate waste recovery and increase diversion rates. The following types of pilot programs are recommended:
    - Curbside waste, recycling, and resource pick-up in priority urban areas
    - Partner/coordinate to facilitate the private use of large recycling roll-off bins in rural areas (General Plan Draft)
- Prohibit businesses and entities from sending junk mail
- Use financial mechanisms to incentivize waste reduction such as a Pay As You Throw (PAYT) program (ISWMP 2019)

- Improve the current reuse facility program (ISWMP 2019)
- Work with contractor to create a list for public distribution, which describes what items are preferable donations
    - Work with the contractor managing the reuse centers to be more selective about merchandise, emphasizing items that are lightly used, clean, and in good condition. Improve signage, organization, and display of merchandise
    - Provide more covered space at reuse centers
    - Collaborate with the volunteer-based Laupahoehoe to increase participation of volunteers
    - Continue public-private partnerships with organizations such as Goodwill Industries to develop reuse centers at existing outlets within the County
- Expand and improve public education and awareness programs. (ISWMP 2019)
    - Develop a business waste audit and education program to foster source reduction within the local business community.
    - Develop a visitor industry waste reduction education program.
    - Continue reuse education, outreach, and public awareness campaign to encourage public participation and use of the reuse centers.

Strategy 9: Recycling

- Host composting and recycling workshops in collaboration with agencies/organizations such as Department of Environmental Management, Recycle Hawai‘i, and the University of Hawai‘i College of Tropical Agriculture and Human Resources Cooperative Extension Service (General Plan Draft)
- Partner with the County and Waste Management to manage recycling/reuse centers at County facilities (General Plan Draft)
- Investigate the feasibility of establishing a mandatory curbside collection program for some single-family residences (ISWMP 2019)
- Develop legislation to require owners and managers of multi-family dwellings and multi-tenant commercial buildings to provide recycling (ISWMP 2019)

- Complete capital projects to facilitate implementation of expanded recycling programs (ISWMP 2019)
    - Modify infrastructure at recycling and transfer stations to recycle selected materials
    - Improve signage at recycling and transfer stations to provide the public with comprehensive information about recycling opportunities and procedures
- Expand opportunities to recycle in public areas and during public events (ISWMP 2019)
    - Install additional recycling bins at parks and other public areas
    - Conduct additional recycling events within the community each year
- Expand opportunities for commercial recycling (ISWMP 2019)
    - Allow small businesses to use the recycling and transfer stations to recycle selected materials
- Develop County policies or ordinances that mandate certain actions be taken to improve recycling rates. (ISWMP 2019)
    - Thoroughly investigate mandates prior to implementation including assessment of markets (should be well-established), operational viability (solicit input from recycling and transfer station attendants, haulers, landfill operators), and implementation in other jurisdictions with an emphasis on other Hawai'i Counties
- Lobby the State to change school waste collection contracts to mandate that recycling services be included (ISWMP 2019)
- Prioritize staffing and capacity building for transfer stations

Strategy 10: Green and biodegradable products

- Improve education and outreach programs that promote improved management of organics. (ISWMP 2019)
    - Ensure that the contractor responsible for administering the organics program is meeting contractual requirements.
    - Expand and further develop a master composter program
    - Develop a training program and guidelines for farmers and gardeners.

- Implement a ‘Stop Wasting Food’ program that would benefit programs such as local food banks.
- Build partnerships to establish compost demonstration gardens at recycling and transfer stations or other visible locations in the community (ISWMP 2019)

Strategy 11: Waste to Energy

- Create infrastructure for island-wide compost collection by setting up systems at transfer stations for communities to use green waste and compost-produced methane for biofuel production
- Composting at farms should be encouraged and facilitated (General Plan Draft)
- Pursue best practices for methane capture at landfills for hydrogen production

Wastewater Emissions

Background

The County of Hawai'i recognizes the need for water conservation and sustainable management of wastewater treatment. Wastewater emissions predominantly come from the electricity used to treat the water supply. Lowering the amount of water needed to be treated and improving the efficiency of water distribution will reduce electricity demand and therefore emissions. This also conserves water as a vital resource for Hawai'i Island; and conservation can be done through water-efficient appliances, proper landscaping, and practices to improve water quality in our natural streams and rivers. The wastewater that is treated comes from our homes, schools, businesses, and facilities that are connected to the sewer system.

Mitigation Strategies

➔ **Strategy 12.** Reduce amount of wastewater needed to be treated

- 

Measures:

- Gallons of water treated

Strategy 12: Reduce the amount of water collected for waste water treatment

- Landscaping shall be provided along streets where regular rainfall or reclaimed water are available for irrigation, and arid species or xeriscape landscaping shall be the preference where reclaimed water and rainfall are not available (General Plan Draft)
- Develop water conservation and stormwater management guidelines for commercial, industrial, and residential properties (General Plan Draft)
- Amend the County plumbing code to require the use of low-flow devices (General Plan Draft)
- Amend the County water code to require water use reporting (General Plan Draft)
- Develop standards for landscapes and irrigation design that emphasize water use efficiency (General Plan Draft)

    - Installation of green roofs, bioswales, and rain gardens on residential, commercial, and industrial properties
    - Consider the use of permeable surface materials to absorb rainfall and stormwater to go back into the ground
- Promote public education on water conservation techniques (General Plan Draft)
- The County shall require water conservation, reuse, and recharge measures for new large development projects in North Kohala, South Kohala, and North Kona Districts. (General Plan Draft)
- Require developments seeking land use entitlements with private water systems to report monthly groundwater use including quantity pumped, chloride (and/or conductivity) concentrations, temperature, and (pump off) water-level data. (General Plan Draft)
- The withdrawal rate from groundwater aquifers shall not exceed 80% of the sustainable yield (General Plan Draft)
- Require installation of non-potable water systems for large developments (General Plan Draft)
- Encourage and incentivize the collection of rainfall for non-potable use (General Plan Draft)
- Facilitate greywater reuse systems through code amendments through partnering with DOH for regulatory changes and incentives (General Plan Draft)
- Develop a water resource strategy for efficient agricultural and urban water use and reuse. (General Plan Draft)
- Install non-potable systems, such as reclaimed wastewater, brackish groundwater and untreated surface water in the proximity of priority Urban Growth Areas for non-potable water uses. (General Plan Draft)
- Conduct a Water Conservation Strategy to implement best management practices from the Hawai'i Water Conservation Plan

Agriculture, Forestry, and Other Land Use Emissions

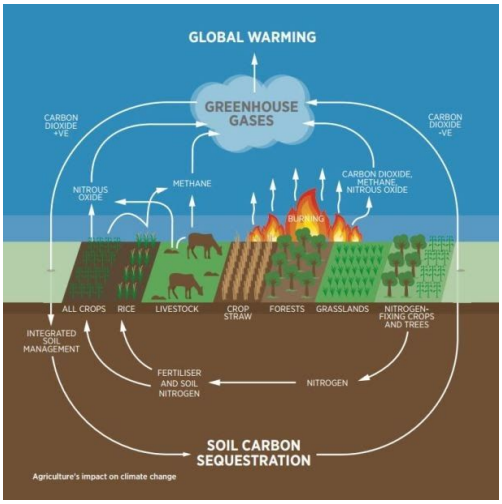
Background

Emissions from agriculture, forestry, and other land uses are emissions that result from our land management and agricultural practices. Hawai'i Island has the largest land area out of all the islands. GHG emissions in the AFOLU sector mostly come from farming and agricultural practices. Agricultural soil carbon and management emissions (tilling), enteric fermentation emissions (animal and livestock digestive processes), manure management emissions (animal and livestock waste), and forest fire emissions are the main sources. Carbon sequestration is the natural process of pulling CO_2 out of the atmosphere and storing it in soil and vegetation, these are considered "carbon sinks." On top of taking carbon dioxide emissions out of the atmosphere, proper carbon sequestration techniques can also improve agricultural yields, build more fertile soils, and positively contribute to ecosystem health. As aspirational as our emissions reduction goals are, it will be nearly impossible to achieve zero overall emissions; therefore, the emissions that we fail to mitigate (for example, aviation) must be offset through carbon sequestration.

Mitigation Strategies

For the Agriculture, Forestry, and Other Land Uses sector of emissions, mitigation strategies are divided into two categories:

- ➔ **Strategy 13.** Promote alternative agriculture and land use management
  - 
- ➔ **Strategy 14.** Expand carbon sequestration potential
  - 



Measures

- Acres of land reforested
- Amount of crop yields
- Soil quality measurements

Strategy 14: Expand carbon sequestration potential - There are several ways Hawai'i County can expand its carbon sequestration potential. Carbon farming encompasses a range of agricultural practices that increases storage of atmospheric carbon dioxide. Reforestation is replanting an unused area of land with trees and vegetation that can sequester larger amounts of carbon dioxide. With a combination of carbon farming practices and a robust reforestation and conservation program, the County of Hawai'i can greatly expand its carbon sequestration capacity to help offset remaining emissions and aid in reaching our goal of carbon neutrality.

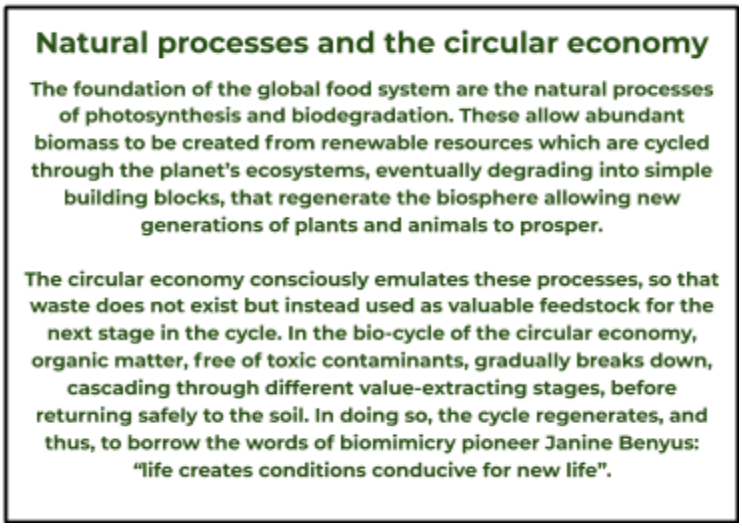
- Promote and encourage conservation projects - expanding conservation zones to prohibit development on natural lands
- Encourage reforestation of undeveloped or vacant deforested lands - reclaiming unused developed land and replanting native vegetation and plant species
- Develop a County sponsored tree planting program
    - Partner with schools, nonprofits, and respective state and County agencies to designate land and volunteers to manage tree planting program
- Incentivize individual and private tree planting through an “Urban Tree Credit System”
    - Offer tax credit for planting or preserving endemic trees on properties to discourage removal
- Partner with private sector, nonprofits, schools, and community organizations to promote educational programs on carbon footprints, carbon offset programs, and carbon farming initiatives
- Implement a Hawaiʻi County Carbon Code
    - The County Department of Research and Development should pursue a program to monitor and track the planting of trees and vegetation through a community scale database
- Encourage landscape designs to include native and endemic species that serve as a carbon sink
- Pursue tax credits to promote landscape designing that maximize a property’s capacity for carbon absorption
- Enforce County rules that promote urban tree planting on County property and public parks
- Identify developed and unused lands that can be reforested
- Increase participation with the State Carbon Credit Program

Strategy 13: Promote alternative agricultural practices - also known as "carbon farming," these are practices that increase capacity to sequester carbon while simultaneously increasing yield for local food production. Alternative agricultural methods take into consideration ample land use that is not covered with crops, and use natural topography and endemic plant species to help retain soil quality. The County should prioritize partnerships with Native Hawai'ian organizations and nonprofits that embrace indigenous practices and values to uphold our responsibility to care for our environment.

- Pursue action on Act 15 signed by Governor Ige to strongly cooperate with the Greenhouse Gas Sequestration Task Force to implement identified policies and mitigation strategies through the four sectors:
    - Agriculture
    - Agroforestry
    - Aquaculture
    - Urban forestry
- Promote aquaculture techniques (Taniguchi, Aimee, et al., 2018)
    - Embrace Native Hawai'ian heritage and prioritize investment in local aquaculture operations
    - Use carbon pricing to help fund and expand aquaculture projects
    - Streamline the aquaculture permitting process
- Encourage agroforestry that combines the use of livestock and tall canopies of trees over one or more layers of low lying crops (Taniguchi, Aimee, et al., 2018)
    - Lobby the State to amend the Agricultural Loan Program to create an Agroforestry Loan Program
    - Lobby the State to prioritize agroforestry in the Forest Stewardship Program
    - Land leases should prioritize long term leases for agroforestry producers
    - Work with the Agricultural Development Corporation to provide agroforestry business plan development to meet wholesale market demand
- Promote biointensive crop production which gains maximum yield from minimum areas of land that simultaneously increase biodiversity and sustain fertility of soil

    - Encourage the use of trees and livestock to fill cropland replacing intensive cropping
- Incentivize organic techniques which do not require the addition of chemical fertilizers or pesticides that degrade soil quality
- Encourage sustainable irrigation techniques
    - Flood irrigation techniques shall be discouraged and replaced by drip, furrow, or sub-irrigation
- Establish aide and guidelines to discourage crop rotation
    - Tillage practices should be discouraged and to be replaced by conservation tillage, no till, or mulch farming
    - Continuous monoculture crops should be replaced by high diversity crop rotations
    - Promote the use of cover crops (crops grown during off-season rather than leaving croplands bare)
        - Help markets for cash crops to bring in extra income for farmers on off season
- Promote manure management practices
    - Encourage all livestock manure to be composted
    - Study feasibility of “digesters” that capture methane from manure and convert it to renewable energy and fuel
    - Improve diet quality for livestock
- Pursue biomass as a form of energy and research markets for farmers to sell produce for clean energy production

A Green Economy



Green economies aim to minimize the environmental risks and ecological scarcities of natural resources to promote sustainable development without degrading the environment. Creating a circular, green economy means production, consumption, and trade are designed to minimize pollution, and the extraction of fossil fuels, raw materials, and water.

Hawai‘i Island is far from becoming a circular economy due to our high dependence on imported fuel, food, medicine, and other goods. Focusing on shifting our consumption away from imported goods and prioritizing goods and services that are produced on-island is our first step towards a green economy. Not only will that make Hawai‘i County more self-sustaining and resilient, it will also shift capital and economic opportunities to local communities.

A 2010 Island of Hawai‘i Green Economy report analyzed Hawai‘i County’s green economy sectors and associated activities:

- ➔ Renewable Energy and Fuel Generation (5%)
  - ◆ Biofuel development, clean energy generation, and related research, training and education.
- ➔ Sustainable Agriculture (40%)
  - ◆ Local food production, aquaculture research and production, forestry management, network development, education and advocacy.
- ➔ Green Construction (19%)
  - ◆ Sustainable building materials, design and construction services, installation of solar equipment, and energy efficiency consultation.

- ➔ Conservation and Pollution Mitigation (23%)
    - Environmental and water conservation and improved resource management.
- ➔ Environmentally Friendly Goods and Services (12%)
    - Green products and services.

These services, if invested in, can provide domestic economic resilience and equity from Puna to North Kohala, and reflect the cultural values of Hawai‘i workers.

The mentality behind a green economy is oriented around life cycle analysis: where resources are coming from, how they are used and their impacts on the environment, and what happens once they are discarded or obsolete. Hawai‘i County shall prioritize our investment in local resources, sustainable production and equitable distribution, and following zero waste principles to achieve a green, circular economy.

How You Can Reduce Your Carbon Footprint

- ➔ Eat less store bought meat
- ➔ Carpool with friends and coworkers to school and work
- ➔ Replace your light bulbs with more efficient LEDs
- ➔ Invest in rooftop PV panels and home batteries
- ➔ Update your homes' insulation to reduce AC demand
- ➔ Purchase electric lawn equipment (weedwackers, leaf blowers, lawn mowers, etc)
- ➔ Shop locally and support vendors at farmers markets
- ➔ Plant more native trees and vegetation in yards for better water collection
- ➔ Use County Public Transit or other multi-modal options (bike share, walking, scooters, etc.)
- ➔ Support green, biodegradable, reusable products over single use plastic products
- ➔ Work from home or telecommute to meetings
- ➔ Contact Hawai'i Energy for energy audits to identify areas at home that can be retrofitted
- ➔ Use clothes liners to rather than a drying machine for laundry
- ➔ Talk about it! Spread the word and raise awareness about your carbon footprint to friends and family

Monitoring and Reporting of Emissions

Tracking and monitoring emissions currently consists of taking available State and County data within each sector. Data collection should be streamlined to a more comprehensive and universal database for reporting on an annual basis. Going forward, a greenhouse gas inventory report should be published on a five year basis, with data representing annual changes to track progress and to better visualize projections and trends during interim years.

The County should prioritize a systematic approach to monitoring and tracking GHG emissions for more accurate inventory and forecasts. Data collected from State agencies should be tracked through County departments whose operations are involved with each emissions sector. Because of the “business as usual” mindset, County departments lack the capacity and incentives to fully address climate change. The siloed structures of each department is one of the biggest obstacles to overcome for a more coherent and comprehensive solution to mitigating and adapting to climate change.

For future greenhouse gas inventories and updates to the Climate Action Plan, it is recommended that the County differentiate between community-wide greenhouse gases and County operations greenhouse gases. The current approach is holistic, combining both community and County governments’ inventories; however, for a more accurate measure of emissions and the impacts of reduction measures, separating the two entities will better aid in monitoring and understanding emissions sources and their reduction potential.

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Appendix A

Proclamation of Commitment to 100% Renewable Ground Transportation by 2045

Proclamation of Commitment to 100% Renewable Ground Transportation by 2045

WHEREAS, as Mayor of the County of Hawai'i, my administration joined the 385-member Climate Mayors network and 196 countries to uphold the Paris Agreement to reduce greenhouse gas emissions, hold global warming to 1.5°C, and accelerate the transition to a clean energy economy that benefits our people's security, prosperity, and health; and

WHEREAS, the Polynesian voyaging canoe Hōkūle'a recently circled the globe during its Mālama Honua Voyage and returned home with a call to action for Hawai'i and the world to become more self-reliant and resilient in the face of climate change; and

WHEREAS, our islands were originally discovered and populated over a thousand years ago by brilliant and courageous Polynesian navigators who utilized the stars to travel thousands of miles harnessing the renewable power of the wind and the ocean; and

WHEREAS, Hawai'i County has already joined the three other counties to endorse the Aloha + Challenge, a statewide commitment with six ambitious goals to be achieved by 2030 that advances climate resilience and sustainability; and

WHEREAS, the Hawai'i Clean Energy Initiative is celebrating a decade of success as it set a bold yet achievable goal, brought parties together to transition away from fossil fuels, and ultimately resulted in a law requiring that 100 percent of Hawai'i's electricity be generated by renewable sources by 2045—the nation's first such benchmark; and

WHEREAS, Hawai'i has established itself as a testbed for clean energy innovation in emerging technologies, programs, and policies, which has had a positive impact on our economy and resulted in keeping $300 million in the islands every year instead of paying for foreign oil; and

WHEREAS, greenhouse gas emissions associated with electricity generation have been falling in Hawai'i due to the Hawai'i Clean Energy Initiative, while emissions from ground transportation in Hawai'i have actually increased in recent years; and

WHEREAS, cars and trucks in Hawai'i consume over 500 million gallons of gasoline and diesel fuel annually, draining nearly $2 billion annually from our local economy and producing 4.5 million metric tons of greenhouse gas pollution that leads directly to increased climate change; and

WHEREAS, Hawai'i's dependence on imported fossil fuel directly contributes to our high cost of living, and national studies have shown that operating and maintaining an

electric vehicle costs about one-third less than operating a comparable fossil-fuel powered vehicle; and

WHEREAS, our commitment to a 100 percent clean energy future is unwavering but the path each island may take to the destination will vary and involve our communities to find the right balance of transport modes, renewable fuels, and electrification to meet our local needs and support local jobs; and

WHEREAS, energy storage technologies developed for hydrogen and electric vehicles can enable a more reliable and resilient renewable electricity grid and can also be employed to make use of variable renewable energy as it's produced; and

WHEREAS, our ground transportation system must transform towards biking, walking, transit, renewable fuel, and electric vehicles if we are to succeed in meeting our goals under Hawai'i state law and the Paris Climate Agreement, while also protecting our local economy; and

WHEREAS, major national governments, cities and companies across the globe have now set targets to phase out fossil fuel-burning cars and trucks and make the switch to renewable fuels, hydrogen, and electric vehicles that result in cleaner air, less noise, energy security, and a reduction of greenhouse gas emissions;

NOW, THEREFORE, I, HARRY KIM, Mayor of the County of Hawai'i, do commit to the next phase of Hawai'i's clean energy future.

In joining the Mayors of all four Hawai'i counties, we pledge to transform Hawai'i's ground transportation to 100 percent renewable fuel sources by ensuring that all public and private ground transportation is fueled by renewable energy by 2045.

In addition, the County of Hawai'i pledges to lead by example and establish a goal of a having a 100 percent renewable-powered city fleet by 2035.

Done this 12th day of December, 2017,
in Honolulu, Hawai'i.

HARRY KIM

Appendix B

Act 234 A Bill for an Act Relating to Greenhouse Gas Emissions

GOV. MSG. NO. 1005

EXECUTIVE CHAMBERS
HONOLULU

LINDA LINGLE
GOVERNOR

June 30, 2007

The Honorable Colleen Hanabusa, President
and Members of the Senate
Twenty-Fourth State Legislature
State Capitol, Room 409
Honolulu, Hawaii 96813

Dear Madam President and Members of the Senate:

This is to inform you that on June 30, 2007, the following bill was signed into law:

HB226 SD2 HD2 CD1 — A BILL FOR AN ACT RELATING TO GREENHOUSE GAS EMISSIONS.
(ACT 234)

Sincerely,

LINDA LINGLE

Approved by the Governor
on JUN 30 2007

HOUSE OF REPRESENTATIVES
TWENTY-FOURTH LEGISLATURE, 2007
STATE OF HAWAII

ACT 234

H.B. NO. 226 S.D. 2 H.D. 2 C.D. 1

A BILL FOR AN ACT

RELATING TO GREENHOUSE GAS EMISSIONS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. (a) The legislature finds that the earth's atmosphere is now warming at the fastest rate in recorded history, a trend that is projected to cause extensive damage to forests, marine ecosystems, and agriculture. Human communities are also threatened by climate change as seas rise, storms become more intense, and episodes of drought and flooding increase. The scientific evidence is now compelling that recent climate change is caused at least in part by human activities, especially the burning of fossil fuels, which has driven atmospheric carbon dioxide concentrations to their highest levels in four hundred twenty thousand years.

The legislature further finds that climate change poses a serious threat to the economic well-being, public health, natural resources, and the environment of Hawaii. The potential adverse effects of global warming include a rise in sea levels resulting in the displacement of businesses and residences and the inundation of Hawaii's freshwater aquifers, damage to marine ecosystems and the natural environment, extended drought and

loss of soil moisture, an increase in the spread of infectious diseases, and an increase in the severity of storms and extreme weather events.

On February 2, 2007, the Intergovernmental Panel on Climate Change, a body established by the United Nations, released its fourth assessment of the predicted impacts of global climate change. The panel predicted temperature rises of up to eleven and a half degrees fahrenheit by 2100 and a sea level rise of up to twenty-three inches, with an additional 7.8 inches possible if current melting of the ice sheets in Greenland and Antarctica continues.

Climate change will have detrimental effects on some of Hawaii's largest industries, including tourism, agriculture, recreational, commercial fishing, and forestry. It will also increase the strain on electricity supplies necessary to meet the demand for air conditioning during the hottest times of the year.

The State has long been a leader in environmental stewardship and is endeavoring to lead the way in alternative renewable energy development and use. It is the intent of the legislature that an air pollution reduction program will continue the State's tradition of environmental leadership by

placing Hawaii among the nation's leaders in efforts to effect a climate change policy. By reducing emissions in Hawaii, this framework of action will serve as an example to other states, the federal government, and other countries to protect our fragile global environment. By investigating and pioneering technologies that would best meet the unique needs of our island State in achieving a 2020 statewide framework of action, Hawaii will also position its economy, technology centers, financial institutions, and businesses to benefit from national and international efforts to meet this important policy. Therefore, the legislature has outlined a plan of action of first:

(1) Declaring a policy, updating an existing statewide inventory of emission; and then

(2) Establishing a regulatory scenario based on an analysis of approaches developed through the work plan of a task force.

(b) Accordingly, the purpose of this Act is to:

(1) Reduce, by January 1, 2020, greenhouse gas emissions in the State to levels at or below the best estimations and updates of the inventory of greenhouse gas emissions estimates for 1990; and

(2) Establish a greenhouse gas emissions reduction task force to prepare a work plan and regulatory scheme for implementing the maximum practically and technically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gases to achieve the statewide greenhouse gas emissions limits by 2020.

SECTION 2. **Declaration of policy.** By January 1, 2020, the State of Hawaii shall reduce statewide greenhouse gas emissions to levels at or below the best estimations and updates of the inventory of greenhouse gas emissions estimates for 1990.

SECTION 3. By December 31, 2008, the department of business, economic development, and tourism and the department of health shall complete an updated inventory of emission sources or categories of sources from the past report prepared by the department of business, economic development, and tourism and the department of health, entitled "Inventory of Hawaii Greenhouse Gas Emissions Estimates for 1990", dated July 1997; provided that at least one public hearing shall be held prior to the completion of the updated inventory.

SECTION 4. **Greenhouse gas emissions reduction task force.** There is established the greenhouse gas emissions reduction task

force within the department of business, economic development, and tourism for administrative purposes only. The task force shall be comprised of the following:

(1) Two members appointed by the president of the senate from affected business sectors;

(2) Two members appointed by the speaker of the house of representatives from affected business sectors;

(3) The deputy director of the department of health's environmental health administration or the deputy director's designee, who shall co-chair the task force;

(4) The director of business, economic development, and tourism or the director's designee, who shall co-chair the task force;

(5) Two members from the University of Hawaii at Manoa climate change commission, selected by members of the Commission;

(6) A member from an environmental organization appointed by the speaker of the house of representatives; and

(7) A member from an environmental organization appointed by the president of the senate.

For the purposes of this section "affected business sector" refers to the following business sectors: electrical utilities, refinery operations, ground transportation industry, or maritime industry.

SECTION 5. **Objective of the task force.** (a) Before December 1, 2009, the greenhouse gas emission reduction task force shall prepare a work plan and regulatory scheme for implementing the maximum practically and technically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gases to achieve the statewide greenhouse gas emissions limit as adopted in section 2 of this Act. For the purposes of this Act, "cost-effective" is defined as being the cost per unit of reduction.

(b) Each member of the task force is encouraged to commit as much time, expertise, and information as is available to the individual member.

(c) Confidential information provided to the task force that is exempt from public disclosure under section 92F-13(4), Hawaii Revised Statutes, shall be held in confidence by the task force or aggregated to the extent necessary to ensure confidentiality as required by chapter 92F, Hawaii Revised Statutes.

SECTION 6. **Work plan.** The work plan shall include but is not limited to the following objectives:

(1) Consultation with all state agencies having jurisdiction over sources of greenhouse gases, including the public utilities commission, on all elements of its plan that pertain to energy-related matters, including but not limited to:

(A) Electrical generation;

(B) The provision of reliable and affordable electrical service;

(C) Petroleum refining; and

(D) Statewide fuel supplies,

to ensure the greenhouse gas emissions reduction activities to be adopted and implemented are complementary, minimize duplication, and can be implemented in an efficient and cost-effective manner.

(2) Identification and recommendations on:

(A) Direct emission reduction measures;

(B) Alternative compliance mechanisms;

(C) Market-based compliance mechanisms; and

(D) Potential monetary and non-monetary incentives,

for sources and categories of sources that are necessary or desirable to facilitate the achievement of the maximum feasible and cost-effective reductions of greenhouse gas emissions by 2020;

(3) Consideration of relevant information pertaining to greenhouse gas emissions reduction programs to ascertain progressive efforts from other locations to postulate control mechanisms most applicable to Hawaii. The task force may consult with other states, the federal government, nongovernmental organizations, and, if applicable, other nations to identify effective strategies and methods to reduce greenhouse gases, manage greenhouse gas control programs, and to facilitate the development of integrated and cost-effective regional, national, and international greenhouse gas emission reduction programs;

(4) Investigation and development of analytical tools, economic models, or other scientific methods to evaluate the total potential costs and total potential economic and non-economic benefits of the plan for reducing greenhouse gases to the State's economy, environment, and public health;

(5) Consideration of the relative contribution of each source or source category to statewide greenhouse gas emissions and the potential for adverse effects on small businesses, and recommendation of a minimum threshold of greenhouse gas emissions below which emission reductions requirements shall not apply;

(6) Identification of opportunities for emission reductions measures from all verifiable and enforceable voluntary actions, including but not limited to carbon sequestration projects and best management practices;

(7) Examination and use of market-based compliance mechanisms to achieve emission reductions and:

(A) Consideration of the potential for direct, indirect, and cumulative emission impacts from these mechanisms, including localized impacts in communities that are already adversely impacted by air pollution;

(B) Design of any market-based compliance mechanism to prevent any increase in the emissions of toxic air contaminants or criteria air pollutants

identified by the Environmental Protection Agency; and

(C) Recommendations to maximize additional environmental and economic benefits for Hawaii, as appropriate;

(8) Suggested rules governing how market-based compliance mechanisms may be used by regulated entities subject to greenhouse gas emission limits and mandatory emission reporting requirements to achieve compliance with their greenhouse gas emissions limits;

(9) Suggested regulation to control mobile sources of greenhouse gas emissions to achieve reductions in statewide greenhouse gas emissions;

(10) Recommendations to minimize "leakage" or a reduction in emissions of greenhouse gases within the State that is offset by an increase in emissions of greenhouse gases outside the State;

(11) Review and recommendations of a schedule of fees to be paid by the sources of greenhouse gas emissions regulated pursuant to this Act;

(12) Implementation of a series of public workshops to give interested parties an opportunity to comment on the

work plan. The task force shall conduct at least one of these workshops in each county; and

(13) Review and revision of the work plan to achieve the maximum technologically feasible and cost-effective reductions of greenhouse gas emissions at least once every five years.

SECTION 7. Not less than twenty days prior to the convening of the regular session of 2010 and every fifth regular session following the regular session of 2010, the greenhouse gas emission reduction task force shall submit to the legislature a copy of its work plan and proposed regulatory scheme, along with any proposed legislation, and any five year update to the work plan and proposed regulatory scheme, for achieving the maximum practically and technically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gases.

SECTION 8. Chapter 342B, Hawaii Revised Statutes, is amended by adding a new part to be appropriately designated and to read as follows:

"**PART . GREENHOUSE GAS EMISSIONS**

§342B-A Statewide greenhouse gas emissions limit, adoption. A statewide greenhouse gas emissions limit to be

achieved by 2020 is hereby established that is equal to or below the level of the statewide greenhouse gas emissions in 1990, as determined by section 3 of Act , Session Laws of Hawaii 2007; provided that for the purposes of this Act greenhouse gas emissions from airplanes shall not be included.

§342B-B Greenhouse gas emissions limits; rules. (a) Before December 31, 2011, the director shall adopt rules pursuant to chapter 91, Hawaii Revised Statutes:

(1) Establishing greenhouse gas emission limits applicable to sources or categories of sources, to be achieved by January 1, 2020, and establishing emission reduction measures to achieve the maximum practically and technically feasible and cost-effective reductions in greenhouse gas emissions in furtherance of achieving the statewide greenhouse gas emissions limit; and

(2) Requiring the reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance with this part,

to become operative beginning on January 1, 2012.

(b) The director, to the extent feasible to achieve the statewide greenhouse gas emissions limit, shall adopt rules pursuant to chapter 91, Hawaii Revised Statutes, and this

section based upon the recommendations and findings of the work plan created pursuant to section 6 of Act , Session Laws of Hawaii 2007.

(c) Any rule adopted by the director pursuant to this section shall ensure all of the following:

(1) The greenhouse gas emission reductions achieved are real, permanent, quantifiable, verifiable, and enforceable by the director; and

(2) If applicable, the greenhouse gas emission reduction occurs over the same time period and is equivalent in amount to any direct emission reduction required pursuant to this part.

(d) The director shall periodically review and update state emission reporting requirements and endeavor to make the requirements consistent with the requirements of international, federal, and other states' greenhouse gas emission reporting programs, as necessary.

(e) After January 1, 2012, the director may revise rules adopted pursuant to this section and adopt additional rules to further this part.

§342B-C Schedule of fees; establishment. The director may adopt rules pursuant to chapter 91, Hawaii Revised Statutes,

that specify a schedule of fees to be paid by the sources of greenhouse gas emissions regulated pursuant to this part. The revenues collected pursuant to this section shall be deposited into the clean air special fund established under section 342B-32, Hawaii Revised Statutes, to be used for the purposes thereof."

SECTION 9. There is appropriated out of the general revenues of the State of Hawaii the sum of $500,000 or so much thereof as may be necessary for fiscal year 2007-2008 and the same sum or so much thereof as may be necessary for fiscal year 2008-2009 for carrying out the purposes of this Act, including the hiring of necessary staff.

The sums appropriated shall be expended by the department of business, economic development, and tourism for the purposes of this Act.

SECTION 10. This Act does not affect rights and duties that matured, penalties that were incurred, and proceedings that were begun, before its effective date.

SECTION 11. If any provision of this Act, or the application thereof to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of the Act, which can be given effect without the

invalid provision or application, and to this end the provisions of this Act are severable.

SECTION 12. In codifying the new sections added by section 8 of this Act, the revisor of statutes shall substitute appropriate section numbers for the letters used in designating the new sections in this Act.

SECTION 13. In printing this Act, the revisor of statutes shall substitute in sections 342B-A, 342B-B, and 342B-C, Hawaii Revised Statutes, of section 8, the corresponding act number of this Act.

SECTION 14. This Act shall take effect on July 1, 2007.

APPROVED this 30 day of JUN , 2007

GOVERNOR OF THE STATE OF HAWAII

Appendix C

HB 623 A Bill for An Act Relating to Renewable Standards

HOUSE OF REPRESENTATIVES
TWENTY-EIGHTH LEGISLATURE, 2015
STATE OF HAWAII

H.B. NO. 623 H.D. 2 S.D. 2 C.D. 1

A BILL FOR AN ACT

RELATING TO RENEWABLE STANDARDS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that Hawaii's dependency on imported fuel drains the State's economy of billions of dollars each year. A stronger local economy depends on a transition away from imported fuels and toward renewable local resources that provide a secure source of affordable energy.

The legislature further finds that alternative energy technologies have advanced significantly in recent years, leading to an explosion of new markets, jobs, and local energy sources. Due to these and other advances, Hawaii is currently ahead of its timeline in reaching its goal of becoming forty per cent renewable by 2030.

The legislature also finds that Hawaii is in a period of energy transition, with many long-term agreements soon to be executed for new forms of imported fuels that may act as temporary "bridge" fuels until local sources of renewable energy can be developed.

The purpose of this Act is to update and extend Hawaii's clean energy initiative and renewable portfolio standards to ensure maximum long-term benefit to Hawaii's economy by setting a goal of one hundred per cent renewable by 2045; provided that

extending the renewable portfolio standard goals and transition to energy independence beyond 2030 shall be undertaken in a manner that benefits Hawaii's economy and all electric customers, maintains customer affordability, and does not induce renewable energy developers to artificially increase the price of renewable energy in Hawaii. This target will ensure that Hawaii moves beyond its dependence on imported fuels and continues to grow a local renewable energy industry.

SECTION 2. Section 269-92, Hawaii Revised Statutes, is amended as follows:

1. By amending subsection (a) to read:

"(a) Each electric utility company that sells electricity for consumption in the State shall establish a renewable portfolio standard of:

(1) Ten per cent of its net electricity sales by December 31, 2010;

(2) Fifteen per cent of its net electricity sales by December 31, 2015;

(3) [~~Twenty five~~] Thirty per cent of its net electricity sales by December 31, 2020; [~~and~~]

(4) Forty per cent of its net electricity sales by December 31, 2030[~~.~~];

(5) Seventy per cent of its net electricity sales by December 31, 2040; and

(6) One hundred per cent of its net electricity sales by December 31, 2045."

2. By amending subsection (d) to read:

"(d) Events or circumstances that are outside of an electric utility company's reasonable control may include, to the extent the event or circumstance could not be reasonably foreseen and ameliorated:

(1) Weather-related damage;

(2) Natural disasters;

(3) Mechanical or resource failure;

(4) Failure of renewable electrical energy producers to meet contractual obligations to the electric utility company;

(5) Labor strikes or lockouts;

(6) Actions of governmental authorities that adversely affect the generation, transmission, or distribution of renewable electrical energy under contract to an electric utility company;

(7) Inability to acquire sufficient renewable electrical energy due to lapsing of tax credits related to renewable energy development;

(8) Inability to obtain permits or land use approvals for renewable electrical energy projects;

(9) Inability to acquire sufficient cost-effective renewable electrical energy;

(10) Inability to acquire sufficient renewable electrical energy to meet the renewable portfolio standard goals beyond 2030 in a manner that is beneficial to Hawaii's economy in relation to comparable fossil fuel resources;

[~~(10)~~] (11) Substantial limitations, restrictions, or prohibitions on utility renewable electrical energy projects; and

[~~(11)~~] (12) Other events and circumstances of a similar nature."

SECTION 3. Section 269-95, Hawaii Revised Statutes, is amended to read as follows:

"**§269-95 Renewable portfolio standards study.** The public utilities commission shall:

(1) By December 31, 2007, develop and implement a utility ratemaking structure, which may include performance-based ratemaking, to provide incentives that encourage Hawaii's electric utility companies to use cost-effective renewable energy resources found in Hawaii to meet the renewable portfolio standards established in section 269-92, while allowing for deviation from the standards in the event that the standards cannot be met in a cost-effective manner or as a result of events or circumstances, such as described in section 269-92(d), beyond the control of the electric utility company that could not have been reasonably anticipated or ameliorated;

(2) Gather, review, and analyze empirical data to:

(A) Determine the extent to which any proposed utility ratemaking structure would impact electric utility companies' profit margins; and

(B) Ensure that the electric utility companies' opportunity to earn a fair rate of return is not diminished;

(3) Use funds from the public utilities special fund to contract with the Hawaii natural energy institute of the University of Hawaii to conduct independent studies to be reviewed by a panel of experts from entities such as the United States Department of Energy, National Renewable Energy Laboratory, Electric Power Research Institute, Hawaii electric utility companies, environmental groups, and other similar institutions with the required expertise. These studies shall include findings and recommendations regarding:

(A) The capability of Hawaii's electric utility companies to achieve renewable portfolio standards in a cost-effective manner and shall assess factors such as:

(i) The impact on consumer rates;

(ii) Utility system reliability and stability;

(iii) Costs and availability of appropriate renewable energy resources and technologies[~~,~~], including the impact of renewable portfolio standards, if any, on

the energy prices offered by renewable energy developers;

(iv) Permitting approvals;

(v) Effects on the economy;

(vi) Balance of trade, culture, community, environment, land, and water;

(vii) Climate change policies;

(viii) Demographics; [~~and~~]

(ix) Cost of fossil fuel volatility; and

[~~(ix)~~] (x) Other factors deemed appropriate by the commission; and

(B) Projected renewable portfolio standards to be set five and ten years beyond the then current standards;

(4) Evaluate the renewable portfolio standards every five years, beginning in 2013, and may revise the standards based on the best information available at the time to determine if the standards established by section 269-92 remain effective and achievable; and

(5) Report its findings and revisions to the renewable portfolio standards, based on its own studies and

other information, to the legislature no later than twenty days before the convening of the regular session of 2014, and every five years thereafter."

SECTION 4. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 5. This Act shall take effect on July 1, 2015.

H.B. NO. 623 H.D. 2 S.D. 2 C.D. 1

Report Title:
Renewable Portfolio Standards; Clean Energy Initiative; Public Utilities Commission

Description:
Increases renewable portfolio standards to 30 percent by December 31, 2020, 70 percent by December 31, 2040, and 100 percent by December 31, 2045. Requires the Public Utilities Commission to include the impact of renewable portfolio standards, if any, on the energy prices offered by renewable energy developers and the cost of fossil fuel volatility in its renewable portfolio standards study and report to the Legislature. (HB623 CD1)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

HB623 CD1 HMS 2015-3370-1

Appendix D

Report of the Committee on Environmental Management Res. No. 356-07

COUNTY OF HAWAI'I **STATE OF HAWAI'I**

RESOLUTION NO. 34 11
(Draft 2)

RESOLUTION AUTHORIZING THE PAYMENT OF FUNDS OF A LATER FISCAL YEAR AND OF A MULTI-FISCAL YEAR AGREEMENT FOR FURNISHING AND IMPLEMENTING ORGANIC WASTE DIVERSION SITES AND COMPOST OPERATIONS IN WEST HAWAI`I AND EAST HAWAI`I FOR THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

WHEREAS, the County of Hawaii's *2002 Update to the Integrated Solid Waste Management Plan* identified recycling and waste diversion as major activities to help the County reach its goal to divert 50% of all solid waste that would otherwise go to a landfill, by 2008 and 80% by 2013, and Resolution 28-03, Draft 2, was approved by the County Council on January 23, 2003, setting forth these goals and policies; and

WHEREAS, Resolution 356-07, *A Resolution to Embrace and Adopt the Principles of Zero Waste as a Long-Term Goal for Hawaii County* was approved by Council on December 19, 2007; and

WHEREAS, Resolution 826-08, *A Resolution Urging the Director of the Environmental Management to Develop an Ordinance and Implement a Plan to Prohibit Food, Paper, and Compostable Organics from Hawaii County Landfills by 2012* was approved by Council on January 23, 2009; and

WHEREAS, the County's 2009 *Integrated Resources and Solid Waste Management Plan (IRSWMP)* identified that 54%, or 114,000 tons, of the waste disposed at County landfills were organic materials that could be composted, thereby preserving valuable landfill space; and

WHEREAS, the County completed construction phase for the Materials Recovery Facility infrastructure for West Hawai`i Sanitary Landfill (WHSL) to include a site for organic waste diversion and compost operations; and

WHEREAS, the County completed construction phase of the Sort Station Facility for East Hawai`i which can help support an adjacent compost operation to maximize organic waste diversion from the South Hilo Sanitary Landfill (SHSL); and

WHEREAS, the SHSL is projected to reach maximum capacity at current activity levels within six (6) to eight (8) years; and

WHEREAS, programs like organic waste diversion and compost operations divert material out of the waste stream, preserve natural resources and prolong the life of the existing landfills; and

WHEREAS, organic waste diversion and compost operations will provide valuable products such as mulch and compost for local consumers and businesses, reducing the need and related costs to import these products; and

WHEREAS, organic waste diversion from County transfer stations and landfills currently diverts green waste and untreated wood and can also divert other organic waste materials such as biosolids, food, paper, biodegradable plastics and FOGs (Fats, Oils & Grease); and

WHEREAS, the County is preparing a Request for Proposal (RFP) for furnishing and implementing organic waste diversion sites and compost operations for the Department of Environmental Management; and

WHEREAS, the high equipment and operations start-up costs, estimated at between $1,500,000 and $2,000,000, require a multi-year commitment to enable a contractor to recover costs and secure reasonable terms for equipment financing; and

WHEREAS, a multi-year commitment also provides the County the most favorable opportunity for competitive bids; and

WHEREAS, it is in the County's best interest to contract the operation of organic waste diversion sites based on a ten (10) year agreement at an estimated price per ton not to exceed an annual average of $70 and provide the Director of Environmental Management with the ability to negotiate for two (2) option periods of up to five years each to extend the contracted services, subject to review by the County Council; and

WHEREAS, Article X, Section 10-11 of the County Charter requires that any contract, lease or other obligation requiring payment of funds from the appropriations of a later fiscal year or more than one fiscal year be approved by resolution.

**BE IT RESOLVED BY THE COUNCIL OF THE COUNTY OF HAWAI`I** that in accordance with Article X, Section 10-11 of the Hawai`i County Charter, the Mayor is hereby authorized to enter into a multi-year contract for services of furnishing and implementing organic waste diversion sites and compost operations in West Hawai`i and East Hawai`i for the Department of Environmental Management and that sufficient funds be budgeted in future fiscal years to cover the anticipated obligation of the County under the terms of the agreement.

BE IT FINALLY RESOLVED that the County Clerk shall forward a copy of this resolution to the Mayor, the Director of Environmental Management and the Director of Finance.

Dated at Hilo, Hawai'i, this 2nd day of March, 2011.

INTRODUCED BY:

Brenda Ford
COUNCIL MEMBER, COUNTY OF HAWAI'I

COUNTY COUNCIL
County of Hawai'i
Hilo, Hawai'i

I hereby certify that the foregoing RESOLUTION was by the vote indicated to the right hereof adopted by the COUNCIL of the County of Hawai'i on March 2, 2011.

ATTEST:

COUNTY CLERK

CHAIRPERSON & PRESIDING OFFICER

ROLL CALL VOTE

	AYES	NOES	ABS	EX
BLAS	X			
FORD	X			
HOFFMANN	X			
IKEDA	X			
ONISHI	X			
PILAGO	X			
SMART				X
YAGONG	X			
YOSHIMOTO	X			
	8	0	0	1

Reference: C-86.3/FC-28
RESOLUTION NO. 34 11
(Draft 2)

Appendix E

Hawai‘i State Legislature House Bill 2182

HOUSE OF REPRESENTATIVES
TWENTY-NINTH LEGISLATURE, 2018
STATE OF HAWAII

H.B. NO. 2182 H.D. 2 S.D. 2 C.D. 1

A BILL FOR AN ACT

RELATING TO ENVIRONMENTAL PROTECTION.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that, according to the Hawaii Sea Level Rise Vulnerability and Adaptation Report released in December 2017, Hawaii could suffer $19,000,000,000 in damage due to projected sea level rise. Worldwide, natural disasters are becoming more severe and frequent. In the United States alone, natural disasters inflicted a record $306,000,000,000 worth of damage, breaking the previous record by almost $100,000,000. Rising global temperatures threaten biodiversity in every ecosystem, and habitat loss grows as higher temperatures permanently change the life cycles of plants and animals.

The legislature further finds that Hawaii is committed to mitigating climate change, including its commitment to have a one hundred per cent renewable energy portfolio by 2045. Mayors from each county of the State have pledged to end the State's dependence on fossil fuels by eliminating fossil fuels from ground transportation by 2045. By legally binding itself to these benchmarks, Hawaii became the first state in the nation to send a clear message to the world that our citizens are determined to secure their energy future and climate health. The legislature notes that Hawaii, as part of the United States Climate Alliance, joined leaders from every other country on earth and committed to upholding the objectives of the 2015 Paris Agreement.

In Act 32, Session Laws of Hawaii 2017, the legislature recognized that climate change is real and poses a serious threat to the State's economy, sustainability, and natural resources. In Act 32, the State committed to expanding strategies and mechanisms to reduce greenhouse gas emissions statewide, striving to formulate and communicate long-term low greenhouse gas emission development strategies, and taking actions to conserve and enhance long-term sinks and reservoirs of greenhouse gases, by prioritizing the development of parks, greenways, and restoration of native upland and coastal forests and wetlands.

Greenhouse gas sequestration presents ample opportunities for foreign investment in the State's economy. Airlines have demonstrated a desire to invest globally-required carbon offset dollars in Hawaii's environmental projects, as well in as other carbon markets such as California. Companies, governments, and other individuals would also like to offset their carbon footprint by investing in environmental projects such as renewable energies. This interest presents tremendous opportunities for local businesses, agriculture, and communities in general. In Act 33, Session Laws of Hawaii 2017, the State established the carbon farming task force to gain a more thorough understanding of how agricultural land management practices can sequester carbon, provide greenhouse gas benefits, and decrease marine sedimentation. The legislature finds that a parallel effort is needed to examine ways to add green canopy to urban areas to curb rising temperatures that have hospitalized and killed residents of this State.

Accordingly, the purpose of this Act is to:

(1) Repeal Act 33, Session Laws of Hawaii 2017 (Act 33), and create a new task force named as the greenhouse gas sequestration task force which has similar aims as the carbon farming task force created by Act 33, but expands and makes it permanent;

(2) Align the State's clean energy and carbon sequestration efforts with climate initiative goals, and require that a member of the greenhouse gas sequestration task force also be a member of the climate change mitigation and adaptation commission; and

(3) Expand the mission of the greenhouse gas sequestration task force by requiring that the task force examine opportunities to exploit carbon sequestering trees and vegetation to reduce urban temperatures and thereby protect public health.

SECTION 2. Chapter 225P, Hawaii Revised Statutes, is amended by adding two new sections to be appropriately designated and to read as follows:

"**§225P-A Greenhouse gas sequestration task force.** (a) The greenhouse gas sequestration task force is established within the office of planning for administrative purposes only. The task force shall have the following objectives:

(1) Work with public and private stakeholders to establish a baseline for greenhouse gas emissions within Hawaii and short- and long-term benchmarks for increasing greenhouse gas sequestration in the State's agricultural and natural environment;

(2) Identify appropriate criteria to measure baseline levels and increases in greenhouse gas sequestration, improvements in soil health, increases in agricultural and aquacultural product yield and quality attributable to greenhouse gas sequestration and improvements in soil health, and other key indicators of greenhouse gas benefits from beneficial agricultural and aquacultural practices that may be used to create a certification program for promoting agricultural and aquacultural practices that generate greenhouse gas benefits and agricultural and aquacultural production benefits;

(3) Identify land and marine use policies, agricultural policies, agroforestry policies, and mitigation options that would encourage agricultural and aquacultural practices and land use practices that would promote increased greenhouse gas sequestration, build healthy soils, and provide greenhouse gas benefits;

(4) Identify ways to increase the generation and use of compost in Hawaii to build healthy soils;

(5) Identify practices and policies that add trees or vegetation to expand the urban tree canopy in urban areas to reduce ambient temperatures, increase climate resiliency, and improve greenhouse gas sequestration in Hawaii; and

(6) Make recommendations to the legislature and governor regarding measures that would increase climate resiliency, build healthy soils, provide greenhouse gas benefits, or cool urban areas.

(b) In addition to the objectives listed in subsection (a), the task force may consider:

(1) Developing incentives and funding mechanisms for these incentives, including but not limited to:

(A) Loans, tax credits, or grants;

(B) Research;

(C) Technical assistance; or

(D) Educational materials and outreach,

to participating agricultural activities, aquacultural activities, or on-farm demonstration projects that are identified and approved by the task force as those that would promote greenhouse gas benefits, build healthy soils, sequester carbon, increase water-holding capacity, and increase crop yields; and

(2) Providing for research, education, and technical support for agricultural activities and aquacultural activities identified by the task force.

(c) The membership of the greenhouse gas sequestration task force shall be as follows:

(1) The director of the office of planning or the director's designee, who shall serve as chairperson;

(2) The chairperson of the board of agriculture or the chairperson's designee;

(3) The chairperson of the board of land and natural resources or the chairperson's designee;

(4) The director of transportation or the director's designee;

(5) The deputy director of the department of health's environmental health administration or the deputy director's designee;

(6) The director of the office of environmental quality control or the director's designee;

(7) The director of the environmental law program at the University of Hawaii at Manoa William S. Richardson school of law;

(8) The administrator of the division of forestry and wildlife within the department of land and natural resources or the administrator's designee;

(9) One member who is also a member of the climate change mitigation and adaptation commission;

(10) One researcher from the college of tropical agriculture and human resources at the University of Hawaii at Manoa;

(11) One extension agent from the college of tropical agriculture and human resources at the University of Hawaii at Manoa;

(12) Four members, one each to be appointed by the respective mayors of the city and county of Honolulu, and the counties of Hawaii, Kauai, and Maui; and

(13) Four members to be jointly selected and invited to participate by the president of the senate and the speaker of the house of representatives, of which two members shall be selected from an environmental nonprofit organization, and two members shall be selected from an agricultural or ranching association.

Task force members may recommend to the task force additional members with appropriate specialized expertise, subject to approval by the chairperson.

(d) Members of the task force shall be nominated and appointed pursuant to, and subject to section 26-34 and shall serve without compensation, but shall be reimbursed for reasonable expenses necessary for the performance of their duties, including travel expenses.

(e) The greenhouse gas sequestration task force shall:

(1) Submit a preliminary report of its findings and recommendations, including any proposed legislation, to the legislature and the climate change mitigation and adaptation commission no later than twenty days prior to the convening of the regular session of 2023; provided that the preliminary report shall discuss the objectives and issues listed in subsections (a) and (b), including the following:

(A) Types of agricultural and aquacultural practices, public land and marine use policies, and on-farm managing practices that would provide greenhouse gas benefits and result in tangible economic benefits to agricultural and aquacultural operations;

(B) Short-term and long-term benchmarks that would indicate how effectively agricultural and aquacultural activities have been helping the State to reach greenhouse gas neutrality;

(C) Appropriate criteria that may be used in a certification program to measure baseline levels and increases in carbon sequestration, improvements in soil health, and other key indicators of greenhouse gas benefits from beneficial agricultural and aquacultural practices;

(D) Types of incentives, grants, research, and assistance that would promote:

(i) Agricultural and aquacultural practices to produce greenhouse gas benefits; and

(ii) Land and marine use policies and agricultural policies that would encourage agricultural, aquacultural, and land use practices to provide greenhouse gas benefits and result in tangible economic benefits to agricultural and aquacultural operations; and

(E) Practices and policies that add trees or vegetation to expand the urban tree canopy in urban areas to reduce ambient temperatures and increase climate resiliency and improve greenhouse gas sequestration in Hawaii; and

(2) Beginning with the regular session of 2024, submit an annual report of its findings and recommendations, including any proposed legislation, to the legislature and the climate change mitigation and adaptation commission no later than twenty days prior to the convening of each regular session.

(f) The office of planning shall provide administrative and clerical support required by the task force.

§225P-B Zero emissions clean economy target. (a) Considering both atmospheric carbon and greenhouse gas emissions as well as offsets from the local sequestration of atmospheric carbon and greenhouse gases through long-term sinks and reservoirs, a statewide target is hereby established to

sequester more atmospheric carbon and greenhouse gases than emitted within the State as quickly as practicable, but no later than 2045.

(b) The Hawaii climate change mitigation and adaptation commission shall endeavor to achieve the goals of this section. After January 1, 2020, agency plans, decisions, and strategies shall give consideration to the impact of those plans, decisions, and strategies on the State's ability to achieve the goals in this section, weighed appropriately against their primary purpose."

SECTION 3. Section 225P-1, Hawaii Revised Statutes, is amended to read as follows:

"**[~~§~~]§225P-1[~~:~~] Purpose.** The purpose of this chapter is to address the effects of climate change to protect the State's economy, environment, health, and way of life. This chapter establishes the framework for the State to:

(1) Adapt to the inevitable impacts of global warming and climate change, including rising sea levels, temperatures, and other risk factors; and

(2) Mitigate its greenhouse gas emissions by sequestering more atmospheric carbon and greenhouse gases than the State produces as quickly as practicable, but no later than 2045."

SECTION 4. Act 32, Session Laws of Hawaii 2017, is amended as follows:

1. By amending section 2 to read:

"SECTION 2. (a) The State shall expand strategies and mechanisms to reduce [~~the~~] greenhouse gas emissions [~~statewide~~] through the reduction of energy use, adoption of renewable energy, and control of air pollution among all agencies, departments, industries, and sectors, including transportation. Such strategies and mechanisms shall utilize the best available science, technologies, and policies to reduce greenhouse gas emissions and shall be closely aligned with the climate change principles and goals adopted in the Paris Agreement and Hawaii's share of obligations within the expectations apportioned to the United States in the Paris Agreement, regardless of federal action.

(b) The State shall strive to formulate and communicate long-term low greenhouse gas emission development strategies and shall take actions to conserve and enhance long-term sinks and reservoirs of greenhouse gases, by prioritizing the development of parks, greenways, and restoration of native upland and coastal forests and wetlands."

2. By amending section 6 to read:

"[~~SECTION 6. Chapter 225P, Hawaii Revised Statutes, is repealed.~~] Repealed."

3. By amending section 10 to read:

"SECTION 10. This Act shall take effect on July 1, 2017[~~; provided that section 6 shall take effect on July 1, 2022~~]."

SECTION 5. Act 33, Session Laws of Hawaii 2017, is repealed.

SECTION 6. The office of planning shall submit a status update report of its progress and recommendations, including any proposed legislation, regarding the greenhouse gas sequestration task force to the legislature no later than twenty days prior to the convening of the regular session of 2021.

SECTION 7. There is appropriated out of the general revenues of the State of Hawaii the sum of $150,000 or so much thereof as may be necessary for fiscal year 2018-2019 for the purpose of funding the greenhouse gas sequestration task force and its related efforts.

The sum appropriated shall be expended by the office of planning for the purposes of this Act.

SECTION 8. In codifying the new sections added by section 2 of this Act, the revisor of statutes shall substitute appropriate section numbers for the letters used in designating the new sections in this Act.

SECTION 9. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 10. This Act shall take effect on July 1, 2018.

Report Title:
Environmental Protection; Carbon Farming Task Force; Greenhouse Gas Sequestration Task Force; Sequestration; Emissions; Office of Planning; Task Force; Appropriation

Description:
Renames the Carbon Farming Task Force established by Act 33, Session Laws of Hawaii 2017, as the Greenhouse Gas Sequestration Task Force and makes the task force and Hawaii Climate Change Mitigation and Adaptation Initiative permanent. Aligns the State's clean energy and carbon sequestration efforts with climate initiative goals. Amends membership and duties of the Task Force. Establishes a zero emissions clean economy target for the State. Makes an appropriation. (HB2182 CD1)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

Appendix F

Hawai'i State Legislature Act 15 A Bill for an Act Relating to Environmental Protection

Approved by the Governor
on JUN 04 2018

ORIGINAL

ACT 015

HOUSE OF REPRESENTATIVES
TWENTY-NINTH LEGISLATURE, 2018
STATE OF HAWAII

H.B. NO. 2182 H.D. 2 S.D. 2 C.D. 1

A BILL FOR AN ACT

RELATING TO ENVIRONMENTAL PROTECTION.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that, according to the Hawaii Sea Level Rise Vulnerability and Adaptation Report released in December 2017, Hawaii could suffer $19,000,000,000 in damage due to projected sea level rise. Worldwide, natural disasters are becoming more severe and frequent. In the United States alone, natural disasters inflicted a record $306,000,000,000 worth of damage, breaking the previous record by almost $100,000,000. Rising global temperatures threaten biodiversity in every ecosystem, and habitat loss grows as higher temperatures permanently change the life cycles of plants and animals.

The legislature further finds that Hawaii is committed to mitigating climate change, including its commitment to have a one hundred per cent renewable energy portfolio by 2045. Mayors from each county of the State have pledged to end the State's dependence on fossil fuels by eliminating fossil fuels from ground transportation by 2045. By legally binding itself to these benchmarks, Hawaii became the first state in the nation to

send a clear message to the world that our citizens are determined to secure their energy future and climate health. The legislature notes that Hawaii, as part of the United States Climate Alliance, joined leaders from every other country on earth and committed to upholding the objectives of the 2015 Paris Agreement.

In Act 32, Session Laws of Hawaii 2017, the legislature recognized that climate change is real and poses a serious threat to the State's economy, sustainability, and natural resources. In Act 32, the State committed to expanding strategies and mechanisms to reduce greenhouse gas emissions statewide, striving to formulate and communicate long-term low greenhouse gas emission development strategies, and taking actions to conserve and enhance long-term sinks and reservoirs of greenhouse gases, by prioritizing the development of parks, greenways, and restoration of native upland and coastal forests and wetlands.

Greenhouse gas sequestration presents ample opportunities for foreign investment in the State's economy. Airlines have demonstrated a desire to invest globally-required carbon offset dollars in Hawaii's environmental projects, as well in as other

carbon markets such as California. Companies, governments, and other individuals would also like to offset their carbon footprint by investing in environmental projects such as renewable energies. This interest presents tremendous opportunities for local businesses, agriculture, and communities in general. In Act 33, Session Laws of Hawaii 2017, the State established the carbon farming task force to gain a more thorough understanding of how agricultural land management practices can sequester carbon, provide greenhouse gas benefits, and decrease marine sedimentation. The legislature finds that a parallel effort is needed to examine ways to add green canopy to urban areas to curb rising temperatures that have hospitalized and killed residents of this State.

Accordingly, the purpose of this Act is to:

(1) Repeal Act 33, Session Laws of Hawaii 2017 (Act 33), and create a new task force named as the greenhouse gas sequestration task force which has similar aims as the carbon farming task force created by Act 33, but expands and makes it permanent;

(2) Align the State's clean energy and carbon sequestration efforts with climate initiative goals,

and require that a member of the greenhouse gas sequestration task force also be a member of the climate change mitigation and adaptation commission; and

(3) Expand the mission of the greenhouse gas sequestration task force by requiring that the task force examine opportunities to exploit carbon sequestering trees and vegetation to reduce urban temperatures and thereby protect public health.

SECTION 2. Chapter 225P, Hawaii Revised Statutes, is amended by adding two new sections to be appropriately designated and to read as follows:

"**§225P-A Greenhouse gas sequestration task force.** (a) The greenhouse gas sequestration task force is established within the office of planning for administrative purposes only. The task force shall have the following objectives:

(1) Work with public and private stakeholders to establish a baseline for greenhouse gas emissions within Hawaii and short- and long-term benchmarks for increasing greenhouse gas sequestration in the State's agricultural and natural environment;

(2) Identify appropriate criteria to measure baseline levels and increases in greenhouse gas sequestration, improvements in soil health, increases in agricultural and aquacultural product yield and quality attributable to greenhouse gas sequestration and improvements in soil health, and other key indicators of greenhouse gas benefits from beneficial agricultural and aquacultural practices that may be used to create a certification program for promoting agricultural and aquacultural practices that generate greenhouse gas benefits and agricultural and aquacultural production benefits;

(3) Identify land and marine use policies, agricultural policies, agroforestry policies, and mitigation options that would encourage agricultural and aquacultural practices and land use practices that would promote increased greenhouse gas sequestration, build healthy soils, and provide greenhouse gas benefits;

(4) Identify ways to increase the generation and use of compost in Hawaii to build healthy soils;

(5) Identify practices and policies that add trees or vegetation to expand the urban tree canopy in urban areas to reduce ambient temperatures, increase climate resiliency, and improve greenhouse gas sequestration in Hawaii; and

(6) Make recommendations to the legislature and governor regarding measures that would increase climate resiliency, build healthy soils, provide greenhouse gas benefits, or cool urban areas.

(b) In addition to the objectives listed in subsection (a), the task force may consider:

(1) Developing incentives and funding mechanisms for these incentives, including but not limited to:

(A) Loans, tax credits, or grants;

(B) Research;

(C) Technical assistance; or

(D) Educational materials and outreach,

to participating agricultural activities, aquacultural activities, or on-farm demonstration projects that are identified and approved by the task force as those that would promote greenhouse gas benefits, build

healthy soils, sequester carbon, increase water-holding capacity, and increase crop yields; and

(2) Providing for research, education, and technical support for agricultural activities and aquacultural activities identified by the task force.

(c) The membership of the greenhouse gas sequestration task force shall be as follows:

(1) The director of the office of planning or the director's designee, who shall serve as chairperson;

(2) The chairperson of the board of agriculture or the chairperson's designee;

(3) The chairperson of the board of land and natural resources or the chairperson's designee;

(4) The director of transportation or the director's designee;

(5) The deputy director of the department of health's environmental health administration or the deputy director's designee;

(6) The director of the office of environmental quality control or the director's designee;

(7) The director of the environmental law program at the University of Hawaii at Manoa William S. Richardson school of law;

(8) The administrator of the division of forestry and wildlife within the department of land and natural resources or the administrator's designee;

(9) One member who is also a member of the climate change mitigation and adaptation commission;

(10) One researcher from the college of tropical agriculture and human resources at the University of Hawaii at Manoa;

(11) One extension agent from the college of tropical agriculture and human resources at the University of Hawaii at Manoa;

(12) Four members, one each to be appointed by the respective mayors of the city and county of Honolulu, and the counties of Hawaii, Kauai, and Maui; and

(13) Four members to be jointly selected and invited to participate by the president of the senate and the speaker of the house of representatives, of which two members shall be selected from an environmental

nonprofit organization, and two members shall be selected from an agricultural or ranching association. Task force members may recommend to the task force additional members with appropriate specialized expertise, subject to approval by the chairperson.

(d) Members of the task force shall be nominated and appointed pursuant to, and subject to section 26-34 and shall serve without compensation, but shall be reimbursed for reasonable expenses necessary for the performance of their duties, including travel expenses.

(e) The greenhouse gas sequestration task force shall:

(1) Submit a preliminary report of its findings and recommendations, including any proposed legislation, to the legislature and the climate change mitigation and adaptation commission no later than twenty days prior to the convening of the regular session of 2023; provided that the preliminary report shall discuss the objectives and issues listed in subsections (a) and (b), including the following:

(A) Types of agricultural and aquacultural practices, public land and marine use policies, and on-farm

managing practices that would provide greenhouse gas benefits and result in tangible economic benefits to agricultural and aquacultural operations;

(B) Short-term and long-term benchmarks that would indicate how effectively agricultural and aquacultural activities have been helping the State to reach greenhouse gas neutrality;

(C) Appropriate criteria that may be used in a certification program to measure baseline levels and increases in carbon sequestration, improvements in soil health, and other key indicators of greenhouse gas benefits from beneficial agricultural and aquacultural practices;

(D) Types of incentives, grants, research, and assistance that would promote:

(i) Agricultural and aquacultural practices to produce greenhouse gas benefits; and

(ii) Land and marine use policies and agricultural policies that would encourage

agricultural, aquacultural, and land use practices to provide greenhouse gas benefits and result in tangible economic benefits to agricultural and aquacultural operations; and

(E) Practices and policies that add trees or vegetation to expand the urban tree canopy in urban areas to reduce ambient temperatures and increase climate resiliency and improve greenhouse gas sequestration in Hawaii; and

(2) Beginning with the regular session of 2024, submit an annual report of its findings and recommendations, including any proposed legislation, to the legislature and the climate change mitigation and adaptation commission no later than twenty days prior to the convening of each regular session.

(f) The office of planning shall provide administrative and clerical support required by the task force.

§225P-B Zero emissions clean economy target. (a) Considering both atmospheric carbon and greenhouse gas emissions as well as offsets from the local sequestration of atmospheric

carbon and greenhouse gases through long-term sinks and reservoirs, a statewide target is hereby established to sequester more atmospheric carbon and greenhouse gases than emitted within the State as quickly as practicable, but no later than 2045.

(b) The Hawaii climate change mitigation and adaptation commission shall endeavor to achieve the goals of this section. After January 1, 2020, agency plans, decisions, and strategies shall give consideration to the impact of those plans, decisions, and strategies on the State's ability to achieve the goals in this section, weighed appropriately against their primary purpose."

SECTION 3. Section 225P-1, Hawaii Revised Statutes, is amended to read as follows:

"[~~§~~]§225P-1[~~]~~] **Purpose.** The purpose of this chapter is to address the effects of climate change to protect the State's economy, environment, health, and way of life. This chapter establishes the framework for the State to:

(1) Adapt to the inevitable impacts of global warming and climate change, including rising sea levels, temperatures, and other risk factors; and

(2) Mitigate its greenhouse gas emissions by sequestering more atmospheric carbon and greenhouse gases than the State produces as quickly as practicable, but no later than 2045."

SECTION 4. Act 32, Session Laws of Hawaii 2017, is amended as follows:

1. By amending section 2 to read:

"SECTION 2. (a) The State shall expand strategies and mechanisms to reduce [~~the~~] greenhouse gas emissions [~~statewide~~] through the reduction of energy use, adoption of renewable energy, and control of air pollution among all agencies, departments, industries, and sectors, including transportation. Such strategies and mechanisms shall utilize the best available science, technologies, and policies to reduce greenhouse gas emissions and shall be closely aligned with the climate change principles and goals adopted in the Paris Agreement and Hawaii's share of obligations within the expectations apportioned to the United States in the Paris Agreement, regardless of federal action.

(b) The State shall strive to formulate and communicate long-term low greenhouse gas emission development strategies and

shall take actions to conserve and enhance long-term sinks and reservoirs of greenhouse gases, by prioritizing the development of parks, greenways, and restoration of native upland and coastal forests and wetlands."

2. By amending section 6 to read:

"[~~SECTION 6. Chapter 225P, Hawaii Revised Statutes, is repealed.~~] Repealed."

3. By amending section 10 to read:

"SECTION 10. This Act shall take effect on July 1, 2017[~~; provided that section 6 shall take effect on July 1, 2022~~]."

SECTION 5. Act 33, Session Laws of Hawaii 2017, is repealed.

SECTION 6. The office of planning shall submit a status update report of its progress and recommendations, including any proposed legislation, regarding the greenhouse gas sequestration task force to the legislature no later than twenty days prior to the convening of the regular session of 2021.

SECTION 7. There is appropriated out of the general revenues of the State of Hawaii the sum of $150,000 or so much thereof as may be necessary for fiscal year 2018-2019 for the

purpose of funding the greenhouse gas sequestration task force and its related efforts.

The sum appropriated shall be expended by the office of planning for the purposes of this Act.

SECTION 8. In codifying the new sections added by section 2 of this Act, the revisor of statutes shall substitute appropriate section numbers for the letters used in designating the new sections in this Act.

SECTION 9. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 10. This Act shall take effect on July 1, 2018.

APPROVED this 04 day of JUN , 2018

GOVERNOR OF THE STATE OF HAWAII

HB No. 2182, HD 2, SD 2, CD 1

THE HOUSE OF REPRESENTATIVES OF THE STATE OF HAWAII

Date: May 1, 2018
Honolulu, Hawaii

We hereby certify that the above-referenced Bill on this day passed Final Reading in the House of Representatives of the Twenty-Ninth Legislature of the State of Hawaii, Regular Session of 2018.

Scott K. Saiki
Speaker
House of Representatives

Brian L. Takeshita
Chief Clerk
House of Representatives

THE SENATE OF THE STATE OF HAWAI'I

Date: May 1, 2018
Honolulu, Hawaii 96813

We hereby certify that the foregoing Bill this day passed Final Reading in the Senate of the Twenty-ninth Legislature of the State of Hawai'i, Regular Session of 2018.

President of the Senate

Clerk of the Senate

Appendix G

Hawai‘i State Legislature - HRS Section 226-109

[§226-109] Climate change adaptation priority guidelines. Priority guidelines to prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy shall:

(1) Ensure that Hawaii's people are educated, informed, and aware of the impacts climate change may have on their communities;

(2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;

(3) Invest in continued monitoring and research of Hawaii's climate and the impacts of climate change on the State;

(4) Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;

(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;

(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;

(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;

(8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities;

(9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and

(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy. [L 2012, c 286, §2]

Appendix H

Hawai'i State Legislature - HRS Ch. 11-60.1

Can be found at: https://health.Hawai'i.gov/cab/files/2014/06/har_11-60_1.pdf

DEPARTMENT OF HEALTH

Amendment and Compilation of Chapter 11-60.1
Hawaii Administrative Rules

December 20, 2011

SUMMARY

1. §§11-60.1-51 to 11-60.1-55 are amended.
2. §11-60.1-57 is amended.
3. A new §11-60.1-58 is added.
4. §§11-60.1-192 and 11-60.1-193 are amended.
5. Chapter 11-60.1 is compiled.

Appendix I

Hawai‘i State Legislature HRS Section 342-B-71

[PART VI.] GREENHOUSE GAS EMISSIONS

[§342B-71] Statewide greenhouse gas emissions limit, adoption. A statewide greenhouse gas emissions limit to be achieved by 2020 is hereby established that is equal to or below the level of the statewide greenhouse gas emissions in 1990, as determined by section 3 of Act 234, Session Laws of Hawaii 2007; provided that for the purposes of this Act greenhouse gas emissions from airplanes shall not be included. [L 2007, c 234, pt of §8]

Appendix J

Hawai'i State Legislature A Bill for an Act Relating to Climate Change

THE SENATE
TWENTY-NINTH LEGISLATURE, 2017
STATE OF HAWAII

S.B. NO. 559 S.D. 1 H.D. 2 C.D. 1

A BILL FOR AN ACT

RELATING TO CLIMATE CHANGE.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

PART I

SECTION 1. The legislature finds that not only is climate change real, but it is the overriding challenge of the 21st century and one of the priority issues of the senate. Climate change poses immediate and long-term threats to the State's economy, sustainability, security, and way of life. Hawai'i has a tradition of environmental leadership, having prioritized policies regarding conservation, reduction in greenhouse gas emissions, and development and use of alternative renewable energy. The legislature has passed numerous measures over the last decade to address climate change.

The legislature recognized in Act 234, Session Laws of Hawaii 2007, that "climate change poses a serious threat to the economic well-being, public health, natural resources, and the environment of Hawaii . . . " and that the "potential adverse effects of global warming include a rise in sea levels resulting in the displacement of businesses and residences and the inundation of Hawaii's freshwater aquifers, damage to marine

ecosystems and the natural environment, extended drought and loss of soil moisture, an increase in the spread of infectious diseases, and an increase in the severity of storms and extreme weather events." Countless scientific studies have concluded that greenhouse gas emissions are a leading contributing factor to global warming. The purpose of Act 234 was to achieve a cost-effective statewide greenhouse gas emissions limit at or below the State's greenhouse gas emissions estimates of 1990 by 2020. However, even if greenhouse gas emissions are reduced to 1990 levels, Hawai'i will still be significantly impacted by climate change well into the future, thus the legislature acknowledges that climate change requires a two-pronged approach — reduction of activities that contribute to global warming and adaptations to mitigate the impacts of climate change on the State.

Act 73, Session Laws of Hawaii 2010, established the environmental response, energy, and food security tax, otherwise known as the barrel tax, to provide resources for addressing the effects of climate change. Act 286, Session Laws of Hawaii 2012, amended the Hawaii State Planning Act to establish climate change adaptation priority guidelines, which require that all

county and state activities consider the impacts of climate change in land use, capital improvement, and program decisions. The legislature also finds that in 2013, President Barack Obama appointed former Governor Neil Abercrombie to serve on the President's Task Force on Climate Preparedness and Resilience to develop recommendations on how the federal government can better support state, local, and tribal efforts in climate mitigation, adaptation, and resilience in the areas of Disaster Management; Built Systems (water, transportation, energy, facilities, and coastal infrastructure); Natural Resources and Agriculture; and Community Development and Health. The Hawaii Climate Adaptation Initiative Act, Act 83, Session Laws of Hawaii 2014, established an Interagency Climate Adaptation Committee and authorized the Department of Land and Natural Resources and Office of Planning to create a Sea Level Rise Vulnerability and Adaption Report by December 2017. Act 83 further authorized the Office of Planning to coordinate development of statewide climate adaptation plans to address the effects of climate change through 2050 to protect the State's economy, health, environment, and way of life.

In September 2016, the International Union for the Conservation of Nature at the Hawaii World Conservation

Conference adopted The Pacific Region Climate Resiliency Plan and the Aloha+ Challenge Model for Sustainable Development Policy Motions to facilitate climate mitigation, adaption, and resiliency efforts in the Pacific region.

The legislature further finds that on December 12, 2015, one hundred ninety-five countries at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change adopted an agreement addressing greenhouse gas emissions mitigation, adaptation, and finance starting in the year 2020, known as the Paris Agreement. Under the Agreement, the parties will set greenhouse gas reduction goals, record and communicate information through a transparency mechanism, and provide support to undeveloped countries through a finance mechanism. Specifically, the Paris Agreement aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

(1) Holding the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial

levels, recognizing that this would significantly reduce the risks and impacts of climate change;

(2) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and

(3) Making finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development.

The Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in light of different national circumstances. The Paris Agreement was adopted on November 4, 2016, and is the largest concerted global effort to combat climate change to date. Regardless of federal action, the legislature supports the goals of the Paris Agreement to combat climate change and its effects on environments, economies, and communities around the world.

Therefore, the purpose of this part is to document the State's commitment to combat climate change by systematically reducing greenhouse gas emissions and improving our resiliency

to climate change aligned with the principles and contributing to the goals set by the Paris Agreement.

The State recognizes that to promote a statewide response to climate change collaboration and cooperation are needed in:

(1) Early warning systems;

(2) Emergency preparedness;

(3) Slow onset events;

(4) Events that may involve irreversible and permanent loss and damage;

(5) Comprehensive risk assessment and management;

(6) Risk insurance facilities, climate risk pooling, and other insurance solutions;

(7) Non-economic losses; and

(8) Resilience of communities, livelihoods, and ecosystems.

SECTION 2. (a) The State shall expand strategies and mechanisms to reduce the greenhouse gas emissions statewide through the reduction of energy use, adoption of renewable energy, and control of air pollution among all agencies, departments, industries, and sectors, including transportation. Such strategies and mechanisms shall utilize the best available

science, technologies, and policies to reduce greenhouse gas emissions and shall be closely aligned with the climate change principles and goals adopted in the Paris Agreement and Hawaii's share of obligations within the expectations apportioned to the United States in the Paris Agreement, regardless of federal action.

(b) The State shall strive to formulate and communicate long-term low greenhouse gas emission development strategies and shall take actions to conserve and enhance long-term sinks and reservoirs of greenhouse gases, by prioritizing the development of parks, greenways, and restoration of native upland and coastal forests and wetlands.

PART II

SECTION 3. Chapter 225P, Hawaii Revised Statutes, is amended by amending its title to read as follows:

"**HAWAII CLIMATE CHANGE MITIGATION AND ADAPTATION INITIATIVE**"

SECTION 4. Section 225P-2, Hawaii Revised Statutes, is amended as follows:

1. By adding a new definition to be appropriately inserted and to read:

""Commission" means the Hawaii climate change mitigation and adaptation commission."

2. By repealing the definition of "committee".

["~~"Committee" means the interagency climate adaptation committee.~~"]

SECTION 5. Section 225P-3, Hawaii Revised Statutes, is amended to read as follows:

"**[~~[~~]§225P-3[~~]~~] [~~Interagency climate adaptation committee;~~] Hawaii climate change mitigation and adaptation commission; general functions, duties, and powers.** (a) There is established [~~an interagency climate adaptation committee~~] the Hawaii climate change mitigation and adaptation commission that shall be placed within the department of land and natural resources for administrative purposes only.

(b) Coordination of the [~~committee~~] commission shall be headed jointly by the chairperson of the board of land and natural resources, or the chairperson's designee, and the director of the office of planning, or the director's designee. [~~Among the various potential impacts of climate change, the committee shall, as a first step, focus on and develop sea level rise vulnerability and adaptation reports that shall include:~~

~~(1) Identification of the major areas of sea level rise impacts affecting the State and counties through 2050;~~

~~(2) Identification of expected impacts of sea level rise based on the latest scientific research for each area through 2050;~~

~~(3) Identification of the economic ramifications of sea level rise;~~

~~(4) Identification of applicable federal laws, policies, or programs that impact affected areas; and~~

~~(5) Recommendations for planning, management, and adaptation for hazards associated with increasing sea level rise.~~

~~The report shall be made publicly available no later than December 31, 2017.~~]

[~~f~~] (c) [~~)~~] The [~~committee~~] commission shall include the following members:

(1) The chairs of the standing committees of the legislature with subject matter jurisdiction encompassing environmental protection and land use;

(2) The chairperson of the board of land and natural resources or the chairperson's designee, who shall be the co-chair of the [~~committee,~~] commission;

(3) The director of the office of planning or the director's designee, who shall be the co-chair of the [~~committee,~~] commission;

(4) The director of business, economic development, and tourism or the director's designee;

(5) The chairperson of the board of directors of the Hawaii tourism authority or the chairperson's designee;

(6) The chairperson of the board of agriculture or the chairperson's designee;

(7) The chief executive officer of the office of Hawaiian affairs or the officer's designee;

(8) The chairperson of the Hawaiian homes commission or the chairperson's designee;

(9) The director of transportation or the director's designee;

(10) The director of health or the director's designee;

(11) The adjutant general or the adjutant general's designee;

(12) The chairperson of the board of education or the chairperson's designee;

(13) The directors of each of the county planning departments, or the directors' designees; and

(14) The manager of the coastal zone management program.

[~~[~~] (d) [~~]~~] In addition to the members listed in subsection (c), the chairs of the [~~committee~~] commission may request the participation or input of members of the public; experts in the field; and county, state, or federal officials [~~necessary for the formulation of the report.~~] or others as necessary.

[~~[(e)] In developing the report, the committee shall:~~

~~(1) Solicit public views and concerns; and~~

~~(2) Coordinate with the various county, state, and federal agencies involved in ongoing climate change adaptation planning initiatives.~~

~~[(f)] The committee shall reevaluate and update the sea level rise vulnerability and adaptation report every five years.~~]

[~~(g)~~] (e) The members of the [~~committee~~] commission shall serve without pay but shall be reimbursed for their actual and necessary expenses, including travel expenses, incurred in carrying out their duties.

(f) The commission shall provide policy direction, facilitation, coordination, and planning among state and county agencies, federal agencies, and other partners as appropriate.

(g) The commission shall establish climate change mitigation and adaptation strategies and goals to help guide planning and implementation statewide using the latest scientific analysis and risk assessment to monitor and forecast climate change related impacts at the regional, state, and local level, including any additional information deemed necessary.

(h) The commission shall identify vulnerable people, communities, industries, ecosystems, and the potential economic ramifications for climate change related impacts.

(i) The commission shall identify existing climate change mitigation and adaptation efforts at the federal, state, and local levels and make recommendations for how to meet or exceed Hawaii's state mitigation goals and shall adopt a liberal

approach in preparation, so as to minimize future risk to the people and environment of Hawaii.

(j) The commission shall assess the capacity and availability of existing resources and identify new sources of revenue necessary to address climate change mitigation and adaptation and shall advise the governor, legislature, and counties on the economic and budgetary ramifications of climate change impacts, mitigation, and adaptation.

(k) The commission shall identify the information necessary to track progress in implementing climate change mitigation and adaptation efforts and shall submit an annual report to the governor and legislature no later than twenty days prior to the convening of each regular session of the legislature.

(l) The commission shall maintain a website that includes a mission statement as well as access to climate change related actions, plans, policies, and results.

(m) The commission shall conduct a comprehensive review of the implementation as required by this section and submit a report to the governor, legislature, and the counties no later

than twenty days prior to the convening of the regular session of 2023 and every five years thereafter.

(n) The commission shall, as a first step, focus on and develop sea level rise vulnerability and adaptation reports that shall include:

(1) Identification of the major areas of sea level rise impacts affecting the State and counties through 2050;

(2) Identification of expected impacts of sea level rise based on the latest scientific research for each area through 2050;

(3) Identification of the economic ramifications of sea level rise;

(4) Identification of applicable federal laws, policies, or programs that impact affected areas; and

(5) Recommendations for planning, management, and adaptation for hazards associated with increasing sea level rise.

The reports shall be made publicly available no later than December 31, 2017, and the commission shall reevaluate and update the sea level rise vulnerability and adaptation report every five years.

(o) In developing the report, pursuant to subsection (n), the commission shall:

(1) Solicit public views and concerns; and

(2) Coordinate with the various county, state, and federal agencies involved in ongoing climate change adaptation planning initiatives."

SECTION 6. Chapter 225P, Hawaii Revised Statutes, is repealed.

PART III

SECTION 7. There is appropriated out of the general revenues of the State of Hawaii the sum of $40,000 or so much thereof as may be necessary for fiscal year 2017-2018 and the same sum or so much thereof as may be necessary for fiscal year 2018-2019 for the purposes of this Act.

The sums appropriated shall be expended by the department of land and natural resources for the purposes of this Act.

SECTION 8. There is appropriated out of the general revenues of the State of Hawaii the sum of $65,000 or so much thereof as may be necessary for fiscal year 2017-2018 and the same sum or so much thereof as may be necessary for fiscal year 2018-2019 for the establishment of one full-time equivalent

(1.00 FTE) climate change mitigation and adaptation coordinator position, who shall be exempt from chapter 76, Hawaii Revised Statutes, to support the Hawaii climate change mitigation and adaptation commission.

The sums appropriated shall be expended by the department of land and natural resources for the purposes of this Act.

PART IV

SECTION 9. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 10. This Act shall take effect on July 1, 2017; provided that section 6 shall take effect on July 1, 2022.

S.B. NO. 559 S.D. 1 H.D. 2 C.D. 1

Report Title:
Climate Change; Paris Agreement; Hawaii Climate Change Mitigation and Adaptation Commission; Appropriation

Description:
Requires the State to expand strategies and mechanisms to reduce greenhouse gas emissions statewide in alignment with the principles and goals adopted in the Paris Agreement. Renames the Interagency Climate Adaptation Committee as the Hawaii Climate Change Mitigation and Adaptation Commission. Clarifies the duties of the Commission. Repeals the Commission effective 7/1/2022. Makes appropriations for purposes of this Act and a climate change mitigation and adaptation coordinator position. (CD1)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

2017-2479 SB559 CD1 SMA-3.doc