

Hawaii State Initiatives to Address Climate and Health: Environmental Management Division (EMD) Integration of Climate Change, Health, and the Environment



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A scenic view of a mountain range with a coastline and a tropical forest in the foreground. The sky is filled with soft, golden clouds, suggesting a sunrise or sunset. The mountains are covered in lush green vegetation, and the foreground shows dense tropical foliage.

Integrating Climate and Health at EMD

Efforts Addressing Climate Change

Presented by: Joanna L. Seto, P.E.

Administrator, DOH Environmental Management Division

State of Hawai'i Department of Health
Environmental Management Division

DOH EMD

Mission Statement: “EMD is responsible for implementing and maintaining statewide programs for controlling air and water pollution, for assuring safe drinking water, and for the proper management of solid and hazardous waste. The division also regulates the state’s wastewater.” -State of Hawai'i DOH



Air Pollution & Increasing Allergens

Asthma, allergies, cardiovascular and respiratory disease. Impacts of VOG & decreasing trade winds

Extreme Heat

Heat-related illness, death, dehydration, decreased learning, increased violence, occupational hazards

Drought

Water supply impacts, decreased air quality

Environmental Degradation

Climate migration from Pacific Island communities, civil conflict, loss of cultural ties to land, loss of tourism economy

Wild Fires & Wildfire Smoke

Injuries, fatalities, loss of homes, cardiovascular and respiratory diseases. Compounded by impacts of VOG & decreasing trade winds

Degraded Living Conditions & Social Inequities

Exacerbation of social vulnerabilities and determinants of health, economic hardship

Risk of Invasive Vectors

Dengue, chikungunya, Zika, malaria, West Nile Virus

Food System Impacts

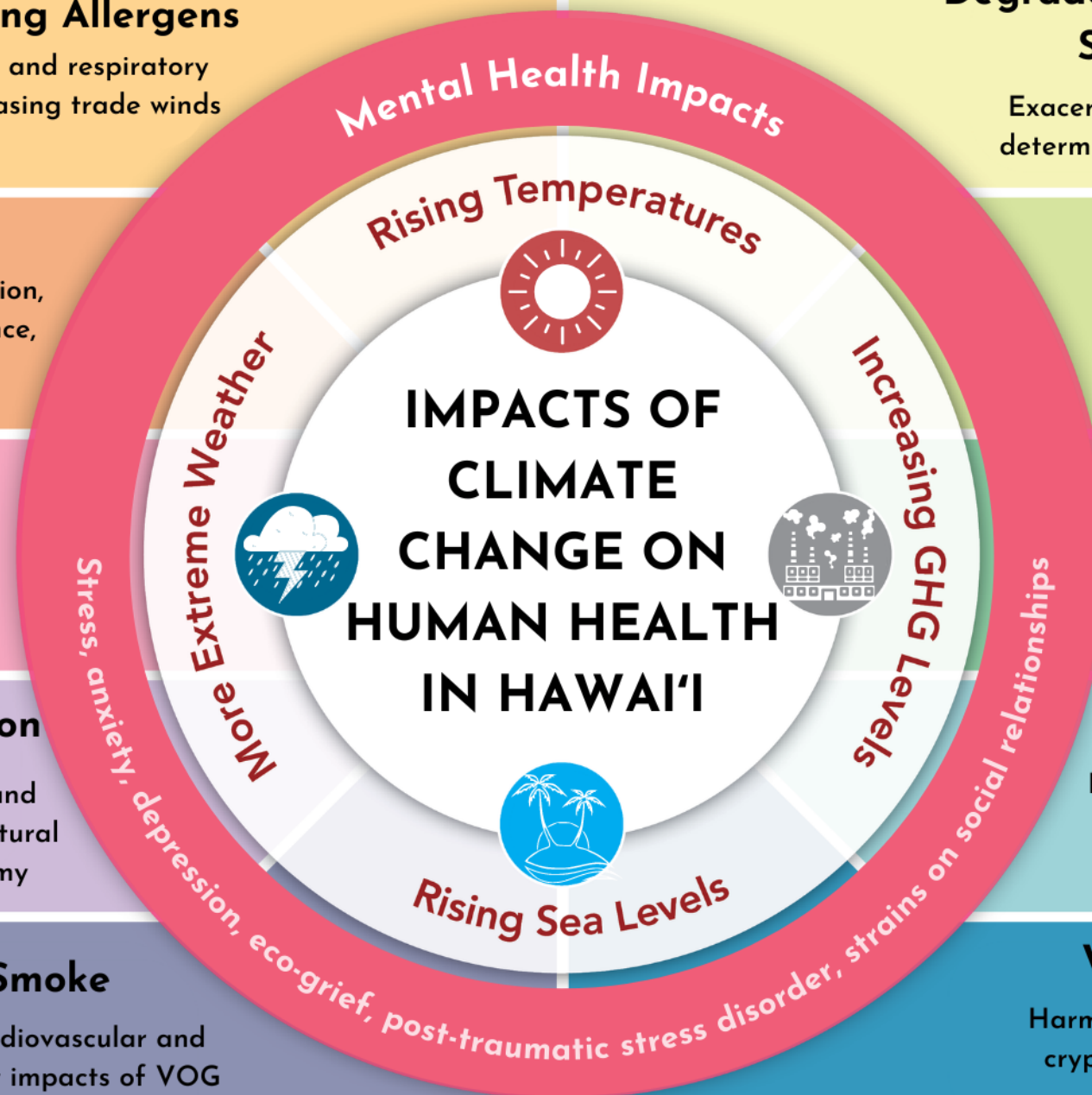
Malnutrition, food insecurity, higher prices, foodborne illness, fragile import supply chain

Severe Weather & Floods

Injuries, drowning, loss of homes, indoor fungi and mold, chemical exposure, cesspool overflows

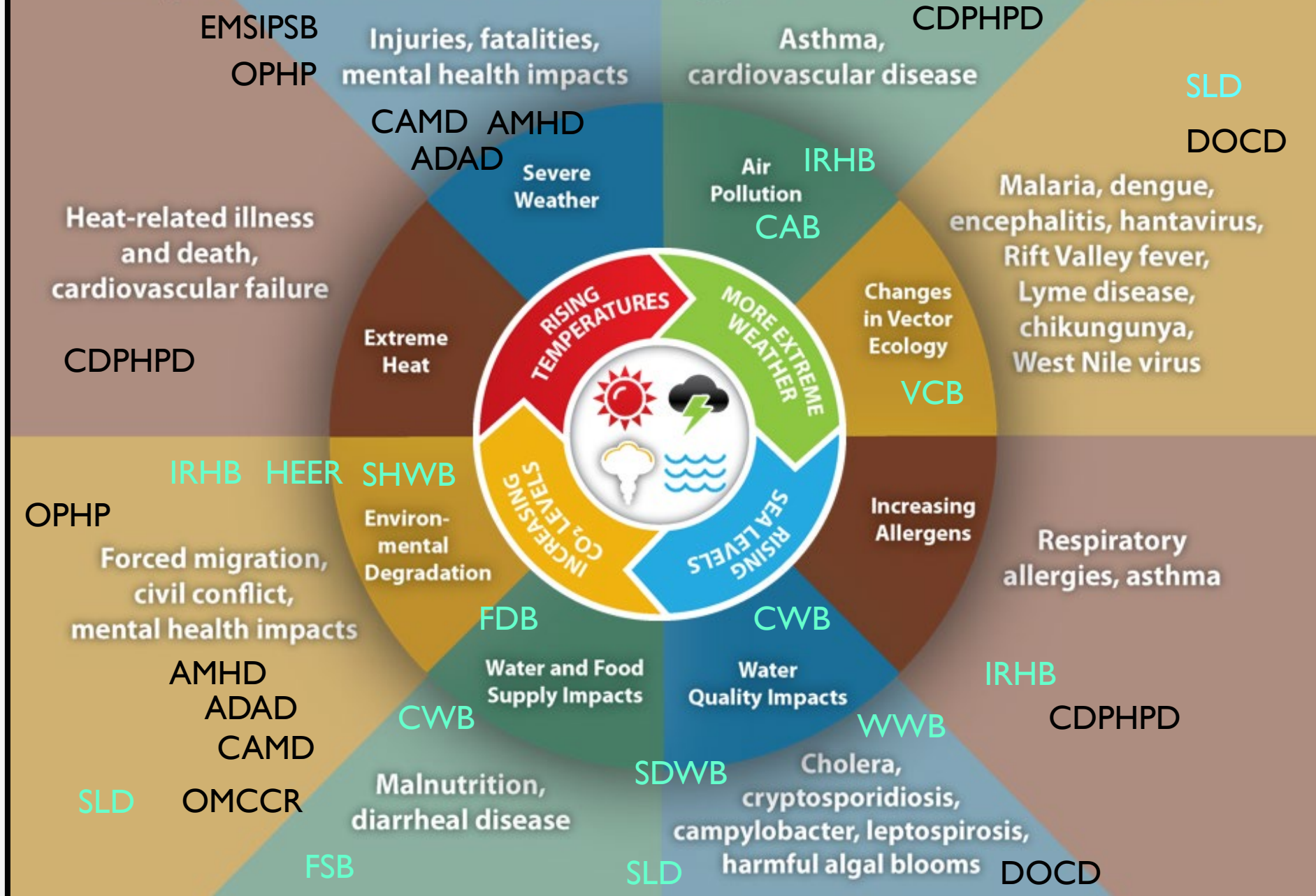
Water Quality Impacts

Harmful algal blooms, campylobacteriosis, cryptosporidiosis, leptospirosis, chemical contamination



(Adapted from CDC, J. Patz; CDPH)

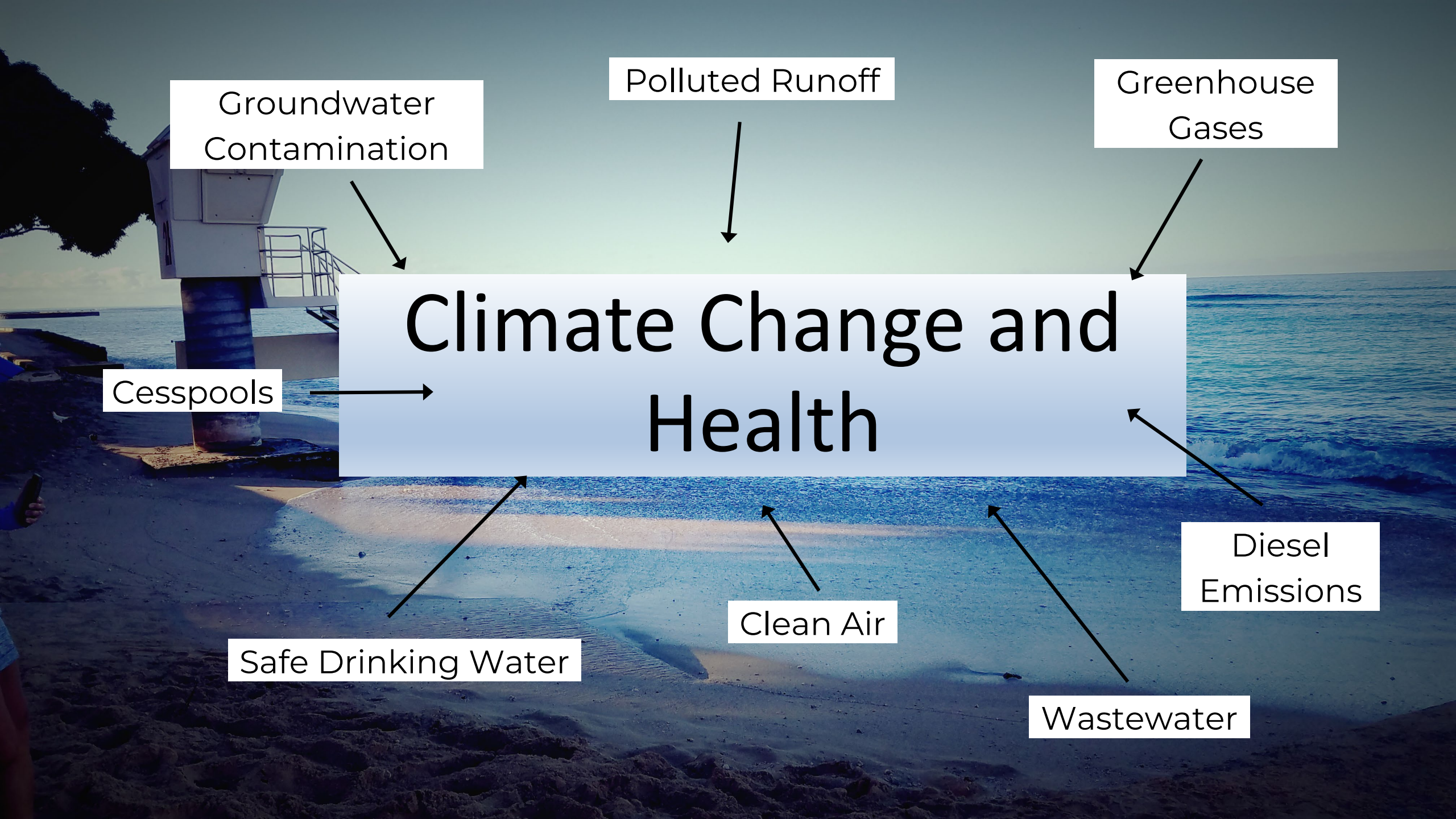
Impact of Climate Change on Human Health



DHOs
OHE

Direct
Service
Providers
CDPHNB
FHSD
DDD

COMMS
OPPPD
OHSM
ASO
HRO
ERO
HISO
OHCA



Groundwater Contamination

Polluted Runoff

Greenhouse Gases

Climate Change and Health

Cesspools

Diesel Emissions

Safe Drinking Water

Clean Air

Wastewater

OVERVIEW

- 1. Clean Air
 - 2. Clean Water
 - 3. Surface Water Protection
 - 4. Safe Drinking Water
 - 5. Solid and Hazardous Waste
 - 6. Wastewater
 - 7. Moving Forward
-
-

An aerial photograph of a vast, lush green mountain valley. The terrain is rugged with deep ridges and valleys, all covered in dense, vibrant green vegetation. The sky is filled with soft, white clouds, and the overall atmosphere is bright and clear. The text "CLEAN AIR" is prominently displayed in the center of the image in a large, white, sans-serif font.

CLEAN AIR

CAB CLIMATE CHANGE (CC) HEALTH CONNECTION

Climate change is caused by an increasing amount of greenhouse gases (GHG) being released into the atmosphere. GHG also directly impact and can compromise human health.

Climate Change impacts related to the air program include:

- Increased air pollutants
- Higher temperatures
- Wildfires

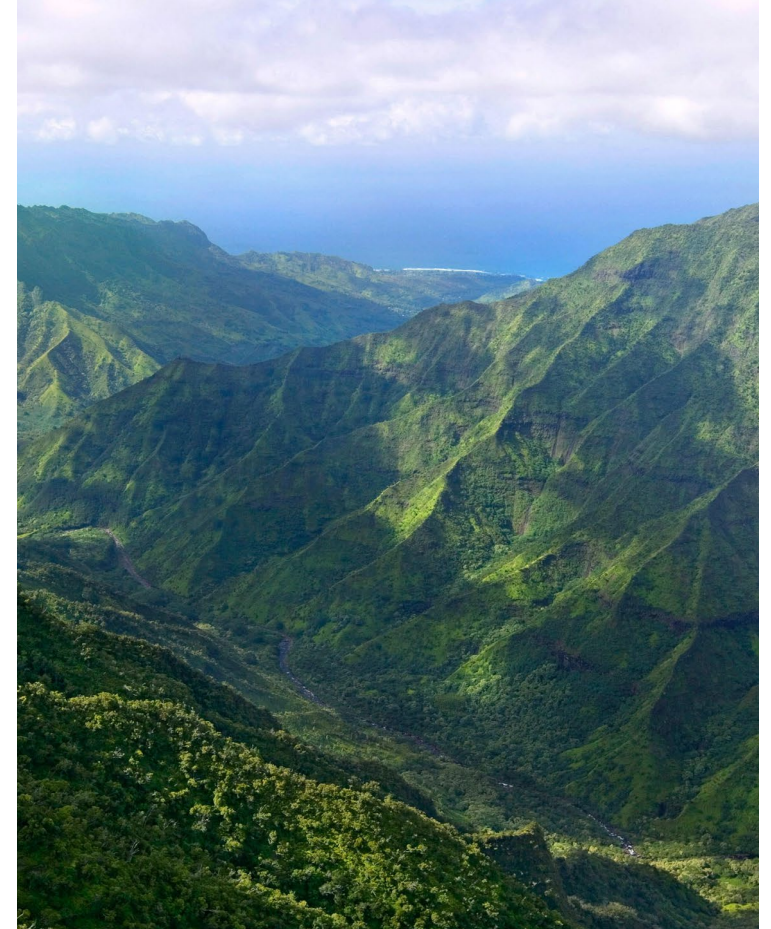


Image Source: <https://www.nature.org/en-us/about-us/where-we-work/united-states/Hawai'i/>

RELATED PROGRAM AREAS

- Air Pollution Control Permits
 - Hawai'i Green House Gases Program
 - Clean Diesel Program
-
-

PERMITS AND INVENTORIES

Air Pollution Control Permits

- Sources emitting air pollution must report the amount of air pollution emitted by their facility and pay fees based on their emissions
- Used to implement the HGHG Program

GHG Emission Inventories

- Keep track of GHG data in Hawai'i to assess progress in achieving GHG reduction goals, and to assist with planning and decision making



<https://www.courthousenews.com/hawaii-residents-can-defend-their-environmental-rights-in-court/>

HAWAI'I GHG PROGRAM

- Implementing state's goals to be 50% below 2005 levels by 2030 and Net-Zero by 2045
- Emissions cap for large existing covered sources producing 100,000 t of CO₂ equivalent or more per year
 - Facilities submitted reduction plans by 2015 and GHG emission caps were incorporated into each facility's air permit reducing GHG emissions 16% below 2010 levels
- GHG Annual Fees for all covered sources



Image Source: <https://www.enr.com/articles/39946-rejected-Hawai'i-utility-merger-scrap-aging-power-plant-upgrades>

CLEAN DIESEL PROGRAM

- Replacement of old engines with new or electric ones that lower emissions
- Diesel Replacement Rebate Program in partnership with Hawai'i State Energy Office
 - 45% rebate to public and private entities replacing old medium and heavy-duty vehicles with electric vehicles and chargers
 - EPA Diesel Emissions Reduction Act (DERA) grants and money from VW settlement used to reduce diesel emissions, further decreasing air pollution and GHG

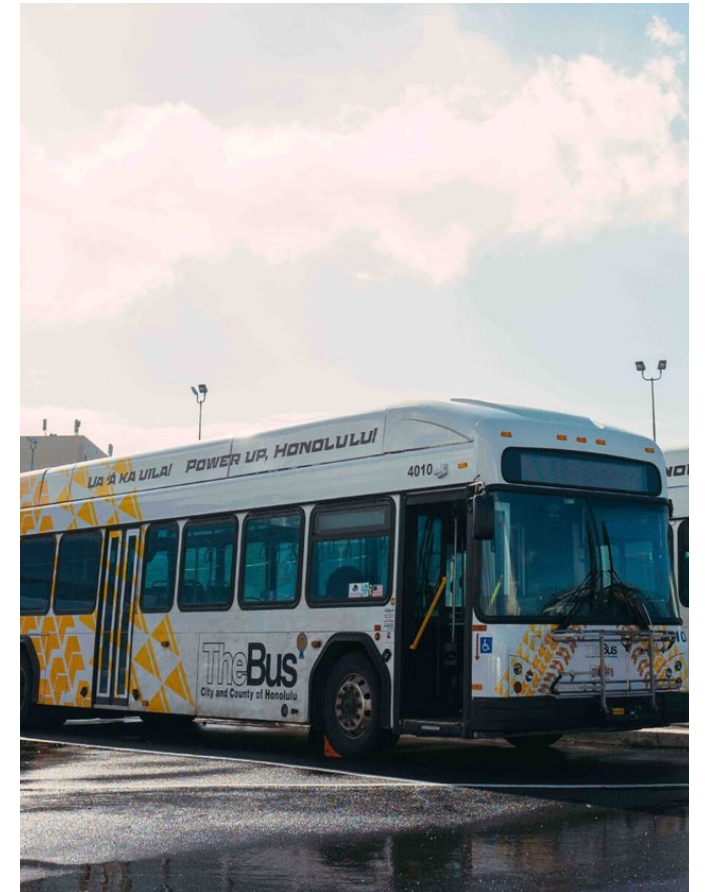


Image Source: <https://www.Hawai'ibusiness.com/new-fuel-efficient-electric-bus-honolulu-department-of-transportation-oahu-transit-services/>



CLEAN WATER

CWB CC HEALTH CONNECTION

Climate change may threaten clean water by increasing the risk of polluted runoff and altering the qualities of water bodies. Climate change related impacts may cause difficulties with clean water permit compliances and scopes of protection.

Climate Change impacts related to the CWB program include:

- Changes in precipitation
- Natural disasters
- Changing temperatures
- Erosion

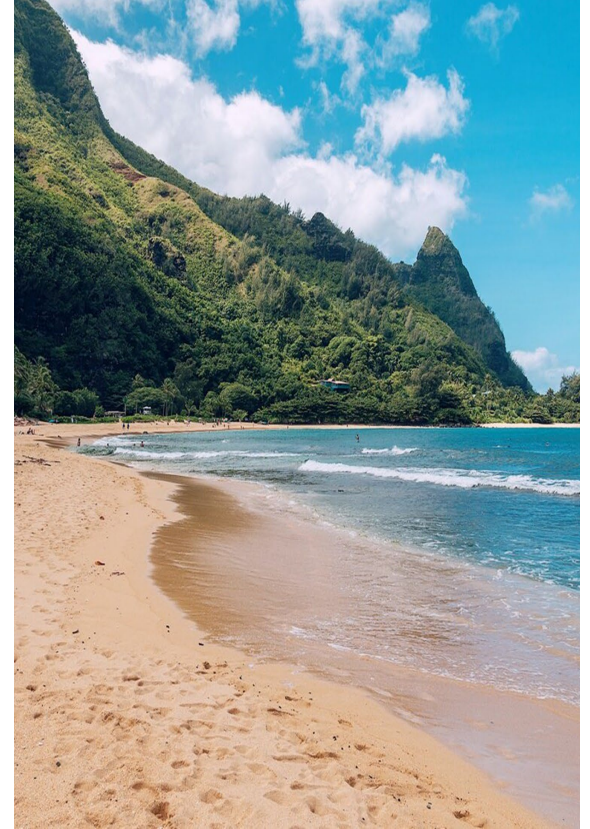


Image Source:
<https://www.acanela.com/blog/best-beaches-to-visit-in-hawaii>

PERMITS

National Pollutant Discharge Elimination System (NPDES) Permits

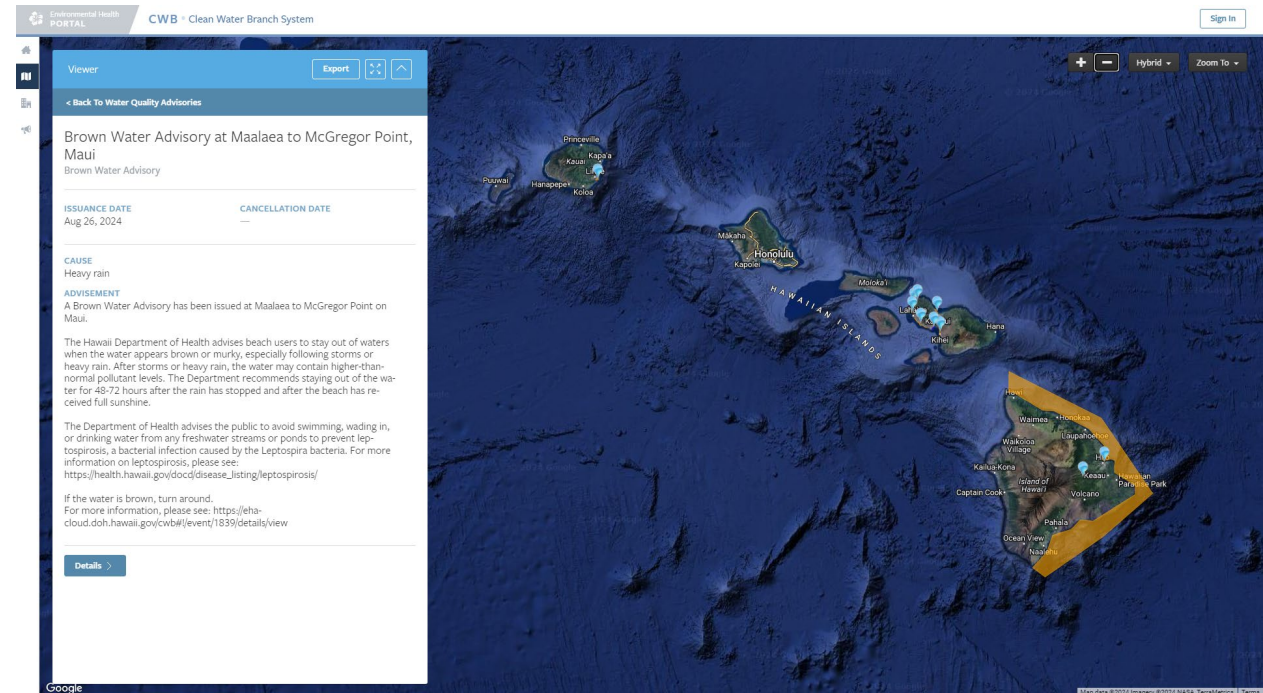
- Prohibits discharge of pollutants from point sources into waterways
- Climate change has the potential to degrade the quality of waterbodies and increase and amplify the effects of pollution from point sources
 - This will impact the way permits are issued from CWB and the provisions for allowed discharges

Water Quality Certifications

- Federal standards from Clean Water Act (CWA) Section 401
- Conducting of activities discharging pollutants into surrounding water
- Coastal erosion may lead to the need for more WQCs as the number of activities zoned as working around water will grow

BEACH MONITORING PROGRAM

- Beach water quality testing to reduce the risk of illness due to usage of coastal waters
- Monitoring for bacteria and issuance of advisories if necessary
- Water Quality Advisory issuance
- Extreme weather events and patterns may cause more pollution to enter waters, degrade water quality, and increase the need for Brown Advisory issuance



CWB's map of Brown Water Advisories
<https://eha-cloud.doh.hawaii.gov/cwb/#!/viewer>

A lush tropical landscape featuring a multi-tiered waterfall cascading into a dark pool of water. The scene is surrounded by dense greenery, including numerous tall palm trees and large ferns. A semi-transparent dark green rectangular box is overlaid in the center of the image, containing the text "SURFACE WATER PROTECTION" in white, bold, sans-serif capital letters.

SURFACE WATER PROTECTION

SWPB CC HEALTH CONNECTION

Climate change can increase the impacts of pollution by potentially releasing chemical and microbial pathogen contaminants in the environment and expanding the geographical spread of pollutants.

Climate Change impacts related to the SWP program include:

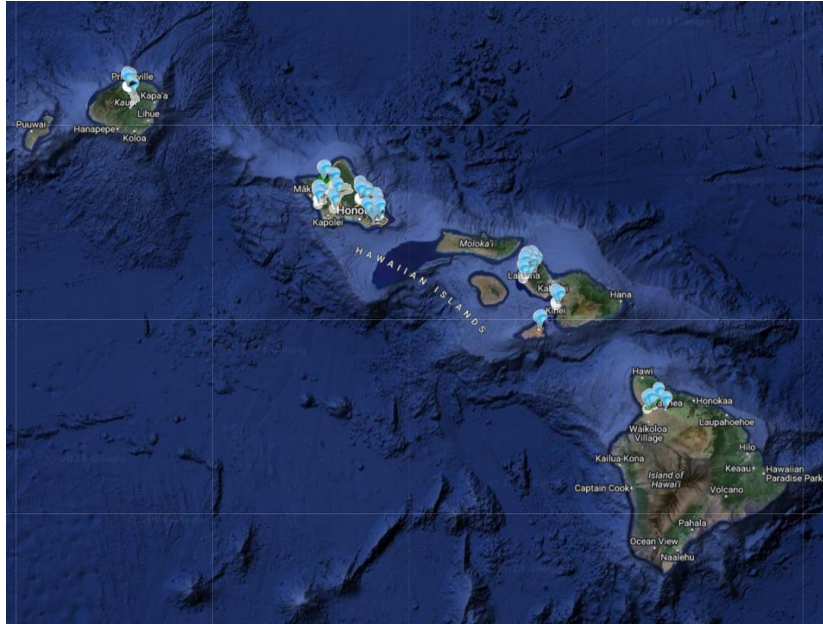
- Changes in Precipitation
- Natural disasters
- Erosion



Image Source:
<https://www.lovebigisland.com/waterfalls/>

POLLUTED RUNOFF CONTROL PROGRAM

Using Federal Clean Water Act Section 319 funds, the PRCP distributes grant funding to implement watershed-based plans developed to restore or protect waters impaired or threatened by nonpoint source pollution.



Map of Polluted Runoff Projects in Hawai'i

Image Source: <https://eha-cloud.doh.hawaii.gov/swp/#!/viewer>

Watershed Planning and Polluted Runoff Control

- Management strategy and plan to achieve water resource goals for specific watersheds
- Watershed protection prevents NPS pollution from runoff and by filtration

Nonpoint Source Management Plan

- Plan every 5 years that outlines objectives and strategies that reduce and prevent NPS pollution and improve water quality
- CC language in NPSMP and recommended in BMPs for project proposals

NEW/UPCOMING PROGRAMS

Coastal Nonpoint Pollution Control Program

- Joint program with Office of Planning
- Measures to reduce and prevent NPS pollution and protect coastal waters
- Sea level rise and warming ocean temperatures threaten the health of coastal waters and climate change exacerbates pollution problems

Water Pollution Prevention Plan

- Large public landowners must register with DOH and develop a plan outlining BMPs to prevent water pollution
- Targeting known sources of pollution to prevent related problems arising with climate and health



<https://www.civilbeat.org/2019/08/toxic-runoff-at-issue-as-state-considers-new-permit-for-kaneohe-boat-facility/>



SAFE DRINKING WATER

SDWB CC HEALTH CONNECTION

Climate change threatens the quality and quantity of available drinking water sources. Changes in temperature and precipitation can alter the behavior and amount of contaminants entering groundwater.

Climate Change impacts related to the drinking water program include:

- Changing precipitation patterns
- Sea level rise
- Changing Temperatures

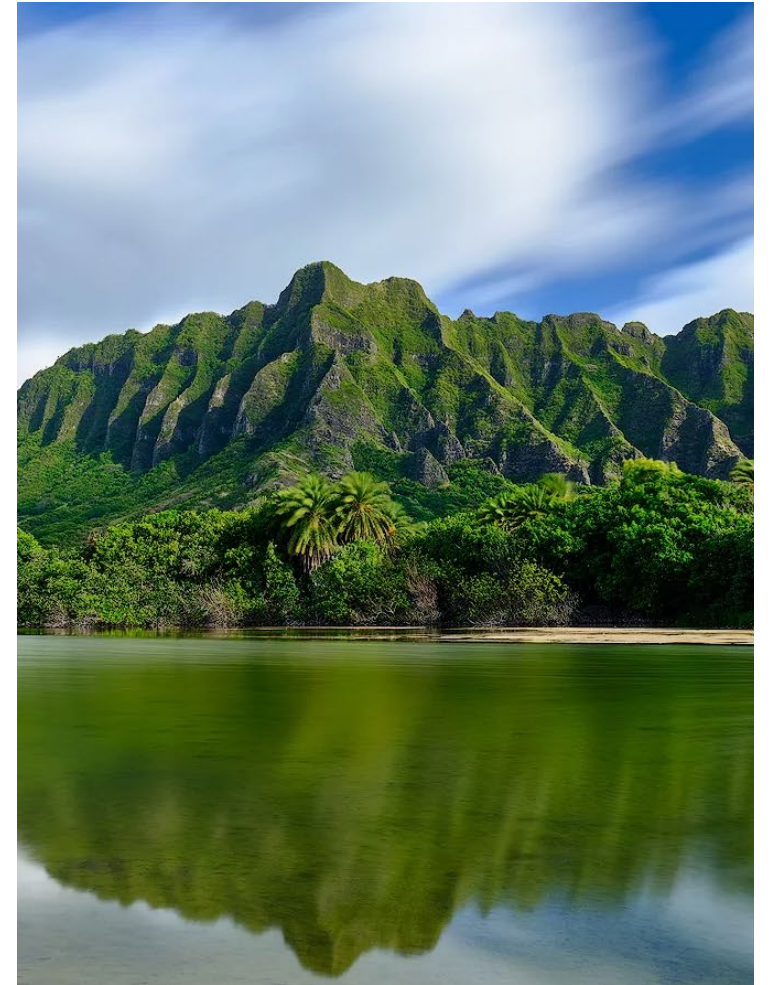


Image Source: <https://www.andrewshoemaker.com/photo/jurassic-dimension-kualoa-ranch/>

GROUNDWATER PROTECTION PROGRAM

Non-regulatory measures for water quality assessment and pollution prevention

Underground Injection Control (UIC) Program

- Regulatory rules preventing the migration of contaminants from UICs into underground drinking water sources
- Erosion, sea level rise, and groundwater range expansion corrode UIC wells
- Rules will change as drinking water aquifers' volume and variability changes

Source Water Protection Program

- Outlines boundaries of water sources (capture zones) and identifies origins of contaminants for the public water system
 - Climate change could alter the boundaries of water sources, exposing them to more contamination and limiting the freshwater lens
-

RELATED PROGRAM AREAS

Drinking Water State Revolving Fund

- Low-interest loans to public water systems to maintain compliance with drinking water standards
- With climate change effects, public water systems may have to work harder to upgrade filtration for chemical contaminants
 - Increased costs of treatment passed on to community members
 - May have to increase water reuse



<https://www.soest.hawaii.edu/soestwp/announce/news/hawaii-drought-during-el-nino-winter-not-always-according-to-new-research/>



SOLID AND HAZARDOUS WASTE

SHWB CC HEALTH CONNECTION

Climate change causes extreme events that may release hazardous substances into the environment and require waste facilities to manage large influxes waste generated.

Additionally, waste under anaerobic decay may release GHGs if not controlled and may contribute to climate change.

Climate Change impacts related to the SHW program include:

- Extreme weather events
- Air pollution

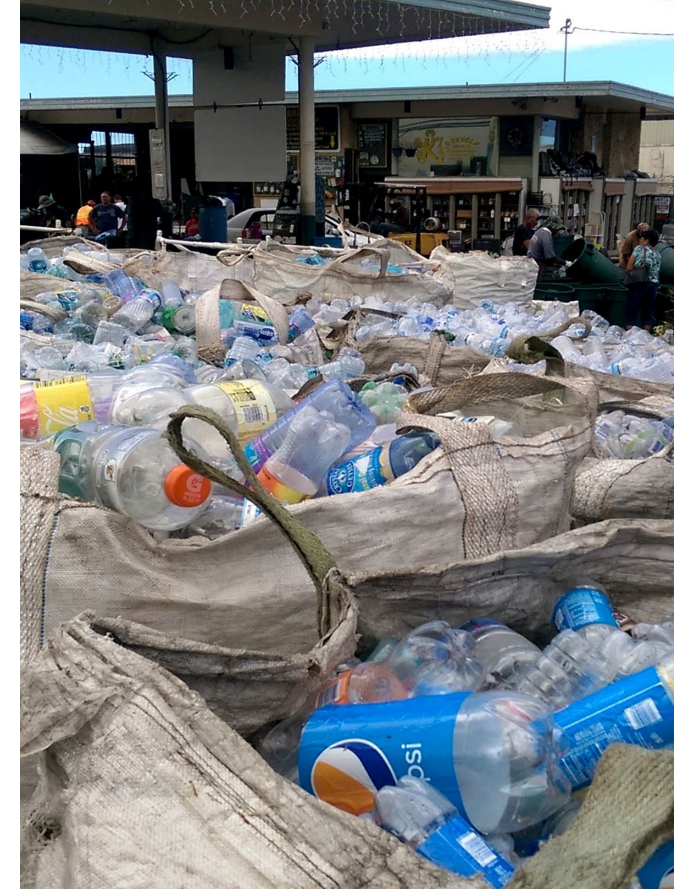


Image Source:

<https://www.allhawaiinews.com/2023/07/hawaii-recycling-program-beyond.html>

RELATED PROGRAM AREAS



Image Source: <https://www.npr.org/2022/01/11/1072346598/hawaii-water-contamination-navy>

Pollution Prevention & Waste Minimization Program

- Reduce hazardous waste generation by utilizing less toxic materials
- Hawaii Green Business Program
- Improved health of workers, lower material expenses and climate impact

Underground Storage Tanks (UST) Program

- UST compliance/ inspections, leak release response, prevention
- Erosion and potential for groundwater contamination
- GHG (methane) emitted from leaked fuel that contribute to climate change



WASTEWATER

WWB CC HEALTH CONNECTION

Climate change causes extreme weather that can lead to water contamination and threaten treatment facilities. Changing temperatures alter the concentration and behavior of chemicals in water that can stress treatment and resiliency systems.

Climate Change impacts related to the WW program include:

- Sea level rise
- Changing precipitation and natural disasters
- Changing temperatures
- Coastal Erosion

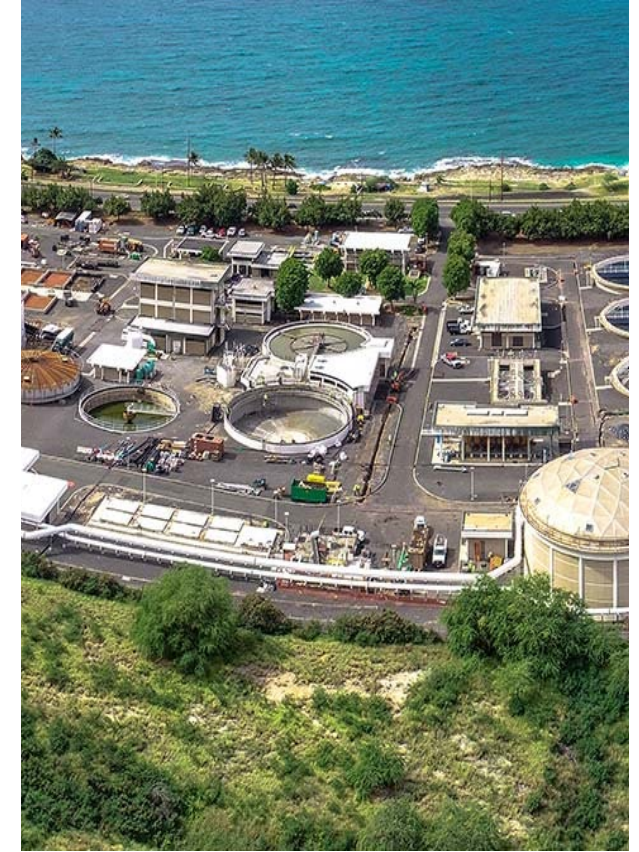


Image Source:
<https://www.henselphelps.com/project/waianae-wastewater-treatment-plant-improvements-upgrade/>

CESSPOOLS

- 83,000 cesspools in Hawai'i and 43,000 currently pose a risk to water resources
 - 50M gallons of untreated sewage per day released into ground
- Problems exacerbate as sea level rises and potentially decrease vertical separation between water table up into contact with sewage
 - Drinking water contamination and spread of diseases

Legislative Act 125 (2017)

- Replacement of all cesspools prior to January 1, 2050
- Cesspool Conversion Working Group evaluated cesspools and assigned Priority levels
- Tax reimbursement (program expired)



Image Source: <https://www.balkandraincleaning.com/septic-tank-cleaning/>

RELATED PROGRAM AREAS

Cesspool Conversion Working Group (completed)

- Outlined plans of action for replacing cesspools

Cesspool Compliance Pilot Grant Program (currently closed)

- Financial assistance to low- and moderate-income property owners to convert Priority Levels 1 and 2 cesspools

Recycled/Reuse Water Program

- Treatment of wastewater for reuse
- Recycled water becomes more important as freshwater and potable water resources decline with climate change

Clean Water State Revolving Fund

- Utilizes Federal funds for low-interest loans to finance construction of water pollution control projects (e.g., treatment works, landfill liners, reuse water lines)
-

A scenic view of a rocky coastline. The foreground is filled with dark, jagged rocks. In the middle ground, a clear, turquoise pool of water is nestled among the rocks. The ocean extends to the horizon under a bright blue sky with scattered white clouds. The text "MOVING FOWARD" is overlaid in white, bold, sans-serif capital letters across the center of the image.

MOVING FOWARD

MAHALO



Diesel Emissions Reduction Act Program & Statewide GHG Emission Inventories

DOH Climate Change & Health Conference

October 24, 2024

Presented by Department of Health Clean Air Branch



Healthy Communities, Healthy Islands, Healthy People

Image Source:

<https://unsplash.com/photos/aerial-view-of-green-and-brown-mountains-and-lake-fd1cQ3mmBTE>

Diesel Emissions Reduction Act (DERA) Program

Speaker:
Marianne Rossio
Clean Air Branch Program Manager

Image Source:
<https://unsplash.com/photos/brown-rocky-mountain-under-blue-sky-during-daytime-1WHFHxnjMP4>



Diesel Engines

- Operation Period:
30 + Years
- Emissions:
PM, NO_x, CO, SO₂, HC
Greenhouse Gases (GHGs)
Hazardous Air Pollutants (HAPs)
- Human Health Impacts:
Asthma, Respiratory Illnesses,
Heart and Lung Disease
- Environment Impacts:
Ground-level Ozone
Climate Change



Image Source:
<https://key-components.toyota-industries.com/products/engine/diesel/>



Background

- **Act 15, SLH 2018** - statewide goal to be carbon net-negative by 2045
- **Act 238, SLH 2022** - includes statewide GHG emissions limit of $\leq 50\%$ 2005 GHG levels by 2030
- **Act 226, SLH 2023** - state goal of Zero Emissions from all Transportation Modes within Hawaii
- Hawaii Signed **Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding (2020)**
 - ✓ 100% New Vehicle Sales be Zero Emission Vehicles by 2050
 - ✓ Interim target 30% by 2030



Objectives of DERA Grant

U.S. EPA DERA Grant Funding to the DOH is utilized to:

- Accelerate the Upgrade and Turnover of Legacy Diesel Fleets Targeting Older Diesel Engines
- Remove Older Diesel Vehicles from the Streets
- Support Emission Reduction Goals
- Reduce Harmful Diesel Emissions, Improve Air Quality, Reduce GHGs, Protect Human Health



Image courtesy of
the EPA



Previous Projects through DERA Grants



Image: The Hawaiian Islands



Image: Board of Water Supply



Image: Department of Transportation

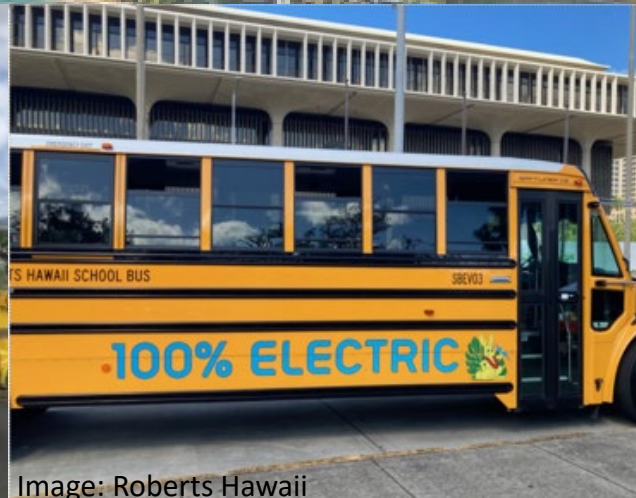


Image: Roberts Hawaii

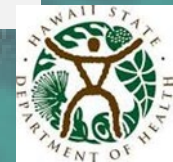


Image: MCI



Diesel Replacement Rebate (DRR) Program

- DOH partnering with the Hawaii State Energy Office (HSEO) and EPA in support of the HSEO DRR Program
- **Rebates of up to 45% of Total Cost** for the Replacement of Medium- and Heavy-Duty Diesel Vehicles
- Volkswagen Environmental Mitigation Trust Fund
 - Match for DERA Funds to Leverage Additional Federal \$
 - Increased Total Amount Available to the Program:
 - \$1.7M (2021/2022); \$2M (2023/2024)



Diesel Replacement Rebate (DRR) Program

- Eligible Vehicles/Projects:
 - Public and Private
 - Buses (school, shuttle, tour, etc.)
 - Medium- or Heavy-Duty Trucks
 - Nonroad Vehicles (includes engines, equipment, or vehicles used in agriculture or handling of cargo at ports and airports)
 - Applicant must currently own and operate the existing vehicle and have owned and operated it for the past 2 years
 - Meet Usage Requirements (miles/year or hours/year)
 - 3 years of remaining life
- Replacements:
 - Fully electric with New Zero Emissions Engine
 - Battery Electric or Hydrogen-Powered
 - Resemble the replaced unit in form and function



Diesel Replacement Rebate (DRR) Program

- Replacements (continued):
 - Must operate for minimum of 5 years following deployment
 - Can include one charging unit per vehicle
- Replaced vehicles/engines must be scrapped to ensure emission reductions
- Successful replacements include:
 - 2 School Buses and 3 Tour Buses



Conclusions

- DERA Grant Program and HSEO DRR Program work together in providing our communities a healthier environment and in supporting Hawaii's decarbonization goals
- DOH in the process of applying for the next DERA grant (Project period runs through September 30, 2026)
- Continued partnership with EPA and HSEO in support of modernizing Hawaii's vehicles, supporting Hawaii's climate change goals, and reducing harmful diesel emissions to protect public health



Information & Application

- **Hawaii State Energy Office Diesel Replacement Rebate (DRR) Program:** <https://energy.hawaii.gov/what-we-do/financial-assistance-and-grants/diesel-replacement/>
- **Clean Diesel Program – Diesel Emissions Reduction Act (DERA):** <https://health.hawaii.gov/cab/clean-air-branch/clean-diesel-program-diesel-emissions-reduction-act-dera/>

Clean Air Branch (808) 586-4200
Hawaii State Energy Office (808) 587-3807

Image Source:

<https://unsplash.com/photos/a-road-surrounded-by-palm-trees-and-mountains-TRAYV5rsA9Y>



Statewide GHG Emission Inventories

Speaker:

Mike Madsen

Clean Air Branch Program Development and
Technical Support Staff Supervisor

Image Source:

<https://unsplash.com/photos/an-aerial-view-of-a-beach-and-a-mountain-6x7d4FnHWZs>



Introduction

- The Clean Air Branch is responsible for providing annual statewide GHG emission inventory reports.
- The inventory reports are used to track Hawaii's progress in reducing GHG emissions.
- Hawaii's GHG reduction goals:
 1. Statewide GHG limit of 1990 levels on and after 2020 (Act 234, 2007).
 2. Statewide carbon net-negative goal by 2045 (Act 15, 2018).
 3. Statewide GHG level of at least 50% below 2005 levels by 2030 (Act 238, 2022).



Greenhouse Gases

- Mass emissions are determined for the following GHGs:
 1. CO_2 ;
 2. CH_4 ;
 3. N_2O ;
 4. HFCs;
 5. PFCs; and
 6. SF_6 .
- The mass emissions are multiplied by each GHGs associated global warming potential to determine the carbon dioxide equivalent emissions.
- International bunker fuel and biogenic CO_2 emissions are excluded from the totals in accordance with IPCC guidance.



Global Warming Potentials (GWPs)

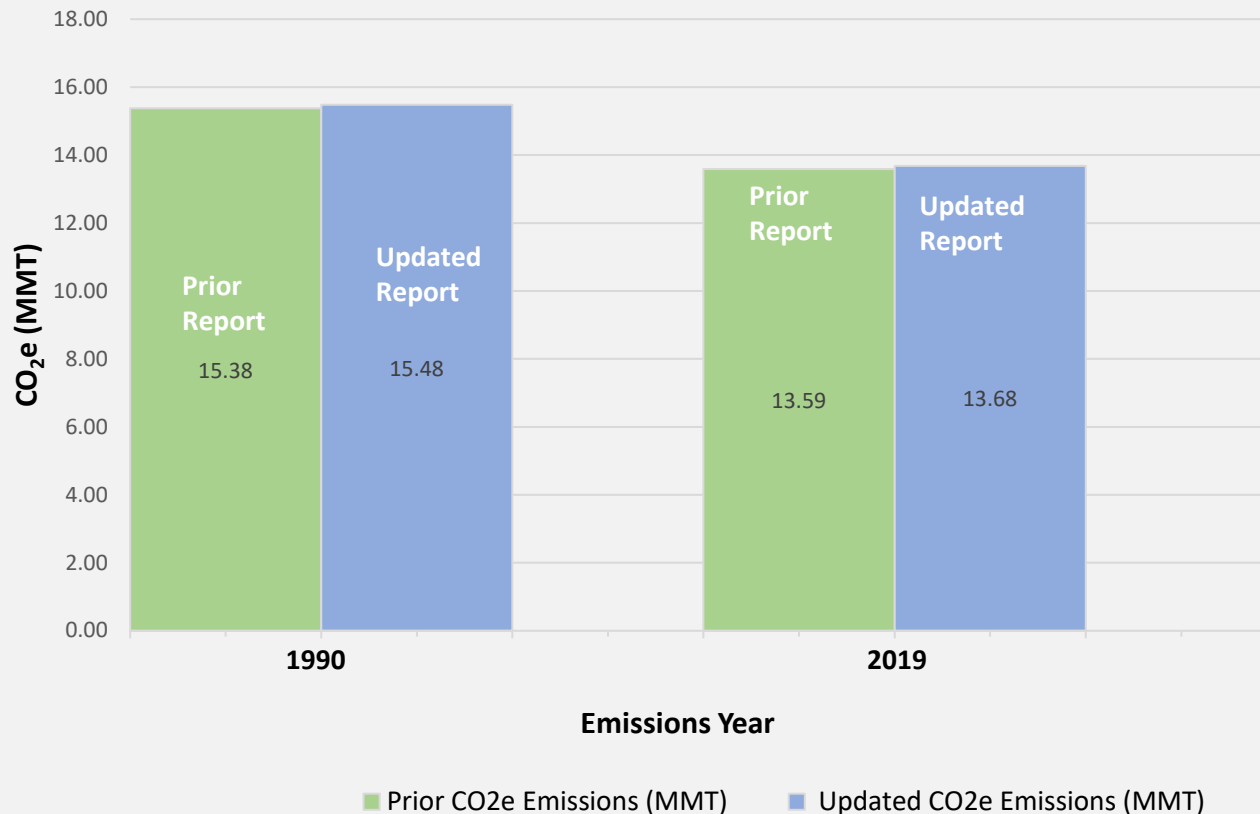
- Global warming potentials used in recent annual report.
- The GWPs are from the IPCC Fifth Assessment Report (AR5).
- GWPs in the report are on a 100-year time horizon.

Gas	GWP
CO ₂	1
CH ₄	28
N ₂ O	265
HFC-23	12,400
HFC-32	677
HFC-125	3,170
HFC-134a	1,300
HFC-143a	4,800
HFC-152a	138
HFC-227ea	3,350
HFC-236fa	8.060
HFC-4310mee	1,650
CF ₄	6,630
C ₂ F ₆	11,100
C ₄ F ₁₀	9,200
C ₆ F ₁₄	7,910
SF ₆	23,500



Update GHG Inventories

**Prior and Updated Statewide GHG Inventories
(Excluding Aviation and International Bunker Fuel Emissions and Including Carbon Sinks)**



Changes include updated:

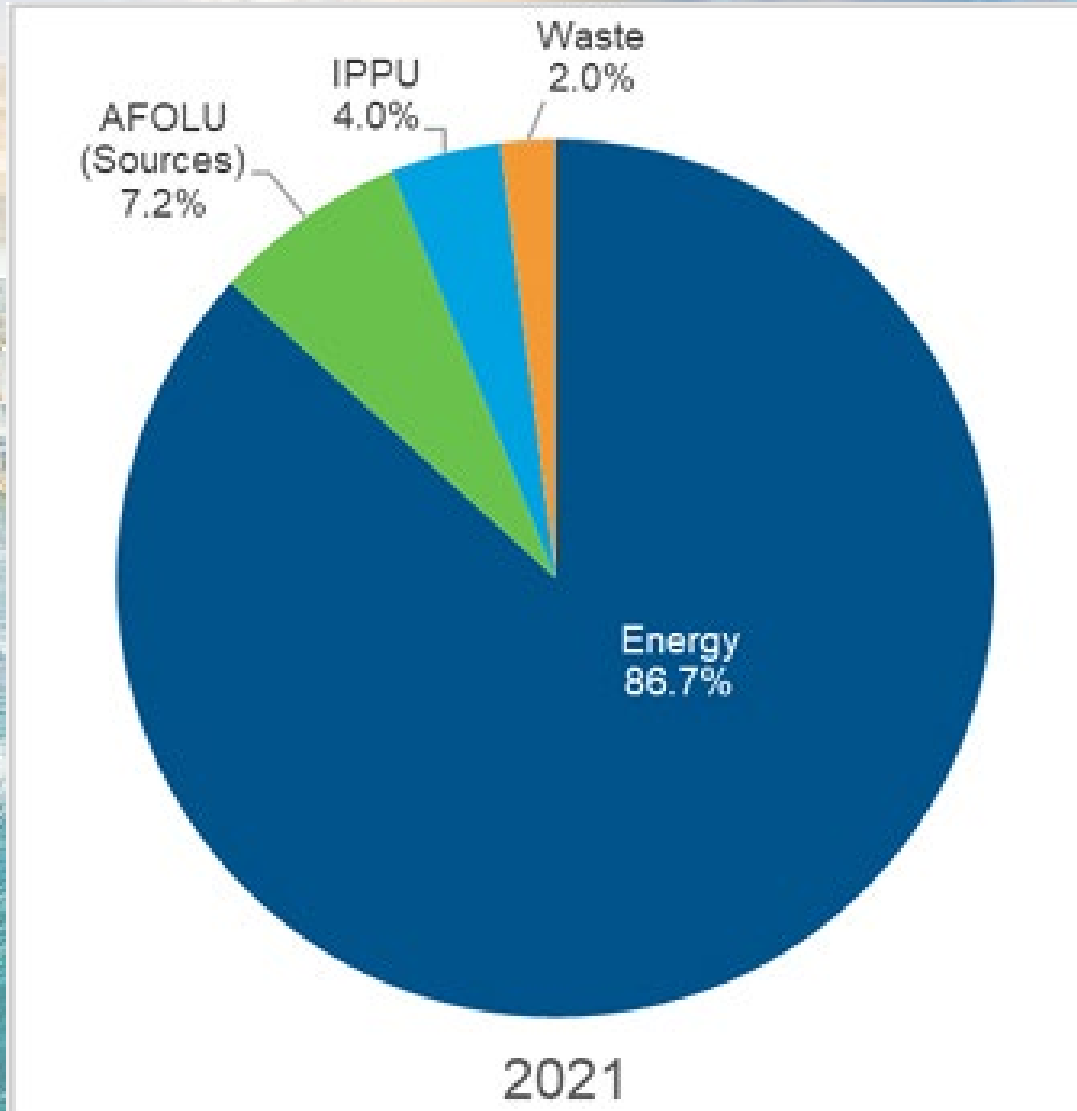
- GWPs;
- Fuel consumption data; and
- GHG emission factors.

Review Team

City & County, Climate Office, DBET/READ, DCCA, DLNR, DOH/CAB, DOT, Gov. Office, HSEO, and PUC.



Emission Inventory Sectors



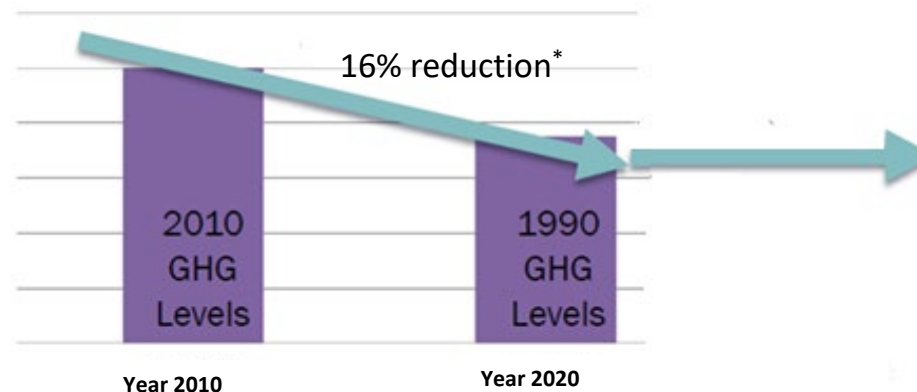
Sector	MMT CO ₂ e
Energy	17.5
<i>Stationary Combustion</i>	7.44
<i>Transportation</i>	9.63
IPPU	0.82
AFOLU (source)	1.45
AFOLU (sinks)	-2.39
Waste	0.41
Total Emissions (excluding sinks)	20.18
Net Emissions (including sinks)	17.79
Net Emissions (including sinks, excluding aviation)	12.53



GHG Emissions CAP

- To help meet goal – GHG emission cap specified for stationary sources.
- Potential CO₂e emissions threshold of 100,000 tons/year.
- Cap is set at 16% below facility's baseline emission level unless alternate cap is approved if 16% reduction cannot be achieved.
- Use 2010 as baseline or alternate approved baseline emission level for establishing the cap.

Statewide Stationary Source GHG Emission Levels



* 13.2% + Factor of Safety = 16% Reduction



Large Stationary Sources



Image: HECO West Oahu



Image: Honolulu Advertiser

Hawaii Administrative Rules, Chapter 11-60.1 Subchapter 11

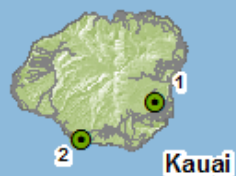
	Threshold
Requires reductions from Hawaii's largest "existing" emitters (18)	$\geq 100,000$ CO ₂ e tons/year (biogenic and non-biogenic emissions)

Affects electric power producers and refineries



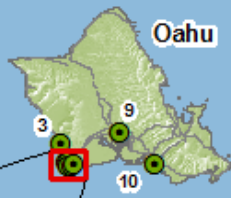
State Greenhouse Gas (GHG) Rule Affected Facilities

2021 Emissions

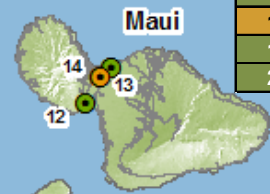
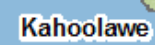


Kauai (1.60%)
119,185 MT CO₂e

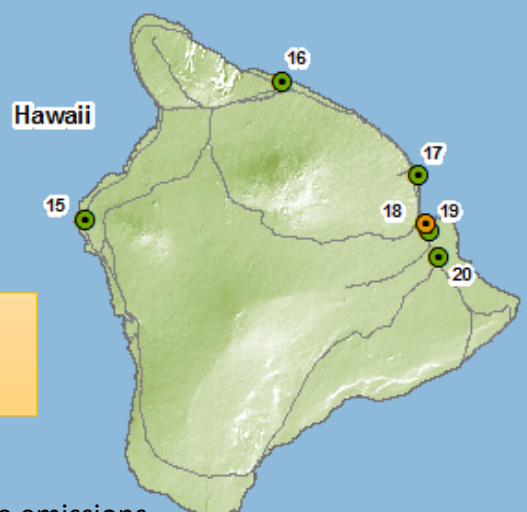
Oahu (68.75%)
5,115,260 MT CO₂e



Molokai (0.32%)
32,807 MT CO₂e



Maui (7.88%)
586,224 MT CO₂e

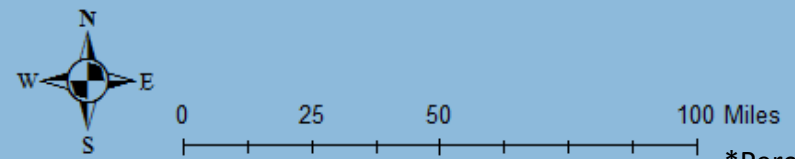


Hawaii Island (7.37%)
548,141 MT CO₂e

Station	Greenhouse Gas Facilities
1	Port Allen Generating Station
2	Kapaia Power Station
3	Kahe Generating Station
4	IES Downstream Refinery
5	Campbell Industrial Park Generating Station
6	AES Hawaii
7	Kalaeloa Generating Plant
8	Par Hawaii Refinery
9	Waiau Generating Station
10	Honolulu Generating Station
11	Palaau Generating Station
12	Maalaea Generating Station
13	Kahului Generating Station
14	HC&S Puunene Sugar Mill
15	Keahole Generating Station
16	Hamakua Energy Plant
17	Hu Honua Bioenergy Plant
18	Shipman Generating Station
19	Kanoelehua-Hill Generating Station
20	Puna Generating Station

Legend

- Facilities Subject to GHG Emissions Cap that Permanently Shut Down
- Facilities Subject to GHG Emissions Cap
- Roads



*Percentages are of total statewide CO₂e emissions

Renewable Portfolio Standard (RPS)

- Renewable Goal For All Electricity Generation Across The State.
- The RPS focuses on reducing emissions from the supply of electricity.

Compliance Year	RPS Requirement (% of Generation)
2010	10%
2015	15%
2020	30%
2030	40%
2040	70%
2045	100%



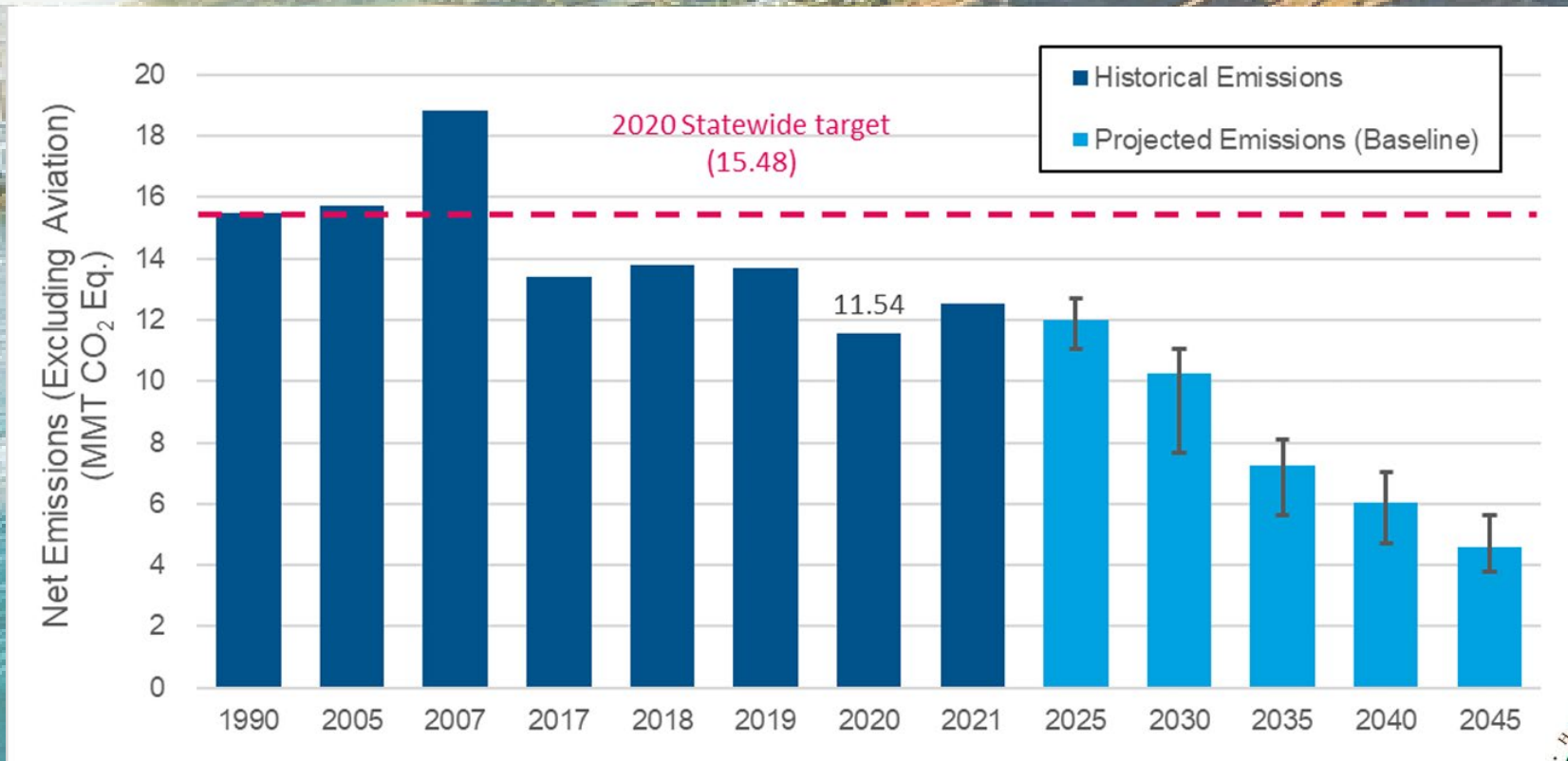
Energy Efficiency Portfolio Standard (EEPS)

- Sets a target of 4,300 GWh of statewide electricity use reductions by 2030.
- EEPS focuses on reducing the demand for electricity.
- Example - promote use of more energy efficient lighting and appliances.



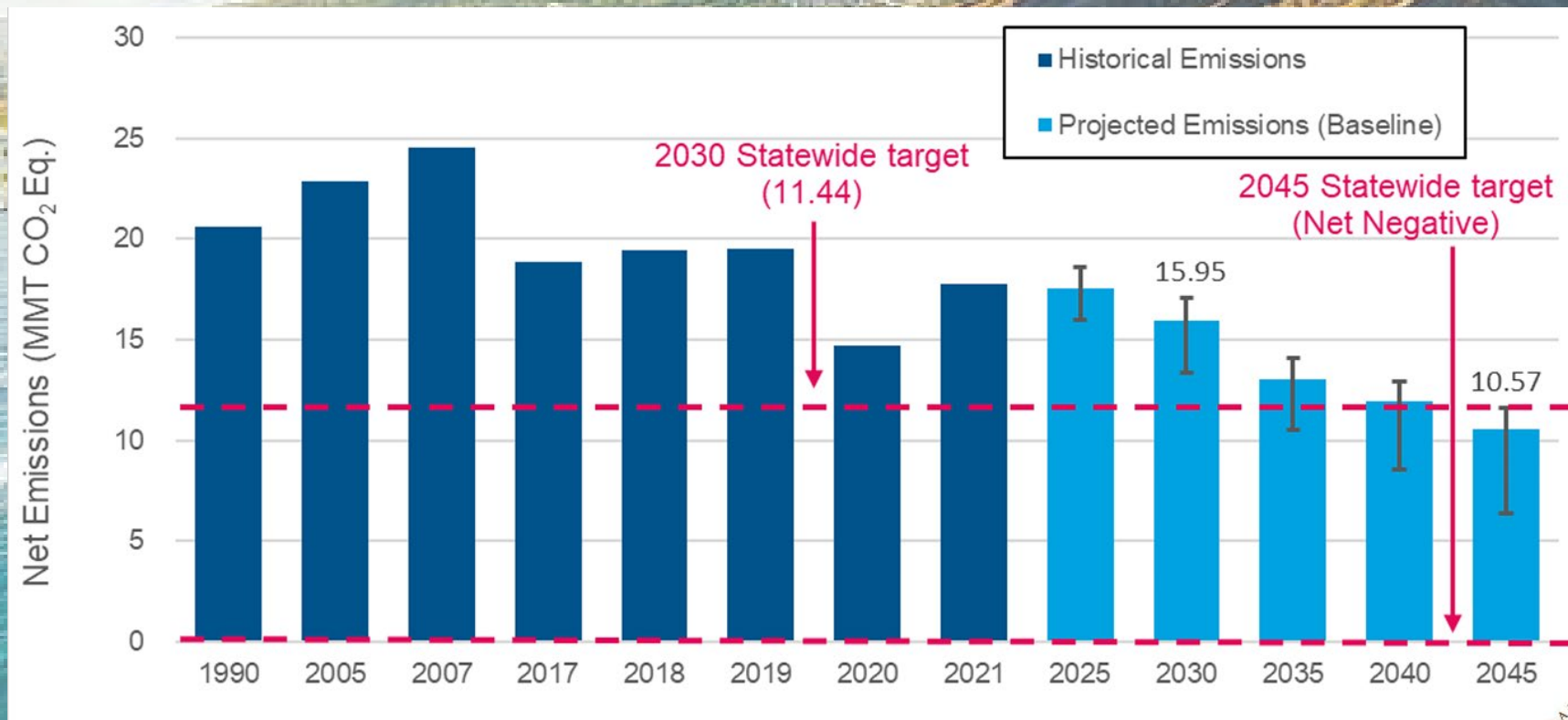
2020 Target

Hawaii GHG Emissions – Most Recent Annual Report



2030 and 2045 Targets

Hawaii GHG Emissions – Most Recent Annual Report



Statewide GHG Inventories

ICF Incorporated, L.L.C.

- Provide three annual reports:
 - 1) First annual report: new 2005, 2018, and 2019 inventory years, updates to previous inventory years, and 2020 to 2045 projections.
 - 2) Second annual report: new 2020 and 2021 inventory years, updates to previous inventory years, and updates to 2022 – 2045 projections.
 - 3) Third annual report: new 2022 inventory year, updates to previous inventory years, and updated 2023 – 2045 projections.



Inventory Status

- The next (third) report is expected to be finalized in March 2025:
- Prepared Request for Proposals for a third contract to include two inventory reports with:
 - 1) First annual report: new 2023 and 2024 inventory years, updates to 1990, 2005, 2007, 2010, and 2015-2022 inventories, and projections for years 2030, 2035, 2040, 2045, and 2050.
 - 2) Second annual report: new 2025 inventory year, updates to 1990, 2005, 2007, 2010, and 2015-2024 inventories, and updates to projections for years 2030, 2035, 2040, and 2050.



Conclusions

- Statewide GHG emission inventories will be used to track progress in reducing emissions.
- Electric Power and Transportation source categories in the Energy Sector are a large part of the Statewide GHG emissions.



Information & Application

Clean Air Branch Homepage Greenhouse Gas Program:

<https://health.hawaii.gov/cab/hawaii-greenhouse-gas-program/#:~:text=The%20statewide%20GHG%20emission%20limit,and%204.61%20MMT%20CO2%20Eq.>

- Clean Air Branch
- (808) 586-4200
- 2827 Waimano Home Road, #130
- michael.madsen@doh.Hawaii.gov

Image Source:

<https://unsplash.com/photos/body-of-water-near-mountain-under-white-clouds-during-daytime-ktvFbHvx4M>



Thank You!

Image Source:

<https://unsplash.com/photos/a-sunset-with-palm-trees-and-a-mountain-in-the-background-OMrk-KJ67KM>

