Priority Climate Action Plan

Prepared for:
U.S. Environmental Protection Agency
Carbon Pollution Reduction Grant Program

Submitted by:
City and County of Honolulu
Office of Climate Change, Sustainability and Resiliency

March 1, 2024

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Acronyms and Abbreviations

Acronym / Abbreviation	Definition
ADA	Americans with Disabilities Act
AFOLU	Agriculture, forestry, and other land use
CAP	Climate Action Plan
CBO	Community-based organization
CCAP	Comprehensive Climate Action Plan
CCSR	Office of Climate Change, Sustainability and Resiliency
C&D	Construction & demolition
CEJST	Climate and Economic Justice Screening Tool
City	City and County of Honolulu
CO2e	Carbon dioxide equivalent
DDC	City and County of Honolulu Department of Design and Construction
DFM	City and County of Honolulu Department of Facility Maintenance
DPR	City and County of Honolulu Department of Parks and Recreation
DPP	City and County of Honolulu Department of Planning and Permitting
DTS	City and County of Honolulu Department of Transportation Services
ENV	City and County of Honolulu Department of Environmental Services
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse gas
HECO	Hawaiian Electric Company
HDOH	Hawai‘i Department of Health
HDOT	Hawai‘i Department of Transportation
HGIA	Hawai‘i Green Infrastructure Authority
HPUC	Hawai‘i Public Utilities Commission
HSEO	Hawai‘i State Energy Office
HGIA	Hawai‘i Green Infrastructure Authority

IECC	International Energy Conservation Code
IPPU	Industrial processes & product use
LIDAC	Low-income, disadvantaged community
LMI	Low- and moderate-income
NOAH	Naturally occurring affordable housing
PUC	Hawai‘i Public Utilities Commission
PCAP	Priority Climate Action Plan
QAPP	Quality Assurance Project Plan
ROH	Revised Ordinances of Honolulu
TPL	Transit priority lane

Introduction

The City and County of Honolulu ("City") is a consolidated city-county jurisdiction incorporated in 1907 and encompassing the entirety of the island of Oʻahu, in the state of Hawaiʻi. The City provides and maintains services for just under one million residents situated in just under 600 square miles of geographically diverse neighborhoods, from such environments as the primary urban core of downtown Honolulu to more rural communities, like those of Koʻolauloa.

Within the City, the Mayor's Office of Climate Change, Sustainability and Resiliency (CCSR) works to protect and improve the lives of Oʻahu residents by increasing community resilience in the face of challenge and change. Established by Oʻahu voters in 2016 by City Charter amendment, CCSR tracks climate change science and impacts and coordinates City actions and policies to implement projects and programs that create a more equitable, thriving, and climate-ready island home. CCSR's guiding principles focus on developing enduring partnerships, thinking long-term, empowering leadership within and outside of City government, and scaling successful work to meet community needs.

Per § 2-10.12 of the Revised Ordinances of Honolulu (ROH), CCSR is charged with the coordination and implementation of the City's Climate Action Plan (CAP) to reduce greenhouse gas emissions and achieve net-negative carbon emissions no later than 2045, consistent with the State of Hawaiʻi zero emissions clean economy target established in §225P-5 of the Hawaiʻi Revised Statutes. The City's first-ever CAP, *One Climate, One Oʻahu: Climate Action Plan 2020-2025*, was adopted by the Honolulu City Council in June of 2021. Additionally, as codified by the ROH, the City's CAP must be updated by CCSR every five years.

On behalf of the City and County of Honolulu, and in consultation with various City agencies, industry stakeholders, and community partners, CCSR has developed this Priority Climate Action Plan (PCAP) to accelerate continued implementation of the City's existing CAP. Additionally, this PCAP initiates analyses and planning processes for the development of the City's next (and first-ever) CAP Update towards 2030 emissions reduction targets. That CAP Update will additionally fulfill the second deliverable—a Comprehensive Climate Action Plan (CCAP)—of the City's Climate Pollution Reduction Grant Program (CPRG) formula grant award from the United States Environmental Protection Agency (EPA).

This PCAP and the priority measures contained within are intended to support investment in policies, practices, partnerships, and technologies that reduce pollutant emissions, create high-quality jobs, prioritize benefits to low-income and disadvantaged communities, and enhance the quality of life for all Oʻahu residents within the City and County of Honolulu.

This PCAP is organized into 7 sections:

1. Introduction
2. Greenhouse Gas (GHG) Emissions Inventory
3. Coordination and Outreach
4. Priority Measures
5. Low-Income, Disadvantaged Community Benefits Analysis
6. Review of Authority to Implement
7. Conclusion

This project has been funded wholly or in part by the EPA under assistance agreement 98T74101 (FAIN) to the City and County of Honolulu Office of Climate Change, Sustainability, and Resiliency. The contents of this document do not necessarily reflect the views and policies of the EPA, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

The measures contained herein should be construed as broadly available to any entity within the geographic scope of this PCAP eligible to receive funding under the EPA's CPRG Implementation Grant General Competition and other funding streams, as applicable.

Greenhouse Gas Emission Inventory

The City has developed an inventory of priority sources of GHG emissions within the City's jurisdiction that occurred during Calendar Year 2021. The City's 2021 inventory is compared to a 2015 baseline from a previously existing GHG inventory developed as part of the City's 2020-2025 Climate Action Plan.

This 2021 PCAP inventory was created using guidance from this project's Quality Assurance Project Plan (QAPP) and databases and processes from an existing inventory compiled by the State of Hawai'i Department of Health. Data was retrieved from a variety of sources, including, but not limited to the following:

- U.S. Energy Information Administration (EIA) State Energy Data System (SEDS);
- State of Hawai'i Data Book;
- Hawai'i State Department of Business, Economic Development, and Tourism (DBEDT) Economic Data Warehouse;
- American Community Survey, 1-Year and 5-Year Estimates;
- Census of Agriculture; and
- U.S. Geological Survey.

Where local data was not available to calculate emissions for a source activity, estimates were derived by scaling down state-level data, using appropriate scaling factors (e.g., de facto population, vehicle registrations, aviation seat miles, or animal population estimates).

A detailed methodology and quality assurance procedures for the preparation of this inventory are contained in Appendix A.

The City's inventory includes the following sectors and gasses:

Sectors	**Greenhouse Gases (across all sectors)**
● Energy ● Industrial Processes & Product Use (IPPU) ● Agriculture, Forestry, and other Land Use (AFOLU) ● Waste	● carbon dioxide (CO_2), ● methane (CH_4), ● nitrous oxide (N_2O), ● fluorinated gases (F-gases), including hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3)

The City and County emitted a total of 13.12 MMT CO2e in 2021, a 7.5% decrease from 2015. Combined energy use by residential, commercial, and industrial buildings is the largest source of emissions, comprising more than a quarter, or 28% of total emissions. Ground transportation represents the second largest source, comprising 16% of the total. Air transportation is a close third (27.9%), followed by the military (8.9%).

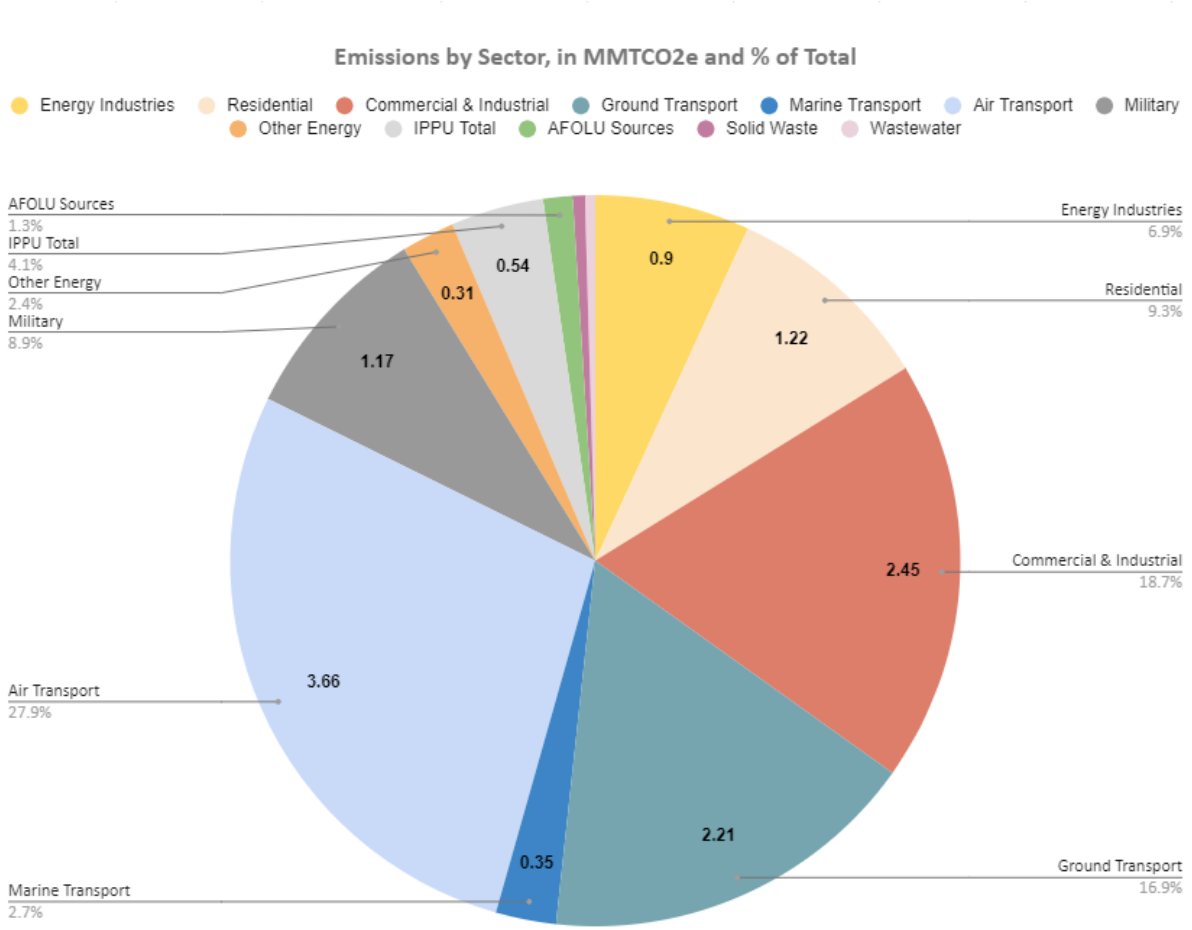

Table 1 details total GHG emissions in million metric tons of carbon dioxide equivalent ($mmtCO_2e$) for all economic sectors and emissions of specific GHGs across all sectors.

TABLE 1. HONOLULU GHG EMISSIONS IN $MMTCO_2E$ BY SECTOR AND GAS

	2015	2021
ENERGY		
Stationary Combustion	5.43	4.57
Energy Industries	*4.71*	*3.95*
Residential	*0.04*	*0.05*
Commercial	*0.31*	*0.34*
Industrial	*0.34*	*0.23*
Transportation	7.49	7.39
Ground Transportation	*2.85*	*2.21*
Marine Transportation	*0.19*	*0.35*
Domestic Aviation	*2.68*	*2.76*
International Aviation	*0.93*	*0.90*
Military Aviation	*0.81*	*0.80*
Military Non-Aviation	*0.05*	*0.37*
Other Energy	0.41	0.31
Incineration of Waste	0.18	0.18
Oil and Natural Gas	0.20	0.10
Non-Energy Uses	0.03	0.03
Energy Total	**13.34**	**12.27**
By GHG		
CO2	13.22	12.17
CH4	0.03	0.02
N2O	0.09	0.08
IPPU		
ODS Substitution	0.01	0.01
Electrical Transmission & Distribution	0.54	0.53
IPPU Total	**0.55**	**0.54**
By GHG		
SF6	0.01	0.01
HFCs & PFCs	0.54	0.53
AFOLU		
AFOLU Sources	0.12	0.17
Enteric Fermentation	*0.02*	*0.03*
Manure Management	*0.005*	*0.007*

Agricultural Soil Management	*0.02*	*0.03*
Field Burning of Agricultural Residues	*0.001*	*0.001*
Urea Application	*0.0002*	*0.0003*
Agricultural Soil Carbon	*0.06*	*0.08*
Forest Fires	*0.0004*	*0.0006*
AFOLU Sinks	(0.61)	(0.53)
Landfilled Yard Trimmings & Food Scraps	*(0.03)*	*(0.02)*
Urban Trees	*(0.24)*	*(0.20)*
Forest Carbon	*(0.34)*	*(0.31)*
AFOLU Total	**(0.49)**	**(0.36)**
By GHG		
CO2	0.038	0.039
CH4	0.062	0.071
N2O	0.020	0.060
WASTE		
Landfills	0.11	0.06
Composting	0.01	0.01
Wastewater	0.06	0.06
Waste Sector Total	**0.18**	**0.13**
By GHG		
CH4	0.11	0.07
N2O	0.06	0.06
TOTAL EMISSIONS	**14.18**	**13.12**
NET EMISSIONS	**13.52**	**12.52**

Coordination and Outreach

The City undertook intergovernmental coordination and stakeholder outreach efforts over the course of developing this PCAP from grant award to PCAP submission (approximately six months during the period from August 2023 to February 2024). This section outlines the framework utilized by the City to facilitate meaningful engagement strategies. These strategies were designed to ensure comprehensive stakeholder representation and to overcome obstacles to engagement, including linguistic, cultural, institutional, geographic, and other barriers.

Outreach Plan

Given the accelerated timeline for PCAP development, the City utilized stakeholder outreach during this period to establish an engagement framework with a purpose of laying the groundwork for more extensive engagement efforts planned for the CCAP development process. Throughout the PCAP engagement process, the primary objective was to re-establish connections with stakeholders previously engaged in the City's 2020-2025 Climate Action Plan development process, while also cultivating new relationships through a combination of face-to-face and online interactions.

The outreach, communication, and engagement strategies utilized during PCAP development were guided by several key principles:

- intentional alignment with related interagency and state climate action and sustainability initiatives to foster collaboration and coherence with broader climate initiatives;
- reengagement of stakeholders and technical advisors from past climate action planning efforts to draw upon valuable knowledge and experience for continuity and consensus on PCAP priorities; and
- expansion of the existing stakeholder network, with particular emphasis on engaging frontline communities, to ensure inclusivity and prioritization of their unique perspectives and needs.

For the purposes of this PCAP, "frontline communities" are defined as those who are the most vulnerable to and will be the most adversely affected by climate change and inequitable actions because of systemic and historical socioeconomic disparities, environmental injustice, or other forms of injustice. This is inclusive of Low-Income and Disadvantaged Communities (LIDAC) as defined by the EPA for the purposes of the CPRG Program.

Meaningful dialogue with frontline community representatives has been central to the City's climate action planning efforts. This dialog enables the City to better understand climate impacts and shape equitable climate action strategies. Through an equity-centered lens, the City aims to prioritize measures in this PCAP—as well as in the City's

climate action planning more broadly—that address critical community needs while simultaneously reducing emissions.

The City's strategies for outreach and engagement in the development of the PCAP included:

- Identification of key stakeholders, with a priority on community-based organizations representing frontline communities (described in further detail in the subsequent subsection);
- In-person and virtual meetings with key community and relevant industry stakeholders, as available, to reintroduce the City's climate action planning efforts and welcome participation and input in future engagement efforts towards development of a CCAP;
- Development and implementation of a comprehensive messaging campaign to raise public awareness about the importance of climate action and highlight the interconnectedness between climate action and addressing other pressing social challenges like long-term affordability;
- Development and publishing of a dedicated website that serves as a centralized, accessible hub for all climate action planning-related information and updates for community members; and
- Development and utilization of an online survey to gather community feedback on climate action planning and preferred engagement strategies.

Additional outreach efforts specific to certain priority measures contained within this PCAP are detailed in Appendix C.

The PCAP engagement framework has laid a solid foundation for future stakeholder and public outreach towards CCAP development. The City has already initiated procurement processes to develop a community ownership model for CCAP development where Community-Based Organizations (CBOs) will be selected and compensated to develop and implement engagement plans tailor to their respective communities in collaboration with and support from the City. This collaborative approach aims to ensure that not only will the voices of O‘ahu's communities be heard and included, but that the community will be empowered to co-design the Climate Action Plan Update development process, with the ultimate goal of fostering a more inclusive and effective strategy for addressing emissions reductions on O‘ahu.

Identification of Stakeholders

For the development of this PCAP, the City prioritized initial outreach to stakeholders, community organizations, and other advocacy groups known to be interested in climate action planning and existing City climate mitigation efforts. The City identified these relevant stakeholders first from those previously engaged in the development of the City's 2020-2025 Climate Action Plan, primarily through a Technical Stakeholder Advisory Group that consulted on the emissions forecasting, establishment of emissions reduction targets, and inclusion of specific implementable mitigation actions in the plan.

Additional stakeholders were identified through the City's regular participation in a number of climate-action focused or related working groups and networks, including, but not limited to:

- Hawai'i Four County Sustainability Network;
- City and County of Honolulu Fleet Modernization Working Group;
- Sustainable Transportation Coalition of Hawai'i;
- Hawai'i Powering Past Coal Taskforce; and
- Hawai'i Energy Equity Hui.

Based on the input received from the community during the 2020-2025 CAP development process, the City's guiding principles for climate action implementation include centering environmental and economic justice. As such, it is essential for the City to engage frontline and other disadvantaged and/or marginalized communities directly or through community representatives and organizations. As detailed in the list of stakeholders in Appendix B, certain stakeholders have been identified as important community voices and resources given their geographic location, membership, and/or service group, even if the organization's mission is not climate action-specific, to ensure the inputs of frontline communities are heard and prioritized. Many of these stakeholders and organizations were previously identified through CCSR's development of a Frontline CBO Database compiled through engagements and conversations with community on the impacts of the COVID-19 pandemic.

A list of all stakeholders identified as relevant for climate action planning engagement as of the publication of this PCAP is included in Appendix B. The City will continue to review and update this list of stakeholders as needed throughout PCAP implementation and CCAP development.

Interagency and Intergovernmental Coordination

The preparer of this PCAP, the Mayor's Office of Climate Change, Sustainability and Resiliency (CCSR), has well-established processes for coordination and cross-collaboration with City departments and agencies. These include regularly recurring coordination meetings to advance implementation of the City's climate action priorities with key agencies, including but not limited to:

- Department of Transportation Services (DTS)
    - DTS is responsible for the planning, operation, and maintenance of the City's multimodal transportation system and for the preparation of an energy conservation and emissions reduction plan for City transportation systems.
- Department of Environmental Services (ENV)
    - ENV is responsible for the operation, maintenance, and functional planning of the City's wastewater and solid waste systems.
- Department of Facility Maintenance (DFM)
    - DFM is responsible for the maintenance of City facilities and infrastructure, such as public streets and bridges, drainage and flood control systems,

City parking facilities, and street lighting systems, as well as for the implementation of an energy efficiency plan to reduce GHG emissions.
- Department of Design and Construction (DDC)
    - DDC is responsible for the project planning, engineering, design and construction of City-owned facilities, as well as for the management of long-range planning of energy conservation projects at City facilities.

Additionally, City agencies participate in a number of intra-City working groups and other forums through which discussions on the City's climate action priorities are facilitated, including but not limited to:

- Fleet Modernization Working Group;
- Affordable Housing Working Group; and
- Planning and Engineering Subcabinet.

CCSR utilized these existing networks and processes to inform City agencies about the CPRG Program and PCAP development process and solicit input on prioritization of the City's climate action priorities. The selection of priority measures for inclusion in this PCAP were, in part, determined by the input of City agencies working off of established priorities in the City's guiding policy and planning documents as listed above.

For the development of this PCAP, the City also worked closely with the Hawai‘i State Energy Office as a state CPRG grantee and preparer for the State of Hawai‘i PCAP. As facilitated by the State Climate Commission Coordinator, the City has participated in numerous discussions with the other three counties of Hawai‘i towards development of aligned climate action priorities that could be replicated and/or scaled at a regional level. CCSR also participates in a recurring monthly convening of the Hawai‘i Four County Sustainability Network composed of sustainability staff across the Hawai‘i's four county governments (Kaua‘i County, Maui County, Hawai‘i County, and the City and County of Honolulu). This network has been an invaluable forum for intergovernmental sharing of best practices and collaborative ideation towards state-wide climate action priorities and implementation. Where identified PCAP priority measures require authorization, engagement, or input from other government entities, the City has initiated contact with relevant entities and stakeholders to ensure climate action strategies are aligned and implementable.

Strategies to Overcome Linguistic, Cultural, Institutional, Geographic, and Other Barriers to Participation

The City has implemented diverse strategies to overcome barriers to participation in its community engagement initiatives, recognizing and embracing the ethnic, cultural, and social diversity of its community as one of O‘ahu's greatest assets. Accessibility and inclusivity are prioritized in all endeavors, ensuring that programs and plans are available to all residents without regard to race, color, age, sex, religion, national origin, ancestry, gender identity, gender expression, sexual orientation, disability, or any other classification protected by state or federal law.

The City utilizes its Limited English Proficiency (LEP) Plan to actively involve individuals with limited English proficiency, guaranteeing their meaningful participation. In accordance with this commitment, CCSR adheres to applicable laws and policies prohibiting discrimination. This includes Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and U.S. Department of Homeland Security regulation 6 C.F.R. Part 19. To enhance accessibility, upon request, the City is able to provide translated materials, interpreters, and language assistance services to ensure meaningful participation for a diverse linguistic community.

In adherence to Americans with Disabilities Act (ADA) requirements, the City guarantees accessibility for individuals with disabilities. Continuous review and enhancement of accessibility features across the City's communication platforms, websites, and online content is a priority to ensure inclusivity for individuals with disabilities.

Throughout the PCAP engagement process, CCSR has prioritized accessibility when selecting meeting locations, including proactively suggesting accommodations nearby and convenient to each stakeholder. This flexible approach aimed to prioritize stakeholder convenience and foster a collaborative and inclusive environment.

These efforts underscore the City's commitment to fostering an inclusive environment where all individuals, regardless of background or ability, can actively engage in shaping the future of our community.

Outreach and Coordination Documentation

Table 2 below provides a log of stakeholder engagements associated with developing this PCAP.

TABLE 2. HONOLULU PCAP STAKEHOLDER OUTREACH LOG

Date	Organization	Contact's Title	Outreach Method
8/31/2023	Papa Ola Lokahi	Transportation Equity Manager	In-person meeting
8/31/2023	Hawai'i Appleseed	Executive Director	In-person meeting
9/6/2023	Hawai'i Youth Climate Coalition	Club Network Director	In-person meeting
9/8/2023	Shake Energy	Vice President of Project Development	In-person meeting

Date	Organization	Contact's Title	Outreach Method
9/8/2023	Hawai'i Alliance for Community-Based Economic Development (HACBED)	Executive Director	In-person meeting
9/15/2023	Hawai'i Public Utilities Commission Office of Policy and Research	Economist	In-person meeting
9/22/2023	Institute for Climate and Peace / AlohaCare	Senior Advisor / Native Hawaiian Liaison	In-person meeting
11/4/2023	Zero Waste O'ahu	Executive Director	In-person meeting
1/18/2024	Hawai'i Workers Center	Executive Director	In-person meeting
1/24/2024	University of Hawai'i at Mānoa Institute for Sustainability and Resilience at Mānoa / University of Hawai'i Economic Research Organization	Director / Research Fellow	Virtual meeting
1/29/2024	Pacific Gateway Center	Deputy Director of Programs	Virtual meeting
1/29/2024	Sierra Club Hawai'i Chapter	Director	Virtual meeting
2/2/2024	Kōkua Kalihi Valley Ho'oulu 'Āina	Program Director and Projects Coordinator	In-person meeting
2/7/2024	KEY Project	Kupuna Program Manager	In-person meeting
2/8/2024	Hawai'i Youth Climate Coalition	Executive Director	Virtual meeting
2/8/2024	Institute for Climate and Peace / AlohaCare	Senior Advisor / Native Hawaiian Liaison	Virtual meeting
2/9/2024	Hawai'i Public Health Institute	Program Manager	Virtual meeting
2/12/2024	Wai'anae Comprehensive Health Center / Mālama Learning Center	Indigenous Food System Manager / Stewardship Coordinator	Virtual meeting
2/15/2023	Hawai'i Workers Center	Executive Director	Virtual meeting
2/16/2024	Papakōlea Community Development Center;	Director	In-person meeting
2/20/2024	Wai'anae Comprehensive Health Center / Mālama Learning Center	Indigenous Food System Manager / Stewardship Coordinator	Virtual meeting

Priority Measures

The measures detailed in this section have been identified as "priority measures" for the purposes of this PCAP, with intent to utilize this PCAP in the pursuit of additional CPRG funding for climate action implementation. This list is not exhaustive of the City's existing climate action priorities. For more information on the City's existing plans and strategies for reducing GHG emissions see the City's 2020-2025 Climate Action Plan.[1] Additional City guiding and planning documents referenced and utilized in the development of this PCAP include:

- O'ahu Resilience Strategy;
- Transportation Demand Management Plan;
- Transportation Energy Conservation and Emissions Reduction Plan;
- O'ahu Bike Plan;
- O'ahu Pedestrian Plan; and
- Climate Ready O'ahu climate adaptation strategy. [2, 3, 4, 5, 6, 7]

The following criteria were used to determine selection of PCAP priority measures:

- The measure is implementation-ready, meaning that the design work for the policy, program, or project is complete enough that a full scope of work and budget could be included in a CPRG implementation grant application.
- The majority of the measure's significant components can be completed in the near term, meaning that all funds will be expended and the project completed within the five-year performance period for the CPRG implementation grants.
- The measure advances the following priorities:
    - Reduced costs of living for low- and moderate-income (LMI) households
    - Increased social equity
    - Improved health and safety
    - Increased resilience to climate disruptions
    - Reduced fossil fuel dependence
    - Significant and sustained emissions reductions

Table 3 below summarizes the City's PCAP priority measures as follows:

Priority Measure #	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
Priority Measure name	2025–2030 *XX,XXX*	2025–2030 *XX,XXX*	*applicable entity(s)*	*city, county, or region*
Priority Measure description, including related efforts, performance metrics, and cost estimates for implementation (where available).				

The equity benefits of each priority measure are described in the Anticipated Benefits and Disbenefits of Priority Measures section below. Additional details on the methods, assumptions, and data inputs used to estimate the cumulative emissions reductions from 2025 through 2030 and 2050 for each Priority Measure are included in Appendix D.

TABLE 3. HONOLULU PCAP PRIORITY MEASURES

Priority Measure 1	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
Create an energy retrofit program for existing multi-unit affordable housing	*2025–2030* 54,642 mtCO2e	*2025–2050* 244,583 mtCO2e	CCSR, HSEO, PUC	Island-wide

Measure Description:
Cumulative emissions from existing buildings will make up the large majority of O‘ahu’s building emissions over the next 25 years. In order to achieve the City’s target of net-negative carbon emissions no later than 2045, it will be necessary for the City to implement energy performance requirements for existing buildings, ideally within the next decade.[8, 9]

Prior to establishing an energy performance requirement for existing buildings, it is critical for the City to first provide targeted support to assist buildings with limited resources to improve their energy performance. An energy retrofit program for existing affordable multi-unit housing on O‘ahu (both public and naturally-occurring affordable housing (NOAH)) will help residents save money, improve living environments, reduce indoor air pollution, and increase resident and building resilience to future climate disruptions. Buildings will have the opportunity to adopt high-efficiency water heating, air conditioning, and appliances as part of a comprehensive retrofit program. Additional measures can include rooftop solar photovoltaic (PV) systems, electric vehicle (EV) charging or EV-ready infrastructure installed in conjunction with other improvements, as well as energy storage, with priority for critical loads or buildings that house LMI populations.

A “whole-building approach” to retrofits comes with significant opportunities to increase energy savings and broader benefits for building tenants and owners. The concept is to address as many opportunities as possible within one project, therefore increasing savings and taking advantage of greater scale to reduce project costs. However, this approach also introduces considerable additional complexity, and without additional technical support, may be inaccessible to most target buildings.

Between local, state, and federal resources, there are currently tremendous opportunities to support multi-family building retrofits on O‘ahu, including state-level Inflation Reduction Act (IRA) rebate programs[10], as well as local commercial property assessed financing

and on-bill financing programs[11], and state and federal tax credits. However, building owners and managers for lower-income multifamily housing rarely have the resources, knowledge, and experience to navigate these separate opportunities in combination. The result is "single measure projects" that miss the opportunity for more expansive savings and resilience.

Building retrofits, even in the best scenario, are highly disruptive to occupants. Most retrofits in multifamily buildings in Hawai'i only occur on an emergency basis, such as to address a safety requirement or a failing system like failure of plumbing waste stacks. A key aspect of a successful retrofit program is to enable a longer project development timeline so that energy retrofits can be combined with other critical measures when the building owner(s) are ready to begin a project.

Prior Success and Related Efforts:
The City's Better Buildings Benchmarking Program, established via ordinance in 2022, requires all commercial and multifamily residential buildings above 25,000 square feet to report energy and water use annually via EPA's Energy Star Portfolio Manager.[12]

Metrics for Tracking Progress:
- number of multifamily units retrofitted
- kWh savings per unit
- unit occupant bill savings

Cost Estimate:
A comprehensive retrofit program has not previously existed on O'ahu, therefore, there is currently some uncertainty with cost estimates. It is estimated that this measure will $7.5m over five years in order to enable retrofits to an estimated 240 buildings and 4,800 units. Administrative costs after the five-year period depends on a number of factors, including potential introduction of building performance standards, ongoing program costs to assist LMI residents, and continued availability of incentives at the federal and state level.

Priority Measure 2	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
Dedicated bus-only lanes along high-occupancy transit corridors	*2025–2030* 3,834 mtCO2e	*2025–2050* 118,131 mtCO2e	DTS, HDOT	Island-wide

Measure Description:
O‘ahu’s robust public transit system has served the public successfully for over five decades. In 2023, the City began operations of the first segment of its autonomous light rail system, Skyline, offering service from West O‘ahu to Aloha Stadium. Skyline service will continue to expand into the primary urban center over the coming years, with near-term plans to complete stops to the downtown Civic Center by 2030.

With the expansion of Skyline, the City has an opportunity to reconfigure the bus system in order to provide faster and more frequent service to residents. For routes that previously provided service across the South Shore all the way into town, buses can now offer more frequent service from their original origin to the rail line, where riders can transfer onto frequent Skyline service.

Transit priority lanes (TPLs) reduce congestion delays, improve bus service and safety, help riders get to their destinations quicker, and lower transit operating costs, particularly in high-occupancy transit corridors, defined as routes with the highest weekday passenger miles traveled and Skyline-connected routes. In short, TPLs offer less expensive and faster service, which results in reduced GHG emissions and pressure to expand roadways.

For the higher traffic portions of these routes, TPLs can offer exclusive or semi-exclusive lanes for use by buses. The lanes are clearly marked, and may include signal prioritization and other enhancements to improve the quality and efficiency of bus service.

Prior Success and Related Efforts:
The King Street bus-only lane, opened in late 2020, reduced bus travel times by 20-30%, improved bus reliability by 11-17%, and saved the City up to $560,000 per year in operating expenses.[13]

Metrics for Tracking Progress:
- % reduction in bus travel time
- % improvement in bus reliability
- % increase in bus ridership
- yearly cost savings for bus operations

Cost Estimate:
$15m over a five-year period from 2025-2030 will enable the City to implement five high-priority transit priority lanes to integrate with rail. While project costs are highly variable, this estimate assumes roughly $3m per project. Carrying this estimate forward to 2050 would result in a total cost of $60m for the period.

Priority Measure 3	**Cumulative GHG emission reductions** ($mtCO_2e$)	**Implementing Agency or Agencies:**	**Geographic Scope:**

Expand geographic, demographic and technological reach of shared micro-mobility	*2025–2030* 32,527 mtCO2e	*2025–2050* 162,635 mtCO2e	DTS, HDOT, CCSR	Island-wide

Measure Description:
Since 2010, micro-mobility options including bike-share and e-scooter systems have grown increasingly important for urban transportation across North American Cities.[14] Honolulu is no exception, with Biki Bikeshare, starting in 2014, seeing 1.8 million miles traveled across 1,000 bikes at 130 stations in 2022.[15]

Shared micro-mobility has the potential to offer a "last-mile" solution for LIDACs in dense, urban areas on O'ahu. In conjunction with the addition of dedicated bike lanes, these services can be a convenient, affordable, environmentally friendly transportation mode that promotes physical activity while reducing reliance on car ownership, where personal vehicles have a direct cost of $16,200 per household per year in Hawai'i.[16]

Because shared micro-mobility is available 24/7, it can also serve as a backup to public transit for night shift workers. Finally, shared micro-mobility can support increased use and ownership of micro-mobility solutions overall by allowing users to assess the usefulness of bikes, e-bikes, and e-scooters within their own lives prior to purchasing a bike or scooter for themselves.

Key aspects of this measure include:
- Expanding existing bike-share and other micro-mobility services to include e-bikes;
- Expanding bike-share and other micro-mobility service areas to identified LIDACs in urban Honolulu; and
- Providing financial support for LMI households to reduce the cost of access to micro-mobility.

Prior Success and Related Efforts:
- The Hawai'i Electric Bike and Moped Rebate Program, which began in 2023, provides rebates of up to $500 or 20% of the retail price available for newly-purchased e-bikes and electric mopeds.[17]
- The City has plans to extend the King Street Protected Bike Lane (currently approximately 2 miles).
- The first segment of the City's elevated light rail system opened in 2023.

Metrics for Tracking Progress:
- % increase in LMI users
- % increase in annual trips
- % increase in annual miles traveled
- % increase number of uses

Cost Estimate:
Estimated capital costs for this measure are $5m over five years—assuming $10,000 per e-bike, inclusive of docking station and utility connection—and continued incremental growth at roughly $1m capital cost per year thereafter.

Priority Measure 4	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
Reduce food waste and increase the diversion of food and other organic materials from the waste stream	*2025–2030* 5,899 mtCO2e	*2025–2050* 39,607 mtCO2e	ENV, HDOH	Island-wide

Measure Description:
Our food supply, both local and imported, represents a large portion of the carbon footprint of Oʻahu residents. This extends from production to transport, distribution, sale, and consumption or disposal of food. Locally, the most effective way to reduce the carbon footprint of our food is to reduce its waste. Hawaiʻi residents throw away approximately one quarter of all food and beverage purchases, representing a cost of $700 per person per year.[18] Reducing food waste can sometimes also be aligned with food donations, which can then add an important social equity element to this effort.

Existing food rescue operations divert food from wholesale distributors, grocery stores, restaurants, hotels, farms, and other organizations away from the waste stream to homeless shelters, food pantries, veterans services, other nonprofits, and social service agencies that serve the hungry. For food that is not consumed, increasing the rate of composting offers additional benefits including reduced carbon pollution, compost production, and support for local farmers.

Food banks on Oʻahu have reported an increasing demand for food donations, which have not returned to pre-pandemic levels. For food that cannot be diverted, there is increasing public demand for more sustainable waste management practices, but limited outlets for restaurants and multifamily housing projects to compost their commercial kitchen waste and or residential food waste.

In recent decades, regulatory requirements needed for siting new compost systems has been a barrier to smaller-scale commercial composting operations. However, efforts in the last several years have begun to open new opportunities.[19] Creating a network of small, commercial food waste composting sites on Oʻahu, and then Statewide, may catalyze growth in food and organics diversion and strengthen local food networks from producer to consumer.

Key aspects of this measure include:

- Increasing food donation opportunities for large institutions;
- Increasing household education on food waste reduction;
- supporting diverse, small-scale commercial compost operations;
- Creating community compost hubs;
- Enabling and encouraging composting at community gardens; and
- Creating incentives for producers, businesses, and households to donate food to help strengthen existing food rescue and redistribution systems and further reduce waste.

Prior Success and Related Efforts:

- The City's Disposable Food Ware Ordinance was adopted in 2019.[20]
- City Ordinance 22-10 requiring the City to begin the curbside collection of food waste was adopted in January 2024.[21]
- The Oʻahu Compost Project pilot, which takes food waste and excess food scraps from food service businesses in Chinatown and composts them in Hawaiʻi's first in-vessel composting unit, partnered with eight restaurants and composted almost 18,000 pounds of food waste as of August 2023.[22]

Metrics for Tracking Progress:

- tons of food waste disposed/year
- tons of food waste recovered/year
- tons of food waste composted/year
- number of businesses composting

Cost Estimate: Not yet available; varies based on specific aspect of this measure.

Priority Measure 5	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
Strengthen building energy code update and review processes to increase efficiency of new buildings	*2025–2030* 686,700 mtCO2e	*2025–2050* 3,629,700 mtCO2e	HSEO, DPP, CCSR	Island-wide

Measure Description:
Electricity consumption, primarily for buildings, represents 39% of Oʻahu's overall GHG emissions. While the island's power supply will continue to become cleaner as HECO integrates more renewable energy, there is a finite amount of land for energy generation on Oʻahu. Constructing buildings as efficiently as possible is the most effective way to improve a building's operational efficiency across its lifetime. While retrofits are often necessary later in a building's life due to improved technology, they are almost always more expensive than constructing a building efficiently in the first place.

Building development is not always tied to building operation, as ownership and management of buildings often transfers at the completion of construction. Additionally, building development is highly sensitive to external fiscal pressures such as interest rates and inflation of material costs. Because of this, concerns around increased development costs are often unnecessarily misaligned with long-term needs of building occupants.

Energy Codes establish a minimum required standard of efficiency for new buildings as a means of bridging this gap. Energy codes are updated regularly on a national level and subsequently adopted at the state and local levels with appropriate local amendments. A lack of resources to design, review, and implement updated codes continues to be a barrier for new code adoption, implementation, and compliance at the City.

This measure seeks to support development of new and existing programs and policies to accelerate the incorporation of energy-efficient design, construction, and technology across new single-family, multi-unit residential, and commercial buildings, including:

- Support for efforts to reduce the cost of implementing energy efficiency measures in LMI residential construction without sacrificing long-term energy savings and comfort for residents;
- Identification of vulnerabilities within the current code with regard to future climate conditions related to heat, flooding, high wind, and other impacts in order to develop locally-appropriate responses for implementation by building industry professionals;
- Further development of existing EV-ready code provisions to better address the needs of different use types while maximizing the opportunity to prepare for vehicle electrification during new construction;
- Support for increased training and resources to enable staff to increase review of and compliance;
- Development of recurring educational programs for the building industry to showcase opportunities of new code provisions locally, demonstrate feasibility, and receive feedback on challenges and solutions to code compliance.

Prior Success and Related Efforts:

- The City successfully adopted the 2015 edition of the International Energy Conservation Code (IECC) after a long period of stagnation with energy code development.
- The City followed up on this success and adopted the 2021 IECC in 2023.[23]

Metrics for Tracking Progress:

- Energy use intensity (EUI) of newly-constructed buildings
- Rate of energy code compliance

Cost Estimate:

Cost estimates for this measure are $500,000 annually, inclusive of staff augmentation, training and stakeholder convenings towards recurring code adoptions on three year cycles.

Priority Measure 6	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
Establish a building deconstruction reuse and recycling program	*2025–2030* 4,122 mtCO2e	*2025–2050* 10,417 mtCO2e	ENV, CCSR, DOH	Island-wide

Measure Description:
O‘ahu is almost 100% dependent on imported building materials for construction of new buildings. The carbon footprint of these materials is a very significant part of the overall footprint of buildings island-wide, therefore, it is necessary to consider means of increasing efficiency and reducing waste of building materials.

The City is currently in the process of identifying a new landfill site in anticipation of the closure of the Waimanalo Gulch Landfill. Additionally, the PVT Landfill, dedicated to construction and demolition (C&D) waste, recently closed, resulting in a decrease of C&D recycling four-fold, from over 800,000 tons in 2018 to just over 200,000 tons in 2022.[24]

Deconstruction for the purposes of this PCAP is defined as the systematic dismantling of a structure that prioritizes salvage of materials for reuse. Where the goal of mechanical demolition is to remove a structure as quickly and efficiently as possible, the goal of deconstruction is to maximize material salvaged, recycle what is not reusable, and minimize the amount of material going to landfill.[25]

Key aspects of this measure include:
- Support for policies and programs that favor building deconstruction over conventional demolition, where feasible;
- Training for contractors to become certified deconstruction contractors;
- Training for construction workers who may perform deconstruction work;
- Education for local building professionals about the deconstruction process and resources for technical assistance and locations for materials recycling, donation or resale; and
- Consideration of a building deconstruction ordinance for homes over a certain age or specifications for a minimum percent of C&D diversion for re-use or recycling.

This measure will help O‘ahu reduce the amount of C&D waste generated and disposed of on island, reduce embodied emissions from local construction projects, and provide circular economy jobs that replace a portion of state dollars that leave Hawai‘i for imported construction materials.

Prior Success and Related Efforts:
Reuse Hawai‘i, a local non-profit focused on material reuse, has led early efforts to expand building deconstruction on O‘ahu and statewide for over a decade. Reuse Hawai‘i

has worked with numerous contractors and provides a foundation for deconstruction and redistribution of construction materials across Hawai‘i.

Metrics for Tracking Progress:

- number of buildings deconstructed per year
- tons of materials repurposed from building deconstruction
- tons of C&D waste disposed annually

Cost Estimate:
The City has not yet developed cost estimates for operation of a deconstruction program. Recent reports from the City of Palo Alto provide a point of reference for potential program costs, estimated at $400,000 for start-up and $600,000 in recurring annual costs for management of the program.[26]

Priority Measure 7	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
Support a Community Solarize Program to increase access to solar for low- to moderate-income households	*2025–2030* 669,965 mtCO2e	*2025–2050* 3,751,804 mtCO2e	HGIA, HSEO, CCSR, HECO	Island-wide

Measure Description:
Rooftop solar PV systems on single-family homes represent a significant portion of the renewable energy mix across O‘ahu’s energy grid. Early systems were supported with net energy metering and benefitted from both state and federal tax credits. For homeowners at higher income levels, rooftop PV subsidies have turned rooftop PV into a strong investment, one that is quickly paid off and results in years of low-cost energy bills to follow. Given O‘ahu’s limited land resources, rooftop PV is a necessary part of the mix for powering our grid, and is a way to reduce GHG emissions and dependence on imported fuels.

Solarize campaigns are community-led initiatives supported by various private and public stakeholders to expand access to rooftop solar for those who have been left behind in the transition to a renewable energy economy. This is achieved by leveraging group purchasing, community education, and grassroots organizing to deliver reduced cost PV. On O‘ahu, the Solarize Wai‘anae campaign focuses primarily on solar access for LMI households and Native Hawaiian families on the leeward (west) side of the island. This effort is also being advanced at the state-wide level as “Solarize 808”.

Community leaders from Wai‘anae are working to launch the initiative with support from the City, the State of Hawai‘i, HECO, and others. A critical component of implementation

of this measure is the Hawai‘i Green Infrastructure Authority’s (HGI)—the state’s “green bank”—grant application to the EPA Solar For All Greenhouse Gas Reduction Fund Program to enable rooftop PV on lower-income households statewide.[27]

Prior Success and Related Efforts:
“Solarize Kaua‘i” is a decade-old effort that brought together Kekaha community members on the west side of Kaua‘i to implement a solarize campaign. The community-led effort was catalyzed by strong leadership and funding from the host benefit fee the town received for being the longtime host of Kaua‘i’s only landfill.

Metrics for Tracking Progress:
- number of new PV systems on LMI rooftops per year
- average utility bill savings for LMI households who install PV systems
- number of new PV systems on LMI households that have storage and can provide backup power during outages

Cost Estimate:
Cost estimates for this measure include: (1) costs to run the community campaign; (2) direct subsidy for LMI household where needed; (3) subsidy of the lending costs for the program; and (4) overall program administration.

Estimated costs to run the campaign are $125m, assuming costs are 5% of total project costs of $2.5b (50,000 rooftop PV systems with battery storage installed by 2050 at $50,000 each). Overall program costs will depend on the number of households included and the available utility tariffs from HECO, which are currently under review by the Hawai‘i PUC. Under the assumption that 10,000 households (20% of total) require grants to buy down system costs by 10% in order to be eligible for on-bill financing program through HGIA, that puts direct subsidy costs at $50m over 25 years.

Priority Measure 8	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
	2025–2030	*2025–2050*		
Expand public electric vehicle charging on O‘ahu	103,947 mtCO2e	4,580,705 mtCO2e	HDOT, DDC, CCSR, HSEO, DTS, DPR	Island-wide

Measure Description:
Electric vehicle (EV) adoption has been accelerating on O‘ahu for the past decade and is anticipated to continue acceleration. Continued improvements to EV technology will enable EVs to deliver on the promise of lower-cost vehicle ownership, including lower upfront cost, lower maintenance costs, and longer vehicle life.

Many O‘ahu residents, including those working multiple jobs, rural residents, families with

children, construction workers, and others, cannot always rely on public transportation to meet their transportation needs. While overall reduced car use and ownership is an important goal of this plan, it is clear that some residents will continue to need to drive.

A particularly challenging barrier to wider EV adoption is access to vehicle charging for residents of multi-unit housing. The expansion of public charging infrastructure, specifically for LMI households that do not have access to home charging, is essential for enabling the benefits of EVs to be distributed equitably.

Key aspects of this measure include:

- Enabling broad expansion of pole-mounted curbside charging to support multi-unit housing residents;
- Programs and policies that support charging infrastructure installations near and within LMI housing;
- Installation of public charging at City facilities; and
- Incorporation of requirements for workforce charging into existing EV-ready provisions of the City's Energy Code and other policies.

Prior Success and Related Efforts:
The City and its partners are currently evaluating the U.S. Department of Transportation Charging and Fueling Infrastructure Grant Program funding opportunity to pilot pole-mounted charging around the state.[28] While pole-mounted charging can only provide a fraction of charging needs, it is potentially far less expensive to install than conventional charging due to the direct connection from the electrical grid through the utility pole to the charging unit.

Metrics for Tracking Progress:

- number of new public EV chargers
- number of new EV chargers installed at LMI multi-family buildings
- number of LMI residents driving EVs
- cost per dual port networked Level 2 public charger

Cost Estimate:
Currently, standalone installation costs for the City of a networked L2 charger is more than $75,000. Assuming installation costs can be reduced by 60-80%[i], the cost of installing 2,000 chargers (estimated as a fraction of the total number of all public chargers necessary to meet demand based on data from the U.S. Department of Energy Electric Vehicle Infrastructure Projection Tool) would be between $30-$60m.

Priority Measure 9	**Cumulative GHG emission reductions** ($mtCO_2e$)	**Implementing Agency or Agencies:**	**Geographic Scope:**

[i] The City anticipates significant cost reductions as the market matures, and installations are integrated with ongoing capital improvements. EV-ready code requirements will also reduce costs significantly.

Support expansion of private car-share services for low- to moderate-income households	*2025–2030* 469 mtCO2e	*2025–2050* 7,833 mtCO2e	HDOT, DDC, CCSR, HSEO, DTS	Primary Urban Center

Measure Description:
Car-share is an important component of a diverse transportation system, offering cars when needed so people can meet their individual transportation requirements without owning a vehicle themselves. Car ownership is very expensive, recently estimated at $16,200 per household per year in Hawai‘i.[29]

Car-sharing can be a valuable component of a larger multi-modal transportation system in denser, urban areas. Adding car-share to the available transportation choices in LMI neighborhoods enables reduced car ownership and related savings. Pricing car use by the trip instead of having a sunk cost to own a car outright changes a person’s decisions around transportation choices. Thus, car-share enables greater use of other modes and is associated with savings in carbon pollution, space for parking, and reduced traffic congestion, while also promoting healthier active transportation options.

Key aspects of this measure include:
- Removing barriers for peer-to-peer car-sharing; and
- Incentives for individuals to offer personal vehicles for car-share.

Prior Success and Related Efforts:
In the 2022 State Legislative Session, the Hawai‘i State Legislature passed and the Governor of Hawai‘i signed Act 77, which establishes peer-to-peer car-sharing definitions, rules, and regulations.[30]

Metrics for Tracking Progress:
- number of car-share vehicles available in LMI census tracts
- number of LMI households who provide car-share vehicles in their community
- number of cars owned by LMI households

Cost Estimate:
Further development is required to estimate costs of implementation for this measure. The City currently has a program to enable the use of public parking for car-share. Such a program could be augmented by reducing the costs to providers that can offer pricing subsidies to low-income households.

A pilot program intended to evaluate the efficacy of subsidized car-share for LMI households over a multi-year period, is estimated to cost between $750,000 and $1m, inclusive of both implementation and evaluation costs.

Priority Measure 10	**Cumulative GHG emission reductions** ($mtCO_2e$)		**Implementing Agency or Agencies:**	**Geographic Scope:**
Implement high priority projects from the O‘ahu Bike Plan	*2025–2030* 32,650 mtCO2e	*2025–2050* 239,435 mtCO2e	DTS, HDOT	Island-wide

Measure Description:
The O‘ahu Bike Plan Update, completed in December 2019, guides the continued growth of bicycling as a safe, convenient, accessible, affordable, healthy, and fun transportation option for O‘ahu residents.[31] The focus of the O‘ahu Bike Plan Update is to identify specific projects, policies, and programs to expand bicycle ridership and provide a network of safe, low-stress bikeways attractive to users of all ages and abilities.

The creation of safer and more affordable transportation options for residents is necessary to increase non-car transportation modes. While bicycling can be more affordable, that is only true if it is safe. By expanding bicycling infrastructure around the island, more residents can consider bicycling as a safe, healthy, and affordable option as a substitution or replacement for individual vehicle ownership and travel mode.

The O‘ahu Bike Plan provides key recommendations to support more widespread bicycling on O‘ahu, including:

1. Commitment to the Vision Zero strategy;
2. Development of seamless connections between bikes and transit;
3. Expansion of education efforts;
4. Establishment of a comprehensive bikeway maintenance program;
5. Implementation of a consistent signage and wayfinding program; and
6. Evaluation of bicycle facilities and programs.

Prior Success and Related Efforts:

- City Ordinance 17-55 established bicycle parking requirements within the City’s Land Use Ordinance and mandates that both short- and long-term bike parking must be provided whenever new floor area, a new dwelling unit, or a new parking structure is proposed.[32]
- The City’s Complete Streets Ordinance, adopted in 2012, expresses the City’s commitment to planning, design, operation, and maintenance of streets that move people and improve safety, while balancing the needs of all road users.[33]

Metrics for Tracking Progress:

- number of high priority O‘ahu Bike Plan projects implemented annually
- miles of bike lane constructed annually
- bicycle miles traveled annually
- reduction in vehicle miles traveled annually

- reduction in number of bicycle-related crashes on Oʻahu

Cost Estimate:
Estimated costs for implementation of all Oʻahu Bike Plan Priority 1 projects are $118m for 128 project segments. For all projects in the plan, including Priority 1, 2, and 3, City costs are estimated at $147m and state costs $168m.

Low-Income and Disadvantaged Community Analysis

Implementing the measures included in this PCAP will significantly benefit low-income and disadvantaged communities (LIDACs) on Oʻahu. This section identifies each LIDAC within the City's jurisdiction that are impacted by this PCAP and describes the City's framework for engagement with LIDAC for the purposes of PCAP development, as well as future climate action planning efforts, including development of the CCAP.

Identification of LIDACs

The City began identifying LIDACs using EPA's Climate and Economic Justice Screening Tool (CEJST). Because of Oʻahu's unique geographic and community characteristics as an island, all communities seek to benefit from implementation of this PCAP, even where LIDACs are prioritized first and foremost. Therefore, means

it was and determined that all LIDACs identified in the CEJST Tool will be impacted and benefit from the priority measures within this PCAP.

Table 4 lists the LIDACs as identified in the CEJST Tool affected by implementation of this PCAP.

TABLE 4. LIST OF LIDACS AFFECTED BY PCAP IMPLEMENTATION

Census Tract ID	Common Name	Region	PCAP Measures that Affect the LIDAC
15003009801	Mākua Valley	Leeward	1, 2, 4, 5, 6, 7, 8, 9, 10
15003009802	Mākaha	Leeward	1, 2, 4, 5, 6, 7, 8, 9, 10
15003009701	Waiʻanae Kai	Leeward	1, 2, 4, 5, 6, 7, 8, 9, 10
15003009704	Lualualei: Halona Rd.	Leeward	1, 2, 4, 5, 6, 7, 8, 9, 10
15003009608	Lualualei Transmitter	Leeward	1, 2, 4, 5, 6, 7, 8, 9, 10
15003008502	Kalaeloa	Leeward	1, 2, 4, 5, 6, 7, 8, 9, 10
15003008914	West Loch: Honowai School	Leeward	1, 2, 4, 5, 6, 7, 8, 9, 10
15003008702	Waipahu: St. Joseph School	Central	1, 2, 4, 5, 6, 7, 8, 9, 10
15003009400	Wahiawa Makai	Central	1, 2, 4, 5, 6, 7, 8, 9, 10
15003007502	Hālawa Valley	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003006809	Salt Lake: Ala ʻIlima Makai	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003006302	Kalihi: Kalena Drive	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10

15003006402	Kalihi Valley: Kamanaiki Street	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003006201	Kalihi: Kam IV Road	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003006202	Kalihi: Linapuni Street	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003006100	Kalihi Waena	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003006000	Kalihi: Umi Street	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003005900	Kalihi Kai: Mokauea Street	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003005600	Kapālama	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003005800	Kalihi Kai: Waiakamilo Rd.	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003005700	Iwilei-Anuenue	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003005500	Pālama	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003005400	Mayor Wright Housing	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003005300	ʻAʻala	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003005000	Kuakini	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003003900	Aloha Tower / Capital District	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003003502	Upper Pāwaʻa	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003003603	ʻAhana Street	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003002005	Ala Wai: Niu Street	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003002006	Ala Wai: Olohana Street	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003002300	Mōʻiliʻili	Urban Core	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
15003001100	Central Pālolo	Urban Core	1, 3, 4, 5, 6, 7, 8, 9, 10

CCSR found the CEJST tool to be insufficient in localized data to truly illustrate the number and location of LIDACs on Oʻahu. It, additionally, does not provide enough data layers in some instances to characterize the vulnerability of certain frontline communities to climate impacts understood locally through experienced hazard events and previous community engagement and conversation. CCSR combined the information available in CEJST with other local data sets and sources to ensure accurate representation of frontline and otherwise vulnerable or disadvantaged communities, inclusive of LIDACs, in the development of this PCAP. This accounting of LIDACs and the unique challenges they face as Oʻahu communities is detailed in Appendix E.

Engagement with LIDACs

The Coordination and Outreach section details how LIDACs were identified for engagement towards development of this PCAP, including development a Frontline CBO Database of contacts and relationships through community conversations and listening sessions. Also as described in that previous section, the PCAP outreach framework has laid a robust foundation for future engagement with LIDACs towards the development of the CCAP. The City has initiated procurement processes to contract CBOs who will receive adequate compensation to support the design and execution of engagement plans specifically tailored to their communities for use in the development of the CCAP. This approach aims to shift engagement practices towards a community-ownership model to ensure community voice is centered throughout the City's climate action planning efforts.

The City remains committed to proper and robust community engagement, education, distribution, and accessibility throughout implementation of this PCAP and development of a CCAP to address the concerns of the project area, communicate the time the project will take to implement, and ensure equitable benefits of implementation processes.

Anticipated Benefits and Disbenefits of Priority Measures

As a stated goal of this PCAP, a reduction in GHG emissions is anticipated through implementation of this PCAP, as previously detailed in Table 3, and not additionally discussed in this section. The additional community and equity benefits as a result of implementation of this PCAP are described below by priority measure. Where potential disbenefits can be anticipated, they are also detailed below with a description of potential solutions to overcome or avoid them.

Benefits and Disbenefits of Priority Measure 1:
Create an energy retrofit program for existing multi-unit affordable housing

The primary community benefit of this measure is a decreased living cost burdens via reductions in utility costs as a result of increased energy efficiency and decreased energy consumption through the installation of energy-based retrofits. The benefits of this measure additionally include increased mental and physical wellbeing for building occupants from retrofits that improve air quality by addressing proper ventilation and the replacement of gas appliances. They also include increased protection and resilience for individuals and households against climate hazards like heat waves when cooling retrofits are installed such as updated, energy-efficient HVAC systems, proper insulation, and cool roofs.

Disbenefits for this measure could include temporary or permanent displacement of tenants due to active construction, an increase in rent costs, or non-renewed leases. Active construction could pose additional disbenefits in terms of health and safety

concerns as a result of temporary decreases in air quality. Such disbenefits may be minimized with proactive and consistent information to tenants about retrofit projects.

Benefits and Disbenefits of Priority Measure 2:
Develop dedicated bus-only lanes along high-occupancy corridors

Bus-only lanes provide considerable community benefits, including improved air quality as a result of reduced idle times via increased efficiency of routes. Additionally, efficient bus lanes increase access to reliable public transportation, which benefits LIDAC households who rely primarily or solely on public transit to move around. Faster and more reliable services can save time and costs for low-income individuals who often have longer commutes. Bus-only lanes also increase safety due to communicated transit priority, fewer cars in bus lanes, and a natural buffer for pedestrians from the fast-moving flow of traffic.

Disbenefits of this measure could include displacement as development of transit corridors may lead to increased property values and gentrification. Additionally, should bus ridership rise and increase the number of affected users, affordability should be kept top-of-mind when evaluating fare structure. Disproportionately burdening low-income individuals who might rely on public transit is a disbenefit that could occur in the implementation of this measure. While the safety of certain transit system users could be increased due, previously designed intersections, if not modified, could increase the risk of accidents between cyclists, pedestrians, and motorists. Well-planned design, education for the public, and proper ADA compliance is crucial to the success and safety of this measure.

Benefits and Disbenefits of Priority Measure 3:
Expand the geographic, demographic and technological reach of shared micro-mobility

Community benefits of the expansion and electrification of micro-mobility services include increased access to additional modes of affordable, reliable transportation that reduce transportation cost burdens for residents reliant upon public transportation services. Additionally, bike-share can provide swing shift and/or third shift workers transportation options when other public transit systems like buses are not running. The electrification of bike-share options would increase efficiency of commute times while also appealing to a wider audience, including those with limited mobility. Increased accessibility to micro-mobility options can improve health outcomes for users—34% of Biki's members reported losing weight, the highest self-reported weight loss was among Native Hawaiians.

Disbenefits of this measure may include cost barriers to use due to membership fees and/or payment methods. Electrification of micro-mobility could additionally increase usage costs. Assessments should be conducted to evaluate provision of lower membership costs for low-income users. Additionally, as the island's current bike-share service territory is limited to the primary urban core, even with planned expansion, LIDACs outside of Honolulu will continue to lack access to such a service. Additional

transportation benefits should be considered to support LMI households in more rural areas of the island.

Benefits and Disbenefits of Priority Measure 4:
Reduce food waste and increase the diversion of food and other organic materials from the waste stream

A primary benefit of this measure is a reduction in waste, which produces a myriad of community benefits. These include less dependence on landfills and incinerators, which currently disproportionately impact marginalized communities on O‘ahu. A primary benefit of composting is the encouragement of a circular economy where profits are retained in local communities and creates a sustainable ecosystem responsive to community needs with greater personal investment and higher-quality product. Additional composting benefits include:

- Enhanced local soils that support local food production;
- Economical and resilient food system that encourages community resilience and enhances food security;
- Local innovation that stimulates the economy and creates jobs;
- Resilience for crops against extreme weather and other climate hazards; and
- Engaged and empowered community members with the tools for resource stewardship.

As a component of this measure, food recovery can increase access to nutritious and affordable food for food insecure individuals.

The geographic locations for implementation of this measure will have to be self-identified by community, which can potentially center implementation in well-resourced and activated communities, leaving other LIDACs without access to the localized composting system. The City should ensure all communities have access to information about this measure for potential consideration of implementation in their community. Costs for contribution to composting systems and use of composting product may be an additional barrier for some communities. Lastly, potential off-gassing, runoff, and/or other byproducts could have negative environmental impacts that may be addressed with proper environmental impact assessments prior to the implementation of composting systems. For actions related to food recovery, special care should be taken to ensure that food collected is viable to eat prior to distribution to avoid potential negative health impacts of this measure.

Benefits and Disbenefits of Priority Measure 5:
Strengthen building energy code update and review processes to increase efficiency of new buildings

Updated energy codes increase the energy efficiency of new buildings, which results in decreased energy costs for building occupants. Building efficiency improvements can also improve indoor air quality, provide better temperature regulation, and increase resilience during climate hazards as buildings better handle grid burden/management,

are more energy independent and provide greater protection from extreme weather events.

While long-term utility costs are decreased with more efficient building design, costs for residential unit ownership and lease could increase given the increased value of the property. This could put such sustainable living environments out of reach of LMI households. Amended codes, if not properly assessed with building experts and within O‘ahu’s unique development context, could create disproportionate impacts for small businesses, especially local builders and contractors, who may face increased compliance costs.

Benefits and Disbenefits of Priority Measure 6:
Establish a building deconstruction reuse and recycling program

The primary benefit of this measure is waste diversion, which decreases reliance on landfills that disproportionately harm LIDACs. Increased reuse of construction waste enhances the local economy by avoiding imported materials and keeping local dollars in local communities. This could generate new jobs in support of a circular economy.

Disbenefits could occur if proper pathways and training are not provided to support such a transition. In instances where deconstruction may be more expensive than traditional demolition, increased costs could be passed on to future property owners or tenants. Implementing financial incentives or subsidies for deconstruction can help mitigate this disbenefit.

Benefits and Disbenefits of Priority Measure 7:
Support a Community Solarize O‘ahu program to increase access to solar for low to moderate income households

Households that benefit from solar PV and battery systems through participation in the implementation of this measure will see lower utility cost burdens and increased resilience against grid disruptions. Additional components of this measure, such as access to EV charging infrastructure, can also reduce long-term transportation costs for participants. Greater access to PV can also increase energy independence. This measure will also create jobs as more households demand PV connection.

Disbenefits of this measure could include a disconnection from community for households unable to provide the upfront costs to participate in community purchasing. The City should work with Solarize partners to provide technical support for the design and permitting of new PV systems to ensure processes do not increase additional costs. Other disbenefits may include displacement of future residents due to increased costs and/or non-renewed leases.

Benefits and Disbenefits of Priority Measure 8:
Expand public electric vehicle charging on O‘ahu

Access to charging is directly related to increased EV adoption. Nationally, acceleration of EV demand may lower up-front costs of new and/or used vehicle purchases, in addition to the long-term costs benefits EV owners accrue annually. Pole-mounted charging, a component of this measure could vastly increase charging accessibility, particularly for non-urban areas. Paired with workforce development programs, this measure can create jobs for qualified technicians to maintain new EV chargers. Public chargers could have long wait times and be subject to monopolization or inconsiderate charging practices, such as parking in a charging stall without actively charging. This disbenefit could be tackled with proper rules, regulations and enforcement.

Benefits and Disbenefits of Priority Measure 9:
Support expansion of private car-share services for low- and moderate-income households

Community benefits of this measure include improved air quality because of less traffic congestion and fewer cars on the road. Fewer cars may translate to less space dedicated to parking, which provides opportunities for greater well-being for residents within micro-mobile cities. Access to a shared vehicle could drastically improve living conditions for whom independent vehicle ownership is currently out of reach. Such access to mobility can increase access to earning potential, participation in community, and interaction with the natural environment, which has a myriad of physical and mental health benefits. For others, substitution of independent car ownership with car-sharing can decrease transportation cost burdens that come with vehicle ownership.

Private car-share services may have associated costs, and while they can be more cost-effective than private car ownership, there's a risk that the pricing structure may still pose challenges for low-income households. Ensuring affordable membership fees and exploring subsidy options can address this concern. Determining which LMI communities are interested in this measure can ensure services are distributed appropriately. Requiring outreach to those communities as a condition to their approval for new car-share programs may enable the City to confirm support for car-share prior to deployment and ensure that deployment is equitable.

Benefits and Disbenefits of Priority Measure 10:
Implement high-priority projects from the O‘ahu Bike Plan

Benefits of this measure include increased safety for vulnerable road users, including bicyclists and pedestrians. Increasing protection for bikeway users can make biking a more attractive transportation mode, which results in fewer cars on the road and improved air quality. As more residents become bikeway users, they will additionally benefit from reduced transportation costs compared to owning a vehicle, as well as improved public health outcomes from engaging in physical activity. New bikeway infrastructure should be prioritized in currently underserved areas to increase the equity benefits of this measure.

Review of Authority

The City has reviewed existing statutory and regulatory authority to implement each priority measure contained in this PCAP. The authority to implement each priority measure is described below. For those measures where authority must be obtained to implement any portion of the measure, a description of action needed by key entities to obtain necessary authorities is also provided below.

Authority to Implement Priority Measure 1:
Create an energy retrofit program for existing multi-unit affordable housing.

This measure is consistent with the Revised Charter of Honolulu § 6-106 and the City's authority to coordinate and direct the development, preparation and implementation of plans and programs related to affordable housing, senior housing, and special needs housing.

The City is in discussions with potential partners to support implementation of this measure, including Hawai'i Energy, the administrator of Public Benefits Fund (PBF) monies for energy efficiency programs, which are collected as a fee on HECO customer utility bills. Oversight authority for the PBF and Hawai'i Energy is granted to the Hawai'i Public Utilities Commission, consistent with Hawai'i Revised Statutes (HRS) § 269-121.

Authority to Implement Priority Measure 2:
Develop dedicated bus-only lanes along high-occupancy transit corridors.

This measure is consistent with the Revised Charter of Honolulu § 6-1703 and DTS authority to direct and perform program planning, operation, and maintenance of the City's multi-modal transportation system in accordance with the City's General Plan and development plans.

Authority to Implement Priority Measure 3:
Expand the geographic, demographic and technological reach of shared micro-mobility.

This measure is consistent with the Revised Charter of Honolulu § 6-1703 and DTS authority to direct and perform program planning, operation, and maintenance of the City's multi-modal transportation system in accordance with the City's General Plan and development plans; and direct and perform the planning engineering, design, and construction for minor improvement projects for transportation systems, including bikeways.

Authority to Implement Priority Measure 4:
Reduce food waste and increase the diversion of food and other organic materials from the waste stream.

This measure is consistent with the Revised Charter of Honolulu § 6-803 and ENV authority to operate, maintain, expand, and upgrade the solid waste systems of the City, including, but not limited to, collection of waste from single-family residences and resource recovery programs. Additionally, this measure is consistent with the Revised Ordinances of Honolulu 2021 § 2-10.8 and CCSR authority to coordinate actions and policies of agencies within the City related to food security, sustainability, and climate resilience, including the development of partnerships and funding sources to encourage alignment with community groups working to address issues of the food and agricultural systems within the City.

As a component of this measure, siting for new compost facilities requires new solid waste permitting approval under the authority of the Hawai‘i Department of Health, consistent with HRS Chapter 342H Part I. The City intends to provide support to this measure’s implementing partners in navigating the state’s permitting processes.

Authority to Implement Priority Measure 5:
Strengthen building energy code update and review processes to increase efficiency of new buildings.

This measure is consistent with Revised Ordinances of Honolulu 2021 § 16B-1.1 and DPP authority to update and enforce the Building Energy Conservation Code for the City.

Authority to Implement Priority Measure 6:
Establish a building deconstruction reuse and recycling program.

This measure is consistent with the Revised Charter of Honolulu § 6-803 and ENV authority to operate, maintain, expand, and upgrade the solid waste systems of the City, including, but not limited to, collection of waste from single-family residences and resource recovery programs; as well as the preparation of functional plans that incorporate proactive and sustainable approaches for waste management, including reduction and recycling efforts to meet statewide GHG emissions reductions goals.

Authority to Implement Priority Measure 7:
Support a Community Solarize Program to increase access to solar for low- to moderate-income households.

As a supporting implementing partner of this measure, the City intends to provide technical support to lead implementing partners on the City’s permitting procedures for new solar PV projects, of which authority to do so is consistent with the Revised Charter of Honolulu § 6-1503 and DPP authority to administer and enforce the City’s zoning rules and regulations and establish procedures for the review of land utilization applications.

The City is in discussion with other lead and supporting partners in the development of this measure, including HECO, which administers grid integration of new PV systems

with oversight authority granted to the PUC, consistent with HRS § 269-142. Additional partners include the Hawai‘i Green Infrastructure Authority (HGIA), which has oversight authority of statewide loan and on-bill financing programs for renewable energy systems, including PV systems, consistent with HRS Chapter 196 Part IV.

Authority to Implement Priority Measure 8:
Expand public electric vehicle charging on O‘ahu.

This measure is consistent with the Revised Charter of Honolulu § 6-903 and DFM authority to maintain, perform program planning, and direct design and construction for City parking facilities, additionally consistent with such county authority granted in HRS § 265A-1.

Where implementation of this measure may require access to streets within the state right-of-way, the City will engage in discussions with HDOT for authority to access. The City is engaged in additional discussions with other implementing partners for this measure for certain components of this measure, including HECO, which has ownership of utility poles.

Authority to Implement Priority Measure 9:
Support expansion of private car-share services for low-and moderate-income households.

This measure is consistent with Revised Ordinances of Honolulu § 2-12.1 and DTS authority to plan, develop, promote, and coordinate ridesharing programs and other transportation systems management programs.

Authority to Implement Priority Measure 10:
Implement high priority projects from the O‘ahu Bike Plan.

This measure is consistent with the Revised Charter of Honolulu § 6-1703 and DTS authority to direct and perform the planning engineering, design, and construction for minor improvement projects for transportation systems, including bikeways. It is additionally consistent with the City’s Complete Streets Ordinance, Revised Ordinances of Honolulu 2021, Chapter 14, Article 18.

Conclusion

The City, in partnership with other governmental agencies, relevant stakeholders, and the broader O‘ahu community, is committed to continued planning, engagement, and action towards:

- Reduced greenhouse gas emissions;
- Prioritization of the needs of frontline communities;
- Investment in sustainable infrastructure, technologies, and practices;
- Creating good jobs;
- Leveraging multiple streams of funding sources; and
- Enhancing the quality of life for O‘ahu residents.

This PCAP is the start of deeper engagement and more continued development towards a Climate Action Plan Update for the City focused on emissions reductions by 20230. The PCAP is the first major deliverable under the CPRG planning grant awarded to the City, and the publication of a Climate Action Plan Update in 2025 will fulfill additional deliverable requirements of the CPRG award. The Climate Action Plan Update, or Comprehensive Climate Action Plan (CCAP), will further build on the GHG analyses initiated during the PCAP’s development and contains additional strategies for equitable and sustainable emissions reductions across all sectors. Additionally, the City will publish a status report in 2027 that details implementation progress for priority measures included in this PCAP and the forthcoming CCAP, any relevant updates to analyses, and next steps for continued implementation.

If you have questions about this PCAP or require additional information on the City’s climate action work, please contact:

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Appendix A:
GHG Inventory Methodology and Quality Assurance Procedures

The GHG emissions inventory contained within and utilized by this PCAP was created using guidance from this project's Quality Assurance Project Plan (QAPP), as well as workflows, methodologies, and data used by the State of Hawai'i Department of Health in building the state's annual inventories.

Where local, county-scope data was not available to calculate county-specific emissions for a source activity, estimates were derived by scaling down state-level data, obtained from the following sources:

- U.S. Energy Information Administration (EIA) State Energy Data System (SEDS)
    - Annual fuel consumption data by end-use sector

- State of Hawai'i Department of Business, Economic Development, and Tourism (DBEDT) State of Hawai'i Data Book and Economic Data Warehouse
    - County-specific data on de facto population, vehicle registrations by vehicle type, and other datasets used to calculate annual scaling factors

- U.S. Environmental Protection Agency (EPA) State Energy Data System (SEDS)
    - Annual fuel consumption data by end-use sector

- EPA Greenhouse Gas Reporting Program (GHGRP) Facility-Level Information on Greenhouse Gases Tool (FLIGHT)
    - Emissions data for large facilities

Inventory Methodology

ENERGY			
Source Activity	**Reference Data**	**Scaling Factor (SF)**	**Data Source**
Stationary Combustion			
Energy Industries	State-level data on fuel consumption of stationary combustion fuels	Population SF = O'ahu De Facto Population / HI State De Facto Population	EIA SEDS, DBEDT
Residential			
Commercial			
Industrial			
Transportation			
Ground Transportation	State-level data on consumption of fuel consumption of	Vehicles SF = Registered Vehicles on O'ahu / HI State	EIA SEDS, DBEDT

	ground transportation fuels	Total Registered Vehicles	
Marine Transportation	State-level data on consumption of fuel consumption of marine transportation fuels	Population SF	EIA SEDS, DBEDT
Aviation	State-level data on consumption of aviation gasoline and jet kerosene consumption	Seatmiles SF = Aggregate seatmiles originating from O‘ahu airports / Total from all airports in Hawai‘i Domestic Aviation SF = Aggregate seatmiles from O‘ahu airports to other US airports / Total from all Hawai‘i airports to other US airports Seatmiles International SF = 1.0 - Seatmiles Domestic SF	Bureau of Transportation Statistics - Air Carrier Statistics (Form 41 Traffic) - US Carriers
Military		Population SF	EIA SEDS
Incineration of Waste	Emissions Report for H-POWER facility	N/A	EPA FLIGHT
Oil and Natural Gas			
Non-Energy Uses	State-level data on consumption of aviation gasoline and jet kerosene consumption	Population SF	2021 Hawai‘i State GHG Inventory
IPPU			
Source Activity	**Reference Data**	**Scaling Factor (SF)**	**Data Source**
ODS Substitution	State-level data on consumption	Population SF	2019 Hawai‘i State GHG Inventory
Electrical Transmission & Distribution			
AFOLU			

Source Activity	Reference Data	Scaling Factor (SF)	Data Source
AFOLU Sources			
Enteric Fermentation	Projected estimates for county data on crop and livestock population in 2021	N/A	2017 Census of Agricultural
Manure Management			
Agricultural Soil Management			
Field Burning of Agricultural Residues			
Urea Application			
Agricultural Soil Carbon			
Forest Fires			
AFOLU Sinks			
Landfilled Yard Trimmings & Food Scraps	State-level data on emissions captured by carbon sink sources	Population SF	DES
Urban Trees		Aggregate area of all forest land cover on Oʻahu / Total forest land cover in Hawaiʻi	USGS
Forest Carbon			
WASTE			
Source Activity	**Reference Data**	**Scaling Factor (SF)**	**Data Source**
Landfills	Emissions Report for industrial landfills	N/A	EPA FLIGHT
Composting	County data on composted waste		
Wastewater	Projected and estimated emissions from Wastewater Data Treatment Plants (WWTP) on Oʻahu		

Appendix B:
Stakeholder List

Federal Agencies:

- U.S. Department of Housing and Urban Development
- U.S. Environmental Protection Agency
- U.S. Department of Energy

State Agencies:

- Governor's Office, Climate and Housing
- DCCA, Office of Consumer Protection
- Hawai'i State Energy Office
- Hawai'i Green Infrastructure Authority
- Hawai'i Public Utilities Commission
- State of Hawai'i Department of Transportation
- State of Hawai'i Department of Health (HDOH)
    - HDOH Chronic Disease Prevention & Health Promotion Division
    - HDOH Solid Waste Division
- State of Hawai'i Historic Preservation Division
- State of Hawai'i Department of Agriculture
- Hawai'i Public Housing Authority
- Hawai'i Community Development Authority
- Hawai'i Tourism Authority

Regional Local Governments:

- Hawai'i County
- Maui County
- Kaua'i County

City and County of Honolulu Departments and Agencies:

- Department of Transportation Services
- Department of Planning and Permitting
- Honolulu Police Department
- Honolulu Fire Department
- Honolulu Emergency Services Department
- Department of Facility Maintenance
- Department of Design and Construction
- Department of Environmental Services
- Department of Parks and Recreation

Location-/Industry-Specific Community Organizations:

- Hawai'i Appleseed
- Hawai'i Housing Finance and Development Corporation
- Honolulu Tenants Union
- Pacific Housing Assistance Corporation

- Shifted Energy
- Pacific Gateway Center
- SHADE Institute
- RE-use Hawai‘i
- Sustainable Coastlines Hawai‘i

Building Industry Representatives:
- AIA Honolulu
- BIA Hawai‘i
- EAH Housing
- Kamehameha Schools
- Land Use Research Foundation
- Alexander & Baldwin
- DR Horton
- Gentry Homes
- Castle & Cooke
- Hunt Companies
- Howard Hughes
- Hawai‘i Operating Engineers Industry Stabilization Fund
- Hunt Companies

Utilities:
- Hawaiian Electric
- Honolulu Board of Water Supply
- Hawai‘i Gas
- Hawai‘i Energy

Agricultural Associations:
- Full Circle Farm
- Hawai‘i Farm Hero

Unions/Workers Rights:
- ILWU Local 142
- Laborers’ International Union Local 368
- Hawai‘i Regional Council of Carpenters
- General Contractors Association of Hawai‘i
- ASHRAE Hawai‘i
- Masonry Institute of Hawai‘i
- Hawai‘i Teamsters Union
- Hawai‘i Workers Center

Community-Based Organizations:
- Aloha United Way
- Kōkua Kalihi Valley, Ho‘oulu ‘Āina
- Papakōlea Community Development Center
- Kōkua Kalihi Valley, KVIBE

- Hawai‘i Bicycle League
- Blue Planet Foundation
- BikeShare Hawai‘i
- Mālama Learning Center
- Kōkua Hawai‘i Foundation
- Surfrider Foundation
- Partners in Development Foundation
- Elemental Excelerator
- Energize Waianae
- Council for Native Hawaiian Advancement
- GoFarm Hawai‘i
- Community Compost movement
- Ma‘o Farms
- Aloha Harvest
- Hawai‘i Foodbank

Public Health Organizations:

- Kōkua Kalihi Valley
- Hawai‘i Public Health Institute
- Papa Ola Lokahi
- Alohacare
- Hawai‘i Community Health Worker Association
- Wai‘anae Comprehensive Health Center

Other Interested Organizations:

- O‘ahu Metropolitan Planning Organization
- AARP Hawai‘i
- Sustainable Transportation Coalition of Hawai‘i
- Ulupono Initiative
- Hawai‘i Solar Energy Association

Honolulu Neighborhood Boards (36 total)

Appendix C:
Outreach Efforts for Specific Priority Measures

An overview of outreach strategies utilized in the development of this PCAP across all priority measures are detailed in the Coordination and Outreach section. More detail on specific engagement efforts for components of certain priority measures are described below. For some priority measures, previous engagement efforts, initiated prior to the City's CPRG planning grant award, were also useful in the development of this PCAP and are also described below, where existing.

Outreach Efforts Specific to Priority Measure 1:
Create an energy retrofit program for existing multi-unit affordable housing.

CCSR initiated the outreach process by directly engaging with leaders from several key community organizations, including Hawai'i Appleseed, Honolulu Tenants Union, and Hawai'i Workers Center. These conversations were pivotal in introducing the green retrofit program concept and establishing collaborative frameworks with key stakeholders.

The City, in partnership with a consultant, held its first stakeholder engagement meeting specific to the development of this measure on January 19, 2024, which included roughly 40 individuals in attendance both online and in-person.

A brief presentation on the City's plans for this measure was also provided at the U.S. Housing and Urban Development Green & Resilient Retrofit Program Plus workshop on February 21, 2024. This workshop was a valuable platform to share program details to a broader audience, including potential collaborators and stakeholders. As a result of this meeting, the City has begun to engage broader partners addressing housing affordability and homelessness on O'ahu.

A presentation is scheduled with HECO's Low- and Moderate-Income Advisory Council for March 21, 2024. This engagement is essential for aligning the measure with HECO's goals for LMI customers.

Affinity groups to address key issues associated with the program are currently being planned and expected to take place in March and April 2024.

Outreach Efforts Specific to Priority Measure 2:
Develop dedicated bus-only lanes along high-occupancy corridors.

In the development of the City's existing King Street bus-only lane and planning towards a Kūhiō Avenue bus-only lane, DTS conducted extensive engagement with community

and transit riders. This included planned community engagement via educational materials on TheBus and interactive rider surveys during the planning and development stages of the project. For the expansion and scaling activities proposed in this measure, additional public town hall meetings, neighborhood board meetings, and other community discussions will be held. Requests and needs for the benefit of LIDACs will be prioritized.

Outreach Efforts Specific to Priority Measure 3:
Expand the geographic, demographic and technological reach of shared micro-mobility.

Previous engagement funded by the Hawai‘i Department of Health and conducted by Hawai‘i Workers Center provided critical information for this measure. The engagement aimed to gather insights on various transportation-related aspects from community members, primarily focusing on transportation methods to and from work, existing transportation barriers, feedback on potential strategies, and relevant demographic data. The initiative targeted diverse groups including residents of affordable housing communities, COFA Workers Association members, potential members of emerging worker associations, attendees of workers' rights trainings, and bus riders within the community.

Engagement activities include distribution of electronic and physical surveys, sharing survey links through newsletters and social media platforms, conducting interviews with workers' associations and community leaders, posting flyers at local businesses, and interviewing bus riders at transit stations. Challenges were encountered initially with the electronic survey format, but adjustments were made to ensure accessibility. Incentives such as gift cards were offered to encourage survey participation.

In total, 32 surveys were completed through a combination of organizer-led interviews and self-administered surveys and culminated in a Shift Worker Transportation Demand Management report.[34] The engagement efforts demonstrated a proactive approach in reaching out to various segments of the community to gather valuable insights for transportation planning initiatives.

Outreach Efforts Specific to Priority Measure 4:
Reduce food waste and increase the diversion of food and other organic materials from the waste stream.

The City’s strategy for expanding public education programs within the solid waste and recycling sector involves a multifaceted approach aimed at increasing public awareness and engagement. Beginning with the development of a comprehensive Public Education Plan in 2021, the City assessed the effectiveness of existing programs, identified areas for improvement, and set measurable goals for future outreach efforts. This plan addressed various audience sectors and prioritize education initiatives across ongoing and planned programs, ensuring tailored approaches to target different demographics and geographic regions. Additionally, the City plans to increase funding for public education programs and initiatives, recognizing the vital role education plays in the

success of solid waste and recycling programs. Efforts include seeking a dedicated resource or staff person to oversee education efforts, aiming to streamline and coordinate education initiatives for maximum impact.

To enhance accessibility of and engagement with food waste resources, ENV continues to make user-friendly improvements to its website and social media presence. Quarterly print advertisements, electronic mailers, and partnerships with local organizations further disseminate educational materials and promote sustainable practices. Hands-on initiatives such as home composting workshops and school recycling grant programs aim to empower citizens, schools, and communities to participate actively in waste reduction efforts. Moreover, the City sought to leverage public viewing areas and education centers at new refuse facilities to provide interactive learning experiences and promote understanding of waste management strategies. Through collaborative efforts with organizations like the National Resources Defense Council and Hawai‘i Public Radio, the City has aimed to amplify its messaging on food waste reduction and other key topics, ensuring widespread dissemination of information and fostering a culture of sustainability within the community.

Outreach Efforts Specific to Priority Measure 5:
Strengthen building energy code update and review processes to increase efficiency of new buildings.

CCSR, in partnership with DPP, successfully spearheaded the recent update of the City’s Building Energy Conservation Code to the 2018 edition of the IECC with local amendments in August 2023. To ensure a thorough and inclusive process, CCSR conducted three virtual webinar and feedback sessions dedicated to discussing various components of the proposed code. Recognizing the significance of involving key stakeholders in the code development process, the virtual sessions were open to the public. Participants included developers, architects, engineers, and policymakers.

Additional engagement efforts include the Honolulu Climate Change Commission’s O‘ahu Design and Construction Stakeholder Focus Group towards development of its building emissions reductions guidance document. This initiative convened a virtual stakeholder discussion in spring 2021 to gather feedback and enrich guidance with local expertise. Identifying stakeholders from eight sectors, including non-profits, developers, and academia, the group gathered insights from 20 participants and received further input through an online survey. A subsequent round of virtual discussions in summer 2022 provided additional written feedback. Discussions and surveys highlighted concerns over climate-related risks such as sea level rise and heatwaves, emphasizing the importance of addressing social and financial costs.

Outreach Efforts Specific to Priority Measure 6:
Establish a building deconstruction reuse and recycling program.

Initial engagement on this measure occurred at an American Institute of Architects of Honolulu Committee on the Environment meeting in August 2023 in which Re-use

Hawai‘i spoke to attendees about construction waste opportunities and challenges. This event served as a valuable platform for gaining exposure to best practices and innovative approaches within the realm of building deconstruction, reuse, and recycling.

Outreach Efforts Specific to Priority Measure 7:
Support a Community Solarize O‘ahu program to increase access to solar for low- to moderate-income households.

CCSR has actively collaborated with the community over the past three years to initiate a community solarize campaign, with geographic focuses on the North Shore and Wai‘anae. CCSR regularly participates in Solarize Wai'anae advisory meetings to help guide implementation of this measure and provide technical support. Additionally, CCSR staff participated in community-organized events at numerous locations around the island. Early meetings consisted of relationship building and organizational discussions with community leaders on how to stand up a Solarize campaign. Later events were focused on outreach where community attendees were provided information about Solarize campaigns and had the opportunity to speak with CCSR, HECO, Hawai‘i Energy, Hawai‘i State Energy Office and other partners. Surveys were conducted to collect interest in joining the campaigns and better understand community needs and interests regarding rooftop solar. Some of these events included:

- Solarize Waianae Organizational Meeting, Kapolei Kaiser Clinic, 12/13/21;
- Solarize Ko‘olauloa tabling event, Kahuku Elementary School, 10/8/22;
- Solarize Wai‘anae tabling event, Wai‘anae Mall, 12/10/22; and
- Solarize Wai‘anae tabling event, 4/1/23.

Outreach Efforts Specific to Priority Measure 8:
Expand public electric vehicle charging on O‘ahu.

Earlier outreach by key partners to collect input on the need for public EV charging includes HECO’s Charge Up Hawai‘i program in 2021.[35] The City also has significant experience in addressing broader residential parking challenges via recent work on Residential Parking Zones (RPZs) which highlight the importance of direct community engagement in the management of scarce parking in high density neighborhoods.

Outreach Efforts Specific to Priority Measure 9:
Support expansion of private car-share services for low- and moderate-income households.

As it relates to this measure, public street parking is a sensitive issue in many, if not all neighborhoods on O‘ahu. The City has recently done considerable outreach to enable the establishment of Residential Parking Zones (RPZs), which offer a system for limiting who parks in a given neighborhood.[36] Dedicating parking to car-share can be perceived as taking parking away from residents, if not supported in a given neighborhood. Other jurisdictions around the country have documented the importance of outreach and communication in order to successfully deploy dedicated public parking for car-share.[37] As the City’s RPZ program continues rollout, the City may engage in

neighborhood-level discussions on EV car-share parking towards development of future RPZs.

Outreach Efforts Specific to Priority Measure 10:
Implement high priority projects from the Oʻahu Bike Plan.

The City has dedicated significant efforts to outreach for their bike plan and complete streets project. These endeavors have involved collaboration among multiple city departments, including the Department of Transportation Services, the Department of Planning and Permitting, and the Department of Parks and Recreation, among others. Through a variety of engagement methods such as community meetings, online surveys, and public forums, stakeholders from all sectors including residents, advocacy groups, businesses, and relevant organizations were actively involved in providing feedback. The extensive outreach sought input on proposed infrastructure enhancements, safety measures, and policy developments related to biking and complete streets. These sustained efforts demonstrate the commitment of Honolulu to improve transportation options, encourage active lifestyles, and create safer and more accessible streets for everyone.

Appendix D:
Methods and Assumptions for Determining Cumulative Emissions Reductions

The below table details the assumptions and methods utilized in determining the cumulative emissions reductions for each priority measure contained within this PCAP.

Should more information on this data be required, please contact CCSR at matthew.gonser@honolulu.gov or (808) 768-2277.

Priority Measure #	Priority Measure	Method for Quantifying GHG Reductions	Key Assumptions	Formula for Emissions Reduced	Cumulative Emissions Reduced, In MTCO2e 2025-2030	Cumulative Emissions Reduced, In MTCO2e 2025-2050	Quantification Tool or Model Used
1	Create an energy retrofit program for existing multi-unit affordable housing	GHG reductions were estimated based on aggregate reductions in electricity consumption of retrofitted units in multifamily buildings with 5+ units and with income levels of 80% AMI or lower.	Buildings to be retrofitted throughout 2025-2050 include existing buildings as of 2025 as well as those built after 2025 but also need retrofits. Housing units are enrolled in phases through 2050.	Emissions reduced per retrofitted housing unit = Average annual kwh usage * 10% savings * EF	54,642	244,583	Custom spreadsheet model
2	Dedicated bus-only lanes along high-occupancy transit corridors	GHG reductions were estimated as the sum of (1) the net reduction in emissions associated with mode share changes, and (2) emissions reduction due to fuel savings from reduced idle time	Bus-only lanes or transit priority lanes (TPLs) reduce travel time by about 20% and lead to changes in the commute mode share. From 2025-2030, TPLs to be implemented under the Skyline Connect Benefits will be fully operational for a total of two (2(years only. For an estimate of the cumulative reduction in emissions from 2025-2050, high-occupancy transit corridors are defined as the Top 25 bus routes with the highest aggregate passenger miles traveled (PMT). It is assumed the TPLs for these routes will be operational for 20 years within the 2025-2050 period.	GHG reductions due to mode share changes + GHG reductions due to reduction in idle time	3,834	117,764	Trip Reduction Impacts of Mobility Management Strategies (TRIMMS)
3	Expand geographic, demographic and technological reach of shared micro-mobility	GHG reductions were derived from annual emissions reduction calculated by Bikeshare Hawaii	The adoption of ebikes will further increase emissions reductions from avoided car trips / VMT by 300% (NABSA eBike Adoption Calculation Factor)	GHG reductions = emissions avoided from reduction in ICE vehicle trips + emissions avoided from eliminated trips needed to charge e-bikes	32,527	162,635	Bikeshare Hawaii model
4	Reduce food waste and increase the diversion of food and other organic materials from the waste stream	GHG reductions were estimated by calculating emissions associated with avoided foodwaste in landfills, given a goal of reducing 50% of food waste by 2030.	Food waste is assumed to be reduced at a constant linear rate from 2025 until 2030, when the city is expected to meet its 50% reduction goal. Total amount of generated food waste is assumed to remain at the 2030 levels until 2050.	Landfilled food waste * 50% * Emision Factor	5,899	39,607	EPA Waste Reduction Model (WARM); custom spreadsheet model
5	Strengthen building energy code update and review processes to increase efficiency of new buildings	GHG reductions were scaled from statewide code-to-code energy savings, using an electricity sales-based scaling factor of 0.65 to estimate energy savings for Honolulu.	Hawaii has four (4) years of lag time in adopting new building codes for both residential and commercial codes (DOE-PNNL, 2021)	Total cumulative emissions reduction for CCH = (HI Statewide 2025 - 2040 reductions + HI Statewide 2040-2050 reductions) * 0.65	686,700	3,629,700	DOE-PNNL model (2021); custom spreadsheet model
6	Establish a building deconstruction reuse and recycling program	GHG reductions were estimated as emissions associated with the total aggregate construction and demolition waste that were diverted from landfills from 2025-2050, based on a 30% reduction by 2025 and 60% by 2050.	Diverting waste do not generate emissions and waste collected are 100% diverted	Waste diverted by type * Emission Factors per waste type	4,122	10,417	EPA Waste Reduction Model (WARM); custom spreadsheet model

Priority Measure #	Priority Measure	Method for Quantifying GHG Reductions	Key Assumptions	Formula for Emissions Reduced	Cumulative Emissions Reduced, In MTCO2e 2025-2030	Cumulative Emissions Reduced, In MTCO2e 2025-2050	Quantification Tool or Model Used
7	Support a Community Solarize Program to increase access to solar for low- to moderate-income households	GHG reductions were estimated by calculating avoided emissions from "solarizing" single-family housing units at income levels of 100% AMI or lower.	Solarized housing units would consume all solar power generated and generate power at the same rate from year of entry in the program until 2050. Housing units are solarized in cohorts.	Emissions reduced per solarized housing unit * 540 kwh generated from solar * Emission Factor	669,965	3,751,804	EPA Emissions & Generation Resource Integrated Database (eGRID); custom spreadsheet model
8	Expand public electric vehicle charging on O ‘ahu	GHG reductions were estimated by calculated as the net reduction in emissions associated with new electric vehicles.	Registered vehicles on O'ahu will increase at the same rate as New electric vehicles are assumed to replace ICE / fossil fuel vehicles, such that electric vehicles comprise 30% of new vehicle sales in 2030, 63% by 2040, and 85% by 2050 (HITransportation CAP).	GHG reduced per electric vehicle = (Ave. VMT of 8,705 * Ave. ICE fuel economy * Emission Factor) - (Ave. VMT of 8,705 * Ave. EV efficiency of BEV/PHEV * Emission Factor)	103,947	4,580,705	EPA Emissions & Generation Resource Integrated Database (eGRID); Custom spreadsheet
9	Support expansion of private car-share services for low- to moderate-income households	GHG reductions were estimated by calculating reduced emissions from VMT shed by new carshare users.	Carshare services are intergrated with public transit. Based on a 2021 market demand study commissioned by the study, potential new carshare users are single-occupancy drivers with short work commutes and who are identified as "Active Aspirers," a market segment of drivers who want to reduce VMT and have a positive view of carshare and public transit.	GHG reduced per new carshare user = Ave. VMT * 13.3% reduction in VMT * Ave. car fuel economy * Emission Factor	469	7,833	Custom spreadsheet model
10	Implement high priority projects from the O‘ahu Bike Plan	GHG reductions are estimated as the aggregate change emissions due to a change in the mode share of bicycling from 1% to 2%.	Assuming the change in mode share is assumed to occur from 2025-2026, the 2% mode share of bicycling will be in effect for three (3) years from 2027-2030. The change in commute behavior are permanent, i.e., commuters who shift from commute to work by driving alone made the shift to bicycling will not revert to other modes.	Aggregate reductions in SOV VMT * Ave. car fuel economy * Emission Factor	32,650	239,435	Trip Reduction Impacts of Mobility Management Strategies (TRIMMS); custom spreadsheet model

Appendix E:
O‘ahu CEJST Summary

The City primarily utilized the EPA’s CEJST Tool to identify LIDACs on Oahu for the purposed of developing this PCAP. However, as detailed in the Low-Income and Disadvantaged Community Analysis section, CCSR found the CEJST tool to be insufficient in localized data to accurately illustrate vulnerability in O‘ahu’s communities. Specifically, geographic areas not included in the CEJST but known locally contain low-income and disadvantaged households include Windward O‘ahu, North Shore, and Hawaiian Homelands.

The table below provides additional analysis for LIDACs, as identified by the CEJST Tool, that includes other localized data in order to better represent vulnerabilities in O‘ahu’s communities for the purposes of evaluating priority measures contained within this PCAP. Additional data sets and sources used to complete this further analysis include:

- Aloha United Way Hawai‘i, ALICE County Report 2021: https://www.unitedforalice.org/county-reports/hawaii
- Social Vulnerability Index for Hawai‘i: https://storymaps.arcgis.com/stories/72c8fcce8e0f405abfc9b73658240f25
- Hawai‘i Statewide GIS Program, Fire Risk Areas: https://geoportal.hawaii.gov/datasets/HiStateGIS::fire-risk-areas/explore?location=19.178539%2C-157.320215%2C7.74&style=risk_rating
- City and County of Honolulu, Climate Ready O‘ahu Web Explorer: https://cchnl.maps.arcgis.com/apps/View/index.html?appid=6694193a396f40fb87f78e98fbad7d73
- Greenlink Equity Map: https://www.equitymap.org
- Hawai‘i Department of Health, Groundwater Contamination Viewer: https://health.hawaii.gov/sdwb/groundwater-contamination-viewer/
- Hawai‘i Department of Hawaiian Homelands, GIS Maps: https://dhhl.hawaii.gov/po/maps/
- PacIOOS, State of Hawaii Sea Level Rise Viewer: https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/

Data not included in either CEJST or the analysis in this appendix, but which the City believes would be invaluable in further evaluation of community vulnerabilities include:

- Intergenerational and extended family households
- Military households
- Household commute distances
- Gentrification

Census Tract #	Common Name	Geographic Area	Median Household Income (CEJST)	Cimate Hazards (CEJST)	Social Challenges (CEJST)	Median Household Income (local sources)	Climate Hazards (local sources)	Other Challenges (local sources)
15003009801	**Makua Valley**	Leeward	$92,917		92nd percentile for asthma 67th percentie for low income 96th percentile for transportation barriers	$56,705	High Fire Risk High Tsunami Risk Erosion Risk 40% Canopy Cover	3.2% energy burden 11.8% without health insurance 14.8% lack internet High Elderly Population 44.2% Native Hawaiian 30% SNAP
15003009802	**Makaha**	Leeward	$55,673		97th percentile for asthma 82nd percentile for low income	$60,123	High Fire Risk High Tsunami Risk 16% Canopy Cover	9.66% energy burden 16.2% without health insurance 21.9% lack internet 56.2% Native Hawaiian 43% SNAP
15003009701	**Waianae Kai**	Leeward	$27,813	93rd percentile for projected flood risk	90th percentile for low income 98th percentile for asthma 94th percentile for housing cost 98th percentile for transportation barriers 92nd percentile for traffic proximity and volume 95th percentile for poverty 96th percentile for unemployment 17% of people 25+ without a high school diploma	$31,603	High Fire Risk High Tsunami Risk Erosion Risk 39% Canopy Cover	4.91% energy burden 17.7% without health insurance 33.3% lack internet 55.3% Native Hawaiian 51% SNAP
15003009704	**Lualualei Halona Rd.**	Leeward	$101,667		94th percentile for asthma 65th percentile for low income 93rd percentile for transportation barriers	$101,667	High Fire Risk High Tsunami Risk 11% Canopy Cover	3.42% energy burden 14.5% without health insurance 15.7% lack internet 55% Native Hawaiian 25% SNAP
15003009608	**Lualualei Transmitter**	Leeward	$50,714		92nd percentile for unemployment 10% of people 25+ without a high school diploma	$68,468	High Fire Risk High Tsunami Risk Erosion Risk 44% Canopy Cover	11.6% energy burden 13.4% without health insurance 25.2% lack internet 58.1% Native Hawaiian 39% SNAP
15003008502	**Kalaeloa**	Leeward	$55,833		94th percentile for asthma 69th percentile for low income 99th percentile for lack of indoor plumping 96th percentile for transportation barriers 98th percentile for unemployment 11% of people 25+ without a high school diploma	$55,833	High Fire Risk High Tsunami Risk 22% Canopy Cover	5.06% energy burden 14.1% without health insurance 29.8% lack internet 24.3% Native Hawaiian 17% SNAP
15003008914	**West Loch: Honowai School**	Leeward	$72,679		91st percentile for linguistic isolation 14% of people 25+ without a high school diploma	$69,154	High Fire Risk 7% Canopy Cover	6.24% energy burden 14.9% without health insurance 17% lack internet High Elderly Population 11.9% Native Hawaiian 36% SNAP
15003008702	**Waipahu: St. Joseph School**	Central	$47,361		96th percentile for linguistic isolation 19% of people 25+ without a high school diploma	$48,380	High Fire Risk 18% Canopy Cover	4.01% energy burden 14.3% without health insurance 37% lack internet High Elderly Population 9.8% Native Hawaiian 18% SNAP
15003009400	**Wahiawa Makai**	Central	$63,785		91st percentile for proximity to superfund sites 83rd percentile for low income 99th percentile for traffic proximity and volume	$45,204	Medium Fire Risk 26% Canopy Cover	6.33% energy burden 15% without health insurance 31.9% lack internet Contaminated water samples High Elderly Population 26.3% Native Hawaiian 32% SNAP

Census Tract #	Common Name	Geographic Area	Median Household Income (CEJST)	Cimate Hazards (CEJST)	Social Challenges (CEJST)	Median Household Income (local sources)	Climate Hazards (local sources)	Other Challenges (local sources)
15003007502	**Halawa Valley**	Urban Core	Missing data		92nd percentile for unemployment 20% of people 25+ without a high school diploma	Missing data	77% Canopy Cover	Contaminated water samples High Elderly Population 25.1% Native Hawaiian
15003006809	**Salt Lake: Ala Ilima Makai**	Urban Core	$55,337		95th percentile for linguistic isolation 16% of people 25+ without a high school diploma	$70,491	Low Fire Risk Medium Tsunami Risk 5% Canopy Cover	2.38% energy burden 12% without health insurance 19.9% lack internet 14.9% Native Hawaiian 21% SNAP
15003006302	**Kalihi: Kalena Drive**	Urban Core	$43,155		95th percentile for asthma 93rd percentile for diabetes 94th percentile for low income 95th percentile for transortation barriers 98th percentile for traffic proximity and volume 97th percentile for linguistic isolation 93rd percentile for poverty 92nd percentile for unemployment 28% of people 25+ without a high school diploma	$43,155	Low Fire Risk 39% Canopy Cover	16.5% Native Hawaiian 52% SNAP
15003006402	**Kalihi Valley: Kamanaiki Street**	Urban Core	$115,511		91st percentile for linguistic isolation 19% of people 25+ without a high school diploma	$100,45	Low Fire Risk 75% Canopy Cover	2.57% energy burden 12.6% without health insurance 14.7% lack internet High Elderly Population 17.1% Native Hawaiian 22% SNAP
15003006201	**Kalihi: Kam IV Road**	Urban Core	$40,583		91st percentile for linguistic isolation 19% of people 25+ without a high school diploma	$63,462	Low Fire Risk 6% Canopy Cover	2.64% energy burden 14.7% without health insurance 29.9% lack internet 12.3% Native Hawaiian 24% SNAP
15003006202	**Kalihi: Linapuni Street**	Urban Core	$38,400		99th percentile for asthma 97th percentile for low income 92nd percentile for housing cost 93rd percentile for proxmity to hazardous waste facilities 99th percentile for traffic proximity and volume 94th percentile for wastewater discharge 99th percentile for linguistic isolation 94th percentile for poverty 94th percentile for unemployment 27% of people 25+ without a high school diploma	$38,400	Low Fire Risk High Tsunami Risk 20% Canopy Cover	5.96% energy burden 23.2% without health insurance 52.1% lack internet 14.6% Native Hawaiian 61% SNAP
15003006100	**Kalihi Waena**	Urban Core	$107,202		93rd percentile for linguistic isolation 25% of people 25+ without a highschool diploma	$113,787	Low Fire Risk 10.3% Native Hawaiian 10% SNAP	3.35% energy burden 13.1% without health insurance 21.3% lack internet
15003006000	**Kalihi: Umi Street**	Urban Core	$59,474		95th percentile for linguistic isolation 30% of people 25+ without a high school diploma	$84,107	Low Fire Risk 3% Canopy Cover	5.42% energy burden 14.7% without health insurance 14.5% lack internet 8% Native Hawaiian 18% SNAP
15003005900	**Kalihi Kai: Mokauea Street**	Urban Core	$60,500		99th percentile for linguistic isolation 28% of people 25+ without a high school diploma	$59,375	Low Fire Risk High Tsunami Risk 2% Canopy Cover	3.43% energy burden 17.6% without health insurance 29.3% lack internet FEMA's Risk Index: Relatively Moderate 25.6% Native Hawaiian 20% SNAP

Census Tract #	Common Name	Geographic Area	Median Household Income (CEJST)	Cimate Hazards (CEJST)	Social Challenges (CEJST)	Median Household Income (local sources)	Climate Hazards (local sources)	Other Challenges (local sources)
15003005600	**Kapalama**	Urban Core	$84,095	90th percentile for projected flood risk	66th percentile for low income 91st percentile for diabetes 98th percentile for proximity to hazardous waste facilities 99th percentile for traffic proximity and volume 91st percentile for underground storage tanks and releases 94th percentile for wastewater discharge 99th percentile for linguistic isolation 28% of people 25+ without a high school diploma	$44,509	Low Fire Risk 9% Canopy Cover	5.71% energy burden 15.6% without health insurance 29.1% lack internet Contaminated water samples High Elderly Population 9.7% Native Hawaiian 29% SNAP
15003005800	**Kalihi Kai: Waiakamilo Rd.**	Urban Core	$71,550		98th percentile for linguistic isolation 36% of people 25+ without a highschool diploma	$55,991	Low Fire Risk High Tsunami Risk 6% Canopy Cover	11.78% energy burden 15.5% without health insurance 25.6% lack internet 16.4% Native Hawaiian 16% SNAP
15003005700	**Iwilei-Anuenue**	Urban Core	$45,132	97th percentile for projected flood risk	87th percentile for low income 99th percentile for lack of indoor plumbing 98th percentile for proximity to hazardous waste facilities 97th percentile for diesel particulate matter exposure 99th percentile for traffic proximity and volume 93rd percentile for underground storage tanks and releases 94th percentile for wastewater discharge 97th percentile for linguistic isolation 93rd percentile for poverty 25% of people 25+ without a high school diploma	$40,924	Low Fire Risk High Tsunami Risk Erosion Risk 3% Canopy Cover	9.53% energy burden 17.1% without health insurance 29.9% lack internet FEMA's Risk Index: Relatively High High Elderly Population 17.6% Native Hawaiian 20% SNAP
15003005500	**Palama**	Urban Core	$75,000		99th percentile for linguitic isolation 30% of people 25+ without a high school diploma	$63,438	Low Fire Risk 7% Canopy Cover	2.64% energy burden 15.2% without health insurance 30.4% lack internet High Elderly Population 10.5% Native Hawaiian 21% SNAP
15003005400	**Mayor Wright Housing**	Urban Core	$33,939		99th percentile for asthma 94th percentile for diabetes 96th percentile for low life expectancy 97th percentile for low income 98th percentile for proximity to hazardous waste facilities 99th percentile for traffic proximity and volume 92nd percentile for undergroundstorage tanks and releases 99th percentile for linguistic isolation 90th percentile for poverty 33% of people 25+ without a high school diploma	$33,939	Low Fire Risk 3% Canopy Cover	6.23% energy burden 23.3% without health insurance 39.6% lack internet High Elderly Population 11.1% Native Hawaiian 60% SNAP
15003005300	**Aala**	Urban Core	$37,460		94th percentile for diabetes 72nd percentile for low income 94th percentile for housing cost 98th percentile forproximity to hazardous waste facilities 99th percentile for traffic proximity and volume 99th percentile for linguistic isolation 37% for people 25+ without a high school diploma	$37,064	Low Fire Risk 19% Canopy Cover	5.18% energy burden 15.9% without health insurance 28.8% lack internet 11.4% Native Hawaiian 30% SNAP
15003005000	**Kuakini**	Urban Core	$46,583		95th percentile for linguistic isolation 14% for people 25+ without a high school diploma	$59,767	Low Fire Risk 14% Canopy Cover	3.40% energy burden 11.3% without health insurance 18.5% lack internet 12.8% Native Hawaiian 7% SNAP

Census Tract #	Common Name	Geographic Area	Median Household Income (CEJST)	Cimate Hazards (CEJST)	Social Challenges (CEJST)	Median Household Income (local sources)	Climate Hazards (local sources)	Other Challenges (local sources)
15003003900	**Aloha Tower/ Capital District**	Urban Core	$25,104	91st percentile for projected flood risk	83rd percentile for low income 94th percentile for diabetes 92nd percentile for heart disease 91st percentile for housing cost 98th percentile for proximity to hazardous waste facilities 99th percentile for traffic proximity and volume 92nd percentile for underground storage tanks and releases	$25,104	Low Fire Risk High Tsunami Risk 12% Canopy Cover	6.77% energy burden 12.8% without health insurance 52.7% lack internet High Elderly Population 11.6% Native Hawaiian 0% SNAP
15003003502	**Upper Pawaa**	Urban Core	$56,953		96th percentile for linguistic isolation 15% for people 25+ without a high school diploma	$49,712	Low Fire Risk 7% Canopy Cover	3.33% energy burden 10.9% without health insurance 33.9% lack internet 9.9% Native Hawaiian 11% SNAP
15003003603	**Ahana Street**	Urban Core	$61,071		90th percentile for diabetes 72nd percentile for low income 95th percentile for proximity to hazardous aste facilities 93rd percentile for proximity to risk management plan facilities 99th percentile for traffic proximity and volume 96th percentile for underground tanks and releases 98th percentile for linguistic isolation 16% of people 25+ without a high school diploma	$32,612	Low Fire Risk 14% Canopy Cover	6.62% energy burden 12.8% without health insurance 41.6% lack internet 8.3% Native Hawaiian 12% SNAP
15003002005	**Ala Wai: Niu Street**	Urban Core	$50,598		91st percentile for linguistic isolation 10% of people 25+ without a high school diploma	$54,292	Low Fire Risk High Tsunami Risk 10% Canopy Cover	1.97% energy burden 9.8% without health insurance 24.2% lack internet 5.8% Native Hawaiian 0% SNAP
15003002006	**Ala Wai: Olohana Street**	Urban Core	$56,300	94th percentile for projected flood risk	68th percentile for low income 92nd percentile for housing cost 94th percentile for proximity to hazardous waste facilities 99th percentile for traffic proximity and volume	$56,750	Low Fire Risk High Tsunami Risk 12% Canopy Cover	1.07% energy burden 9.9% without health insurance 18.6% lack internet 5.6% Native Hawaiian 5% SNAP
15003002300	**Moiliili**	Urban Core	$44,201		92nd percentile for linguistic isolation 12% of people 25+ without a high school diploma	$51,565	Low Fire Risk 7% Canopy Cover	High Elderly Population 12.1% Native Hawaiian 10% SNAP
15003001100	**Central Palolo**	Urban Core	$49,359		95th percentile for linguistic isolation 12% of people 25+ without a high school diploma	$48,462	Low Fire Risk 17% Canopy Cover	5.18% energy burden 12.3% without health insurance 37.4% lack internet High Elderly Population 19.5% Native Hawaiian 32% SNAP

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