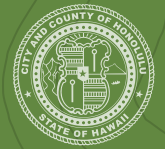


CITY AND COUNTY OF HONOLULU

Annual Sustainability Report

2022



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Contours of Change

The lines that animate the 2022 Annual Sustainability Report are inspired by topographic map lines that bring a third dimension to the roots of our culture in Hawai'i - our land and ocean. The concentric circles also evoke how change happens through a "ripple effect." The actions of just one individual impacts others, and when we work together, change can occur island-wide.

The front cover of this report features volunteers at MA'O Organic Farms in Wai'anae. Credit: Office of Climate Change, Sustainability, and Resiliency

2021 turned out to be another year that deeply tested our community resilience and sustainability resolve. In the face of challenges, progress was made, but the challenges also bring more urgency to double down on our goals and drive action.



Ongoing COVID ups and downs continued to impact, shape, and redefine our lives. The year started and ended with floods, including a Presidential disaster declaration. We also began what is now a growing fresh water strain following water system and aquifer contamination from the U.S. Navy’s Red Hill Bulk Fuel Storage Facility.

And into this year we all received important notices from two of our utilities: (1) Hawaiian Electric—forewarning increasing costs of electricity of about 10% because of global dynamics and our still heavy and fragile reliance on oil imports for energy; and (2) Board of Water Supply (BWS)—requesting voluntary water use reduction by 10% due to the Red Hill issues and constraints on the use of that aquifer and fresh water resource. These events highlight that now more than ever, new solutions and actions are needed to support our resource management, affordability, economic development and resilience goals. Across water resource management and energy use for transportation, existing buildings, and new buildings, efficiency is security. Saving water and energy saves money, expresses our respect and values for these resources and ‘āina, and creates a more affordable, secure, and Resilient O‘ahu.

The sustainability data tracked in this report is produced for accountability and transparency, ensuring learning and course corrections to follow through on our goals. These categories and data remind us what’s at stake and what’s necessary to transform the sustainability and resiliency of both City operations and our island community.

The path forward towards O‘ahu’s resilient energy future and staving off climate change impacts was made clear when on Earth Day 2021 Mayor Rick Blangiardi released the City’s first-ever Climate Action Plan (CAP) to combat climate change and eliminate fossil fuel emissions. The CAP outlines 9 strategies and 47 actions for O‘ahu to pursue to reduce emissions by 45% by 2025, and put us on the path to carbon neutrality by 2045. The creation of the CAP included more than two years of community, stakeholder, and departmental engagement, with more than 2,000 individual inputs from residents.

Additional resilience headway includes:

- Honolulu being honored by the American Council for an Energy-Efficient Economy’s City Clean Energy Scorecard as among the “most improved” cities nationwide for clean energy and transportation actions, and moving up in the ranking to number 24 (from 41) out of 100 cities.
- The implementation of a City-wide Energy Savings Performance Contract that makes major water and energy efficiency upgrades to City facilities, saves taxpayer money, and boosts clean energy jobs.
- Clean City fleet transition including new electric bus chargers and 17 electric buses added to the fleet.
- Securing approximately \$2.5 million in direct or in-kind federal and private funding to drive action on 10+ resilience and climate action projects.
- Launching in partnership with the U.S. Army Corps of Engineers a flood mitigation reevaluation study in the Ala Wai Canal Watershed.
- Introducing and facilitating the City’s Equity Foundations Training for City employees, which hosted 54 participants from 22 City departments and agencies over a spring and fall five-week series to gain an understanding of foundational equity concepts related to City operations.

We’d like to mahalo the many folks who continue supporting and engaging with the City in the pursuit of a more resilient island home. The work we put in now will determine how well we will be able to safeguard our ‘āina and future generations. Change isn’t easy, but climate change is harder. Together we are capable of overcoming any obstacle.

Imua!

Matthew J. Gonser
 Chief Resilience Officer
 & Executive Director
 City and County of Honolulu
 Office of Climate Change,
 Sustainability and Resiliency

Reporting on Our Progress

The City is committed to transparency, fairness, informed decision making, and accountability in everything we do. This requires tracking and reporting overall performance in meeting sustainability objectives and targets. With this kuleana comes an undeniable sense of urgency to make progress on climate action—reducing and eliminating the drivers of climate change—and local resilience across several critical community priorities. This reporting is affirmed by and fulfills the expectations of O’ahu residents as defined in Charter Section 6-107 and Ordinance 20-47.

The 2022 Annual Sustainability Report reflects on progress achieved in 2021. For the first time, the Annual Sustainability Report features a section on

Food Security and Sustainability, important for both climate and resilience, as well as economic revitalization and growth goals. Challenges for household food security were magnified through ongoing COVID-19 economic strain, and responsive innovations and partnerships created new opportunities for farmers and consumers. Growing sustainable food systems is key in building a resilient O’ahu.

The work does not rest. We celebrate progress where made and take to heart where more is needed. Resilience requires learning moments, and the Annual Sustainability Report provides that opportunity. The City is committed to the work, partnering with community, and tracking and reporting on our collective efforts. 2022, we’re coming for you!

Performance Indicators

The Annual Sustainability Report compiles City sustainability goals and objectives, and tracks specific measures and indicators from activities across O’ahu that focus on climate change, sustainability, and resiliency. The content of the report was created by:

- Cataloging existing sustainability and climate objectives and targets within the City;
- Determining data availability and baselines to measure targets; and
- Selecting specific measurable indicators to track progress towards those existing targets.

Some key performance indicators do not have associated targets by which we track progress, but rather help us to more thoroughly understand the implications of our progress towards centering equitable outcomes for our communities. The

“Equity Indicators” throughout this report highlight perspectives for consideration when evaluating traditional performance measures to better understand inclusion and impact in reaching our sustainability goals. These data support transparency and more informed decision-making.

We have attempted to track data by calendar year (January 1-December 31). However, several pieces of data reflect the City’s fiscal year (July 1-June 30), as they are only available via fiscal year schedule. Notations are made wherever data is measured by fiscal calendar.

In some cases, data availability was impacted by the COVID-19 pandemic. In these instances, the report contains the most recently available data or re-reports indicators from the 2021 Annual Sustainability Report.

2021 Overview

The snapshots below summarize progress trends as compared to the previous year's data, and illustrate the structure of this report. **Blue** performance indicators represent positive trends, **orange** performance indicators identify where improvements are needed, and those in **gray** classify where performance has remained stagnant.

SUSTAINABLE CITY OPERATIONS



Electricity



Water Usage



Renewable Fleet

CLIMATE ACTION



Renewable Energy



Carbon Emissions



Equity & Affordability

CLEAN & AFFORDABLE TRANSPORTATION



EVs & Charging



Vehicle Miles Travelled



Safe & Equitable Access

CLIMATE ADAPTATION & RESILIENCE



Tree Planting



Water Reuse



Water Consumption

FOOD SECURITY & SUSTAINABILITY



Capacity



Workforce Development



Equity & Affordability

SUSTAINABLE WASTE MANAGEMENT



Waste Generation



Recycling Rates



Waste Composition

DISASTER PREPAREDNESS



Federal Funding



Informed Residents



Home Safety

Sustainable City Operations

OBJECTIVE: Integrate sustainable and environmental values into City plans, programs and policies to improve environmental performance of City operations and advance sustainability and resilience priorities (Revised Charter of Honolulu Section 6-107).

Improving the water and energy use efficiency of City facilities is a win-win for everyone. City employees gain improved comfort and a healthier workplace, taxpayers see utilization of their dollars towards other important City priorities, and we all realize the benefits of a healthier environment.

Back in 2020, the City began working with Energy Service Company (ESCO) partners to become more energy and water efficient. 2021 brought commencement of the construction phase across numerous City facilities, with work ranging from chiller replacements to LED lighting retrofits, to high efficiency plumbing fixtures, replacement transformers, photovoltaic arrays and electric vehicle charging stations. We can anticipate \$6.8

million in annual electric and water bill savings once completed, some of which, through the innovative investment partnership, goes to pay for the improvements themselves.

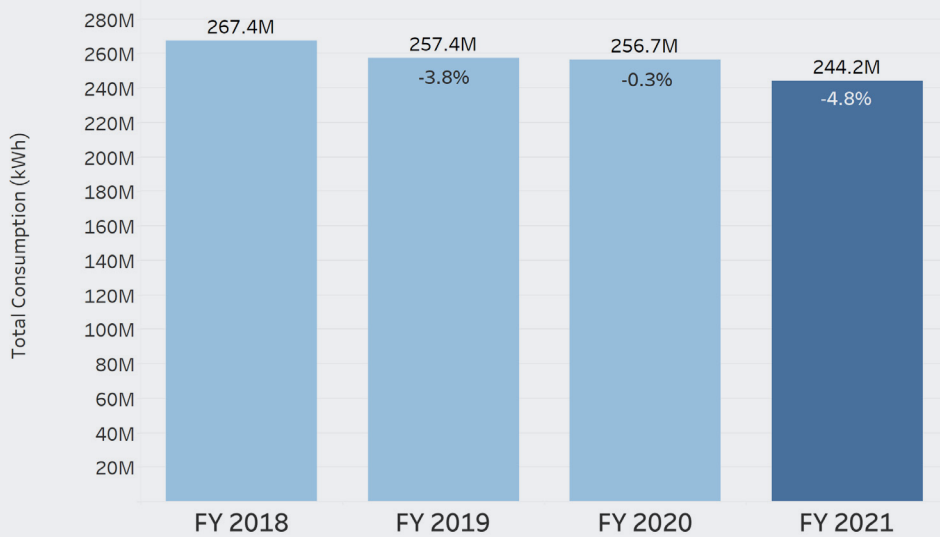
The City's total electricity use decreased 4.8% in Fiscal Year 2021, the fourth consecutive year of declining use. Increasing electricity use in rail operations was offset by reductions across all other agencies. The City has nearly completed benchmarking for all of its buildings over 10,000 square feet in accordance with Ordinance 20-47 to assure that water and energy resources will continue to be carefully managed in the future, and to lead by example in encouraging the same savings for commercial buildings.

The City continues with energy and cost-saving LED lighting installations across facilities, including those at the Walter Murray Gibson Building in downtown Honolulu. Credit: Johnson Controls

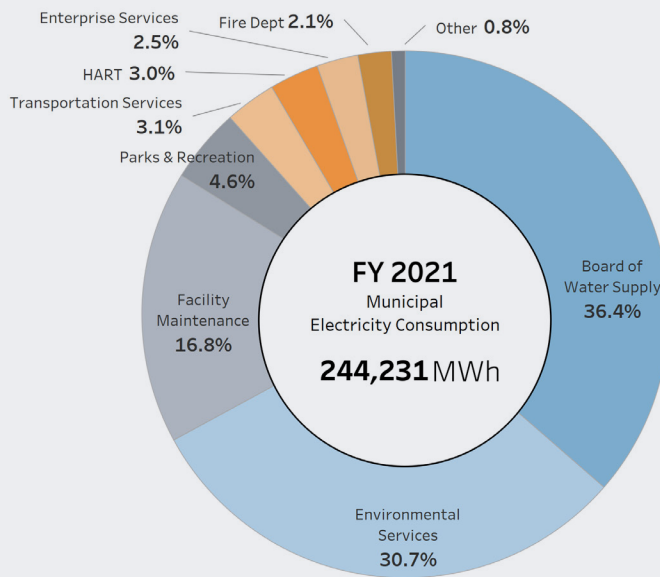


MUNICIPAL ENERGY USAGE
Ordinance 20-47

Municipal Electricity Usage



Municipal Electricity Usage by Department, FY 2021



Other = Police Department, Emergency Services Department, Department of Information Technology, Department of Emergency Management

Change by Dept FY 2020 to FY 2021

Board of Water Supply	-2%
Environmental Services	-7%
Facility Maintenance	-9%
Parks & Recreation	-13%
Transportation Services	-15%
Enterprise Services	-16%
HART	55%
Fire Dept	0%
Other	-2%

MUNICIPAL FUEL USAGE *Ordinance 20-47*

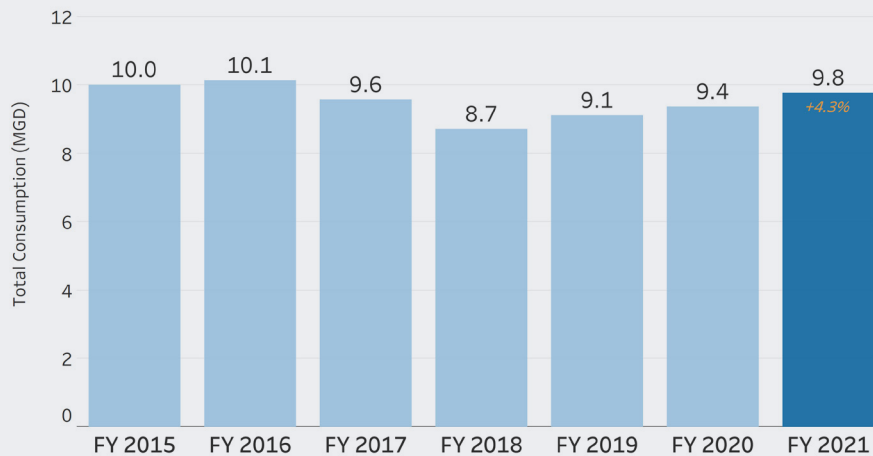
Municipal Fuel Usage by Department

Department	Type			
	Biodiesel(B20)	Diesel	Unleaded	Propane
Board of Water Supply	27,925 gal	35,757 gal	163,915 gal	
Department of Enterprise Services		18,872 gal	27,656 gal	878 gal
Department of Environmental Services	1,563,761 gal	40,253 gal	153,433 gal	86 gal
Department of Facility Maintenance	1,306,721 gal	41,871 gal	124,736 gal	1,672 gal
Department of Parks and Recreation	150,365 gal		191,329 gal	714 gal
Department of Transportation Services		4,594,457 gal	1,081,881 gal	
HART		6,851 gal	1,476 gal	176 gal
Honolulu Emergency Services Dept	70,472 gal	131 gal	23,038 gal	38 gal
Honolulu Fire Department		180,408 gal	31,336 gal	33,166 gal
Honolulu Police Department		5,016 gal	1,349,112 gal	2,013 gal
Other	282 gal		24,639 gal	
Grand Total	3,119,526 gal	4,923,616 gal	3,172,551 gal	38,743 gal

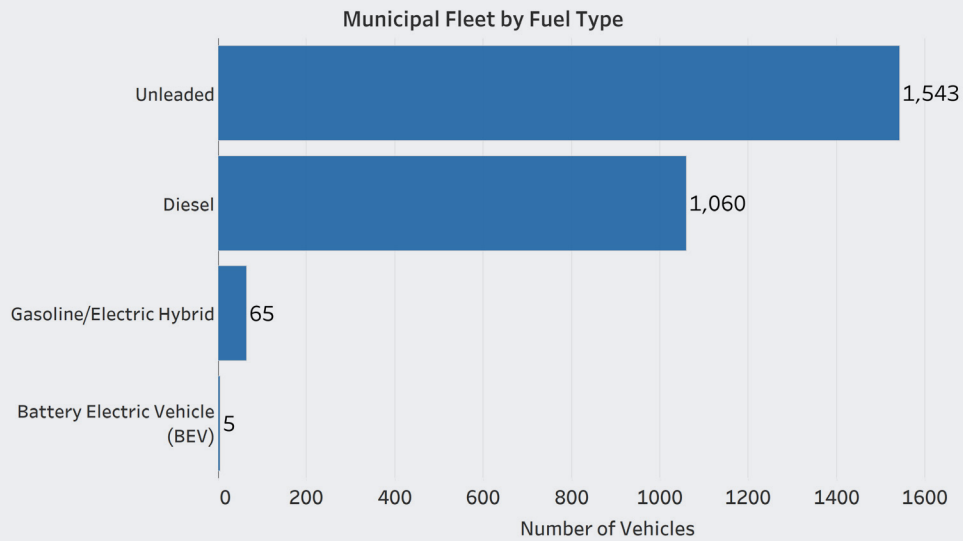
“Other” departments: BFS, City Clerk, CSD, DCS, DDC, DEM, DIT, DPP, Mayor’s Office, Medical Examiner, Prosecuting Attorney

MUNICIPAL WATER USAGE *Ordinance 20-47*

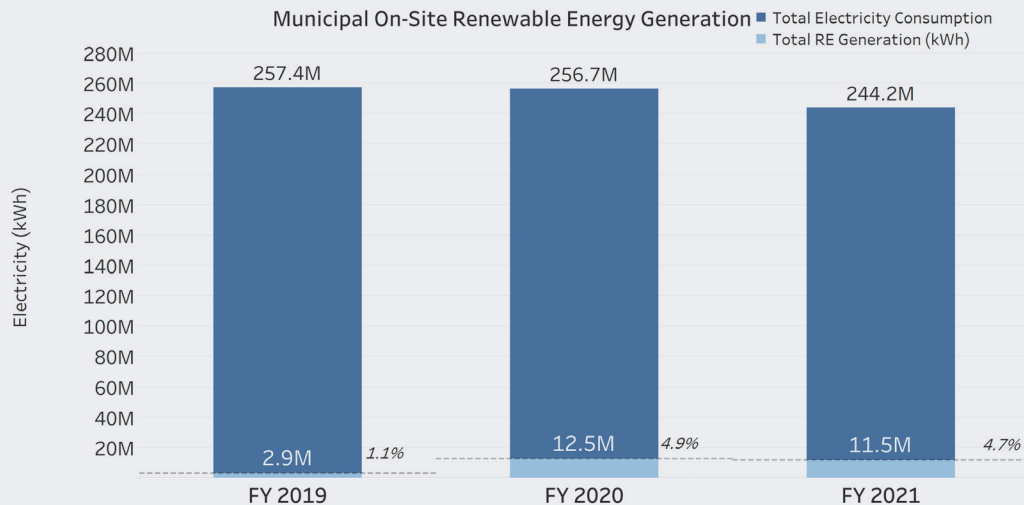
Municipal Water Usage



100% RENEWABLE MUNICIPAL FLEET BY 2035
Ordinance 20-47



INCREASE ON-SITE RENEWABLE ENERGY GENERATION BY 200% BY 2025
Climate Action Plan



Climate Action

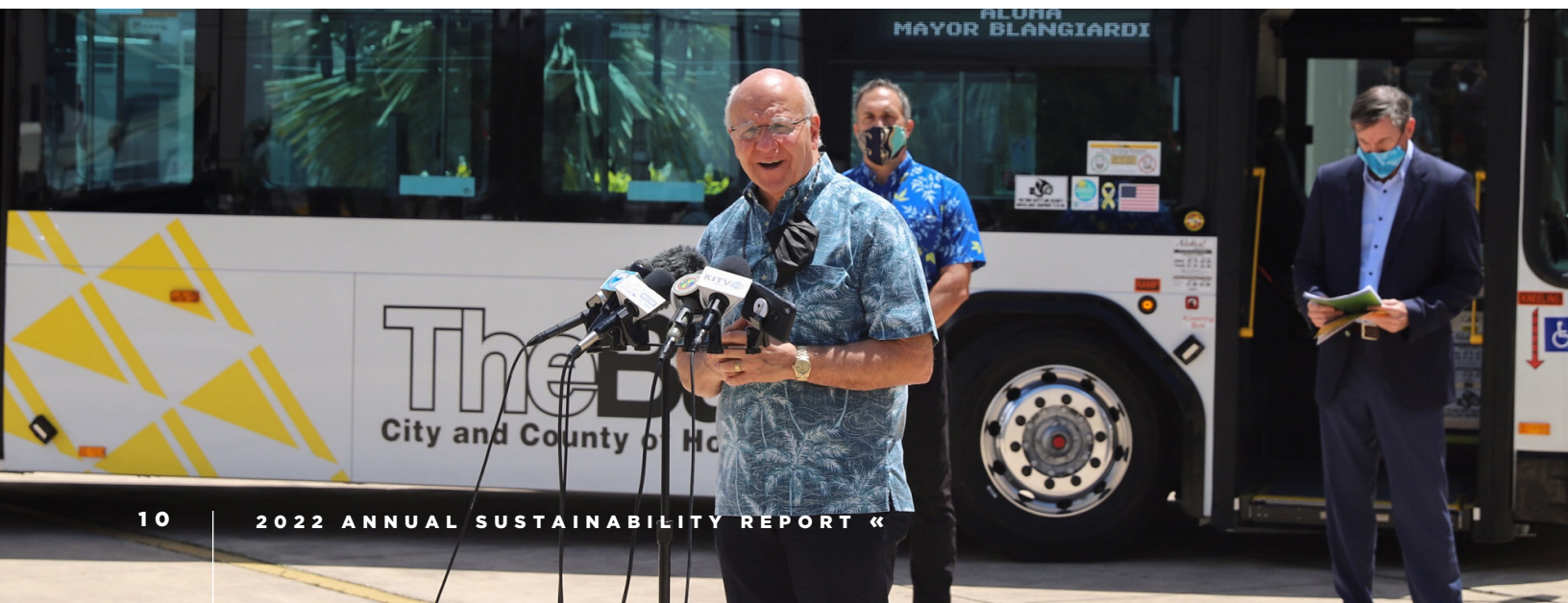
OBJECTIVE: Increase self-sufficiency through a transition to 100% renewable energy, and maintain an efficient, reliable, resilient, and cost-efficient energy system that achieves net-negative carbon emissions no later than 2045. (O’ahu General Plan & Ordinance 20-47).

The steady increase of electricity produced from renewable sources continued in 2021, with approximately one-third of O’ahu’s energy now coming from renewables. And even more renewable energy projects are in development in anticipation of the pending closure of O’ahu’s coal plant—one of the dirtiest sources of energy on-island—in 2022. To ensure facilitation of timely development of rooftop, distributed, and grid-scale energy projects, the City began participating in the Governor’s Powering Past Coal Task Force in 2021. This collaborative group of developers, utilities, and regulators work together to coordinate and share information on challenges in transitioning to a 100% renewable energy economy, including the global supply chain issues exacerbated by the COVID-19 pandemic. Additionally, the City and the solar industry continue to collaborate on enhancements to processes and systems that facilitate more rooftop solar and battery systems,

bringing their benefits to more households. With unexpected hazards and events continuing to impact the affordability of energy for residents, we know there is still more work to be done to end our reliance on fossil fuels, instilling a renewed sense of urgency in reaching our climate targets.

To that end, the City adopted its first ever Climate Action Plan in June 2021, identifying 47 actions across 9 key strategies that will put us on the pathway to a net-zero carbon economy by 2045. These actions provide a roadmap for the City and community to focus our collective efforts to cut greenhouse gas emissions, while improving community conditions and quality of life. Successful implementation of these actions will require ongoing and extensive collaboration across multiple sectors including transportation, buildings, agriculture, tourism, and the energy grid.

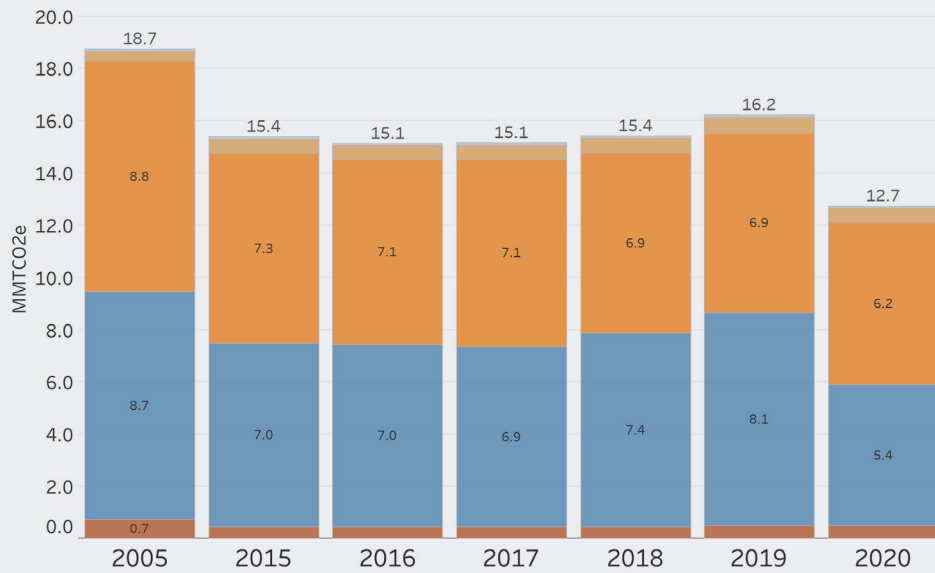
On Earth Day, April 22, 2021, Mayor Rick Blangiardi released the City’s first-ever Climate Action Plan, a community-driven strategy for eliminating fossil fuels to combat climate change. It was officially adopted by City Council on June 2, 2021. Credit: Office of Climate Change, Sustainability and Resiliency



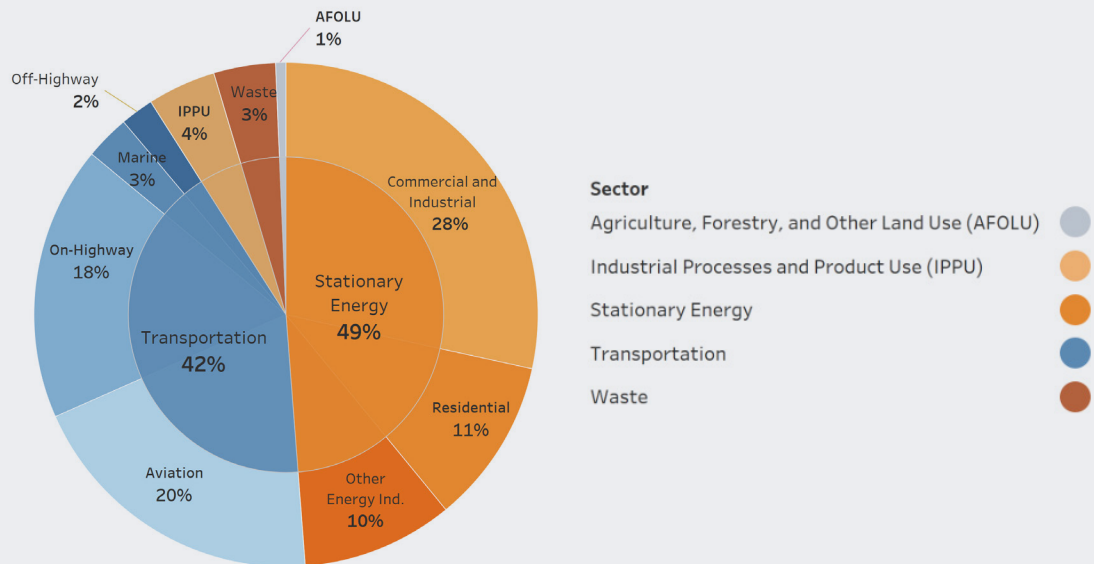
NET-NEGATIVE CARBON ECONOMY BY 2045

Ordinance 20-47

O'ahu Greenhouse Gas (GHG) Emissions Inventory by Year (MMTCO₂e)



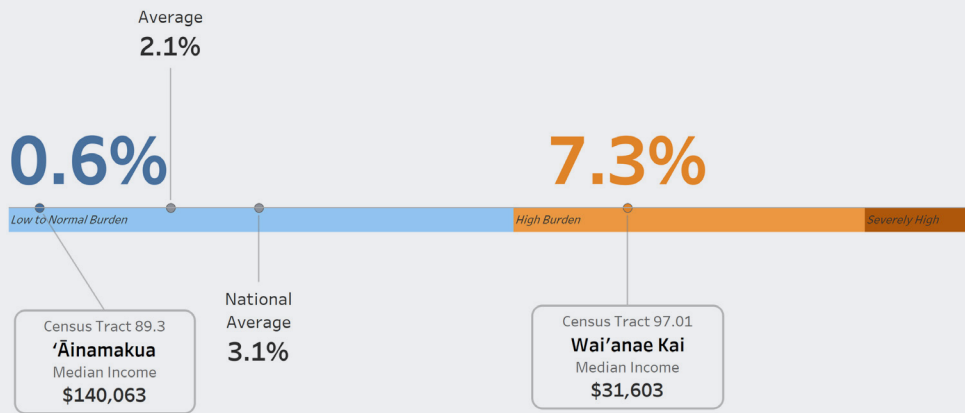
O'ahu GHG Emissions Inventory by Sector, 2020



A detailed analysis of the island's GHG inventory is available on a dashboard at resilientoahu.org/greenhouse-gas-inventory.

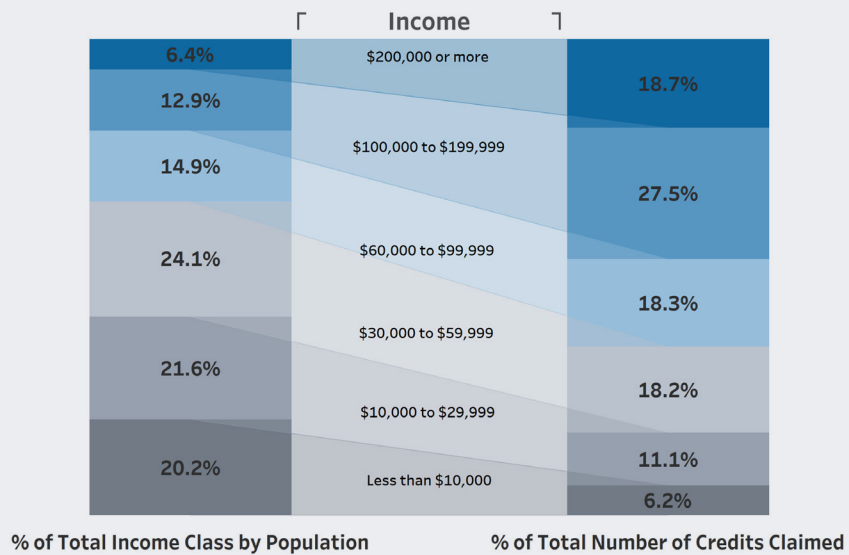
EQUITY INDICATORS

O'ahu Average Energy Burden, 2021

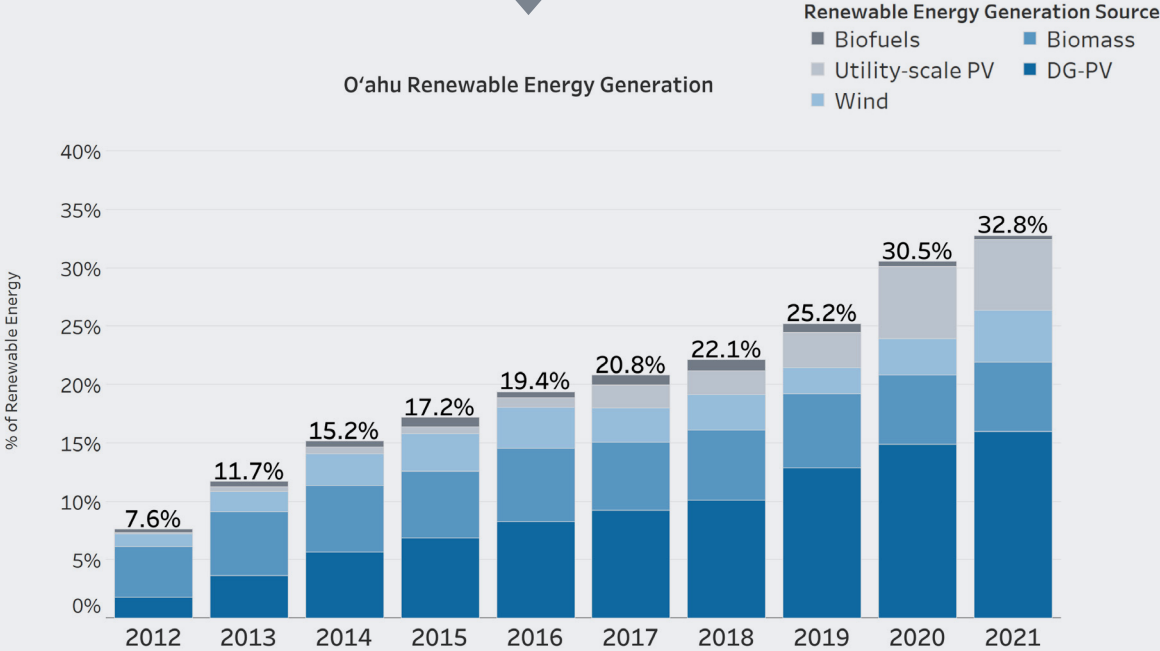


Energy burden is the percentage of household income spent on home energy bills. A high energy burden is considered to be above 6% and a severe energy burden is above 10%. This year, the data source has been improved.

State of Hawai'i Renewable Energy Tax Credits Claimed, 2019



100% RENEWABLE ENERGY BY 2045 *Ordinance 20-47*



Workers construct new electric bus chargers at the Department of Transportation's Kalihi-Pālama facility. Credit: Office of Climate Change, Sustainability, and Resiliency



Clean & Affordable Transportation

OBJECTIVE: Create an integrated multi-modal transportation system which serves all users; moves people and goods safely, efficiently, and at a reasonable cost; and minimizes fossil fuel consumption and greenhouse gas emissions (O’ahu General Plan).

Clean and affordable transportation comes in many forms: from walking and bicycling, car sharing and electric vehicles, to riding TheBus and future rail. The City’s Climate Action Plan defines critical strategies and actions to achieve more connected communities and that help make these viable alternatives to single occupancy vehicles, including increasing development density, not overbuilding expensive parking, and building infrastructure to enable people on bikes and sidewalks to safely share complete streets with people in vehicles.

Once again, however, available data shows that O’ahu residents continue to choose automobile travel over these other modes. Vehicle miles traveled measures all the miles driven by all the cars and trucks on the

island. While total VMT was down about 3% year over year, the data shows an increase in per capita VMT, likely due to the lower visitor numbers in 2020. Shifting away from single occupancy vehicle use and into alternative modes is essential, as electrification alone supports emissions reductions, but misses many other benefits of reduced auto dependency.

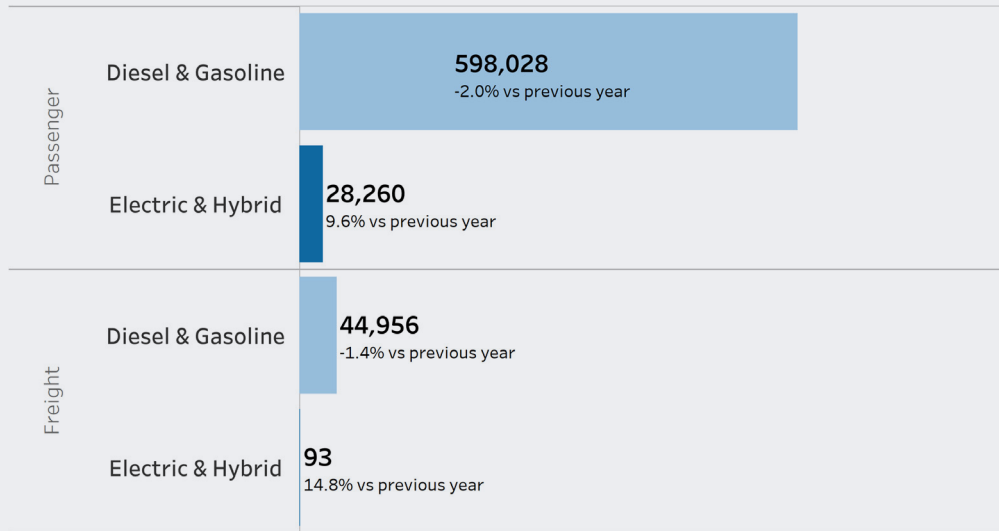
Electric vehicle registrations have continued to accelerate on O’ahu, jumping from 9,644 in 2020 to 12,240 in 2021. And how about riding the bus and driving electric at the same time? The Department of Transportation Services, which manages TheBus, now has a total of 17 electric buses, with 20 more expected to join the fleet in the near-term.

Residents of the McCully neighborhood are enjoying the new Complete Streets traffic circle located at the intersection of Waiola and Wiliwili Streets, which helps slow down traffic in neighborhoods at unsignalized intersections, and promotes health and safety. Credit: Department of Transportation Services

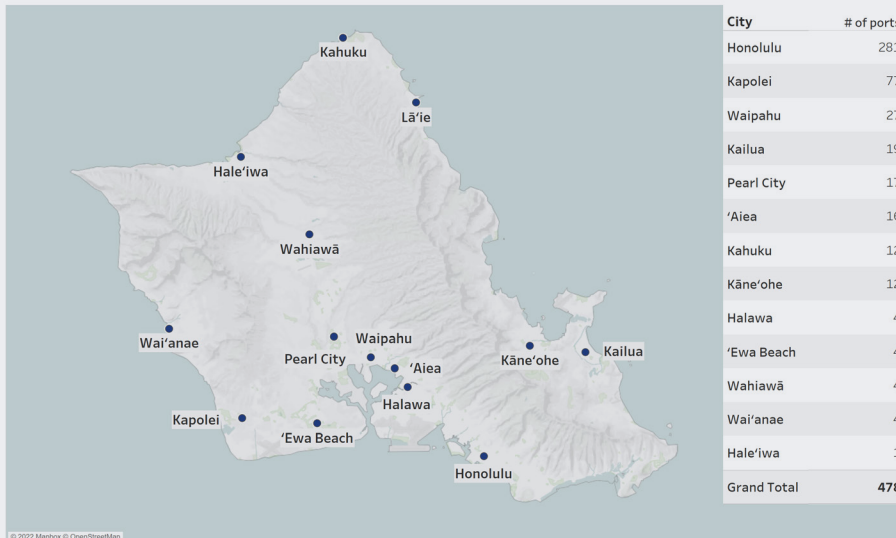


100% RENEWABLE GROUND TRANSPORTATION BY 2045
Four County Public and Private Ground Transportation Commitment

Registered Vehicles on O’ahu by Fuel Type, 2021



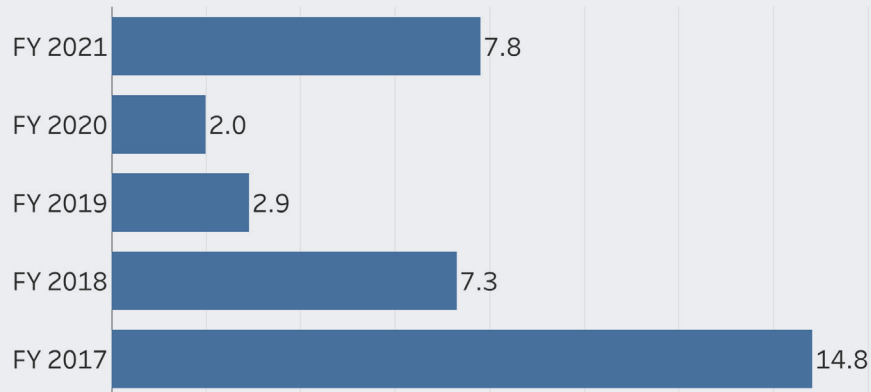
Installed EV Charger Ports on O’ahu, 2021



As of December 2021, O’ahu has **478** total public EV charging ports. This is an increase of **10%** from last year, with **44** new ports added in 2021, the majority of which were installed in Urban Honolulu.

INSTALL 5 MILES OF BIKE INFRASTRUCTURE PER YEAR
Department of Transportation Services

Miles of Completed Bike Projects

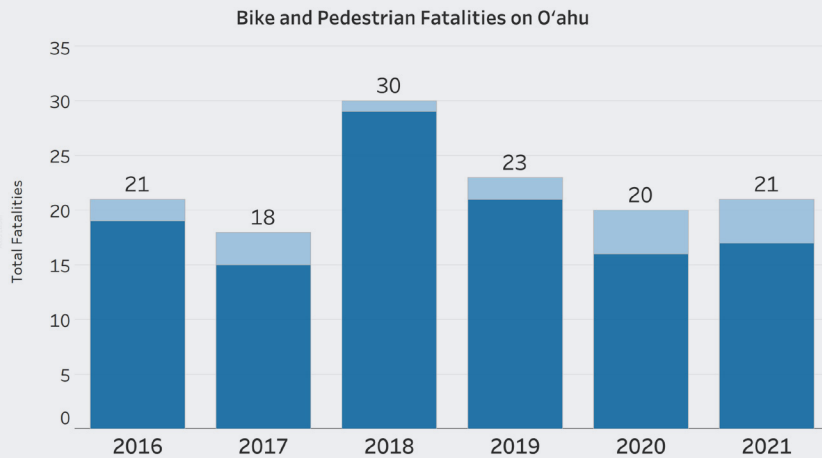


TRACKING VEHICLE MILES TRAVELED

Annual Vehicle Miles Traveled Per Capita



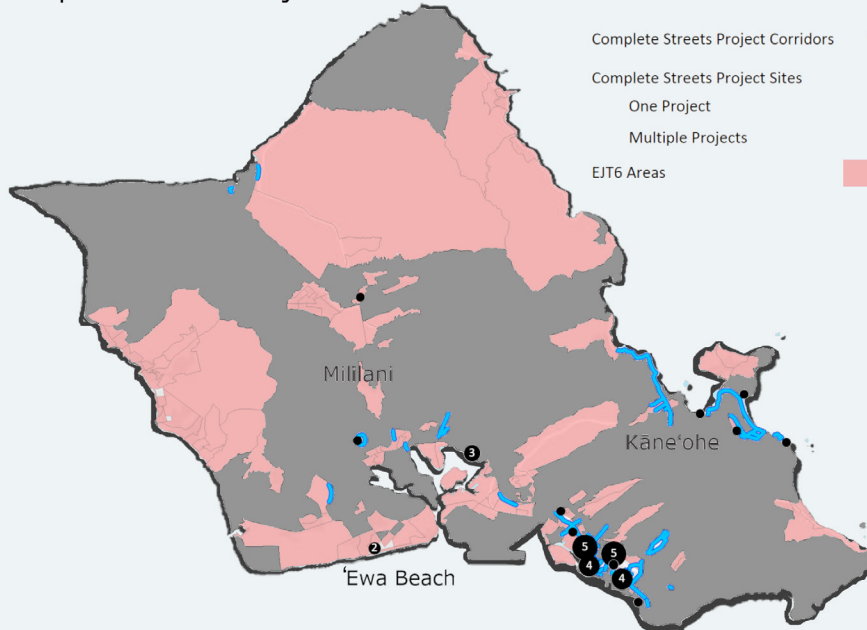
EQUITY INDICATORS



- Bicyclist
- Pedestrian

Safe and adequate infrastructure is necessary to protect and ensure the safety of our most vulnerable roadway users. Our “Vision Zero” goal aims to eliminate bicycle and pedestrian fatalities by 2024 (O’ahu Bike Plan 2019 Update and O’ahu Pedestrian Plan).

Complete Streets Projects in Environmental Justice Areas



Of the **43** active City-led Complete Streets projects in FY21, **47%** are located in Title VI/Environmental Justice (EJT6) communities, which represent roughly **30%** of O’ahu’s population. For FY21, these Complete Streets projects included crossing improvements, more protected bikeways, one mile of new bus-only lane, speed-reduction measures, and street trees.

Climate Adaptation & Resilience

OBJECTIVE: Protect and preserve the natural environment by preparing for the impacts of climate change, planning for natural and coastal hazards, integrating and protecting trees in development, and implementing One Water principles for climate change adaptation solutions and maintenance of a safe, reliable, and sustainable supply of water (O’ahu General Plan & Ordinance 20-47).

Through the ‘ōlelo no’eau, “hahai nō ka ua i ka ulu lā’au,” (rain always follows the forest), Native Hawaiians understood the connection between trees and water supply. Trees not only beautify our communities, but also help us combat climate change by mitigating the impacts from increasing temperatures and changing rainfall patterns.

The City continues to make progress toward its goal of planting 100,000 trees. In 2021, the City passed the halfway point, thanks to community partnerships to not only plant new trees, but to also provide continual care and maintenance for existing tree canopy. Hundreds of trees have been planted on all

parts of the island by community-based groups such as the Ko’olau Mountains Watershed Partnership, Protect and Preserve Hawai’i, Aloha Tree Alliance, and Waimea Valley.

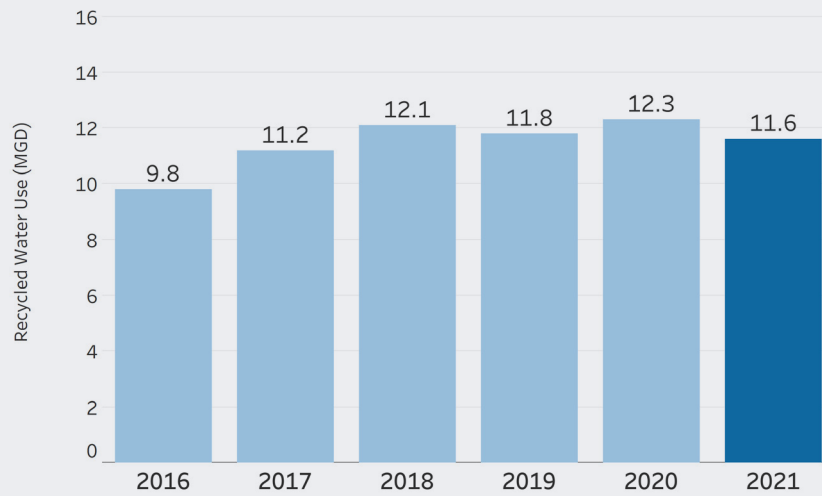
Additionally, in 2021, O’ahu’s recycled water use declined to 2019 levels. Recycled water production and use are impacted by changes in demand from large institutional users, such as City golf courses, and overall changes in demand due to dry or hot weather. It remains as important as ever to manage water, rain, and heat, through practices of conservation, recharge, and reuse, including planting and maintaining trees to keep neighborhoods and communities cool.

Honolulu Botanical Garden staff assisting students and teachers from the School for Examining Essential Questions of Sustainability (SEEQS) with planting native species at Lili’uokalani Botanical Garden. Credit: Department of Parks and Recreation



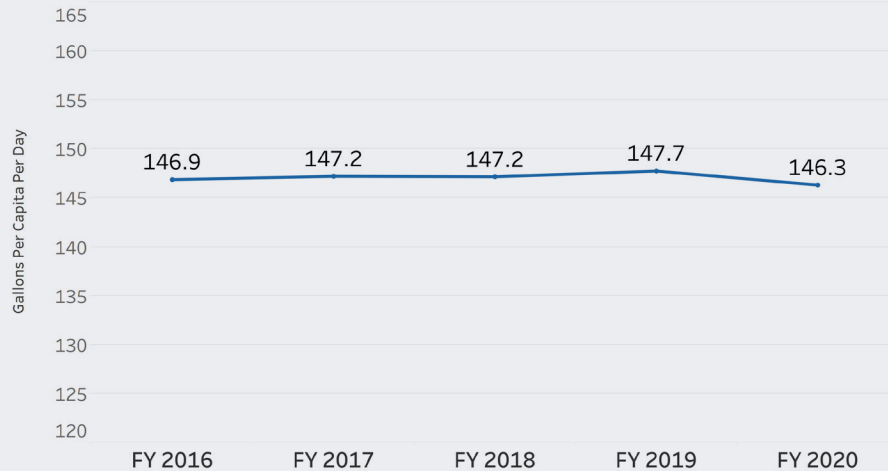
DOUBLE THE AMOUNT OF WASTEWATER REUSED BY 2030 (FROM 2015)
Board of Water Supply Water Master Plan

O'ahu Annual Recycled Water Use



REDUCE PER CAPITA WATER CONSUMPTION TO 145 GALLONS PER DAY BY 2040
Board of Water Supply Water Master Plan

O'ahu Per Capita Water Consumption



CLIMATE CHANGE ADAPTATION & ONE WATER COLLABORATION FRAMEWORK
Ordinance 20-47

In accordance with Ordinance 20-47, the Resilience Office has convened a One Water panel to implement a One Water Strategy for climate change adaptation. The strategy aims to integrate the management of stormwater, wastewater, and freshwater as one resource, in order to create resource and financial efficiencies.

Vision Statement

One Water Honolulu champions cost-effective and climate-resilient infrastructure services for the people, culture, and sustainability of O’ahu through integration and innovation in planning, implementation, and maintenance.

Who is on the One Water Panel?

The One Water Panel is comprised of directors and staff from the following departments:

- Department of Planning & Permitting
- Department of Design & Construction
- Department of Transportation Services
- Department of Facility Maintenance
- Department of Environmental Services
- Department of Parks & Recreation
- Honolulu Board of Water Supply
- Office of Climate Change, Sustainability and Resiliency

Other participating agencies include:

- Department of Budget & Fiscal Services

What are the benefits of a One Water strategy?

A One Water Strategy creates cross-collaboration and increases capacity within City agencies to tackle climate change impacts through adaptation and water resource management measures such as conservation, recharge, and reuse, by:

- Leveraging funds for projects that cannot be completed under a single entity, including coordinating on federal funding opportunities.
- Fostering understanding between utilities to identify overlapping challenges and opportunities.
- Protecting and efficiently using water resources through management efforts of conservation, recharge, and reuse.
- Identifying and addressing challenges in adapting to sea level rise and building more resiliency into infrastructure across water, wastewater, and stormwater sectors.
- Identifying target geographic regions to work collaboratively for climate change adaptation initiatives.

2021 Activities

- Held 9 working meetings and developed a Vision Statement and draft work plan
- Facilitated a Māpunapuna Working Group focused on flooding plus sea level rise impacts
- Coordinated on capital improvement project implementation and planning
- Drafted an interdepartmental Memorandum of Understanding to confirm and facilitate interdepartmental efforts

Food Security & Sustainability

OBJECTIVE: Support long-term agricultural diversification and productivity, and foster market opportunities that increase access to and promote consumption of safe, fresh, and locally grown food (O’ahu General Plan).

The complex web of our food system directly impacts and is impacted by climate and economic resilience. Building a strong local food system that also enables access to fresh nutritious food to all are two important pillars in ensuring an equitable food system. This inaugural data sets a baseline indicator for local food production growth, food system access, and equity using information from O’ahu based food hub sales, agriculture sector wages, and Supplemental Nutrition Assistance Program (SNAP) locations around the island. SNAP, formerly known as Food Stamps, is a federal nutrition program that supplements low-income households’ food budgets to allow greater access to nutritious foods and more self-sufficiency. Increased SNAP access points, where food retailers or farmers markets accept these federal benefits, are good indicators of progress in reducing food insecurity for low-income communities.

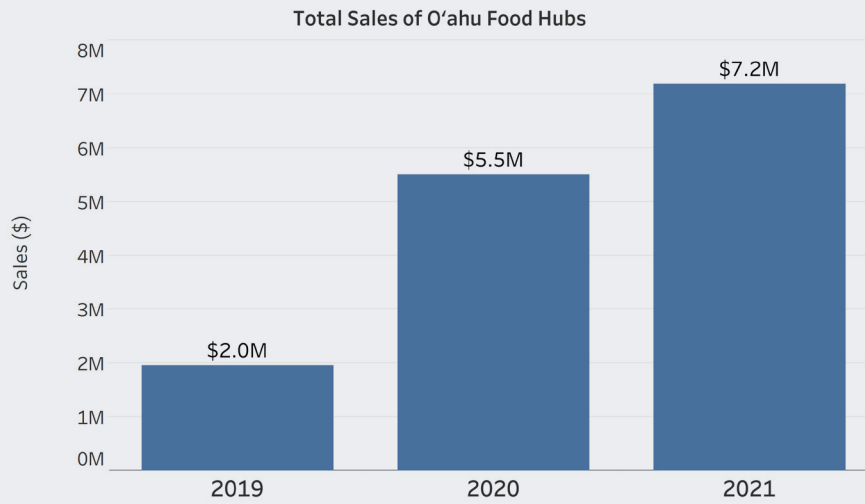
A food hub is a business or organization that actively manages the aggregation, distribution, and marketing of 100% locally grown and made goods. The growth of O’ahu’s four food hubs is a good indicator of progress in local food production and consumption from small, locally owned farmers. As food hubs grow more essential to leveraging our local food economy, they support O’ahu’s goal of reducing food import dependence. This dependence is a significant security issue if a shock or stressor were to cut off our food supply chain, as was shown during the COVID-19 pandemic.

Supporting people in accessing local and healthy food matters. Supporting farms in getting their food and products to people matters. Supporting the agriculture workforce matters. In the words of University of Hawai’i West O’ahu Assistant Professor of Sustainable Community Food Systems, Albie Miles, “If we get food right, we get everything right.”

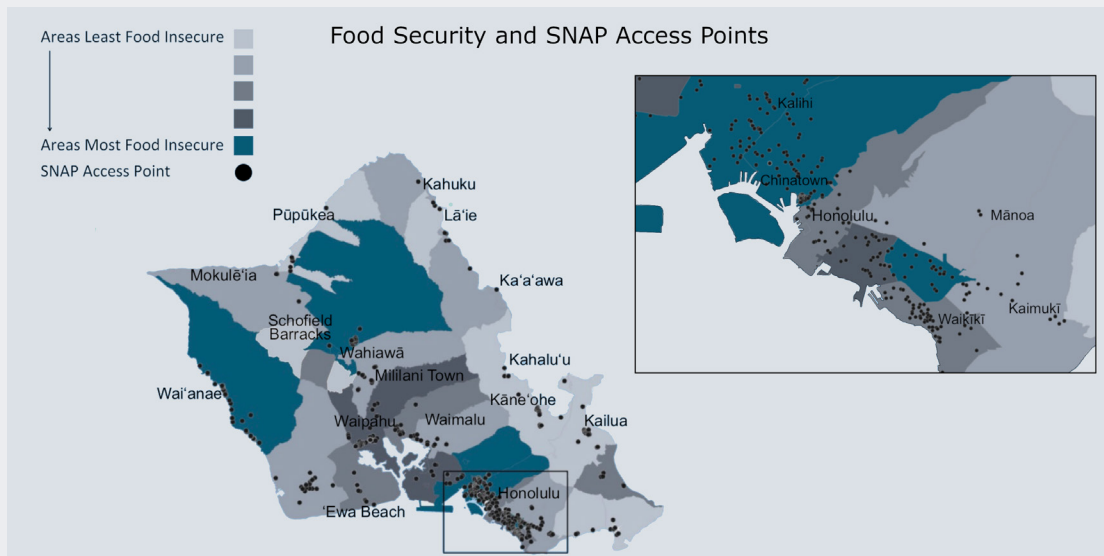
Through the City’s Farm to Food program, O’ahu Agriculture and Conservation Association provided locally sourced food to Kunia residents to ensure our community was fed during the COVID-19 pandemic. Credit: O’ahu Agriculture and Conservation Association



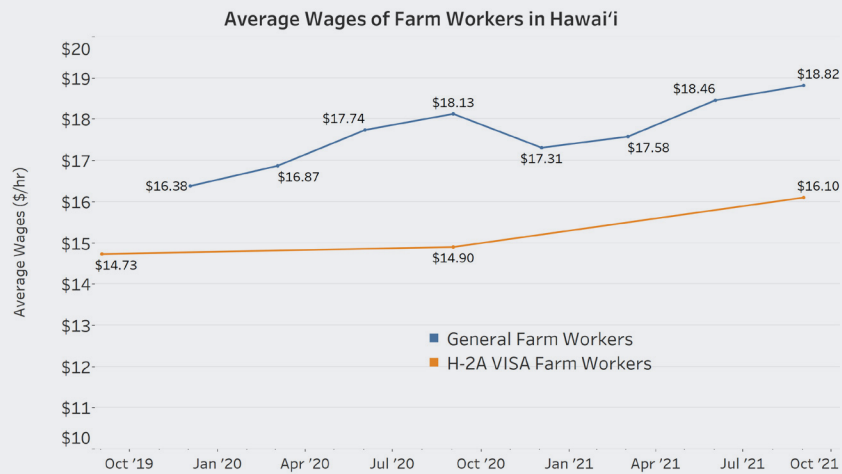
INCREASING FOOD SYSTEM CAPACITY



EQUITY INDICATOR



SUPPORTING WORKFORCE DEVELOPMENT



From 2020-2021, the average wage of hired farmworkers in Hawai'i increased by **\$2.44**, marking an almost **15%** increase since January 2020. Similarly for H-2A Visa workers, wages increased from **\$14.73** in 2020 to **\$16.10** in 2021. This marks a **9%** increase in wages.

To keep our kūpuna safe and fed during COVID-19, Kōkua Valley Roots Cafe prepared healthy Kūpuna Meals, seen here with locally sourced beef and veggies. Credit: Office of Climate Change, Sustainability, and Resiliency





Sustainable greens cultivated in grow beds at Kunia Country Farms.

Credit: Kunia Country Farms

Sustainable Waste Management

OBJECTIVE: Manage an integrated and sustainable waste system that minimizes the generation of waste, maximizes energy and waste recovery, and provides safe, reliable, and environmentally sound collection and disposal systems (O’ahu General Plan & 2019 Integrated Solid Waste Management Plan).

The data available for this year’s report highlights updates from 2020, which offers insight into how the COVID-19 pandemic impacted O’ahu’s waste streams. 2020 saw a notable 16% reduction in the total amount of waste produced and a 14% reduction in the amount of waste generated per person island-wide. This decrease is most likely due to commercial closures and the sharp decline in tourism. With a couple more years’ worth of data we’ll discover whether these indicators are temporary or if they reflect a new trend. For now, the City continues to take lessons learned from developments throughout the pandemic to better understand how to maintain progress towards our sustainable waste management objective.

Even though we continue to make positive progress towards our waste targets, we know that waste we’ve

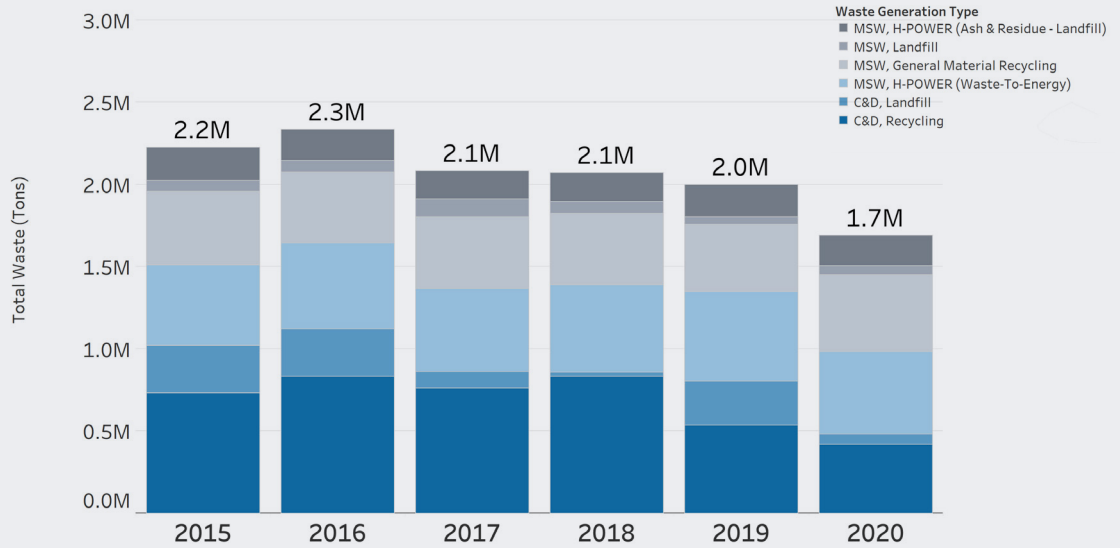
already produced can stay with us for long periods of time. Microplastics have been found at the summit of Mount Everest to the deepest parts of the ocean, and now, alarmingly, were recently discovered in human blood, including plastic particles from drink bottles, food packaging, and plastic bags. Most plastics are petroleum-based, contributing to fossil fuel emissions, pollution, and litter. Recent efforts to reduce the amount of plastic in our waste stream include implementation of the City’s Disposable Food Ware Ordinance (DFWO). The DFWO restricts the use and sale of disposable plastic and polystyrene food ware and service ware. Although supply chain challenges exist due to the COVID-19 pandemic, we know implementation of these key initiatives through 2022 will go a long way towards not only minimizing waste, but ensuring the waste we produce contributes less to the climate crisis.

Microplastics littering Mālaekahana Beach. Credit: Office of Climate Change, Sustainability, and Resiliency

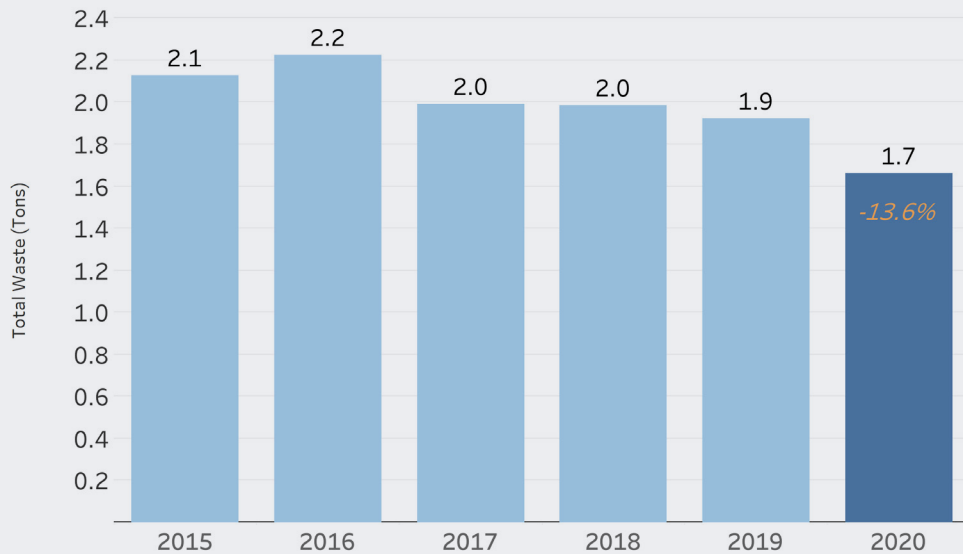


REDUCE PER CAPITA WASTE GENERATION BY 25% BY 2030
 2019 Integrated Solid Waste Management Plan

O'ahu Total Waste Production



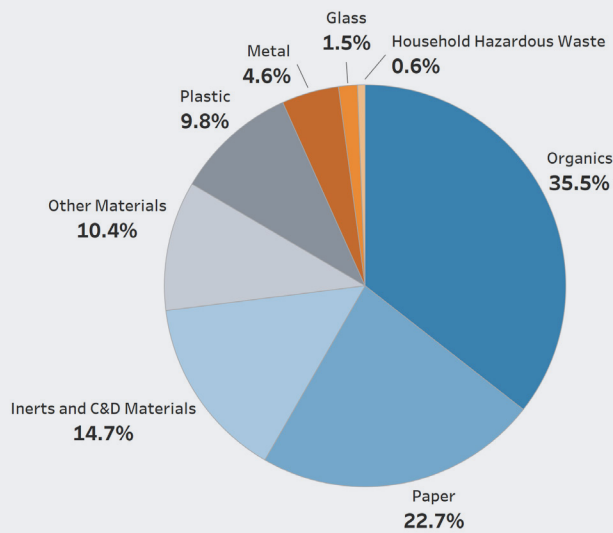
O'ahu Per Capita Waste Production



Sustainable Waste Management

REDUCE SINGLE-USE PLASTICS IN THE WASTE STREAM 2019 Integrated Solid Waste Management Plan

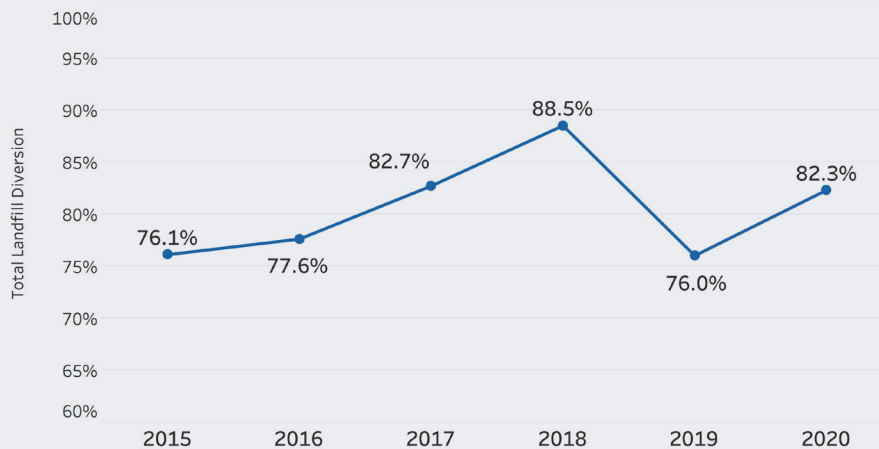
2017 O'ahu Waste Composition



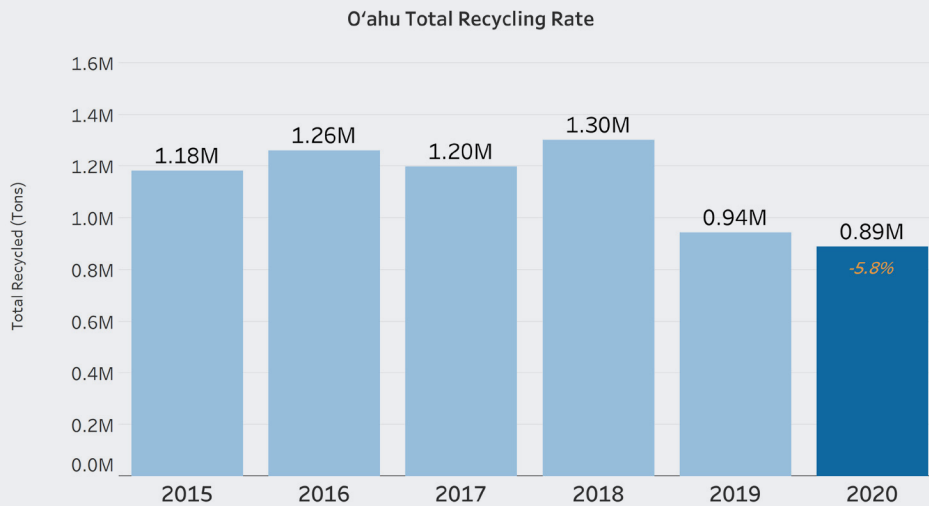
One of the goals in the 2019 Integrated Solid Waste Management Plan is to “Reduce carbon emissions from the waste stream by reducing or eliminating carbon-based single-use plastics and polystyrene from the waste stream. Specifically, the City has established a goal of reducing plastic waste going to H-POWER and landfill by 1 percentage point (from 10 percent to 9 percent) by 2030.”

INCREASE LANDFILL DIVERSION RATE TO 95% BY 2030 2019 Integrated Solid Waste Management Plan

O'ahu Waste Diversion Rate



INCREASE RECYCLING RATE 10% BY 2030
2019 Integrated Solid Waste Management Plan



The measured decrease from 2018-2019 is mostly attributed to a private company updating their construction and demolition recycling reporting method.

A refuse truck delivers 'ōpala (trash) to the City's H-POWER waste-to-energy plant, where it is incinerated to generate electricity. Credit: Department of Environmental Services



Disaster Preparedness

OBJECTIVE: Create disaster-prepared communities that protect residents, visitors, and property against natural disasters, environmental stressors, climate change, and other emergencies and enable cost-effective disaster response and recovery that enhances community resiliency (O’ahu General Plan).

Pre-disaster planning and hazard mitigation

improves resilience and the speed, safety, and efficiency of recovery. According to the National Oceanic and Atmospheric Administration, 2021 held the second highest number of disasters within the U.S. (after 2020), with the total cost of disaster damage adding up to \$145 billion. The storms of March and December 2021 impacted public and private infrastructure, caused power outages, impacted schools and homes, and resulted in a bridge closure that affected residents for months while expedited repairs were made.

Climate change amplifies the intensity and frequency of extreme weather, and sea level rise further exacerbates the impacts from storms, waves, and rainfall flooding. The City continues to invest in disaster resilience and in mitigating disaster impacts. In 2021, the City was awarded just over \$2,000,000 in FEMA grant funding for hazard mitigation, disaster risk reduction, and other flood analysis projects.

Informing and training residents is key in advancing community disaster resilience. Despite COVID-19

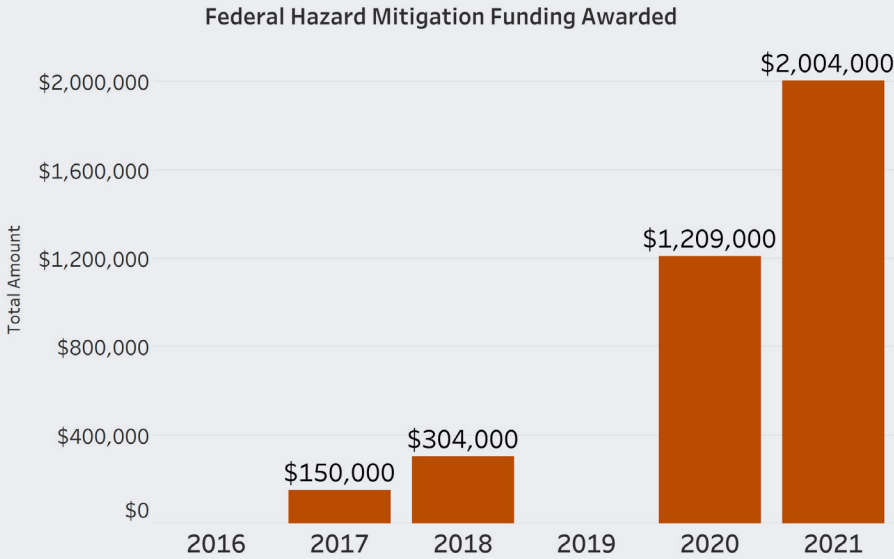
interfering with in-person Community Emergency Response Team (CERT) training, 400 individuals were able to receive disaster preparedness training through virtual platforms. HNL.info continues to be a vital tool to keep residents up to speed on disaster announcements and other important updates. Nearly 69,000 individuals have signed up to receive notifications through the smartphone app or the web-based system. About 12% of those registrations occurred in 2021, an increase from the previous year.

Mitigation actions can happen at both the infrastructure and household scales. Household disaster preparedness improves community resilience, as more structures and families are better equipped to buffer a storm, and limited public resources remain available for those most in need. Resources such as the *Homeowner’s Handbook to Prepare for Natural Hazards – Fourth Edition* provide valuable information on how residents can reduce disaster risk in a cost-effective manner. Each step that individuals, homeowners, and businesses take increases preparedness for the whole community.

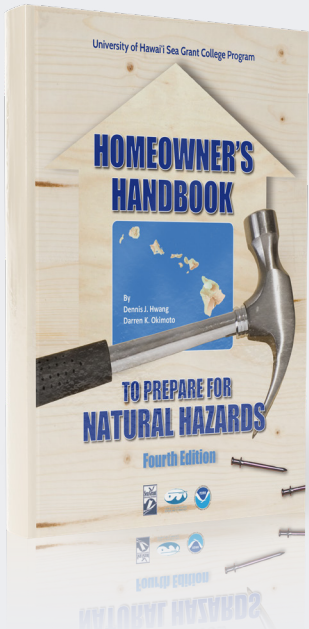
A City worker shovels sand at Ala Moana Beach Park that had washed over the sidewalk during the December 2021 Kona Low storm. Credit: Department of Parks and Recreation



MAXIMIZING FUNDING OPPORTUNITIES



IMPROVING HOME SAFETY

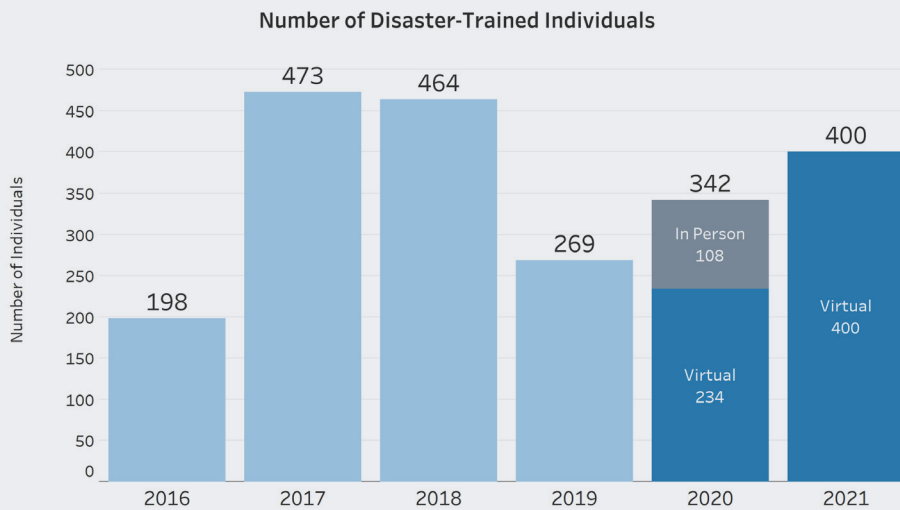


Approximately **71%** of all single-family homes on O'ahu lack sufficient hurricane wind resistance and **45%** severely lack hurricane wind-resistance without retrofits due to construction before 1988 when code updates began to require hurricane straps that tied roofs to walls to prevent them from blowing off in strong winds. This year, the methodology for this data has been updated for more sustainable tracking in future years.

The *Homeowner's Handbook to Prepare for Natural Hazards - Fourth Edition* is a free resource with a wealth of information for personal disaster resilience. The Handbook covers many retrofit measures, such as how to install the Hawai'i Plantation Tie hurricane clip, adding window protection, and strengthening roofs. A digital copy is available at <https://bit.ly/homeowners-handbook-4>.

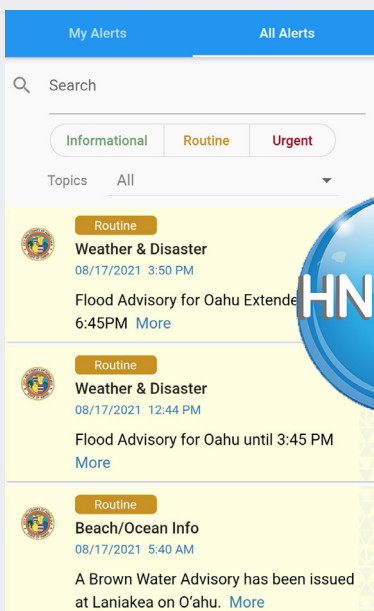
Disaster Preparedness

PROVIDING COMMUNITY TRAINING



In years 2016-2019, the graph depicts the number of CERT-trained individuals. Due to COVID-19, the ability to offer CERT training was severely limited; therefore, 2020-2021 depicts the total number of disaster trainings (including CERT and non-CERT). The number of virtual trainings in 2020 was previously reported as 204; this error has been corrected to 234 virtual trainings.

INCREASING COMMUNITY AWARENESS



The HNL.info app gives users real-time access to City disaster announcements and updates. **68,837** individuals have signed up to use the app so far, with **8,226** new users in 2021 alone. Sign up today!



One of the many impacts of the March 2021 storm included flooded roads, as shown here in Waikāne.

Credit: Hawai'i State Department of Transportation

Ola: O‘ahu Resilience Strategy Actions

The O‘ahu Resilience Strategy serves as a guiding policy pathway for the City to directly address the challenges of our time including: long-term affordability and economic diversification; preparing for and recovering from hazard events; eliminating carbon pollution and adapting to climate change impacts; and building community cohesion, the foundation for increasing our island resilience.

Through coordination across City departments and with community partners, the City worked to advance progress on the 44 Resilience Actions, supporting sustainable recovery and resilience. New progress includes initiatives to increase availability of affordable housing, accelerate cost and energy savings in City facilities, and more. With the initiation of new action on three more Resilience Actions in 2021, in addition to continuing to make headway on actions already in progress, the entire Resilience Strategy is now approximately 75% underway, with many more actions on the cusp of completion in just three years since the strategy’s release. With new progress achieved last year, as shown in the highlights featured here, the City is poised to accelerate implementation of these critical community resilience-building initiatives throughout the coming year.



► **Resilience Action 3 - Develop Alternative, Affordable Housing Options for O‘ahu Residents**

Taking an innovative approach to addressing challenges of affordable housing, Mayor Blangiardi signed Ordinance 21-12 into law in April 2021, which provides \$10 million in grant incentives to housing developers. The City also completed construction on the West Loch Modular project, a “stacked” modular design, to add 58 more units to the City’s affordable housing portfolio. Through its newly established Affordable Housing Working Group, the City will be able to build on these 2021 achievements to find more inventive solutions for increasing our affordable housing stock.

► **Resilience Action 20 - Reduce Taxpayer Expense and Increase Renewable Energy through a City-Wide Energy Performance Contract**

To become more energy efficient, save taxpayer dollars, and boost clean energy jobs, the City achieved substantial completion in 2021 of the first phase of an Energy Savings Performance Contract across ten facilities. Energy conservation measures installed include LED lighting upgrades, equipment modernization, and critical water conservation retrofits. Improvements in these facilities alone are projected to yield over \$2 million in utility bill and taxpayer savings annually, with even more savings yet to come as the City begins phase two at an additional 80 City facilities.

► **Resilience Action 27 - Transform the City’s Public Fleet to 100% Renewable Fuel by 2035**

In 2021, the City welcomed 17 battery electric buses to kick off its fleet transition to zero-emissions by 2035, per the City’s climate action targets established in Ordinance 20-47. E-buses decrease carbon pollution and provide a comfortable, quiet ride for residents no matter the destination. To prepare for our e-buses, the City installed new e-bus charging stations at the Kalihi-Pālāma Bus Facility with capacity to charge up to nine e-buses at once. The City also welcomed two more electric vehicles (EVs) to its light-duty fleet and established a Fleet Modernization Working Group for collaboration on strategies to accelerate the adoption of EVs.

Constructed in 2021, the City’s West Loch modular housing complex—the first of its kind in the state—will provide 58 permanently affordable units to meet critical housing needs. (Resilience Action 3)



PILLAR I.

Remaining Rooted

Ensuring an Affordable Future for Our Island

Our place-based culture has the highest quality of life—and highest cost of living—in the nation. The City will invest in long-term solutions that increase self-sufficiency, reduce out-of-pocket expenses, and assure our community stay intact.

Goals / Actions

GOAL 1

Supporting Affordable Housing Development

- 1 Reduce Empty Homes and Increase Affordable Housing Funding
- 2 Return Illegal Vacation Rental Units to Local Housing
- 3 Develop Alternative, Affordable Housing Options for O'ahu Residents
- 4 Expand Affordable Housing Funding by Implementing Progressive Property Taxes
- 5 Implement a Guaranteed Security Program to Support Local Home Ownership

GOAL 2

Reducing Additional Cost Burdens

- 6 Expand Housing and Energy Transformation by Accelerating the Permitting Process
- 7 Reduce Utility Costs for Residents through Transparency and Disclosure
- 8 Increase Housing Affordability by Reducing Parking Requirements

GOAL 3

Improving Economic Opportunity

- 9 Foster an Innovation Economy through the City's Office of Economic Development
- 10 Promote New Agricultural Models for Economic and Food Security



Learn More

PILLAR II.

Bouncing Forward

Fostering Resilience in the Face of Natural Disasters

The threats from hurricanes, flooding, and extreme weather are on the rise. The City will work with individuals, neighborhoods, and institutions to be prepared to absorb these blows and rebound in ways that put our entire community on stronger footing for each successive event.

Goals / Actions

GOAL 1

Pre-Disaster Preparation

- 11 Protect Lives and Property by Updating Building Codes
- 12 Launch Residential Hurricane Retrofit Program to Strengthen Properties Vulnerable to Hurricanes
- 13 Increase Flood Insurance Affordability for O'ahu Residents
- 14 Establish Future Conditions Climate Resilience Design Guidelines

GOAL 2

Effective Disaster Response

- 15 Develop a Network of Community Resilience Hubs
- 16 Establish an O'ahu Emergency Food Supply and Storage Strategy
- 17 Ensure Access to Fuel Supplies to Aid Disaster Response and Recovery
- 18 Increase O'ahu's Preparedness Utilizing Scenario Modeling and Artificial Intelligence

GOAL 3

Successful Disaster Recovery

- 19 Develop and Implement a Long-Term Disaster Recovery Plan for O'ahu

PILLAR III.

Climate Security

Tackling Climate Change by Reducing Emissions and Adapting to Impacts

The climate crisis is the biggest challenge humanity has ever faced, and as an island society we are facing the impacts first. The City must transition to a 100 percent clean energy economy as rapidly as possible and begin changing policies and our infrastructure to protect lives and property that are increasingly in harm's way.

Goals / Actions

GOAL 1

Clean Energy Economy

- 20 Reduce Taxpayer Expense and Increase Renewable Energy through a City-Wide Energy Performance Contract
- 21 Establish an Energy Benchmarking Standard for O'ahu Commercial Buildings
- 22 District Cooling: Tap the Ocean to Cool Our Buildings
- 23 Expand Opportunities for Methane Capture and Re-Use

GOAL 2

Clean Ground Transportation

- 24 Expand Electric Vehicle Charging Infrastructure Island-Wide
- 25 Accelerate Carbon-Free New Mobility Options
- 26 Ensure Equal Access to Sustainable Transportation Options and Cost Savings
- 27 Transform the City's Public Fleet to 100% Renewable Fuel by 2035

GOAL 3

Climate Resilient Future

- 28 Chart a Climate Resilient Future by Creating and Implementing a Climate Adaptation Strategy
- 29 Protect Beaches and Public Safety with Revised Shoreline Management Rules
- 30 Protect Coastal Property and Beaches Through Innovation and Partnerships
- 31 Establish a Storm Water Enterprise Fund to Better Finance Water Management
- 32 Deploy Sustainable Roof Systems to Manage Urban Heat and Rainfall
- 33 Keep O'ahu Cool by Maintaining and Enhancing the Community Forest
- 34 Minimize Economic and Property Risk within the Ala Wai Canal Watershed

PILLAR IV.

Community Cohesion

Leveraging the Strength and Leadership of Local Communities

Community is the essential element of resilience. The City must foster connectivity and collaboration to ensure that when we are presented with economic and environmental challenges, we will come together stronger and tighter as one island 'ohana that cares for all.

Goals / Actions

GOAL 1

Empower Grassroots Resilience Champions

- 35 Increase Coordination with Neighborhood Emergency Preparedness Groups
- 36 Increase City-Community Relationships through Volunteerism
- 37 Weave a Tighter Community With Neighborhood Gatherings
- 38 Empower Neighborhoods to Co-Design Safe and Complete Streets

GOAL 2

Communicate and Affirm Island Values






- 39 Celebrate O'ahu's Resilient Past and Future through Public Art
- 40 Lift Up Positive Examples of Island Values in Action
- 41 Launch a Place-Based Resilience Training Program for City Leadership
- 42 Foster Shared Understanding of Climate Change Island-Wide Through an Outreach Campaign

GOAL 3

Island-Wide Alignment

- 43 Ensure City Partnership in O'ahu's Collective Impact Resilience Efforts
- 44 Create a City-Community Liaison to Leverage Non-Profit and Volunteer Assets

KEY

-  Substantial Completion
-  Significant Progress
-  Action Initiated
-  Not Started
-  On Hold

Grades & Ratings

While we recognize that O’ahu is unique, it is helpful to compare our efforts and progress to other communities as we all do the important work to become more sustainable and resilient. Year after year, we either report directly to or are scored by outside evaluators, which are helpful to keep the pressure on as we look to improve on our goals while maintaining what we do well.

 <p>CARBON DISCLOSURE PROJECT</p> <p>Scored in Progress towards Environmental Performance</p> <p>B Scale: A to D-</p> <p>Previous Scores: B (2020), C (2019)</p>	 <p>AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY</p> <p>Clean City Energy Scorecard</p> <p>#24 Out of 75 U.S. Cities</p> <p>Previous Scores: #41 (2020), #47 (2019)</p>
 <p>ENVIRONMENT AMERICA</p> <p>America’s Top Shining Cities for solar PV installed per capita</p> <p>#1 Out of 50 U.S. Cities</p> <p>Previous Scores: #1 (2020), #1 (2018)</p>	 <p>PARK SCORE</p> <p>Average, Investment, Amenities, & Access</p> <p>#57 Out of 100 U.S. Cities</p> <p>Previous Scores: #41 (2020), #50 (2019)</p>



At a Visions of O'ahu event in summer 2021, residents had a chance to draw, paint, and talk story about their experiences with climate change while providing ideas for creating a more resilient and sustainable O'ahu.

Credit: Office of Climate Change, Sustainability, and Resiliency

ClimateReadyOahu.or

Community Action & You

Reaching our sustainability and

resilience goals requires bold government actions now and in the future, but government is only one essential ingredient. The number one tool of resilience is community—community innovation, community voice, and community action, as well as community strength and knowledge. We can't do it without you.

Now more than ever, it is uplifting to see the direct actions that community groups, households, and businesses are taking—and can take—to drive action and transformation. It's becoming easier than ever to switch to sustainable practices, as many of these actions come with incentives, rebates, and cost savings. Going green is both environmentally and fiscally responsible.

From the City to the resident, “from the mountains to the ocean, from the windward to the leeward side,”¹ our collective efforts will drive the change we want to see in order to keep our island home healthy and thriving. Mahalo nui loa for your commitments to a more sustainable, resilient, and climate ready O'ahu!

Looking for more ways to get involved? Connect with us at resilientoahu.org or reach out at (808) 768-2277 or resilientoahu@honolulu.gov.

Simple ways to take action now:

- Buy local food at the People's Open Markets to improve food security and a healthy local economy that is less dependent on imports.
- Try walking or biking on short trips instead of driving, or hop on one of the City's new electric buses!
- When buying products, aim for those that are reusable, avoid plastics, and have minimal or recyclable packaging. Check out one of the zero waste and refill stores on island that make it easier to reduce.
- Help to #conserve808 by finding easy tips and cash incentives to save energy, water and money at resilientoahu.org/conserve-808.
- In the market for a new or used car? Driveelectricchi.com can help you go electric.
- Create a disaster plan and kit to be prepared for any shocks that may come our way, and sign up for HNL info emergency alerts.
- Keep planting trees and recording them at bit.ly/100ktreesoahu. And come on out to volunteer as a Citizen Forester to inventory existing City street and park trees (smarttreespacific.org/projects/citizenforester).
- Talk about climate change, resilience, and sustainability with friends, family and neighbors.
- Join a community group or find a place to volunteer with at resilientoahu.org/volunteer-today.
- Participate with your neighborhood board, and submit testimony on bills that you care about.
- Stay informed! Follow @ResilientOahu on Instagram, Facebook, and Twitter, and subscribe to the Resilience Office newsletter at resilientoahu.org.

¹ You know, da kine, John Cruz, "Island Style," 1996.



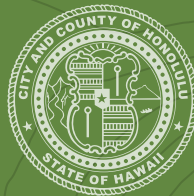
During Make a Difference Month, the Department of Facility Maintenance - Storm Water Quality Division hosted a special project where volunteers completed a 60 foot long chalk mural along the Ala Wai Canal that read "protect our waters."

Credit: Department of Facility Maintenance - Storm Water Quality Division

CITY AND COUNTY OF HONOLULU

Annual Sustainability Report

2022



Prepared by
OFFICE OF CLIMATE CHANGE,
SUSTAINABILITY & RESILIENCY

www.resilientoahu.org