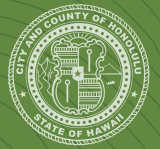


CITY & COUNTY OF HONOLULU

Annual Sustainability Report

2020





Contents

Letter from Honolulu’s Chief Resilience Officer	4
Reporting on Our Progress	5
Performance Indicators	6
Our Commitments	7
Achieving A Carbon Neutral Economy	8
Sustainable City Operations	10
Clean & Affordable Transportation	14
100% Renewable Energy Future	16
Water Security & Green Infrastructure	18
Sustainable Waste Management	20
Disaster Resilience	22
Community Resilience and Equity	24
Tracking Progress Towards Resilience	26
Grades & Ratings	28
Conclusion & Next Steps	30

Contours of Change

The lines that animate the 2020 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 action of just one individual will impact others, and when we work together change can occur across our island.

Welcome to the City and County of Honolulu's Annual Sustainability Report, published by your Office of Climate Change, Sustainability and Resiliency. This year, our resilience has been greatly tested with the COVID-19 pandemic and economic hardship. However, the way our island has responded to these challenges clearly shows that we are strong, connected, and can work together to overcome difficulties.



With this report, we continue to ensure our local government is transparent and accountable in our progress towards tackling the issues of climate change, increasing sustainability in City operations, and working with communities to

- Aligning the City's economic, sustainability, and climate resilience objectives, we launched two Energy Performance Service Contracts covering all of the City's parks, office buildings, fire stations, police stations, and parking lots in conjunction with the Department of Parks and Recreation, Department of Design and Construction, and Department of Budget and Fiscal Services. These contracts aim to save taxpayer dollars, reduce greenhouse gas emissions, and create high-paying green jobs in response to the COVID-19 and climate crises while helping to transform the City's operations and infrastructure.

become more resilient. Your City leadership is taking the lead on creating a sustainable future with a strong mix of goals and actions on the ground. To highlight a few:

- Bill 25 (2019) was passed by City Council in May 2020 and was signed into law by Mayor Caldwell on June 4, 2020 (Ordinance 20-10). Ordinance 20-10 adopts the State Energy Conservation Code (2017) as the updated energy code for Honolulu, and includes a number of local amendments, that are tailored to help residents save on their utility bills and ensure new buildings are ready for the future.
- With the unanimous passage of Resolution 19-283 on November 12, 2019, the Honolulu City Council authorized the Department of the Corporation Counsel to initiate legal action against fossil fuel companies to recover climate crisis-related costs; filed on March 9, 2020, City and County of Honolulu v. Sunoco LP, et al, takes action to recover damages and climate crisis-related costs from fossil fuel companies that profited from oil sales in Hawaii and failed to disclose the dangers of their products.

While we're heartened by the increasing momentum of O'ahu's sustainability efforts, we recognize that we are just at the beginning of our journey. Much remains to be done both in terms of implementing our City commitments, and also adopting aggressive and equitable new policies and programs that will actually move the needle across all the indicators of the report that reflect community-centered and socially responsible outcomes. We look forward to creating a more Resilient O'ahu with you!

Imua!

Joshua W. Stanbro
 Chief Resilience Officer
 & Executive Director
 City and County of Honolulu
 Office of Climate Change,
 Sustainability and Resiliency

Reporting on Our Progress

As mandated by O'ahu residents in Section 6-107 of the City Charter, the Office of Climate Change, Sustainability and Resiliency (Resilience Office) shall report to the mayor and City Council regarding overall performance in meeting sustainability and environmental targets and objectives.

The creation of the Resilience Office and Climate Change Commission by voters, and subsequent island-wide outreach and surveys, indicate **that with resounding unity, the residents of O'ahu are alarmed by the impacts of climate change and are looking to City leadership to implement policies and actions that promote a secure and sustainable future.**

This report gathers in one place the commitments of our City, and establishes specific performance indicators that reflect a range of climate change, sustainability, and resilience activities taking place across the island of O'ahu.

The process to establish the metrics in this annual report included:

- Cataloging existing sustainability and climate commitments to the City;
- Determining data availability and baselines information to measure commitments;
- In collaboration with City Council members, Department leaders, and others, selecting specific measurable metrics to track our island progress in key areas.



Performance Indicators

The performance indicators included in this report were selected based on the following three considerations:

1. Specific mandates outlines by City Charter;
2. Primary sustainability goals and commitments adopted by City leadership; and
3. Availability of data on an annual basis.

We have attempted to track data by calendar year (January 1-December 31). However, in some cases the data reflects the City’s fiscal year (July 1-June 30) due to the fact that several data sets are collected on a fiscal year schedule. We have made a notation where the data is based on a fiscal calendar.

Several key performance indicators lack sufficient quality or quantity of data at this time to be captured and reported. Nevertheless, we have included place holders because of their critical importance for measuring sustainability on O’ahu. In these cases, the Resilience Office will work closely with the City and other stakeholders to ensure that this data is available for future reports.

This 2020 Sustainability Report also features a high-level summary of the City’s progress on the 44 actions of the O’ahu Resilience Strategy.

We also recognize this report continues to be a work in progress. We welcome feedback regarding other key metrics that should be included in future editions.

Our Commitments

In 2016, the same year Honolulu was selected as a member of The Rockefeller Foundation’s 100 Resilient Cities, voters created the Office of Climate change, Sustainability and Resiliency.

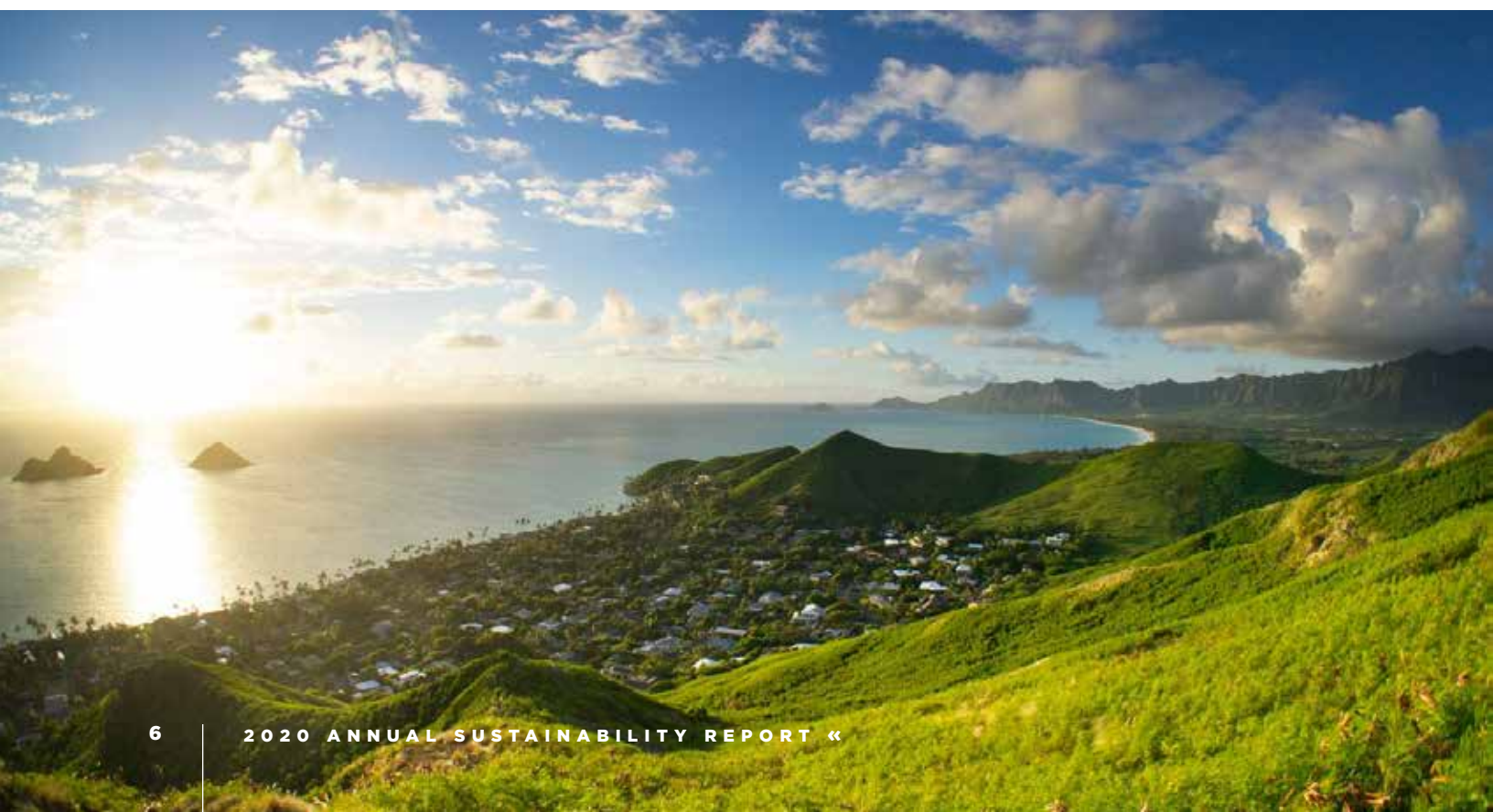
Honolulu, has become one of the leading cities in addressing the impacts of climate change. Honolulu is now signed onto the Paris climate agreement, Chicago Climate Charter, is a member of the Powering Past Coal Alliance, and most recently as one of the 25 winning cities in the \$70 million Bloomberg Philanthropies’ American City Climate Challenge.

In December 2018, the City Council adopted Resolution 18-221 demonstrating strong City support for achieving a 100% renewable-powered City transportation fleet by 2035, as well as a 100% clean energy and carbon neutrality future island-wide by 2045.

This demonstrates that the commitment to a climate resilient O’ahu is one shared by both branches of City government and is institutionalized in the City Charter.

Carbon-Free Economy	Sustainable City Operations	Clean Transportation	100% Renewable Energy	Water Security
Fossil Fuel Streets	Pledge to transition to Fossil-Fuel-Free Streets by procuring, with our partners, only zero-emission buses from 2025; and ensuring a major area of our city is zero emission by 2030.			
Power Past Coal Alliance	Committed to phasing out existing unabated coal power generation (State of Hawai’i also signed).			
We Are Still In	Partner with other US cities/counties to advocate for national climate policies and take collective action: Climate Mayors.			
Resolution 17-67	Requesting the Administration to report to the council on its establishment of CCSR, the development of Honolulu’s Resilience Strategy, and other City actions as part of the 100RC network.			
Resolution 17-166	City Council’s commitment to sustainable transportation through the purchase of zero-emission buses.			
Revised Charter 6-1703(g)	Prepare an energy conservation and emissions reduction plan for city transportation systems which shall include methods to meet state greenhouse gas reduction and clean energy goals.			
Act 097	Reach renewable electricity by 2045.			
Act 15	Achieve carbon neutrality by 2045.			
Resolution 18-55	Urges the Administration to increase the City’s urban tree canopy to at least 35% by 2035.			
Revised Ordinance 41-13	Provides for better environmental control in order to improve the quality of life of its citizens by enacting protective regulations to safeguard exceptional trees within the City and County of Honolulu.			

To learn more about our City commitments, visit resilientoahu.org/what-we-do



Achieving a Carbon Neutral Economy

The City remains committed to the emissions reductions goals in the global Paris climate agreement and working towards the State mandate to be carbon neutral by 2045. The general guidance from climate scientists is that we must decrease our carbon emissions by 50% each decade going forward to avoid the most catastrophic impacts of climate change. Our emission inventory shows we are not moving fast enough.

that will lay out O’ahu-specific carbon reduction targets and pinpoint clear strategies and actions for the next five years to achieve those goals. Already more than 2,000 participants in 11 community meetings, an island-wide survey and a virtual open house have weighed in from across the island to lay the foundation of action in the forthcoming climate action plan.

By continuing to work together across different levels of government, with innovation from the private sector and leadership from community and local civic leaders, we can continue to make progress towards a carbon neutral economy.

To track island-wide progress in reducing local emissions, the City completed a GHG inventory for 2005 and 2015, and continues to update it on an annual basis, which shows that O’ahu’s emissions have decreased by approximately 20% from 2005 levels, though they have plateaued in the most recent years from 2015-2018. The two largest sources of emissions for O’ahu continue to be electricity generation to power homes and businesses, and fossil fuel for cars, trucks, and other vehicles driving on our streets.

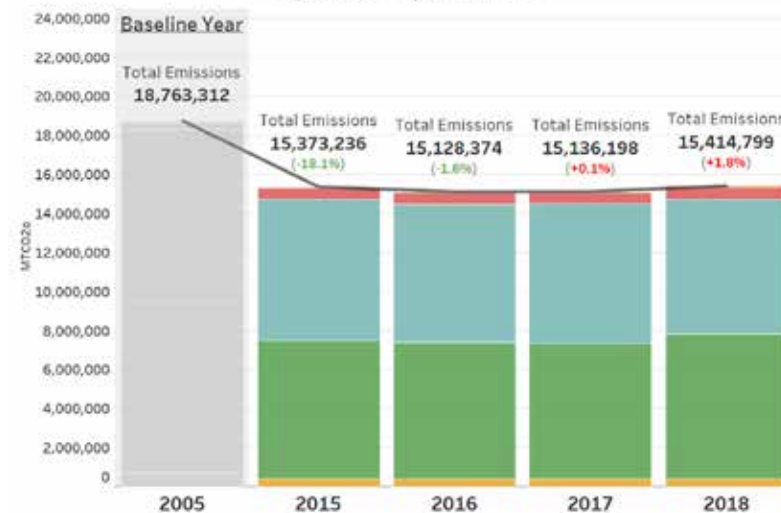
To build on existing island-wide efforts and accelerate our transition to a clean energy economy, the City is finalizing a Climate Action Plan to cover 2020 to 2025



As the City strives to achieve a carbon neutral economy, continuous efforts are being made to lower the island-wide greenhouse gas emissions. The overall greenhouse gas emissions on O’ahu is on a downward trend as net emissions were lowered by

17.9% in 2018, the most recent inventory year, relative to 2005, the baseline inventory year. However, the 2018 greenhouse gas inventory indicates an increase of 1.8% in total emissions between 2017 and 2018, specifically due to the aviation sector. The emissions from all other sectors have either decreased or remained the same.

O’ahu GHG Inventory, 2005-2018
City and County of Honolulu

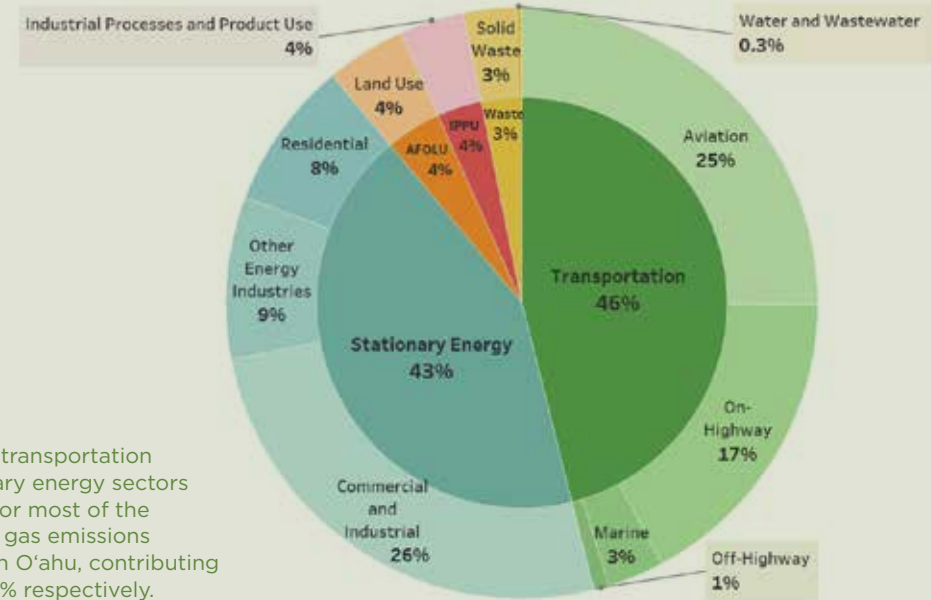


In 2018, total island-wide emissions were 15,414,799 MTCO₂e, a 1.8% increase over the previous year. Although the emissions from the stationary energy sector decreased by 3.4% in 2018, the increase in total emissions was mainly due to the transportation sector, which produced 7.3% more emissions compared to 2017.

Achieving A Carbon Neutral Economy

Our Path to Success

2018 GHG Inventory by Sector
City and County of Honolulu

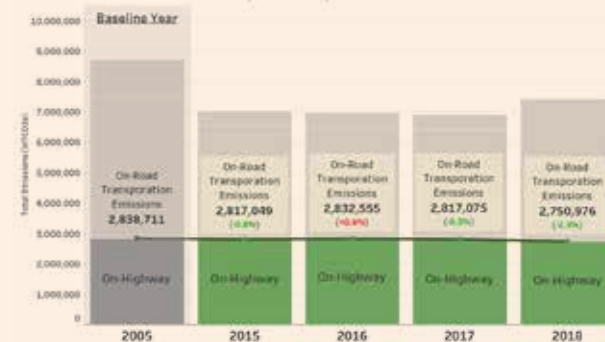


In 2018, the transportation and stationary energy sectors accounted for most of the greenhouse gas emissions produced on O’ahu, contributing 46% and 43% respectively.

TRACKING

ON-ROAD TRANSPORTATION EMISSIONS

On-Road Transportation Emissions, 2005-2018
City and County of Honolulu



Total on-road transportation emissions on O’ahu were 2,750,976 MTCO₂e in 2018, 2.3% less than the previous year.

TRACKING

RESIDENTIAL BUILDING & COMMERCIAL AND INDUSTRIAL BUILDING EMISSIONS

Building Emissions, 2005-2018
City and County of Honolulu



In 2018, carbon emissions from commercial and industrial buildings decreased by 0.9% while emissions from residential buildings increased by 1.1% from the prior year. Overall, building emissions decreased by 21.9% compared to the baseline year 2005.

Sustainable City Operations

The City is committed to leading by example to help O’ahu become a more sustainable island community. From reducing energy usage in City buildings to fuel use from city fleet vehicles, our City will create greener and cleaner City operations to do our part to address climate change and improve efficiency of government, especially as we build our economy back from the impact of the coronavirus.

The City has already seen efficiency improvements through energy performance service contracts (ESPC’s) at our Board of Water Supply and from the 2019 completion of a citywide project to replace 53,500 streetlights with efficient LEDs. New savings will be seen from more recent efforts in 2020, including the Department of Environmental Services installation of a 3.6 megawatt solar system at the waste-to-energy facility, H-POWER, as well as additional LED streetlight replacements at Ala Moana Regional Park. In the summer of 2020, the City also awarded two additional ESPC’s to develop an ambitious suite of energy and water conservation measures across all the City’s facilities that will identify new opportunities to install renewable energy, electric vehicle charging, and other innovative

climate resilience measures in City buildings starting in 2021.

The metrics in this section include: municipal energy and water consumption, fossil fuel usage, and methane capture and reuse. The Sustainability Report highlights department usage and key energy conservation projects for the past fiscal year.

The full data of the report can be found in the references section on our website.



Improving energy efficiency for City parks and facilities

In an effort to progress the its operations towards a more sustainable future, the City has selected two Energy Service Company (ESCO) partners to assist with energy-related

improvements for City-wide facilities and operations and the City’s 303 park locations. The ESCOs will first conduct an audit to determine the best cost saving options and energy improving projects and the selected projects will be funded by future energy savings accumulated over the next several years. The initiative can potentially save the City and taxpayers millions of dollars in city-wide operations while also creating local green jobs and improving city facilities and parks to become more energy efficient.



Sustainable City Operations

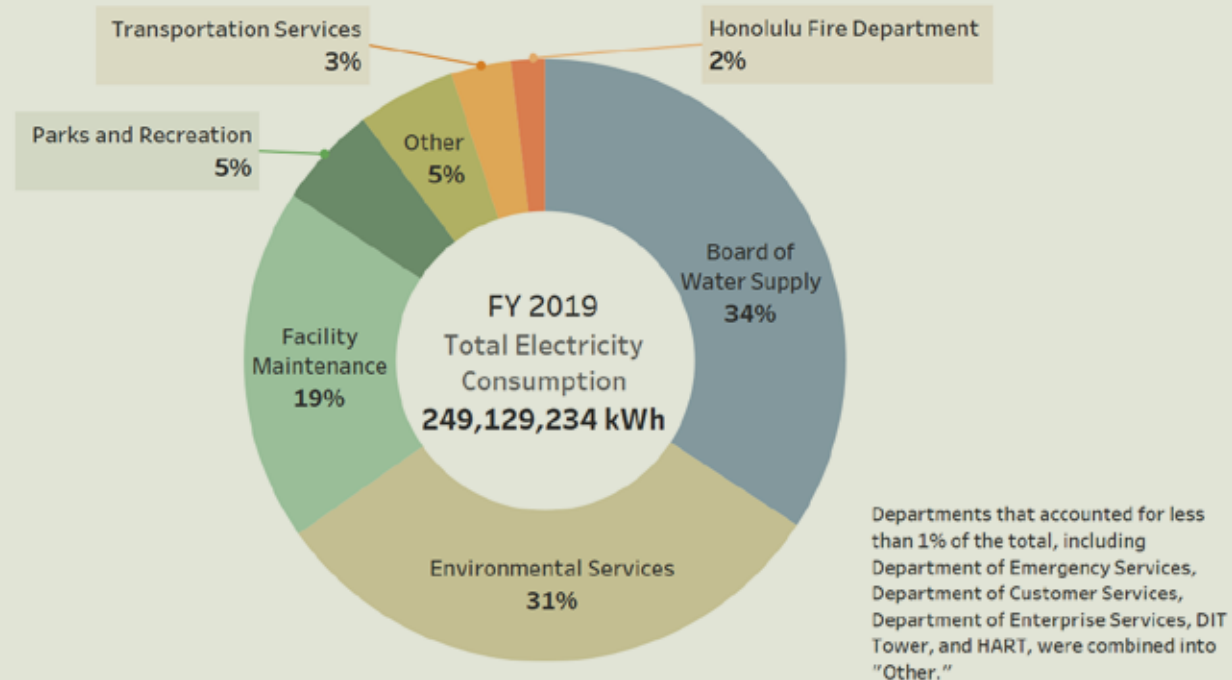
Our Path to Success

TRACKING MUNICIPAL WATER USAGE	TRACKING CITY FLEET FOSSIL FUEL USAGE
<p style="text-align: center;">Municipal Water Usage, FY2015-FY2019 City and County of Honolulu</p> <p style="text-align: center;">Municipal water usage was 9.1 millions of gallons per day in FY2019, an increase of 4.6% from FY2018.</p>	<p style="text-align: center;">City Fleet Fossil Fuel Usage, FY2017-FY2019 City and County of Honolulu</p> <p style="text-align: center;">In FY2019, the City fleet’s diesel fuel usage decreased by 0.9% while gasoline usage increased by 0.3% from the previous year.</p>
TRACKING MUNICIPAL ENERGY CONSUMPTION	TRACKING ON-SITE RE-USE OF METHANE
<p style="text-align: center;">City Operations Electricity Usage, FY2017-FY2019 City and County of Honolulu</p> <p style="text-align: center;">City operations used 249,129,234 kilowatt hours of electricity in FY2019. The Board and Water Supply and Department of Environmental Services accounted for more than half of the total municipal electricity consumption, at 34% and 31%, respectively.</p>	<p style="text-align: center;">Methane is a potent greenhouse gas but can help offset our energy needs. A pilot project at Honouliuli wastewater plant generates gas to that can help replace fossil fuel imports.</p>

Electricity Usage

Sustainable City Operations

FY2019 Municipal Electricity Usage by Department
City and County of Honolulu



ENERGY HIGHLIGHTS FOR 2020

Department of Design and Construction (DDC)

- Completed conversion of 53,000 legacy street lights to LED.
- Procured LED sports lighting fixtures for DFM to replace legacy sports lighting fixtures for the baseball field at Patsy T. Mink Central O'ahu Regional Park.
- Completed replacement of the exterior light fixtures with new LED light fixtures in the parking lots, on the comfort stations, and gymnasium at the Kāne'ohe District Park.

Department of Land Management (DLM)

Energy savings achieved at City Housing Projects:

- Hawai'i Energy Smart Program sponsored the installation of energy savings projects for residential units in West Loch Elderly Village and Harbor Village resulting in annual kWh savings of 32,351 and cost savings of \$9,901.68.

- Hawai'i Energy provided and installed LED light bulbs at no cost to the City. The lighting improved the visibility of common areas within Marin Tower and Harbor Village and produced an annual kWh savings of 333,276 kWh and cost savings of \$93,322.32

Department of Parks and Recreation (DPR)

- Completed the installation of a new LED ballfield lighting system at Kahuku District Park.
- Completed the replacement of the exterior light fixtures with new LED light fixtures in the parking lots, on the comfort stations, on the multi-purpose center, and the pavilion at Kailua District Park.

Fuel Usage

Sustainable City Operations

FY2019 Municipal Fuel Usage by Department
City and County of Honolulu

Department	Fuel Type			
	Diesel	Electricity	Gasoline	Propane
Board of Water Supply	62,300 gal	85,245,768 kWh	183,900 gal	
Community Services			5,123 gal	
Customer Services		361,190 kWh		
DIT Towers		729,893 kWh		
Emergency Management		5,536 kWh		
Enterprise Services	20,896 gal	7,766,535 kWh	28,168 gal	
Environmental Services	133,935 gal	77,294,864 kWh	10 gal	3,502 gal
Facility Maintenance	1,441,226 gal	47,333,173 kWh	433,753 gal	5,142 gal
HART	2,723 gal	3,835,089 kWh	51 gal	113 gal
Honolulu Emergency Services	129,515 gal	456,521 kWh	17,646 gal	957 gal
Honolulu Fire Department	172,219 gal	4,405,530 kWh	38,732 gal	19,691 gal
Honolulu Police Department	3,512 gal		1,346,468 gal	1,476 gal
Parks and Recreation	3,913 gal	13,632,830 kWh		18,649 gal
Transportation Services	5,377,824 gal	8,062,305 kWh	1,270,933 gal	
Total Consumption	7,348,063 gal	249,129,234 kWh	3,324,785 gal	49,530 gal

Department of Transportation Services (DTS)

- Completed the installation of the first electric bus charging system at the Kalihi-Palama Bus Facility in support of the 2035 renewable fleet goals.
- Continued efforts to use electric vehicles in TheBus fleet including developing plans to install depot EV charging stations at Middle Street, testing e-buses to re-design route and rate structures to support electrification, and budgeting for bulk purchases of battery electric buses in support of 2035 fleet goals.

Board of Water Supply (BWS)

Continued implementation Energy Savings Performance Contract (ESPC):

- Replaced seventeen (17) conventional vehicles with sixteen (16) hybrid vehicles and one (1) plug-in hybrid vehicle.
- Installed one (1) Level-1 vehicle charging station.
- Air Conditioning retrofit — two of three Corporation Yards chiller retrofits completed, which replaced an old chiller with a new, more efficient chiller. Third Corporation Yard retrofit, with three units being retrofitted started in CY19.
- Photovoltaic (PV) systems continue to be installed at outlying stations. Beretania Complex carport PV construction completed.
- ESPC work continued through CY19.

Clean & Affordable Transportation

On-road transportation is the third largest greenhouse gas emission source on O’ahu behind Commercial and Industrial buildings and Aviation. The total amount of pollution from local transportation has remained stubbornly stable even as other sources of emissions fall. Reducing transportation-based carbon pollution is critical to meeting our overall climate change commitments.

The City has established several goals that will help decarbonize the transportation economy and spur necessary action to meet the State’s mandate for carbon neutrality by 2045:

1. Transition our City fleet to 100% renewable energy by 2035;
2. Convert the entire community to 100% renewable ground transportation by 2045; and,
3. Reduce the overall number of vehicle miles traveled.

Providing clean transportation options — including more opportunities for residents to safely and affordably ride public transit, walk, bike, use car and ride share, or use electric vehicles from their homes or businesses — has many benefits. Beyond

emissions reduction, it can reduce our community’s vulnerability to imported oil prices, relieve traffic congestion, and promote healthy, active lifestyles for members of our communities. The City continues to make essential advances in expanding rail, safe biking and walking paths, continuing to ensure TheBus remains a clean and safe option in spite of coronavirus, installing EV chargers in City facilities, and by passing new policies such as Ordinance 20-10 requiring new buildings be electric-vehicle ready.



City builds out complete streets with new protected bike lane

Identified as a priority in the newly adopted 2019 O’ahu Bike Plan, the City opened a new, two-way protected bike lane running mauka to makai on Pensacola Ave in September

of 2020. The new lane connects to the existing King Street bike lane and offers a safer ride for Makiki and Ala Moana communities who have higher rates of bicycling and lower rates of car ownership than the island average. This bike lane is part of the City’s long-term Complete Streets program, and complements temporary efforts in 2020 such as Kalakaua Open Street Sundays to offer safe opportunities for residents to walk, jog, roll or bike during the COVID pandemic.



Clean & Affordable Transportation

Our Path to Success

<h3>TRACKING</h3> <h4>COMMUTE MODE SHARE IN 2018</h4> <p>2018 O’ahu Commute Mode Share City and County of Honolulu</p> <ul style="list-style-type: none"> Drove alone: 65.5% Other: 34.4%* Public transportation (excluding taxicab): 7.2% Worked at home: 4.5% Walked: 4.4% Taxicab, motorcycle, or other means: 2.9% Bicycle: 0.8% <p>*0.1% is missing from the total due to a rounding error.</p> <p>In 2018, 65.5% of commuters arrived at work by driving alone.</p>	<h3>TRACKING</h3> <h4>REDUCE PER CAPITA VEHICLE MILES TRAVELED</h4> <p>Annual Vehicle Miles Traveled (AVMT), 2015-2019 City and County of Honolulu</p> <table border="1"> <tr><th>Year</th><th>AVMT</th><th>% Change</th></tr> <tr><td>2015</td><td>6,508</td><td></td></tr> <tr><td>2016</td><td>6,468</td><td>-0.6%</td></tr> <tr><td>2017</td><td>6,582</td><td>+1.9%</td></tr> <tr><td>2018</td><td>6,627</td><td>+0.7%</td></tr> <tr><td>2019</td><td>6,559</td><td>-0.8%</td></tr> </table> <p>In 2018, the per capita annual vehicle miles traveled was 6,043, an increase of 1.5% since 2015.</p>	Year	AVMT	% Change	2015	6,508		2016	6,468	-0.6%	2017	6,582	+1.9%	2018	6,627	+0.7%	2019	6,559	-0.8%																								
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<h3>TRACKING</h3> <h4>INSTALLED EV CHARGERS</h4> <p>Installed EV Chargers on O’ahu City and County of Honolulu</p> <table border="1"> <tr><th>Area</th><th>Count</th></tr> <tr><td>Urban Honolulu</td><td>263</td></tr> <tr><td>Kapolei</td><td>69</td></tr> <tr><td>Waipahu</td><td>20</td></tr> <tr><td>Kaunoihi</td><td>15</td></tr> <tr><td>Pearl City</td><td>12</td></tr> <tr><td>Kaliua</td><td>11</td></tr> <tr><td>Aiea</td><td>10</td></tr> <tr><td>Lanai</td><td>6</td></tr> <tr><td>Kahuku</td><td>6</td></tr> <tr><td>Ewa Beach</td><td>4</td></tr> <tr><td>Waikeane</td><td>4</td></tr> <tr><td>Haleiwa</td><td>2</td></tr> <tr><td>Wahiawa</td><td>2</td></tr> <tr><td>Grand Total</td><td>424</td></tr> </table> <p>O’ahu has 413 total EV charging stations. However, most are in Urban Honolulu and it is critical that additional stations be added around the island.</p>	Area	Count	Urban Honolulu	263	Kapolei	69	Waipahu	20	Kaunoihi	15	Pearl City	12	Kaliua	11	Aiea	10	Lanai	6	Kahuku	6	Ewa Beach	4	Waikeane	4	Haleiwa	2	Wahiawa	2	Grand Total	424	<h3>GOAL</h3> <h4>INCREASE DEDICATED BIKE LANES 98% BY 2025</h4> <p>Existing and Planned Bike Paths and Lanes City and County of Honolulu</p> <table border="1"> <tr><th>Year</th><th>Miles</th><th>% Change</th></tr> <tr><td>2012</td><td>60.8</td><td></td></tr> <tr><td>2019</td><td>139.8</td><td>+129.93%</td></tr> <tr><td>2025</td><td>277.2</td><td>+98.29%</td></tr> </table> <p>Between 2012 and 2019, the City added 79 mi of bike paths and lanes. The City is planning to add 137 mi in the next five years.</p>	Year	Miles	% Change	2012	60.8		2019	139.8	+129.93%	2025	277.2	+98.29%
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100% Renewable Energy Future

The City and County of Honolulu has adopted by ordinance the achievement of 100% renewable energy for O'ahu by 2045. The City is also part of the Aloha+ Challenge, a joint pledge from the State and all four counties that set a mid-term goal of 2030 to have 70% of the island's energy come from clean and renewable energy sources.

Our 2018 GHG Inventory shows that fossil fuel burned to power O'ahu's electric grid (used in the residential, commercial, industrial and energy-producing industries) accounted for 35% of our total island-wide emissions. In a strong positive trend, O'ahu's renewable energy generation has increased from 6.7% in 2011 to 25.2% in 2018, over half of which comes from solar on residents' rooftops. For the seventh year in a row, Honolulu was ranked as the top city nationwide for per capita installed solar in 2020, with almost more than three times the solar capacity per person than the next best city, San Diego.

In addition to transitioning to renewable energy sources, O'ahu must further reduce emissions by

tackling energy efficiency in our built environment. New policies such as Honolulu's updated energy code that was adopted by City Council and signed by Mayor Caldwell into law as Ordinance 20-10 in June of 2020 will help ensure just that. Through this ordinance, commercial and residential buildings on island are required to be 33-65% more energy efficient and "ready" for rooftop solar and electric vehicles, helping to pave the way for further energy and cost savings for residents. The City also continues to advocate for ambitious GHG reductions and affordability measures in our electric grid by intervening in proceedings at the Public Utilities Commission.



As Honolulu remains ranked as the top city in the country for per capita solar capacity in 2020, the City continues its efforts to transition the island to a 100% renewable energy future. In 2019, the City on-site renewable energy sites produced electricity that was equivalent to 5% of the island's total grid electricity consumption.

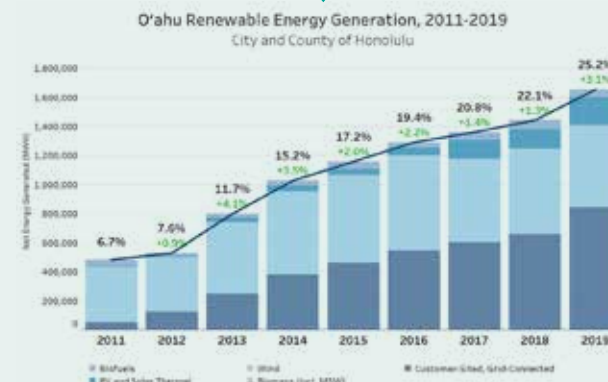


100% Renewable Energy Future

Our Path to Success

GOAL

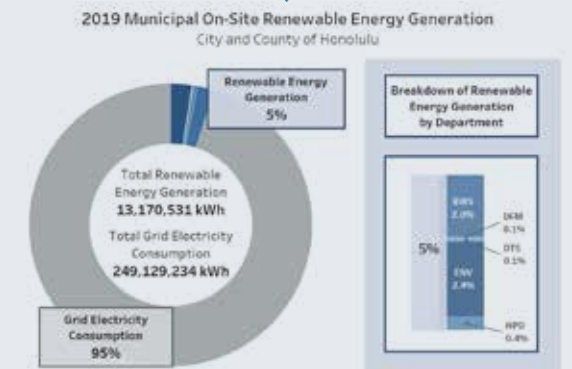
100% OF O'AHU'S ENERGY WILL COME FROM RENEWABLES BY 2045



Island-wide renewable energy generation was 1,655,628 MWh and accounted for 25.2% of all energy generation on O'ahu in 2019, an increase of 3.1% over 2018.

TRACKING

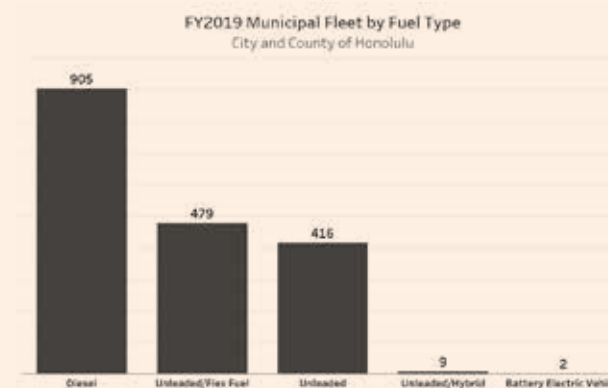
CITY ON-SITE RENEWABLE ENERGY GENERATION



In 2019, municipal renewable energy generation produced 13,170,531 kWh, which was equivalent to 5% of total island-wide grid electricity consumption. This represents more than a six-fold increase in on-site PV production in the past two years, jumping from producing 0.72% in 2018 to 5% in 2019 of total grid electricity consumed on O'ahu.

GOAL

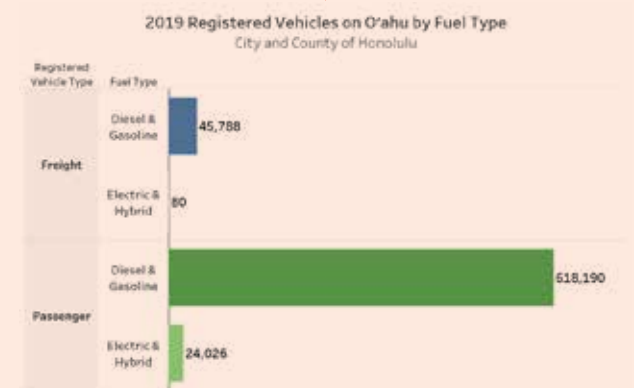
100% RENEWABLE CITY FLEET BY 2035



In FY2019, the municipal fleet included 479 unleaded gasoline and flex-fuel vehicles, 9 unleaded gasoline hybrid vehicles and 2 EV vehicles.

TRACKING

100% RENEWABLE ENERGY GROUND TRANSPORTATION BY 2045



In 2019, only 3.5% of the registered vehicles on O'ahu were electric or hybrid vehicles.

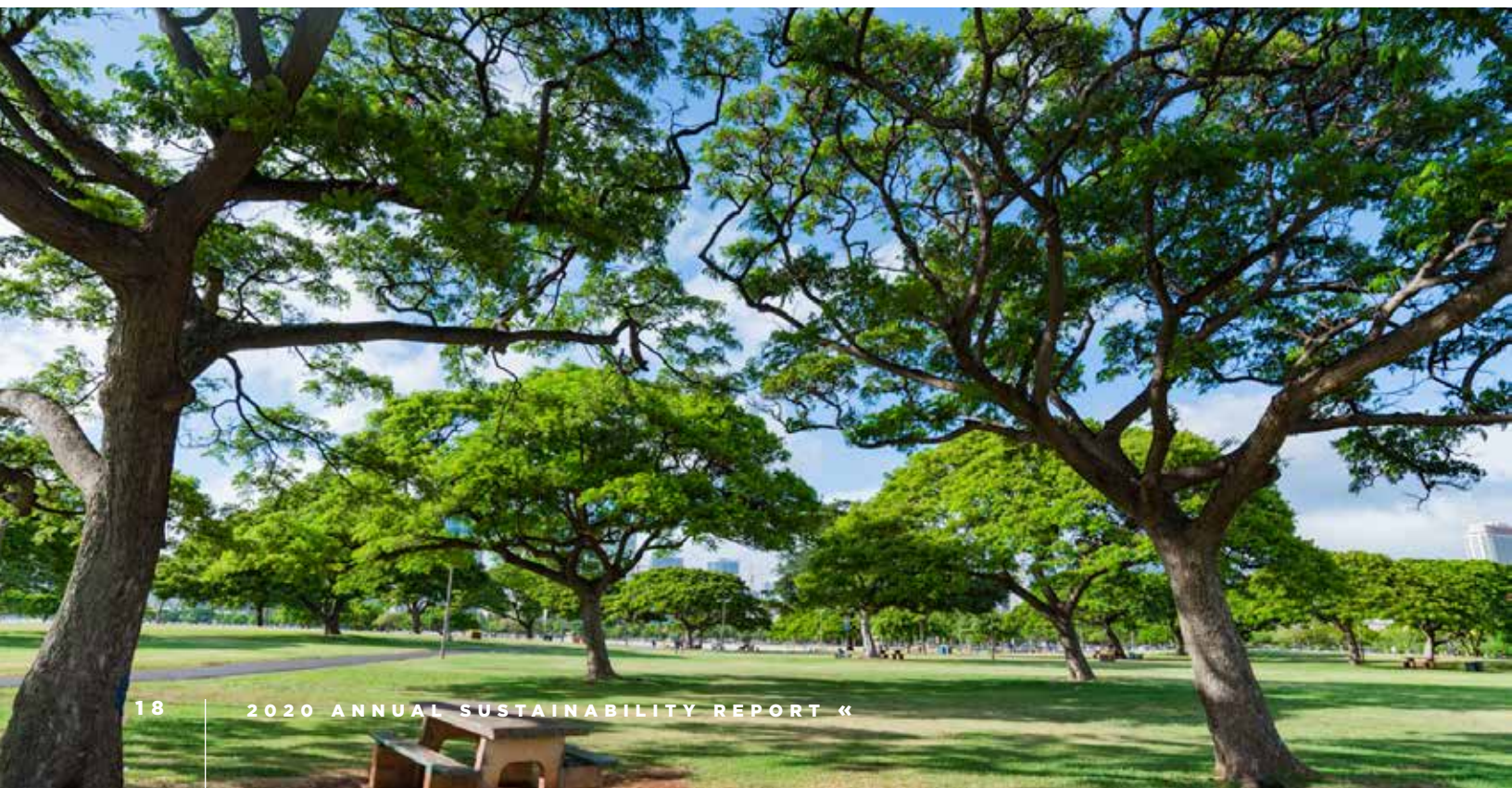
Water Security & Green Infrastructure

2019 was the hottest year ever recorded for Honolulu and for Hawai'i. Statewide, 273 daily temperature records were tied or broken. 2019 was the second hottest year on record for the planet. Locally, community stewards and scientists, residents and planners, and even insurers all registered alarm over these changes and recognize the threat to our economy and way of life in the near future.

Though it can be scary, change is also an opportunity for improvement. Communities have organized to plant trees that lower neighborhood temperature but also improve walkability. Residents are plugging into local nonprofits and spending time caring for and restoring special natural places and cultural sites. The Resilience Office worked with 30 volunteers to collect data to create the first O'ahu Community Heat

Assessment, a tool that not only linked strangers together but can also show what neighborhoods are on the front line of climate impact. Hundreds of volunteers planted thousands of trees across the island in 2019-2020 and we are recording every one of them on our Every Tree Counts App, all towards our island's tree goals.

As we move into a "One Water" future, we are also working to use less water from our aquifers, re-use more water for irrigation, and protect our neighborhoods from future flood events fueled by climate change with resilient infrastructure. We will continue to track these measurements year over year, and even as our challenges grow we want to work with our communities to use change to improve our neighborhoods.



Water Security & Green Infrastructure

Our Path to Success

GOAL	TRACKING
REDUCE PER CAPITA WATER CONSUMPTION TO 145 GALLONS PER DAY BY 2045	DOUBLE THE AMOUNT OF WASTEWATER REUSED BY 2030
<p style="text-align: center; font-weight: bold; font-size: small;">O'ahu Per Capita Water Consumption, FY2015-FY2018 City and County of Honolulu</p> <p style="font-size: x-small; margin-top: 5px;">In FY2018, island-wide per capita water consumption was 147.2 gallons per capita per day.</p>	<p style="text-align: center; font-weight: bold; font-size: small;">O'ahu Recycled Water Use, 2015-2019 City and County of Honolulu</p> <p style="font-size: x-small; margin-top: 5px;">Recycled water use on O'ahu was 11.8 millions of gallons per day in 2019.</p>
GOAL	GOAL
PLANT 100,000 TREES ACROSS O'AHU BY 2025	INVENTORY AND ASSESS CITY STREET AND PARK TREES
<p style="font-size: x-small; margin-top: 5px;">Since December 2017, at least 30,445* trees have been planted by the community and the City across O'ahu. *as of October 14th, 2020</p>	<p style="font-size: x-small; margin-top: 5px;">Since 2017, 219 Citizen Forester volunteers mapped and assessed 14,253 city street and park trees across O'ahu and continue to work towards a comprehensive tree inventory.</p>
<p style="font-weight: bold; font-size: small;">Measuring O'ahu's Urban Trees</p> <p style="font-size: x-small;">During the summer of 2019 the Resilience Office served as Team Leader for a Downtown tree mapping group of Citizen Foresters. This volunteer program collects critical data for the management of City tree assets. Over 5 months, 29 volunteers mapped 596 trees to grow our City's tree inventory and assess the community tree canopy. These 596 trees remove 1,909 lbs/yr of pollution, save 79,433 kWh/yr of energy, sequester 129,057 lbs/yr of carbon and prevent 1,560,920 gallons/yr of runoff.</p>	

Sustainable Waste Management

On O‘ahu, solid waste contributes to more greenhouse gas emissions than industrial processes. Recognizing waste’s contribution to the climate crisis, the City remains committed to achieving the Aloha+ Challenge goal of reducing waste state-wide by 70% by 2030. Additionally, the City has developed two new waste reduction goals specifically for O‘ahu through the development of the 2019 Integrated Solid Waste Management Plan:

1. Reduce per capita waste generation 25% by 2030; and
2. Reduce carbon emissions from the waste stream by substantially reducing or eliminating carbon-based single-use plastics and polystyrene from the waste stream by 2030.

In an effort to advance progress on those goals, Mayor Caldwell signed Bill 40, the Disposable Food Ware Ordinance (DFWO), into law in December of 2019. The DFWO phases out certain single-use polystyrene and plastic products to help reduce the amount of plastic pollution on O‘ahu and its contribution to climate change. As the DFWO takes effect in 2021, the Resilience Office remains committed to tracking and reporting on the percentage of plastic in the waste stream and our waste generation and reduction overall.

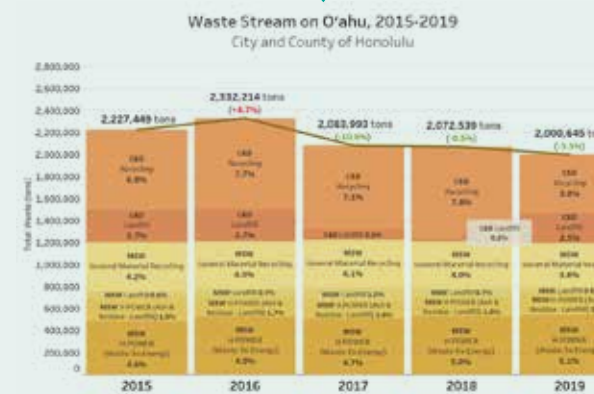


Sustainable Waste Management

Our Path to Success

TRACKING

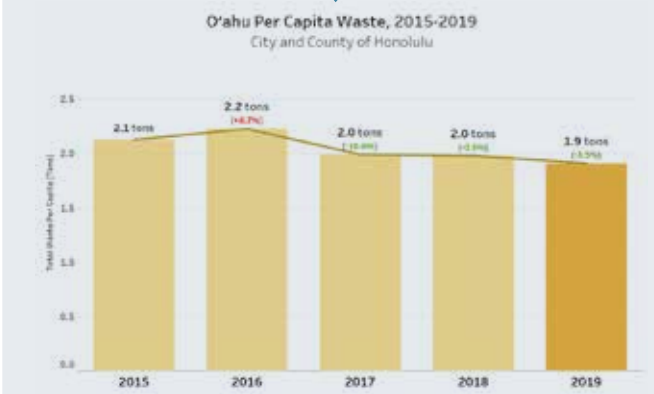
TOTAL ISLAND-WIDE WASTE



In 2019, O‘ahu produced 2,000,645 tons of waste in 2019, a 3.5% decrease over the previous year.

TRACKING

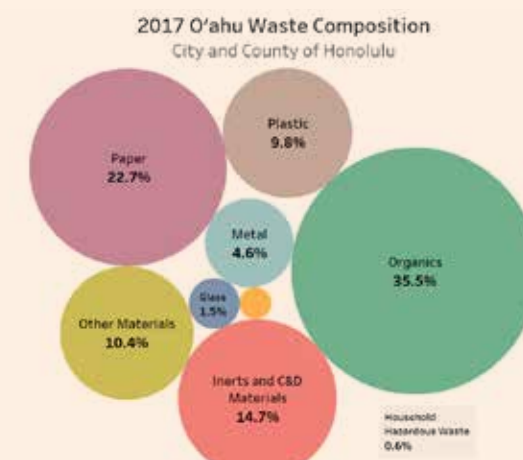
PER CAPITA WASTE



Total waste per capita generated on O‘ahu was 1.9 tons in 2019, a 3.5% decrease over 2018.

TRACKING

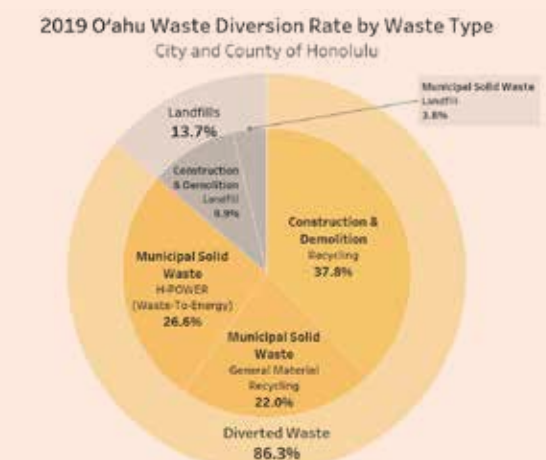
PLASTICS IN O‘AHU’S WASTE STREAM



Plastics accounted for 9.8%* of our municipal solid waste sent to H-POWER.

TRACKING

WASTE DIVERSION



In 2019, 86.3% of the waste on O‘ahu was diverted from landfills.

Disaster Resilience

In recent history, US disaster losses have been highest in coastal areas, especially where building codes are insufficient to prevent damage from natural hazards. Climate change continues to amplify natural hazards, causing stronger and more frequent hurricanes and tropical storms, and intensifying rainfall and flood events – which are especially challenging for isolated island communities such as O’ahu. Our island’s vulnerable coastline, including treasured beaches and critical coastal infrastructure, is increasingly impacted by chronic coastal erosion and sea level rise.

In 2019, the City completely updated its Hazard Mitigation Plan, which lays out long-term strategies to reduce the impacts of future disaster events on people, property, and the environment. Incorporating






input from 3 large workshops, 10 facilitated group meetings, and over 900 respondents to various public opportunities to comment over the 12-month process, the plan underscores the importance of being proactive with building codes and other actions to increase climate resilience.

This section follows expanded efforts to leverage federal funding for risk reduction projects, examines long-term trends along the shoreline, tracks the resilience of our homes and buildings, and catalogues some of the ways community members are staying connected and ready. Our social bonds and neighbor-to-neighbor ties are the best resilience tools we have. They will continue to drive our concerted effort to reduce risk and increase the culture of aloha that keeps our community strong in the face of adversity.



Disaster Resilience

Our Path to Success

TRACKING	TRACKING
HAZARD MITIGATION & RISK REDUCTION	HURRICANE PREPAREDNESS
 <p style="font-size: small;">Federal Hazard Mitigation Funding, FY2015-FY2020 City and County of Honolulu</p> <p style="font-size: x-small;">In fiscal year 2020, the City received \$262,500 in federal Hazard Mitigation Assistance funding to support permanent risk reduction projects, a significant increase. The City has spent approximately \$1 million towards such projects over the past 25 years combined.</p>	 <p style="font-size: x-small;">Approximately 68%* of all single-family homes on O’ahu lack sufficient hurricane wind resistance and 45% severely lack hurricane wind-resistance without retrofits due to single-wall construction before 1988 when codes were updated.</p>
TRACKING	TRACKING
COMMUNITY RESPONSE	INFORMED RESIDENTS
 <p style="font-size: small;">Number of CERT-Trained Individuals, 2014-2019 City and County of Honolulu</p> <p style="font-size: x-small;">269 individuals completed CERT (Community Emergency Response Team) training in 2019. CERT teaches disaster management and response skills to individuals and groups.</p>	 <p style="font-size: x-small;">The HNL.info app gives users real-time access to City disaster announcements and updates. Our goal is to have 100% of residents have the HNL.info app on their phones to protect the lives of you and your loved ones.</p>
 <p style="font-size: x-small;">Nearly 25% of O’ahu’s beaches have been lost since 1940 That’s over 17 miles of beaches lost. For many years, the typical response to the threat of coastal erosion has been to protect the land by building a seawall. Over time though, this “solution” leads to another problem – the loss of beaches. When a retreating beach runs up against a hard structure such as a seawall, it has no place to go. Beach sands in front of the wall can erode away entirely, leaving adjoining beach areas vulnerable to accelerated erosion.</p>	

Community Resilience & Equity

All of our island communities are impacted by climate change, but not all communities are impacted equally. Heat waves are harder for households that can't afford air conditioning. An old car's gas bill can break the monthly budget. Cost of housing and transportation in comparison to income are critical factors to consider for long-term climate resilience. The Aloha United Way ALICE Report found that 40% of households on O'ahu already struggle to make ends meet, and that number will rise as a result of the COVID-19 economic downturn. In 2018, the average household "Survival Budget" for a family of four was \$85,000, but the median retail sales wage—Hawaii's most common occupation—was just \$26,060 a year.

The best climate resilience solutions reduce disparities and avoid creating an undue burden on populations already experiencing chronic

vulnerability and economic stress. In one California county, vouchers are provided to low and moderate income residents to purchase hybrid and EV cars which can save out of pocket operating and fuel cost by 50%. The Resilience Office has worked with Hawaii Energy and to retrofit City affordable housing units with energy-saving devices that not only reduce climate emissions but also cut utility bills.

It's clear nationwide and in Hawaii that gender, age, race, ability, socioeconomic status and educational attainment are strong predictors of an individual's ability to afford basic needs as well as weather climate change impacts. When we move forward to address the critical crisis of climate change for all O'ahu residents, we must work together to ensure that no community bears a disproportionate burden or gets left behind.

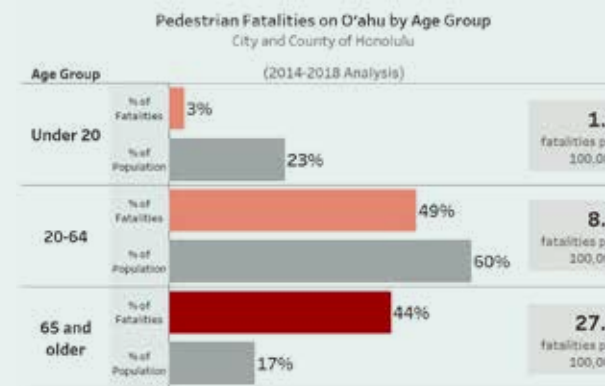


Community Resilience and Equity

Our Path to Success

TRACKING

PEDESTRIAN FACILITIES BY AGE GROUP



An analysis of pedestrian fatalities on O'ahu between 2014-2018, reports that Kupuna, age group of 65 years and older, experienced 27.9 fatalities per 100,000, a significant higher rate compared to other age groups.

TRACKING

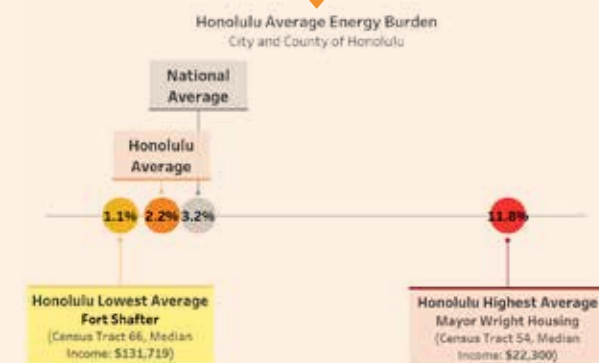
TRANSPORTATION AFFORDABILITY



O'ahu residents, both urban and rural, face higher transportation costs than the national average. Robust public transit and transit oriented development will improve transportation affordability, accessibility, and equity island-wide.

TRACKING

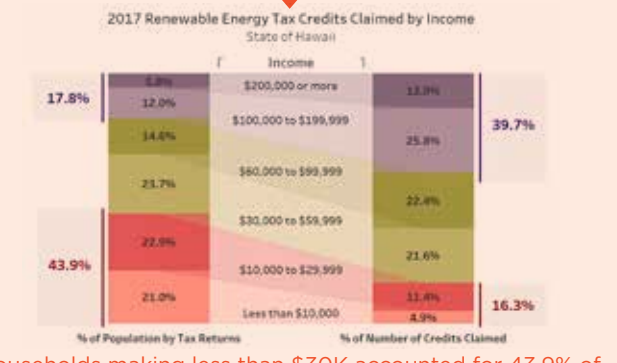
ENERGY BURDEN



In 2018, the highest energy burden for Honolulu was in Mayor Wright Housing, an affordable housing community, where the residents spent 11.8% of their annual income on energy. The data highlights how households with lower median incomes are disproportionately impacted and spend a higher proportion of their income on energy bills.

TRACKING

PV ENERGY



Households making less than \$30K accounted for 43.9% of the population in the state of Hawaii but only represented 16.2% of the tax credits claimed for renewable energy in 2017. This indicates a disproportion in community-based renewable energy projects available for households making less than \$30K and the need to increase PV projects for lower-income households to claim PV tax credits.

Tracking Progress Towards Resilience

The Ola: Oahu Resilience Strategy is truly a kākou effort. Mayor-elect Blangiardi and a blue-ribbon panel of 22 public and private leaders led development of the comprehensive Strategy to protect island residents, released in May 2019 by Mayor Caldwell at his State of the City address. In September of 2019, the Honolulu City Council adopted the O’ahu Resilience Strategy as a guiding policy document for the City, ensuring that the Strategy represents a true City vision. Developed in collaboration with over 3,000 O’ahu residents, organizations, and community leaders, the O’ahu Resilience Strategy contains 44 concrete Resilience Actions for the City to take that directly address our challenges of long-term affordability, prepare people and place for the impacts of the climate crisis, and increase community cohesion and resilience in the face of change. Producing a strategy, however, is not the end of thinking about resilience—it’s the beginning.

In just over a year since the strategy’s release, the Resilience Office has worked across City departments to drive innovation and implementation, making headway on 29 of the 44 Resilience Actions. For the sake of transparency, the City will track our progress year over year on Resilience Strategy actions here in the Annual Sustainability Report.

To address the rampant proliferation of unlawful short-term vacation rental units (VRU) that contribute to O’ahu’s housing crisis, the Honolulu City Council passed Ordinance 19-18. This ordinance strengthens existing VRU regulations allowing only a limited number of new units in non-resort areas under a new registration process. Such regulation preserves the social fabric of neighborhoods for long-term residents and increases the local housing supply by removing illegal short-term units from the market.

► Resilience Action 2

In response to immediate community needs as a result of the COVID-19 pandemic, the City established the Office of Economic Revitalization (OER) via City Council Resolution 20-197. In the short-term, OER significantly expanded the City’s capacity to deliver COVID-19 economic assistance. In the long-term, OER will focus on guiding O’ahu’s strategy for a diversified economy that reduces over-reliance on any one sector and accelerates expansion in sustainable agriculture, renewable energy, innovation technology, and more.

► Resilience Action 9

Increasing rates of sea level rise and coastal erosion threaten major losses to over a quarter of the beaches on O’ahu. The City Climate Change Commission published guidance recommending new shoreline regulations and setbacks. The Resilience Office secured FEMA funding to engage stakeholders and update Chapters 21A, 23, and 25 of the Revised Ordinances of Honolulu in an effort to protect and preserve life, safety, property, and public access on O’ahu’s 66 miles of sandy shoreline as our climate changes around us.

► Resilience Action 29



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

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

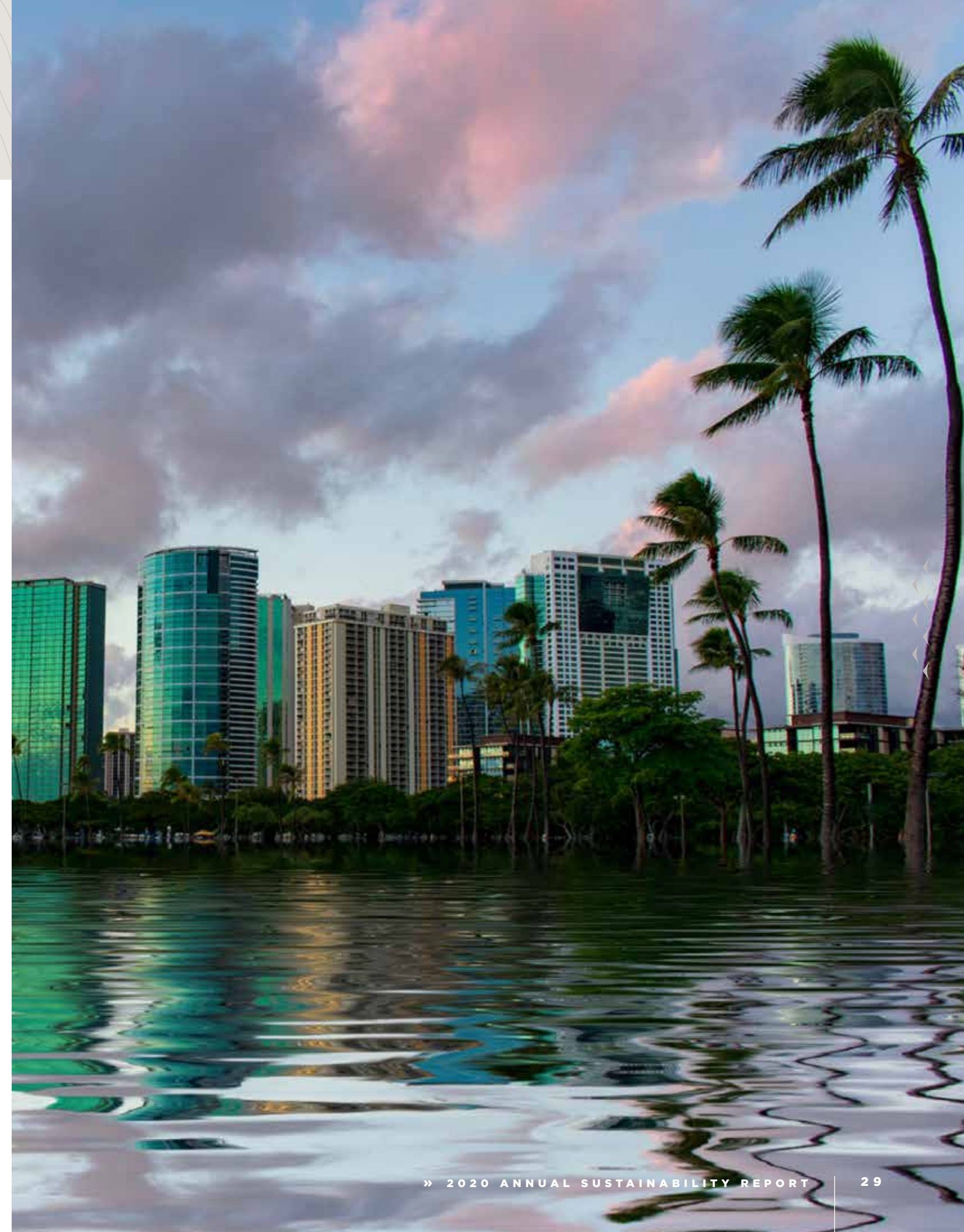
KEY

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

Grades & Rankings

While we recognize O'ahu is unique, it's helpful to compare our progress to other communities as we all race to become more sustainable and resilient. Year over year, we will track our progress in these national benchmarks and continue to improve our progress over time.

 <p>CARBON DISCLOSURE PROJECT</p>	 <p>AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY</p>
<p>Scored in progress towards Environmental Stewardship</p> <p>B Scale: A to D-</p>	<p>Clean City Energy Scorecard</p> <p>#47 Out of 75 US Cities</p>
<p>Previous Score: C (2018)</p>	
 <p>ENVIRONMENT AMERICA</p>	 <p>WALLETHUB</p>
<p>America's Top Shining Cities for solar PV installed per capita</p> <p>#1 Out of 50 US Cities</p>	<p>Greenest Cities in America</p> <p>#12 Out of 100 US Cities</p>
<p>Previous Score: #6 (2018)</p>	
 <p>PARK SCORE</p>	 <p>UN SUSTAINABLE DEVELOPMENT GOALS</p>
<p>Acerage, Investment, Amenities, & Access</p> <p>#41 Out of 100 US Cities</p>	<p>Sustainable Cities & Communities</p> <p>#10 Out of 105 US Cities</p>
<p>Previous Score: #48 (2018)</p>	<p>Previous Score: #10 (2018)</p>



Conclusion & Next Steps

The residents of O‘ahu live close to the land and ocean and know that not only is our environment under threat, it is also the foundation of our economy. The metrics contained within this Report provide a dashboard for years to come, providing a transparent accounting of our progress as an island community toward a safe and secure future. It is our firm belief that the foundation of good government policies require tangible goal setting, the collection of sound data, and tracking our performance.

In the creation of this report, we found inspiring stories of sustainability efforts both in the community and within the City government. We applaud all of the individual and agency efforts that continue to help make our island community more resilient. The commitments made by City leadership to create and uphold local, state, national and international goals have provided a strong foundation to accelerate and measure our work alongside other communities going forward.

The City is making progress towards becoming more resilient and sustainable. However, the speed of change happening around us means that we must pick up the pace. Building a carbon-free economy and preparing our infrastructure for the impact of climate change is no small task. However, many hands make even a heady canoe light. In the end, it’s a kākou thing: we are truly all in this together.

The data in this report will only shift in a positive direction if our island population lends support. If you would like to get involved in this island-wide effort, we welcome you to contact the Resilience Office at any time.

Contact the Resilience Office:
(808) 768-2277
resilientoahu@honolulu.gov
www.resilientoahu.org

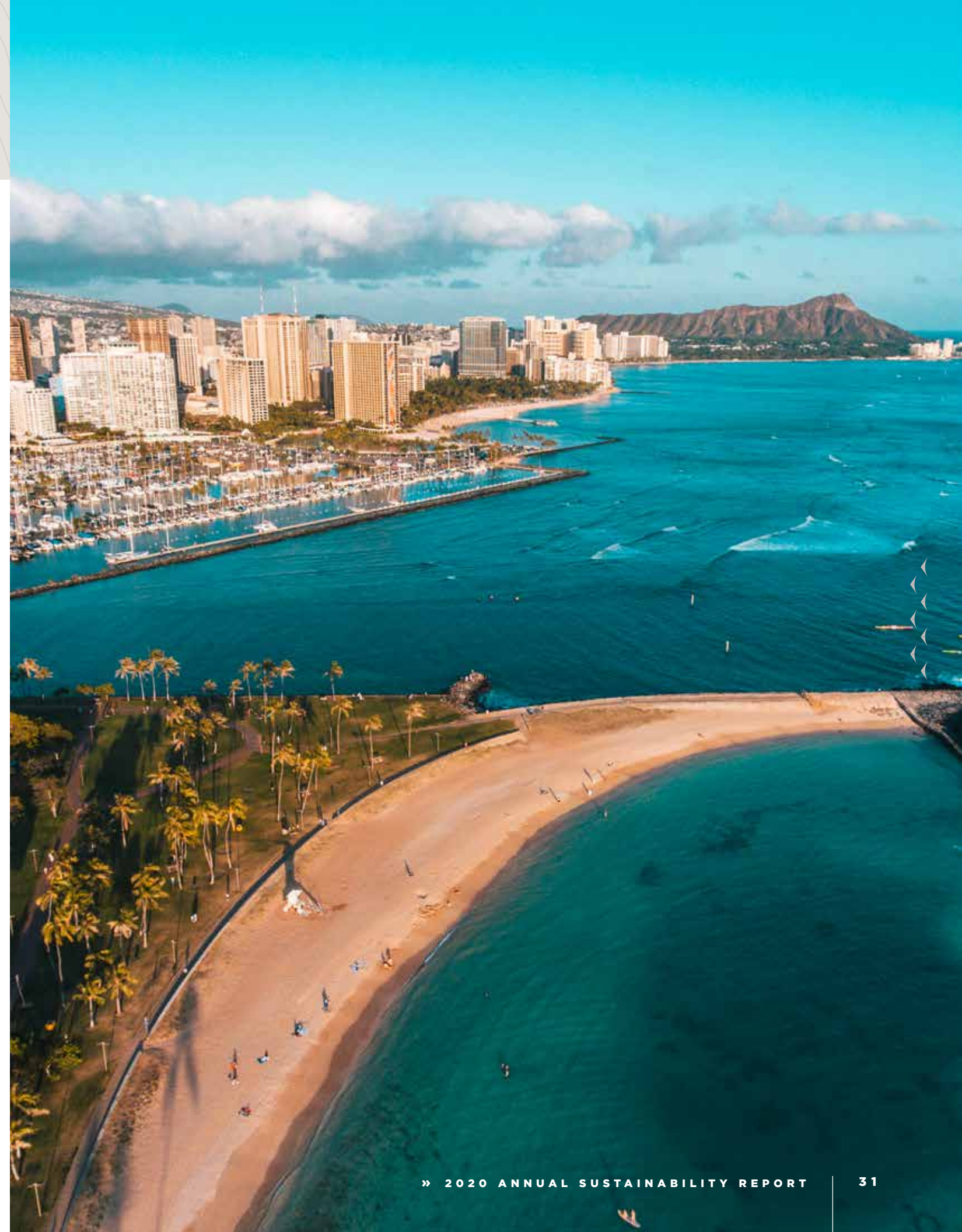
What you can do:

Resilience is built through our daily choices. From City priorities to individual actions, our efforts, add up!

- Buy local food — it’s healthier for you and our economy. It also supports having fresh food on the island when disaster strikes.
- Swap your car for a hybrid or electric vehicle — or better yet ditch car expenses altogether and walk, bike, and take the bus instead.
- Reduce your utility bill by installing a solar water heater and other energy efficiency moves in your home.
- Retrofit your home and keep two weeks of supplies on hand in case the next hurricane makes landfall on O‘ahu.

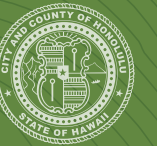
The number one tool of resilience is community. Talk about climate change, resilience, and sustainability with your friends, family and especially your neighbors. Together we can create a healthier, safer O‘ahu that is ready for any shocks and stresses that come our way.

Follow us on Instagram, Facebook, and Twitter at @ResilientO‘ahu for sustainable tips and ideas as we continue to protect our island community.



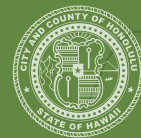
CITY & COUNTY OF HONOLULU

Annual Sustainability Report 2020



CITY & COUNTY OF HONOLULU

Annual Sustainability Report 2020



Prepared by
OFFICE OF CLIMATE CHANGE,
SUSTAINABILITY & RESILIENCY

www.resilientoahu.org