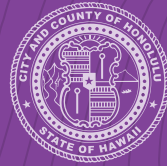


Climate Ready O'ahu

CITY AND COUNTY OF HONOLULU

CLIMATE ADAPTATION STRATEGY





The impacts of climate change here on O‘ahu cannot be denied, affecting both residents and businesses and including everything from a house falling into the ocean to serious infrastructure damages from flooding around the island.

The City and County of Honolulu continues to focus on the need to eliminate greenhouse gas pollution—the root cause of climate change and the source of climate impacts—while also accelerating our adaptation efforts. Climate Ready O‘ahu identifies necessary long-term solutions.

The commitment of Honolulu is already reflected in investments and grants received to address flooding, increasing temperatures, and more. This is further highlighted in the strategies and actions here through efforts already underway for our climate

preparedness. And still, we know there’s much work ahead.

This process surfaced big essential questions including, where are we going; who gets to determine a vision; how do we commit to long-term needs through near-term action; and, what tools do we have and what tools do we need? This strategy puts forward solutions to those challenges and opportunities.

My thanks to the thousands of community voices, the Community Advisory Hui, the technical research team and City Climate Change Commissioners, City Council members, and our City agencies for the vision and commitment.

Rick Blangiardi
Mayor
City and County of Honolulu

Introduction

Climate change is an unequivocal danger to us today and an increasing threat for our future. As the climate has changed, we’ve experienced impacts to our community, ‘āina (land, earth), and infrastructure. As we work to rapidly eliminate greenhouse gas pollution and stop causing more climate change (see the City’s Climate Action Plan), we must also take actions to reduce the risks to our sustained well-being. Climate adaptation is taking action to prepare for and adjust to both the current and projected impacts of climate change.

As our island’s climate adaptation strategy, Climate Ready O‘ahu is about protecting what we love by adapting to climate change. It uplifts 12 strategies and 57 actions we must take to prepare, protect, and safeguard our island community as climate impacts unfold today and for generations of O‘ahu residents to come.

O‘ahu’s top climate hazards are:



Sea Level Rise



Heat



Drought and Wildfire



Flash Flooding



Hurricanes

Climate Change on O'ahu

Though these hazards are not new to O'ahu, the intensity and frequency at which we experience them are expected to increase and cause a variety of negative impacts.

Agriculture

- ▶ Farming productivity losses
- ▶ High risk of interruptions to imported food supply
- ▶ Higher production and water costs

Cultural Resources

- ▶ Increased erosion and inundation of fishponds
- ▶ More frequent exposure of Hawaiian burials
- ▶ Increased stress on biocultural resources

Coasts and Wetlands

- ▶ Beach erosion and narrowing
- ▶ Nearshore water contamination from flooded cesspools
- ▶ Wetland and ocean biodiversity loss

Conservation

- ▶ Reduction in groundwater resources
- ▶ Increased likelihood of wildfires
- ▶ Native biodiversity and habitat loss

Transportation

- ▶ Washed out highways and road closures
- ▶ Loss of roadway connections between communities
- ▶ Disruption in emergency services

Urban Areas

- ▶ Hotter days and nights
- ▶ Groundwater flooding and drainage failure
- ▶ Reduced shade from damage to trees

Buildings

- ▶ Increased damage to property, or loss of property
- ▶ More frequent disruption in electrical, waste, and water services
- ▶ Additional investments needed for climate resilient retrofits

Community

- ▶ Reduction in recreational activity opportunities
- ▶ Local water and food shortages
- ▶ Increased heat waves and associated health risks

Homes

- ▶ Permanent flooding and loss of property
- ▶ Additional costs needed to keep homes cool
- ▶ Increased likelihood of hurricane damage

Vision Statement

Informed by community members and businesses, climate scientists, and government agencies, our vision for a Climate Ready O'ahu is:



All people are empowered with the knowledge, tools, and resources to prepare for climate impacts.



Connections between people and native ecosystems are cultivated so the 'āina is safeguarded for generations to come.



Infrastructure works with natural systems to keep people safe at home, at work, and everywhere in between.

Community Voices

Climate Ready O'ahu advances adopted policies and goals, and is built on a foundation of community voices, including an Advisory Hui, City staff, and more than 2,000 residents who were engaged through surveys, workshops, open houses, a public comment period, and other community engagement efforts.

Community Outreach By the Numbers:



12 community engagement workshops

20



farmer's markets

40



member Community Advisory Hui

2

island-wide surveys



2

award-winning Climate Ready Games



2



Open Houses



32

meetings with City departments

6

community engagement workshops



2,000+ voices heard



1,200+ comments recorded



33

out of

35






















zip codes represented

From state and city governments, to residents and communities, to the visitors we host each year, preparing for climate change requires continued collaboration in identifying and implementing solutions that make sense for us. By executing the following strategies and actions, Climate Ready O'ahu will enhance the well-being of O'ahu residents and the environment for generations to come.

Empowered and Prepared People

A climate-ready O’ahu is one where all people are empowered with the knowledge, tools, and resources needed to prepare for climate impacts.

Raising awareness of climate hazards, providing educational resources for implementing climate adaptation solutions, and collaborating with natural and cultural resource practitioners will foster alignment in protecting our community and cultural resources from climate impacts.

Action #	Action Name	Hazards	Timeframe
 Strategy 1: Increase public understanding of climate change hazards to foster individual and community preparedness.			
1.1	Develop and distribute materials about climate hazards, their impacts, and how individuals can take action to prepare.		 Near
1.2	Expand the City’s network of partners who serve frontline communities to check in on vulnerable neighbors during climate “shocks.”		 Near
1.3	Provide training to public-service safety staff, outdoor workers, and caregivers to recognize and report patterns of heat-related illnesses and injuries.		 Near
 Strategy 2: Amplify and increase capacity for community-led climate adaptation.			
2.1	Create a Climate Champions program to encourage local climate leadership.		 Near
2.2	Encourage and support neighborhoods to become certified Firewise Communities.		 Medium
2.3	Create a resource hub to promote opportunities for engaging in community-led climate adaptation.		 Near
2.4	Celebrate community action on climate adaptation.		 Medium
 Strategy 3: Partner with cultural resource practitioners to plan for climate impacts to Native Hawaiian and other cultural resources.			
3.1	Recognize and compile educational resources on how Native Hawaiian cultural practices positively contribute to climate adaptation.		 Near
3.2	Research climate impacts on Native Hawaiian cultural practices and resources		 Medium
3.3	Assess and mitigate risk to iwi kūpuna from sea level rise and coastal erosion.		 Medium
3.4	Produce tools and guidance specific to climate indicators defined by Native Hawaiian communities.		 Near
3.5	Identify and plan for climate impacts to historic sites and landmarks.		 Medium
 Strategy 4: Center equity in climate change adaptation.			
4.1	Operationalize an Equity Screen for City projects to ensure equitable implementation of climate ready actions.		 Near
4.2	Develop and monitor key adaptation metrics in collaboration with frontline community members.		 Near
4.3	Improve language accessibility of climate-related information		 Medium

Safeguarded and Stewarded 'Āina

A climate-ready O‘ahu is one where connections between people and native ecosystems are cultivated so the ‘āina is safeguarded for generations to come.

Strengthening ecosystem-wide restoration efforts, improving watershed health, and enhancing local food production and access will minimize loss of ‘āina and strengthen natural buffers to climate impacts.

Action #	Action Name	Hazards	Timeframe
Strategy 5: Strengthen climate resilience of beach and wetland ecosystems through preservation and restoration.			
5.1	Utilize the expanded scope of the Clean Water and Natural Lands Fund to better protect and maintain beaches and wetlands.		Near
5.2	Establish wetland protection and restoration goals.		Medium
5.3	Increase partnerships and investments to support cesspool conversions islandwide		Near
5.4	Collaborate with the community to restore beach and dune systems in City beach parks.		Near
5.5	Explore the potential for a statewide Coastal Conservancy in coordination with the State and other counties.		Medium
Strategy 6: Improve watershed health to mitigate wildfire risk and manage flooding.			
6.1	Slow and hold runoff in parks, open spaces, and roads to improve water quality and reduce flooding.		Near
6.2	Expand support of conservation, maintenance, and reforestation across all priority watersheds.		Medium
6.3	Expand capacity and partnerships for stream maintenance.		Medium
6.4	Adopt stream buffers to reestablish natural stream systems.		Medium
6.5	Increase and improve the quality of buffer areas around wildfire prone areas		Near
Strategy 7: Strengthen fresh water security by improving water conservation and reuse.			
7.1	Expand recycled water infrastructure and plans for water reuse.		Far
7.2	Adopt a plumbing “reach code” to incentivize water efficiency.		Medium
7.3	Incentivize water efficiency upgrades in buildings and homes.		Medium
7.4	Expand the use of non-potable water.		Near
Strategy 8: Facilitate a climate resilient local food system.			
8.1	Evaluate underutilized City lands to grow the local food system.		Near
8.2	Catalyze the use of Climate Smart Agricultural practices and technologies.		Medium
8.3	Commission a study on impacts of climate change on agriculture.		Near
8.4	Create a climate adaptation resource network for farmers and food system stakeholders.		Near
8.5	Expand the City’s community garden network in underserved neighborhoods.		Medium
8.6	Support increased long-term capacity to store, refrigerate, and distribute food.		Medium

Safe & Reliable Infrastructure

A climate-ready O’ahu is one where infrastructure works with natural systems to keep people safe at home, at work, and everywhere in between.

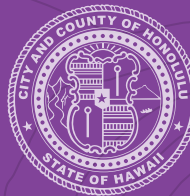
Retrofitting buildings and homes, increasing urban green spaces, and integrating climate resilience principles into planning efforts will protect people and community assets, minimize disruptions in daily lives, and reduce repair costs from climate impacts.

Action #	Action Name	Hazards	Timeframe
Strategy 9: Integrate climate resilience into City capital planning, operations, and policies.			
9.1	Coordinate resilient infrastructure investments through the One Water Honolulu Panel.		Medium
9.2	Integrate climate resilience principles into City budgeting processes.		Near
9.3	Improve understanding of flood risks by expanding and updating flood maps		Medium
9.4	Create a toolbox of innovative funding mechanisms for climate adaptation.		Medium
9.5	Reduce the urban heat island effect by adding more shade to codes and standards		Near
Strategy 10: Safeguard buildings, homes, and infrastructure against climate hazards.			
10.1	Retrofit City facilities at risk from storms and flooding.		Far
10.2	Assess risk to public infrastructure from extreme heat.		Near
10.3	Incentivize wind and flooding retrofits for homes and businesses, especially in areas with low shelter availability.		Near
10.4	Develop sea level rise adaptation pathways for high priority infrastructure assets.		Medium
10.5	Pilot cool and permeable alternatives to traditional pavements in parking lots, roads, and recreational spaces.		Near
10.6	Require use of Climate Change Design Guidelines for all Capital Improvement Projects.		Near
Strategy 11: Reduce flood risk and coastal erosion by directing development to safer and higher ground.			
11.1	Update Flood Ordinance to require Freeboard in certain special flood hazard areas.		Near
11.2	Assess the adoption of climate resilient development standards via a sea level rise overlay zone.		Medium
11.3	Critically evaluate the cost of relocating infrastructure out of the sea level rise exposure area versus repairing and maintaining infrastructure in place.		Medium
11.4	Develop priority options for smart redevelopment and managed retreat for areas vulnerable to sea level rise.		Medium
Strategy 12: Keep our communities cool as temperatures rise and during heat waves.			
12.1	Update the City’s street and park tree inventory to better maintain and grow the urban tree canopy.		Near
12.2	Facilitate cooling solutions and retrofits to protect residents from increasing temperatures.		Medium
12.3	Establish shade quotas along multi-modal transit corridors, in public recreation spaces, and in other public facilities.		Medium
12.4	Develop a “Heat Hazard Annex” for the Emergency Operations Plan.		Near
12.5	Assess risk to community health and safety from increasing temperatures and heat waves.		Near
12.6	Increase availability of public drinking fountains.		Medium
12.7	Maximize installation of solar PV over parking lots to mitigate urban heat.		Near

Mahalo to the many community residents, civic leaders, technical advisors, and partners, for making this strategy possible.

Download the full Climate Adaptation Strategy and track the City's implementation progress at www.resilientoahu.org.

Climate Ready O'ahu



Prepared by
**OFFICE OF CLIMATE CHANGE,
SUSTAINABILITY & RESILIENCY**

www.resilientoahu.org