# Ola: O‘ahu Resilience Strategy

City and County of Honolulu

Office of Climate Change, Sustainability and Resiliency

RESILIENT O'AHU

# Resilience

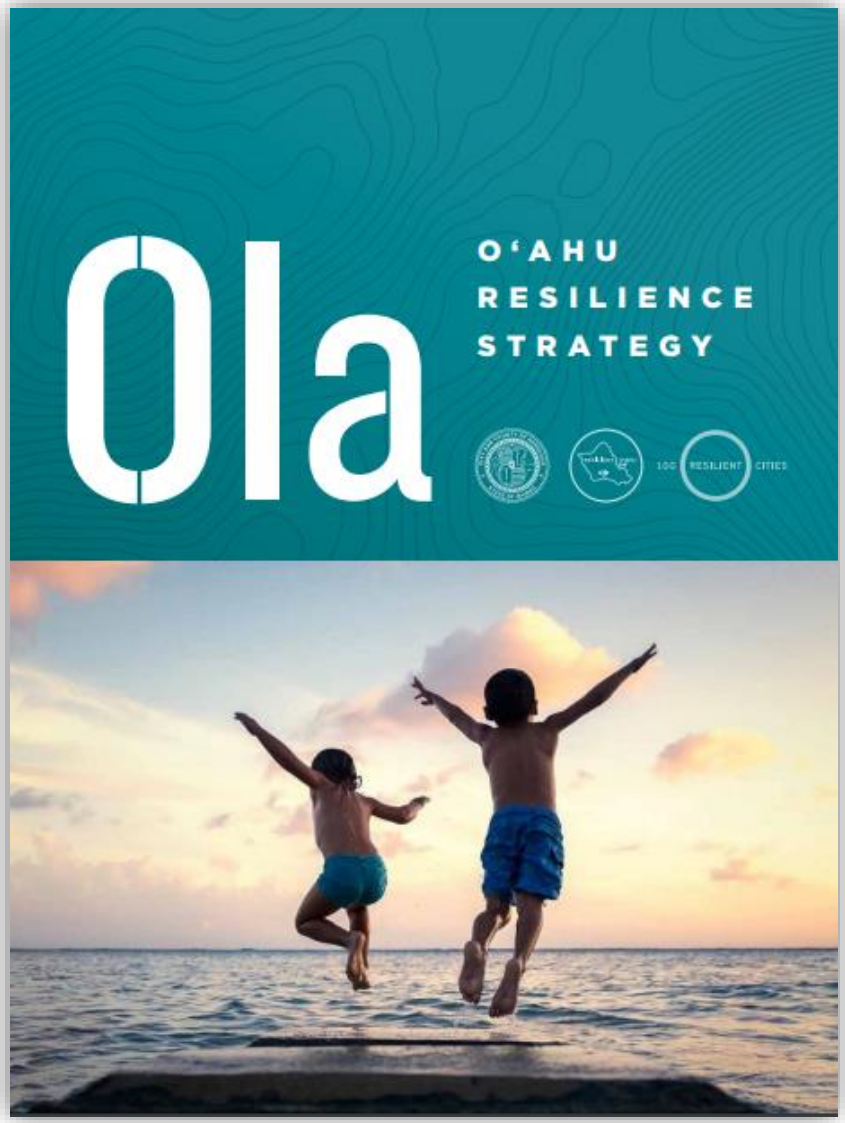
The capacity of individuals, communities, institutions, businesses, and systems to survive, adapt, and thrive no matter what kinds of chronic stresses and acute shocks they experience.

# USDN urban sustainability directors network

**USDN helps us ensure we are using the best ideas from around the world. The Resilience Hubs concept (Action 15) developed organically as the best response to a community need, and now is being duplicated in other cities as a result of sharing best practices.**

# Office of Climate Change, Sustainability and Resiliency

## O‘ahu Resilience Strategy



IF WE'RE SINKING, THEN WHY ARE WE 200 FEET IN THE AIR
NEGLECT COMES WITH A PERSPECTIVE

# Strategy Development Process

July 2017 — May 2018

## PHASE I

Strategy Kick-off → O'ahu-wide Community Assessment & Outreach → Focus Area Identification → Preliminary Resilience Assessment

Research Approach & Work Plan Development

## PHASE II

Working Groups Kick-off → Story, Research, & Analysis → Action Development & Prioritization → Resilience Strategy

August 2018 — May 2019

Office of Climate Change, Sustainability and Resiliency

# Community Resilience Perceptions

## Community Input

**Agenda Setting Workshop**

**140+**

**Stakeholders** from **19** sectors representing **117** unique organizations

**+2,200**

**Resilience Perception Surveys Conducted**

33 Neighborhood Board Presentations

219 Meetings with other Stakeholder Groups

**On a scale of 1-10 (low – high), how resilient do you think O'ahu is today?**

**3.9**

# Survey Responses: Top Five Shocks & Stresses

| Top 5 Shocks | Top 5 Stresses |
|---|---|
| Hurricane | Cost of Living |
| Tsunami | Climate Change Impacts |
| Infrastructure Failure | Aging Infrastructure |
| Rainfall Flooding | Lack of Affordable Housing |
| External Economic Crisis | Over-reliance on Imports |
| Disease Outbreak | Food or Water Shortage |
| Nuclear Attack | Income Inequality |
| Earthquake | Lack of Political Leadership |
| Cyber Attack | Over-reliance on Tourism and Military Economy |
| Terrorist Attack | Decline of Aloha Spirit |
| Heat Wave | Educational Disparity |
| Other | |
| Riot/Civil Unrest | |

Office of Climate Change, Sustainability and Resiliency

# Community Resilience Pillars

**Remaining Rooted**

**Bouncing Forward**

**Climate Security**

**Communit y Cohesion**

# Remaining Rooted

## Ensuring an Affordable Future for Our Island

## Pillar I. / REMAINING ROOTED
Ensuring an Affordable Future for Our Island

| Action # | Action Name | Lead | Timeframe | Aligned Aloha+ Challenge Goal | Primary Aligned UN Sustainable Development Goal | Secondary Aligned UN Sustainable Development Goal |
|---|---|---|---|---|---|---|
| **Goal 1: Supporting Affordable Housing Development** | | | | | | |
| 1 | Reduce Empty Homes and Increase Affordable Housing Funding | HOU | Mid-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 10 - Reduced Inequalities |
| 2 | Return Illegal Vacation Rental Units to Local Housing | DPP | Immediate | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 1 - No Poverty |
| 3 | Develop Alternative, Affordable Housing Options for O'ahu Residents | DPP | Short-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 9 - Industry, Innovation and Infrastructure |
| 4 | Expand Affordable Housing Funding by Implementing Progressive Property Taxes | BFS | Mid-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 10 - Reduced Inequalities |
| 5 | Implement a Guaranteed Security Program to Support Local Home Ownership | CSD | Mid-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 1 - No Poverty |
| **Goal 2: Reducing Additional Cost Burdens** | | | | | | |
| 6 | Expand Housing and Energy Transformation by Accelerating the Permitting Process | DPP | Mid-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 9 - Industry, Innovation and Infrastructure |
| 7 | Reduce Utility Costs for Residents through Transparency and Disclosure | CCSR | Mid-term | Clean Energy | SDG 7 - Affordable and Clean Energy | SDG 10 - Reduced Inequalities |
| 8 | Increase Housing Affordability by Reducing Parking Requirements | DPP | Mid-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 9 - Industry, Innovation and Infrastructure |
| **Goal 3: Improving Economic Opportunity** | | | | | | |
| 9 | Foster an Innovation Economy through the City's Office of Economic Development | OED | Mid-term | Green Workforce & Education | SDG 8 - Decent Work and Economic Growth | SDG 9 - Industry, Innovation and Infrastructure |
| 10 | Promote New Agricultural Models for Economic and Food Security | OED | Mid-term | Local Food | SDG 2 - Zero Hunger | SDG 8 - Decent Work and Economic Growth |

# Bouncing Forward

Fostering Resilience in the Face of Natural Disasters

## Pillar II. / BOUNCING FORWARD
Fostering Resilience in the Face of Natural Disasters

| Action # | Action Name | Lead | Timeframe | Aligned Aloha+ Challenge Goal | Primary Aligned UN Sustainable Development Goal | Secondary Aligned UN Sustainable Development Goal |
|---|---|---|---|---|---|---|
| **Goal 1: Pre-Disaster Preparation** | | | | | | |
| 11 | Protect Lives and Property by Updating Building Codes | DPP | Short-term | Smart Sustainable Communities | SDG 9 – Industry, Innovation and Infrastructure | SDG 11 – Sustainable Cities and Communities |
| 12 | Launch Residential Hurricane Retrofit Program to Strengthen Properties Vulnerable to Hurricanes | CCSR | Short-term | Smart Sustainable Communities | SDG 11 – Sustainable Cities and Communities | SDG 10 – Reduced Inequalities |
| 13 | Increase Flood Insurance Affordability for O'ahu Residents | CCSR | Short-term | Smart Sustainable Communities | SDG 11 – Sustainable Cities and Communities | SDG 15 – Life on Land |
| 14 | Establish Future Conditions Climate Resilience Design Guidelines | DDC | Mid-term | Smart Sustainable Communities | SDG 9 – Industry, Innovation and Infrastructure | SDG 11 – Sustainable Cities and Communities |
| **Goal 2: Effective Disaster Response** | | | | | | |
| 15 | Develop a Network of Community Resilience Hubs | DEM | Mid-term | Smart Sustainable Communities | SDG 9 – Industry, Innovation and Infrastructure | SDG 11 – Sustainable Cities and Communities |
| 16 | Establish an O'ahu Emergency Food Supply and Storage Strategy | DEM | Short-term | Smart Sustainable Communities | SDG 11 – Sustainable Cities and Communities | SDG 10 – Reduced Inequalities |
| 17 | Ensure Access to Fuel Supplies to Aid Disaster Response and Recovery | DEM | Mid-term | Smart Sustainable Communities | SDG 11 – Sustainable Cities and Communities | SDG 15 – Life on Land |
| 18 | Increase O'ahu's Preparedness Utilizing Scenario Modeling and Artificial Intelligence | DEM | Short-term | Smart Sustainable Communities | SDG 9 – Industry, Innovation and Infrastructure | SDG 11 – Sustainable Cities and Communities |
| **Goal 3: Successful Disaster Recovery** | | | | | | |
| 19 | Develop and Implement a Long-Term Disaster Recovery Plan for O'ahu | CCSR | Short-term | Smart Sustainable Communities | SDG 11 – Sustainable Cities and Communities | SDG 16 – Peace, Justice and Strong Institutions |

# Bouncing Forward

## Action 11:
## Protect Lives and Property by Updating Building Codes

Stronger codes increase the ability of residents to shelter at home with all of their necessities

| National Benefit-Cost Ratio Per Peril<br>*BCR numbers in this study have been rounded | Exceed common code requirements | Meet common code requirements | Utilities and transportation | Federally funded |
|---|---|---|---|---|
| Overall Hazard Benefit-Cost Ratio | 4:1 | 11:1 | 4:1 | 6:1 |
| Riverine Flood | 5:1 | 6:1 | 8:1 | 7:1 |
| Hurricane Surge | 7:1 | Not applicable | Not applicable | Not applicable |
| Wind | 5:1 | 10:1 | 7:1 | 5:1 |

**National Benefit-Cost Ratio by Hazard Mitigation Measure**
If the City invests now in mitigation, rather than clean-up after a natural hazard, the return on investments are considerable:
Exceeding common code requirements saves $4 per $1 spent; Adopting model codes saves $11 per $1; mitigating infrastructure saves $4 per $1 spent; Federal mitigation grants save $6 per $1 spent.

Graphic Adopted from National Institute of Building Sciences

# Bouncing Forward

**Action 12:**
**Launch Hurricane Retrofit Program for Vulnerable Homes**

Retrofit programs can help bring older homes up to modern code standards

Roof blown off in Kahala earlier this year

# Bouncing Forward

**<u>Action 13:</u>**
**Increase Flood Insurance Affordability for Oʻahu Residents**

In addition to ensuring residents are able to afford insurance, the City-level actions which lower flood insurance premiums reduce potential flooding impacts

# Bouncing Forward

**Action 15:**
**Develop a Network of Community Resilience Hubs**

Resilient community facilities that are designed or retrofitted to withstand potential disaster impacts can function during and after disaster, providing operational space for critical service and resource providers

# Bouncing Forward

**Action 16:**
**Establish an Oʻahu Emergency Food Supply and Storage Strategy**

Hawaiʻi Foodbank assists 1 in 5 people City-wide with daily food needs, so planning for emergency food supply during disaster is critical

# Bouncing Forward

## Action 19:
## Develop and Implement a Long-term Disaster Recovery Plan for Oʻahu

Stakeholder input and buy-in is essential to the recovery planning process, both in preparing for and recovering from disaster

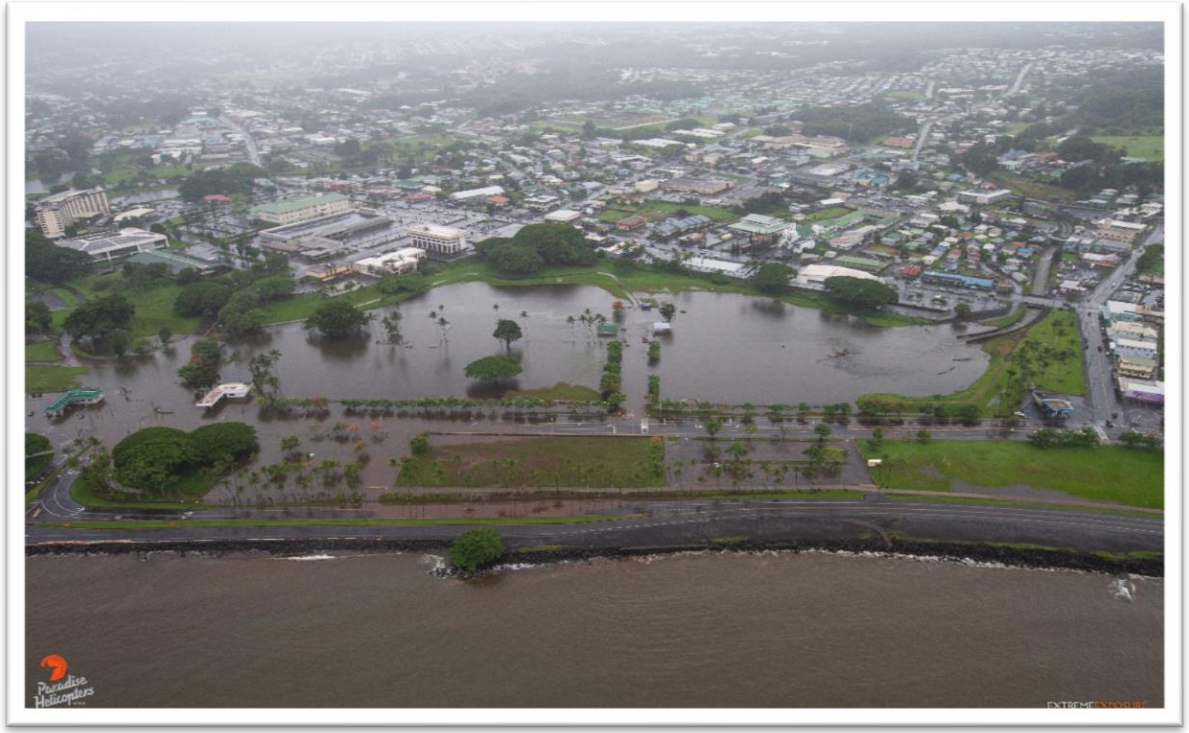


Photo credit: Paradise Helicopters and Extreme Exposure

RESILIENT O'AHU

# Climate Security

## Tackling Climate Change by Reducing Emissions and Adapting to Impacts

CITY AND COUNTY OF HONOLULU · STATE OF HAWAII

**Pillar III. / CLIMATE SECURITY**
Tackling Climate Change by Reducing Emissions and Adapting to Impacts

| Action # | Action Name | Lead | Timeframe | Aligned Aloha+ Challenge Goal | Primary Aligned UN Sustainable Development Goal | Secondary Aligned UN Sustainable Development Goal |
|---|---|---|---|---|---|---|
| **Goal 1: Clean Energy Economy** | | | | | | |
| 20 | Reduce Taxpayer Expense and Increase Renewable Energy through a City-Wide Energy Performance Contract | DDC | Short-term | Clean Energy | SDG 13 - Climate Action | SDG 7 - Affordable and Clean Energy |
| 21 | Establish an Energy Benchmarking Standard for O'ahu Commercial Buildings | CCSR | Short-term | Clean Energy | SDG 9 – Industry, Innovation and Infrastructure | SDG 11 - Sustainable Cities and Communities |
| 22 | District Cooling: Tap the Ocean to Cool Our Buildings | DFM | Short-term | Clean Energy | SDG 7 - Affordable and Clean Energy | SDG 13 - Climate Action |
| 23 | Expand Opportunities for Methane Capture and Re-Use | ENV | Mid-term | Waste Reduction | SDG 12 - Responsible Consumption & | SDG 7 - Affordable and Clean Energy |
| **Goal 2: Clean Ground Transportation** | | | | | | |
| 24 | Expand Electric Vehicle Charging Infrastructure Island-Wide | CCSR | Immediate | Clean Energy | SDG 13 - Climate Action | SDG 9 - Industry, Innovation and Infrastructure |
| 25 | Accelerate Carbon-Free New Mobility Options | DTS | Long-term | Clean Energy | SDG 11 - Sustainable Cities and Communities | SDG 13 - Climate Action |
| 26 | Ensure Equal Access to Sustainable Transportation Options and Cost Savings | BFS | Immediate | Clean Energy | SDG 13 - Climate Action | SDG 10 - Reduced Inequalities |
| 27 | Transform the City's Public Fleet to 100% Renewable Fuel by 2035 | DTS | Long-term | Clean Energy | SDG 13 - Climate Action | SDG 11 - Sustainable Cities and Communities |
| **Goal 3: Climate Resilient Future** | | | | | | |
| 28 | Chart a Climate Resilient Future by Creating and Implementing a Climate Adaptation Strategy | CCSR | Short-term | Smart Sustainable Communities | SDG 13 - Climate Action | SDG 11 - Sustainable Cities and Communities |
| 29 | Protect Beaches and Public Safety with Revised Shoreline Management Rules | DPP | Short-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 14 - Life Below Water |
| 30 | Protect Coastal Property and Beaches Through Innovation and Partnerships | DPP | Short-term | Natural Resource Management | SDG 14 - Life Below Water | SDG 17 - Partnerships for the Goals |
| **Goal 3: Climate Resilient Future** (continued) | | | | | | |
| 31 | Establish a Storm Water Enterprise Fund to Better Finance Water Management | DFM | Short-term | Natural Resource Management | SDG 9 - Industry, Innovation and Infrastructure | SDG 6 - Clean Water and Sanitation |
| 32 | Deploy Sustainable Roof Systems to Manage Urban Heat and Rainfall | DPP | Short-term | Smart Sustainable Communities | SDG 9 - Industry, Innovation and Infrastructure | SDG 11 - Sustainable Cities and Communities |
| 33 | Keep O'ahu Cool by Maintaining and Enhancing the Community Forest | DPR | Long-Term | Natural Resource Management | SDG 15 - Life on Land | SDG 13 - Climate Action |
| 34 | Minimize Economic and Property Risk within the Ala Wai Canal Watershed | DDC | Immediate | Smart Sustainable Communities | SDG 9 - Industry, Innovation and Infrastructure | SDG 11 - Sustainable Cities and Communities |

RESILIENT O'AHU

# Community Cohesion

Leveraging the Strength and Leadership of Local Communities

## Pillar IV. / COMMUNITY COHESION
Leveraging the Strength and Leadership of Local Communities

| Action # | Action Name | Lead | Timeframe | Aligned Aloha+ Challenge Goal | Primary Aligned UN Sustainable Development Goal | Secondary Aligned UN Sustainable Development Goal |
|---|---|---|---|---|---|---|
| **Goal 1: Empower Grassroots Resilience Champions** | | | | | | |
| 35 | Increase Coordination with Neighborhood Emergency Preparedness Groups | DEM | Immediate | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 10 - Reduced Inequalities |
| 36 | Increase City-Community Relationships through Volunteerism | CSD | Short-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 17 - Partnerships for the Goals |
| 37 | Weave a Tighter Community With Neighborhood Gatherings | CCSR | Immediate | Smart Sustainable Communities | SDG 16 - Peace, Justice and Strong Institutions | SDG 11 - Sustainable Cities and Communities |
| 38 | Empower Neighborhoods to Co-Design Safe and Complete Streets | DTS | Immediate | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 9 - Industry, Innovation and Infrastructure |
| **Goal 2: Communicate and Affirm Island Values** | | | | | | |
| 39 | Celebrate O'ahu's Resilient Past and Future through Public Art | MOCA | Short-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 16 - Peace, Justice and Strong Institutions |
| 40 | Lift Up Positive Examples of Island Values in Action | MAY | Short-term | Smart Sustainable Communities | SDG 11 - Sustainable Cities and Communities | SDG 16 - Peace, Justice and Strong Institutions |
| 41 | Launch a Place-Based Resilience Training Program for City Leadership | CCSR | Immediate | Smart Sustainable Communities | SDG 16 – Peace, Justice and Strong Institutions | SDG 11 - Sustainable Cities and Communities |
| 42 | Foster Shared Understanding of Climate Change Island-Wide Through an Outreach Campaign | CCSR | Short-term | Clean Energy | SDG 13 - Climate Action | SDG 4 - Quality Education |
| **Goal 3: Island-Wide Alignment** | | | | | | |
| 43 | Ensure City Partnership in O'ahu's Collective Impact Resilience Efforts | CCSR | Mid-term | Smart Sustainable Communities | SDG 17 - Partnerships for the Goals | SDG 16 - Peace, Justice and Strong Institutions |
| 44 | Create a City-Community Liaisons to Leverage Non-Profit and Volunteer Assets | MDO | Mid-term | Smart Sustainable Communities | SDG 17 - Partnerships for the Goals | SDG 8 - Decent Work and Economic Growth |

# Mahalo

RESILIENT O'AHU

Office of Climate Change, Sustainability and Resiliency

(808) 768-2277
resilientoahu@honolulu.gov
resilientoahu.org
@ResilientOahu