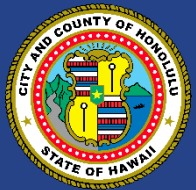




Climate Ready O'ahu

Climate Adaptation Strategy



City and County of Honolulu
Office of Climate Change, Sustainability and Resiliency



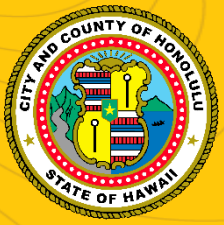
City Climate Change Commission
August 20, 2020



Project Introduction & Asks

- **Scope and process**
- Support to ensure most current climate change information
- Other guidance, critique, and support to practice and execute on climate equity and resilience
- Future formal project touch points with Climate Change Commission
- Request up to two commissioners to participate as members of still to be developed advisory/stakeholder group(s)
- *Request for all commissioners to participate in any and all other engagement/participation platforms*
- *Professional/personal assistance in getting the word out*





Climate Security

Action 28: **Chart a Climate Resilient Future by Creating and Implementing a Climate Adaptation Strategy**

- (1) Vulnerability assessment for City infrastructure
- (2) ID climate-driven risks to critical infrastructure, assets, and populations
- (3) Evaluation/ranking of risks to ID near-term threats
- (4) Mitigation plans to protect core infrastructure and assets
- (5) Coordination of adaptation options across multiple departments and shared infrastructure needs
- (6) Recommendation for Capital Improvement Projects and funding vehicles to address shared solutions
- (7) Key recommendations for land use and policy changes to reduce risk exposure to climate change impacts

*+Hawai'i Fresh Water Initiative and
One Water for Climate Resiliency*

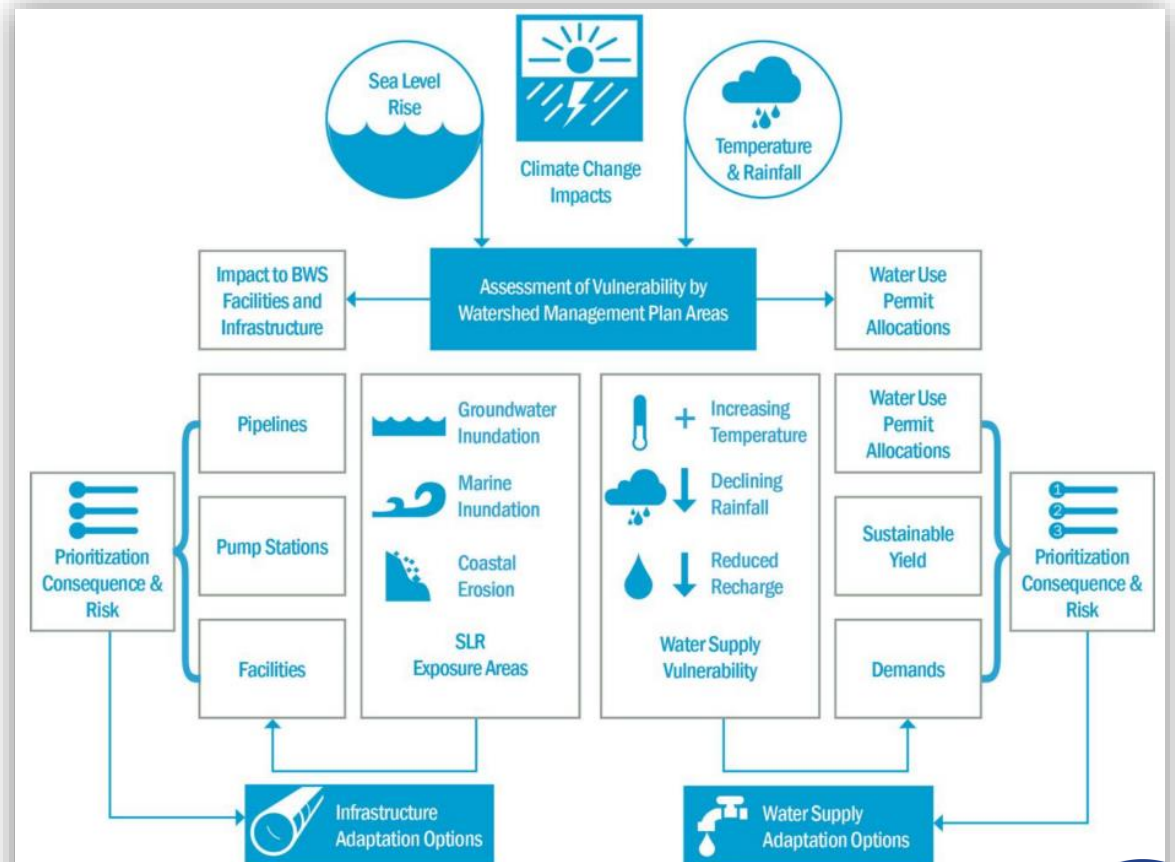
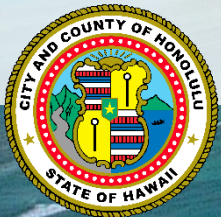


Figure ES-3. Overall Vulnerability Assessment Approach to Identifying Adaptation Strategies.

Graphic Credit: Board of Water Supply





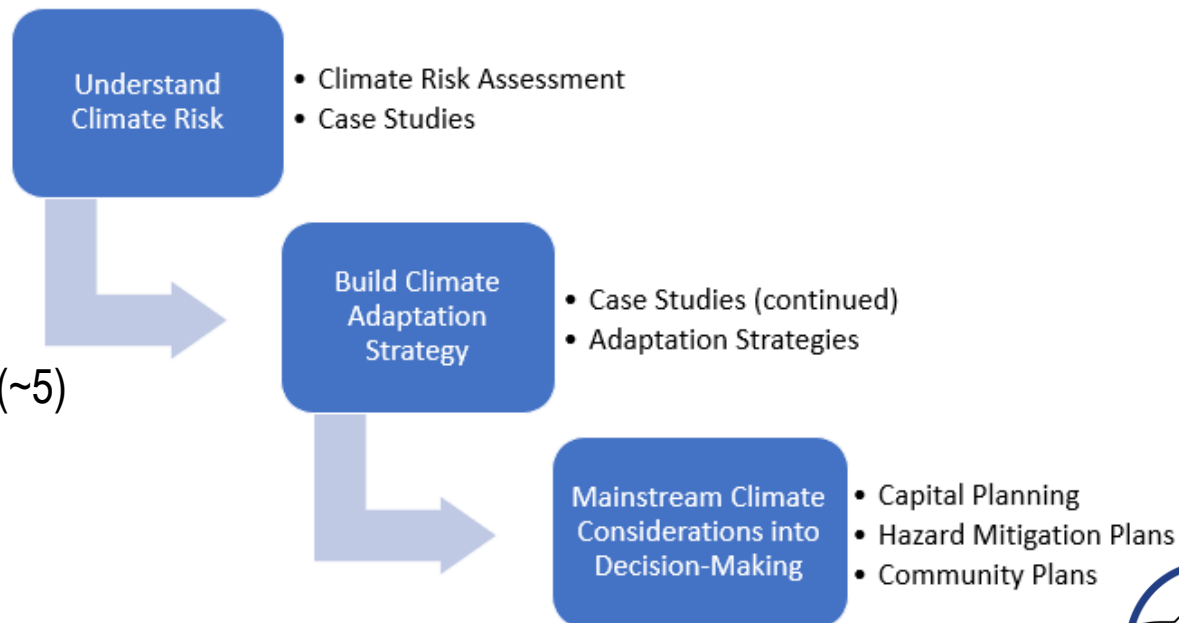
Climate Adaptation Strategy

Goals, Objectives, Tasks

- *Equity in process, proposals, and then implementation (as informed by outreach and guided by decision-making support materials)*
- (1) Risks Assessments and (2) Adaptation Strategies
- Support the 8 Community Plans with materials to advance that planning process
- Support department Functional Plans
- Support budget development and decision making

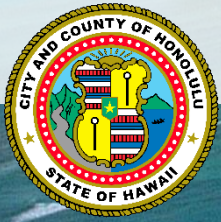
Tasks

- Climate Risk Assessment
 - Identify risks and understand exposure
 - Analyze and evaluate risks
 - Economic analysis
- Develop case studies for Adaptation Action Areas (~5)
 - Sector-specific adaptation strategies
 - Cross-cutting adaptation strategies
- Develop Decision-Making Support Materials



Towards a *Climate Resilience and Hazard Mitigation Plan*





Climate Adaptation Strategy

Team

Resilience Office

Matthew Gonser
Maddy Baroli
Sophie Lee
Ujay Siddharth

ICF International

Susan Asam (O'ahu)
Cassandra Bhat (Miami)
Brenda Dix (NYC)
Claire Phillips (DC)
Amanda Vargo (DC)

Timeline

July 2020-September 2021

Outreach & Inreach

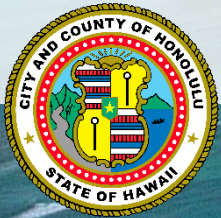
Resilience Office – external engagement leads

- *Project website, Virtual Meetings/Open Houses, Interactive Map, Visioning*
- *Advisory Hui(s), Focus groups*
- *Climate Change Commission*
- *Review Drafts*
- *City Council Committee(s)*
- *Etc.*

ICF International – internal engagement leads

- *1:1/Dept. Interviews/work sessions*
- *City Resilience Team/Directors reviews*
- *Interdepartmental work sessions*



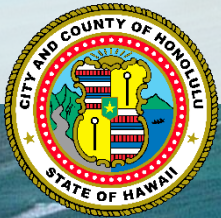


Working Schedule

Task	2020						2021							
	J	A	S	O	N	D	J	F	M	A	M	J	J	A
T1: Project Management														
T2: Stakeholder/Working Group Engagement			*	*		*	*							
T3: Risk Assessment Adaptation Plan Scoping and Outline		*												
T4: Conduct Climate Risk Assessment					*									
T4a: Identify Climate Risk Events and Understand Exposure		*												
T4b: Analyze and Evaluate Risks			*	*										
T4c: Economic Analysis				*										
T4d: Draft and Final Climate Risk Assessment Results				*	*									
T5: Develop Case Studies for Adaptation Action Areas								*						
T5a: Sector-specific Adaptation Strategies						*								
T5b: Cross-cutting Adaptation Strategies								*						
T6: Develop Draft and Final Climate Adaptation Strategy									*			*		
T7: Develop Decision-Making Support Materials													*	
Public participation	Project website, focus/advisory groups, social/mixed media...													
				VE	VE		VE			VE			VE	

VE = Virtual Engagement





Task	2020					2021								
	J	A	S	O	N	D	J	F	M	A	M	J	J	A
T1: Project Management														
T2: Stakeholder/Working Group Engagement			*	*		*	*							
T3: Risk Assessment Adaptation Plan Scoping and Outline		*												
T4: Conduct Climate Risk Assessment					*									
T4a: Identify Climate Risk Events and Understand Exposure		*												
T4b: Analyze and Evaluate Risks			*	*										
T4c: Economic Analysis				*										
T4d: Draft and Final Climate Risk Assessment Results				*	*									
T5: Develop Case Studies for Adaptation Action Areas								*						
T5a: Sector-specific Adaptation Strategies						*								
T5b: Cross-cutting Adaptation Strategies								*						
T6: Develop Draft and Final Climate Adaptation Strategy									*			*		
T7: Develop Decision-Making Support Materials													*	*

Climate Risk Assessment

1. Understand context: scope, values, and audience
2. Identify risks: risk scenarios and exposure variables
3. Analyze risks: assess likelihood and consequence
4. Evaluate risks: assign risk ratings and assess adaptive capacity

Outputs

- Exposure maps
- Climate risk assessment
- Economics assessment
- 8 Community Plan area “tear sheets” on climate risks

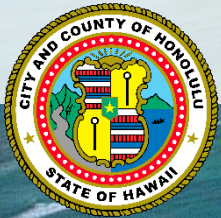
Exhibit 6. Example Risk Summary

TABLE 11. Risk Rating Evaluation for Ocean Acidification Scenario

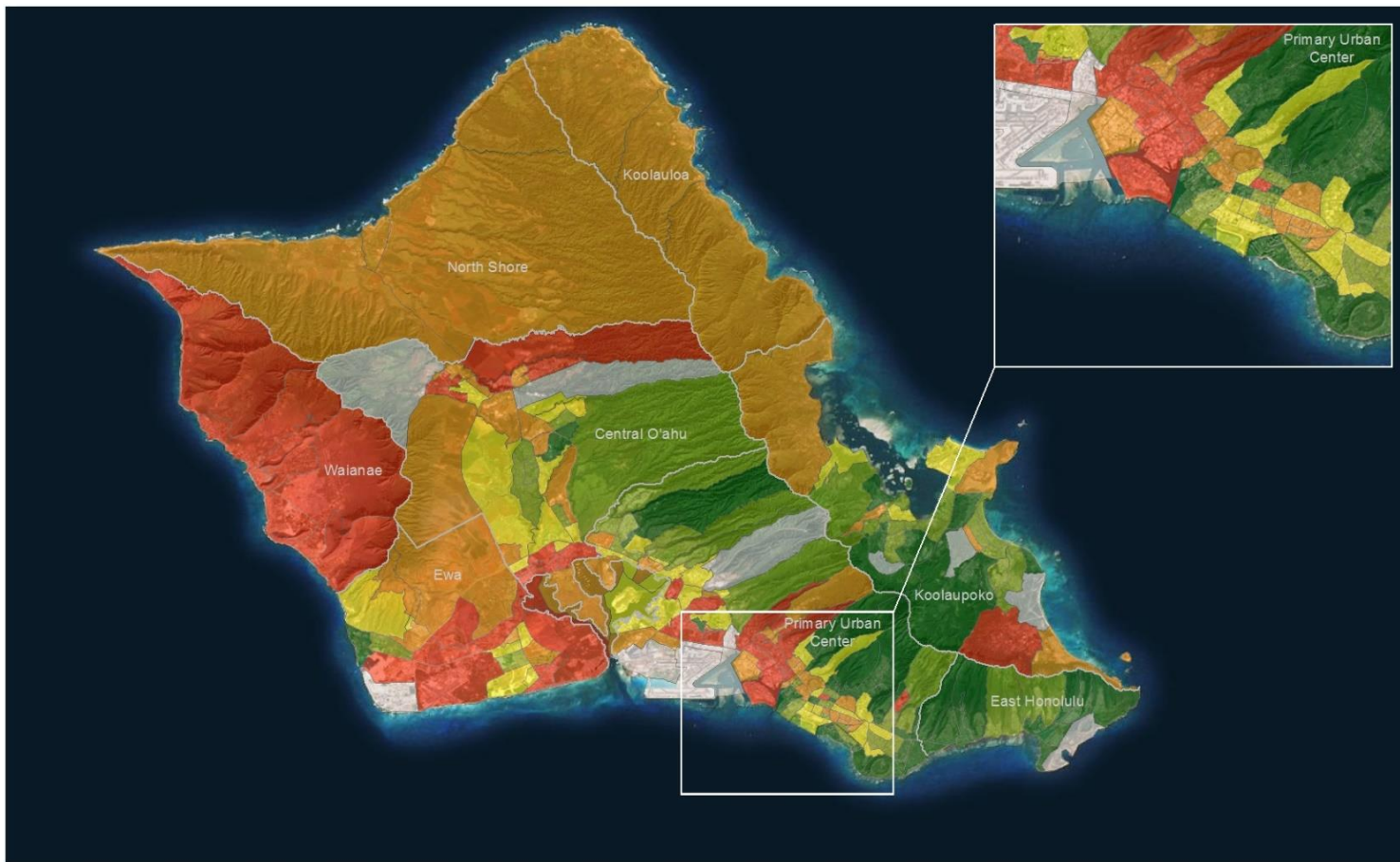
OCEAN ACIDIFICATION: 0.15 REDUCTION IN PH BY 2050				
LIKELIHOOD				
CURRENT RATING	JUSTIFICATION	2050 RATING	JUSTIFICATION	CONFIDENCE
2	Current global surface ocean pH of 8.1 falls below the critical threshold of 7.95 but, given the variability of B.C.'s naturally low pH, there is some potential to temporarily cross the threshold.	5	Climate-related risk cause: Increased carbon dioxide emissions causes ocean acidification. 2050 projections: A decrease in pH of 0.15 units, which meets or surpasses the critical threshold of some bivalve and gastropod species.	Medium
CONSEQUENCE				
CATEGORY	CONSEQUENCE	RATING	JUSTIFICATION	CONFIDENCE
Health	Loss of life	1	There is no evidence that ocean acidification causes loss of life.	Low
	Morbidity, injury, disease, or hospitalization	1	There is no evidence that ocean acidification causes morbidity, injury, disease, or hospitalization.	Low
Social functioning	Psychological impacts	4	For individuals directly connected to the ocean, ocean acidification could cause severe, long-term impacts (e.g., depression, loss of identity).	Low
	Loss of social cohesion	4	Ocean acidification could cause permanent loss of livelihoods or way of life for coastal communities and could affect food supplies, employment opportunities, and community culture and identity.	Low
Natural resources	Loss of natural resources	5	Shellfish and other marine life could experience decreased calcification and altered behavioural and chemical responses. These species will be weakened permanently and likely unable to recover.	Medium
Economic vitality	Loss of economic productivity	4	Economic impacts may include higher mortality of shellfish, decreased growth and productivity, and job losses.	Medium
	Loss of infrastructure services	1	There is no evidence that ocean acidification causes loss of infrastructure services.	Medium
Cost to provincial government		2	Costs to government might include lost revenue and taxes as well as resources or programs to help the shellfish industry cope with acidification.	Low
OVERALL RISK	CURRENT	LOW (5.5)		LOW
	2050	HIGH (13.8)		

Additional engagement with Indigenous communities would be needed to understand potential consequences from their perspectives.





Implementing New Equity & Climate Practices



Opportunities and Obligations to...

- Normalize*
- Organize*
- Operationalize*

Equity in processes and practices

Social Vulnerability Index

- Very Low Vulnerability
- Low Vulnerability
- Medium Vulnerability
- High Vulnerability
- Very High Vulnerability
- No Data

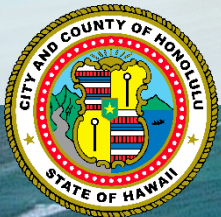


Resilient O'ahu: Social Vulnerability Index

City and County of Honolulu
Hawai'i, USA

Map Date: January 11, 2019
Map Projection:
GCS_North_American_1983





Implementing New Equity & Climate Practices

Implementation

Implementing Resilience for O'ahu

Producing a strategy is not the end of thinking about resilience –it's the beginning.

- Functional Plans
- Storm Water Fee
- Integrated Infrastructure Planning
- Infrastructure Resilience Design Review
- Longer-term Capital and Financial Plans
- Hazard Mitigation Plan and CIP Alignment

Normalize
Organize
Operationalize

The Key Components for Action:



New Policies



Budget Alignment

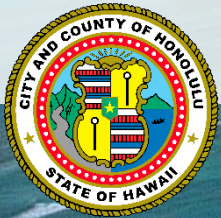


Resilient Projects



City-Community Partnerships





Climate Adaptation Strategy & Decision Making

Related Resilience Actions, i.e., Adaptation Strategies

Climate Security

- 29 – Coastal regulations
- 30 – Coastal partnerships
- 31 – Stormwater utility
- 32 – Sustainable roofs
- 33 – Community forestry
- 34 – Ala Wai Canal watershed

Bouncing Forward

- 11 – Codes, Codes, Codes
- 12 – Hurricane retrofits
- 13 – Community Rating System
- 14 – Future Condition Design Guidelines for public works

Community Cohesion

- 42 – Understanding of climate change island-wide

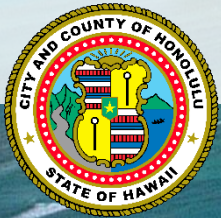
Mayor Directives

- 18-2 – Climate Change and Sea Level Rise
- 20-14 – Increasing Temperatures and Urban Tree Canopy

Climate Change Commission Guidance

- Climate Change Brief
- Sea Level Rise Guidance
- Shoreline Setback Guidance
- One Water for Climate Resiliency White Paper
- Climate Change and Financial Risk Guidance
- Social/Racial/Climate Equity*
- Social Cost of Carbon Guidance*
- Construction Guidance*





Mayor's Directive 18-2 | Climate Adaptation

resilientoahu.org/s/MayorsDirective18-02.pdf



Sea Level Rise and Coastal Hazards

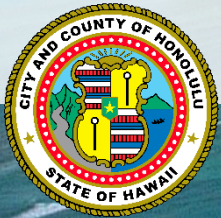


Rainfall

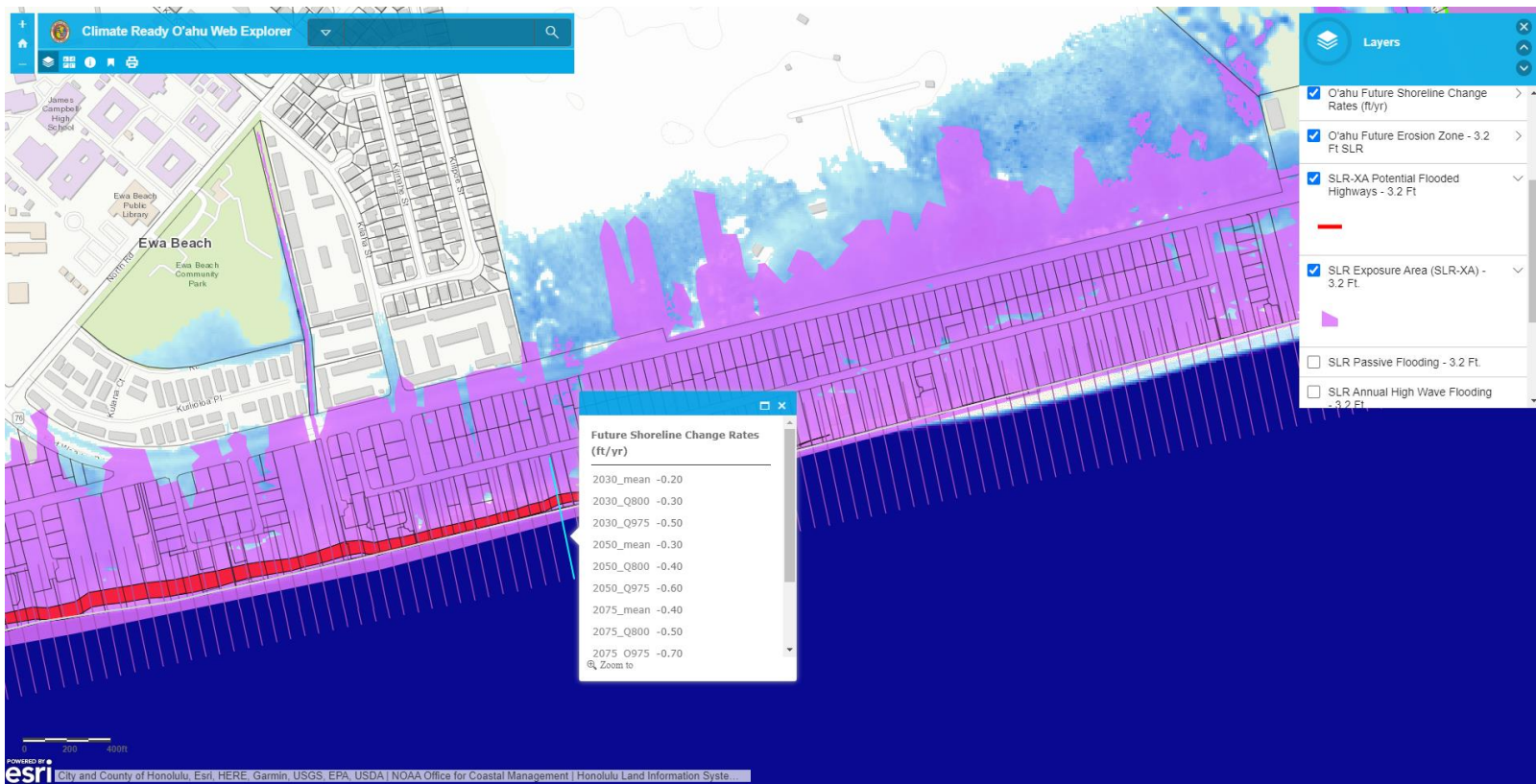


Heat





Mayor's Directive 18-2 | Climate Adaptation



Climate Ready O'ahu Web Explorer

Current Layers

- SMA
- TMKs
- Community Plan Areas
- Historical and Future Shoreline Change Rates
- State 3.2' SLR-XA, component hazards, and flooded highways
- O'ahu DFIRM
- NOAA 6' SLR
- Heat Index Afternoon
- Tree Canopy – Land Cover (2010)

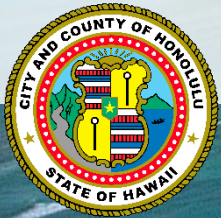
Additional Potential Layers

- Beach/dune geology
- "Future V Zone"
- Tsunami Zones
- Tree Inventory/Citizen Forester Data

bit.ly/climatereadyoahumap

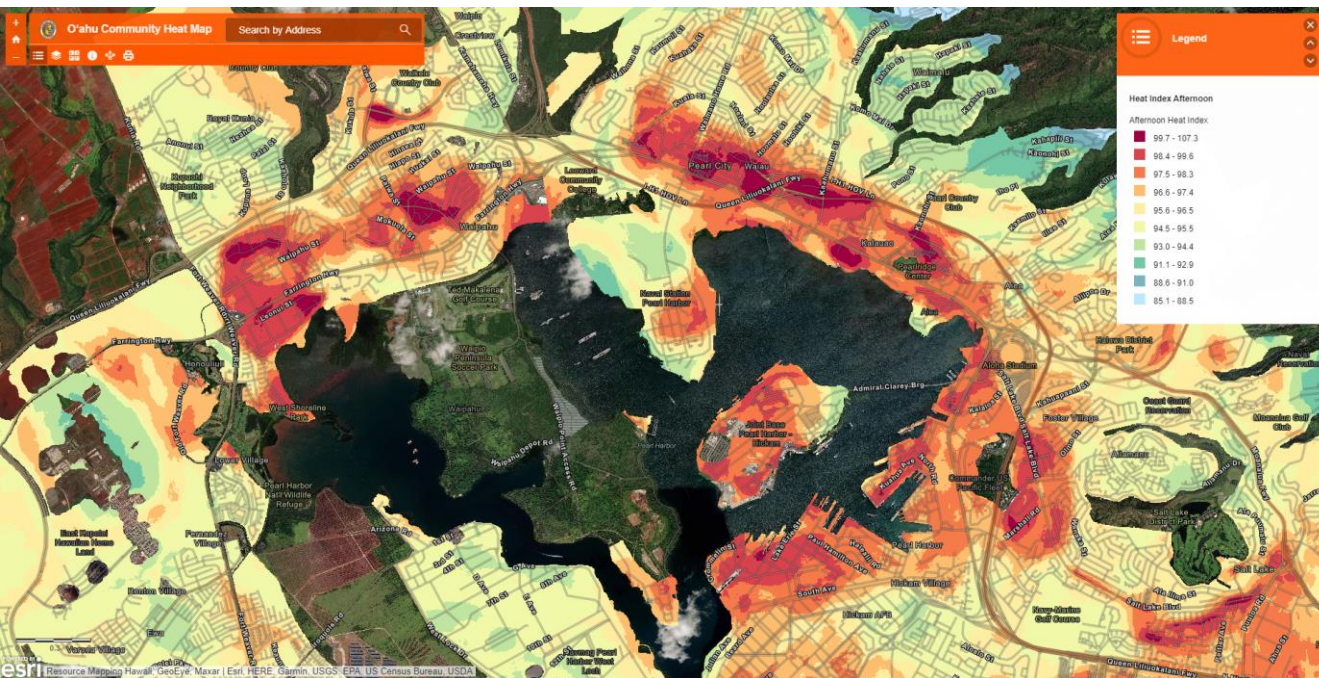
resilientoahu.org/s/MayorsDirective18-02.pdf





Mayor's Directive 20-14 | Temps and Trees

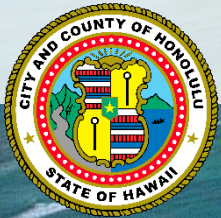
resilientoahu.org/s/Mayors-Directive-20-14.pdf



bit.ly/oahuheatmap







Hope, Visioning, Correction, Restoration

Stories/Messages for the Future

Positive proactive community visioning

Opportunities and Obligations to...

*Normalize
Organize
Operationalize*

Equity in processes and practices



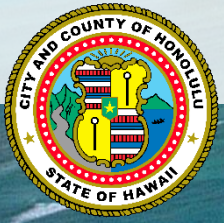
hookuaaina Celebrate with us as we Makaluhi - a period of rest or feasting which follows a prolonged season of toil.

In January, after completing our very last patch in the lo'i, we declared a season of Makaluhi for our 'ohana. Literally translated makaluhi means tired eyes but in this case, we use it as an adjective to describe "a period of rest or feasting which follows a prolonged season of toil" (wehewehe.org). Little did we know that the COVID pandemic was about to shut everything down and literally force us to take a period of rest, canceling all events including our fundraiser on August 15th. We wish



Log in to like or comment.





Hope, Visioning, Correction, Restoration

Coming to the Conversation

Dr. Noelani Puniwai

“The place has changed just as you’ve grown up... It gives you that positive aspect that we’re resilient people...Take a more proactive approach to being part of the environment. I think that’s a good message for climate change. I think as we get more connected to our environment and understand what’s going on we’ll be able to **tackle it positively and not just always feel scared about climate change and just really feeling the negative effects that we think it’s going to bring.”**



Voice of the Sea, Season 5 Episode 9
[Adapting Culture to Climate Change](#)

University of Hawai'i Sea Grant College Program
Center for Marine Science Education



Mahalo



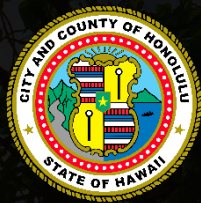
Office of Climate Change, Sustainability and Resiliency

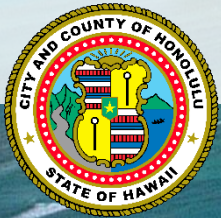
(808) 768-2277

resilientoahu@honolulu.gov

resilientoahu.org

[@ResilientOahu](https://www.instagram.com/ResilientOahu)





Requests & Questions

Project Introduction & Asks

- **Scope and process**
- Support to ensure most current climate change information
- Other guidance, critique, and support to practice and execute on climate equity and resilience
- Future formal project touch points with Climate Change Commission
- Request up to two commissioners to participate as members of still in-development advisory/stakeholder group(s) (potential action item?)
- *Request for all commissioners to participate in any and all other engagement/participation fora*
- *Professional/personal assistance in getting the word out*

Recommendations; Questions?

