Urban Land Institute

Resilience Hubs:
Essential Infrastructure for Resilient Communities

MCKENZIE JONES | MARIA GALARZA | ILLYA AZAROFF

URBAN SUSTAINABILITY DIRECTORS NETWORK | CITY OF DETROIT | +LAB ARCHITECT

AUGUST 14, 2024

Housekeeping and Agenda

- Please use the Q&A for questions.
- Agenda:
  - Welcome and Introduction to Resilience Hubs
  - Detroit: Community Center at AB Ford Park
  - O’ahu: Ko'olauloa Community Resilience Hub
  - Panel Discussion
  - Audience Q&A
- We are recording this discussion!

Today's Speakers

McKenzie Jones

Urban Sustainability Directors Network

Maria Galarza

City of Detroit

Illya Azaroff

+LAB Architect

What is resilience?

The **ability of a community to anticipate, accommodate, and thrive amidst changing climate conditions** or hazard events and enhance quality of life, reliable systems, economic vitality, and conservation of resources for present and future.

What are Resilience Hubs?

Resilience Hubs are trusted, community-led facilities that enhance the well-being of marginalized communities before, during, and after a disruption.

They serve dual purposes:

- enhancing quality of life and social connection
- acting as critical facilities that help communities stay safe and respond to disruptions

Why do we need Resilience Hubs?

Marginalized communities experience increased exposure to climate hazards and a reduced capacity to adapt.

Resilience Hubs are intended to:

- reduce social isolation
- shift power to community members
- provide opportunities to address the root causes of disproportionate exposure
- enhance communities' capacity to adapt

How are Resilience Hubs developed?

Resilience Hubs are developed and implemented through deep collaboration between local governments, community leaders, and community-based organizations.

Resilience Hub Modes

Everyday

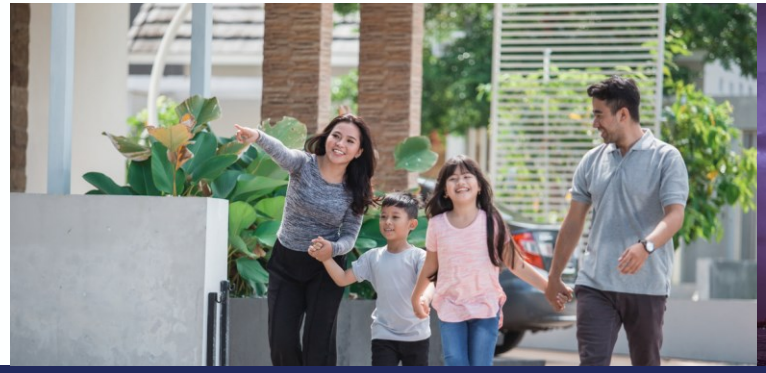
- All infrastructure and services are available
- No major disruptions are present
- Primary focus is on community services and relationship-building

Disruption

- Disruptions can include natural disasters, pandemics, and social unrest
- Can vary from minutes to months or years

Recovery

- The aftermath of the disruption during which the community works to restore normal or better conditions
- Can last days to years



Five Foundational Areas

These five foundational areas are the core components of any Resilience Hub.

- Programs & Services
- Communications
- Building & Landscape
- Power Systems
- Operations and Maintenance

A.B. Ford Community Center

City of Detroit – Office of Sustainability

Building a new community center with resilience in mind

Lessons Learned

Key Takeaways

- Stay true to the core mission
- Design for the needs of the users / community members
- Keep two scenarios in mind:
  - Normal times – core purpose of the facility
  - Emergency times – how might space serve a double duty
- Communicate resilient elements as adding value and design them from the start.

Challenges

- Resilience could be hard to communicate so examples are key
- It could be hard to engage around “worse case scenarios”
- Facilities electricians and maintenance staff should be engaged as early as possible.
- Funding is seen as a challenge, but there are existing opportunities available.

Project Budget:

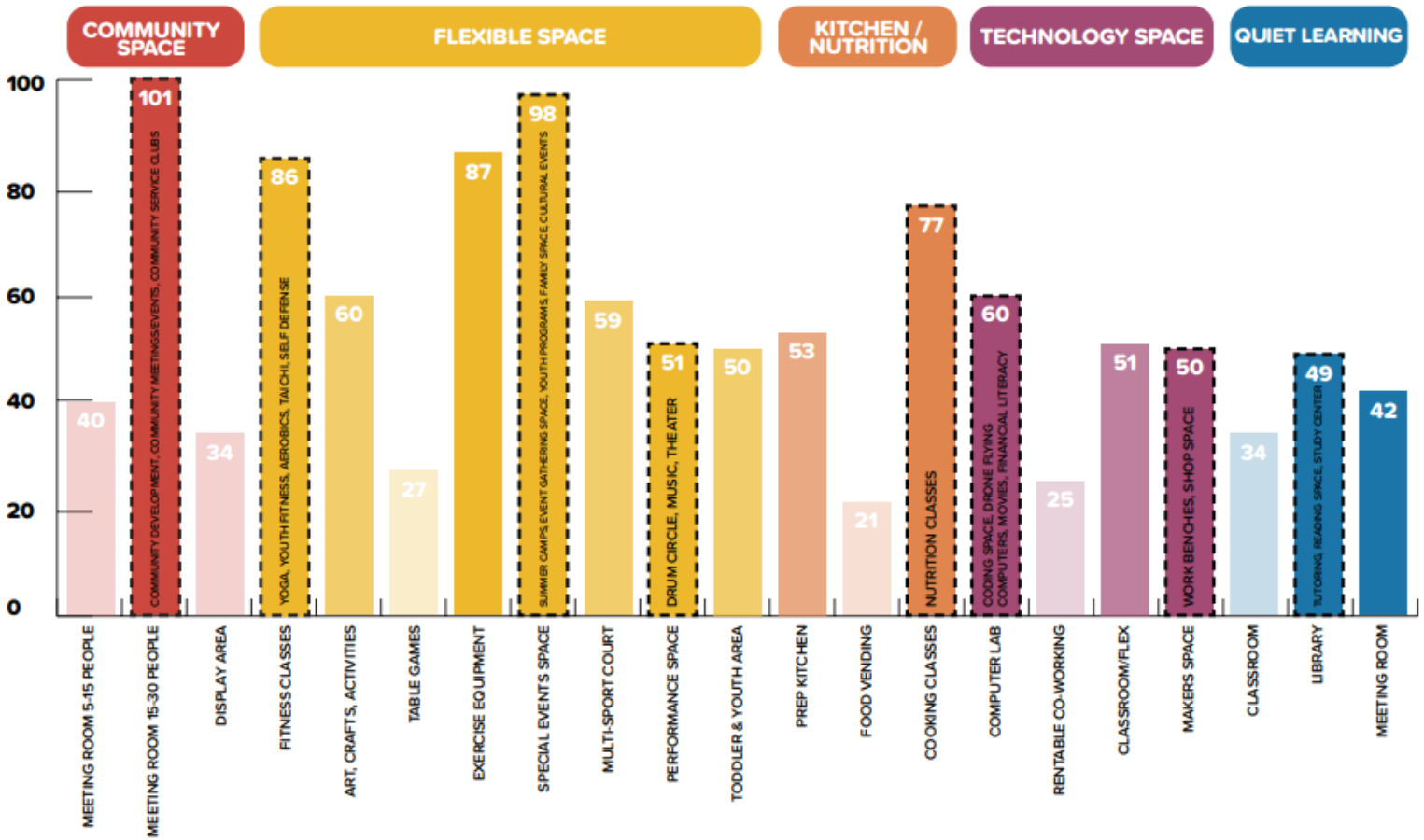
cost of design
(includes engagement)
$370K

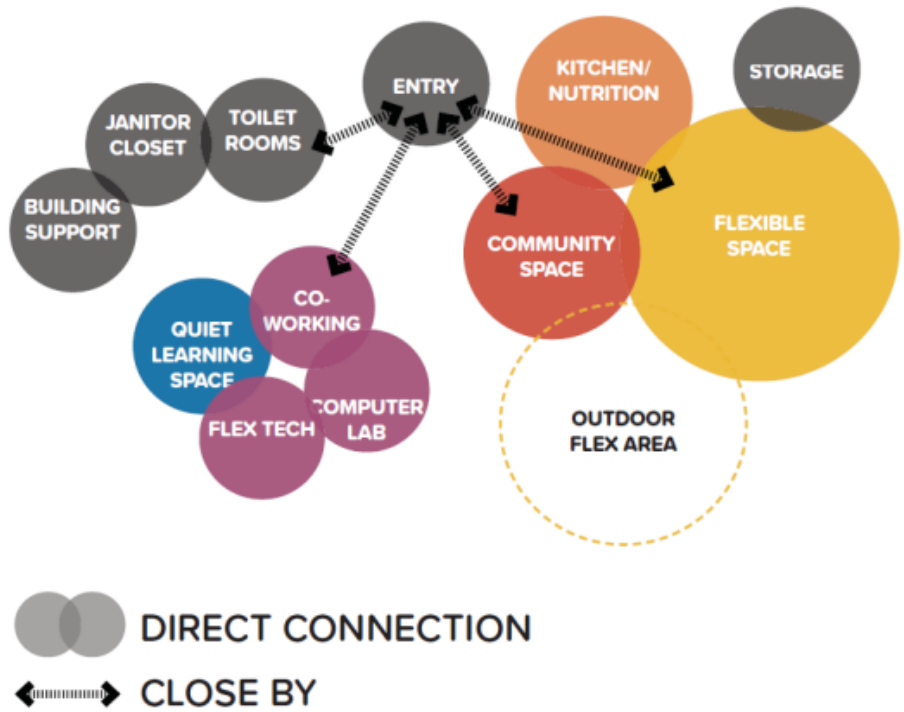
cost of construction
$6.9M

cost of solar + battery storage:
(including additional engineering and design changes)
$670K

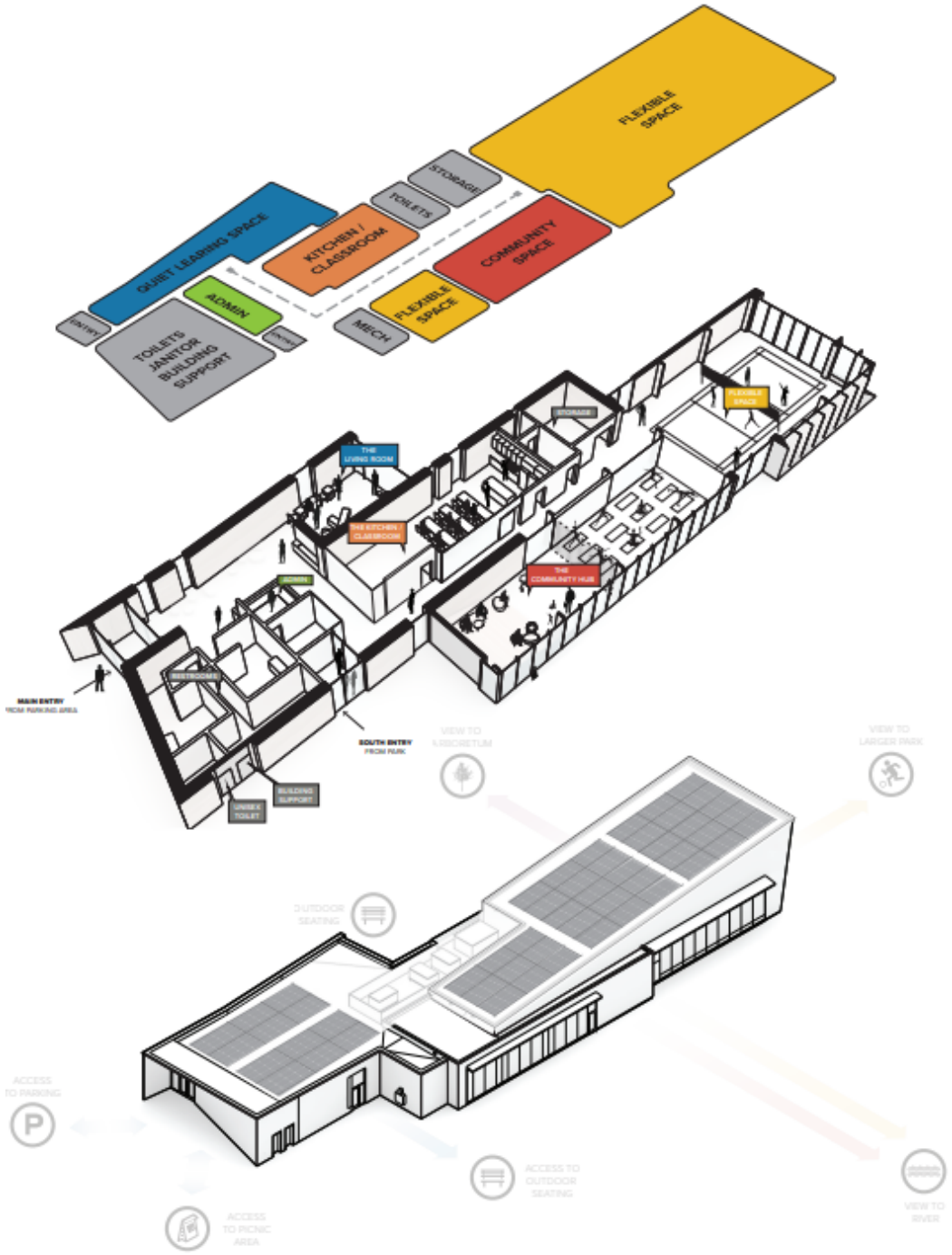
How your feedback shaped the space:

We received over 160 suggested activity types from the community survey!
We organized the suggestions into 5 categories and began to shape the spaces based on them. Through engagement activities the following were prioritized:






FAMILY 10 GAME SET
PICTIONARY
ONE DAY
Jenga



FLEXIBILITY was the main theme for the entire building. Most rooms will accommodate various activities over time. From indoor drone flights to a warming or cooling shelter.

COMMUNITY gathering spaces was a top priority identified. The building is organized to allow for community activities of various scales AND designed with accessibility and universal design principles in mind.

RESILIENCY emerged as an important design consideration. Through a technical assistance grant, we were able to design for solar panels + battery storage that will provide energy to the building for up to 72 hours in case of a black out. As climate change impacts our region, the building can serve as a place for community to gather and deploy resources in normal times and times of crisis.

Community Resilience HUB KCRH

Illya Azaroff FAIA
Director of Design and Resilient Planning +LAB Architect PLLC.

Hui O Hau`ula is a 501c3 non-profit:

Vision: To perpetuate Ohana, Kuleana and Aloha. **FAMILY, KNOWLEDGE and LOVE**

Mission: To support the **health, safety, educational, cultural, environmental, social and economic resilience** of Ko`olauloa communities.

GOALS – Community - HOH

Pathways to Survive and Thrive through the following goals & objectives:

Goal 1: Economic Security through Career Development/Job Training

Goal 2: Health and Wellness

Goal 2: Supportive Relationships

Goal 4: Safety and Security

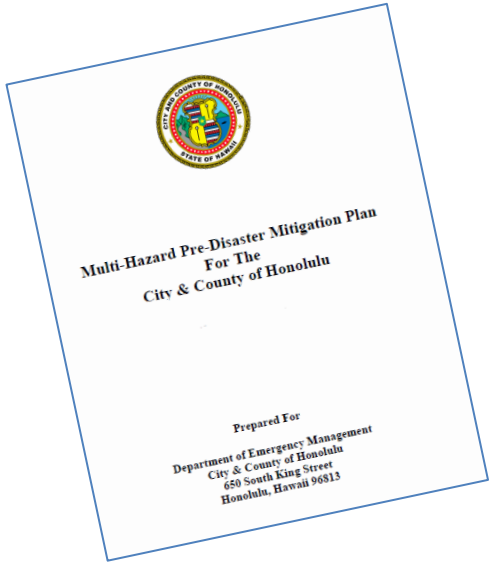
Process……..together

Assess the hazards today & tomorrow
Analyze the site
Plan with the community
Align with government & funding programs
Design the site and buildings
Build the project

FEMA

HMP Identified Hazards (Assess)

Natural Hazard is a natural process or event with the potential to cause harm

Natural Hazard	Natural Process	Event
	Erosion	Hurricane
	Scour	Tsunami
	Wave Inundation	Sea Level Rise
	Flooding	Rain Bomb/Cloud Burst
	Wind	Climate Change
		Tornado
		Earthquake
		Volcano
		Landslide Drought/Torrential Rain Extreme Temperatures

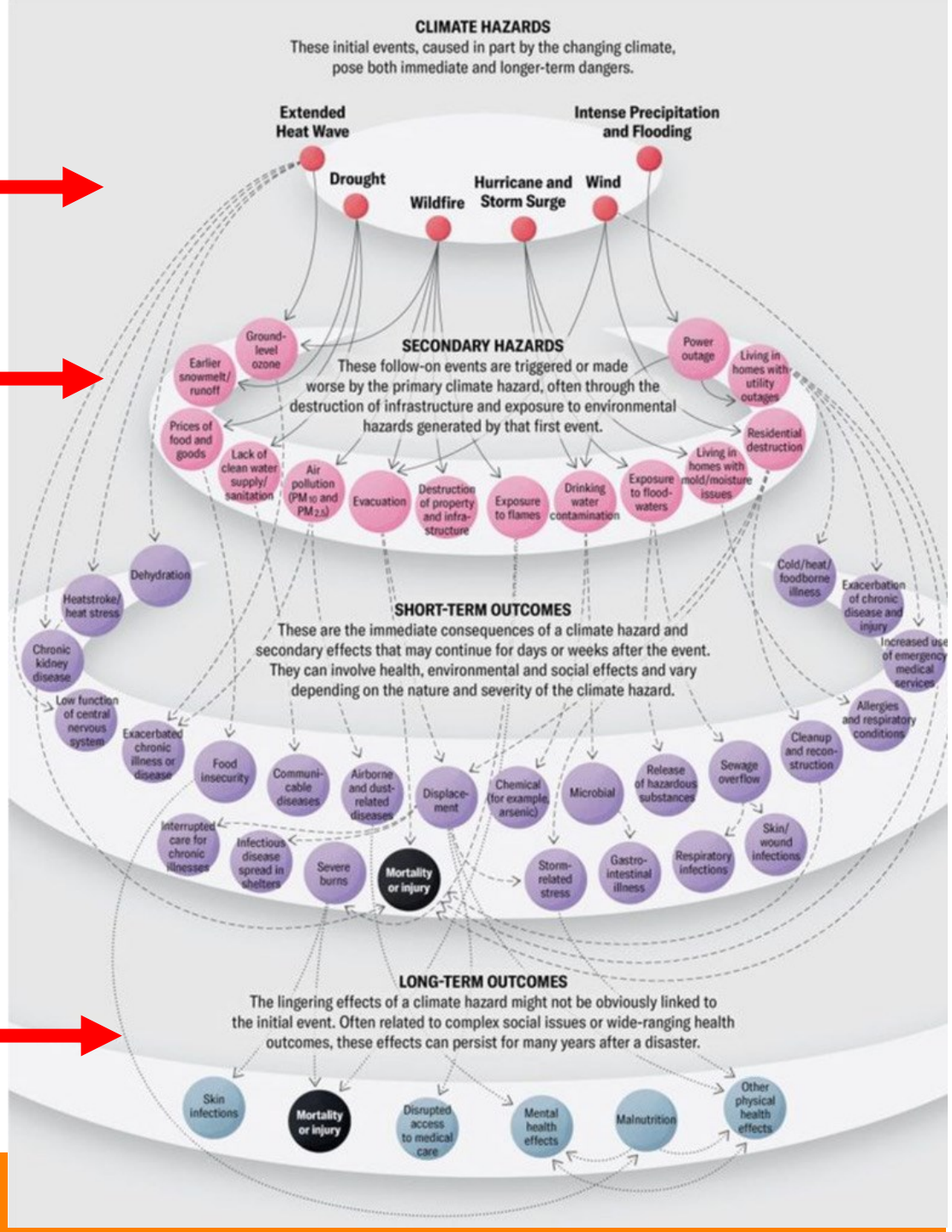
Cascading Effects (Assess)

Climate Hazard

Secondary Hazard

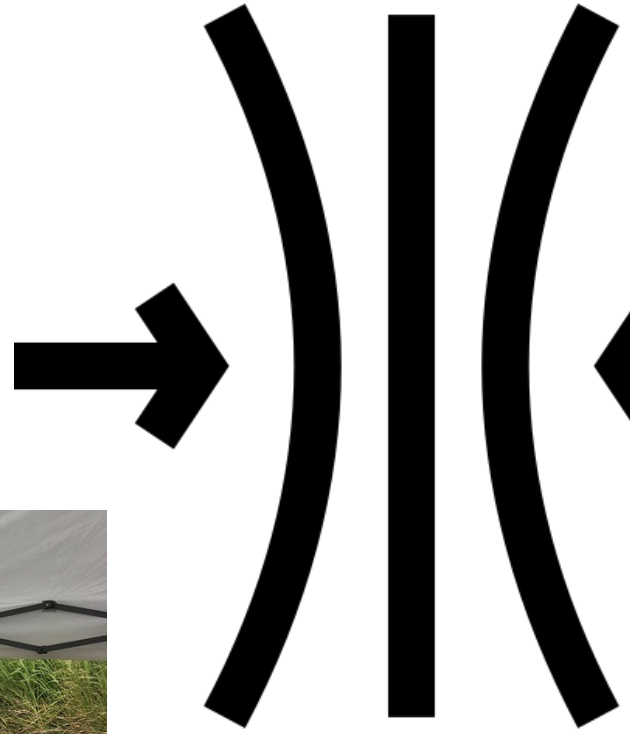
Short Term Outcomes

Long-Term Outcomes



+ lab architects

Resilience

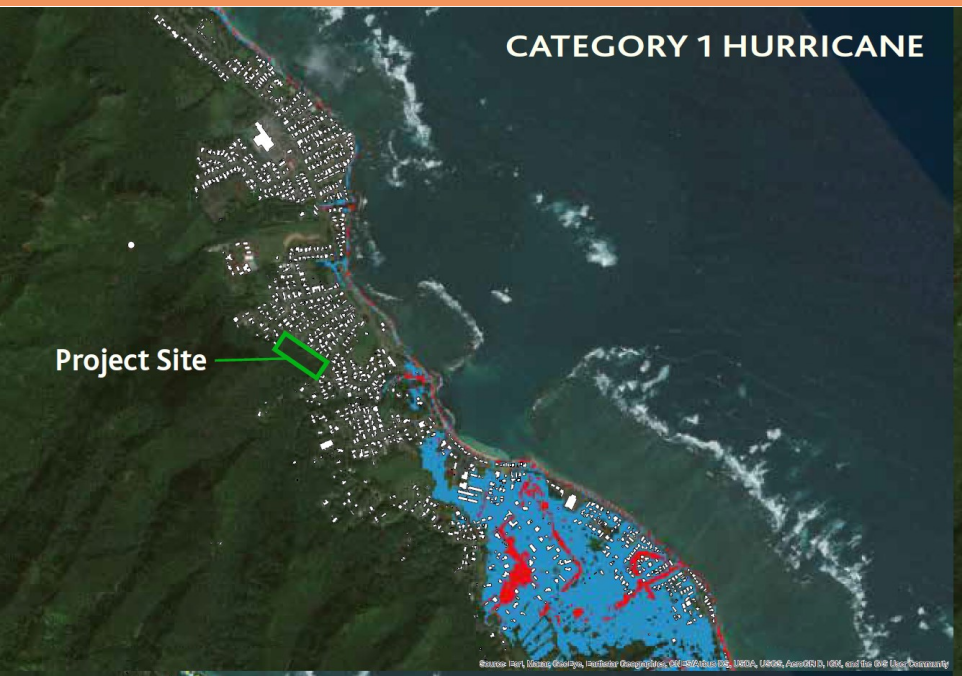


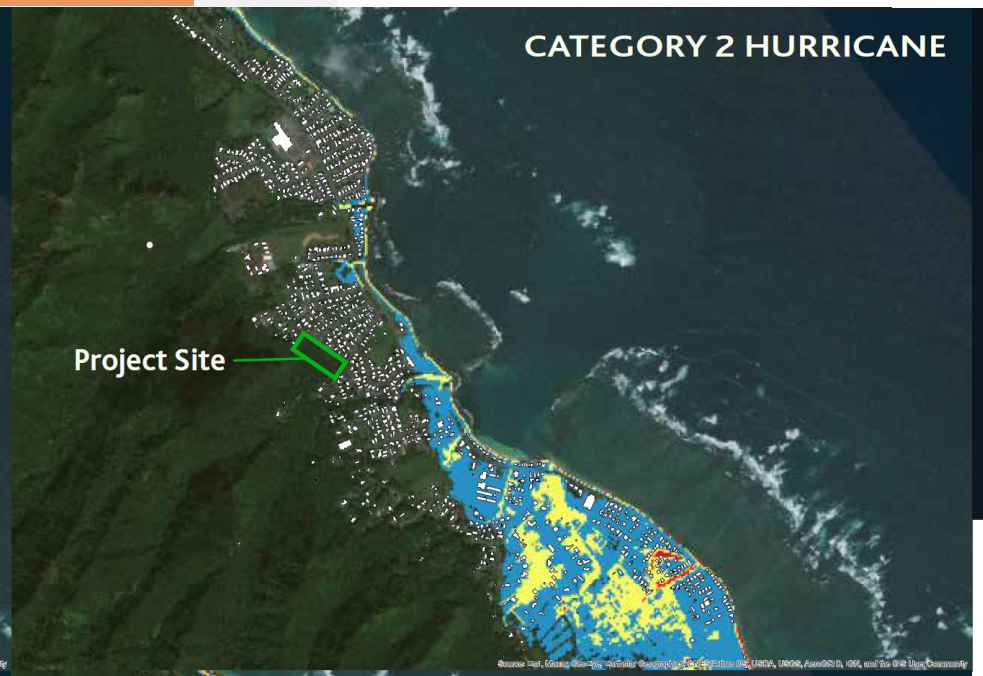
Sustainability

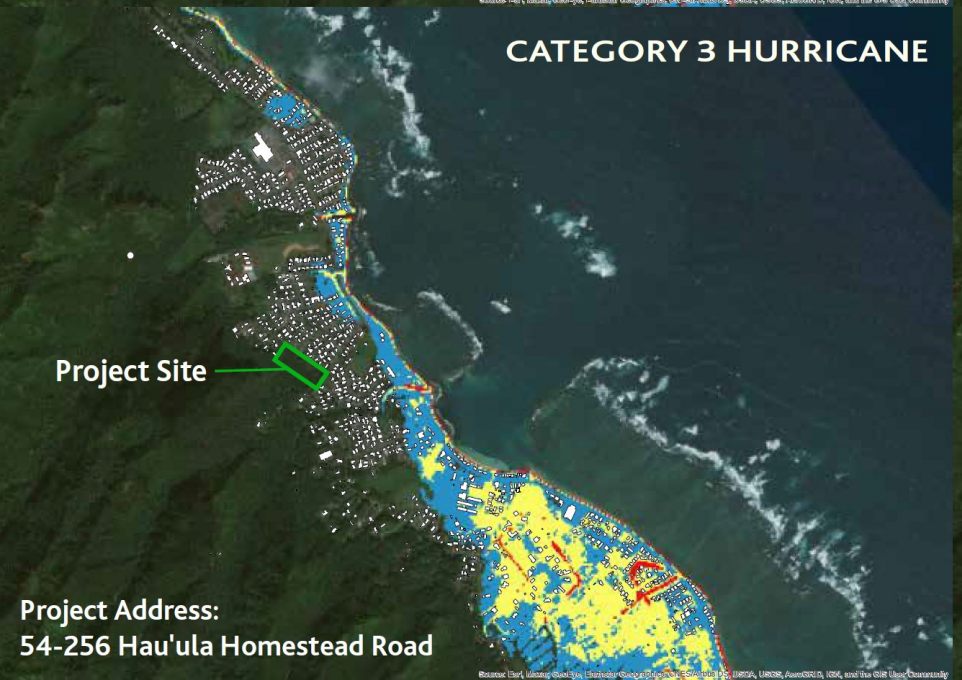
Equity

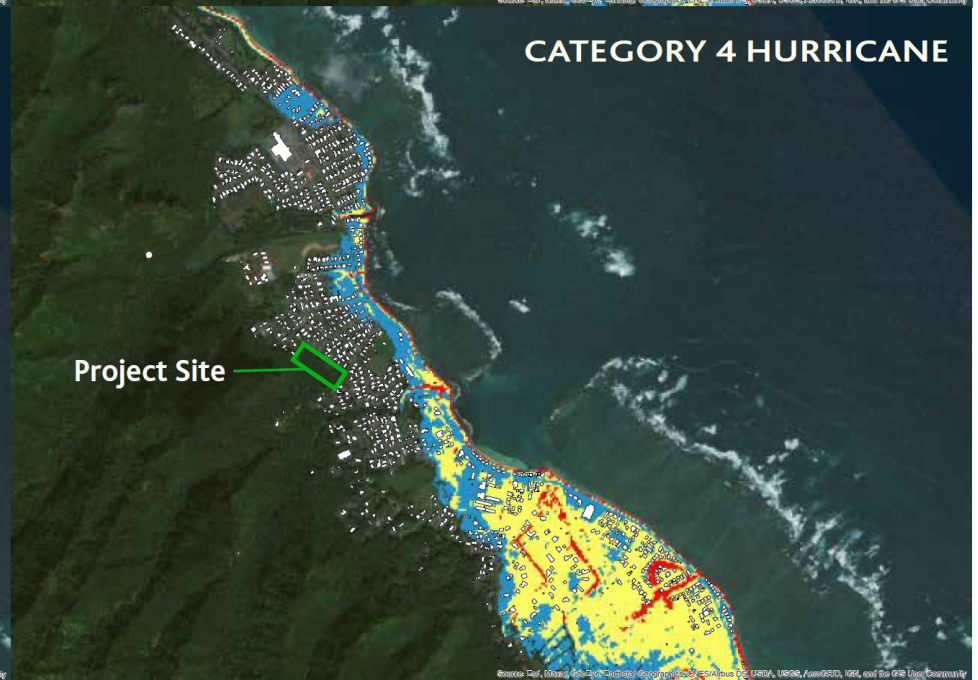
Analyze the Site

HCA HAU'ULA COMMUNITY ASSOCIATION + lab SHADE









Project Address:
54-256 Hau'ula Homestead Road

Ko'olauloa Resilience Hub Project

Hau'ula, O'ahu, Hawai'i

Site Analysis

Sea, Lake, and Overland Surges from Hurricanes

The Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model is a computerized model made by the National Weather Service. The model estimates storm surge heights for each category of hurricane by using atmospheric pressure, size, forward speed, and other types of data. This map of Hau'ula is overlaid with the SLOSH model to describe the projected impacts of hurricane storm surge. The project site is protected from Category 1 to 4 storm surge.

Legend

- 1 to 3 feet of storm surge
- 3 to 6 feet of storm surge
- 6 to 9 feet of storm surge

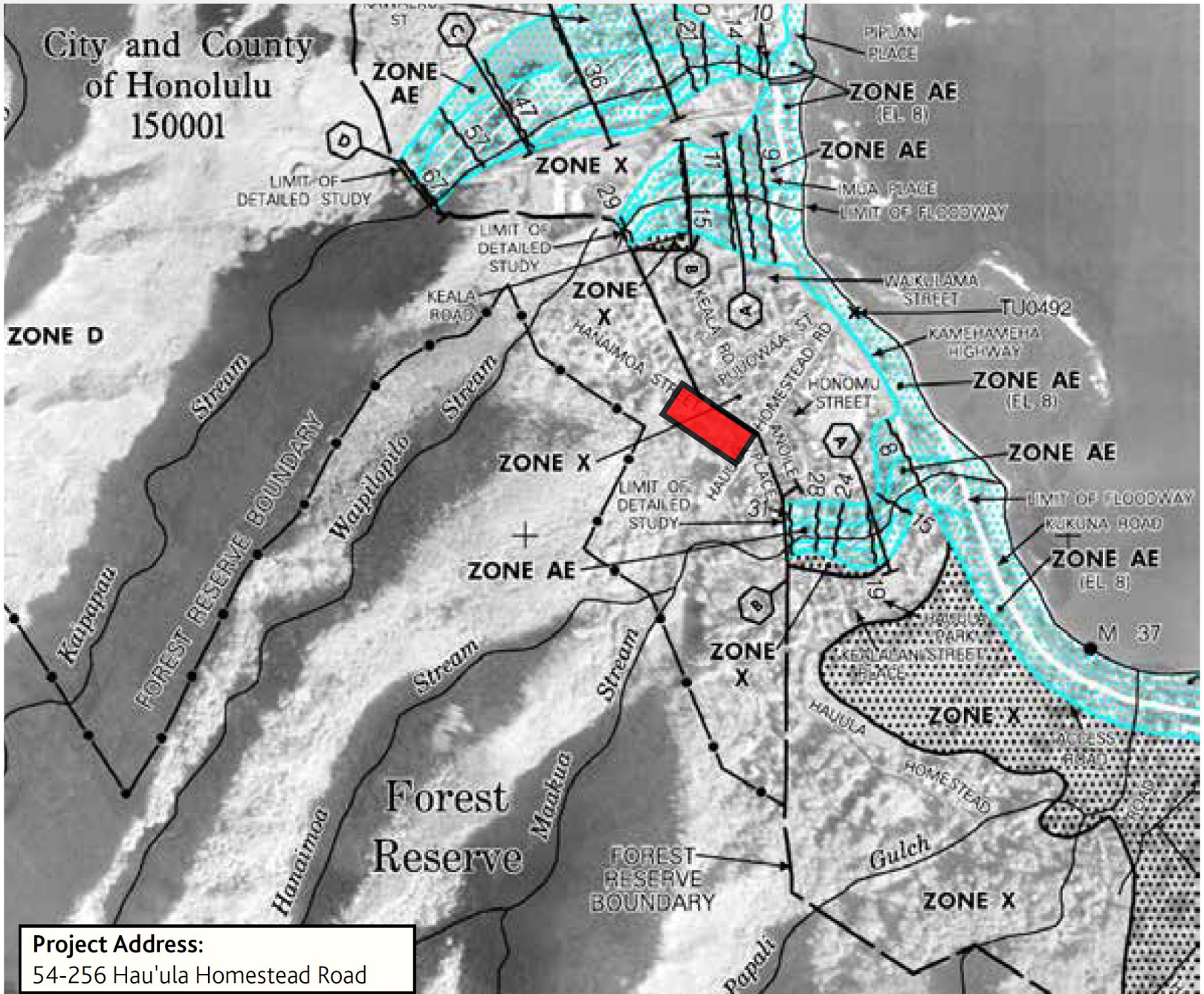
Date: August 14, 2020
By: Cuong Tran
Sheet 1 of 1

N

0 500 1000 ft

Link to SLOSH:
https://www.nhc.noaa.gov/nationalsurge/#data

Analyze the Site



Project Address:
54-256 Hau'ula Homestead Road

HCA HAU'ULA COMMUNITY ASSOCIATION + lab SHADE

Ko'olauloa Resilience Hub Project

Hau'ula, O'ahu, Hawai'i

Site Analysis

Flood Insurance Rate Map (FIRM)

The Ko'olauloa Resilience hub project site is located in the Zone D designated flood area. The flood area Zone X surrounds the project site, where inland flooding is of minimal risk. The right of the project site shows the boundary of a floodway that is connected to the Ma'akua and Hanaimoa streams. The Kaipapa'u and Waipilopilo streams connect to the floodway to the left of the project site. This FIRM map is effective as of September 30, 2004 and is listed as number 15003C0135F.

Legend

	Project Site
	Special Flood Hazard Areas Subject to Inundation By The 1% Annual Chance Flood
Zone AE	Base Flood Elevations Are Determined
Zone A	Base Flood Elevations Are Not Determined
Zone X	Areas determined to be outside the 0.2% annual chance floodplain
Zone D	Areas in which flood hazards are undetermined, but possible

N

0 500 1000 ft

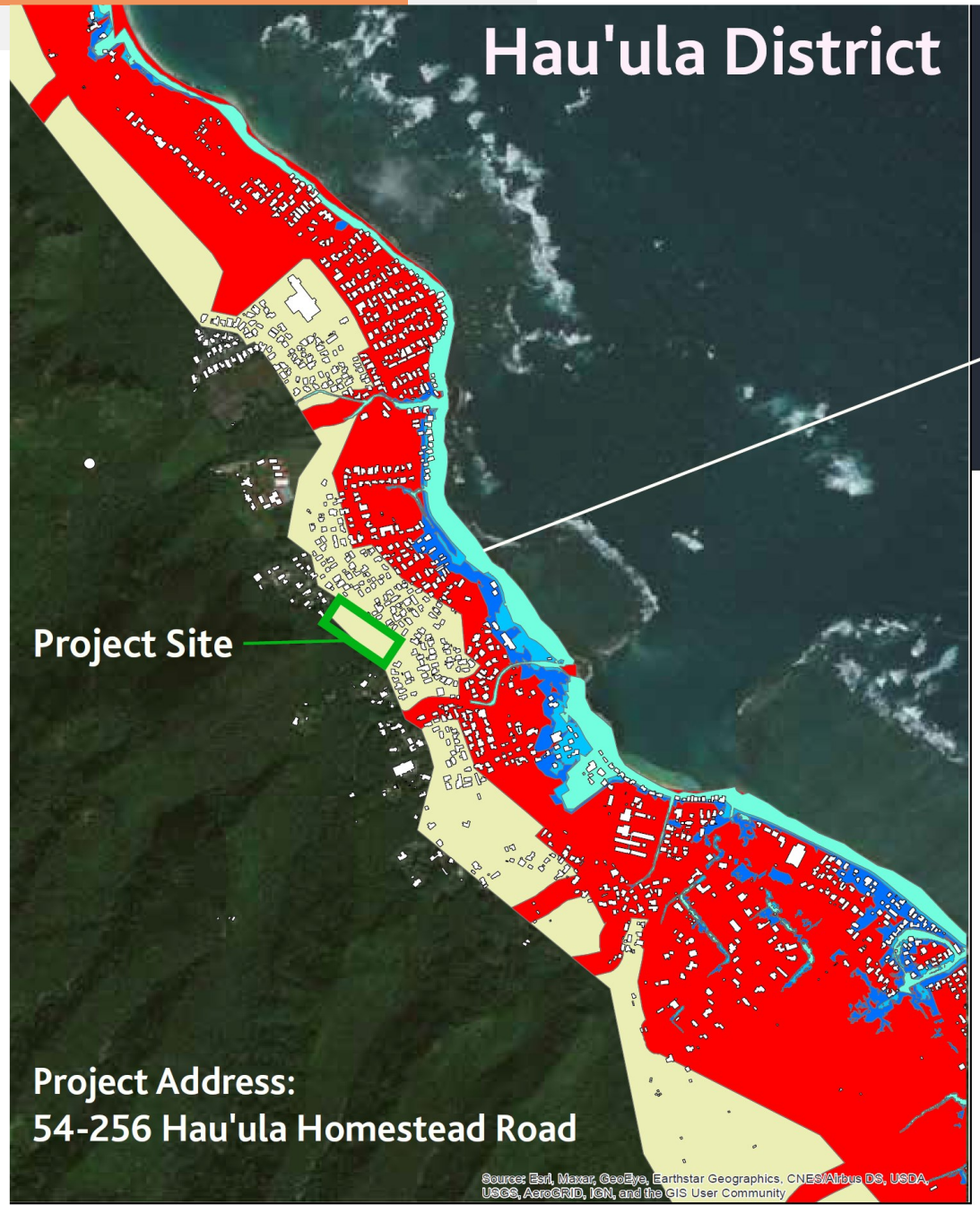
Date: August 20, 2020
By: Cuong Tran
Sheet 8 of 8

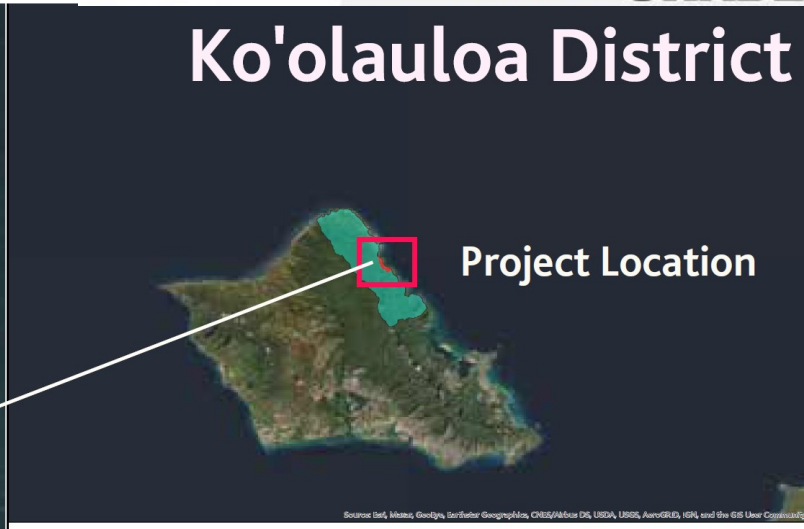
Link to FIRM download tool:
https://msc.fema.gov/portal/home

Analyze the Site

Tsunami Evacuation Zone – **Based on Historical Tsunami Events impacting Hawaii – 1946, 1957, 1960.**

Extreme Tsunami Evacuation Zone – Based on Extreme Event (“Great Earthquake and Tsunami Event”- e.g., Indonesia 2005, Japan 2011)





Ko'olauloa Resilience Hub Project
Hau'ula, O'ahu, Hawai'i

Site Analysis
Sea Level Rise and Tsunami Hazard Vulnerability

The district map of Hau'ula is overlaid with three future sea level rise (SLR) projections modeled by PacIOOS. The designated tsunami evacuation zones are also color-coded. The Ko'olauloa Resilience Hub site is located away from up to 3.2 feet of SLR inundation, and is located in the Extreme Tsunami Evacuation Zone.

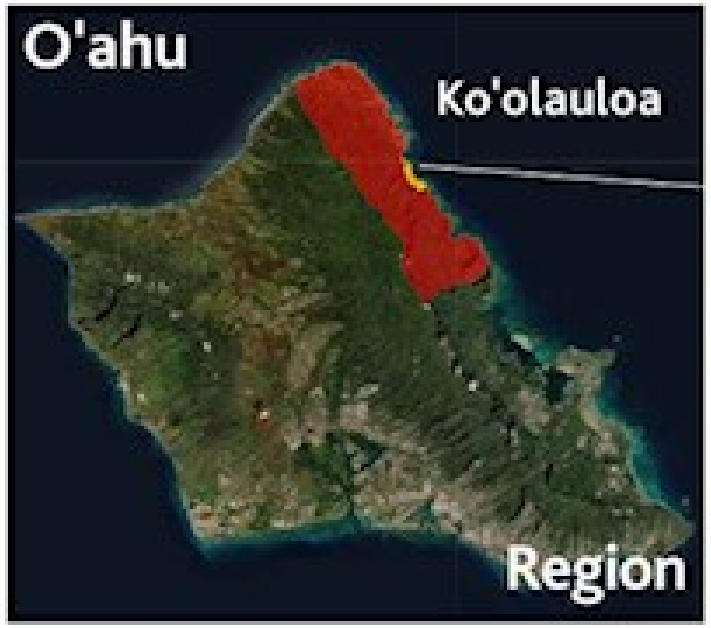
Legend

- 1.1 feet SLR
- 2.0 feet SLR
- 3.2 feet SLR
- Tsunami Evacuation Zone
- Extreme Tsunami Evacuation Zone

N
0 500 1000 ft

Date: August 13, 2020
By: Cuong Tran
Sheet 1 of 8

Link to PacIOOS:
https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/
Link to Tsunami Evacuation Zones:
https://www.pacioos.hawaii.edu/voyager/info/tsunami_evac_zones_summary.html



Ko'olauloa Resilience Hub Project

Hau'ula, Ko'olauloa, O'ahu
Site Photo Documentation

Site:
54-256 Hau'ula Homestead Road

Date and Time of Visit:
July 14, 2020/10:00AM - 12:00PM

Attendees:

SHADE Institute:
Dean Sakamoto
Cuong Tran
Ben Credle
Nicole Nomura

G70:
Ryan Char
Cody Winchester
Remy Fung

Hau'ula Community Center:
Dotty Kelly-Paddock

Kahana Bridge July 16, 2022

26,000 Residents
Single road
fragile
and
vulnerable

+ lab HCA SHADE

RESILIENT O'AHU

"My Community is

Self aware

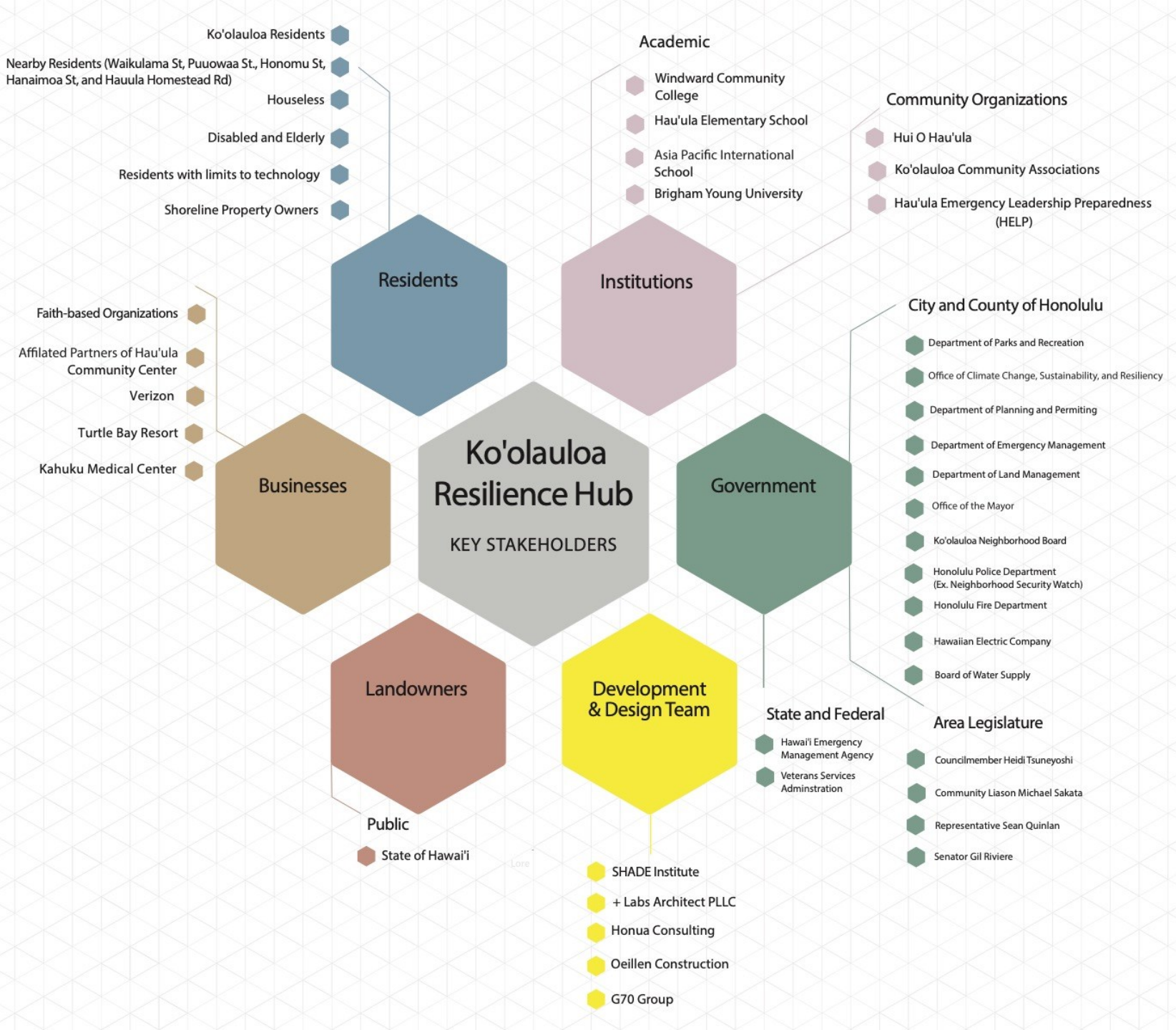
Self actualized, and

Invisible"

Plan with Community
- Team organization

Key Stakeholders

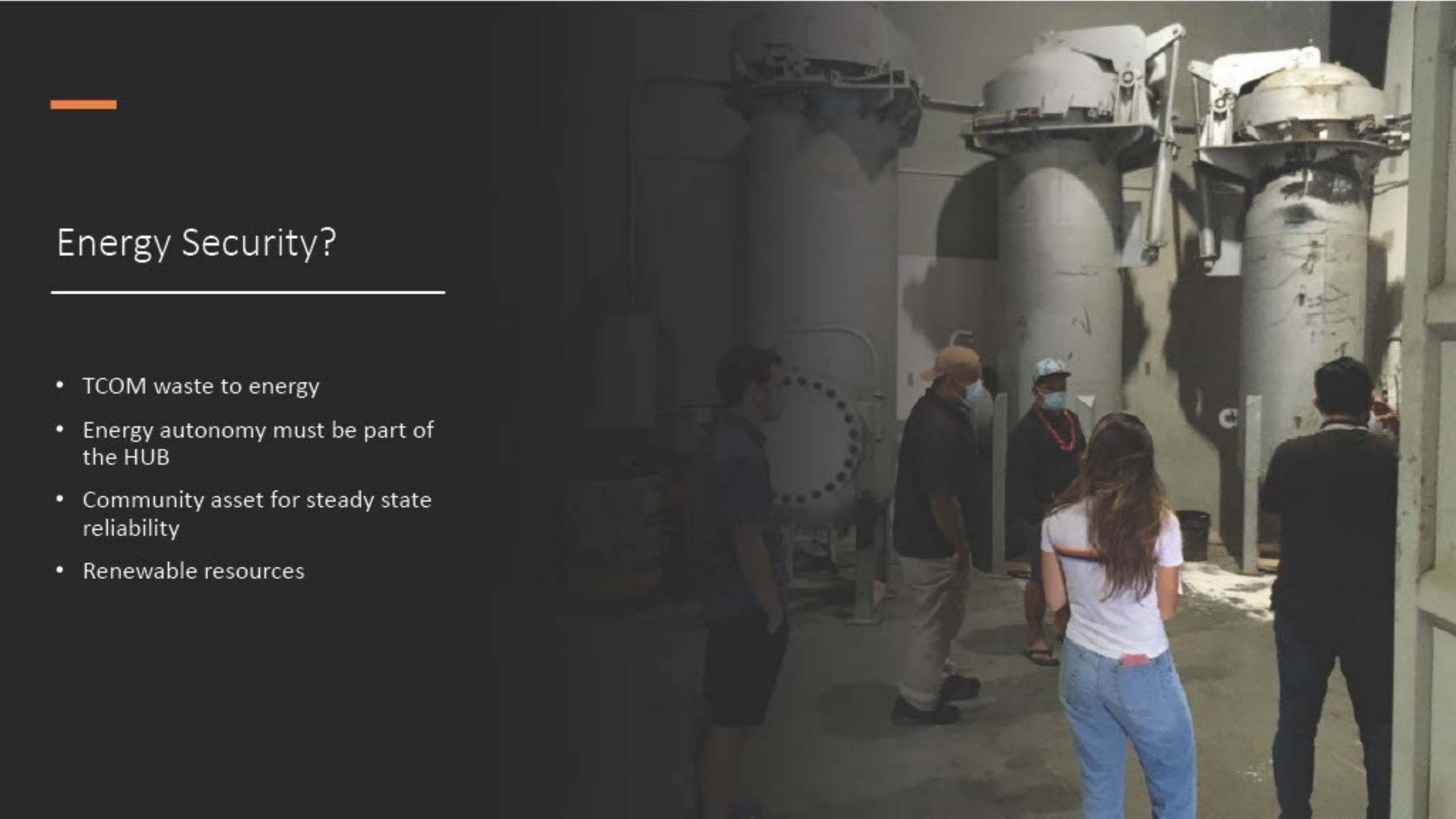
- Residents
- Landowners
- Businesses
- Institutions
- Government
  - City and County
  - State and Federal
    - Areas of Legislature
    - Funding
- Development and Design Team



- Before the pandemic this is a community need
- Food and equity

Energy Security?

- TCOM waste to energy
- Energy autonomy must be part of the HUB
- Community asset for steady state reliability
- Renewable resources



Housing Vulnerabilities

- Survey of housing throughout the region
- 85% of the homes here are projected to be damaged from a category one hurricane

Coastal erosion and flooding

- Wave inundation and rain
- Vulnerabilities and access compromised
- Infrastructure failure

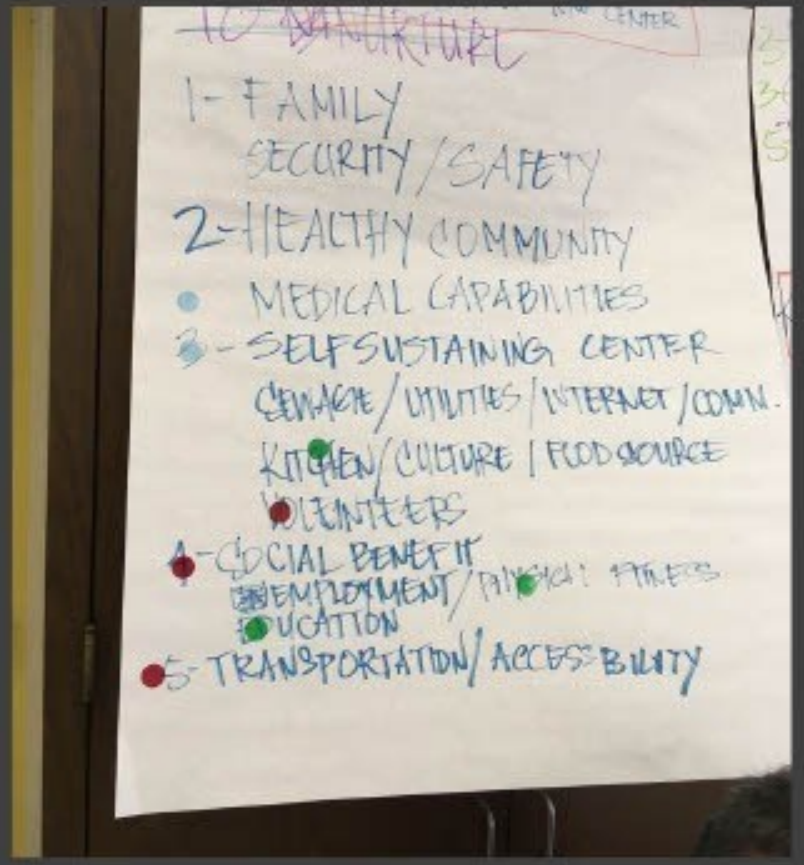
KCRH project considers the following hazards from the State and City HMP

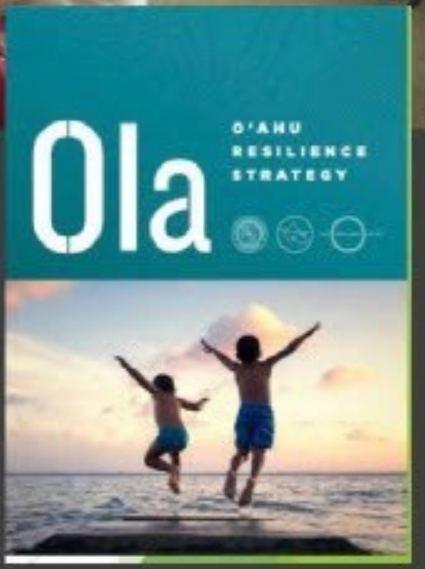
- Climate Change Effects (Designing for Tomorrow: 150+ years)
- Coastal Erosion (Transportation and Supply Chain, 30-day Isolation)
- Strong Winds (Non-Tropical Cyclonic)
- Tropical Cyclones (Including Hurricanes)
- Floods (Rain and topographic flooding)
- Tsunamis (Extreme tsunami zone location)
- Earthquakes (base isolation of the building)
- Landslides and Rock Falls (location and topographic effects)
- Droughts (native plantings and Ahupua restoration)
- Wildfire (Materials and defensible space)
- Hazardous Materials (By Transportation, or Island Storage, Infiltration etc.)
- VOG's (Volcanic Gases will be addressed in Design Development)

Community workshops

- Residents
- Stake holders
- Government representatives
- Facilitators
- Historians

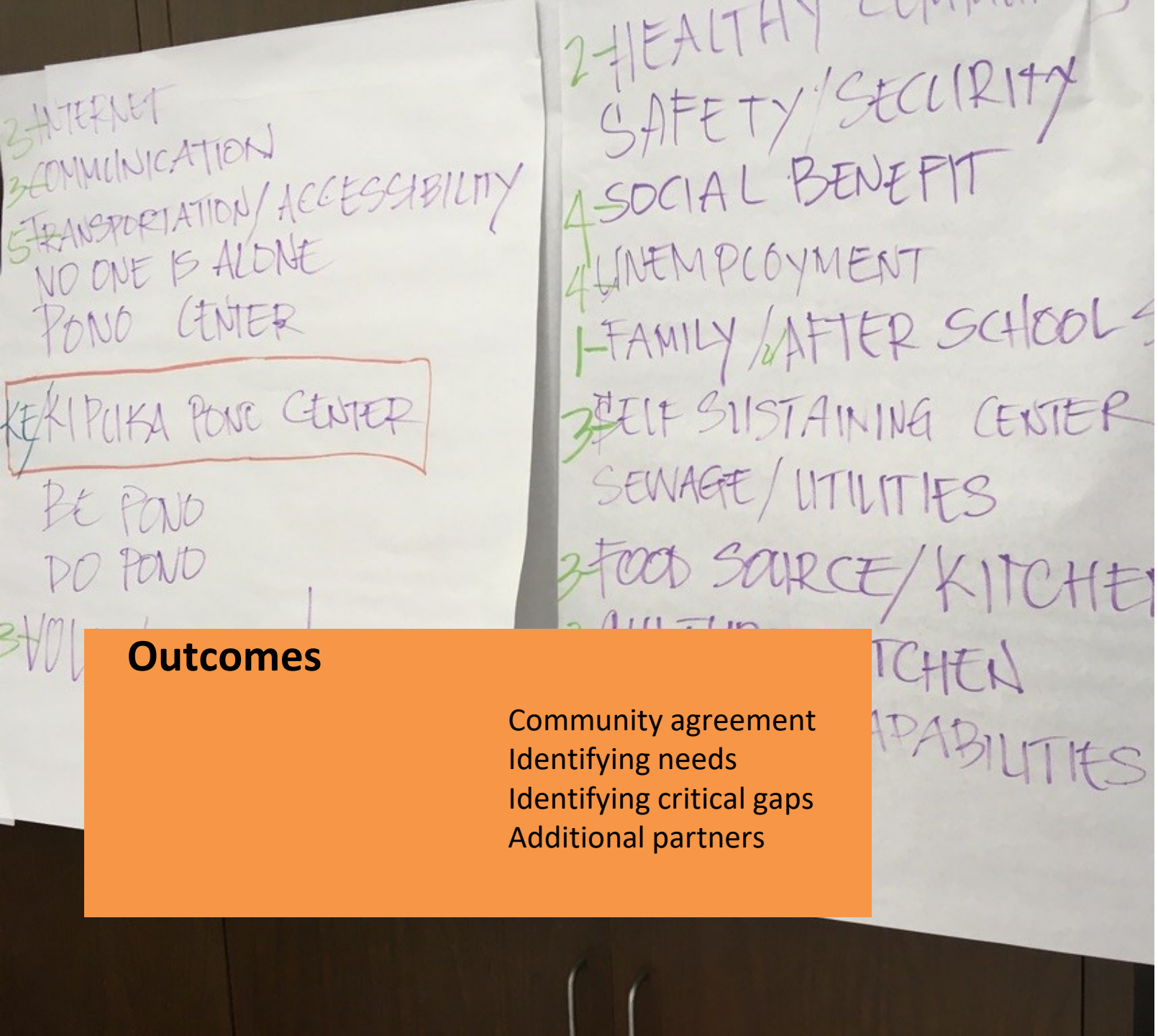
HCA HAU'ULA COMMUNITY ASSOCIATION + lab SHADE





Priorities Identified

- 8 teams in two workshops
- Over 100 participants
- Partners and stakeholders



Outcomes

Community agreement
Identifying needs
Identifying critical gaps
Additional partners

HCA HAU`ULA COMMUNITY ASSOCIATION + lab SHADE

Photo credit Jake Price

Community has a face

- Resilience is an action and people of Hau'ula take action

"This community has not had a voice, we have not been visible. The community engagement, getting together, talking, sharing, laughing, hurting together, whatever it is, builds bonds in the community".

Future of the community

"When we talk about sustainability, and sustaining our life, I believe helping to sustain our culture"

Photo credit Jake Price

Voices of the people

“We may be poor, but we are rich in our culture. That's why we still hanging on as why we still do what we do. We fight for the next generation so that they don't forget the culture. They don't forget where they're from and their roots”

Photo credit Jake Price

Partners – Services for the HUB

Partners/Potential Partners that will provide services onsite:

(1) Verizon: Communications
(2) YMCA
(3) Windward Community College
(4) University of Hawaii, Center on Disability Studies
(5) Honolulu Community Action Program
(6) Hawaii Foodbank: Ohana Food Distribution
(7) Veterans Services
(8) Native Hawaiian Health Care Program for Native Hawaiians
(9) WIC: Programs for Women and Children
(10) Hawaiian Island Land Trust
(11) Hauula Community Garden/Ulu Coop
(12) HICO- Hawaii Energy Authority
(13) Native Hawaiian Job Training & Youth programs
(14) Green jobs programs for youth

Two ideas underpin the design

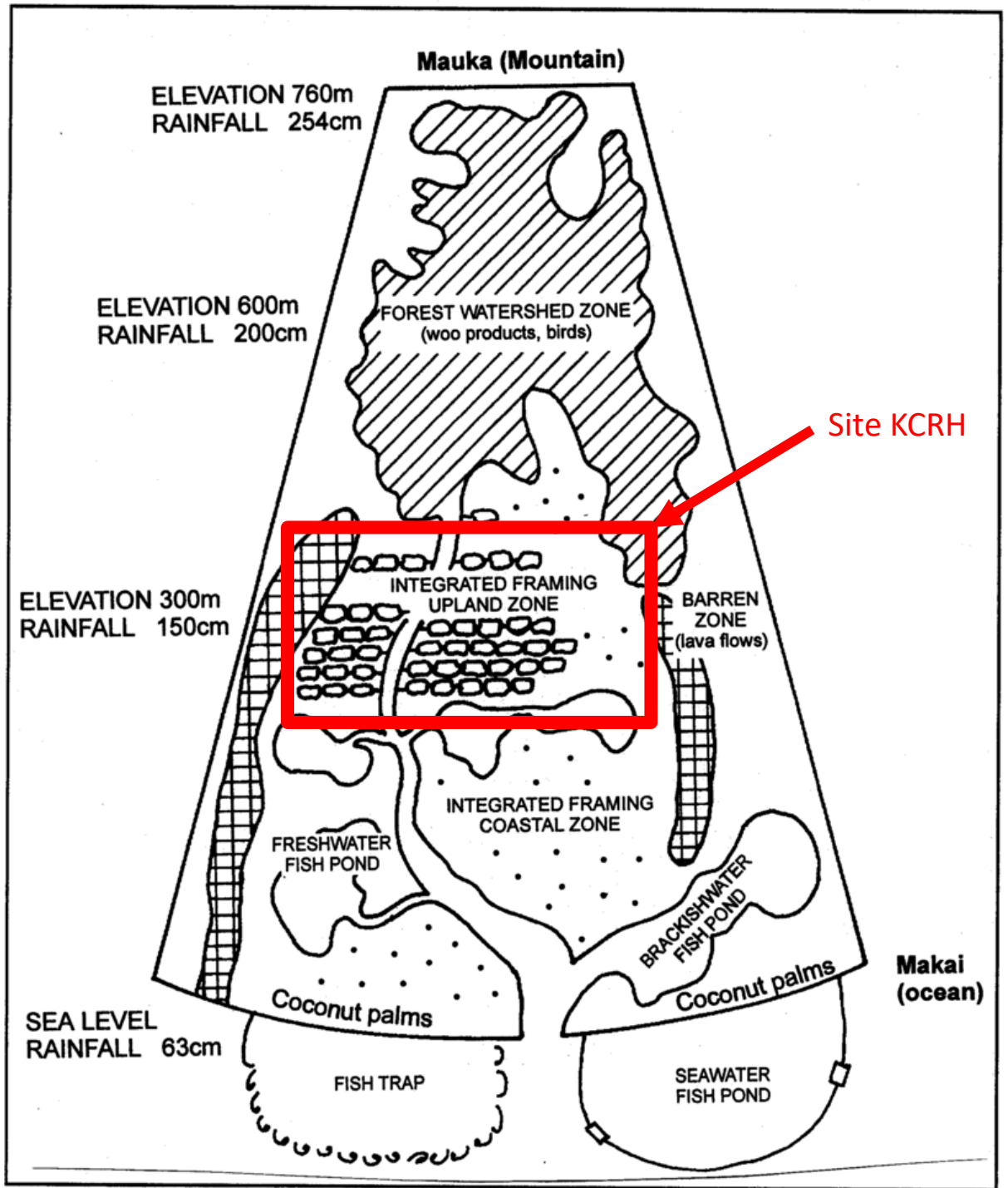
Consideration for the Community and stakeholders

two central ideas

Wa’a for the buildings

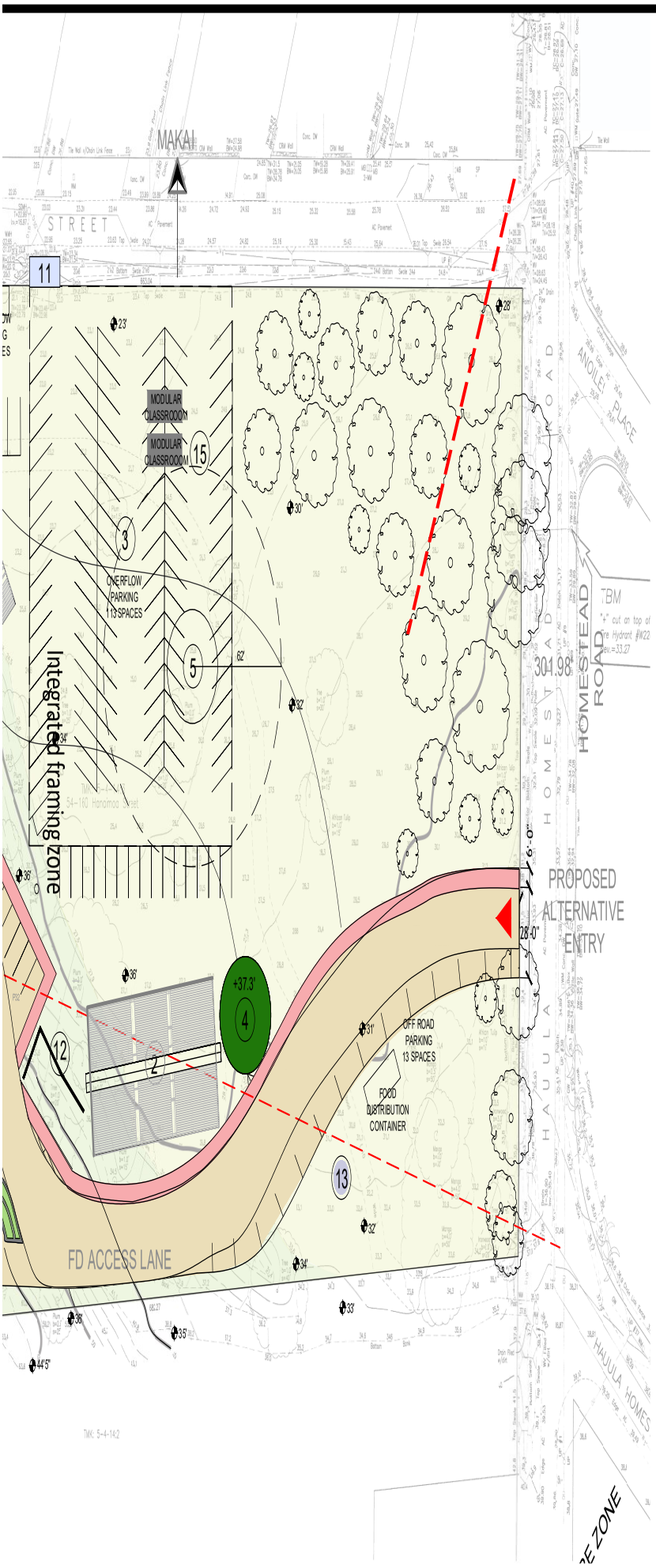
and

Ahupua’a for the land management



KCRH - Ko’olauloa Community Resilience Hub

KCRH PRELIMINARY DESIGN - SITE PLAN



LEGEND

SITE PROGRAM LEGEND	
1	PRIMARY HUB
2	SECONDARY SUPPORT BLDG
3	OVERFLOW PARKING
4	HULA MOUND

+lab
ARCHITECTURE + EXPERIMENTATION
925 BERGEN STREET STUDIO 105
BROOKLYN, NEW YORK 11238
718-783-0363

PRELIMINARY DESIGN

FOR ENVIRONMENTAL ASSESSMENT PURPOSES ONLY

REVISIONS

NUMBER	DATE	DESCRIPTION

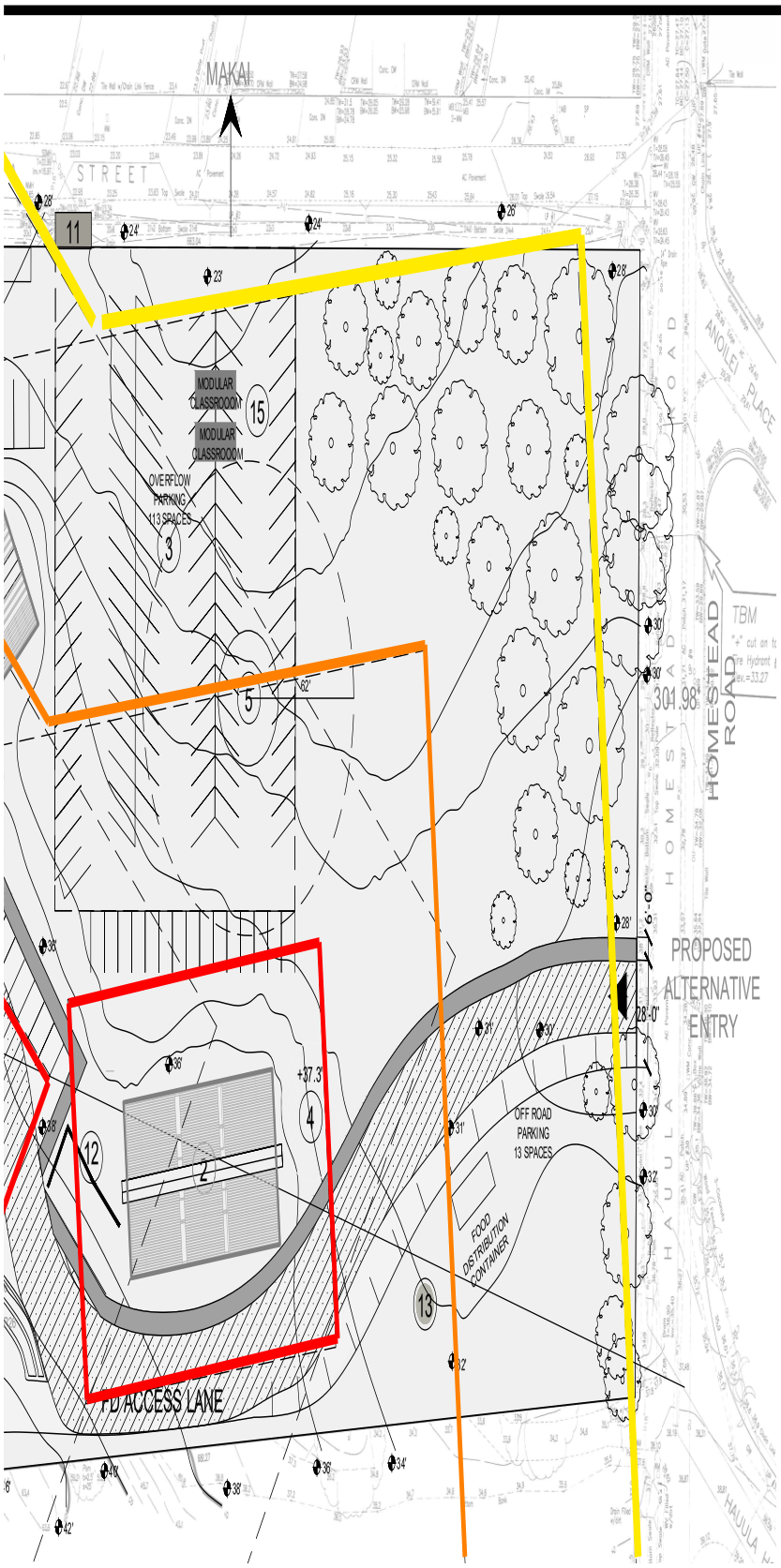
DO NOT SCALE PLANS

CONTRACTOR TO PROMPTLY NOTIFY ARCHITECT OF ANY MATERIAL VARIATIONS BETWEEN FIELD CONDITIONS AND EXISITI CONDITIONS AS INDICATED IN CONTRACT DOCUMENTS

PROJECT
KO'OLAULOA COMMUNITY

+ lab

KCRH PRELIMINARY DESIGN - DEFENSIBLE SPACE (Z1 - 30', Z2 -100', Z3- 200'



SITE PROGRAM LEGEND	
1	PRIMARY HUB
2	SECONDARY SUPPORT BLDG

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ARCHITECTURE + EXPERIMENT
925 BERGEN STREET STUD
BROOKLYN, NEW YORK 112
718-783-0363

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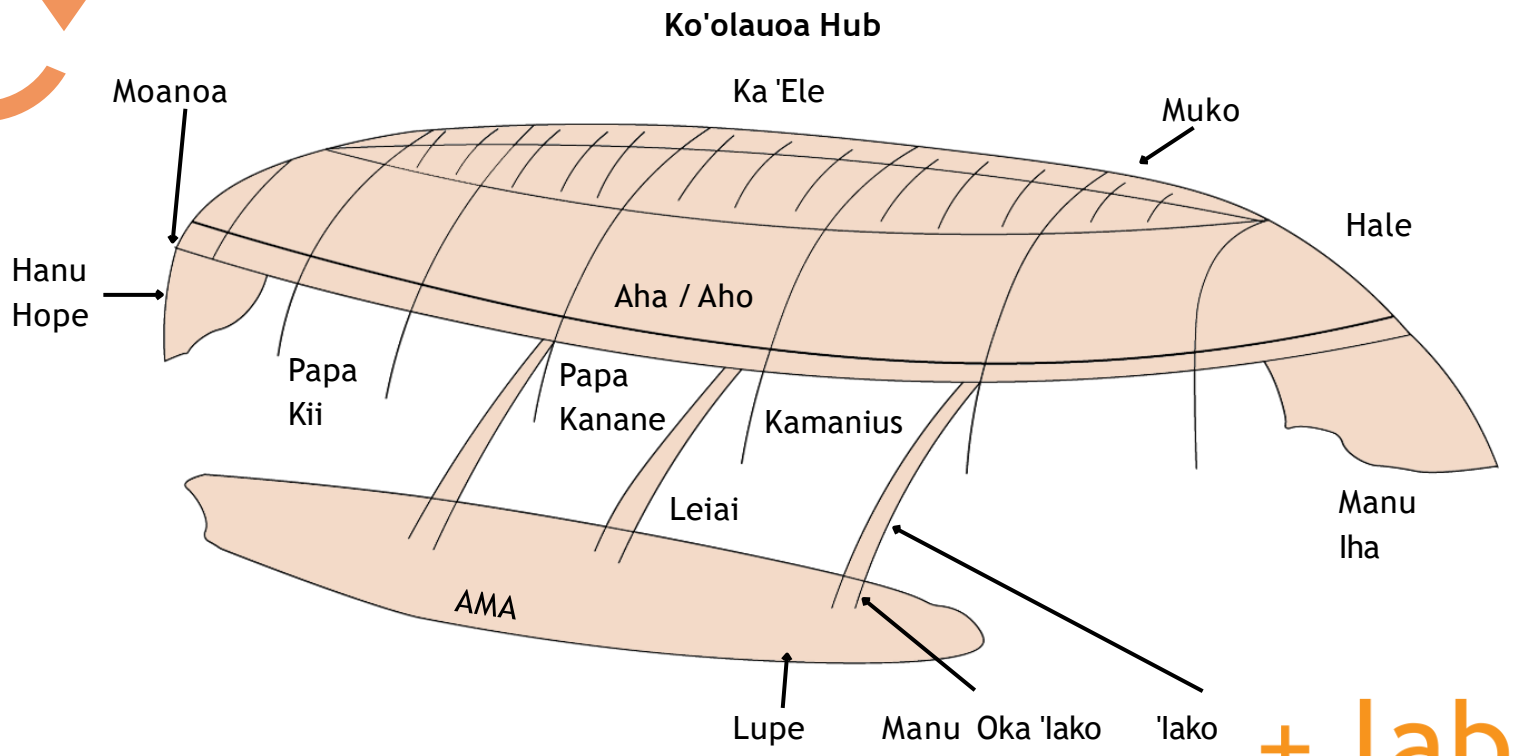
Wa'a Concept Diagram

"Huli"
Flip over the
canoe to stay safe



"When you see the storm you flounder the boat so it stays put" - Dr. Tusi ...

+ lab
architect pllc.

Ko’olauloa Community Resilience Hub

+ lab
architect pllc.

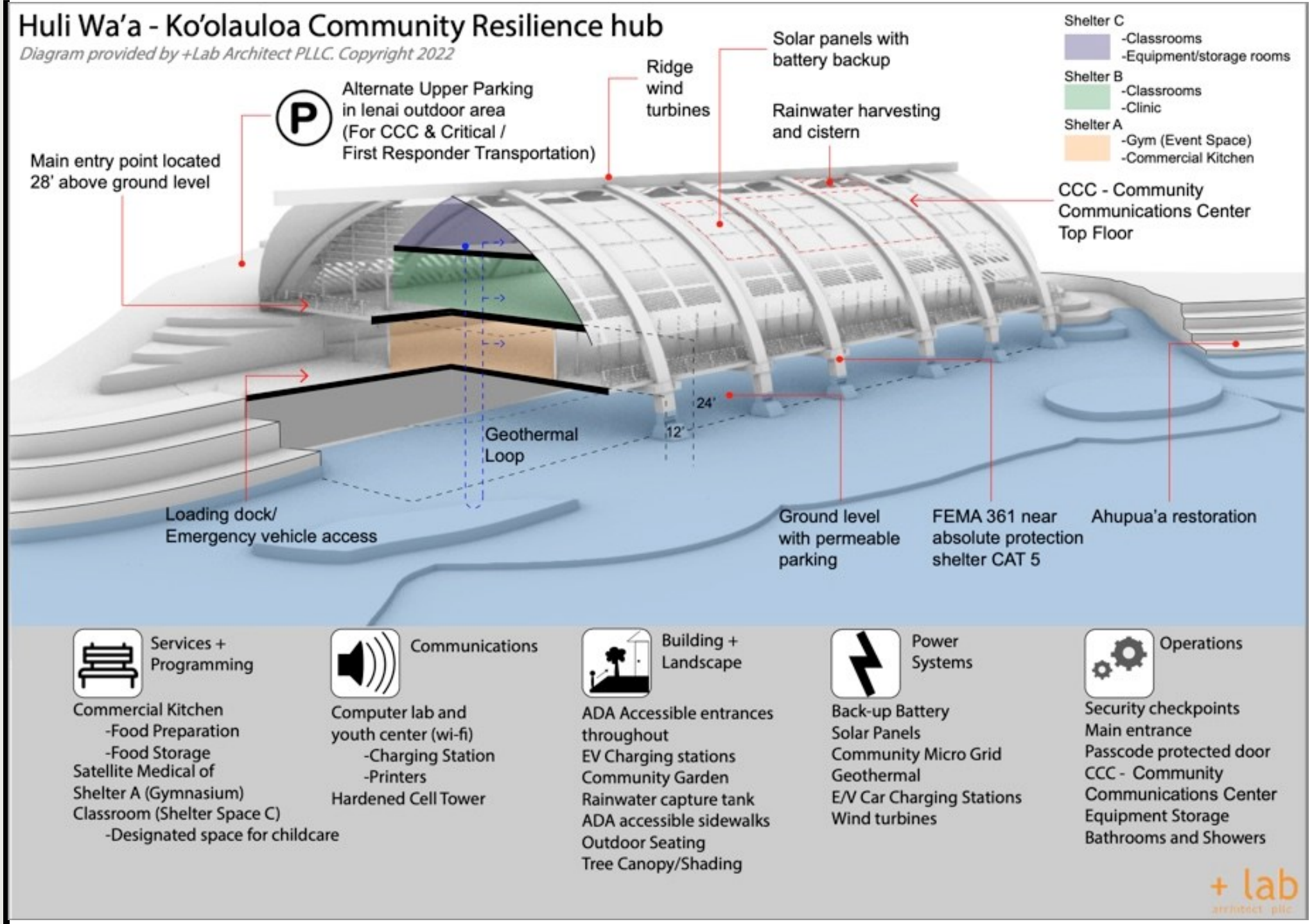
KCRH

Wa'a Layout Concept

FEMA 361

30 days off grid capable

Shelter Capacity 1500 people



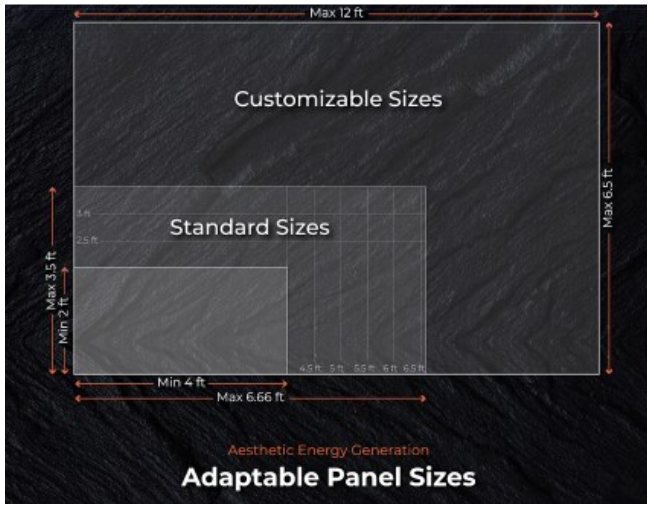
Indigenous Wisdom
+
Technology

ETIPP – Grant Team

RENEWABLE POWER STRATEGIES

SOLAR
WIND
HYDROGEN
GEO-THERMAL
HYDRO
WAVE

1 —- Upper Parking Lot (3’-3” x 6’ -5” panels)
2 —- Roof Top Fins East Side (4” x 6’ fins)
3 —- Roof Top Fins West Side (4” x 6’ fins)
4 —- Rooftop PV East (3’-3” x 6’ -5” panels)
5 —- Rooftop PV West (3’-3” x 6’ -5” panels)
6 —- Ridge Wind Turbines



With resilience and sustainability being a major focus of the Ko’olauloa Community Resilience Hub (KCRH), the capacity of solar and wind energy generation needs to be quantified. Based on our curre design we have 5 areas for solar panels & one proposed Ridge wind turbine. In order to calculate the capacity for our proposed solar panels on the facade we arranged our panels on the facade of our 3D model and determined the total square footage and determined our solar panel dimensions through ou proposed manufacturers website ; https://www.mitrex.com/solar-panels/ , to fit the areas available for solar pv.

1 —- Upper Parking Lot (3’-3” x 6’ -5” panels)
2 —- Roof Top Fins East Side (4” x 6’)
3 —- Roof Top Fins West Side (4” x 6’)
4 —- Rooftop PV East (3’-3” x 6’ -5” panels)

Community relationship to the land and this site

- Next step planting 100 native trees
- Army Corp is clearing the remaining site
- EA process underway, schematic design and planning secured
- Adaptation funding from the state secured
- Pursuing Federal Adaption funding and ecological regenration

03.05.2024

Schatz Secures Nearly $400 Million In New Earmark Funding For Hawai‘i Non-Profits, Projects, More Earmarks Expected In Next Round Of Funding

WASHINGTON – U.S. Senator Brian Schatz (D-Hawai‘i), chair of the Senate Appropriations Subcommittee on Transportation, Housing and Urban Development, secured $394 million in new congressional directed spending, also known as earmarks, in the first half of this year’s government funding bill. Additional earmark funding for Hawai‘i is expected to be included the second half of the funding deal which is set to be announced on March 22.

“We are bringing home nearly $400 million in new earmark funding and expect more to come,” said Senator Schatz, a member of the Senate Appropriations Committee. **“These earmarks will give local non-profits and projects more resources to serve communities across Hawai‘i.”**

As a senior member of the Senate Appropriations Committee, Schatz worked with congressional leaders to ensure Hawai‘i received its fair share of federal earmark funding.

EARMARKS SECURED BY SENATOR SCHATZ INCLUDE THE FOLLOWING:

Sustainable Moloka‘i – $1.3 million

This project would fund the acquisition of land to support the development of a permanent food hub on Moloka‘i. (Schatz and Tokuda joint request)

Hui o Hau‘ula – $5.4 million

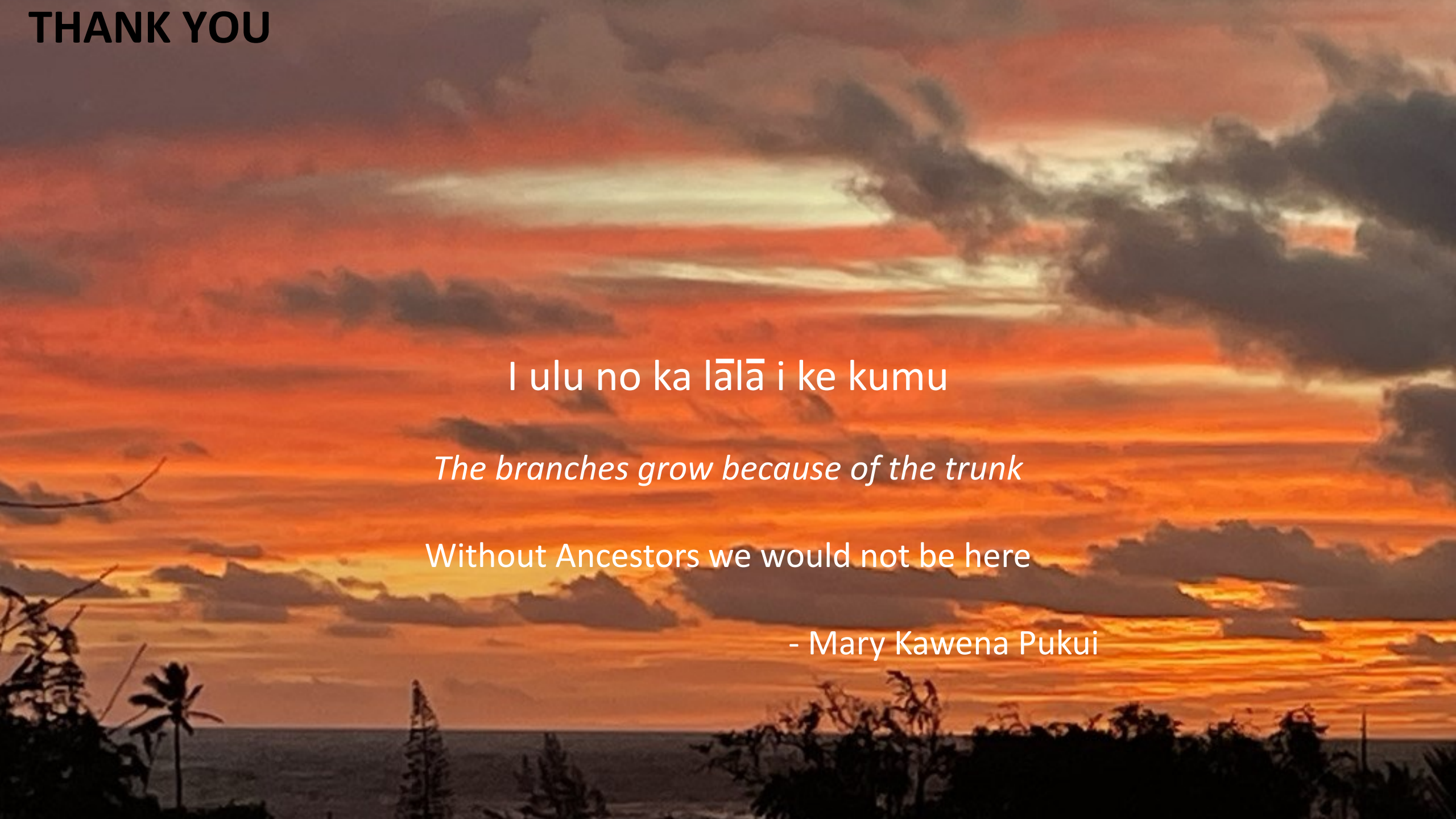
Funding will support construction of a community center and shelter in Hau‘ula. (Schatz, Hirono, and Tokuda joint request)

Island of Hawai‘i YMCA – $635,000

Progress !

+ lab architects

THANK YOU


I ulu no ka lālā i ke kumu
The branches grow because of the trunk
Without Ancestors we would not be here
- Mary Kawena Pukui

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