CLIMATE ACTION RESILIENCE PLAN

JANUARY 2024 UPDATE

OFFICE OF INNOVATION AND SUSTAINABILITY

OFFICE OF ECONOMIC DEVELOPMENT

OFFICE OF INNOVATION & SUSTAINABILITY

ITEMS TO BE DISCUSSED

- WHAT IS CARP?
- OIS CARP GOALS
- UPDATE ON OIS/CCRS CONTRACTS


WHAT IS CARP?

Hawai'i Environmental Legislation

"This set of legislation is another important step in our long-term plan for energy independence in Hawai'i," said Governor Lingle. *"As we continue to work toward achieving our goal of having 70 percent clean energy in Hawai'i by 2030, these new laws will make it easier for businesses to invest in renewable energy projects."*

HB2863 HD2 SD2 CD1, Relating to Renewable Energy, which becomes Act 207, establishes new responsibilities for director of the Department of Business, Economic Development and Tourism (DBEDT) as the State's energy resources coordinator. This position will create a streamlined permitting process that includes state and county permits required for the siting, development, construction, and operation of a new renewable energy facility of at least 200 megawatts of electricity. The bill requires the coordinator to hold a public meeting on the island where the project will be located to promote awareness and encourage public input.

HB2505 HD2 SD2 CD1, Relating to Energy, which becomes Act 208, establishes a full-time renewable energy facilitator position in the Department of Business, Economic Development, and Tourism. The facilitator would report to the state energy coordinator. The facilitator's duties will include facilitating existing permits, proposing changes to the permit process and coordinating energy projects.

HB2261 HD2 SD1, Relating to Agricultural Loans, which becomes Act 209, establishes a new class of loans that will help farmers create their own power for their operations, thus helping to preserve the future of farming and aquaculture in the State of Hawaii. The bill expands the State's existing agricultural and aquaculture loan programs to allow farmers to develop renewable energy for their farms using renewable sources such as photovoltaics, hydro, wind, methane, biodeiesel and ethanol. Food safety and product tracking projects would also qualify for the loans.

Hawai'i Leads Nation in Renewable Clean Energy Law

Gov. David Ige signed **House Bill 623** that sets a renewable portfolio standard (RPS) of **100 percent of net electricity sales by 2045**.

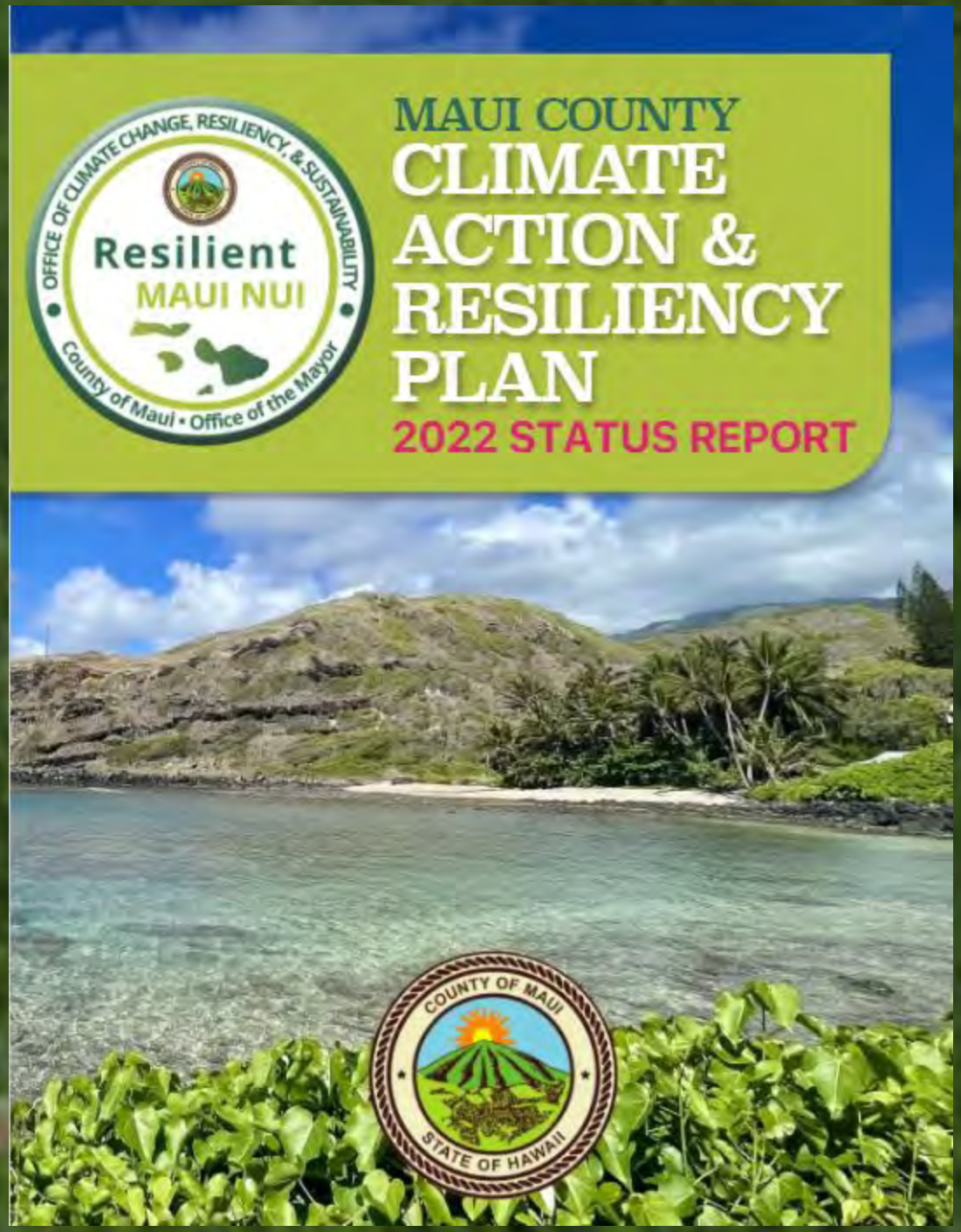
- The United States, and the world as a whole, is now in a transition to a clean energy future. The State of Hawai'i—a leader in this transition since it established the **Hawai'i Clean Energy Initiative** in 2008 with the Energy Department—is well on its path toward achieving the **most ambitious clean energy target in the country**. After initially setting a goal of 70% clean energy by 2030, Hawai'i further **upped the ante** in 2015 by **setting a goal of 100% renewable electricity by 2045.**

Maui County is currently working on adopting a Climate Action & Resiliency Plan that builds on the State Initiatives. The first version of CARP was not adopted which is why OIS is working to build a more community led and centered version of the Plan for adoption.

WE ARE STILL IN

SUSTAINABLE DEVELOPMENT GOALS

Aloha+ CHALLENGE




OIS CARP GOALS

REFORESTATION, FLOOD MITIGATION, FERAL UNGULATE MGMT, BIOCHAR, INTEGRATED COMPOST SYSTEMS, COMMUNITY FOOD FORESTS, RESILIENCE HUBS, CLEAN ENERGY & GREEN PATHWAYS

These are a few of the initiatives/action steps referred to in the CARP that OIS is actively implementing in collaboration with our State and Federal partners.

IMPLEMENTATION

REPI = $1.5 million

Community Food Forest= $200k

EPA Green House Gas Reduction= $7 million

Resilience Hubs= $700k

NOAA Climate Ready Workforce = $1.5 million

Hazard Mitigation Grant= In Progress

OFFICE OF INNOVATION & SUSTAINABILITY

February Events

2/8 Mayor Sustainability Series - State of Our Climate

State of Our Climate: Hawai'i and Moananuiākea - Speakers will present findings of the *Hawai'i and US-Affiliated Pacific Islands* Chapter of the **Fifth National Climate Assessment**, and we will discuss how to ensure Maui's sustainability and resiliency in the face of climate change related challenges.

2/12 COP 28 Climate Review and Beginning to Build the Bridge to Baku

The **Conference of Parties (COP)** is where United Nations member states convene to assess progress in dealing with climate change and make a plan for action. We will provide an engaging platform to reflect on the outcomes ,exchange perspectives, envision actionable steps moving forward for Maui Nui. , and begin pursuing potential paths to COP 29.

2/13 What in the World?! Economic Forum '24 Review

Join us for an overview and reflections on the key outcomes and points of discussion at this year's **WEF Annual Meeting in Davos**. Your ideas and input would be appreciated in **bringing critical global conversations into context here at home** in Maui County. International Innovation Implications in our Islands.

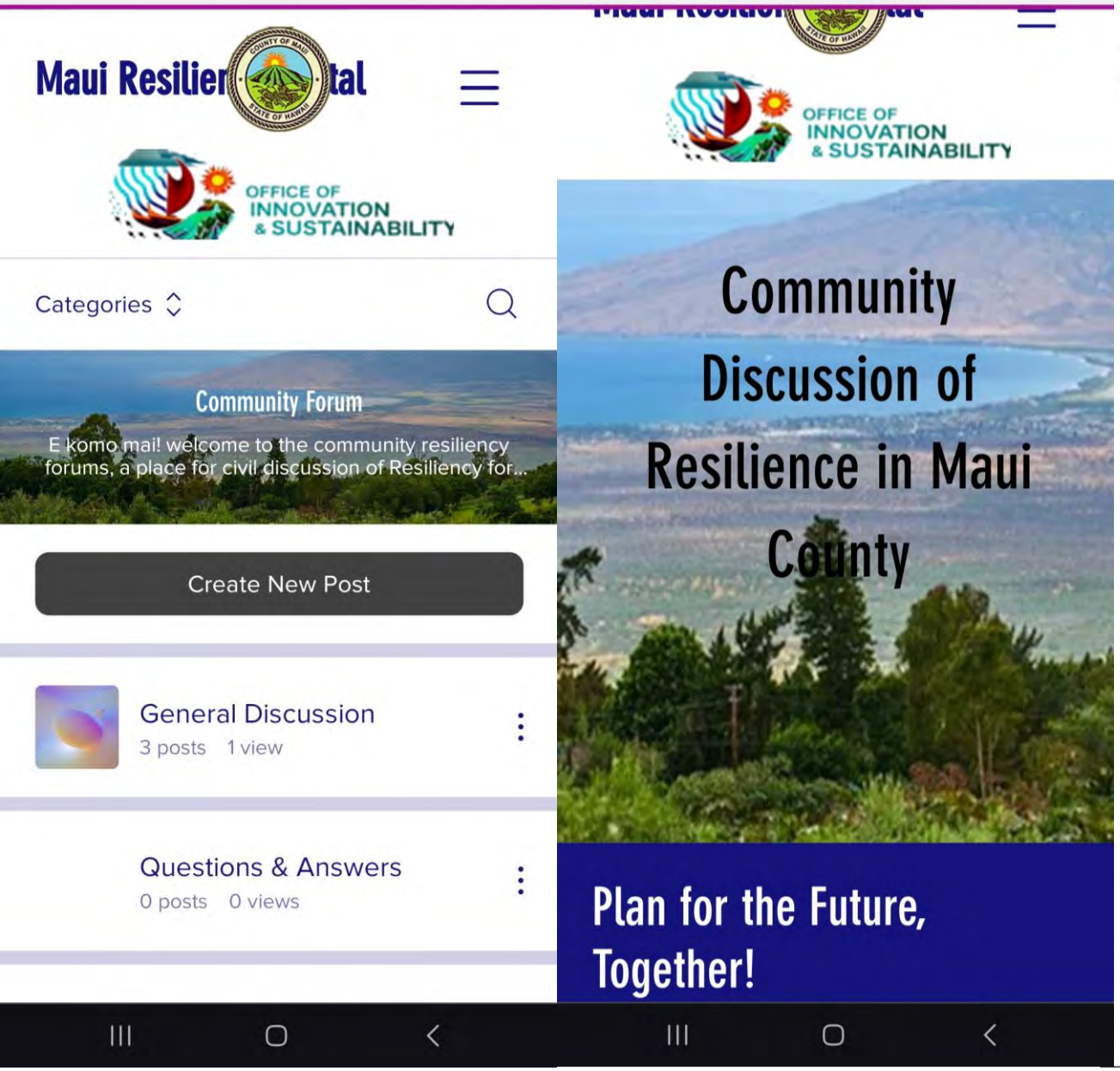
2/28 Wai'ona 'Ōma'oma'o - Green Drinks Maui Nui

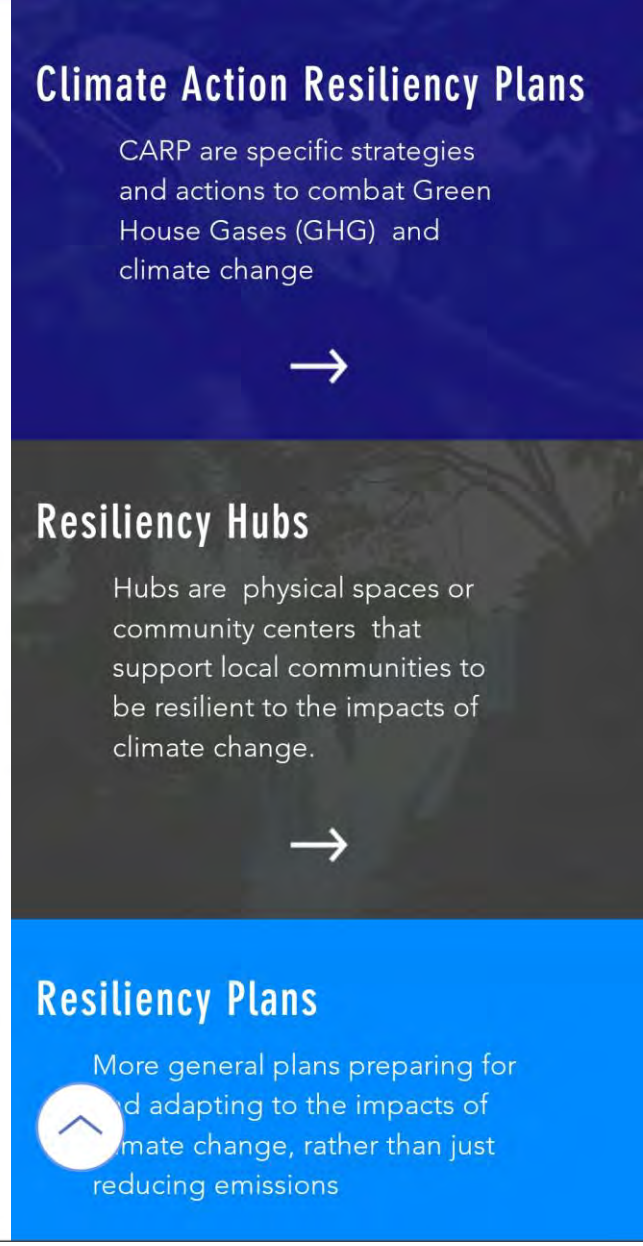
Gathering of professionals and community members passionate about environmental sustainability. Green Drinks sessions are informal, lively mixers that bring together people from various sectors, including NGOs, academia, government, and business. **It's an opportunity to network, share ideas, and explore ways to build toward sustainability and resiliency in Maui County and across the Islands**.

2/29 Maui Nui Green Book Club

Explore and discuss compelling literature that sheds light on sustainability, climate change, cultural cohesion, and how we can bring visionary concepts and solutions to Maui County. A steppingstone towards **building a more informed and proactive community.**

Contact joshuacooperhawaii@gmail.com for more information





MAUI RESILIENCE PORTAL

https://jerry16360.wixsite.com/mauiresiliencyportal

CARPAC

The proposed schedule of work will be at least **6 months** aspiring to actualize the **Paris Agreement** and **UN 2030 Agenda** and aiming to accomplish establishment of local action plans.

The schedule **set to conclude on Earth Day 2024** will be inspired by community members and informed by stakeholders contribution to chart a sustainable course for the County of Maui mitigation and adaptation efforts.

The **CARPAC will meet monthly** with Office of Innovation & Sustainability staff and potentially participate in conversations and conferences to enhance our understanding of elements of the Climate Action and Resilience Plan and to engage in creation of **local action plans**.

The following is a ***tentative schedule*** for CARPAC **meetings**:

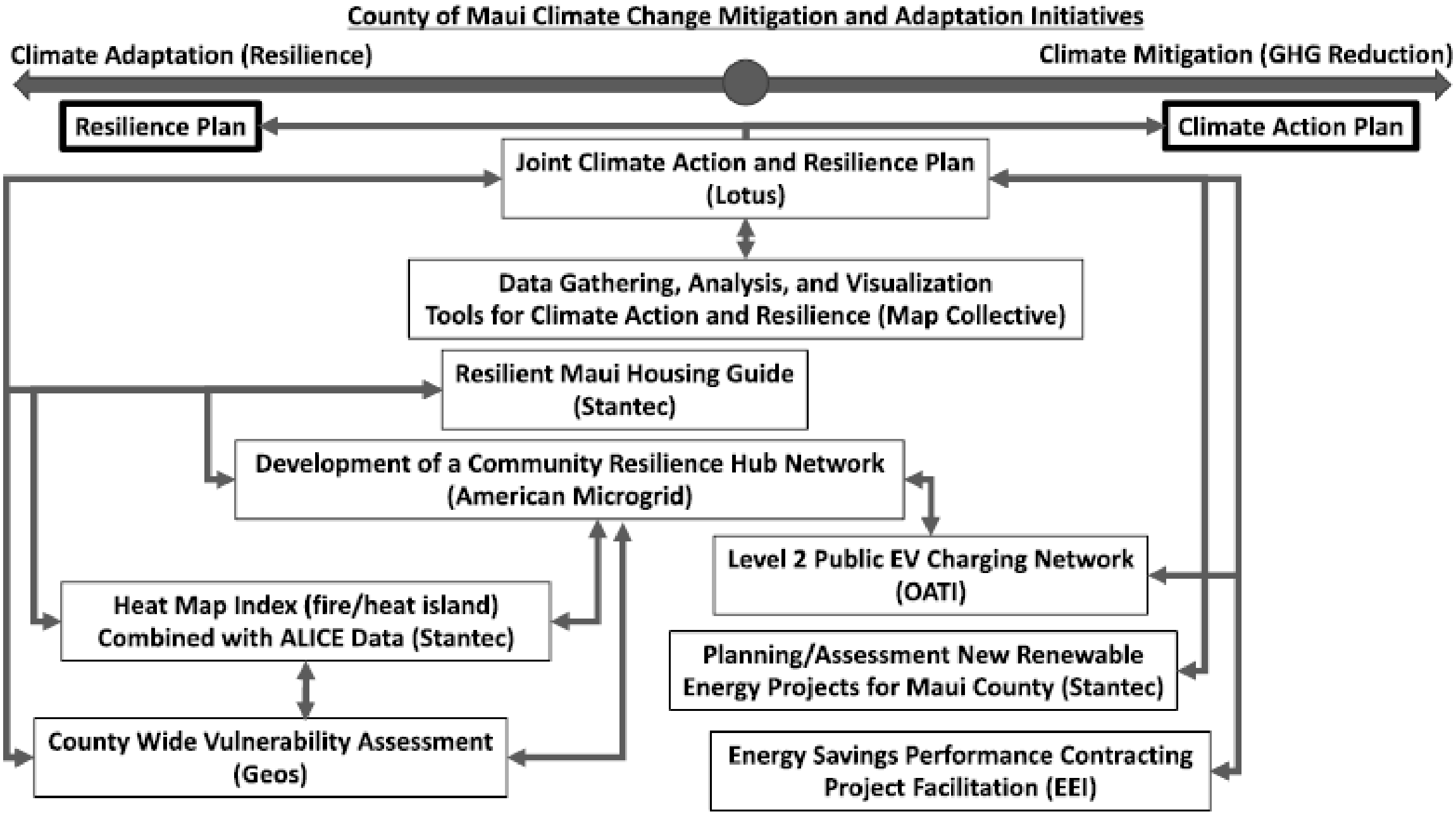
February 28 Wednesday 11 a.m. - 1 p.m.

March 13 Wednesday 11 a.m. - 1 p.m.

April 8 - 9 Monday - Tuesday 11 a.m. - 1 p.m.

UPDATE ON OIS/CCRS CONTRACTS

OFFICE OF INNOVATION & SUSTAINABILITY


County of Maui Climate Change Mitigation and Adaptation Initiatives
Climate Adaptation (Resilience)
Climate Mitigation (GHG Reduction)
Resilience Plan
Climate Action Plan
Joint Climate Action and Resilience Plan (Lotus)
Data Gathering, Analysis, and Visualization Tools for Climate Action and Resilience (Map Collective)
Resilient Maui Housing Guide (Stantec)
Development of a Community Resilience Hub Network (American Microgrid)
Level 2 Public EV Charging Network (OATI)
Heat Map Index (fire/heat island) Combined with ALICE Data (Stantec)
Planning/Assessment New Renewable Energy Projects for Maui County (Stantec)
County Wide Vulnerability Assessment (Geos)
Energy Savings Performance Contracting Project Facilitation (EEI)

LIST OF CONTRACTS

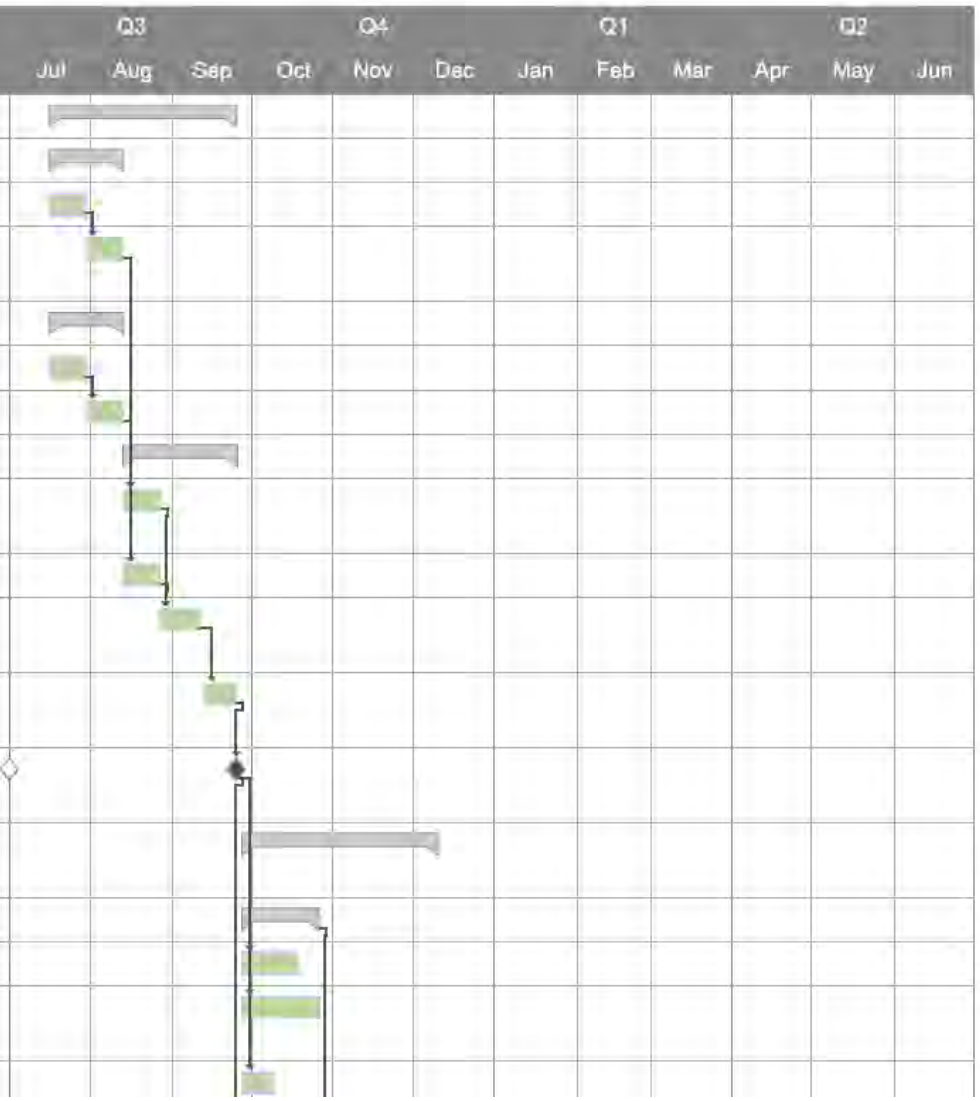
Contract number	Contractor	Project	Contract Amount	Amdmnt	2nd Amdmt	Total	Remaining
C7138	**Engineering Economics Inc.**	Project Facilitators for Energy Savings Performance Contracting (ESPC)	$ 85,197.74	$ 25,000.00		$ 110,197.74	$ 3,940.74
C7410	**Open Access Technology, Inc.**	Electric Vehicle Supply (ESVE) & Associated Services	$ 297,997.00	$ 128,260.00	$ 2,471,050.00	$ 673,362.00	$ 456,602.30
C7431	**Geos Institute**	Whole Systems Solutions; Countywide Vulnerability Assessment	$ 77,956.00	$ 19,240.00		$ 97,196.00	0
C7432	**Map Collective, Inc.**	Whole Systems Solutions; Assessing & Analyzing Carbon Emissions	$ 186,000.00			$ 186,000.00	$ 20,253.71
C7434	**American Microgrid Solutions**	Whole Systems Solutions; Development of Comm. Resilience Hub Netwrk	$ 148,775.00	$ 72,500.00		$ 221,275.00	$ 62,511.83
C7436	**Lotus Engineering & Sustainability**	County of Maui Joint Climate & Resilience Plan	$ 249,977.00	$ 85,000.00		$ 334,977.00	$ 12,121.06
C7437	**Stantec**	Climate Change, Sustainability & Resilience: Whole System Solution	$ 438,231.00			$ 438,231.00	$ 238,030.38


AMERICAN
MICROGRID
SOLUTIONS

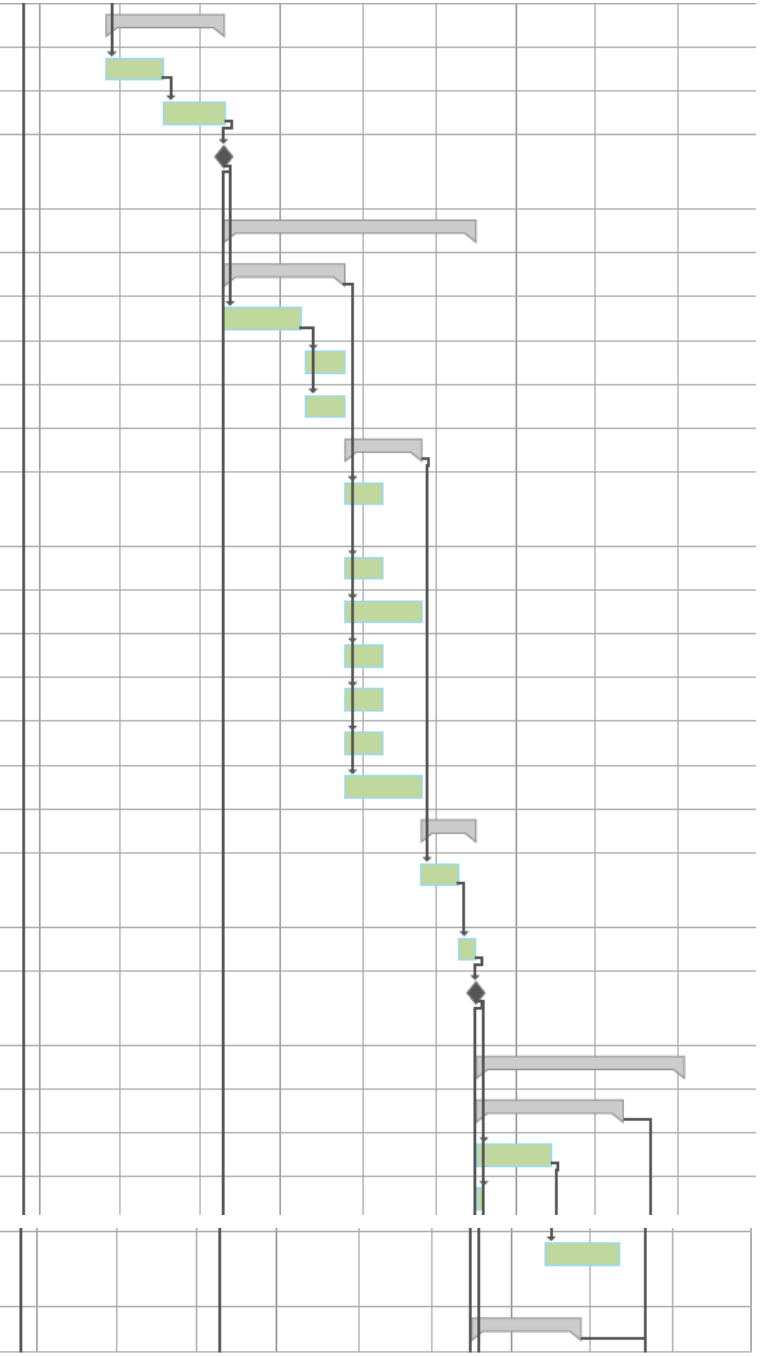
Original Work Schedule

County of Maui RFP 20-21/P-143 : American Microgrid Solutions - Detailed Schedule

Task Name	Start	Finish
Phase 1: Service Area Selection	07/16/21	09/24/21
Community relationship-building	07/16/21	08/12/21
Co-identify trusted community partners	07/16/21	07/29/21
Introduce the project to local community leaders	07/30/21	08/12/21
Research existing resources	07/16/21	08/12/21
Review existing plans and regulations	07/16/21	07/29/21
Collect existing decision-making tools	07/30/21	08/12/21
Select service areas	08/13/21	09/24/21
Assess existing stressors and exposure to hazards	08/13/21	08/26/21
Assess sensitivity & adaptive capacity	08/13/21	08/26/21
Identify highest-priority service areas (based on community input)	08/27/21	09/10/21
Prepare service area list and vulnerability assessment	09/13/21	09/24/21
MILESTONE 1: Present service area vulnerability assessment	09/24/21	09/24/21
Phase 2: Community visioning sessions and workshops	09/27/21	12/09/21
Service area workships	09/27/21	10/25/21
Identify external stakeholder groups	09/27/21	10/18/21
Community leader collaboration on vision and process	09/27/21	10/25/21
Identify interest in joining local project team	09/27/21	10/08/21

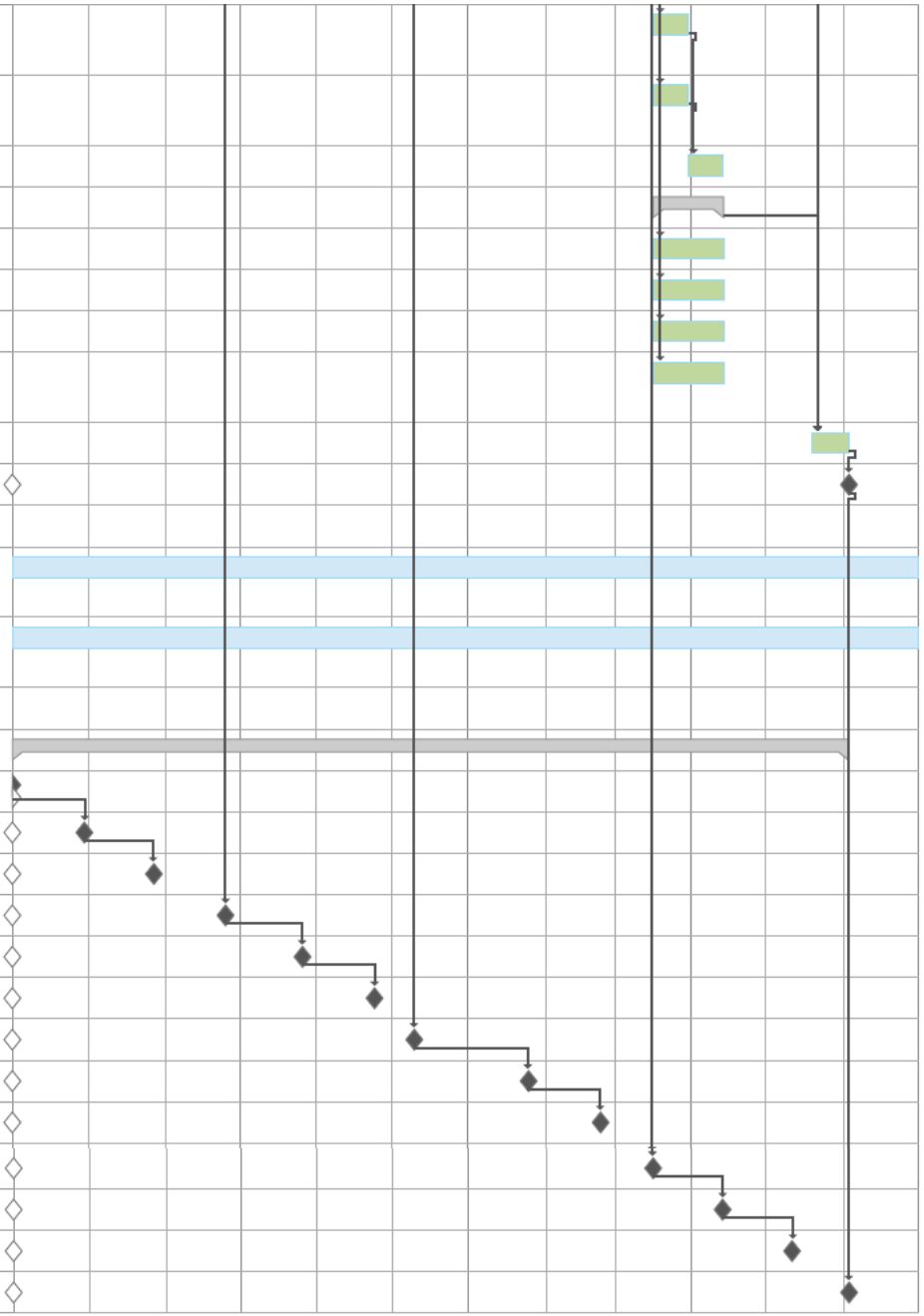


Set goals for each service area	10/26/21	12/09/21
Hold stakeholder meetings to brainstorm goals	10/26/21	11/16/21
Local project team alignment on priorities	11/17/21	12/09/21
MILESTONE 2: Report on team-building and goal-setting	12/09/21	12/09/21
Phase 3: Site Identification and Evaluation	12/10/21	03/15/22
Identify candidate sites	12/10/21	01/24/22
Stakeholder meeting to identify trusted sites	12/10/21	01/07/22
Evaluate programs and services to be provided	01/10/22	01/24/22
Create performance specifications	01/10/22	01/24/22
Assess candidate sites	01/25/22	02/22/22
Assess food/water storage and distribution capability	01/25/22	02/07/22
Assess security posture	01/25/22	02/07/22
Assess energy infrastructure	01/25/22	02/22/22
Assess existing community-serving programs	01/25/22	02/07/22
Assess existing operational plans	01/25/22	02/07/22
Assess existing communications equipment	01/25/22	02/07/22
Assess building and landscape	01/25/22	02/22/22
Prioritize candidate sites	02/23/22	03/15/22
Stakeholder meeting to share assessment results	02/23/22	03/08/22
Local project team alignment on prioritized list	03/09/22	03/15/22
MILESTONE 3: Present prioritized list of sites and assessments	03/15/22	03/15/22
Phase 4: Resilience Solution Identification	03/16/22	06/02/22
Resilient Programming and Services	03/16/22	05/10/22
Co-identify gaps in existing programming	03/16/22	04/12/22
Co-identify gaps in existing services	03/16/22	03/16/22
Identify best-practice programs for resilience education	04/13/22	05/10/22
Resilient Building and Landscape	03/16/22	04/26/22



Task Name	Start	Finish
Identify structural or site improvements required to meet project goals	03/16/22	04/12/22
Identify local contractors capable of implementing improvements	04/13/22	04/26/22
Resilient Power	03/16/22	05/18/22
Power Resilience Strategy	03/16/22	03/29/22
Identify and quantify Critical Loads	03/16/22	03/29/22
Quantify operating parameters	03/16/22	03/29/22
Energy Data Analysis	03/16/22	04/12/22
Collect utility data	03/16/22	04/05/22
Produce a Load Forecast to establish a baseline using monthly and/or interval data.	04/06/22	04/12/22
Technology Solution Analysis	04/13/22	05/12/22
Identify suitable technologies to achieve the project goals	04/13/22	04/26/22
Create resilient power system preliminary design	04/27/22	05/10/22
Evaluate and address the interconnection process	05/11/22	05/12/22
Estimate impact of the system on sustainability metrics	05/11/22	05/12/22
Incentives and Economic Analysis	05/11/22	05/18/22
Estimate capital and operating cost for the system	05/11/22	05/12/22
Outline finance and incentive opportunities to support the system	05/13/22	05/16/22
Produce 20-year financial proforma	05/17/22	05/18/22
Resilient Operations	03/16/22	04/12/22

Identify key staff, volunteers, and associated roles	03/16/22	03/29/22
Propose training outline to support staff in all modes	03/16/22	03/29/22
Propose additional operational plans	03/30/22	04/12/22
Resilient Communications	03/16/22	04/12/22
Identify network infrastructure needs	03/16/22	04/12/22
Identify internal communications needs	03/16/22	04/12/22
Identify external communications needs	03/16/22	04/12/22
Identify communication training and proactive outreach efforts	03/16/22	04/12/22
Prepare feasibility report	05/19/22	06/02/22
MILESTONE 4: Deliver feasibility report	06/02/22	06/02/22
Microgrid and hybrid systems analysis and planning (T&M)	07/01/21	06/30/22
Renewable energy project navigation and financing (T&M)	07/01/21	06/30/22
Billing schedule	07/01/21	06/02/22
Milestone 0 - Award / Notice to Proceed	07/01/21	07/01/21
Progress Payment 1a	07/30/21	07/30/21
Progress Payment 1b	08/27/21	08/27/21
Milestone 1 - Service Area Selection	09/24/21	09/24/21
Progress Payment 2a	10/25/21	10/25/21
Progress Payment 2b	11/23/21	11/23/21
Milestone 2 - Team and Goal Establishment	12/09/21	12/09/21
Progress Payment 3a	01/24/22	01/24/22
Progress Payment 3b	02/22/22	02/22/22
Milestone 3 - Prioritized Site List	03/15/22	03/15/22
Progress Payment 4a	04/12/22	04/12/22
Progress Payment 4b	05/10/22	05/10/22
Milestone 4 - Feasibility Report	06/02/22	06/02/22



Example of Recommendations from AMS

Resilient Power offers holistic value to Velma McWayne Santos Community Center

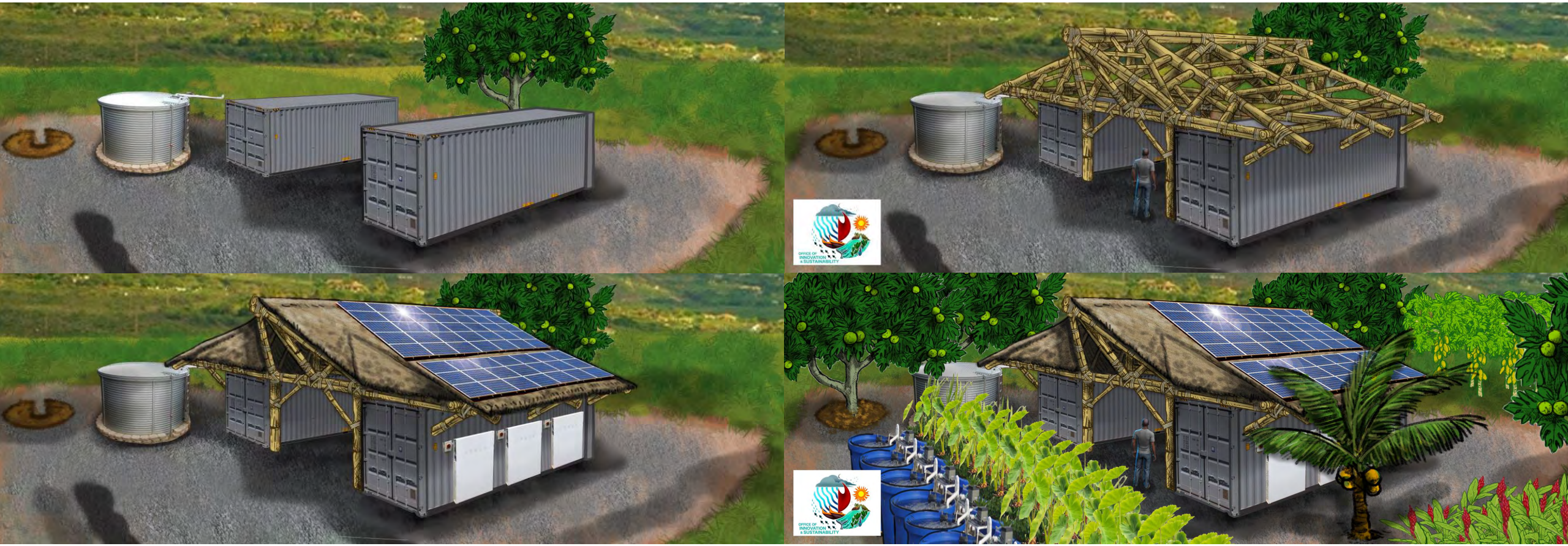
- A Resilient Power system that couples a battery with solar at Velma McWayne Santos Community Center (VMSCC) offers savings, resilience, and sustainability.
- Solar offers onsite renewable generation, bill savings and incentive revenue, but solar alone provides no resilience.
- Resilient Power captures the sustainability benefits of solar, the resilience benefits of energy storage, and enables efficient use of clean energy production for both on-site consumption and export to the grid.
- This preliminary feasibility analysis explores a tradespace of design options, specific facility development, and financing of a system.
- **Recommendation**: After analyzing multiple combinations of solar and storage systems, a Resilient Power solution with **39 kW of solar and a 30 kW / 90 kWh battery** best meets VMSCC's goals.

- To accommodate the completion of American Microgrid Solutions (AMS) scope of work, OIS worked to grant a final 6 month No Cost Contract Extension to AMS.

- AMS is working hand in hand with OIS to finish their project by 4th quarter FY24.

- OIS is pairing the research that AMS is completing with a rapidly deployable and scalable Resilience Hub Demonstration Project that is currently underway.

RESILIENCE HUBS DEMONSTRATION PROJECT

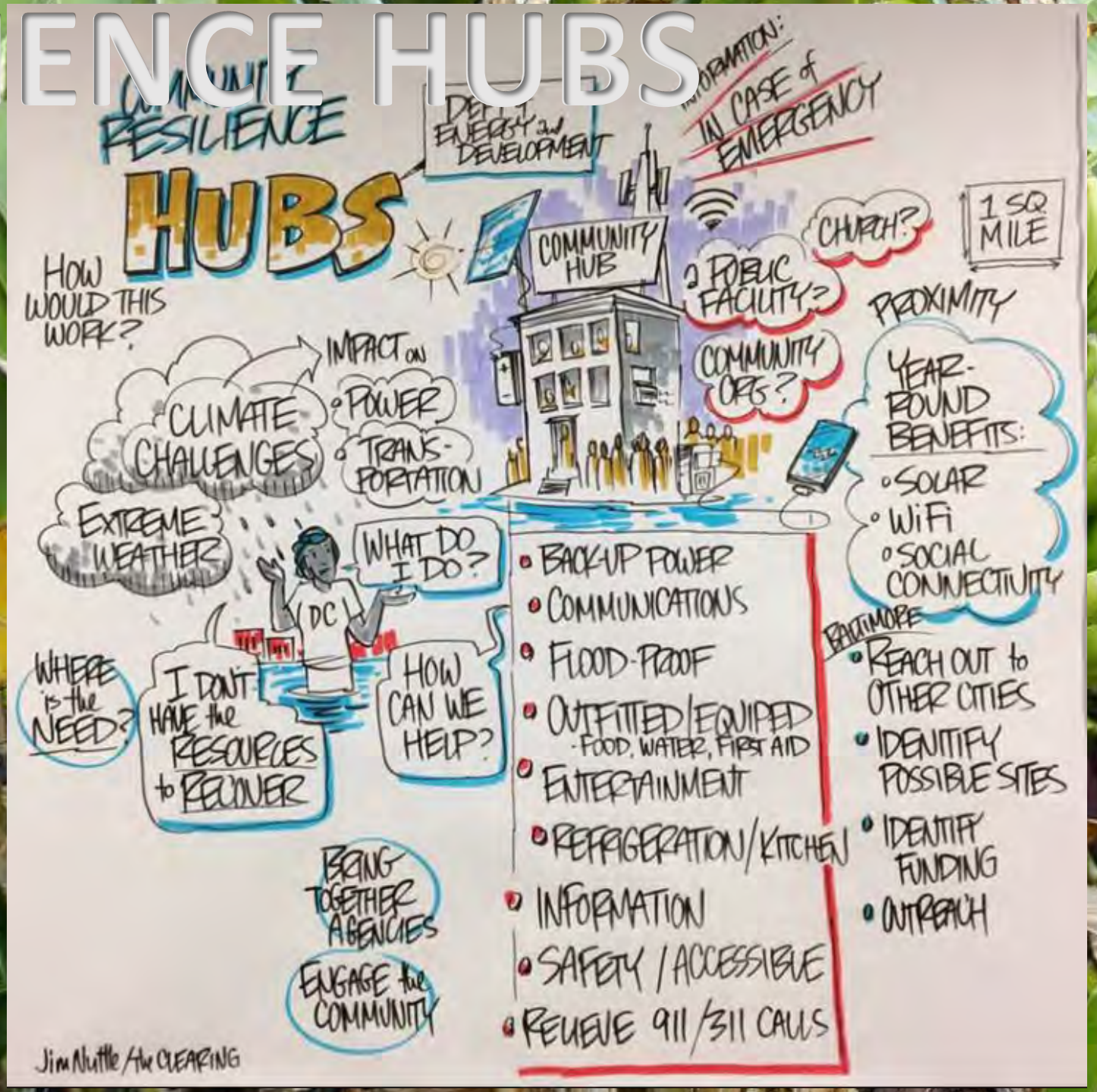


Resilience hubs are more than emergency shelters, they are scalable community and education hubs for self-reliance and sustainability.

RESILIENCE HUBS

COST: Approx. $350k per site fully funded from OIS FY24 Budget
SITES: Lahaina, Hāna, Molokaʻi
INCLUDES: minimum of two 20’ containers, solar panels, batteries, Starlinks, generators, emergency foods/items/communications supplies, game fence, propane tanks, water catchment tank/system, drip irrigation system, food forest, aquaponics system, & covered (metal/natural) bamboo structure for community meetings.

RESILIENCE HUBS




STANTEC

Renewable Energy Planning

Overall status statement – The project approach for this task was meant to be accessible to a general audience that is interested in planning to meet 100% renewable energy goals, but who may not have specific technical knowledge.

Task	Percent complete	Status	Actions requested
1- Data collection and energy stakeholder engagement	Complete		
2- Current state of renewable energy deployment in Maui County	90% complete	Draft submitted seeking feedback to finalize content	Draft feedback requested from County of Maui CCRS
3- Overview of Maui County's potential renewable energy resources	60% complete	Draft in-development	
4- Potential pathways to 100% renewable goal	20% complete	Research started. Draft plan was to be shared with County of Maui in March of 2023	Data requested from County of Maui CCRS

5- Design and planning of community engagement	10% complete	Presentation of approach to County of Maui and CARPAC was planned for March 2023	Coordination on timelines and groups, feedback on approach requested from County of Maui CCRS
6- Community engagement events	0% complete	Was planned for April and May 2023	Feedback on draft summary of engagement findings
7- Final report	30% complete	Draft content was to be compiled into final report in June 2023	

Task 1, the earliest stage of this project, involved gathering publicly available energy data and key energy stakeholder engagements. These stakeholders were identified in collaboration with Maui County. The discussions helped to identify useful resources and provided the opportunity for stakeholders to highlight perspectives and issues that they felt should be reflected in the Sustainable Energy Assessment. Interviews were held with representatives from:

- Hawaii State Energy Office
- Hawaii Natural Energy Institute
- Hawaii Public Utilities Commission
- Hawaii Energy
- Ulupono
- Life of the Land
- Sierra Club
- Integrated Grid Planning Working Group

County of Maui CCRS received a draft version of the deliverable from Task 2, *Maui County's Current Energy Landscape.* This section reviews existing energy generation across the islands within Maui County, in- development renewable energy projects, and discusses expectations for future energy needs.

In Task 3, we considered technical, economic, spatial, environmental, and social and cultural pros and cons of different energy resources. The organization is addressing established renewables (i.e., distributed solar, utility scale solar, wind turbines, battery energy storage) and other renewable resources (e.g., offshore wind turbines, tidal energy, geothermal, hydro, other energy storage).

Task 4, the potential pathways section, is meant to distill broad information shared in the overview of renewable energy. Stantec would welcome County or key stakeholder feedback as we define these pathways. The pathways would focus on hypothetical strategies for achieving the 100% renewable energy goal and describing and contrasting the expected renewable energy developments necessary based on those strategies.

The design and planning for public engagement in Task 5 would be taken up to share the information developed and to gain feedback on the ideas. Stantec sought County of Maui CCRS support as the community engagement approach was developed and sought support coordinating timelines and stakeholder groups.

Feedback received from public engagement events would be collected and summarized in the final report, Task 6. Where appropriate, content in other sections would be adapted to reflect feedback, as well.
The findings from these activities would be gather an included in the project report, which was expected to be delivered in June 2023.

List of attached draft products –

1. Draft Renewable Energy Planning White Paper

Unfinished Tasks –

1. Final Renewable Energy Planning White Paper

Fire and Heat Map

Overall status statement – Produced a technical approach memorandum. Received stakeholder contact list for future approach discussion.

List of attached draft products –
1. Draft Technical Approach to ALICE Data, Fire and Heat Mapping

Unfinished Tasks –

Planned activities Jan-April 2023 – Meet with identified stakeholders to discuss technical approach. Reach out to HCDPs to see if humidity data may have become available for Maui islands. Continue discussion with County and Map collective to see if finer scale data can be obtained/created to identify vulnerable populations. Finalize and perform approach to create a 3 polygonal data sets— one for wildfire risk, one for heat wave risk, and another for vulnerable populations. This will allow both wildfire and heat wave risk areas to be overlayed with areas of identified vulnerable populations. The polygonal data sets of vulnerable populations may be suitable for overlapping of other hazard risks moving forward. A final technical memorandum detailing the approach, source data, assumptions and limitations, and metadata of final data sets will be provided. Three spatial layers (polygon format) will be provided for County use and distribution as appropriate.

COM input needs – Requested Parcel data and associated ownership (with both owner address and parcel address to help identify probable rental properties) from COM. Continued support with stakeholder engagement regarding proposed technical approach, and subsequent outputs. A decision regarding the possible use of ESRI web-based applications to refine the spatial scale of the ALICE-driven identification of vulnerable populations.

Workshop – Reach out to already identified community members for attendance, provide input, confirm fully virtual or hybrid delivery options.

Activities to completion: Completion of 3 polygonal data sets as detailed above, finalize technical memorandum detailed approach, provision of GIS data and associated metadata.

Resilient Housing

Overall status statement – Completed interviews with 13 expert stakeholders representing construction, insurance, nonprofit, energy, academia, county government, and state government. Produced stakeholder feedback summary documents. Completed 80% resilient housing policy white paper and 30% resilient housing guide content development. 90% white paper and 50% housing guide are planned intermediate deliverables were to be delivered by the end of 2023.

Task	Percent complete	Status	Actions requested
1- Resilient Housing Policy White Paper	90%	Draft submitted seeking feedback to finalize content	Draft feedback requested from County of Maui CCRS to finalize White Paper

Task	Percent complete	Status	Actions requested
1- Resilient Housing Policy White Paper	90%	Draft submitted seeking feedback to finalize content	Draft feedback requested from County of Maui CCRS to finalize White Paper

List of attached draft products –

1. Draft White Paper on Opportunities to Increase Housing Resilience
2. Draft Resilient Housing Guide

Unfinished Tasks –

Planned activities Jan-April 2023 – Meet with new COM Office of Innovation and Sustainability representatives. Finalize white paper, conduct 75% housing guide feedback presentation, and finalize housing guide.

COM input needs –. Initial feedback from PBR was incorporated into 50% draft of housing guide. It was planned that PBR would provide support for graphics and housing guide design in the 75% draft, After the closing of CCRS, efforts to prepare the 75% draft were paused.

Activities to completion: 75% housing guide draft, finalize white paper, develop housing guide graphics, finalize housing guide.

OIS is working together with Stantec to complete their Contracted scope of work

OTHER CONTRACTS

- **GEOS Institute**: County Wide Vulnerability Assessment is complete.
- **Map Collective** worked in conjunction with **Lotus Engineering**, **Sustainability, LLC** (Lotus) and **Sustainable Pacific** (SP) to produce the **CARP**. CARP was completed but not adopted.
- **OATI** has completed statements of work for Eddie Tam, Kīhei Aquatic, Kīhei Gym, and Lāhainā Aquatics Center.

OIS BUDGET ALLOCATIONS FY24

$ 1.8 million in Professional Services
divided into:
$ 700,000 Resilience Hubs
$ 400,000 Housing RSF
$ 200,000 Community Food Forest
$ 200,000 YMCA Low Income Subsidy Program
$ 150,000 Wailuku Bee
$ 30,000 OIS Website and Digital Initiatives

MAHALO