MAUI COUNTY CLIMATE ACTION & RESILIENCY PLAN

2022 STATUS REPORT

A Just & Resilient Future for All

Aloha,

It is my honor to share the County of Maui's first ever Climate Action and Resiliency Plan (CARP). It is our foundation for identifying climate threats we face as a community and the actions needed to reduce greenhouse gas emissions while strengthening our resilience to climate change impacts.

> *Our CARP is ambitious, but considering what's at stake, it is also vital.*

The people of Maui County co-created this plan. Since 2021, we've heard from more than 1,000 residents who know these islands well.

They've witnessed the decline of our coral reefs and escalation of drought, flooding, wildfires, sea level rise, and coastal erosion. Our response is a plan that considers everyone who lives here. I am honored to be part of a community deeply rooted in cultural values that elevate the needs of the group above individual desires.

> *We are at a crossroads. Science warns us that the window to reverse the impacts of climate change is rapidly closing.*

As a remote island community, we have no choice but to take urgent action. We can, and must, reduce our dependence on fossil fuels. At the same time, we can grow our local renewable energy and clean transportation sectors. Equal access to this emerging clean economy will mean new career opportunities.

> *Ultimately, Maui County will have a healthier natural environment. It won't be easy. Our CARP puts Maui County on a path to 100% clean ground transportation by 2035 and 100% clean energy by 2045.*

Mahalo to the Maui County Council, our county departments, residents, community-based organizations, and advisory groups for sharing your mana'o and commitment to protect, restore, and regenerate our island home. I must also acknowledge and thank the Office of Climate Change, Resiliency, and Sustainability (CCRS) for their dedication and perseverance in spearheading the creation of this plan.

I am confident that our CARP will help us to build a better, stronger, more resilient future for Maui County.

> *The actions we take today will determine the future we leave to our children, grandchildren, and great-grandchildren.*

With warmest aloha,

Michael P. Victorino
Mayor, County of Maui

The Office of Climate Change, Resiliency, & Sustainability

ADVANCING CLIMATE ACTION **and resiliency initiatives within Maui County is the focus of the Office of Climate Change, Resiliency, and Sustainability (CCRS). The staff carries out this work with a focus on equity and social inclusion.**

CCRS serves as a liaison between the Office of the Mayor, county departments, County Council, the State of Hawai'i, and the many community organizations and individuals who play a critical role in co-creating and implementing climate action and resiliency initiatives for the people of Maui County.

CLIMATE ACTION THROUGH ENGAGEMENT

CCRS launched its Climate Action Through Engagement (ClimATE) Hub website (resilientmauinui.org) in 2022.

The ClimATE Hub is regularly updated and serves as an online portal for the community to engage with and co-create equitable climate change solutions for Maui County.

CCRS spearheads a number of ongoing climate action and resiliency initiatives, including:

- Climate and Community Trends Primer
- Maui County Climate Change Vulnerability Assessment
- Energy Savings Performance Contracting
- Public Electric Vehicle (EV) Charging Network
- Resilience Hubs Network
- New Renewable Energy Opportunities Analyses
- Fire and Heat Map Index
- Resilient Housing Guide
- Residential Cesspool Conversion Program and Planning of Innovative Water Quality Technologies
- Open Space and Natural Resources Preservation
- Promotion of Widespread Reef-Safe Mineral Sunscreen Use
- Inter-Departmental Discussions and Team Building on Climate Action and Resiliency
- Environmental Protection, Green Building, and Energy Grants Management and Distribution

Meet the CCRS Team

As our community faces growing uncertainty around climate change impacts, now more than ever, we must unite around a common vision and urgent action to ensure a sustainable pathway for our collective future. We must celebrate our differences and build upon our strengths, while ensuring that we lift up all members of our community and that no one is left behind. This Climate Action and Resiliency Plan builds upon intergenerational knowledge and charts a course for a more resilient and thriving future for Maui Nui and its residents.

*— **Alex de Roode,** Energy Commissioner*

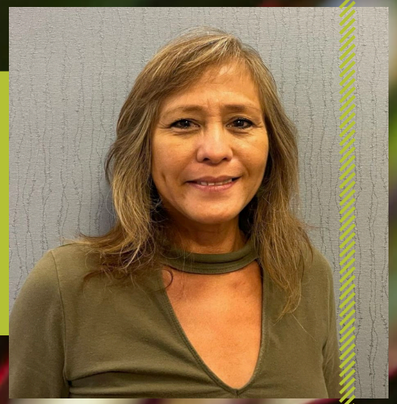
Maui County's first Climate Action and Resiliency Plan is a necessary roadmap to address climate change challenges and plan for a resilient future. Community and equity are the base for implementing meaningful climate actions and ushering in a new era of economic opportunity and environmental justice in our communities. The CARP holds the county accountable, ensuring a just and resilient home for our people. Acting on these promises will be felt for generations and lead the way to our clean energy future. Our islands, climate, culture, and future depend on it!

*— **Hannah Shipman,** Green Building and Resilient Housing Specialist*

THE COUNTY OF MAUI'S APPROACH TO CLIMATE ACTION and resiliency will continue to evolve and adapt to emerging needs with advances in knowledge, technology, policies, programs, and dedicated funding.

Pursuing cohesive and intentional actions on an individual, community, and county level is integral for our deeply connected and diverse community to prioritize sustainable behaviors, strengthen our natural and built systems, employ water and energy efficiency, support local, and reduce/reuse/recycle to elevate our collective resiliency in the face of a changing climate.

*— **Allison Cleghorn,** Environmental Coordinator*



Sustainability is providing for current needs in ways that do not diminish or deplete generations from enjoying the same quality of life or benefiting from the same resources.

*— **Maria Ornellas,** Grants Manager*

> **Failing to plan is planning to fail.**
>
> ***— Lori Buchanan,*** *Coordinator/Commissioner Moloka'i: Maui Invasive Species Committee; Planning Commission*

Voices of the Climate Action & Resiliency Plan Advisory Council

For a community to be resilient, we must consider impacts to all people and demographics, with inclusivity for all, to thrive. This plan is rooted in the diversity that makes Maui County a special place and envisions a net-zero and equitable future that benefits the environment and people.

— Makale'a Ane, *Community-Based Program Manager, The Nature Conservancy*

With the development of a comprehensive Climate Action and Resiliency Plan involving our community, government, and public agencies, we will be better prepared to protect our communities.

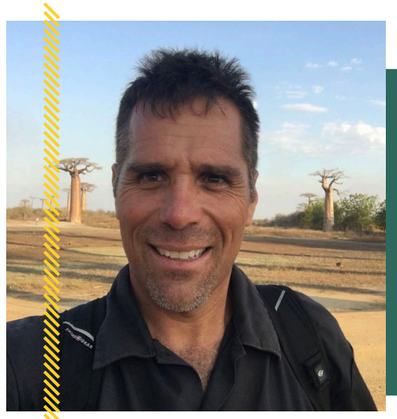
— Gary Bulson, *Chief Engineer (Retired), Hyatt Regency Maui*

Development of this Plan included discussions around accounting for the different regions of Maui Nui relative to climate change impacts. Our hope is that the Plan and its resulting actions will benefit the people and places throughout Maui Nui.

— Kainoa Casco, *Project Manager-Farming and Sustainability, Mahi Pono*

East Maui faces unique challenges with climate change impacts due to the remoteness of our community and the vulnerability of our infrastructure. This Plan provides a guide to be proactive in meeting those challenges.

— Scott Crawford, *Executive Director, Kipahulu Ohana*

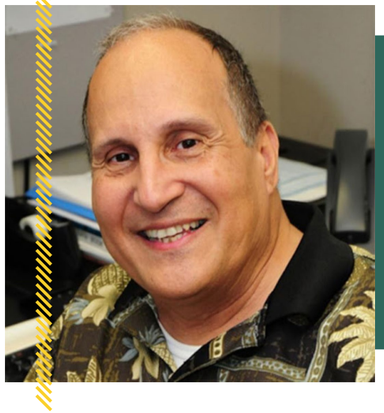


Maui, Moloka'i, and Lāna'i face uncertain times with the globally changing climate. However, by looking to the past and using the wisdom of the kūpuna, we can find a way forward that is both resilient and sustainable.

— Scott Fisher, *Director of 'Āina Stewardship, Hawaiian Islands Land Trust*

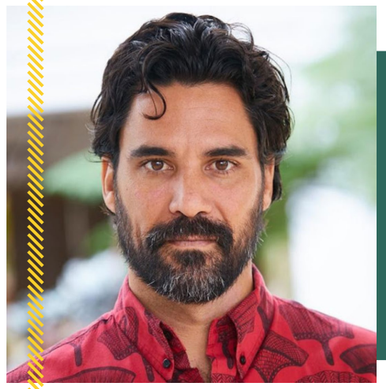
"Just as the proverb, "The best time to plant a tree was 20 years ago; the second best time is now" goes, we missed the best time to have completed this Plan 20 years ago, but we have this Plan now to use as a living document, as it was intended. I am grateful to everyone who put their hā into it, and to everyone who will execute it. He moku he wa'a, he wa'a he moku.

— Keani Rawlins-Fernandez, *Council Vice-Chair, Maui County Council*



"He ali'i ka 'āina; He kauā ke kanaka." The Land is chief. The People are its servants. This Plan is a pathway to restore balance, protecting and preserving our 'āina for future generations.

— Frank R. De Rego, Jr., *Director of Business Development Projects, Maui Economic Development Board*

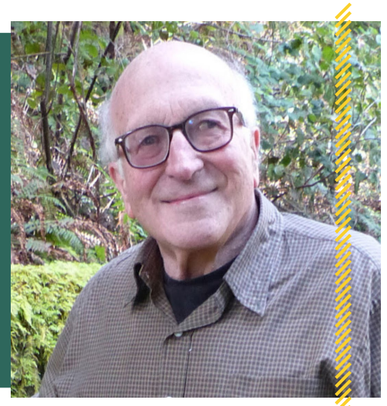


"O ke kahua mamua, mahope ke kūkulu,." The Plan represents the foundation by which we build our resiliency as a community and commit to the actions needed to build the walls, undertake the work, and to protect our community for all the days to come.

— Kainoa Horcajo, *Principal, Mo'olelo Group*

Climate change is the result of excessive carbon emissions caused by too many people. Maui County must do its part to formulate and implement programs that will reduce carbon emission activities and control the size of our population.

— Dick Mayer, *Coordinator, Alliance of Maui Community Associations; Professor (retired), Maui Community College*



A roadmap for our leadership is a guide to address the impact of climate change. Only through thoughtful action by everyone in our community can we build resiliency to meet the future needs of our changing environment.

— Gail Miyahira, *Maui County Area Coordinator (Retired), Hawai'i Healthcare Emergency Management*

Working collaboratively with our community will ensure that Maui Nui will be protected for our future generations.

— *Tyson Miyake,* *Chief of Staff, County of Maui Office of the Mayor*

Developing a resiliency plan is a critical step to support our community's future through a collaborative effort that considers the complex systems impacted by climate change.

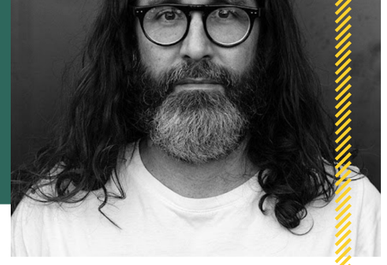
— *Nicolette van der Lee,* *Program Manager, Hana Career Pathways, University of Hawai'i*

This Plan will establish a shared vision and goals so that we have a roadmap into the future.

— *Tara Owens,* *Extension Faculty, Coastal Processes Specialist, University of Hawai'i Sea Grant Program*

Understanding and preparation of ongoing environmental changes are critical as social equity gaps continue to widen as a result.

— *Nicolas Winfrey,* *President /Chief Professional Officer, Maui United Way*



This Plan allows for collective energy and action from our community to make a profound difference. Implementation and realignment to new information will be the real work ahead of us. Imua!

— *Jonathan Stenger,* *Analyst, Kamehameha Schools*

ADDITIONAL CLIMATE ACTION & RESILIENCY PLAN ADVISORY COUNCIL MEMBERS:

Lauren Armstrong, *Executive Director, Maui Metropolitan Planning Organization*
Sol Kaho'ohalahala, *Hawaiian Culture and Community Environmental Steward*
Mahina Martin, *Director, Government and Community Affairs, Hawaiian Electric Company*
Jenny Worth, *Disaster Program Manager, American Red Cross*

> All quotes in this Plan from Maui County residents were sourced directly from comments submitted by community members in response to CCRS surveys.

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Land Acknowledgment

The County of Maui acknowledges Kānaka Maoli (Native Hawaiians) as the first people of Maui, Molokaʻi, Lānaʻi, and Kahoʻolawe–the islands of Maui County. Kānaka Maoli have lived and thrived here ever since the first Polynesians migrated to the Hawaiian Islands more than 1,000 years ago.

To better understand Hawaiian history, it is important to appreciate the ʻōiwi (indigenous) worldview that sees all life as interconnected. This highly sustainable perspective recognizes that both nature and humankind thrive only when everything is in balance, and that humans are an integral part of nature itself.

Prior to the arrival of Europeans in 1778, Kānaka Maoli had established an advanced resource and social management system throughout Hawaiʻi. Islands were divided into moku (districts), from the mountain summit to the ocean. Each moku was subdivided into ahupuaʻa (subdivision of land within a moku) in which communities would mālama (care for) the natural resources that supplied their material, subsistence, and spiritual needs. The island of Maui has over 200 ahupuaʻa within 12 moku, Moloka'i has 7 moku, and Lānaʻi has one.

Ka Mahalo ʻĀina

Mahalo nō ke Kalana ʻo Maui i nā Kānaka Maoli ma ko lākou ʻano o ka lāhui mua loa o Maui, Molokaʻi, Lānaʻi, a me Kahoʻolawe–ʻo nā mokupuni hoʻi o Maui Kalana. Ua ola a māhuahua loa nā Kānaka Maoli ma Hawaiʻi nei mai ka wā i neʻe nui mai ai nā kūpuna Polenekia he kaukani a ʻoi mau makahiki aku nei.

I mea nō e hoʻomapopo leʻa iho ai i ka mōʻaukala Hawaiʻi, he pono nō ke mahalo i ke kuanaʻike ʻŌiwi e ʻike ana i ka pilina ma waena o nā mea a pau o ke ao nei. He mea nō kēia kuanaʻike kūpono loa e hōʻoia ana i ka maikaʻi wale o ko ke ao kūlohelohe me kanaka ke pono a kaulike wale nā mea a pau, a me ka ʻike nō hoʻi he mea nui ka pilina o kanaka me ko ka ʻāina.

Ma mua loa nō o ko nā ʻEulopa pae nui ʻana mai i ka makahiki 1778, ua hoʻokahua nā Kānaka Maoli i ʻōnaehana hoʻokele kaiapili a kumuwaiwai ʻoi loa ma o ka pae ʻāina ʻo Hawaiʻi nei. Ua kālai ʻia nā mokupuni i mau moku, mai nā piko mauna a i kai. Ua kālai ʻia nō nā moku pākahi i mau ahupuaʻa, ʻo kahi hoʻi o kēlā me kēia kaiaulu e mālama ai i nā kumuwaiwai ʻāina i lako ai nā makelia, nā pono nohona, a me nā pono hoʻomanamana. Ua ʻoi aʻe ka nui o ko Maui Mokupuni mau ahupuaʻa i luna o 200 ma loko o ona mau moku he ʻumikūmālua, ʻehiku moku o Molokaʻi, a he hoʻokahi o Lānaʻi.

Each community developed intimate, region-specific knowledge of the ʻāina (land), wai (fresh water), and kai (ocean waters) under their care. Kānaka Maoli affirmed the reciprocal obligation to care for all that cares for them. This traditional Hawaiian knowledge, ʻike kupuna, comes from the wisdom of countless previous generations that lived in harmony with nature.

After European arrival, many of Maui County's native ecosystems were badly damaged and some traditional knowledge and cultural practices were suppressed or lost. However, beginning with the Hawaiian Cultural Renaissance of the 1970s, lineage-based knowledge, genetic memory, and Native Hawaiian scholarship have successfully begun to restore expertise in many of the dormant practices.

The people of Maui County have inherited great kuleana (responsibility and privilege) to bring back balance to the islands guided by the examples and values of our hosts, the Native Hawaiian people.

Ua hele nō a lewa ko kēlā me kēia kaiaulu ʻike no ko lākou mau ʻāina ponoʻī i pili hoʻi i nā ʻāina, wai, a kai a lākou i kahu ai. Ua hōʻoia nā Kānaka Maoli i ka pānaʻi kūpono e mālama i nā mea e mālama ai iā lākou. Mai nā hanauna o mua mai he lehulehu wale i noho pono ma ka ʻāina mai kēia ʻike kuʻuna.

Ma muli mai o ko nā ʻEulopa pae ʻana iho, ua hoʻohaumia ʻia a pōʻino wale nā kaiaola ʻōiwi, ua nalowale kekahi mau ʻoihana, a ua kāohi wale ʻia iho kekahi mau hanana kū moʻomeheu. Eia naʻe, mai ka wā mai o ke Au Hoʻōla Hou i ka Moʻomeheu Hawaiʻi o ka makahiki pāanahulu 1970, ua hoʻihoʻi hou maila nā papa hana ʻaneʻane nalowale ma o ka ʻike kuʻuna, ka ʻike ōewe, a me ka ʻimi naʻauao ʻŌiwi Hawaiʻi.

Ua ili mai he kuleana nui ma luna o ka poʻe o Maui Kalana e hoʻoponopono i nā pilikia o nā mokupuni o Maui Nui i alakaʻi ʻia e nā laʻana a me nā manaʻo waiwai o ko kākou mau mea hoʻokipa, ʻo ia hoʻi ko ka Lāhui Hawaiʻi.

OUR **GUIDING PRINCIPLES**

Protect, restore, and sustainably manage our natural environment for current and future generations.

We are dedicated to active stewardship and restoration of our natural environment for current and future generations. Not only do we seek to protect our natural environment, but also to restore the ʻāina, wai, kai, and lewa (air) resources that have been degraded. Implementing regulations, policies, and programs that support the sustainable management of our natural environment will help reinforce ongoing restorative practices throughout our community. This approach embraces the use of traditional knowledge, including lessons learned from the moku-ahupuaʻa land management system and sustainable ecological practices.

Reduce local greenhouse gas (GHG) emissions to achieve net negative carbon.[1]

We are committed to eliminating GHG emissions and to achieving net negative carbon. To achieve this, we must continue to reduce our GHG emissions through climate action while also supporting regenerative practices that sequester carbon and increase our carbon stock.

1 Net negative carbon occurs when more CO_2 is removed from the atmosphere through carbon sequestration than what the community emits.

KŌ KĀKOU **LOINA ALAKAʻI**

E hoʻopalekana, e hoʻoponopono, a e hoʻomaluō me ka mālama kūpono i ko kākou ao kūlohelohe no kēia au nei a i ke au hou e hiki mai ana.

ʻOnipaʻa nō mākou i ka mālama kuʻupau ʻana i ko kākou ao kūlohelohe, a i kona hoʻoponopono hou ʻia ʻana, no nā haunauna o kēia au nei a o ia mua aku. Ke noke naʻe nei mākou i ka hoʻomaluō ʻana i ko kākou ao kūlohelohe pū me ka hoʻoponopono ʻana i nā kumuwaiwai ʻāina, wai, kai, a lewa i hoʻohaumia a hoʻopōʻino ʻē ʻia. Ma o ka hoʻokō ʻana i nā kānāwai, nā papa hana, a me nā polokalamu e kākoʻo ana i ka hoʻokele kūpono a hoʻomāunauna ʻole ʻana i ko kākou ao kūlohelohe nō e hoʻoikaika ai i nā hanana hoʻoponopono ma o ko kākou mau kaiaulu. Hoʻohana nō kēia ʻano hana i ka ʻike Hawaiʻi kuʻuna pau pū hoʻi me nā haʻawina o ko ka ʻōnaehana kālaiʻāina moku a ahupuaʻa a me nā papa hana kālaikaiaola kūpono a hoʻomāunauna ʻole.

E hoʻokanahaʻi i ka malele māhuea hoʻomehana honua (MHH) i loaʻa ka ʻole malele kalapona[1]**.**

ʻOnipaʻa kākou i ka hōʻole ʻana o ka māhuea hoʻomehana honua i mea e loaʻa ai ka hoʻoʻiliʻilina kalapona. I mea e hoʻokō ai i ka hoʻokanakahaʻi ʻana o ka māhuea ʻino, pono e hōʻeu ʻana i ka hana paepae aniau e like me ka hana hōʻīpale kalapona a me ka hana hoʻonui waihona kalapona.

1 E loaʻa nō ka ʻole malele kalapona ke ʻoi aʻe ka nui o ke kalapona ʻokikene lua i unuhi ʻia mai loko mai o ka ewa ma o ka hoʻopaʻa kalapona ʻana nō ma mua nō hoʻi o ka nui kalapona i hoʻomalele ʻia e ke kaiaulu.

Optimize resiliency within local communities.

In order to optimize local community resiliency, we must identify, develop, and implement equitable and effective strategies that support thriving healthcare, workforce, education, and housing systems that help to effectively reduce the continued displacement of multi-generational Maui County families. **We are committed to improving our collective and individual communities' ability to respond to challenges and recover from internal and external shocks and stressors, such as natural disasters, global economic instability, health crises, and supply chain impacts.**

Cultivate local cultural practices rooted in ecological knowledge and values.

Collective and individual communities within Maui County have cultivated local cultural practices and traditions over many years that are rooted in foundational values and sustainable knowledge. **We must use and learn from historical ecological wisdom to further inform and guide our current and future practices.**

Advance social equity and community inclusion.

We must ensure that fair and just social policies are in place and that we avoid actions that could widen the equity gap. We must prioritize identifying resilient, safe, and affordable climate change solutions for all members of the community and ensure the prosperity of local families.

E hoʻokāʻoi aʻe i ka mākaukau a kūʻonoʻono pono o nā kaiaulu kūloko.

No ka hoʻokāʻoi ʻana aʻe i ka mākaukau a kūʻonoʻono pono o nā kaiaulu kūloko, e pono nō kākou ke hoʻomaopopo, hoʻomōhala, a e hoʻokō i mau kaʻakālai kaulike a makaulīʻi e kōkua ana i nā māhele lawelawe olakino kūpono, limahana, hoʻonaʻauao, a me nā ʻōnaehana kaiahale e kinai pono ai i ka hehu mau ʻia ʻana aku o ko ke Kalana ʻo Maui mau ʻohana lauhanauna. **ʻOnipaʻa nō mākou i ka hoʻokāʻoi ʻana aʻe i ka hiki o ko kākou mau kaiaulu kuleana like a kū kahi ke hoʻomākaukau pono no nā wā pōʻino a ke hoʻoponopono i nā mea hoʻonui ʻaloʻahia a hoʻohikilele kūloko a kūwaho e laʻa hoʻi nā pōpilikia kūlohelohe, ka lauwili wale o ka hoʻokele waiwai honua, nā pōpilikia olakino o ka lehulehu, a me nā ālaina i nā kuʻina hoʻolako.**

E hoʻoulu i nā papa hana ʻŌiwi kuluma kūloko i kumu nō i ka ʻike a me nā manaʻo waiwai kālaikaiaola.

Ua hele nō a kuluma he mau papa hana a loina ʻŌiwi ma nā kaiaulu kuleana like a kū kahi o ke Kalana ʻo Maui ma o nā makahiki he nui wale a i kumu hoʻi i nā manaʻo waiwai hoʻokahua pono a me ka ʻike kūpono a hoʻomāunauna ʻole. **E pono nō kākou ke hoʻohana a ke hoʻopaʻanaʻau i ka ʻike naʻauao kālaikaiola o ke au i hala i mea e hoʻomālamalama a alakaʻi mai ai i kā kākou mau papa hana o kēia au nei a me ia mua aku.**

Hoʻoholomua i nā pono lehulehu a i ka leo kaiaulu.

E pono nō mākou ke kōkua kuʻupau i ka hoʻoholo pono ʻia o nā kulekele kūpono a kaulike no ka lehulehu i ʻole e emi hou iho ai ka pono o ka lehulehu. E pono nō ke hoʻomakakoho i ka loaʻa ʻana o nā hopena loli aniau makauliʻi, hoʻopalekana, a hoʻomākaukau a hoʻokūʻonoʻono pono hoʻi no nā kānaka a pau o ke kaiaulu a i ka nohona kūpono, maluhia, a lako pono o nā ʻohana kūloko.

Grow a thriving local circular economy.

We actively support the growth of a thriving local circular economy, which uses a systems approach that is restorative and regenerative. Instead of extracting, using, and disposing of resources (a linear economy), we seek to eliminate waste and wasteful practices by circulating products and materials for as long as possible via methods such as reducing resource use, reusing, recycling, refurbishing, and repairing. **A circular economy means turning waste into a "resource" rather than a "cost."**

Sustainably address current and future infrastructure needs.

By utilizing a systematic approach that integrates recognized sustainable best management practices informed by local and ancestral wisdom, historical guidance, and innovative strategies, **we are committed to sustainably addressing current and future infrastructure needs of our community.**

Commit to both institutional and individual action and local implementation of climate action and resiliency strategies.

We are committed to both institutional and individual action and local implementation of climate mitigation and resiliency strategies and actions. We will develop, adopt, and implement policies that address identified climate and resiliency actions. It will take action at all levels to achieve a sustainable future. This includes addressing constraints to our ecological systems associated with limits to the carrying capacity of our natural systems.

E hoʻomōhala a e hoʻomāhuahua kaiaulu hoʻokele waiwai kūloko hoʻopōʻaiapuni.

Pau ʻole nō ko mākou kākoʻo i ka hoʻomōhala a hoʻomāhuahua ʻia o kahi kaiaulu hoʻokele waiwai kūloko hoʻopōʻaiapuni hoʻi e hoʻoholo pono ai i papa hana kū ʻōnaehana hoʻoponopono, hoʻoulu, a hoʻōla hou. Ma kahi nō hoʻi o nā hana kāwī a unuhi wale, hoʻohana wale, a hoʻolilo waiwai wale aku (he hoʻokele waiwai lālani nō hoʻi), ke noke nei mākou i ka hoʻopau ʻokoʻa ʻia o ka hoʻonui ʻōpala a moka ʻana nō, a o nā hana hoʻomāunauna hoʻi, ma o ka hoʻopōʻaiapuni ʻana i nā huahana a me nā makelia no ka wā lōkihi loa o ka hiki ma o nā kiʻina hana e laʻa ka hōʻemi ʻana i ka nui hoʻohana a hoʻolilo kumuwaiwai ʻana, ka hoʻohana hou ʻana, ka hoʻopōʻaiapuni ʻana, ka hōʻano hou ʻana, a me ka hoʻoponopono ʻana. **Ma ka hoʻokele waiwai pōʻaiapuni, he kumuwaiwai nō ka ʻōpala, ʻaʻole hoʻi he kumulilo.**

E nānā me ka pono a me ka makaulīʻi i nā pono hoʻokahua kaiaulu o kēia au me ia mua aku.

Ma o ka papa hana kū ʻōnaehana e hoʻohui ana i mau kiʻina hana hoʻoholo pākela a makaulīʻi i hōʻoia ʻē ʻia nō, a i kumu hoʻi i ka ʻike kupuna a kūloko, nā haʻawina mōʻaukala, a i nā kiʻina hana makakū a maiau, **ua ʻonipaʻa nō mākou i ka nānā makaulīʻi pono ʻana i nā pono hoʻokahua kaiaulu o kēia au me ia mua aku o ko kākou kaiaulu.**

E huki like ma nā hana neʻepapa a me nā hana pākahi, a i ka hoʻokō kūloko ʻana i nā papa hana hoʻoponopono aniau a me nā kaʻakālai aniau.

ʻOnipaʻa nō mākou i ke kōkua a paipai ʻana i ka huki like ma nā hana neʻepapa, a pēlā pū me nā hana pākahi, i kā mākou nānā pono ʻana i ka loli aniau a i nā ālaina, a me nā mea kūpono paha, i pili hoʻi i ka hoʻomākaukau a hoʻokūʻonoʻono kaiaulu. E hoʻomōhala, e hoʻāpono, a e hoʻokō nō mākou i mau kulekele e nānā pono ai i nā hana hoʻomākaukau a hoʻokūʻonoʻono kaiaulu a me ka hoʻoponopono aniau. He pono nō ka huki like ʻana ma o nā pae a pau e loaʻa mai ai he au hou mākaukau a kūʻonoʻono pono. Ua pau pū nō me ka nānā pono ʻana i nā palena o ka pono o ko kākou mau ʻōnaehana kaiaola i pili hoʻi i nā palena ʻauamo o ko kākou mau ʻōnaehana kaiameaola a kūlohelohe.

Executive Summary

Local Action

is paramount to addressing the climate change crisis and reaching state, national, and global climate goals. The County of Maui's Climate Action and Resiliency Plan (CARP) demonstrates our commitment to reducing greenhouse gas (GHG) emissions and to building resilience against climate threats.

The CARP takes into account the similarities and differences across the individual communities and climate issues on the three inhabited[1] islands of Maui County: Maui, Molokaʻi, and Lānaʻi.

1 Kahoʻolawe is the fourth island that makes up Maui County and is not focused on in this current plan. However, future updates to this plan should include special consideration for and inclusion of Kahoʻolawe Island.

Introduction

WITH AN ABUNDANCE OF NATURAL RESOURCES

that create a vibrant setting for residents and visitors, each of Maui County's islands is unique. A key part of this vibrancy comes from Maui County's ideal climate, which is changing over time as global climate change accelerates.

Increased development, tourism, and environmental impacts have exacerbated community, cultural, and environmental challenges.

The CARP was spearheaded by the County of Maui's Office of Climate Change, Resiliency, and Sustainability (CCRS) and provides a clear and actionable set of strategies and actions to reduce our communities' contribution to climate change and to build community resilience and adaptation to current and future climate change impacts. In this way, the CARP is a two-pronged approach that addresses both ***mitigation*** by reducing greenhouse gas emissions and ***adaptation*** by increasing resiliency and preparedness.

The CARP was shaped by guiding principles developed and vetted by the Climate Action and Resiliency Plan Advisory Committee (CARPAC)[1] and the County of Maui's Resiliency Hui[2]. The principles were further defined, vetted, and translated into ʻōlelo Hawaiʻi (Hawaiian Language). The climate mitigation and resiliency strategies and actions discussed in the CARP are aligned with these principles and noted throughout the plan.

1 Comprised of 20 members from the public, subject matter experts, government, public officials, and private sector representatives that met approximately once per month throughout 2022 for 2-hour collaborative sessions.

2 Comprises more than 50 representatives from 11 County of Maui departments who engaged in monthly 2-hour meetings to review and provide input on the CARP and other county climate action and resilience initiatives. Please see the Acknowledgment section for a complete list of departments.

Introduction

Resiliency has been an integral part of Native Hawaiian culture—long before the concept of "sustainability" was introduced in popular Western discourse—and through that Maui County has a rich history of environmental stewardship and a deep connection to the natural world.

> **I believe, as the Kahuna once did, that these islands can be a model for the whole world in sustainability, climate correction, food and goods independence, and above all, kindness and aloha.**
>
> *- Maui County Resident*

The principles of sustainability cascade into every aspect of our community from health and well-being to economics, culture, and equity. Therefore, another central guide for the formation of climate strategies and actions was aligning the County of Maui's existing commitments and pledges with the culture, history, and values of the community. See the report's History of Climate Action section (pg. 99) for more information on the County of Maui's existing commitments.

The County of Maui seeks to ensure that equitable solutions are identified within the CARP so that vulnerable, **low- to moderate-income (LMI) households and marginalized communities** are lifted up as the strategies and actions are implemented. Climate change impacts are amplified in Maui County due to its remote island geography, and even more so within vulnerable socio-economic groups. According to the Intergovernmental Panel on Climate Change (IPCC), indigenous peoples, economically and politically disadvantaged groups, and communities that depend on local agriculture are at a disproportionate risk of climate consequences, all of which can be found in Maui County.[1]

1 Intergovernmental Panel on Climate Change, "Summary for Policymakers Headline Statements," IPCC Sixth Assessment Report Impacts, Adaptation and Vulnerability," (Cambridge: Cambridge University Press, 2022), 2-3.

Acknowledging climate change's disproportionate impact on vulnerable, LMI Households and marginalized communities, the CARP's strategies center around climate justice. These strategies and actions also aim to reduce air and water pollution.

Alongside co-creating this plan with our local community, the County of Maui engaged with local climate scientists, businesses, and policymakers to develop the following climate action and resiliency recommendations.

> **There is an inescapable feeling of inequality and struggle. The wealthiest people who have second homes and vacation here have the ability to make changes. We should direct local laws to ensure that the golf courses and hotels adopt sustainable energy and water use technologies. The working people who live here struggle so much just to afford the basics… the wealthy tourists should be held to account by making sustainable practices the only option.**
>
> *- Maui County Resident*

> **Economic disparity within our community is a barrier. Changes must be affordable for all. Financial incentives would be effective motivation for change, given the financial difficulties local residents face every day.**
>
> *- Maui County Resident*

Our Collective Future

WORLDWIDE, HUMANS ARE AT A DECISIVE MOMENT

and turning point in our fight against climate change. Without immediate and collective action, Maui County is on a path to experience catastrophic repercussions, including food and water shortages, severe and frequent natural disasters, and extreme disruptions to the built and natural environment.

Scientists warn that the window is rapidly closing to reduce warming to the critical threshold of 1.5°C.

An analysis of current international climate commitments and GHG emissions trajectories puts the world on track to exceed a 3.2°C temperature increase this century.[1] Human activity, namely the combustion of fossil fuels, has increased the concentration of carbon dioxide (CO_2) in the atmosphere from 280 to over 410 parts per million (ppm) since pre-industrial times.[2] CO_2 and other atmospheric gases act like a greenhouse, trapping heat and progressively increasing the global surface temperature.

1 Intergovernmental Panel on Climate Change, "Summary for Policymakers," Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, (Cambridge: Cambridge University Press, 2021).

2 Environmental Protection Agency, " Atmospheric Concentrations of Greenhouse Gases," Climate Change Indicators, 2021, https://www.epa.gov/climate-indicators/climate-change-indicators-atmospheric-concentrations-greenhouse-gases

Documented Changes In Maui County Since 1950

50%
FEWER DAYS WITH TRADE WINDS

85%
OF BEACHES WITH SERIOUS EROSION
FROM SEA LEVEL RISE

2°F
AVERAGE WARMING
(1.5°C)

34
MORE DAYS OVER **90°F**
(32.2°C)

The degree to which the world continues to warm is directly tied to current and future GHG emissions trajectories. For Maui County residents, the urgency of climate action and resilience cannot be overstated.

4 inches LESS
ANNUAL PRECIPITATION

In a survey conducted by the County of Maui in 2022, **85% of Maui County residents are concerned about climate change** impacts in their community.[1]

1 Geos Institute and Sustainable Pacific. 2022. "County of Maui, Hawai'i Climate and Community Trends Primer."

Infographic data from: County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

Our Collective Future

The coastal geography and sensitive ecosystems across Maui County make the region highly susceptible to climate change impacts.

In fact, in 2018, the Hawaiian Island Climate Vulnerability and Adaptation Synthesis found that most vulnerable natural systems in Maui County (Maui, Molokaʻi, and Lānaʻi) are ***moderately to highly vulnerable*** to climate change.

The most vulnerable habitats and services include:

- Coastal beaches due to erosion and inundation.
- Dry forests due to changes in precipitation and soil moisture.
- Cultural knowledge and heritage due to the potential loss of native ecosystems and species, and inundation of cultural sites.
- Natural flood mitigation and erosion control due to flash floods, drought, and wildfire, as well as loss of wetlands and coastal dunes.
- Freshwater supply due to increased drought, changing precipitation, watershed function, and sea level rise.[1]

To help us better understand the potential consequences of climate change, the IPCC created hypothetical future GHG emissions "pathways," termed ***Regional Concentration Pathways (RCP)***. The **RCP**8.5 "Business-as-Usual" trajectory projects a future where the world continues to rely heavily on oil and gas, and no significant policy changes are made to reduce emissions. The lower GHG emissions scenario, **RCP**4.5, models a more sustainable future where the world makes immediate and drastic GHG emissions reduction actions.

1 R.M Gregg, "Hawaiian Island Climate Vulnerability and Adaptation Synthesis," (2018), EcoAdapt, quoted in, County of Maui ,"County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

PREDICTING THE EFFECTS OF CLIMATE CHANGE AND IMPLEMENTING PROTECTIVE RESILIENCY MEASURES ARE CRITICAL TO PROTECTING MAUI COUNTY'S COMMUNITY AND ENVIRONMENT.

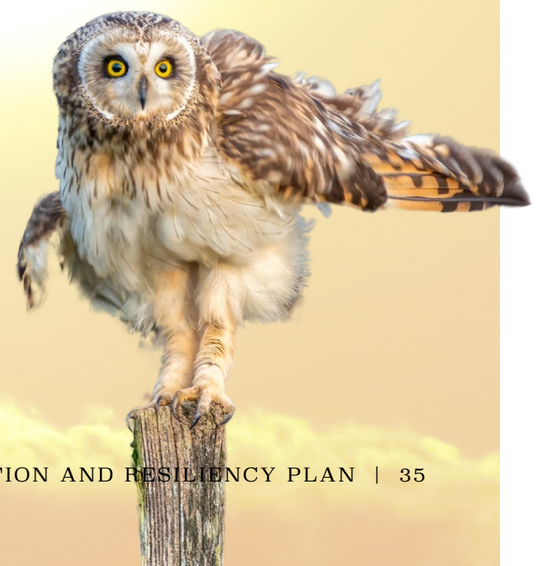
The section below summarizes some of the climatic shifts already observable in Maui County and what we can expect if climate change continues to accelerate in the coming decades.

Rising Temperatures

Since 1955, the average temperature in Maui County has risen by 2° F. The hottest years on record were 2019 and 2020.[1] Rising temperatures are further intensified by a shift and reduction in northeast trade winds. Between 1973 and 2019, winds in Hawaiʻi shifted from northeast to east and declined from 291 days per year to 150 days per year (from 80% to 41% of the year).[2] If GHG emissions continue unmitigated (**RCP**8.5), temperatures in Maui County could increase 2° to 6° F by mid-century (2041 to 2070) and 3° to 9° F by late-century (2071 to 2099).[3]

Temperature increases of this degree will have cascading effects (i.e. drought, heat waves, wildfires, etc.) across every sector from agriculture, health, the economy, and many more.

> **"I was born and raised on Maui. I have seen us go from a very, very rainy season to an almost non-existent one. Also, major coastal erosion and loss of beaches. The overall temperature is also much hotter. I am quite concerned as an adult who has seen so much change already in my lifetime.**
>
> *- Maui County Resident*



1 Laura E. Stevens et al., "State Summaries," NOAA National Centers for Environmental Information, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 11.

2 Jessica A. Garza et al., "Changes of the prevailing trade winds over the islands of Hawai'i and the North Pacific," Journal of Geophysical Research 117 (2012), quoted in County of Maui "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 18.

3 Oliver Elison Timm, "Future warming rates over the Hawaiian Islands based on elevation-dependent scaling factors." International Journal of Climatology, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 10.

Our Collective Future

Ocean Temperatures and Acidification

Off the coast of Maui Island, water temperatures have been recorded as high as 86°F – an increase of 1.5°F in the last century.

Rising CO_2 also contributes to ocean acidification in Maui County. The ocean is one of the world's biggest "carbon sinks," absorbing approximately 25% of the carbon dioxide humans release yearly.[1] **Too much CO_2 eventually disturbs the pH balance of the oceans. Over time, these changes to the marine ecosystem have contributed to widespread coral bleaching and the erosion of habitat for marine life, impacting sea turtles, birds, marine mammals, and fish.[2]**

Widespread coral bleaching—the event when coral expel algae living in their tissues resulting in the coral turning white—has become more common, with mass events in 2014, 2015, and to a lesser extent 2019. **By mid-century, coral bleaching events are projected to occur every year.**[3]

1 UC Davis, "What is carbon sequestration and how does it work?" Carbon Sequestration, 2019 https://climatechange.ucdavis.edu/climate/definitions/carbon-sequestration

2 County of Maui. "County of Maui, Hawai'i Climate and Community Trends Primer." (2022), 25.

3 Keener, V., D. Helweg, S. Asam, S. Balwani, M. Burkett, C. Fletcher, T. Giambelluca, Z. Grecni, M. Nobrega-Olivera, J. Polovina, and G. Tribble, 2018: Hawai'i and U.S.-Affiliated Pacific Islands. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1242–1308. doi: 10.7930/NCA4.2018.CH27

SCIENTISTS PREDICT THAT TEMPERATURES COULD INCREASE ANOTHER 5°F BY 2100.

County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer." (2022), 7.

> **Extreme climate change, water diversion, and water drying up before it is able to complete its journey [to the ocean] will be the demise of many of these species. Countless native plants and animals depend on the wind, rain, and water flow to exist, and seeing the depletion of these resources throughout the island due to climate change (i.e. extreme heat) is sad to watch.**
>
> *- Maui County Resident*

Sea Level Rise

Rising sea levels and high tides have eroded 85% of Hawai'i's beaches.[1]

As climate change continues to accelerate, sea levels will continue to rise. **By the end of the 21st century, scientists predict that sea levels will rise 3.2 ft.[2]** Marine flooding, destruction of homes and businesses, forced shoreline retreat, saltwater intrusion, shifting wave dynamics, and extreme storms are some potential consequences of rising sea levels.

1 Charles H. Fletcher et al., "National assessment of shoreline change: Historical shoreline change in the Hawaiian Islands," U.S. Geological Survey Open-File Report 1051 (2011): 55, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

2 National Oceanic and Atmospheric Administration. "Coastal Erosion Line: Hawaii 3.2 ft. Sea Level Rise Scenario," (2020), https://data.noaa.gov/dataset/dataset/coastal-erosion-line-hawaii-3-2-ft-sea-level-rise-scenario.

> **The biggest climate change [impact] I can see is sea level rising. With the ocean rising, people that built homes near the shoreline will have to move. Large waves are also eating away at local parks and beaches. Our iwi kupuna (ancestral bones) are also being exposed by climate change. We need to have an emergency and evacuation plan for people living near the ocean, and especially the east end of Moloka'i.**
>
> *- Maui County Resident*

SCIENTISTS PREDICT THAT SEA LEVELS WILL RISE MORE THAN 3 FEET BY THE END OF THE 21st CENTURY.

Our Collective Future

Precipitation Changes and Wildfires

Climate change is expected to make extreme weather events more frequent and severe.

This trend is already observable in Hawai'i, where the rate of extreme weather events has increased from every 20 years to every 5 years.[1]

At the same time, a decline in average annual precipitation and changing El Niño weather patterns contribute to drought conditions across Maui County. For example, rainfall measurements at the Kahului Airport showed that, since 1955, **the average annual precipitation has declined by 4 inches.**

If GHG emissions continue unmitigated (**RCP**8.5), annual precipitation could decline by as much as 70% by mid-century.[2] Drought, alongside increasing development, has led to a reduction in groundwater supply (aquifer recharge). Reduced precipitation, drought, and rising temperatures lead to an increase in wildfires across Maui County.

In the last century, wildfire burn areas in the state have increased fourfold.[3] If climate change continues at the current rate, wildfires are expected to become more frequent and destructive.

> **When there is any kind of natural disaster, our northeast area of Haiku is served last as far as clearing roads and restoring power and internet. As climate-related weather events worsen, this is a serious concern for our safety, access to essential supplies, and communication.**
>
> *- Maui County Resident*

1 Charles H. Fletcher et al., "National assessment of shoreline change: Historical shoreline change in the Hawaiian Islands," U.S. Geological Survey Open-File Report 1051 (2011): 55, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

2 Oliver Elison Timm et al., "Statistical downscaling of rainfall changes in Hawai'i based on the CMIP5 global model projections," Journal of Geophysical Research: Atmospheres 120 (2014): 92-112, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 15.

3 C. Trauernicht et al., "The contemporary scale and context of wildfire in Hawai'i," Pacific Science 69 (2015): 427–444, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 26.

A Comprehensive Approach

The CARP is an integral part of the County of Maui's strategy for mitigating and adapting to climate change. The County of Maui is also engaged in a more comprehensive approach that includes active participation at local, national, and global levels.

Even as a small part of the global problem, actions taken by the County of Maui can have a huge impact in inspiring change around the world.

According to the United Nations Environmental Program (UNEP), the world could limit global warming to 2.7° F (1.5° C) if global GHG emissions decline 7.6% each year between 2020 and 2030.[1]

The longer we delay action, and CO_2 continues to be released into the atmosphere, the more daunting these goals become.

A delay of only 5 years (2025) would require year-over-year GHG emissions reductions of 15.5%, making the 2.7° F (1.5° C) target virtually unattainable.

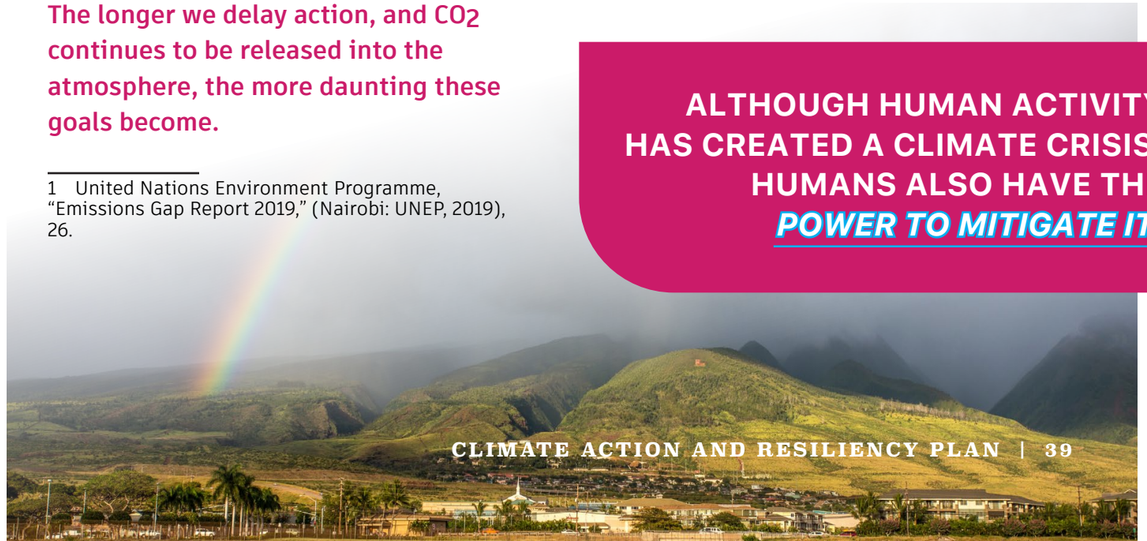
We still have an opportunity to limit global temperatures and to avoid a climate catastrophe, but we must take action now.[2]

The County of Maui's participation in local and global climate initiatives demonstrates a strong commitment to act. The county is actively engaged and committed to many climate mitigation and adaptation pledges, seen in snapshot in the History of Climate Action section (pg. 104) and described in detail in the Appendix (pg. 286).

1 United Nations Environment Programme, "Emissions Gap Report 2019," (Nairobi: UNEP, 2019), 26.

2 UNEP, "Emissions Gap Report 2019," 39.

ALTHOUGH HUMAN ACTIVITY HAS CREATED A CLIMATE CRISIS, HUMANS ALSO HAVE THE *POWER TO MITIGATE IT.*



Moving Towards Net Negative Carbon

This is a challenging commitment, but we have the tools to achieve it and know it is critical to ensure that current and future generations (and all life) can thrive within Maui County and enjoy a healthy, prosperous, and stable existence.

To achieve this goal, the Maui County community must drastically reduce GHG emissions while utilizing nature-based solutions to increase the amount of carbon being sequestered.

The CARP outlines strategies and actions for reducing and sequestering community-wide GHG emissions and, as a result, Maui County's contribution to global warming.

The County of Maui conducted two community-wide GHG emissions inventories for the years 2016 and 2019. The 2016 inventory represents the baseline year. The 2019 inventory is used to analyze progress from the baseline year (2016) and focus future GHG emissions reduction efforts. The County of Maui's GHG emissions inventories used the Global Protocol for Community-Scale Greenhouse Gas Inventories (the GPC),[1] the gold standard for GHG accounting for communities worldwide. The GPC allows communities to report both a BASIC and BASIC+ inventory. A **BASIC inventory** includes the minimum sources communities must report to be protocol-compliant (building energy, in-boundary transportation, grid supply electricity, and waste and wastewater). The **BASIC+ inventory**, on the other hand, is more complete and represents all sources a community might generate. In addition to the minimum emissions sources accounted for in the BASIC inventory, BASIC+ considers emissions generated from electricity transmission and distribution loss, out-of-boundary transportation, industrial processes and product use, and agriculture.

The County of Maui is committed to reducing local GHG emissions to ACHIEVE NET NEGATIVE CARBON EMISSIONS BY 2045.

The GHG inventory helped to determine the activities and sectors that are the greatest contributors to Maui County's carbon footprint. Next, the County of Maui analyzed the magnitude of GHG emissions reductions required to help the State of Hawai'i reach its goal of carbon neutrality by 2045 and set GHG emission reduction goals as a part of the Hawai'i Clean Energy Initiative (HCEI) and the Aloha+ Challenge.

In a "Business-as-Usual" scenario it is estimated that Maui County's GHG emissions will *decrease* by 16% by 2050.

This "Business-as-Usual" scenario takes into account an expected increase in tourism and residents that would lead to a rise in demand for resources. It also takes into account a 30% increase of EVs by 2050 and 100% renewable electricity by 2045.

HOWEVER, IN THE "BUSINESS-AS-USUAL" SCENARIO, MAUI COUNTY FALLS *DRASTICALLY SHORT* OF OUR TARGET OF NET NEGATIVE CARBON BY 2045.

Guided by data analysis with input from the community and local experts, the County of Maui prioritized 19 climate mitigation strategies and 61 supporting actions to further reduce community-wide GHG emissions.

1 For more information see: https://greenhousegasprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities

Deeper Dive into Current Greenhouse Gas Emissions

The GHG emissions inventory calculates all community-generated GHG emissions by considering activity data, such as consuming gasoline in a passenger vehicle and quantifying the impact of this activity on global warming (through a common GHG emissions factor).

By determining what activities and sources are the greatest emitters of greenhouse gases, the County of Maui prioritizes policies with the greatest GHG emissions reduction potential. The County of Maui facilities' GHG emissions can be found in the next section, the County of Maui's Operational Greenhouse Gas Emissions (pg. 48).

In 2019, Maui County generated a BASIC GHG emissions total of 1,512,220 metric tons of carbon dioxide equivalent ($mtCO_2e$), an increase of 4% since 2016. In 2019, Maui County emitted a BASIC+ total of 2,410,670 $mtCO_2e$, an increase of 9% since 2016.

The average Maui County resident emitted approximately 14.56 $mtCO_2e$ annually, which is slightly below the national average of 15.3 $mtCO_2e$ per capita each year. However, the U.S. national average is much higher than that of other developed countries.[1]

For example, the average annual $mtCO_2e$ per capita in the European Union was 6.4 $mtCO_2e$ in 2019.[2] In some of the most progressive European countries, like Switzerland, the average per capita carbon footprint is as low as 4.7 $mtCO_2e$ per capita each year.[3]

Over half of Maui County's total GHG emissions are generated within the transportation sector (51% in the BASIC inventory and 61% in the BASIC+ inventory).

In the BASIC+ inventory, which considers transboundary travel, air travel coming to and from Maui County is the greatest source of transportation GHG emissions at 29%.

On-road vehicles are a close second, making up 40% of Maui County's total BASIC GHG emissions and 25% of Maui County's total BASIC+ GHG emissions.

1 World Bank Group, "Historical GHG Emissions," Climate Watch, 2022, https://www.climatewatchdata.org/ghg-emissions?end_year=2019&start_year=1990
2 World Bank Group, "Historical GHG Emissions."
3 World Bank Group, "Historical GHG Emissions."

The majority of residents in Maui County own and drive a passenger vehicle, contributing to greater congestion and road vehicle emissions. Waterborne transportation accounts for 6% of GHG emissions in BASIC inventory and 4% of BASIC+ inventory.

The building energy sector is the next greatest contributing sector, making up 44% of BASIC GHG emissions and 29% of BASIC+ GHG emissions. This sector includes electricity, natural gas, and propane GHG emissions used in residential, commercial, industrial, and streetlights. In the BASIC+ inventory, the electricity lost in transmission and distribution is included. In 2019, approximately 5.26% of electricity was lost in transmission.

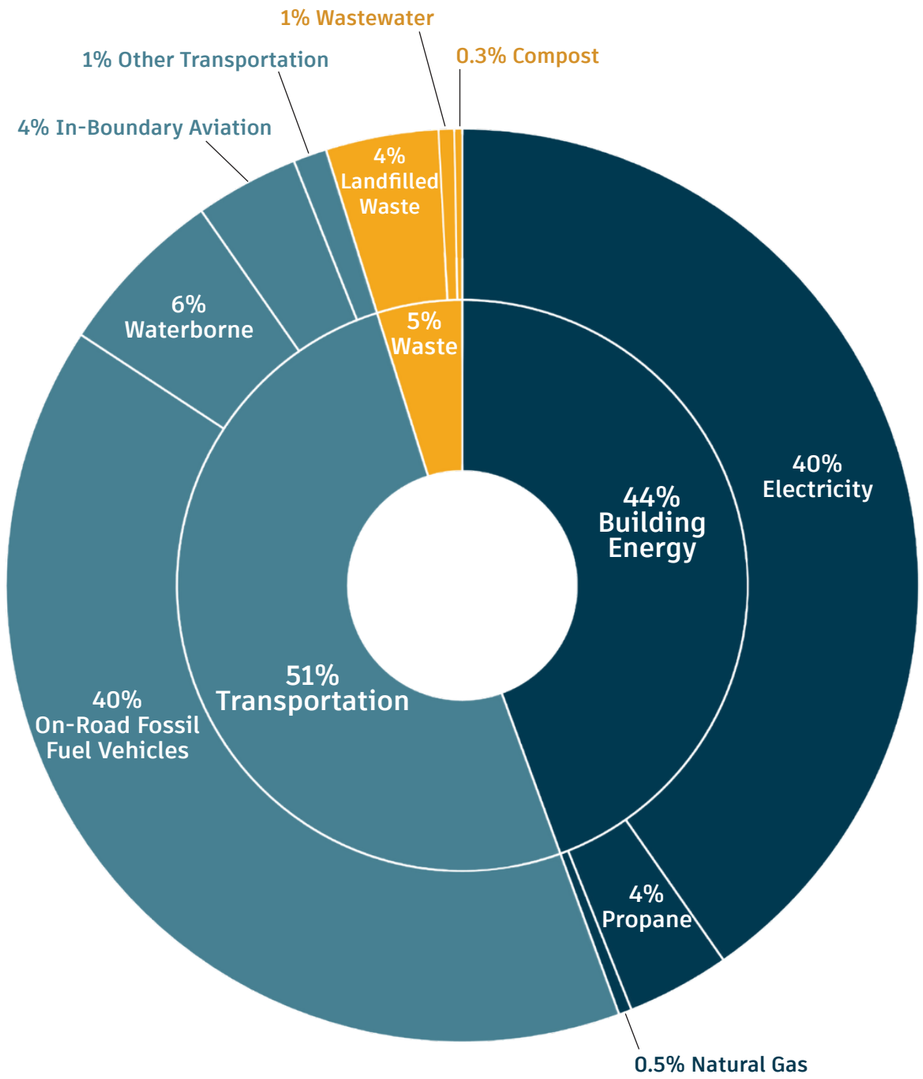
Electricity is the greatest source of GHG emissions within the building energy sector, at over 90% in the BASIC and BASIC+ inventories. Propane and natural gas account for approximately 8% and 1%, respectively, in both the BASIC and BASIC+ inventories.

Waste and wastewater management contribute a smaller proportion of total GHG emissions at 3% to 5%. Agriculture, Forestry, and Other Land Use (AFOLU) and Industrial Processes and Product Use (IPPU) make up 3% and 4%, respectively, of the BASIC+ inventory.

BASIC Emissions by Sector and Source

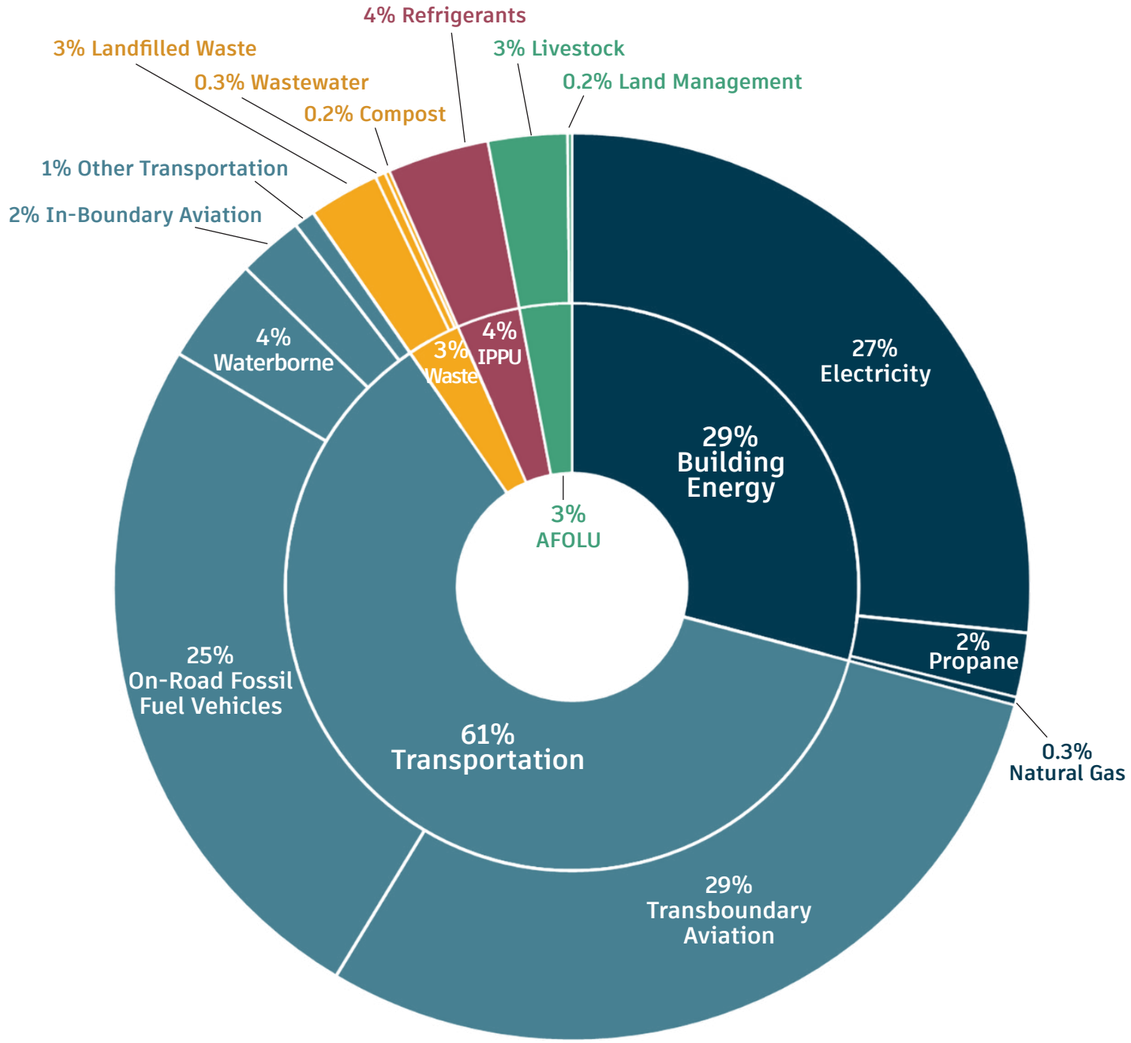
The inner circle shows the share of emissions from each sector. The outer circle displays the breakdown of emissions produced by individual sources that fall within each sector.

For example, the building energy sector produces 44% of Maui County's total emissions. Electricity, within the building energy sector, produces 40% of Maui County's total emissions.



BASIC+ Emissions by Sector and Source

BASIC+ emissions include additional sectors and sources compared to BASIC emissions. Transboundary aviation is the largest BASIC+ source and contributes 29% of Maui County's 2019 BASIC+ GHG emissions.



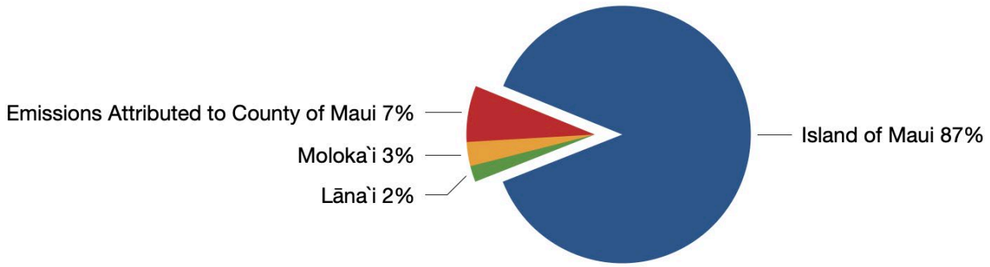
IPPU: Industrial Processes and Product Use
AFOLU: Agriculture, Forestry, and Other Land Use

Between 2016 and 2019, community BASIC GHG emissions increased by 4% and BASIC+ GHG emissions increased by 9%. However, the relative contribution from each GHG emission source remained relatively constant.

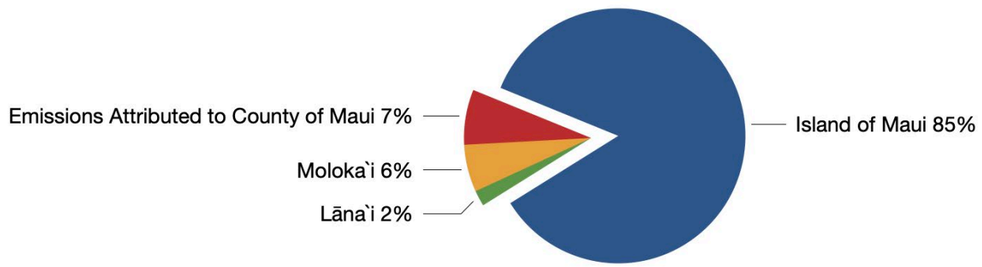
In general, GHG emissions in Maui County and the relative contribution of various sectors and sources are comparable to other municipalities in Hawai'i. For example, the majority of GHG emissions on O'ahu come from the transportation sector (50% of total) and building sector (42% of total).

Most of Maui County's GHG emissions are generated by activities on and around the island of Maui, followed by Moloka'i and then Lāna'i. Some GHG emissions sources are not easily separated by island and are attributed to Maui County as a whole. These include GHG emissions from agricultural and land use practices, off-road transportation, and boats. Since no permanent residents reside on Kaho'olawe, GHG emissions for that island were not reported.

BASIC Emissions by Island (mt CO_2e)



BASIC+ Emissions by Island (mt CO_2e)



Tourism Impacts on Greenhouse Gas Emissions

Addressing GHG emissions related to tourism in Maui County is paramount to reducing community-wide GHG emissions. With nearly 3 million visitors in 2019, tourism is a significant driver of GHG emissions in Maui County.

The de facto population on any given day in 2019 was 227,479, of which 166,000 are considered residents, **meaning that during any given day, approximately 61,479 visitors are in Maui County.**[1]

Between air travel in and out of Maui County, tourism development, hotels and resorts, and high levels of purchases and waste generation, visitors are a significant driver of GHG emissions in Maui County.

Without a concentrated effort to reduce the GHG emissions associated with tourism, Maui County will not be able to meet our GHG emissions reduction targets.

It is important to note, however, that these numbers reflect pre-pandemic tourism for Maui County. While tourism has largely rebounded over the last year, the COVID-19 pandemic contributed to a dramatic drop in tourism and related emissions in 2020 and 2021.[2]

The County of Maui is committed to working with the visitor industry to better measure its GHG impact and to identify industry-specific opportunities (especially in air travel) to mitigate these GHG emissions.

1 Maui County Data Book, "Visitor Industry & Recreation," Section 10, (2020), 178-210. https://sbdc.dev.hyperspective.com/wp-content/uploads/2021/10/2020-Chapter10.pdf

2 Kehaulani Cerizo, "Maui County visitors reach highest monthly count since pandemic, new data shows," (July 29, 2022), MauiNow. https://mauinow.com/2022/07/29/maui-county-visitors-reach-highest-monthly-count-since-pandemic-new-data-shows/#:~:text=Through%20the%20first%20half%20of,the%20first%20half%20of%202019.&text=For%20the%20first%20half%20of,the%20first%20half%20of%202019

Our Collective Future

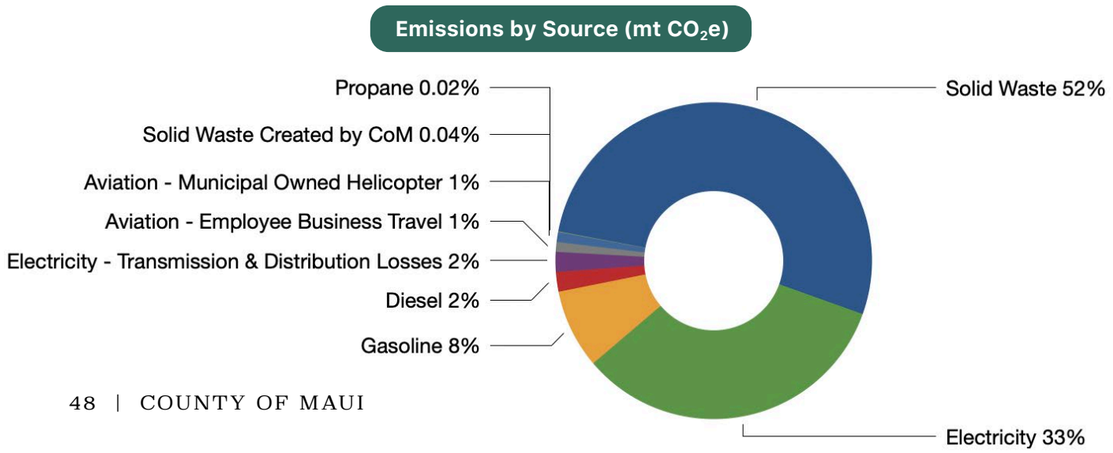
Maui County's Operational Greenhouse Gas Emissions

The County of Maui, as an organization, is addressing its GHG emissions from buildings, fleet vehicles, waste generated in facilities, and the landfills that it owns and operates.

Of the total GHG emissions produced in Maui County, county operations account for 8% of BASIC GHG emissions and 5% of BASIC+ GHG emissions. Landfills owned and operated by the County of Maui make up 53% of its total GHG emissions and provide the best and quickest way to reduce overall emissions. Landfill management through flaring, diversion, and landfill gas utilization are all opportunities to reduce GHG emissions.

Electricity—consumed by activities including building operations and municipal-owned water and wastewater infrastructure—is the next largest GHG emissions source at 33%. Energy efficiency and renewable energy both provide proven technologies to reduce energy costs and pollution. Gasoline and diesel used in the county's fleet of vehicles make up 8% and 2%, respectively. The remaining GHG emissions make up less than 5%.

It is important to note that the waste generated by Maui County operations, not including residential or commercial waste, only accounts for less than 1/2 of a percent of the overall GHG emissions.

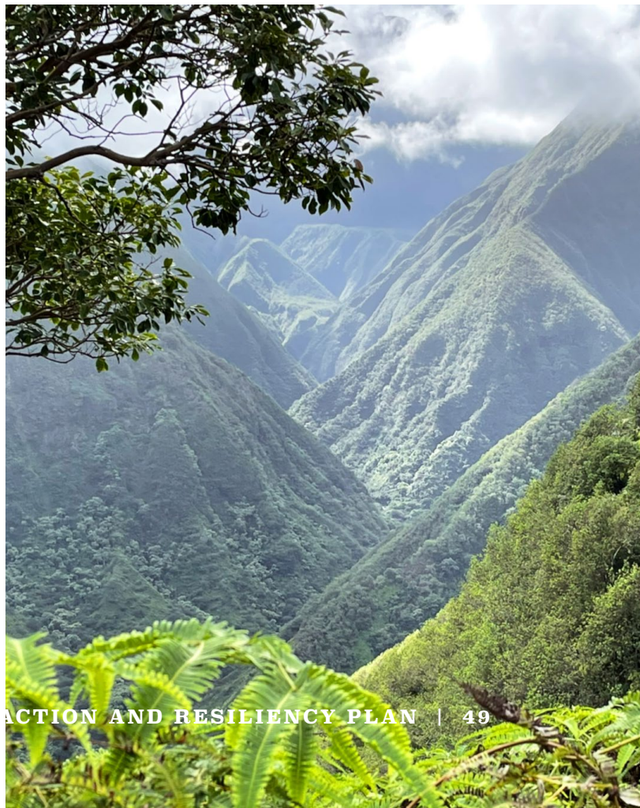


Projected Greenhouse Gas Emissions

Using 2016 as the baseline year and integrating the Hawai'i Clean Energy Initiative is commitment of 100% renewable electricity by 2045 and building out an EV network CCRS completed a "Business-as-Usual" projection of Maui County's BASIC+ GHG emissions through 2050. A "Business-as-Usual" projection models future GHG emissions if the County of Maui does not take any further action to reduce GHG emissions. The model expects 30% of all vehicles to be electric by 2050 even if no actions are taken by the County of Maui to increase adoption.

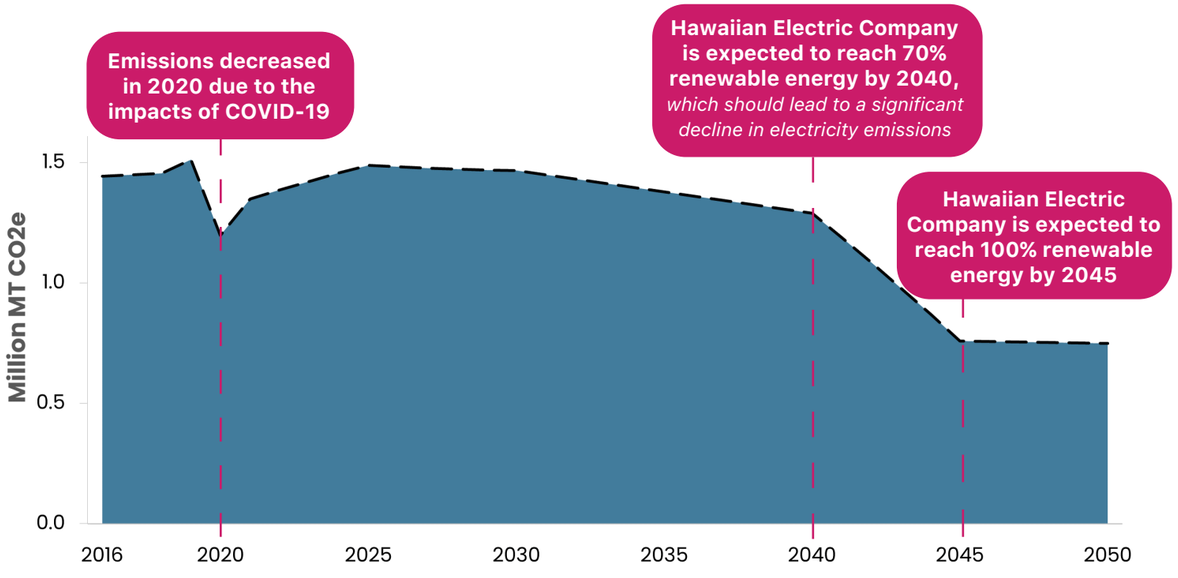
Using this scenario and only accounting for BASIC GHG emissions, Maui County's community GHG emissions are expected to decrease by 48% by 2050—missing the goal of a 52% decrease to reach net zero GHG emissions.

This is because Hawaiian Electric Company, the electric utility serving Maui County, is expected to increase renewable sources of electricity. As shown on the next page, by 2045 all electricity is expected to be net zero GHG emissions. However, other GHG emissions sources, such as aviation GHG emissions, counteract some of this progress because of an increase in demand for resources driven by rising population and tourism.



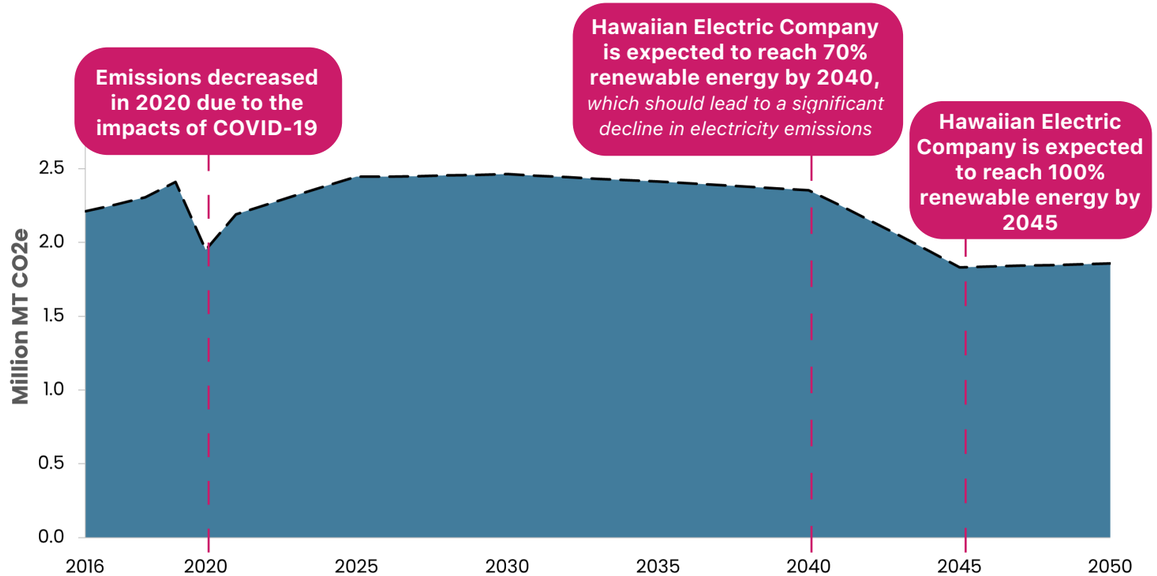
BASIC Business-as-Usual Emissions Projection

BASIC emissions are projected to decrease in a “Business-as-Usual” (BAU) scenario.



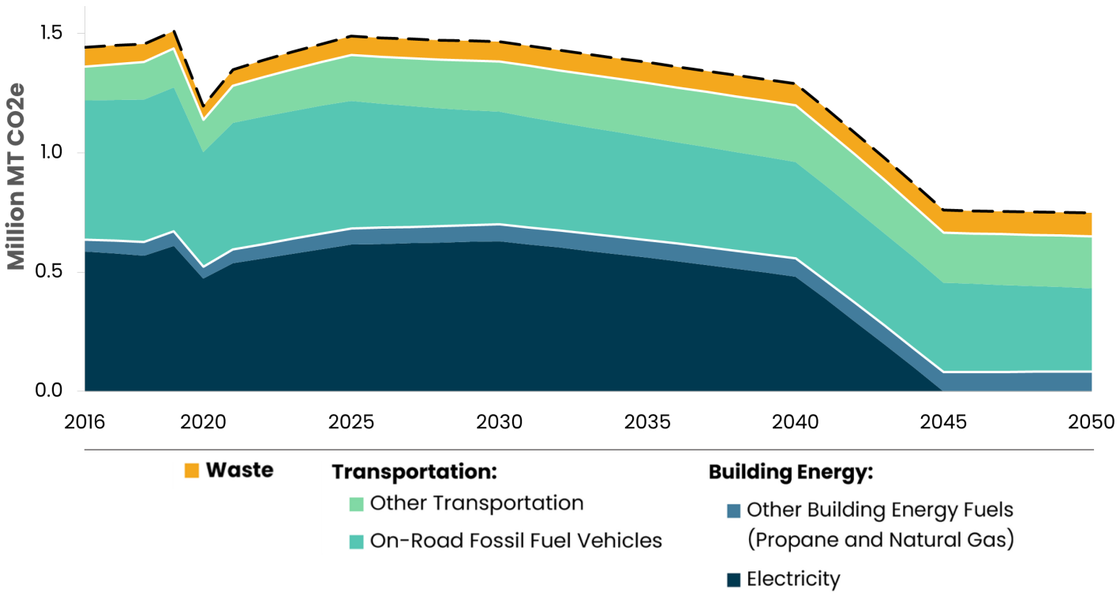
BASIC+ Business-as-Usual Emissions Projection

BASIC+ emissions are projected to decrease slightly but remain steady in a “Business-as-Usual” scenario.



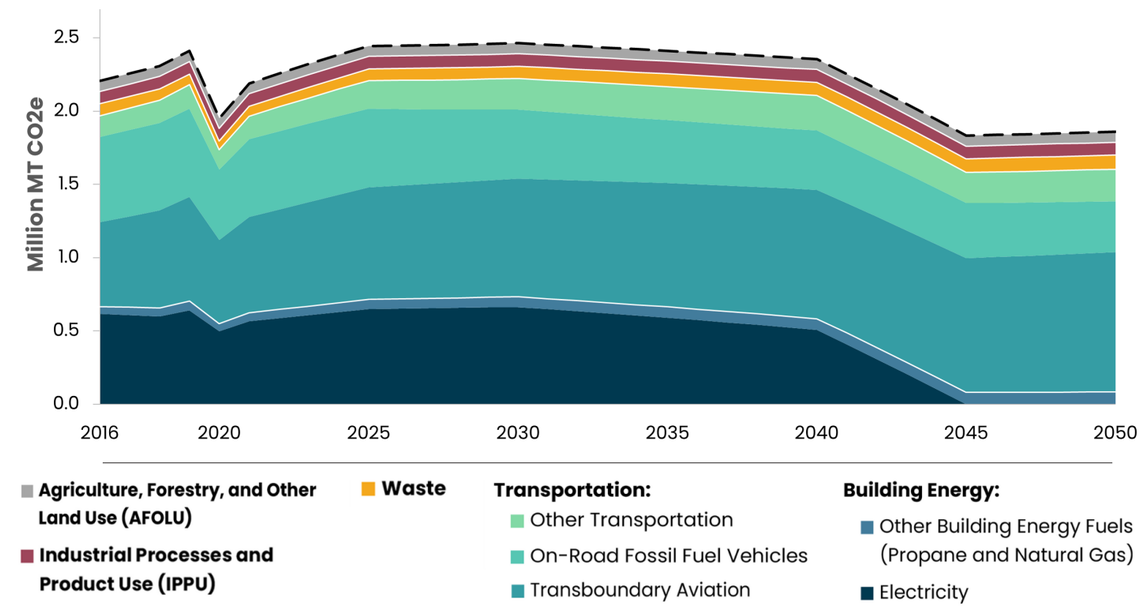
BASIC Business-as-Usual Emissions Projection by Source

In a BAU scenario, emissions are expected to decrease from 1.4 million mt CO_2e in 2016 to roughly 750,000 mt CO_2e in 2050. This reduction is primarily due to Hawaiian Electric Company reaching 70% renewable energy by 2040 and 100% renewable energy by 2045.



BASIC+ Business-As-Usual Emissions Projection by Source

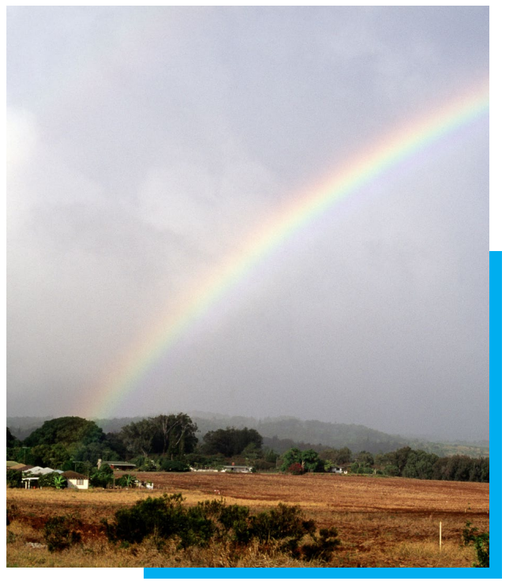
Expected increases in visitors and emissions from flights to Maui County partially offset emissions reductions from Hawaiian Electric Company’s renewable energy goals.

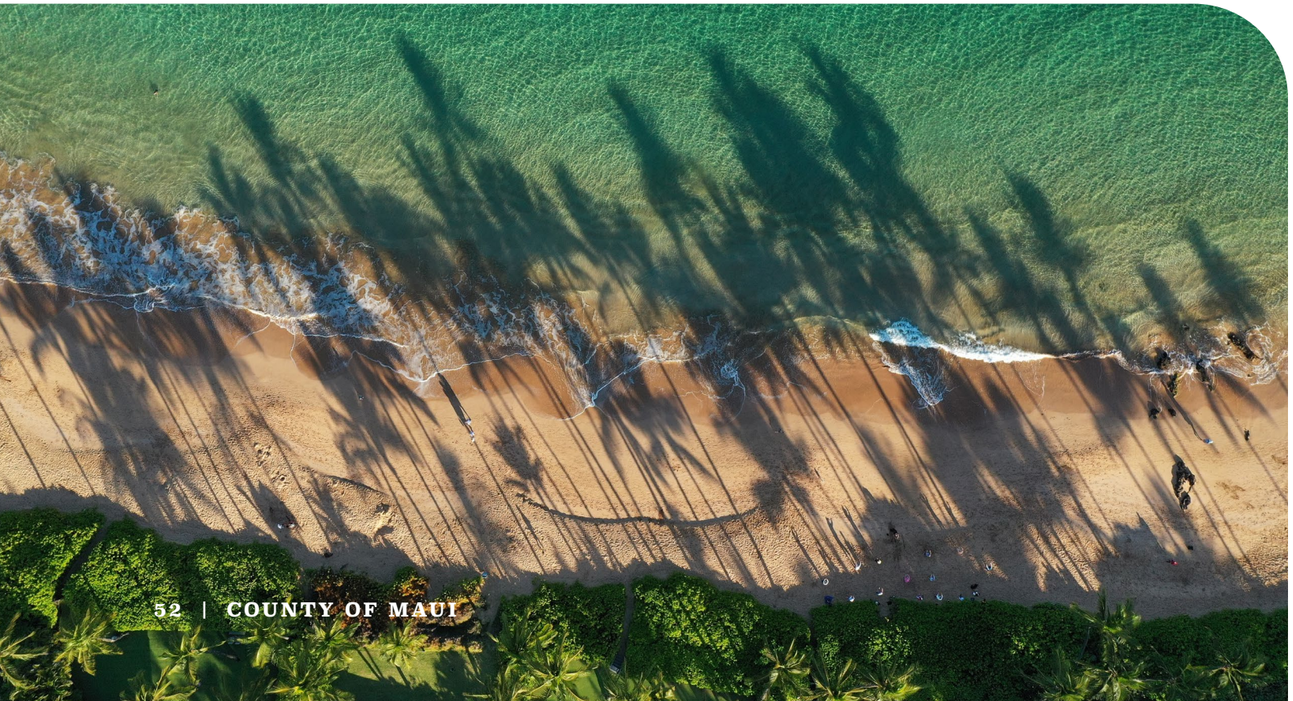


Our Collective Future

When accounting for BASIC+ GHG emissions, Maui County communities' GHG emissions are expected to decrease by only 16% by 2050 in a "Business-as-Usual" scenario—missing the goal of an 84% decrease to reach net zero GHG emissions.

As GHG emissions from the electricity sector decline, GHG emissions from transboundary aviation become a greater proportion of Maui County's total GHG emissions. Without significant policy intervention, aviation GHG emissions are expected to increase annually through 2050 at a similar rate to the increase in tourism.





Carbon Sequestration and Stock

Maui County's land sequesters carbon and is a critical asset in the fight against climate change. Maui County's lands store 18% of the State of Hawai'i's terrestrial carbon.[1]

The climate crisis and Maui County lands are inextricably linked. Aligning work on climate change, land conservation, and restoration is an opportunity to utilize local carbon sinks to benefit multiple efforts. This approach will ensure that our response to the climate crisis addresses and improves the functionality and connectivity of our native ecosystems, resulting in increased environmental resilience.

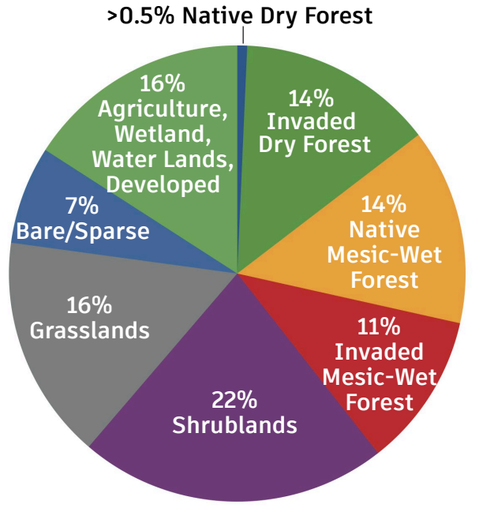
All lands have the potential to sequester carbon from the atmosphere and store it in plant material, including the ecosystems that make up Maui County. Certain land cover types and regenerative[2] land practices sequester more carbon than others. Maui County's lands were analyzed to assess the current carbon stock and identify potential strategies and actions to increase this stock over time. For the carbon stock analysis, Maui County lands were classified into 9 broad categories: Native dry forest, invaded dry forest, native mesic-wet forest, invaded mesic-wet forest, non-native tree plantations, shrublands, grasslands, and bare/sparse ground. Agricultural lands were included in the analysis; however, there are caveats.[3]

1 Selmants, P.C., Giardina, C.P., Jacobi, J.D., and Zhu, Zhiliang, eds., 2017, Baseline and projected future carbon storage and carbon fluxes in ecosystems of Hawai'i: U.S. Geological Survey Professional Paper 1834, 134 p., https://doi.org/10.3133/pp1834.

2 Regenerative land practices including composting, mulching, biochar, natural Korean farming, and other beneficial land practices.

3 Due to a lack of Hawai'i-specific data, only soil organic carbon estimates were available for agricultural lands. The carbon stock for Maui County's agricultural, wetland, water, and developed lands was estimated with the available data. However, that this is not indicative of the cover type's full carbon stock, it is just representative of the carbon stock of the soil organic carbon pool. Should more localized data and plant species data become available in the future, this analysis should be rerun to include the carbon stocks of the agriculture, native forest, water, developed, and wetland land cover types.

Maui County Land Cover Distribution



Our Collective Future

Wet forests predominantly populated by native tree species include plants such as koa, ʻōhiʻa, and olapa. Unfortunately, several of these native forests have been invaded by invasive species such as miconia, pampas grass, and feral ungulates.

The establishment of invasive species is severely damaging to the functionality of watersheds and other areas throughout Maui County.

In addition to the introduction of invasive species, our lands were forever changed by the modern agriculture industry.

As a result of the development of agricultural plantations, most agriculture in Maui County consisted of pineapple or sugarcane over the last century. However, all large-scale pineapple and sugarcane plantations have closed over the last decade, leaving damaged soils that need restoring and regenerating.[1]

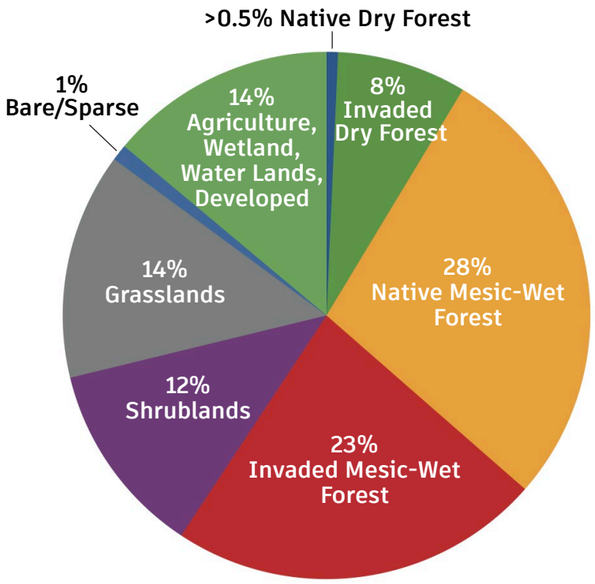
Maui County's diverse lands consist of a special combination of unique forests, agricultural lands, and coastal ecosystems.

Each land cover type holds carbon in its plants and soil, called a carbon stock. Different cover types hold more or less carbon compared to others.

Hawai'i's land, 18% is located within Maui County, and 18% of Hawai'i's carbon is stored within Maui County's lands.

The chart below shows the total amount of carbon stock (metric tons [MT] of carbon) stored by each land cover type in Maui County. Most of the stored carbon is held within predominantly wet forests dominated by native tree species, followed by predominantly wet forests dominated by invasive species.

Carbon Storing (MT Carbon) by Land Type



Forests, including those with non-native tree plantations, hold 60% of the carbon stock in Maui County. Restoring and maintaining the health of forests will be critical to preserve and grow Maui County's carbon stocks going forward.

It is important to note that carbon is not the only metric for determining the best method for land management. For example, although non-native tree plantations store a lot of carbon, there are other negative consequences and positive impacts of altering intact native landscapes that must be considered.

This is also true with regard to native dryland forests. Converting native dryland forests to any cover type (except for bare/sparse vegetation) will store more carbon, but potentially alter critical habitats for many of Hawai'i's native species.

Strategic land management is essential to ensuring that Maui County's lands both sequester carbon and help to increase Maui County's resilience to climate change impacts while preserving native biodiversity and cultural connection to native habitats.

Photo credit: Troylauphotography

1 Note that cattle ranches are also a large part of the agriculture landscape in Hawai'i. For more information on the impacts of cattle on Maui County's emission see the Agriculture, Land Use, and Natural Resources section (pg. 194) of this report.

Our Collective Future

Resiliency in a Changing Climate

The Resiliency Action portion of the CARP aims to prepare the community for adapting to current and future climate change impacts.

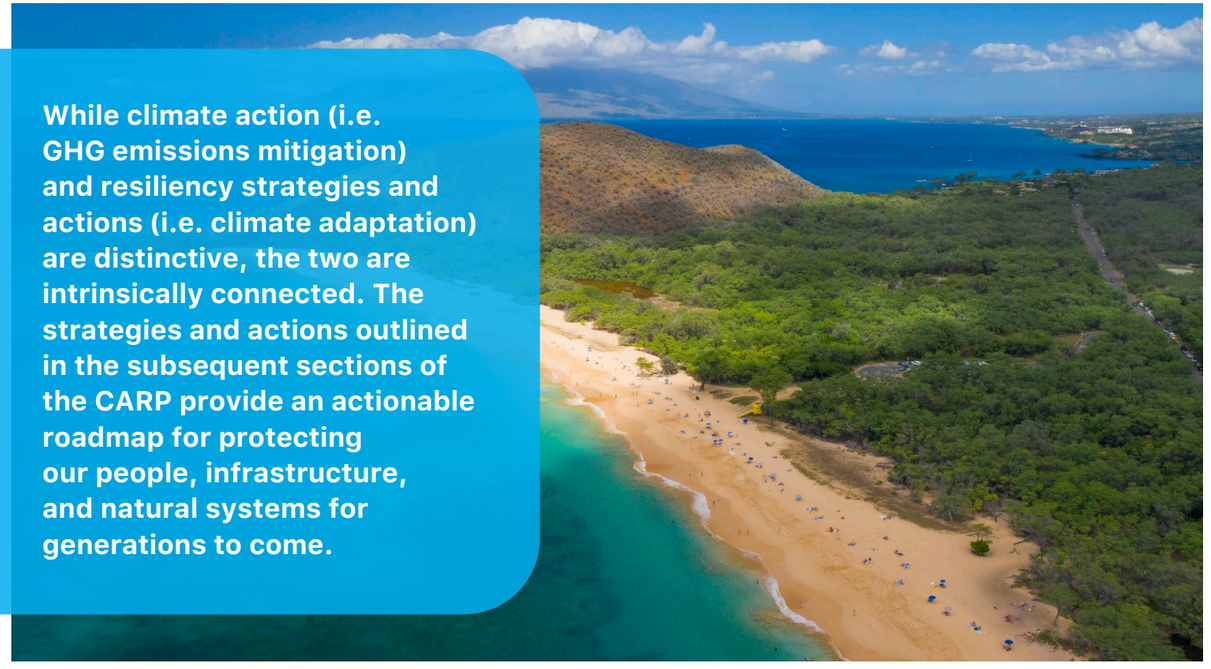
Resiliency is particularly important for Maui County because of its remote location and it being disproportionally negatively impacted by climate change as a result of being an island. The coastal geography of Maui County's islands makes the community, natural resources (including plants and animals), and infrastructure more vulnerable to climate change impacts. Certain communities within our county are especially remote and difficult to access, and therefore face increased vulnerabilities such as limits on imported goods and centralized services.

As a part of the development of the CARP, community forums were held across Maui County to identify vulnerabilities, strategies, and actions for reducing climate risks to the community and the environment. Focused workshops were held with our more remote communities such as East Maui, Molokaʻi, and Lānaʻi.

Resilience strategies and actions were developed on a framework of 3 climate resilience pillars: secure our people, secure our infrastructure, and secure our natural systems. With these pillars in mind, local government, community organizations, businesses, and residents can make decisions that are consistent with and support a climate resilient future.

Through these pillars, 22 strategies and 83 supporting actions were identified to be actively pursued by the County of Maui and its community partners to strengthen local climate resilience.

While climate action (i.e. GHG emissions mitigation) and resiliency strategies and actions (i.e. climate adaptation) are distinctive, the two are intrinsically connected. The strategies and actions outlined in the subsequent sections of the CARP provide an actionable roadmap for protecting our people, infrastructure, and natural systems for generations to come.



Accountability

The County of Maui is committed to becoming a leading community in the fight against climate change. A crisis of this scale requires systematic change and ongoing adaptation. In addition to these local strategies and actions, the County of Maui advocates for and contributes to state, federal, and international mitigation and adaptation policies and initiatives.

To ensure that progress continues to be made, the County of Maui has committed to:

- **Report Maui County's GHG emissions regularly** and ensure that we are on track to meet our carbon reduction targets.
- **Update the County of Maui's ClimATE Hub regularly** (https://www.resilientmauinui.org/) to ensure it is clear about which actions have been started, are in progress, or have been completed, as well as updating our community about new initiatives.
- **Update the CARP** every 5 years. Future updates to the CARP will also include targeted outreach and planning for additional communities in need of more targeted climate action plans, like Kaho'olawe island.
- **Utilize the strategies and actions** identified in the CARP to guide the County of Maui's departmental, administrative, and legislative efforts.
- **Continue to reach out to groups** that may have been left out of the climate conversation and continue to support and connect underrepresented groups with leaders and decision makers in the energy, climate, resilience, equity, and environmental spheres.

Hōʻuluʻulu Manaʻo Nui

He mea nui koʻikoʻi nō ka Huki Like Kūloko no ka nānā pono ʻana i ka pōpilikia loli aniau a no ka hoʻokō ʻana i nā pahuhpou aniau no ka mokuʻāina, ke kaumokuʻāina, a me ka honua a puni. He hōʻike nō kā ke Kalana ʻo Maui "Climate Action and Resiliency Plan (CARP)" i kā mākou noke e hoʻokō i ka hoʻokanahaʻi ʻana i ka hoʻomalele māhuea hoʻomehana honua (MHH), a e hoʻokūpaʻa ʻē i nā kaiaulu no nā pōpilikia loli aniau.

Nānā nō ke CARP i ke kūlike paha a i ka ʻokoʻa paha o kēlā a me kēia kaiaulu, a me nā pilikia aniau kekahi, ma o nā mokupuni o Maui Kalana i noho kanaka ʻia[1]: ʻo Maui, Molokaʻi, a me Lānaʻi nō hoʻi.

1 ʻO Kahoʻolawe nō ka mokupuni ʻahā o Maui Kalana i hoʻokomo ʻole ʻia ma kēia papa hana nei. Eia naʻe, e hoʻokomo pū ʻia he mau manaʻo e pili iā, a e kūpono no, Kahoʻolawe ke hōʻano hou ʻia ka papa hana i ke au e hiki mai ana.

ʻŌlelo Mua

NO KA NUI WALE O NĀ KUMUWAIWAI KŪLOHELOHE

nō i māhuahua ai hoʻi ka ʻāina no nā kamaʻāina a me nā malihini pū, a ua lua ʻole hoʻi ko Maui Kalana mau mokupuni pākahi. Ua kumu nō ia ʻano māhuahua i ko Maui Kalana aniau ʻoluʻolu e loli naʻe nei ma o nā makahiki me ka māmā ʻana aʻe o ka loli aniau.

Hoʻonui nō ka hoʻokahua kaiaulu ʻana, ka ʻoihana hoʻokipa malihini, a me nā hopena hoʻopilikia kaiapuni hoʻi i nā ālaina a pilikia kaiaulu, moʻomeheu, a kaiapuni nō hoʻi.

Ua alakaʻi ʻia ke CARP e ko ke Kalana ʻo Maui keʻena ʻo ke "Climate Change, Resiliency, and Sustainability (CCRS)," a he mea nō ia e hoʻākāka leʻa ai i nā kaʻakālai a papa hana kūpono no ka hoʻokanahaʻi ʻana i kā ko kākou mau kaiaulu hoʻonui ʻana i ka loli aniau a e hoʻoikaika ai i ka hiki o nā kaiaulu ke hoʻomākaukau pono no nā hopena aniau e hiki mai ana. No laila, aia nō ʻelua mana o ke CARP e nānā ana i ka hoʻoponopono ʻana ma o **ka hoʻokanahaʻi ʻana** i ka nui malele māhuea hoʻomehana honua a me **ka hōʻano hou ʻana iho** ma o ka hoʻoikaika i ka hoʻokūpaʻa ʻē ʻana.

Ua hoʻokumu ʻia ke CARP ma muli nō o nā kulehana alakaʻi i hoʻomōhala ʻia a wae ʻia e ke "Climate Action and Resiliency Plan Advisory Committee (CARPAC)[1]" a me ka "Resiliency Hui[2]" o ke Kalana ʻo Maui. Ua hoʻomau ʻia aku naʻe ka wehewehe ʻia ʻana, ka wae ʻia ʻana, a me ka unuhi ʻia ʻana o nā kaʻakālai i ka ʻōlelo Hawaiʻi nō hoʻi. Ua launa pono nō nā papa hana, nā kaʻakālai pili i ke aniau, a me nā kaʻakālai hoʻokūpaʻa kaiaulu o loko o ke CARP me nā kulehana i wehewehe ʻia ma o ka palapala hōʻike holoʻokoʻa.

1 He mau lālā 20 o ka lehulehu, nā loea kumuhana/kumumanaʻo, ko ke aupuni, nā ʻelele kīwila, a me nā ʻelele o ka ʻāpana pāʻoihana i hui pū ma kahi o hoʻokahi manawa o kēlā a me kēia mahina ma o ka MH 2022 no nā hālāwai kaʻana manaʻo.

2 He 50 a ʻoi mau ʻelele mai 11 mau keʻena o ke Kalana ʻo Maui mai i komo pū ma nā hālāwai (2-hola pākahi) o kēlā a me kēia mahina e nāʻana a hāpai manaʻo ai no ke CARP a me kekahi mau papa hana aniau a hoʻokūpaʻa kaiaulu a ke kalana. E ʻoluʻolu i ka nānā i ka mahele ʻŌlelo Hōʻoiaʻiʻo (Acknowledgment) no ka papa helu holoʻokoʻa o nā keʻena.

ʻŌlelo Mua

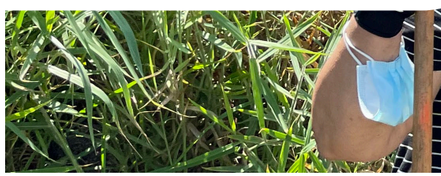
ʻO ka hoʻokūpaʻa kaiaulu ʻana nō he mea nui ma ka moʻomeheu Kanaka Maoli–mai kekahi wā ma mua loa aku o ka manaʻo hou ʻo "sustainability" ma nā ʻōlelo kūkā o ko ke Komohana mau lāhui–a ma o Maui Kalana me kona mōʻaukala waiwai loa i ke kahu kaiapuni ʻana a me kona pilina kūpaʻa loa i ke ao kūlohelohe.

> **E like nō me nā kāhuna o ke au i hala, manaʻo hoʻi au he hiki i kēia mau mokupuni ke lilo i laʻana kūpono no ko ke ao a puni ma ka nohona hoʻokō pono kaiapuni, ka hoʻoponopono aniau, ke kūʻokoʻa meaʻai a makelia hoʻolako nohona, a, ʻo nā mea nui loa, ka lokomaikaʻi a me ke aloha.**
>
> *- He Makaʻāinana o Maui Kalana*

Pili loa nō nā kulehana no ka hoʻokō ʻana i ka pono kaiaulu hoʻi me nā ʻano a pau o ko kākou kaiaulu mai ka maikaʻi o ke ola mai a i ka hoʻokumu waiwai, ka nohona, a me ke kaulike pono kanaka nō hoʻi. No laila, ʻo kekahi alakaʻi nui no ka hoʻokumu ʻana i nā kaʻakālai a papa hana aniau nō ka hoʻolōkahi ʻana i ko ke Kalana ʻo Maui mau hana a ʻōlelo hoʻopaʻa i hoʻokumu ʻē ʻia hoʻi me ka moʻomeheu, ka mōʻaukala, a me nā manaʻo alakaʻi o ke kaiaulu. E nānā i ko kēia palapala mahele "History of Climate Action" (ʻaoʻao 99) no kekahi ʻikepili o ko ke Kalana ʻo Maui mau ʻōlelo hoʻopaʻa.

Kūlia nō ke Kalana ʻo Maui i ka loaʻa iā loko o ke CARP he mau hopena kūpono no nā kānaka a pau i mea e pai ʻia aʻe ai nā kaiaulu i nānā nui ʻole ʻia a me nā ʻohana pā wale, he **"low-to-moderate income (LMI)"** hoʻi, ke hoʻokō ʻia mai nā kaʻakālai a me nā papa hana. Hoʻonui ʻia ko Maui Kalana pilikia i ka loli aniau ma muli nō o kona ʻano he hui mokupuni kaʻawale loa, a pēlā pū nō hoʻi ma loko o kona mau kaiaulu i pilikia ma nā ʻano pilikanaka a me ka hoʻokumu waiwai ʻana. Wahi a ka "Intergovernmental Panel on Climate Change (IPCC)," ua kaulike ʻole nō nā kānaka ʻōiwi, nā kaiaulu pilikia i ka nele loa, a me nā kaiaulu e kaukaʻi ana i ka mahiʻai kūloko hoʻi ma nā hopena pilikia aniau, he mau ʻano kaiaulu kēia i loaʻa nō ma Maui Kalana.[1]

1 Intergovernmental Panel on Climate Change, "Summary for Policymakers Headline Statements," IPCC Sixth Assessment Report Impacts, Adaptation and Vulnerability," (Cambridge: Cambridge University Press, 2022), 2-3.



Ma ka hōʻoiaʻiʻo ʻana i nā hopena kaulike ʻole o ka loli aniau no nā kaiaulu i nānā nui ʻole ʻia a me nā ʻohana LMI a pā wale, kūlia nō ko ke CARP mau kaʻakālai i ke kaulike aniau. Eia kekahi, kūlia nō kēia mau kaʻakālai a papa hana i ka hookanahaʻi ʻana i ka haumia ea a me ka haumia wai/kai kekahi.

Me ke alu like i ka hoʻokumu ʻana i kēia papa hana me ko ko kākou mau kaiaulu kūloko, ua hana pū ke Kalana ʻo Maui me kekahi mau kānaka ʻepekema kālaianiau, ʻoihana, a kānaka kau kānāwai kūloko ma ka hoʻomōhala ʻana i nā ʻōlelo kākoʻo o lalo iho nei nō hoʻi e pili i nā papa hana aniau a me ka hoʻokūpaʻa kaiaulu ʻana.

> **Ulukū a pōnalonalo wale ʻo loko i ke kaulike ʻole a me ka pōpilikia. He hiki i nā kānaka i ʻoi loa ma ka waiwai, me nā home keu a me ka hiki ke hoʻomaha iho ma ʻaneʻi, ke hoʻololi i nā kānāwai. E pono nō kākou ke hoʻokumu i mau kānāwai e koi ana i nā kahua pāʻani kolepa a me nā hōkele e hoʻohana i mau ʻenehana ikehu a wai kūpono. ʻĀpuʻepuʻe wale ko ʻoneʻi mau kānaka paʻahana loa i loko o ka hoʻolako ʻana iā lākou iho ma ka liʻiliʻi loa… he pono nō ke hoʻokuleana ʻia nā malihini waiwai loa ma o ka ʻāpono ʻana i nā hana wale nō e pono ai ka ʻāina.**
>
> *- He Makaʻāinana o Maui Kalana*

> **He mea keʻakeʻa nui ke kaulike waiwai ʻole ma ko kākou kaiaulu. He pono nō ke kaulike nā lolina kānāwai no nā kānaka a pau. He mea hōʻeuʻeu pono nō nā kumu hoʻolalelale waiwai e loaʻa mai ai he hulihia ma muli hoʻi o nā pilikia kumu waiwai o nā kamakūloko i nā lā a pau.**
>
> *- He Makaʻāinana o Maui Kalana*

Ke Au i mua o Kākou a Pau

A PUNI KA HONUA, HE WĀ KOHO KOʻIKOʻI KĒIA NO KANAKA **a he manawa hoʻohulihia nō i ko kākou paio loli aniau ʻana. Inā ʻaʻole e hoʻoponopono ʻānō ʻia e ka nui kaiaulu, aia ʻo Maui Kalana ma ke ala pololei no nā hopena hoʻopōʻino nui e laʻa ka nele ʻai a wai, nā pōpilikia kūlohelohe maʻamau ʻino loa, a me nā kepakepa nui i nā kaiapuni o nā wao a pau.**

Ke aʻo nei nā kānaka ʻepekema no ka mio wale ʻana o ka manawa kūpono e hoʻokanahaʻi ai i ka mehana honua a i ka palena koʻikoʻi he 1.5º Klk.

Hōʻike mai nō kekahi huli o nā hoʻohiki aniau kauʻāina o ke au nei, a me nā wānana malele MHH hoʻi, i ke kaʻa ʻana o ka wela honua i luna o 3.2 Klk i loko o kēia kenekulia nei.[1] Ua hoʻonui wale nā hana a kanaka, ʻo ka mea ʻino loa nō ke puhi wāwahie mōʻalihaku ʻana, i ka paʻapūhia o ke kalapona ʻokikene lua i loko o ka lewa mai ka nui he 280 anakahi o ka miliona a i ka 410 a ʻoi anakahi o ka miliona mai ka wā ma mua mai o ke au ʻoiʻenehana.[2]

1 Intergovernmental Panel on Climate Change, "Summary for Policymakers," Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, (Cambridge: Cambridge University Press, 2021).

2 Environmental Protection Agency, "Atmospheric Concentrations of Greenhouse Gases," Climate Change Indicators, 2021, https://www.epa.gov/climate-indicators/climate-change-indicators-atmospheric-concentrations-greenhouse-gases

Moʻokūʻikena o nā Lolina mai ka MH 1950 mai

50%
MAU LĀ ME KA ʻOLE O KA MOAʻE

85%
O NĀ KAPAKAI E PŌʻINO I KA ʻAʻAIANALU
NO KA PIʻIʻILIKAI

Ua pili loa nō ka hikiwawe o ko ka honua hoʻomehana ʻia ʻana i nā wānana malele MHH o ke au nei a no kēia mua aku. No ko Maui Kalana poʻe makaʻāinana, ʻaʻole o kana mai ke koʻikoʻi o ka pono ke huki like ma ka hoʻokūpʻa ʻē ʻana i ke kaiaulu no nā wā pōpilikia loli aniau.

4 inches LESS
ANNUAL PRECIPITATION
Emi iho he 4 ʻīniha kimu o ka makahiki

Ma kekahi anamanaʻo a ke Kalana ʻo Maui i ka MH 2022, ua hopohopo he 85% o ko Maui Kalana poʻe makaʻāinana i nā hopena o ka loli aniau ma ko lākou mau kaiaulu.[1]

1 ʻIkepili kiʻikuhi mai loko o ke: County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

Infographic data from: County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

2ºPh
ʻAWELIKE HOʻOMEHANA HE (1.5ºKlk)

34
MAU LĀ KEU E KAʻA HE **90ºPh**
(32.2ºKlk)

Ke Au i mua o Kākou a Pau

Ma muli nō o ko Maui Kalana mau hiʻona ʻāina kapakai a me kona mau kaiaola pāloli wale, ua hiki nō ke pōʻino wiki kēia kalana i nā hopena o ka loli aniau.

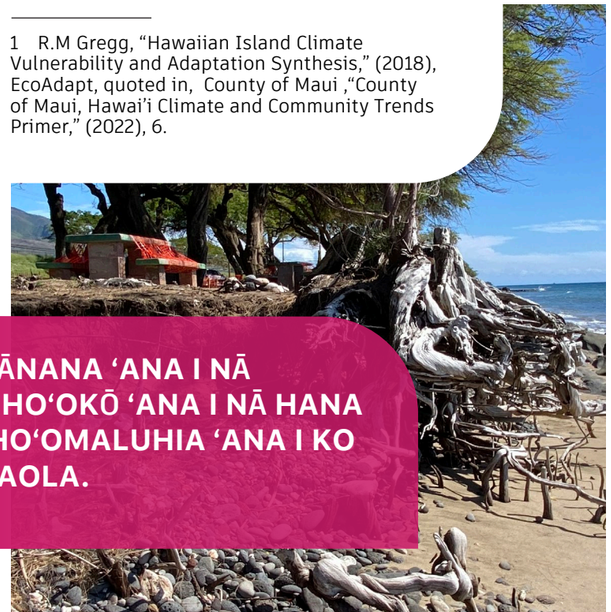
Eia hoʻi, i ka MH 2018, no ke ana ʻia o ke kūlana pā wale o nā kaiaola kūlohelohe o Maui Kalana (Maui, Molokaʻi, a me Lānaʻi), ua hōʻike ʻia e ka "Hawaiian Island Climate Vulnerability and Adaptation Synthesis," aia nō ke kūlana **mai ka pae waena mai a i ka pae kiʻekiʻie loa.**

ʻO kekahi o nā kaianoho a me nā hana lawelawe e pā wale loa nō ʻo:

- Nā kapakai i ka ʻaʻaianalu a me ka poholo i ka piʻi ʻilikai.
- Nā wao nahele Kona i ka loli kimu a me ka maloʻo o ka lepo.
- Ka ʻike a moʻomeheu kuʻuna i ka nalo loa paha o nā kaiaola a me nā lāhulu ʻōiwi, a me ka poholo o nā wahi pana i ka piʻi ʻilikai.
- Ka hoʻoponopono ʻana i nā hālana wai maʻamau a me ke kāohi ʻaʻaiawai ma muli nō o nā wai hālana hikiwawe wale, nā wā maloʻo, a me nā ahi hihiu wale, a pēlā pū me ka nalo loa o nā ālialia a me nā puʻeone kapakai.
- Ka nui o ka wai maoli i ka nui o nā wā maloʻo, ke emi kimu, ka pono o nā ʻāina kumu wai, a me ka piʻi o ka ʻilikai.[1]

I mea e maikaʻi aʻe ai ko kākou hoʻomaopopo ʻana i nā papaha hopena o ka loli aniau, ua hoʻokumu ka PHPLA i mau "ala" hoʻomalele MHH ʻināʻinā o ke au hou, i kapa ʻia ʻo nā "Regional Concentration Pathways (RCP)." Kuhi nō ka wānana RCP8.5 ʻo "Kāloaʻa-Kūmaumau" i papaha no ke au e hiki mai ana pili i ko ka honua hoʻomau ʻana i ke kaukaʻi nui i luna o ka ʻaila tā a me ke kakalina, a ʻaʻohe nui ka hoʻololi ʻana i nā kulekele e emi ai ka nui malele māhuea. No kekahi papaha pili i ka hoʻokanahaʻi ʻana i nā MHH, hōʻike mai ke kumu hoʻohālike ʻo RCP4.5 i au hou i ʻoi aʻe kona kūpono, ʻo ka wā nō o ko ka honua hoʻololi iho a hoʻokanahaʻi nui ʻānō ʻana i ka nui malele MHH.

1 R.M Gregg, "Hawaiian Island Climate Vulnerability and Adaptation Synthesis," (2018), EcoAdapt, quoted in, County of Maui ,"County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.



HE MAU MEA KOʻIKOʻI NUI NŌ KA WĀNANA ʻANA I NĀ HOPENA O KA LOLI ANIAU A ME KA HOʻOKŌ ʻANA I NĀ HANA HOʻOKŪPAʻA KAIAULU HOʻI NO KA HOʻOMALUHIA ʻANA I KO MAUI KALANA MAU KAIAULU A KAIAOLA.

He wahi hōʻuluʻulu manaʻo nō ka māhele ma lalo iho e pili i nā loli aniau e ʻike ʻia nei ma Maui Kalana, a me nā mea a kākou e ʻike ai inā e hikiwawe aʻe ana ka loli aniau ma o nā makahiki pāanahulu e hiki mai ana.

Ka Piʻina Wela

Mai ka MH 1955 mai, ua piʻi nō ka ʻawelike wela ma Maui Kalana he 2° Ph. ʻO nā makahiki wela loa i palapala ʻia nō nā MH 2019 & 2020.[1] Hoʻonui ʻia ka piʻina wela e ka haʻoneʻe a emi ʻana o ka Moaʻe. Ma waena o nā MH 1973-2019, ua haʻoneʻe ka Moaʻe mai ka hikina ʻākau mai a i ka hikina, a ua emi iho nō mai 291 mau lā o ka makahiki a i 150 mau lā (mai ke 80% a i ke 41% o ka makahiki).[2] Inā ʻaʻole e hoʻoponopono ʻia ka nui malele MHH (RCP8.5), he hiki i ka wela o Maui Kalana ke piʻi he 2° a 6° Ph ma ka waena kenekulia (2041-2070), a he 3° a 9° Ph i ka hopena kenekulia (2071-2099).[3]

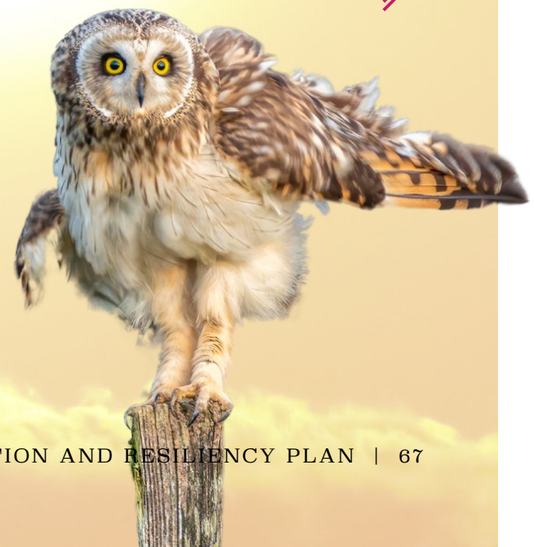
E ulu a nui wale ana nā hopena o ka piʻina wela (e laʻa nā wā maloʻo, nā wā wela, nā ahi hihiu wale, a pēlā aku) ma o nā ʻāpana a pau mai nā ʻoihana mahi ʻai, olakino, hoʻokele waiwai, a he nui loa aku.

1 Laura E. Stevens et al., "State Summaries," NOAA National Centers for Environmental Information, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 11.

2 Jessica A. Garza et al., "Changes of the prevailing trade winds over the islands of Hawai'i and the North Pacific," Journal of Geophysical Research 117 (2012), quoted in County of Maui "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 18.

3 Oliver Elison Timm, "Future warming rates over the Hawaiian Islands based on elevation-dependent scaling factors." International Journal of Climatology, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 10.

> **"Ua hānau a hānai ʻia au ma Maui nei. Ua ʻike maka nō wau i ka loli ʻana mai nā kau mai i nui loa ai ka ua, a hiki i kēia wā he ʻaneʻane maloʻo wale. Pēlā pū me ka ʻaʻaianalu nui a me ka lilo loa o kekahi mau kahaone. Ua piʻi nui wale ka wela. Hopohopo nui au i kaʻu i ʻike ai ma koʻu ʻano he makua no nā lolina he nui wale i loko o koʻu wā ola.**
>
> *- He Makaʻāinana o Maui Kalana*



Ke Au i mua o Kākou a Pau

Ka Mehana a me ka Hōʻakika ʻia ʻana o ka Moana

Ma ʻō iki aku o nā kapakai o Maui Mokupuni, ua ana ʻia ka mehana o ke kai ma kahi o ke 86°Ph – he piʻina o ka nui he 1.5°Ph mai kēlā kenekulia i hala iho nei.

Hoʻonui ka piʻina KO2 i ka hōʻakika ʻia ʻana o ka moana ma Maui Kalana kekahi. ʻO ka moana nō kekahi o ko ka honua "mea omo a hoʻāhu kalapona" nui loa, e omo ana ma kahi o 25% o ka nui kalapona ʻokikene lua e hoʻomalele ʻia e kanaka i kēlā a me kēia makahiki.[1] **He mea nō ka nui loa o ke KO2 e pāʻewaʻewa auaneʻi ai ke kaulike "pH" o nā moana. Ma o ke kaʻa ʻana o nā makahiki, he mea kēia mau lolina kaiaola moana e hoʻonui ai i ka hoʻokuakea pūkoʻa ʻana a me ke emi ʻana iho o nā kaianoho meaola moana, a e māino ai i nā iʻa a me nā manu o ka moana.**[2]

Ua hele nō a laulaha loa ka hoʻokuakea pūkoʻa ʻana––ka manawa a ka pūkoʻa e luaʻi aʻe ai i ka limu koʻa e noho ana i loko o kona mau ʻaʻaʻa hunaola, a ʻo ke kuakea ʻokoʻa nō ka hopena––me kekahi mau hanana nui ʻino loa ma nā MH 2014, 2015, a ma kekahi kūlana i emi iki iho, ma ka MH 2019. **Ma ka waena kenekulia, wānana ʻia nā hanana hoʻokuakea pūkoʻa ma nā makahiki a pau.**[3]

1 UC Davis, "What is carbon sequestration and how does it work?" Carbon Sequestration, 2019 https://climatechange.ucdavis.edu/climate/definitions/ carbon-sequestration

2 County of Maui. "County of Maui, Hawai'i Climate and Community Trends Primer." (2022), 25.

3 Keener, V., D. Helweg, S. Asam, S. Balwani, M. Burkett, C. Fletcher, T. Giambelluca, Z. Grecni, M. Nobrega-Olivera, J. Polovina, and G. Tribble, 2018: Hawai'i and U.S.-Affiliated Pacific Islands. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1242–1308. doi: 10.7930/NCA4.2018.CH27

WĀNANA NŌ NĀ KĀNAKA ʻEPEKEMA I KA PIʻI O KA WELA HE 5°Ph KE KŌ IHO KA MH 2100.

County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer." (2022), 7.

> **ʻO ka loli aniau ʻino loa, ka hōʻaui kahawai ʻana, a me ka maloʻo ʻokoʻa o ka wai ma mua o kona hiki ʻana i ka muliwai nō kekahi mau mea e pau loa ai ka nui o kēia mau lāhulu. Kaukaʻi nui nā meaulu a holoholona he nui wale i ka makani, i ka ua, a i ke kahe o ka wai no ke ola, a he mea hoʻokaumaha loa nō ka ʻike ʻana i ke emi ʻana iho o kēia mau kumuwaiwai ma o ka mokupuni ma muli hoʻi o ka loli aniau (e laʻa ka wela ʻino loa).**
>
> *- He Makaʻāinana o Maui Kalana*

Ka Piʻi ʻIlikai

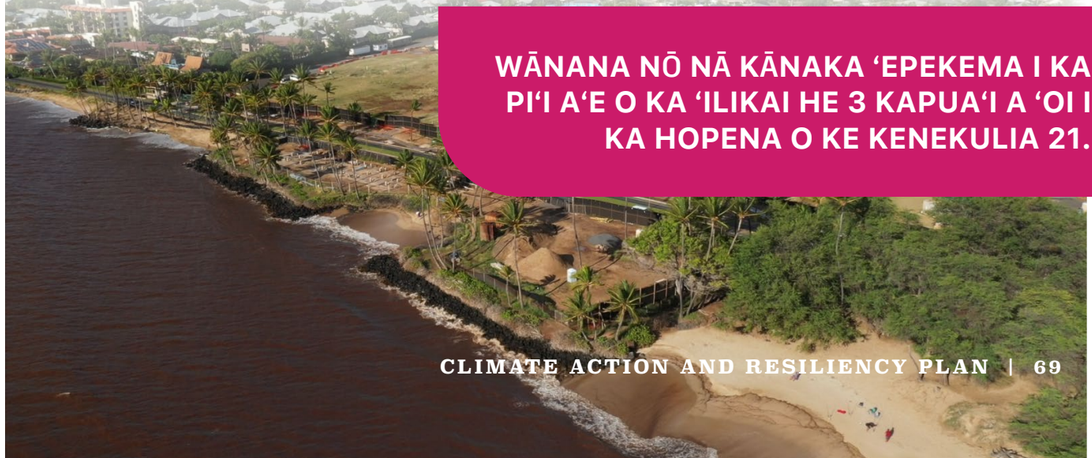
Ua ʻaʻaianalu ʻia he 85% o ko Hawaiʻi mau kahaone e ka piʻi ʻilikai a me nā kai nuʻu nui mai.[1]

Me ka piʻi ʻana o ka loli aniau, e piʻi pū nō ka ʻilikai. **No ka hopena o ke kenekulia 21, wānana nō nā kānaka ʻepekema i ko ka ʻilikai piʻina he 3.2 Kp.**[2] ʻO nā nalu eʻe nui, ka lilo ʻana aku o nā home a me nā wahi hana, ke koina e haʻalele ʻokoʻa iā kapakai, ka ʻāwili hewa o ke kai me ka wai lalo honua, ka loli o nā ʻano maʻamau o nā ʻale, a me nā ʻino ʻoʻolokū ʻino loa nō kekahi mau papaha hopena ma muli hoʻi o ka piʻi ʻilikai.

1 Charles H. Fletcher et al., "National assessment of shoreline change: Historical shoreline change in the Hawaiian Islands," U.S. Geological Survey Open-File Report 1051 (2011): 55, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

2 National Oceanic and Atmospheric Administration. "Coastal Erosion Line: Hawaii 3.2 ft. Sea Level Rise Scenario," (2020), https://data.noaa.gov/dataset/dataset/coastal-erosion-line-hawaii-3-2-ft-sea-level-rise-scenario.

> **"ʻO ka hopena nui loa o ka loli aniau aʻu e ʻike nei nō ka piʻi ʻilikai. Me ke eʻe mai o ka moana, e pono ana nā kānaka i kūkulu home ma kapakai ke neʻe aku. Ke ʻaʻai akula nā nalu nui i nā pāka a me nā kahaone kūloko kekahi. Ke huʻe ʻia aʻela nā iwi kupuna e ka loli aniau kekahi. E pono nō kākou i kekahi papa hoʻolālā hikiāloa no nā pōulia a me ka hoʻohaʻalele kanaka ʻana no ka poʻe e noho ana ma kapakai, a pēlā loa pū nō hoʻi no ka poʻe e noho lā ma naʻe o Molokaʻi.**
>
> *- He Makaʻāinana o Maui Kalana*



WĀNANA NŌ NĀ KĀNAKA ʻEPEKEMA I KA PIʻI AʻE O KA ʻILIKAI HE 3 KAPUAʻI A ʻOI I KA HOPENA O KE KENEKULIA 21.

Ke Au i mua o Kākou a Pau

Nā Lolina Kimu a me nā Ahi Hihiu Wale

Manaʻo ʻia nō ko ka loli aniau hoʻonui ʻana i ka ʻoʻolokū loa o nā ʻino ʻoʻolokū.

Hiki ke ʻike ʻia iho kēia ʻano hanana ma Hawaiʻi nei, ʻo kahi nō o ka pinepine o nā ʻino ʻoʻolokū loa i hele ai a nunui mai ka manawa hoʻokahi ma loko o nā makahiki he 20 mai a i ka 5 makahiki.[1]

I ka wā hoʻokahi, hoʻonui nō ke emi ʻana iho o ka ʻawelike kimu kūmakahiki a me nā ʻōnaehana anilā "El Niño" hoʻi i nā ʻano kūpilikiʻi o nā wā maloʻo ma o Maui Kalana. He laʻana nō nā hāʻina o ke ana ʻia ʻana o ka ua ma ke Kahua Mokulele o Kahului e hōʻike ana, mai ka MH 1955 mai, **i ke emi ʻana iho o ka ʻawelike kimu kūmakahiki he 4 ʻīniha.**

Inā ʻaʻole e hoʻoponopono ʻia ka hoʻomalele MHH (RCP8.5), he hiki nō ke emi iho ke kimu kūmakahiki he 70% ma ka waena kenekulia.[2] ʻO nā wā maloʻo, a me ka hoʻonui ʻia ʻana o ka hoʻokahua kaiaulu pū, he mau mea i emi iho ai ka nui o ka wai lalo honua (ka hoʻopiha hou ʻole ʻia o nā waihona wai lalo honua). ʻO ke emi kimu, nā wā maloʻo, a me ka piʻi ʻana o ka wela he mau mea i nui aʻe ai nā ahi hihiu wale ma o Maui Kalana.

Ma kēlā kenekulia i kaʻa aku nei, ua nui pāhā aʻela nā wahi ma ka mokuʻāina i pau i ke puhi ʻia e nā ahi hihiu wale.[3] Inā hoʻomau aku ka loli aniau penei, wānana ʻia nō ka piʻi ʻana o ka nui a me ka weliweli o nā ahi hihiu wale.

1 Charles H. Fletcher et al., "National assessment of shoreline change: Historical shoreline change in the Hawaiian Islands," U.S. Geological Survey Open-File Report 1051 (2011): 55, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

2 Oliver Elison Timm et al., "Statistical downscaling of rainfall changes in Hawai'i based on the CMIP5 global model projections," Journal of Geophysical Research: Atmospheres 120 (2014): 92-112, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 15.

3 C. Trauernicht et al., "The contemporary scale and context of wildfire in Hawai'i," Pacific Science 69 (2015): 427–444, quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 26.

> **Aia nō a pilikia loa i kekahi pōʻino kūlohelohe, ʻo ko mākou wahi ma ka hikina ʻākau o Haʻikū nō kahi hope loa i lawelawe ʻia no ka hoʻomaʻemaʻe alanui a me ka hoʻihoʻi hou ʻana i ka ikehu a me ka punaewele. I ka piʻi ʻana o ka ʻinoʻino o ke aniau, he kuleana koʻikoʻi nō ko mākou hoʻopalekana ʻia ʻana, ka loaʻa o nā pono nui, a me ke kaʻaʻike.**
>
> *- He Makaʻāinana o Maui Kalana*

He Kaʻakālai Maiau

ʻO ke CARP nō he ʻāpana hoʻokumu o ko ke Kalana ʻo Maui kaʻakālai no ka hoʻoponopono i, a me ka hōʻano hou ʻana ma muli o, ka loli aniau. Ua paʻahana nō ke Kalana ʻo Maui i kekahi kaʻakālai i ʻoi aʻe ka maiau e noke ana i ke kākoʻo ma nā pae aupuni kūloko, mokuʻāina, a kaumokuʻāina kekahi.

I loko nō o kona ʻano ʻuʻuku i ke alo o ka honua holoʻokoʻa, he hiki hoʻi i nā hana a ke Kalana ʻo Maui e hoʻokō ai ke hoʻolalelale i ko ka honua a puni hōʻano hou a hoʻololi ʻana iho.

Wahi a ka "United Nations Environmental Program (UNEP)," he hiki nō i ko ka honua ke kāohi iho i ka hoʻowela honua he 2.7° Ph (1.5° Klk) inā kanahaʻi iho ka nui malele MHH he 7.6% i nā makahiki a pau ma waena o ka MH 2020 a me ka MH 2030.[1]

Inā ʻapaʻapa wale kākou i ka hoʻoponopono, a mau nō ka hoʻomalele ʻia ʻana o ke KO2 i ka lewa, e nui aʻe ana nō ka paʻakikī o ka hiki ʻana aku i ka pahuhopu.

Inā ʻapaʻapa he 5 mau makahiki wale nō (2025), e pono ana ke hoʻokanahaʻi ʻia ka nui malele MHH kūmakahiki he 15.5%, a e holohuʻa hewa i kahi pahuhopu o ka 2.7° Ph (1.5° Klh).

Ua mau nō naʻe ko kākou hiki ke kāohi i ka wela honua a e ʻalo i ka pōʻino aniau, akā he pono hoʻi ke ʻeleu a mikimiki ʻānō.[2]

ʻO ko ke Kalana ʻo Maui komo pū ma nā hanana kūloko a me ko ka honua ma ka hoʻoponopono aniau nō he hōʻike ikaika i kona kuleana. Ua ʻonipaʻa nō ke kalana i kekahi mau ʻōlelo hoʻohiki no ka hoʻoponopono aniau a me ka hōʻano hou ʻana, e ʻike ʻia nō ma ke kiʻi ma ka māhele "History of Climate Action" (ʻaoʻao 99) a i wehewehe pono ʻia hoʻi ma ka Pākuʻina (ʻaoʻao 286).

1 United Nations Environment Programme, "Emissions Gap Report 2019," (Nairobi: UNEP, 2019), 26.

2 UNEP, "Emissions Gap Report 2019," 39.

ʻOIAI ʻO NĀ HANA A KANAKA NĀ KE KUMU O KA PŌPILIKIA ANIAU, HE HIKI HOʻI NAʻE IĀ KANAKA KE HOʻOPONOPONO I UA PŌPILIKIA NEI.

Ke Au i mua o Kākou a Pau

Ka Pahuhopu ʻo ka ʻOle Malele Kalapona

He hana nui a paʻakikī kēia, eia naʻe aia nō iā kākou nā pono e loaʻa mai ai kēia pahuhopu, a he mea nui hoʻi ia no ka māhuahua ʻana aʻe o ko kēia hanauna, a me ko nā hanauna (a me nā meaola) a pau o ia mua aku, ma Maui Kalana me ka nohona he kūpaʻa, kūpono, a kūʻonoʻono nō hoʻi.

No ka loaʻa mai o kēia pahuhopu, he pono nō ʻo Maui Kalana ke hoʻokanahaʻi nui iho i ka nui malele MHH ʻoiai e hoʻohana ana i nā kaʻakālai kumu kūlohelohe e hoʻonui ai i ke omo a hoʻopaʻa pono ʻana i ka nui kalapona.

He alakaʻi nō ke CARP no nā kaʻakālai a me nā hana e hoʻokanahaʻi a hoʻopaʻa ai i nā MHH ma o ke kaiaulu a, me ia hoʻi, i ko Maui Kalana mau haʻawina hoʻonui mehana honua.

Ua hoʻokele nō ke Kalana ʻo Maui i ʻelua moʻolako malele MHH ma o ke kaiaulu no ka MH 2016 a me ka MH 2019. ʻO ka moʻolako o 2016 nō ka makahiki kumu hoʻohālikelike. Hoʻohana ʻia ka moʻolako o 2019 no ke kālailai ʻana i ka holomua mai ka makahiki kumu hoʻohālikelike (2016) mai, a no ke kia ʻana i nā hana hoʻokanahaʻi i ka nui malele MHH o ke au e hiki mai ana. Ua hoʻohana ko ke Kalana ʻo Maui mau moʻolako malele i ke "Global Protocol for Community-Scale Greenhouse Gas Inventories (the GPC),[1]" ʻo ia nō ke ana hoʻohālikelike kūmau ʻoi loa no nā kaiaulu a puni ka honua. He mea nō ka GPC e hiki ai i nā kaiaulu ke hōʻike aku i kekahi o nā moʻolako ʻelua, he BASIC a i ʻole he BASIC+. ʻO ka moʻolako BASIC no ka liʻiliʻi loa e hiki ai i nā kaiaulu ke hoʻokō i mea e hahai pono ai i ke kaʻina (ʻo ka ikehu hale, ke alakau kūloko, ka uila ʻōnaehana pūnaewele, ka ʻōpala, a me ka wai kele). Eia nō naʻe, ʻo ka moʻolako BASIC+ nō he hōʻike i ʻoi aʻe kona makauliʻi e hōʻike ana i nā kumu malele a pau a kēlā a me kēia kaiaulu. Me ka liʻiliʻi loa o nā kumu malele o ka moʻolako BASIC pū, nānā nō ka BASIC+ i nā mea i hoʻomalele ʻia e ka hoʻōlapa uila ʻana a me ka lilo ma ka hoʻoili ʻana, ke alakau kūwaho, nā hana a me ka hoʻolilo makelia ʻoiʻenehana, a me ka ʻoihana mahi ʻai.

Ua kōkua ka moʻolako MHH ma ka hōʻike leʻa ʻana i nā hana a me nā ʻāpana nui e hoʻonui ana i ko Maui Kalana meheu kalapona. A laila, ua kālailai ke Kalana ʻo Maui i ka nui ʻino o nā koina no ka hoʻokanahaʻi malele MHH e pono ai no ke kōkua ʻana i ka Mokuʻāina ʻo Hawaiʻi e hiki aku i kona pahuhopu ʻo ke kaulike kalapona ke kō iho ka MH 2045, a e hoʻonohonoho i mau pahuhopu malele MHH no ka "Hawaiʻi Clean Energy Initiative (HCEI)" a me ke "Aloha+ Challenge."

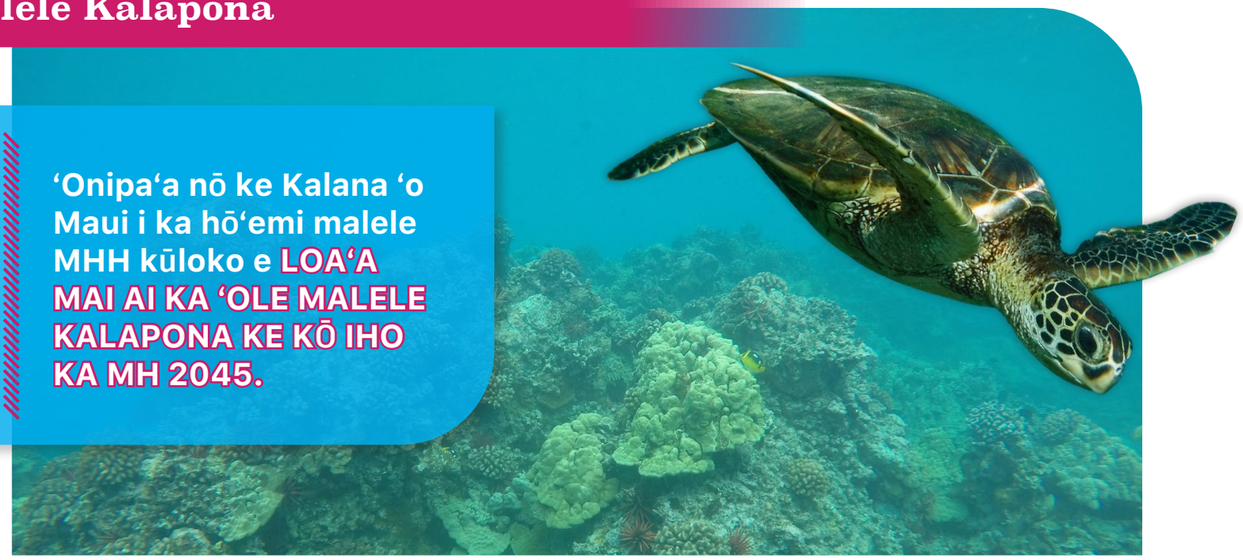
Ma ke kūlana "Kāloaʻa-Kūmaumau," holo manaʻo ʻia ka hoʻokanahaʻi ʻia o ko Maui Kalana hoʻomalele MHH he 16% ke kō iho ka MH 2050.

Ma kēia kūlana "Kālo'a-Kūmaumau" ua nānā pū ʻia nō ka hoʻonui ʻia o ka ʻoihana hoʻokipa malihini a me ka nui o nā makaʻāinana e hoʻonui ai i ka pono i nā kumu waiwai. A pēlā pū nō me ka hoʻonui ʻia o nā kaʻa uila he 30% ke kō iho ka MH 2050, a me ka uila kumu hōʻano hou ʻia he 100% ke kō iho ka MH 2045.

ʻO KA MEA ʻĀPIKI NAʻE, NO KE KŪLANA "KĀLOAʻA-KŪMAUMAU," ʻAʻOLE I LAWA IKI KO MAUI KALANA MĀKAUKAU E HIKI AKU AI I KA PAHUHOPU O KA ʻOLE MALELE KALAPONA KE KŌ IHO KA MH 2045.

Ma o ke kālailai ʻikepili me ka manaʻo o ko ka lehulehu a me nā lae ʻula kūloko, ua hoʻokaʻina makakoho nō ke Kalana ʻo Maui i 19 mau kaʻakālai hoʻoponopono aniau a i 61 mau hanana kākoʻo i mea e hoʻokanahaʻi iho ai i ka nui malele MHH ma o ke kaiaulu.

ʻOnipaʻa nō ke Kalana ʻo Maui i ka hōʻemi malele MHH kūloko e LOAʻA MAI AI KA ʻOLE MALELE KALAPONA KE KŌ IHO KA MH 2045.



1 For more information see: https://greenhousegasprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities

He Kaulona Maiau i ka Nui Malele Māhuea Hoʻomehana o ke Au nei

He mea nō ka moʻolako malele MHH e helu ai i ka nui malele MHH holoʻokoʻa a ke kaiulu ma o ka nānā ʻana i ka ʻikepili nohona e laʻa ke puhi kakalina o nā kaʻa hali ʻōhua a me ka helu pono ʻana i nā hopena o kēia ʻano hana e pili i ka hoʻomehana honua (ma o kekahi heluhana malele MHH maʻamau).

Ma o ka hōʻike pono ʻana i nā hana a me nā kumu nui o ka hoʻomalele māhuea hoʻomehana honua, hoʻonohonoho mua nō ke Kalana ʻo Maui i mau kulekele me nā papaha nui loa hoʻi no ka hoʻokanahaʻi malele MHH. Hiki ke loaʻa nā helu malele MHH o ko ke Kalana ʻo Maui mau pono lako ma ka mahele o hope aʻe nei, "the County of Maui's Operational Greenhouse Gas Emissions" (ʻaoʻao 48).

Ma ka MH 2019, ua hoʻomalele nō ʻo Maui Kalana he huina malele MHH BASIC he 1,512,220 mau "metric tons of carbon dioxide equivalent (mtCO2e)," i hoʻonui ʻia he 4% mai ka MH 2016 mai. I ka MH 2019, ua hoʻomalele ʻo Maui Kalana i ka huina BASIC+ he 2,410,670 mtCO2e, i hoʻonui ʻia he 9% mai ka MH 2016 mai.

Ma ka ʻawelike, ua hoʻomalele ka makaʻāinana maʻamau pākahi o Maui Kalana ma kahi o 14.56 mtCO2e o ka makahiki hoʻokahi, he helu ma lalo iki iho o ka ʻawelike kaumokuʻāina he 15.3 mtCO2e no kēlā a me kēia kanaka o ka makahiki hoʻokahi. Eia kā, ʻoi aʻe ka ʻawelike kaumokuʻāina o ka U.S. ma mua loa o nā ʻāina ʻoiʻenehana ʻē aʻe.[1]

He laʻana nō ka ʻawelike kūmakahiki no nā kānaka pākahi o ka Hui ʻĀina ʻEulopa hoʻi he 6.4 mtCO2e i ka MH 2019.[2] Ma kekahi o nā kaumokuʻāina ʻEulopa holomua loa, e laʻa ʻo Kuikilani, ʻo ka ʻawelike meheu kalapona o nā kānaka pākahi nō he 4.7 mtCO2e ma ka liʻiliʻi loa o ka makahiki hoʻokahi.[3]

Ua kumu he hapa a ʻoi aku o ko Maui Kalana huina malele MHH ma ka ʻāpana ʻoihana alakau (he 51% ma ka moʻolako BASIC, a he 61% ma ka moʻolako Basic+).

Ma ka moʻolako BASIC+, e nānā ana i ke kaʻahele kaʻa palena, ʻo ka lele mokulele (haʻalele aku a pae mai) ma Maui Kalana nō ke kumu nui o ka malele MHH ʻoihana alakau, he 29%.

1 World Bank Group, "Historical GHG Emissions," Climate Watch, 2022, https://www.climatewatchdata.org/ghg-emissions?end_year=2019&start_year=1990
2 World Bank Group, "Historical GHG Emissions."
3 World Bank Group, "Historical GHG Emissions."

ʻO nā kaʻa holo alanui nō ka ʻalua ma ka huina, he 40% o ko Maui Kalana huina malele MHH BASIC, a he 25% o ko Maui Kalana huina malele MHH BASIC+.

Kalaiwa ka hapanui o ko Maui Kalana poʻe i ko lākou mau kaʻa hali ʻōhua ponoʻī, he mau mea nō e hoʻonui ai i ka paʻapū o nā alanui a me ka malele māhuea kaʻa. ʻO nā moku holo kai nō ke kumu o 6% o ka malele MHH ma ka moʻolako BASIC, a he 4% ma ka moʻolako BASIC+.

ʻO ka ʻāpana ʻoihana ikehu hale nō ka ʻāpana ʻalua no ka hoʻonui malele mHH, me 44% o ka nui malele MHH BASIC a he 29% o ka nui malele MHH BASIC+. Ma kēia ʻāpana, ua komo pū nō ka nui malele i kumu i ka uila, māhuea puhi, a me ka pōpene i hoʻohana ʻia ma nā kaiahome, nā kaiahana, a me nā kukui alanui. Ma ka moʻolako BASIC+, ua komo pū nō ka uila i nalowale aku ma ka hoʻōlapa ʻia ʻana. I ka MH 2019, ua nalowale ma kahi o 5.26% o ka uila ma ka hoʻōlapa ʻia ʻana.

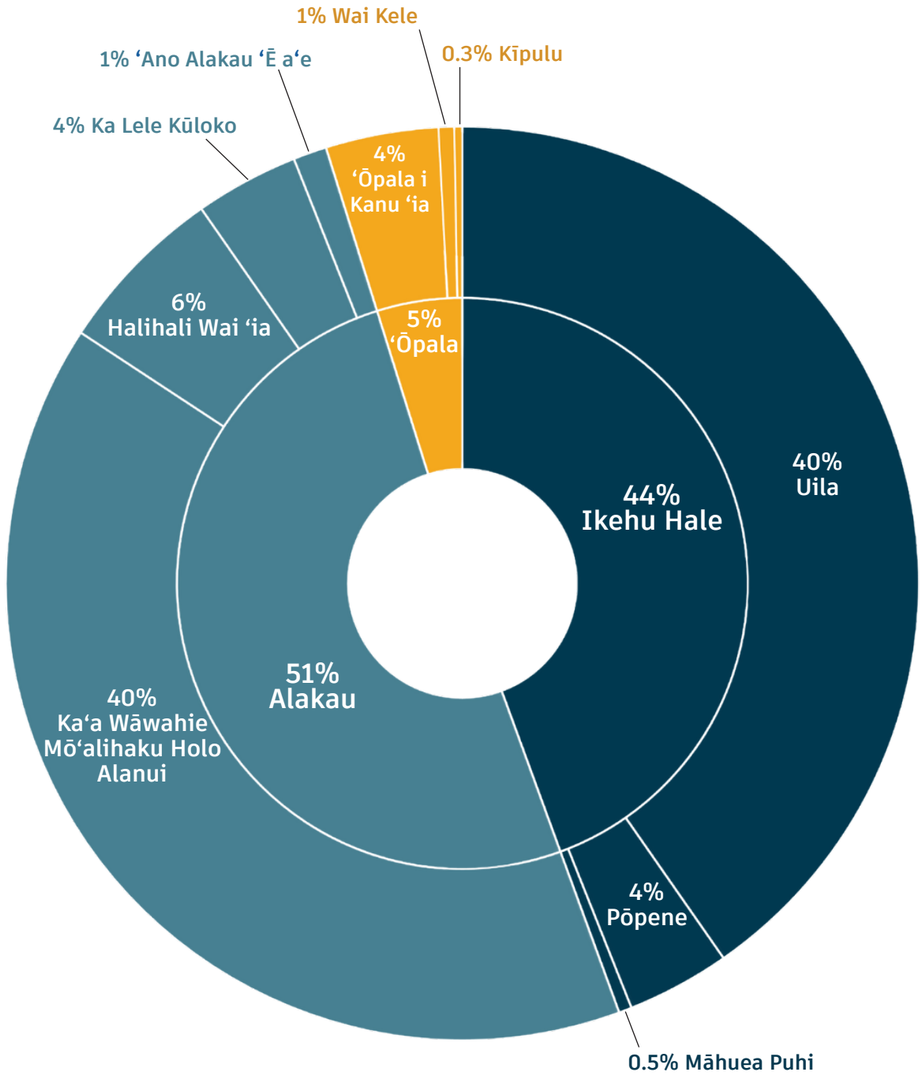
ʻO ka uila nō ke kumu nui loa o ka nui malele MHH ma ka ʻāpana ʻoihana ikehu hale, he 90% a ʻoi ma nā moʻolako BASIC a BASIC+. Aia nō ka pōpene a me ka māhuea puhi ma kahi o ka 8% a me ka 1% ma nā moʻolako ʻelua BASIC a BASIC+ pākahi.

Mai ka 3% a i ka 5% mai o ka huina malele MHH, ʻaʻole i nui aku ka hoʻomalele MHH o ka hoʻomalu ʻōpala a wai kele ʻana. He mau mea ka "Agriculture, Forestry, and Other Land Use (AFOLU)" a me ka "Industrial Processes and Product Use (IPPU)" e hoʻokomo pākahi he 3% a he 4% o ka moʻolako BASIC+.

Ka Huina Malele BASIC o nā ʻĀpana a Kumu Pākahi

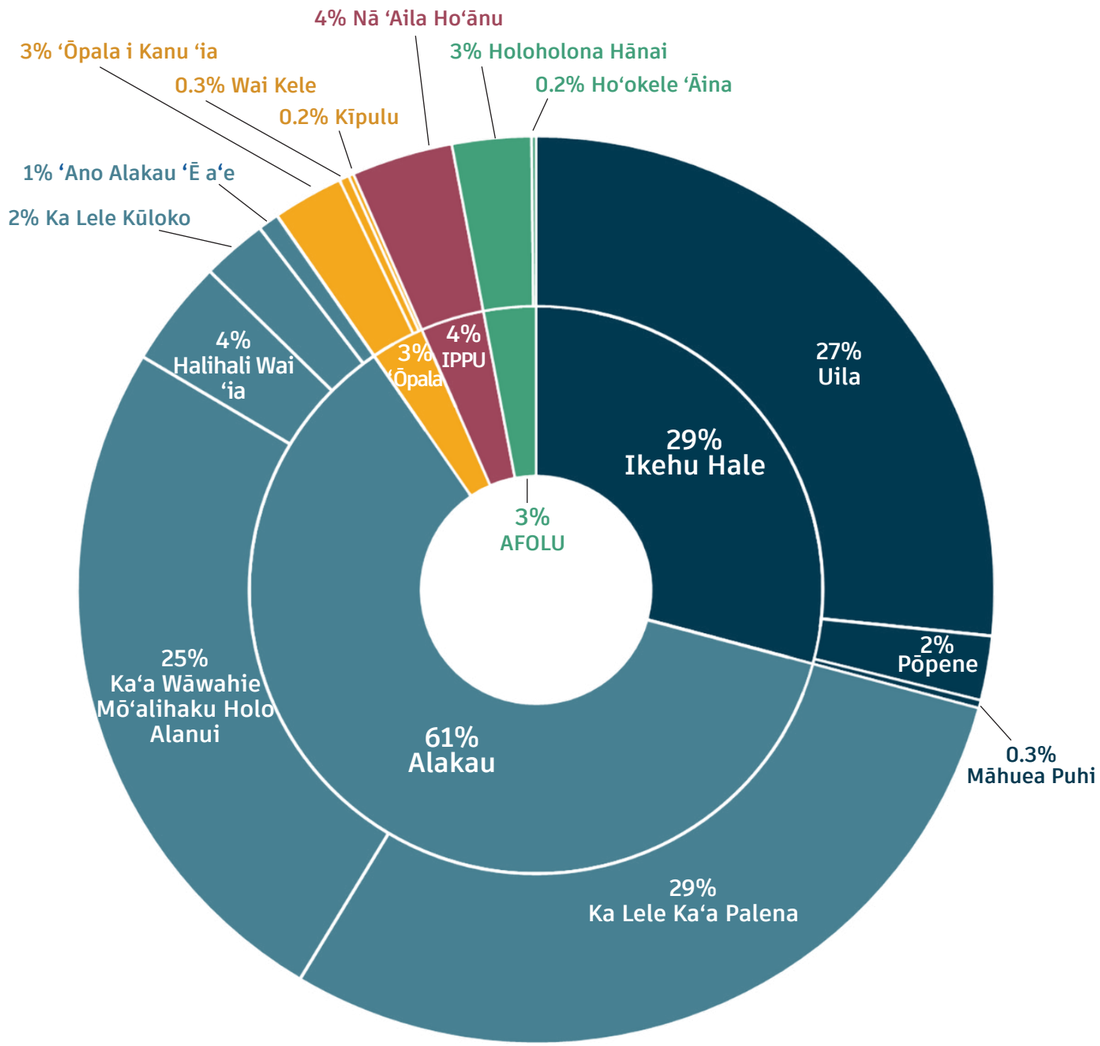
Hōʻike mai nō ka pōʻai o waena i ka nui malele mai loko aku o kēlā a me kēia ʻāpana. Hōʻike mai nō ka pōʻai o waho i ke kālailai ʻia ʻana o ka hoʻomalele a nā kumu pākahi o kēlā a me kēia ʻāpana.

He laʻana nō ka hoʻomalele aku a ka ʻāpana ʻoihana ikehu hale, he 44% o ko Maui Kalana huina malele. No ka ʻāpana ʻoihana ikehu hale, hoʻomalele nō ka uila he 40% o ko Maui Kalana huina malele.



Ka Huina Malele BASIC+ o nā ʻĀpana a Kumu Pākahi

Ua nui aku nō nā ʻāpana a me nā kumu malele BASIC+ ma luna hoʻi o nā kumu malele BASIC. ʻO ka lele kaʻa palena nō ke kumu BASIC+ nui loa e hoʻonui ana i ko Maui Kalana mau huina malele MHH BASIC+ he 29% i ka MH 2019.



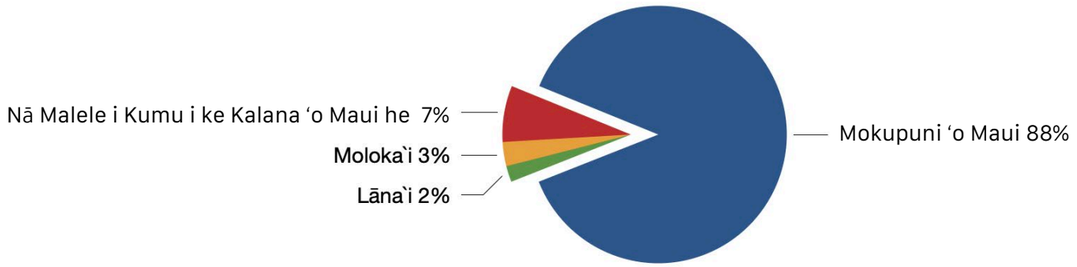
IPPU: Industrial Processes and Product Use
AFOLU: Agriculture, Forestry, and Other Land Use

Ma waena o nā MH 2016 me 2019, ua nui aʻe ko ke kaiaulu mau huina malele MHH BASIC he 4%, a ua nui aʻe ka huina malele MHH BASIC+ he 9%. Eia naʻe, ua ʻano kūmau nā huina nui o kēlā a me kēia kumu malele MHH.

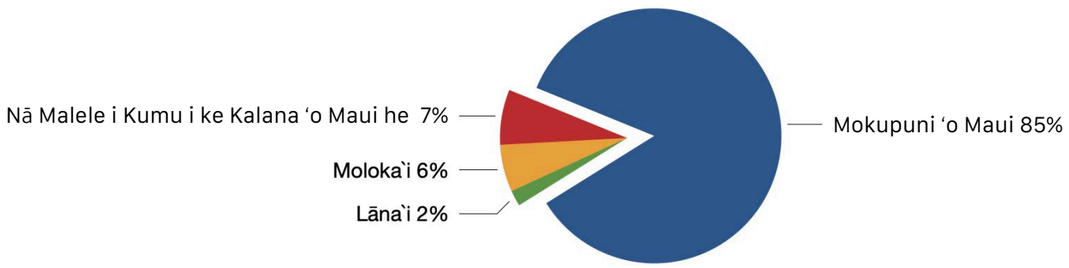
Ma ka manaʻo laulā, ua like a like nō ko Maui Kalana mau malele MHH, a me ka hoʻonui malele o nā ʻāpana like ʻole, me kekahi o nā kaiaulu kiwikā ma o Hawaiʻi nei. I wahi laʻana, ua kumu nō ka hapanui o ka nui malele MHH ma Oʻahu mai ka ʻāpana ʻoihana alakau (he 50%) a me ka ʻāpana ʻoihana kūkulu (he 42%) mai.

Ua kumu nō ka hapanui o ko Maui Kalana mau malele MHH i nā hanana ma ka mokupuni ʻo Maui (me kona mau kai), aia ʻo Molokaʻi ma muli ona, a laila mai ʻo Lānaʻi. ʻAʻole i hoʻokaʻawale maʻalahi ʻia kekahi o nā kumu malele ma waena o nā mokupuni pākahi, no laila ua kuhi ʻia ʻo Maui Kalana nō ke kumu. Ua komo pū ma kēia helu nō ʻo ka nui malele MHH mai ka ʻoihana mahi ʻai a me nā hana kuleana ʻāina, ke alakau holo ʻāpuʻupuʻu, a me nā moku. ʻOiai ʻaʻohe makaʻāinana e noho kūmau ana ma Kahoʻolawe, ʻaʻole i hōʻike ʻia ka nui malele MHH no ua mokupuni nei.

Nā Huina Malele BASIC a nā Mokupuni Pākahi (mt CO_2e)



Nā Huina Malele BASIC+ a nā Mokupuni Pākahi (mt CO_2e)



Nā Hopena Māhuea Hoʻomehana Honua a ka ʻOihana Hoʻokipa Malihini

He mea nui koʻikoʻi nō ka nānā pono ʻana i ka nui malele MHH i pili i ka ʻoihana hoʻokipa malihini ma Maui Kalana no ka hoʻokanahaʻi ʻana i ka nui malele MHH ma o ke kaiaulu. Me ka nui malihini puka 3 miliona i ka MH 2019, ʻo ka ʻoihana hoʻokipa malihini nō he kumu nui o ka hoʻomalele MHH ma Maui Kalana.

ʻO ka heluna kānaka ʻoiaʻiʻo o ka MH 2019, he 227,479 ma kēlā a me kēia lā, akā he 166,000 nō ka nui makaʻāinana o ia huina nui, **no laila, aia ma kahi o 61,479 mau malihini ma Maui Kalana i nā lā a pau.**[1]

Me ka nui o ka holo mokulele (pae a haʻalele) ma Maui Kalana, ka hoʻonui ʻoihana hoʻokipa malihini, nā hōkele a me nā kahua hōkele, ka nui loa o ke kūʻai ʻana a me ke kiloi ʻōpala ʻana, ʻo nā malihini nō he kumu nui loa o ka nui malele MHH ma Maui Kalana.

1 Maui County Data Book, "Visitor Industry & Recreation," Section 10, (2020), 178-210. https://sbdc.dev.hyperspective.com/wp-content/uploads/2021/10/2020-Chapter10.pdf

Inā ʻaʻole e mākia nui ʻia ka hoʻokanahaʻi malele MHH i pili i ka ʻoihana hoʻokipa malihini, ʻaʻole e hiki iā Maui Kalana ke hiki aku i ka pahuhopu ʻo ka hoʻokanahaʻi malele MHH.

Eia nō naʻe, ʻo kēia mau helu nō nā helu o Maui Kalana no ka ʻoihana hoʻokipa ma mua mai o ka maʻi ahulau hoʻopuni honua. ʻOiai ua ikaika hou aʻela ka ʻoihana hoʻokipa ma o ka makahiki i kaʻa iho nei, ʻo ke ahulau COVID-19 nō ke kumu o ke kanahaʻi nui o ka nui malele i pili i ka ʻoihana hoʻokipa ma nā MH 2020 a 2021.[2]

ʻOnipaʻa nō ke Kalana ʻo Maui i ke alu pū me ko ka ʻoihana hoʻokipa malihini i ke ana pono ʻana i nā hopena MHH, a i ka nānā pono ʻana i nā māhele o ua ʻoihana lā (ʻo ka holo mokulele nō ka mea nui) i mea hoʻi e hoʻokanahaʻi pono ai i kēia mau malele MHH.

2 Kehaulani Cerizo, "Maui County visitors reach highest monthly count since pandemic, new data shows," (July 29, 2022), MauiNow. https://mauinow.com/2022/07/29/maui-county-visitors-reach-highest-monthly-count-since-pandemic-new-data-shows/#:~:text=Through%20the%20first%20half%20of,the%20first%20half%20of%202019.&text=For%20the%20first%20half%20of,the%20first%20half%20of%202019

Ke Au i mua o Kākou a Pau

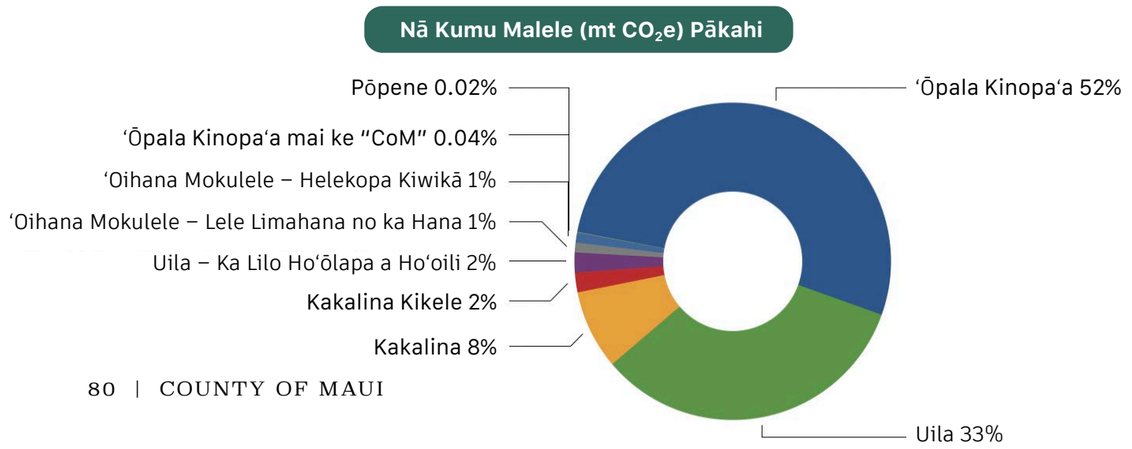
Ko Maui Kalana mau Malele Māhuea Hoʻomehana Honua Kumu ʻŌnaehana

Ma kona ʻano he hui ʻōnaehana, ke nānā nei ko ke Kalana ʻo Maui i ka nui malele MHH i kumu i nā hale, nā kaʻa ʻāuna, ka ʻōpala pono lako, a me nā lua ʻōpala i hoʻomalu ʻia a hoʻokele ʻia e ke kalana.

No ka huina nui malele MHH i kumu nō iā Maui Kalana, ʻo ka ʻōnaehana kalana hoʻi ke kumu o ka hoʻomalele MHH BASIC he 8%, a he 5% o ka hoʻomalele MHH BASIC+. Ua kumu nō he 53% o ko ke Kalana ʻo Maui mau malele i nā lua ʻōpala i hoʻomalu ʻia e ke kalana, a ʻo ia hoʻi ke ala e hikiwawe ai ka hoʻokanahaʻi ʻana i ka nui malele. I mea nō e hoʻokanahaʻi ai i ka nui malele MHH, aia hoʻi he mau ala kūpono no ka hoʻomalu lua ʻōpala ʻana i pili i ke puhi māhuea ʻana, ka puʻunaue ʻōpala ʻana, a me ka hoʻohana ʻana i nā māhuea keu.

ʻO ka uila–i pau wale i nā hanana e laʻa nā ʻōnaehana hale a me ka haka kahua ʻōnaehana wai kele i ʻona kiwikā ʻia–nō ke kumu ʻalua o ka hoʻomalele MHH, he 33% ka nui. ʻO ka hoʻolilo ikehu ʻuhaʻuha ʻole a me ka ikehu kumu hōʻano hou ʻia nō kekahi mau ʻenehana kūpono i hōʻoia ʻē ʻia no ka hoʻēmi ʻana i ke kumu kūʻai ikehu pū me ka haumia. He mau kumu nō ke kakalina a me ke kakalina kikele [diesel] i puhi ʻia e ko ke kalana ʻāuna kaʻa no he 8% a he 2% pākahi. ʻO ka nui malele MHH keu aku, ua emi iho ma lalo o ka 5%.

He kūpono nō ka hoʻomaopopo ʻana no ka ʻōpala i kumu nō i ko Maui Kalana mau ʻōnaehana, ʻaʻole naʻe i pili me ka ʻōpala a nā makaʻāinana a me ka ʻoihana kālepa, ua emi iho ma lalo o he 1/2 pakeneka wale nō o ka nui malele MHH.

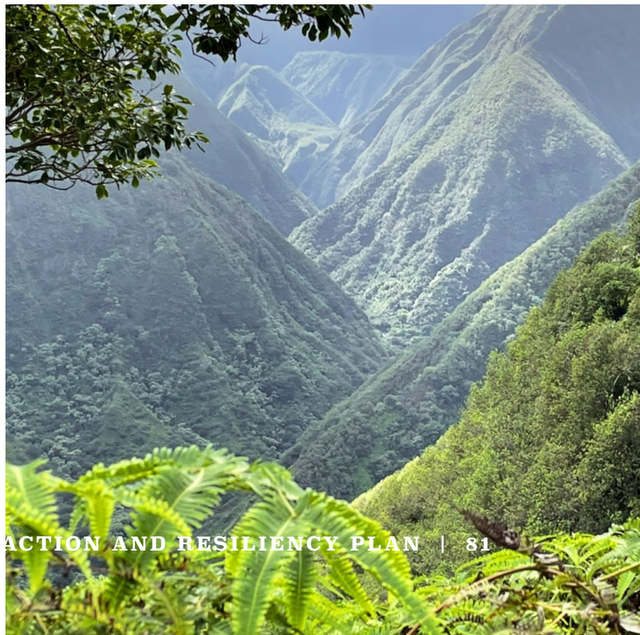


Wānana Malele Māhuea Hoʻomehana Honua

ʻO ka hoʻohana ʻana i ka MH 2016 ma ke ʻano he kumu hoʻohālike, a me ka hoʻokō pū ʻana i ka "Hawaiʻi Clean Energy Initiative" nō, he ʻano hoʻohiki hoʻi ia e loaʻa mai ai ka pahuhopu he 100% no ka uila kumu hōʻano hou ʻia ke kō iho ka MH 2045, a me ka hoʻokahua ʻana i kahua pūnaewele kaʻa uila. Ua pau iā CCRS he wānana "Kāloaʻa-Kūmaumau" o ko Maui Kalana mau malele MHH ke kō iho ka MH 2050. He kumu hoʻohālike nō ka wānana "Kāloaʻa-Kūmaumau" no kekahi hopena inā ʻaʻole hoʻokanahaʻi ke Kalana ʻo Maui i ka nui malele MHH. Inā hoʻonui paha ke Kalana ʻo Maui i mau hana hoʻoponopono hou aku, inā ʻaʻole paha, wānana nō ke kumu hoʻohālike i ke kuapo ʻia o 30% o nā kaʻa puhi ʻaila tā a pau no nā kaʻa uila ke kō iho ka MH 2050.

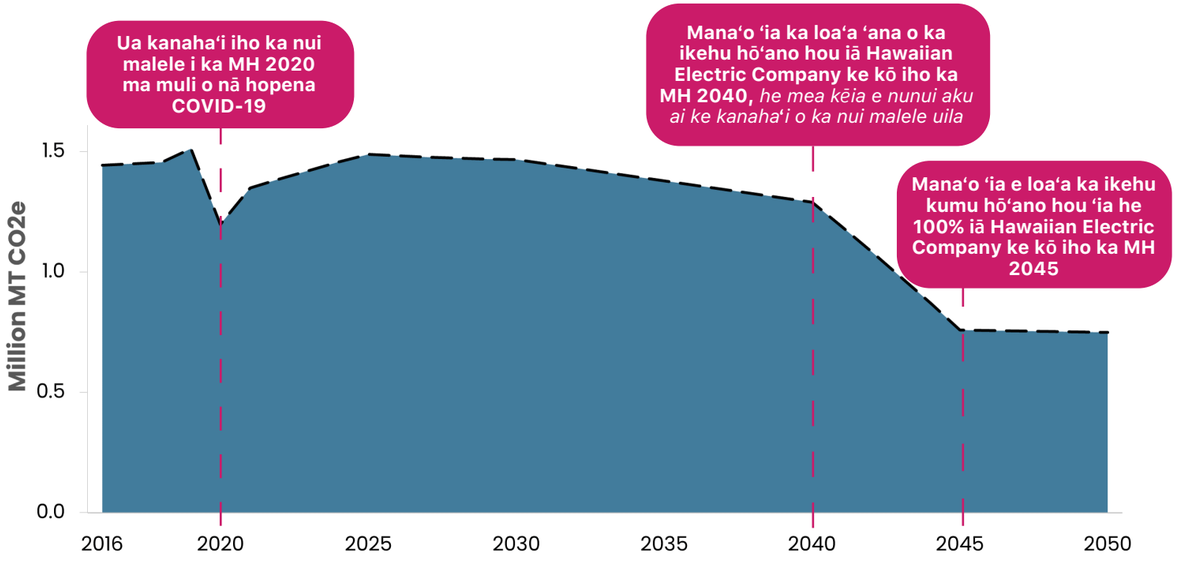
Me kēia papaha, a ma ka helu ʻana i ka nui malele BASIC MHH wale nō, wānana ʻia ke kanahaʻi ʻana o ko Maui Kalana mau malele MHH he 48% ke kō iho ka MH 2050–a holohuʻa wale i ka pahuhopu o ke kanahaʻi he 52% e loaʻa iho ai ka ʻole malele MHH.

No ka mea, ua manaʻo ʻia e hoʻonui aku ʻo Hawaiian Electric Company, ʻo ka hui mikaō o Maui Kalana, i nā kumu i hōʻano hou ʻia o ka uila. E like me ia e hōʻike auaneʻi ʻia ana ma ia ʻaoʻao aku, ua makemake ʻia ka ʻole malele MHH no nā kumu uila a pau ke kō iho ka MH 2045. Eia nō kā, kāohi iho nā kumu hoʻomalele MHH ʻē aʻe, e laʻa ka nui malele ʻōnaehana mokulele, i ka holomua o ka hoʻonui ʻia ʻana o ka pono i nā kumuwaiwai ma muli o ka nui ʻana aʻe o ka helu kanaka a me ka ʻōnaehana hoʻokipa malihini.



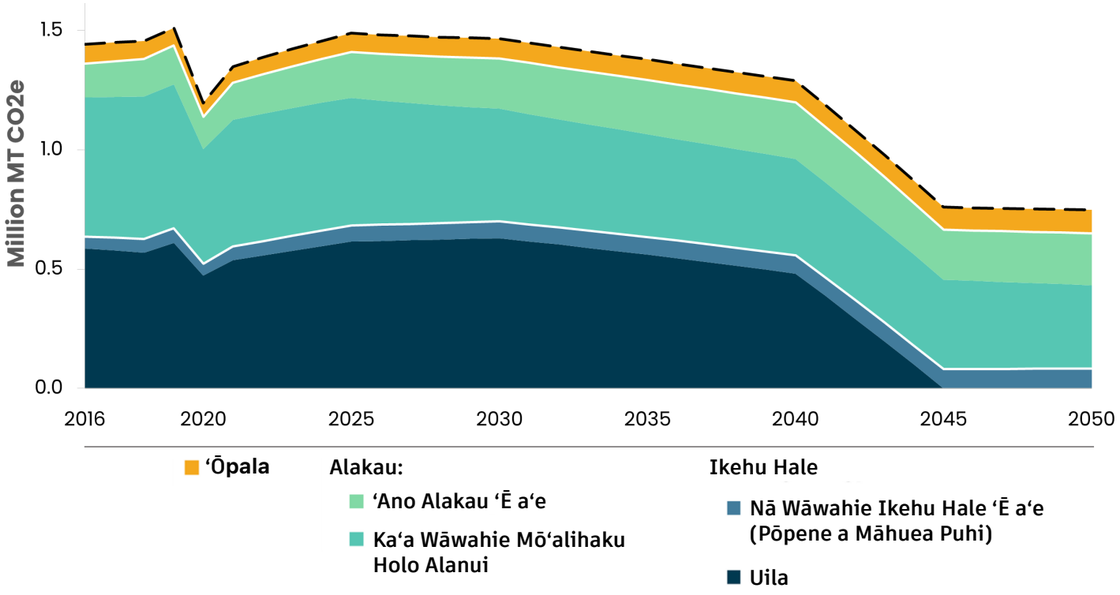
Wānana Malele Kāloaʻa-Kūmaumau BASIC

Wānana ʻia ka nui malele BASIC e kanahaʻi ma ka papaha “Kāloaʻa-Kūmaumau” (KK).



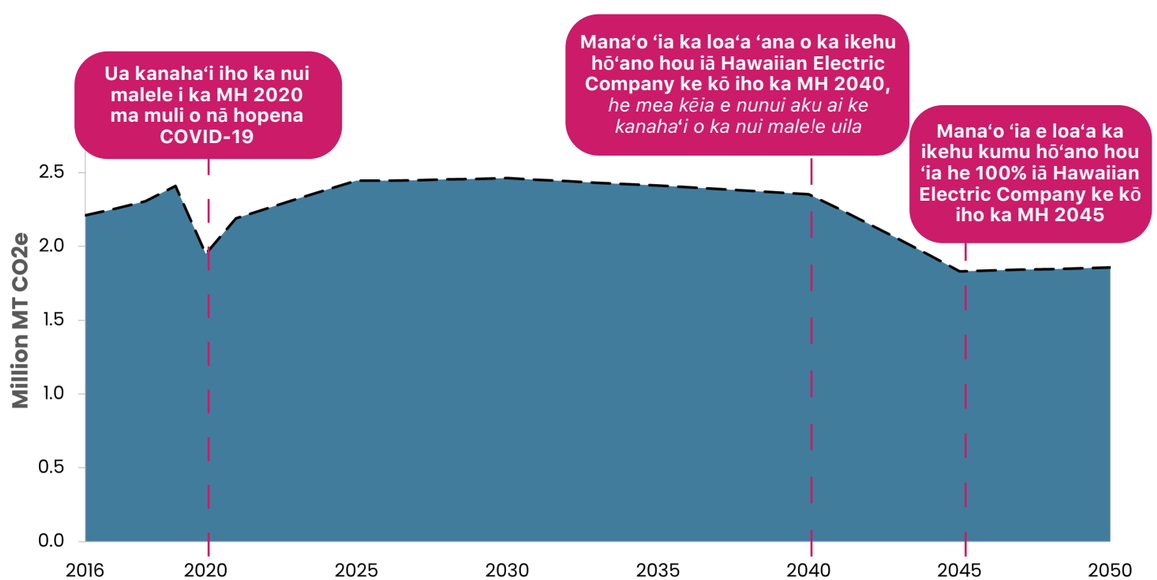
Wānana no nā Kumu Malele Kāloaʻa-Kūmaumau BASIC Pākahi

Ma kekahi papaha KK, manaʻo ʻia ke kanahaʻi malele mai ka 1.4 miliona mt CO2e iho i ka MH 2016 a i kahi o 750,000 mt CO2e ke kō iho ka MH 2050. Ua kumu nui nō kēia kanahaʻi ʻana i ka loaʻa ʻana o ka ikehu kumu hōʻano hou ʻia he 70% iā Hawaiian Electric Company ke kō iho ka MH 2040, a he 100% ikehu kumu hōʻano hou ʻia i ka MH 2045.



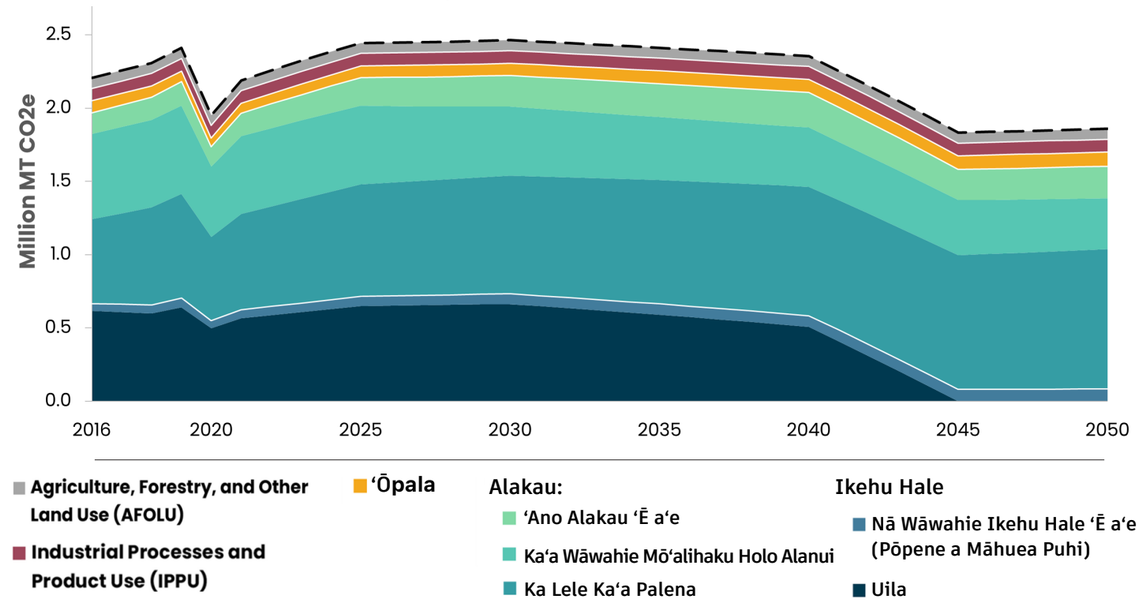
Wānana no nā Kumu Malele Kāloaʻa-Kūmaumau BASIC+

Wānana ʻia ka nui malele BASIC+ e kanahaʻi iki, akā e loli ʻole ana ma ka papaha “Kāloaʻa-Kūmaumau.”



Wānana no nā Kumu Malele Kāloaʻa-Kūmaumau BASIC+ Pākahi

He mea ka hoʻonui ʻia ʻana o ka nui malihini a me ka nui malele o nā mokulele ma Maui Kalana e ʻākeʻakeʻa ai, ma kekahi ʻano, i ka hoʻokanahaʻi ʻana i ka nui malele ma ko Hawaiian Electric Company mau mākia ikehu kumu hōʻano hou ʻia.



Ke Au i mua o Kākou a Pau

I ka helu ʻana i ka nui malele MHH BASIC+, manaʻo ʻia ke kanahaʻi ʻana iho o kā ko Maui Kalana mau kaiaulu hoʻomalele MHH he 16% wale nō ke kō iho ka MH 2050 ma ka papaha "Kāloaʻa-Kūmaumau"—he holohuʻa nō i ka pahuhopu o ke kanahaʻi he 84% i loaʻa ka ʻole malele MHH.

Aia nō a kanahaʻi ka nui malele MHH a ka ʻāpana ʻoihana uila, e nui ana ka nui malele MHH a ka ʻōnaehana mokulele kaʻa palena ma ka huina nui o ko Maui Kalana mau malele MHH. Inā ʻaʻole e kāohi ʻia ma o nā kulekele, wānana ʻia ko ka ʻōnaehana mokulele mau malele MHH nui ʻana aʻe ma o nā makahiki a pau a kō ka MH 2050 e paʻi a paʻi me ka ʻawelike o ka nui ʻana aʻe o ka ʻōnaehana hoʻokipa malihini.

Ke Omo a Hoʻopaʻa Kalapona ʻana a me ke Ahu Kalapona

Omo a hoʻopaʻa nō ko Maui Kalana mau ʻāina i ke kalapona, a he waiwai nui ia ma ka hoʻoponopono loli aniau. Hoʻāhu ko Maui Kalana mau ʻāina i 18% o ko ka Mokuʻāina ʻo Hawaiʻi kalapona pili honua.[1]

Ua hihia loa ko Maui Kalana mau ʻāina me ka pōpilikia aniau. He mea nō ka hoʻolālani ʻana i nā hanana hoʻoponopono aniau, hoʻomaluō ʻāina, a hoʻokūpaku ʻāina e hoʻohana ai i nā mea omo a hoʻopaʻa kalapona kūloko no ka maikaʻi o kekahi mau papa hana he nui. He mea kēia ala e hoʻokō mai ai i ka hoʻoponopono pōpilikia aniau a e hoʻonui ai i ka maikaʻi a me nā pilina o ko kākou mau kaiaola ʻōiwi, a ʻo ka pono nui o nā kaiaola nō ka hopena.

He hiki nō i nā ʻano wao a pau ke omo a hoʻopaʻa i ke kalapona mai loko aku o ka lewa a e hoʻāhu i ua kalapona lā ma loko o nā meaulu, pau pū nō me nā kaiaola kumu o Maui Kalana. No ke omo a hoʻopaʻa kalapona ʻana, ʻoi aku ka pono o kekahi mau ʻano meaulu wao a me kekahi mau hana hoʻokūpaku ma mua o kekahi.[2] Ua kālailai ʻia ko Maui Kalana mau wao i mea nō e hoʻomaopopo iho ai i ka pono, ka pono ʻole paha, o ke ahu kalapona o ke au nei, a i mea hoʻi e loaʻa pono ai he mau kaʻakālai a hanana paha e hoʻonui auaneʻi i kēia ahu.

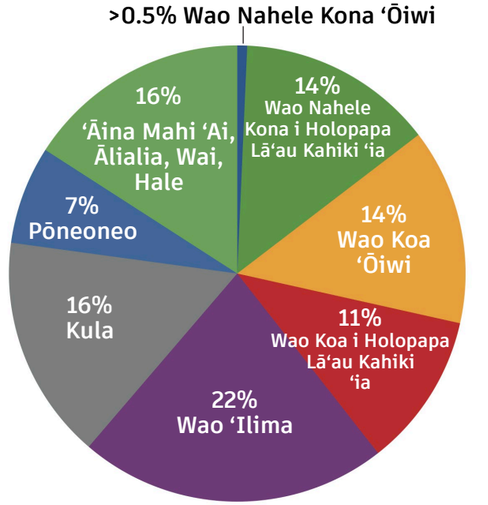
No ke kālailai ahu kalapona, ua wae ʻia ko Maui Kalana mau wao i 9 mau waeʻanona: Wao nahele Kona ʻōiwi, wao nahele Kona i holopapa lāʻau kahiki ʻia, wao koa ʻōiwi, wao koa i holopapa lāʻau kahiki ʻia, mahi lāʻau kahiki, wao ʻilima, kula, a me nā ʻāina pōneoneo. Ua hoʻokomo pū ʻia nā ʻāina mahi ʻai ma ke kālailai ʻana kekahi; akā, aia nō he mau mea aʻo e makaʻala ai.[3]

1 Selmants, P.C., Giardina, C.P., Jacobi, J.D., and Zhu, Zhiliang, eds., 2017, Baseline and projected future carbon storage and carbon fluxes in ecosystems of Hawai'i: U.S. Geological Survey Professional Paper 1834, 134 p., https://doi.org/10.3133/pp1834.

2 Regenerative land practices including composting, mulching, biochar, natural Korean farming, and other beneficial land practices.

3 Ma muli o ka nele i ka ʻikepili pili wale iā Hawaiʻi, ʻo nā koho mahuʻi wale nō ka i loaʻa ai no ke kalapona ʻokanika o ka lepo o nā ʻāina mahi ʻai. Ua koho ʻia nā helu moʻolako no ke ahu kalapona o ko Maui Kalana mau ʻāina mahi ʻai, wao kele, wai, a hale mai nā ʻikepili i loaʻa mai. Eia kā, ʻaʻole nō ia he hōʻike leʻa no ke ahu kalapona holoʻokoʻa o nā meakanu, he hōʻailona wale naʻe ia o ke ahu kalapona o ka waihona kalapona ʻokanika o ka lepo. I ke au e hiki mai ana, aia nō a loaʻa mai nā ʻikepili kūloko hou aku a pili hoʻi i nā lāhulu meaulu, a laila nō e kālailai hou ʻia ai me ka hoʻokomo pū ʻia o nā ahu kalapona o nā meaulu o nā ʻāina mahi ʻai, wao ʻōiwi, wai, hale, a ālialia.

Ka Ili Waeʻanona Meaulu Wao o Maui Kalana



Ke Au i mua o Kākou a Pau

Ua ulu nui ʻia nā wao maʻukele i nā lāhulu lāʻau ʻōiwi e laʻa ke koa, ka ʻōhiʻa, a me ka ʻōlapa. Ua pōʻino nō naʻe kēia mau wao nahele ʻōiwi i ka holopapa ʻia e nā lāhulu kahiki e laʻa ka maikonia, ka mauʻu "pampas," a me nā holoholona maiʻao ʻōhuka a ʻāhiu.

ʻO ka holopapa i nā lāhulu kahiki he mea hoʻopōʻino nui i ka pono o nā ʻāina kumu wai a me kekahi mau wao ʻē aʻe ma o Maui Kalana.

E like nō me ke komo hewa o nā lāhulu kahiki, ua hoʻololi loa ʻia ko kākou mau ʻāina e ka ʻoiʻenehana mahi ʻai haole.

Ma muli nō o ka hoʻokahua ʻia ʻana o nā mahina ʻai, ʻo ka hapanui o nā mea i mahi ʻia nō ka hala kahiki a me ke kō ma o ke kenekulia i kaʻa aku nei. Eia nō naʻe, ua pau loa ka mahi nui ʻia ʻana o ka hala kahiki a me ke kō ma o kēlā pāanahulu makahiki iho nei, a ua waiho wale ʻia ka lepo haumia e pono ana i ka hoʻoponopono kūpono ʻia ʻana.[1]

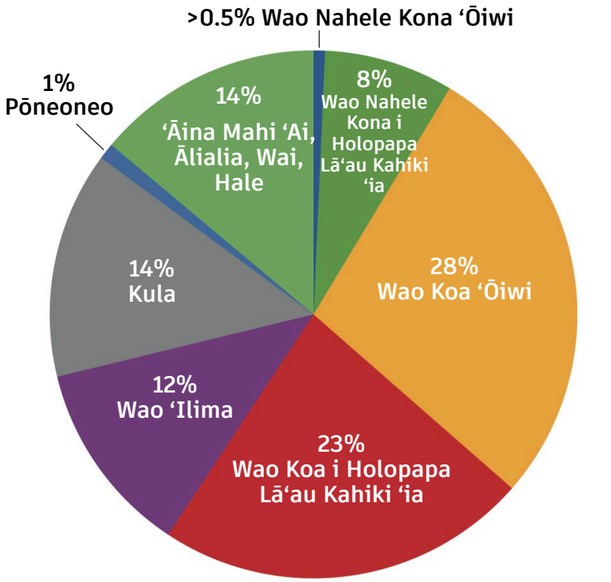
No ka nui o ko Maui Kalana mau ʻano ʻāina a wao, aia nō he ʻano huina laha ʻole o nā ʻano wao, ʻāina mahi ʻai, a kaiaola pili kai laha ʻole.

Omo a hoʻopaʻa nā ʻano wao a pau i ke kalapona ma nā meaulu a me ka lepo, i kapa ʻia nō he ahu kalapona. He ʻokoʻa naʻe ka nui o ka hiki o kēlā a me kēia ʻano wao ke omo a hoʻopaʻa i ke kalapona.

No ko Hawaiʻi Mokuʻāina mau ʻāina, aia he 18% iā Maui Kalana, a ua hoʻāhu ʻia he 18% o ka nui o ko Hawaiʻi kalapona i nā ʻāina o Maui Kalana.

Hōʻike ke kiʻikuhi o lalo iho nei i ka huina nui o ke ahu kalapona ("metric tons [MT]" o ke kalapona) i hoʻāhu ʻia e kēlā a me kēia ʻano wao ma Maui Kalana. Aia nō ka hapanui o ke kalapona i hoʻāhu ʻia ma nā wao maʻukele i ulu nui ʻia i nā lāhulu lāʻau ʻōiwi, a ma muli iho hoʻi nā wao maʻukele i holopapa lāʻau kahiki ʻia.

Hoʻāhu Kalapona (Kalapona MT) o nā ʻAno Wao Pākahi



Aia nō i nā wao nahele, a me nā wao me nā ulu lāʻau kahiki, he 60% o ke ahu kalapona ma Maui Kalana. He mea nui nō ka hoʻokūpaku ʻana i nā wao nahele no ka pūlama a hoʻonui ʻana i ko Maui Kalana mau ahu kalapona ma ia mua aku.

I maopopo, ʻaʻole ʻo ke kalapona wale nō ke ana hoʻohālike no ke koho ʻana i ke ala kūpono ʻoi loa no ka hoʻomalu ʻāina ʻana. I laʻana, ʻoiai he hoʻāhu nui nā ulu lāʻau kahiki i ke kalapona, he pono nō ke kālailai ʻia nā hopena kūpono ʻole, a me nā hopena maikaʻi paha, o ka hoʻololi ʻana i nā wao ʻōiwi i holopapa ʻole ʻia.

A pēlā pū me nā wao nahele Kona ʻōiwi. E hoʻonui ʻia ka hiki ke hoʻāhu kalapona ke hoʻololi ʻia aku ke ʻano o nā lāʻau ma nā wao nahele Kona ʻōiwi (ma waho o nā wahi i namauahi ai nā meaulu), akā e hoʻololi pū ʻia paha nā kaianoho nui o nā lāhulu ʻōiwi Hawaiʻi he nui.

He mea pono loa nō ke kaʻakālai hoʻomalu ʻāina noʻeau ʻana no ka hoʻomau ʻana i ke omo a hoʻopaʻa kalapona ʻana o ko Maui Kalana mau wao, a no ka hoʻoikaika ʻana i ko Maui Kalana mākaukau no nā hopena loli aniau ʻoiai hoʻi e hoʻomaluō ana i ka nui laulā o nā ʻano meaola ʻōiwi a me nā pilina mēheuheu me nā kaiaola ʻōiwi.

Photo credit: Troylauphotograph

1 E hoʻomaopopo iho no ka nui o nā ʻāina hānai pipi i komo pū ma ko Hawaiʻi mau ʻāina mahi ʻai. No kekahi ʻikepili keu no nā hopena mai nā pipi mai ma ko Maui Kalana malele, e nānā i ka māhele "Agriculture, Land Use, and Natural Resources" (ʻaoʻao 162) o kēia palapala.

Ke Au i mua o Kākou a Pau

Ka Hoʻokūpaʻa Kaiaulu i ke Au Loli Aniau

Mākia nō ka māhele "Resiliency Action" o ke CARP i ka hoʻokūpaʻa ʻana i ke kaiaulu no ka hōʻano hou ʻana iho no nā hopena o ka loli aniau o ke au nei a me ia mua aku.

He mea nui koʻikoʻi nō ka hoʻokūpaʻa kaiaulu ʻana no Maui Kalana ma muli nō o kona ʻano he kaʻawale loa, a me nā hopena lua ʻole mai ka loli aniau mai a no kona ʻano he huina mokupuni. He mau mea ko Maui Kalana mau hiʻona ʻāina kapakai e pā wale ai kona mau kaiaulu, kumu waiwai (pau pū me nā meaulu a me nā holoholona), a me ka haka kahua ʻōnaehana kaiaulu i nā hopena loli aniau. No ke kaʻawale a mamao loa o kekahi o ko kākou mau kaiaulu, no laila i nui aʻe ai ko lākou pā wale i nā mea e laʻa ka hiki ʻole ke loaʻa mai nā pono kākomo a me ka lawelawe aupuni.

Ma ka hoʻomōhala ʻia ʻana o ke CARP, ua mālama ʻia he mau hālāwai kūkākūkā no ka lehulehu ma o Maui Kalana i mea hoʻi e ʻike pono ʻia ai nā ʻano pā wale, nā kaʻakālai, a me nā hana no ka hoʻokanahaʻi ʻana i nā hopena hoʻopōʻino aniau o ke kaiaulu a me ke kaiapuni. Ua hoʻokele ʻia he mau hālāwai hoʻomākia ma nā kaiaulu i ʻoi aku ko lākou kaʻawale a mamao e laʻa ʻo ko Maui Hikina, ko Molokaʻi, a me ko Lānaʻi.

Ua hoʻomōhala ʻia he mau kaʻakālai hoʻokūpaʻa kaiaulu ma kekahi haka hoʻolālā o 3 kūkulu no ka hoʻokūpaʻa kaiaulu ʻana ma muli o ka loli aniau: ʻo ka palekana kanaka, ka palekana haka kahua ʻōnaehana kaiaulu, a me ka palekana o ko kākou mau ʻōnaehana kūlohelohe. Me kēia mau kūkulu, he hiki nō i ke aupuni kūloko, nā hui kaiaulu, nā ʻoihana, a me nā makaʻāinana ke koho pono i nā koho e kākoʻo pono ana i ke kūpaʻa o ko kākou mau kaiaulu i ke au e hiki mai ana.

Ma muli o kēia mau kūkulu, ua kapaʻī ʻia he 22 mau kaʻakālai me 83 mau hana kākoʻo a ke Kalana ʻo Maui a me kona mau pakanā kaiaulu e kuʻupau ai i ka hoʻokō no ka hoʻoikaika ʻana i ke kūpaʻa kaiaulu kūloko no ka loli aniau.

ʻOiai ua ʻokoʻa nō nā hana hoʻoponopono aniau (e laʻa ka hoʻoponopono malele MHH) a me nā kaʻakālai a hana hoʻokūpaʻa kaiaulu (e laʻa ka hōʻano hou no ke aniau), ua pili loa naʻe nā mea ʻelua. He mau mea nā kaʻakālai a me nā hana i wehewehe ʻia ma nā māhele o ke CARP e hōʻike ai i kekahi ala e hoʻopalekana ai i ko kākou mau kānaka, haka kahua ʻōnaehana kaiaulu, a ʻōnaehana kūlohelohe ma o nā hanauna e puka mai ana.

Kuleana

ʻOnipaʻa nō ke Kalana ʻo Maui i kona lilo ʻana he kaiaulu alakaʻi ma ka paio loli aniau. No ka nui ʻino o kēia pōpilikia aniau, e pono wale nō i ka hoʻololi ʻōnaehana a me ka hōʻano hou pinepine a kūmaumau. Me kēia mau kaʻakālai a hanana kūloko, hoʻokomo pū nō ke Kalana ʻo Maui i ka hoʻomōhala ʻana i mau kulekele a kānāwai hoʻoponopono no nā aupuni mokuʻāina, pekelala, a kauʻāina kekahi.

I kō pono ka holomua, ua ʻae nō ke Kalana ʻo Maui e hoʻokō i:

- **Mau hōʻike kūmau no kā Maui Kalana mau malele MHH** a e noke nō i ko kākou hoʻokō ʻana i ka loaʻa mai o nā pahuhopu hoʻokanahaʻi kalapona.
- **Ka hōʻano hou kūmau i ko ke Kalana ʻo Maui "ClimATE Hub"** (https://www.resilientmauinui.org/) i akāka leʻa ai nā hana i hoʻomaka ʻia, e holo ana, a i ʻole i hoʻokō ʻia, a no ka hōʻike ʻana i ko kākou kaiaulu no nā hanana hou kekahi.
- **Ka hōʻano hou i ke CARP** i nā makahiki ʻelima a pau. Ma nā ʻano hou o ke CARP o ke au o mua aku, e loaʻa nō ke kōkua a hoʻolālā kikoʻī no nā kaiaulu hou aku e pono ana i nā kaʻakālai hoʻoponopono aniau kikoʻī, e laʻa ʻo Kahoʻolawe.
- **Ka hoʻokō ʻana i nā kaʻakālai a me nā hanana** i wehewehe ʻia ma ke CARP i mea e alakaʻi ai i nā hana hoʻokumu kānāwai, hoʻokele aupuni, a māhele aupuni o ke Kalana ʻo Maui.
- **Ka noke mau i ka ʻimi ʻana** i nā hui i komo ʻē ʻole paha ma ke kūkākūkā pili aniau, a i ka hoʻomau ʻana e kākoʻo a e launa pū me nā hui leo iki, me nā alakaʻi a poʻo nō naʻe, ma nā pōʻai ikehu, aniau, hoʻokūpaʻa, hoʻokaulike, a kaiapuni.

INTRODUCTION

WHILE THE COUNTY OF MAUI

spearheaded the development of the CARP, the plan was shaped, first and foremost, by the collective voices of our community.

Each of Maui County's islands and communities have unique landscapes, diverse cultures and traditions, and rich natural resources that serve as the foundation of community discussion. In this way, the CARP was co-created by all stakeholders involved in its development.

Over 1,000 perspectives were shared through surveys, interviews, talk story sessions, focus groups, and advisory committees. Among those voices, were Native Hawaiian cultural practitioners who, on a number of occasions, emphasized the importance of the "intangible spirit" that, through connection to ʻāina and kuleana, requires us to cultivate and manage mana (energy/authority) and maintain pilina (connection and relationship) to address climate change.

Introduction

THE CARP PROVIDES **a clear and practical set of strategies and actions that have been developed alongside the community, CARPAC, and Resiliency Hui which aim to reduce our communities' climate change contributions and build local resilience to climate impacts.**

As part of the development of the CARP, the following guiding principles are intended to serve as a foundation for all identified strategies and actions.

The CARP is driven by the following Guiding Principles:

1. **Protect, restore, and sustainably manage our natural environment for current and future generations.**
2. **Reduce local GHG emissions to achieve net negative carbon.**
3. **Optimize resiliency within local communities.**
4. **Cultivate local cultural practices rooted in ecological knowledge and values.**
5. **Advance social equity and community inclusion.**
6. **Grow a thriving local circular economy.**
7. **Sustainably address current and future infrastructure needs.**
8. **Commit to both institutional and individual action, and local implementation of climate resiliency strategies and actions.**

Moving Towards Net Negative Commitments

The County of Maui is committed to meeting our aggressive emissions reduction goals. Although these commitments and goals may be difficult to achieve, the stakes have never been higher.

Current and future generations' quality of life and the health of our 'āina depend on achieving these ambitious targets.

Our collective future must be a shared responsibility between residents, community nonprofit organizations, government, and businesses.

Together, we must ensure that by reducing our negative impacts and increasing our individual and community resiliency, we ensure a just and equitable future for all Maui County residents.

GREENHOUSE GAS EMISSIONS

The County of Maui has committed to reducing local GHG emissions to achieve net negative carbon by 2045.

Guided by data from 2 community-wide GHG emissions inventories and extensive community input from residents and local experts, the County of Maui prioritized 19 climate mitigation strategies and 61 supporting actions.

A comprehensive analysis of these strategies and actions found that implementing them will result in a 76% reduction in community-wide GHG emissions by 2050.

The County of Maui also established 22 resilience strategies and 83 supporting actions to prepare and build resilience against potential climate threats.

Introduction

Leading with Climate Equity

What is Climate Equity?

Within the CARP, climate equity means ensuring a just distribution of climate protection efforts, alleviating unequal burdens caused by climate change, and balancing access to critical resources.

WHEN DISCUSSING CLIMATE EQUITY, it is important to highlight the difference between **equity** and **equality**. Where ***equality*** allocates each group or person the same resources or opportunities, ***equity*** considers the background and circumstances of each individual or group to allocate the resources and opportunities necessary to reach an equal outcome.

Within the CARP, the ultimate desired outcome is the implementation of sustainable and equitable practices and systems throughout Maui County.

Attaining this outcome will require effort and collaboration across various community groups. ***Climate equity*** acknowledges that specific communities are more vulnerable to the effects of climate change, including rural, remote, coastal, and indigenous populations.

The groups most vulnerable to climate change often contribute the least to global warming. By incorporating climate equity measures, the County of Maui can ensure that future policies and practices do not disproportionately impact or disadvantage vulnerable and historically underserved communities.

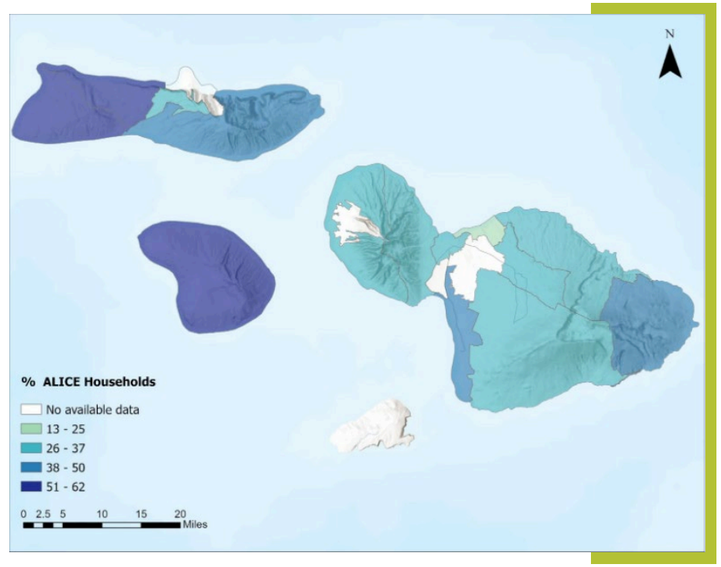
Prioritizing climate equity creates room for diverse perspectives and the voices of historically underserved populations.

This benefits Maui County by providing leaders and community members with a deeper understanding and knowledge of the individual climate impacts experienced by local residents. As a result, unforeseen problems can be addressed and creative solutions can be identified for all Maui County residents.

ALICE Communities

The State of Hawai'i conducted 2 **Asset Limited, Income Constrained, Employed** (ALICE) Reports in 2017 and 2020 to identify areas where the cost of living has proved unsustainable for working people. These reports specifically look at households with high enough earnings to surpass the Federal Poverty Line (FPL), but not high enough to afford a basic household budget that includes adequate housing, child care, food, transportation, and health care.

This map shows the percentage of Maui County's population that fell under the ALICE threshold in 2017. **In Hawai'i, 42% of resident households fall below the ALICE threshold—a household income of $75,000 or less.**[1] This rate is higher in Moloka'i and Lāna'i, with 45% and 62% of households falling under the ALICE threshold, respectively.[2]



Maui United Way and Aloha United Way are in the process of updating ALICE maps and addressing data gaps as new data becomes available. An ALICE report specific to Maui County is currently being developed to further identify the most vulnerable populations to climate change impacts.

1 This threshold is consistent for all counties except for Kalawao County, which encompasses Kalaupapa on Moloka'i where it is only $25,000. Data gaps can be seen in the districts of Lahaina, Kalaupapa, and Wailuku resulting from missing data. More targeted and refined data is needed in order to develop a more accurate and robust analysis of ALICE households within Maui County.

2 Aloha United Way, Alice in Hawai'i: A financial Hardship Study (2020), unitedforalice.org/attachements/allreports/2020ALICEREPORT_HI.pdf

Introduction

How is the County of Maui Prioritizing Climate Equity?

Effective and equitable climate policies are accomplished by actively listening to local communities, thereby co-creating a just and equitable climate future for all.

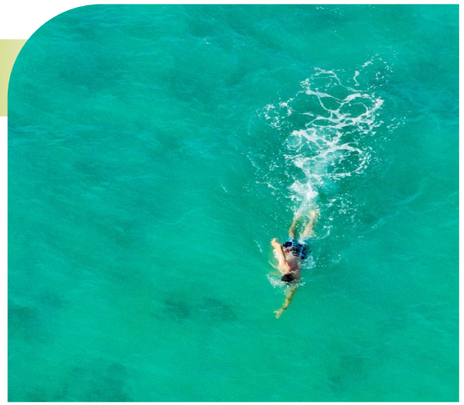
In response, the County of Maui is committed to:

- **Supporting policies and practices that recognize the unique needs of individual communities,** culturally and geographically, and working to remove access barriers to resources and services. All strategies and actions were reviewed with an equity lens to ensure they are helping to create systemic and institutional changes to promote greater equity and inclusion throughout Maui County.
- **Recognizing inequities and seeking to elevate the voices of Native Hawaiians, local families, and vulnerable populations** to ensure representation throughout the implementation of the CARP.
- **Increasing our knowledge, understanding, and recognition of Maui County's rich cultural history,** learning from the past to inform our future, and building partnerships that reflect all voices of our community in the implementation and future updates of the CARP.

To ensure community voices were engaged and heard across Maui County, CCRS held individual talk story sessions in several of our more remote communities (i.e. East Maui, Lānaʻi, and Molokaʻi).

Our purpose was to gain insight directly from residents on climate change impacts. These sessions included identifying unique vulnerabilities, gathering location-based and historical knowledge of each community, and discussing climate strategies and actions to ensure long-term resiliency.

The findings from these sessions are included throughout the CARP and discussed in more detail in the Community Call Out section (pg. 78). The authors of this plan recognize that there are other remote communities within Maui County that should also be consulted in future updates to the CARP (e.g. Kahakuloa, Honokōhau, Honokowai, Kanaio, etc.).



History of Climate Action

IN HAWAIʻI,

the roots of true ʻāina stewardship originated with the indigenous communities that thrived on these islands. As an island people, traveling on voyaging canoes throughout the Pacific, the ancestors of the Lāhui Hawaiʻi (Hawaiian People) developed remarkably acute observational skills (kilo).

These observational skills translated into an intimate understanding of the flora and fauna of the islands and a clear understanding of how the winds, clouds, and rains interact with each other and the land. These keen observational skills formerly enabled Kanaka Maoli farmers to properly time agricultural practices, fishers to understand fish abundance and spawning seasons, and, most importantly, all land stewards to sustainably preserve the delicate balance of natural resources.

History of ʻĀina and Environmental Stewardship

THE DEVELOPMENT OF THE MOKU-AHUPUAʻA

system, first on the Ewa plain of Oʻahu, and soon afterward on Maui Island under the leadership of the father-son aliʻi of Kaʻulahea and Kakaʻalaneo of Lahaina, is perhaps the best evidence of how observational skills evolved into practices which promoted sustainable ʻāina stewardship from mauka to makai.

Recent archaeological and paleoenvironmental studies have confirmed and validated the efficacy of the moku-ahupuaʻa system by demonstrating a rebound in resource abundance and ecosystem health in the generations following the development of this system.

Additionally, important cultural and subsistence practices, such as the development of extensive wetland loʻi kalo (taro patches) and loko iʻa (fishponds), contributed to the sustainability, productivity, and ecological health of the ʻāina. For example, loʻi kalo, in addition to their remarkable productivity, are known to attenuate sediment that might otherwise discharge into the ocean and damage nearshore reefs.

Similarly, fishponds often act as sediment traps (particularly the type known as loko iʻa kalo, in which both fish and taro are raised) and act as a barrier to sediment discharge into the ocean.

The practices which collectively promoted and fostered environmental stewardship are both numerous and varied by place.

The social, economic, and political transformations of the 19th and 20th centuries witnessed constraints in the ability of Kānaka Maoli to use these traditional practices to care for these lands. The pre-existing balance of natural systems was forever altered due to the introduction of the plantation industry and ungulates, resulting in water diversions, drastic landscape changes, and a dramatic decline in taro production and fishpond use (many of which were buried under the eroded sediment).

The introduced ungulates quickly reproduced and contributed to severe erosion and loss of native plant ecosystems. Erosion, resulting in sedimentation on nearshore reefs, also dramatically reduced the abundance of fish, shells, and limu (seaweed), an important resource many families relied upon.

The Hawaiian renaissance in the early 1970s witnessed a resurgence of interest in restoring and reinvigorating cultural practices which had been passed down through generations, with known benefits to ecological health.

The Hawaiian renaissance encouraged both direct political action—such as the occupation of Kahoʻolawe by the Protect Kahoʻolawe ʻOhana to stop the bombing and desecration of this sacred island—and the struggle to return water to Maui County's streams. **The Hawaiian renaissance has also witnessed the restoration of traditional agricultural practices, such as taro farming and the rebuilding of fishponds, although much work remains to be done.**

> **An essential factor to look at when developing a blueprint for a sustainable future lies deep in the past. The indigenous host culture of this land holds ancient wisdom to long-term survivability of the ecosystems that sustain life for all species including humans. Unfortunately, the economic driven systems that have evolved since colonization have conflicted with and altered the natural systems.**
>
> *- Maui County Resident*

Reliance on the knowledge of traditional Hawaiian practices provides a path forward that current generations can emulate in order to promote sound environmental stewardship and work towards a more sustainable, equitable, and resilient future.

State and County Action

Hawai'i and the County of Maui have ambitious plans to tackle climate change built upon years of work, commitments, and declarations.

1998

First State of Hawai'i Climate Change Action Plan.[1]

1 See: https://planning.hawaii.gov/wp-content/uploads/2016/06/HawaiiActionPlan1998.pdf

2005

First Hawai'i 2050 Sustainability Plan.

2008

State adopted the Hawai'i Clean Energy Initiative to get to 70% clean energy by 2030.

2011

State's sustainability priority guidelines codified in the Hawai'i State Planning Act, as HRS 226-108.

2012

State's climate change adaptation priority guidelines codified in the Hawai'i State Planning Act, as HRS 226-109.

2014

Hawai'i Green Growth launched the Hawai'i 2050 Sustainability Plan and Aloha+ Challenge with support from the governor.

State of Hawai'i increased its commitment to the Hawai'i Clean Energy Initiative goal to reach 100% renewable electricity by 2045 and signed it into law, which includes reducing annual statewide GHG emissions to 1990 levels.

Senate Concurrent Resolution 69 passed to establish Aloha+Challenge goals, inspired by the Hawai'i 2050 Sustainability Plan.

2017

Became first state in the nation to commit to the Paris Agreement, through Act 32, Session Laws of Hawai'i.

2018

Hawai'i becomes the first state in the country to commit by law to a zero-emission and carbon-neutral economy by 2045.

2021

Became first state in the nation to declare a climate emergency through Act Senate Concurrent Resolution 44.

Updated the Hawai'i 2050 Sustainability Plan.

History of Climate Action

Snapshot of Commitments

Aloha+ Challenge

The Aloha+ Challenge is a statewide framework that aims to create He Nohona ʻAeʻoia, a culture of sustainability across the State of Hawaiʻi.

Hawaiʻi Green Growth Local2030 Hub

The Hawaiʻi Green Growth Local 2030 Hub aims to advance "locally and culturally appropriate" sustainability solutions, with emphasis on local implementation of the United Nations Sustainable Development Goals (UN SDGs).

ICLEI's Race to Zero

ICLEI's Race to Zero commits the County of Maui to reach zero GHG emissions by 2050 (at the latest).

Maui County Sea Level Rise Proclamation

The Maui County Sea Level Rise Proclamation acknowledges the threat of sea level rise through climate change and directs planning efforts and all County of Maui departments to consider it in their programs and planning regulations.[1]

1 For more information see: https://www.mauicounty.gov/DocumentCenter/View/133253/Frequently-Asked-Questions---updated-04222022

Environment America's Mayors for Solar Energy

The County of Maui Mayor committed to supporting efforts to advance solar energy in local communities, states, and the nation.

Paris Climate Agreement

The State of Hawaiʻi and the County of Maui have made commitments to meet the Paris Climate Agreement goal to keep global temperature rise this century well below 3.6° F (2° C).

Renewable Ground Transportation Commitment

The County of Maui is committed to transitioning all public and private ground transportation in Maui County to 100% clean transportation by 2045 and to transition county fleet vehicles to 100% clean transportation by 2035.[2]

We Are Still In

With this commitment, the County of Maui pledges to continue to support the goals of the Paris Climate Agreement and work towards GHG emissions reductions equal to or greater than the U.S. goal under the Paris Climate Agreement.

2 For more information see: https://mauinow.com/2017/12/13/hawaii-mayors-pledge-100-renewable-ground-transportation-by-2045/

Crosswalking

The County of Maui made sure to utilize, review, and connect the best available science and existing planning initiatives through a thorough crosswalking analysis.

By considering existing planning documents, resources, and academic studies, we can: use consistent community goals and objectives in coordinating strategies, actions, and policies; gain a more robust assessment of climate change vulnerabilities, remediation solutions, and resilience strategies; incorporate cross-sector buy-in; expand a list of diverse representatives working on various planning efforts for continued collaboration and knowledge transfer; cross reference, integrate, and add to strategies that exist in multiple plans; and provide consistency for future planning efforts and legislation. In addition to referencing existing plans and resources, equity considerations were reviewed at every stage of the CARP's development and integrated throughout the plan.

The plans listed in the Appendix (pg. 253) were referenced and considered throughout the development of the CARP. For a complete list of crosswalked plans, please see that section.

Our Collective Voices

TO UNDERSTAND ITS MOST PRESSING CHALLENGES,

the County of Maui worked with diverse communities through an in-depth public engagement process. These collective voices are woven into the fabric of the CARP and shape the plan's goals, pillars, strategies, and actions.

Our Collective Voices

CARP Stakeholder Engagement

Working together as a community is paramount for Maui County to combat and adjust to climate change.

The history of ʻāina and environmental stewardship in Maui County illustrates how sustainability and resiliency have been an integral part of the culture long before the concept of "climate action." As Maui County's islands, communities, and ʻohana experience the effects and challenges of climate change, the county has and will continue to advocate for the community's most urgent needs at the governmental and local levels.

To achieve this goal, the County of Maui ensured that community stakeholders were engaged and involved in the development of the CARP from the beginning. Engagement began at the end of 2021 and was conducted through October 2022.

> **Nothing motivates community more than grassroots involvement. If the people define the problem and identify resources to solve it, they will work hard to get the project done.**
>
> *- Maui County Resident*

CARP Engagement Partners

The CARP pursued many avenues of community engagement during the development process. The CARP incorporated feedback from residents through our ClimATE hub, social media, vulnerability workshops, forums, polls and surveys, and Native Hawaiian and cultural reviews.

The development of the CARP also relied heavily on invested community engagement partners, members, and experts. Please see the Acknowledgments section (pg. 261) for a detailed list of partners and contributors.

ENGAGEMENT NUMBERS

at a glance

70+
COMMUNITY ADVISORS

20 CARPAC MEMBERS
representing a diverse cross-section of our community

50+ RESILIENCY HUI MEMBERS
participating across 11 County of Maui Departments

21
COMMUNITY ADVISOR WORKSHOPS

11 CARPAC WORKSHOPS

10 RESILIENCY HUI WORKSHOPS

20
VIRTUAL COMMUNITY FORUMS & MEETINGS
identifying climate vulnerabilities and resilience strategies

31+
SITE VISITS
across Maui County with 100+ community members engaged to assess climate vulnerabilities and related cultural impacts

800+
TOTAL RESPONDENTS TO 5 COMMUNITY SURVEYS

Our Collective Voices

Community Call Outs

Maui County is the only county in the State of Hawai'i that includes three inhabited islands (Maui, Moloka'i, and Lāna'i), and a fourth uninhabited island (Kaho'olawe).

While there are established population centers located in West, Central, South, and Upcountry Maui, many remote, more sparsely populated communities exist throughout the county. These include communities located within rugged East Maui as well as communities located on Moloka'i and Lāna'i.

As part of the development of the CARP, the County of Maui conducted targeted outreach within these three regions. There are a number of additional remote communities located across Maui County (such as Kahakuloa, Honokōhau, Honokowai, Kanaio, and others) that were not able to receive targeted outreach in the development of the CARP due to a lack of time and necessary resources. These communities will be consulted for future updates of the CARP.

The islands of Moloka'i and Lāna'i experience climate change issues that are unique to their respective communities and geographies.

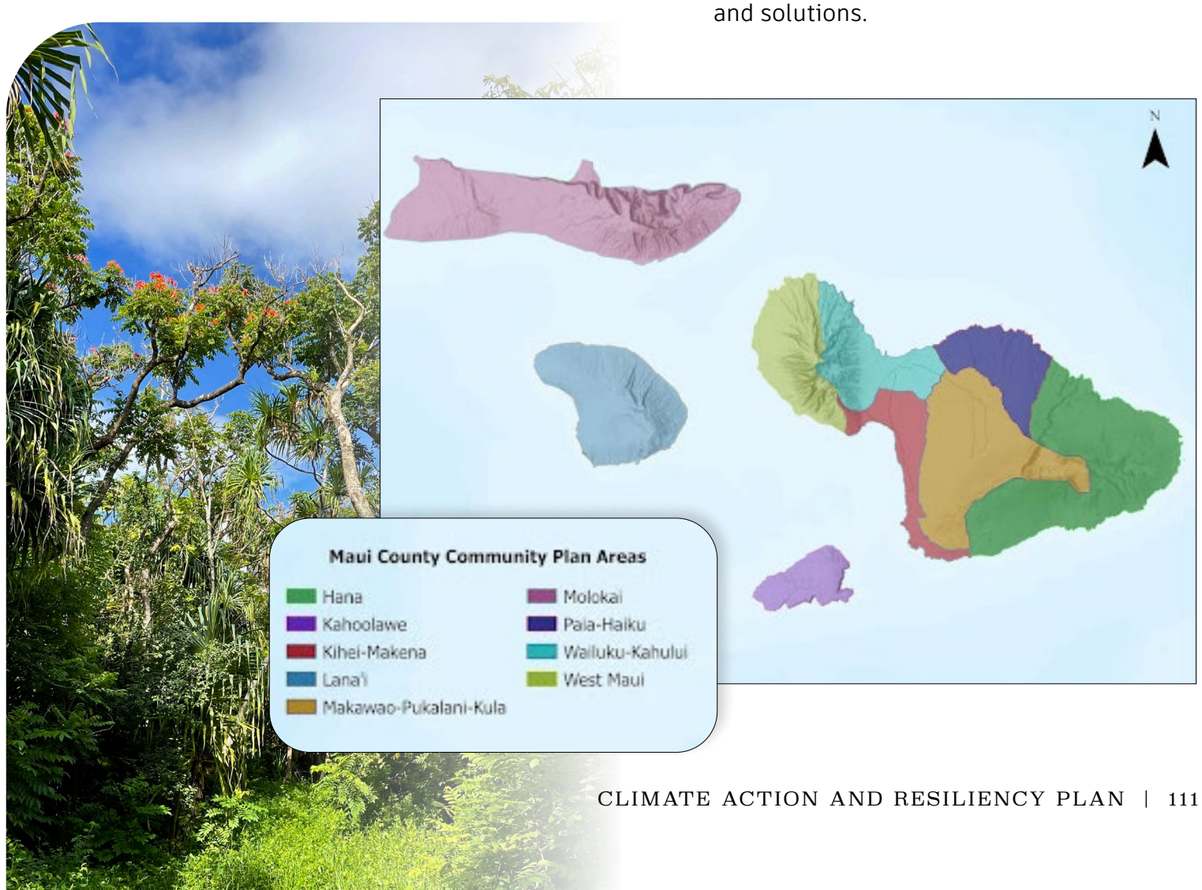
South Maui is currently updating its South Maui Community Plan, consisting of areas from Manawainui Gulch in the northwest to the boundary between Kanaio and Auwahi ahupua'a on Maui's south shore. The South Maui Community Plan spans across portions of four traditional moku: Wailuku, Kula, Honua'ula, and Lahaina. However, it does not include areas of Maui Island considered to be a part of Upcountry Maui.

West Maui's updated community plan covers a majority of the traditional moku of Lahaina and Kā'anapali. Its common boundary with the Wailuku Judicial District begins at the southern shore of West Maui about 3/4 of a mile west of Papawai Point, then continues along the ridgeline in a northerly direction to 'Eke Crater and due north along Pō'elua Gulch to the northern shoreline of West Maui.

The CARP has been crosswalked with the updates to the West Maui and South Maui community plans and allows for additional focus on remote areas of Maui County, some of which have not yet completed extensive updated planning efforts.

Residents of remote areas, including the individual islands of Moloka'i and Lāna'i, face access challenges, including difficult, expensive, or time-consuming travel and unreliable communication systems.

Because of these unique characteristics, the County of Maui held targeted community engagement sessions with several more remote areas of Maui County to identify place-specific considerations related to climate vulnerabilities, resiliency actions, and solutions.



Our Collective Voices

The communities of Molokaʻi, Lānaʻi, and East Maui have four specific challenging areas that need to be uniquely addressed within the context of their local communities and our changing climate:

- Increased need for sustainable, affordable housing.
- Increased need for healthcare services and medical professionals.
- Increased issues related to invasive ungulates and invasive species causing severe erosion, runoff, threats to native biodiversity, and additional problems.
- Increased vulnerabilities to supply chain interruptions due to additional remoteness.

Several of the unique climate-related vulnerabilities and community-driven strategies for Molokaʻi, Lānaʻi, and East Maui are discussed in the following pages.

Molokaʻi

Molokaʻi's population of 7,345 residents have managed to sustain a culture that does not primarily rely on tourism to sustain its economy. Climate change directly affects this more traditional way of life on Molokaʻi.

There are stark examples of climate change vulnerabilities across the island. While there is a lush, mountainous region to the northeast, much of Molokaʻi's landscape is parched because of a century of overgrazing, deforestation, drought, loss of native plants, and stream diversions for contemporary agricultural practices.

Lower elevations in west and south Molokaʻi are extremely dry. Increasing heat and drought creates a high fire risk and more demand for air conditioning, creating financial stress on households.

The feral ungulate population on Molokaʻi expedites erosion and landslide potential, degrades farming and ranching viability, and damages the surrounding reef and associated coastal resources.

In addition, the fostering of active communication and collaboration with large landowners is needed to strengthen community relationships and to establish land access agreements that allow for adequate fire prevention and feral ungulate population control.

RESIDENT-RECOMMEND COMMUNITY ACTIONS:

- **Removing dead trees coupled with reforestation, regenerative agriculture, and planting shade trees in community areas**
- **Using native plants in landscaping and ground covers**
- **Changing building codes that support water catchment and greywater capture and reuse**
- **Providing community education on topics such as passive and desert water harvesting strategies**

Our Collective Voices

Climate change impacts are already hampering food security and negatively impacting traditional food gathering practices such as limu harvesting, fishing, and growing taro.

Local Molokaʻi residents recommend laws and policies that support the following:

- **Restoration and responsible management of ancient/ traditional food infrastructure by ahupuaʻa**
- **Restoration of stream flow**
- **Increased local food production by supporting local farmers**
- **Agricultural workforce development and youth programs**
- **Improving the local food distribution system**

Storms and flooding events along Molokaʻi's south coast are already causing bridge and road closures and damage, limiting access and connectivity for the community. Increased passive flooding due to sea level rise is a severe threat to south shore roads, structures, the harbor port for barge shipments, and other critical infrastructure.

The loss of major employers and continued climate impacts has contributed to an economic gap on the island.

Sustʻāinable Molokai, a nonprofit organization, is working to restore ʻāina momona (abundance) to the land and people of the island, shaping growth that aligns with their cultural values.

Sustʻāinable Molokai is currently developing the Molokaʻi Community Energy Resilience Action Plan, which is an independent, island-wide, community-led and expert-informed collaborative planning process to increase renewable energy on Molokaʻi.

Simultaneously, they are developing the Molokaʻi Climate Change and Sea Level Adaptation and Resiliency Plan, a community-led plan for Molokaʻi's future. They are also working to rebuild their local food system through a Food Sovereignty Program, which seeks to develop economic opportunities for its producers while fostering its residents' health.

THE COMMUNITY IDENTIFIED THE NEED FOR:

- Future strategic relocation of its main town and population center Kaunakakai to a safer inland location at a higher elevation, secure from the impacts of sea level rise, king tides, coastal erosion, tsunamis, and other climate change impacts
- More secure and improved methods of importing goods and supplies to the island
- Relocation of sewage treatment facilities
- Solutions to address existing cesspools
- Development and implementation of additional water pollution and erosion control measures to trap silt and capture or redirect stormwater

Our Collective Voices

Lānaʻi

Lānaʻi, with a population of 3,315 residents is unique amongst the islands of Hawaiʻi as it is 98% privately owned by Larry Ellison, founder and chairman of software giant Oracle.

The economy is supported by two Four Seasons resort hotels, a golf course, and the rental of luxury homes on the resort's property.

Residents feel a high level of water insecurity due to Lānaʻi being the driest inhabited island in the county, sitting in the rain shadow of Maui and the Big Island. Development, overgrazing, and loss of native plants have impacted the water supply, and coastal areas and reefs are being affected by erosion and larger storms. Lānaʻi's two harbors and coastal roads on the south and west facing shores are particularly vulnerable to sea level rise.

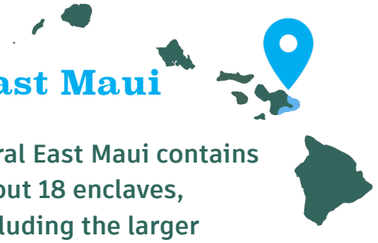
Lānaʻi community members suggest revisiting a desalination system, applying current technology, capturing water upslope, using native a'ali'i shrubs and vetiver grass for erosion control, exploring fog drip capture, planning for wastewater treatment and reuse during plant

expansion, investing in a more resilient and efficient water system, activating regenerative agroforestry in high-risk soils, and using fencing to keep feral ungulates out of the upper watershed.

There is a strong desire to increase resiliency by taking care of Lānaʻi's aging population and increasing community food production.

A community partner, Pūlama Lānaʻi, was created by Ellison, "to manage, preserve and protect our precious land and natural resources." Pūlama Lānaʻi focus areas include agricultural programs, resource management, conservation, hydroponic gardening, and freshwater system development. **A separate proposed solar project will also provide 95% of the island's energy needs and is sited to be on Pūlama Lānaʻi land.**

East Maui



Rural East Maui contains about 18 enclaves, including the larger settlements of Huelo, Keʻanae, Nāhiku, Hāna, Kīpahulu, and Kaupō. The 40 mile journey to the largest town of Hana (pop. 1,584) winds through 620 curves and 59 mostly one-lane bridges.

Flooding events often close roads and bridges, limiting access in and out of these communities. Inland, slopes rise dramatically up the east side of Haleakala volcano. Residents are concerned about ungulates and other invasive species taking over forests and watersheds, impacting biodiversity and degrading water quality. Beyond Hāna, the highway narrows even further, including some one-lane cliffside corners, rough unpaved stretches, and gullies prone to washouts.

Erosion and landslides affect the entire region's infrastructure, impact water supplies, and choke reefs.

Residents suggest managing resources with traditional knowledge; expanding shoreline and nearshore management plans; and providing expanded environmental education for children, college students, farmers, and landscapers.

The Hāna region attracts up to 7,000 visitors daily, causing substantial disruptions to residents' daily lives. Residents emphasize they do not have the infrastructure to accommodate this influx of people, especially in an emergency. Internet and cell service throughout East Maui are poor. Expansion of the communications network, supplemented by ham radios, is needed, as well as increased digital literacy. Residents suggested each East Maui community should have a Certified Emergency Response Team (CERT) leader.

Hotter temperatures are starting to negatively affect crops and increase the demand for air conditioning, adding financial stress on households and businesses.

This fertile region is capable of ample food production, and a distribution network could significantly improve resiliency by supplying more prominent island outlets and a certified commercial kitchen. Subsistence gathering and fishing are strained. Restoration of Hamoa fishponds was emphasized, along with community stream clean ups and reestablishing beneficial limu.

Towards Net Negative Carbon

Climate Action

is interconnected with every sector. From health and well-being, culture, economics, and equity, the principles of sustainability cascade into every aspect of our community.

Therefore, alignment with the County of Maui's pledges and the culture, history, and values of the community guided the formation of the climate strategies and actions. As noted in the CARP Guiding Principles, the County of Maui is committed to eliminating GHG emissions and achieving net negative carbon.

Towards Net Negative Carbon

NET NEGATIVE CARBON occurs when more CO_2 is removed from the atmosphere through carbon sequestration than the community emits. To achieve this, we must continue to reduce GHG emissions through climate strategies and actions, while also supporting regenerative practices that sequester carbon and increase our carbon stock.

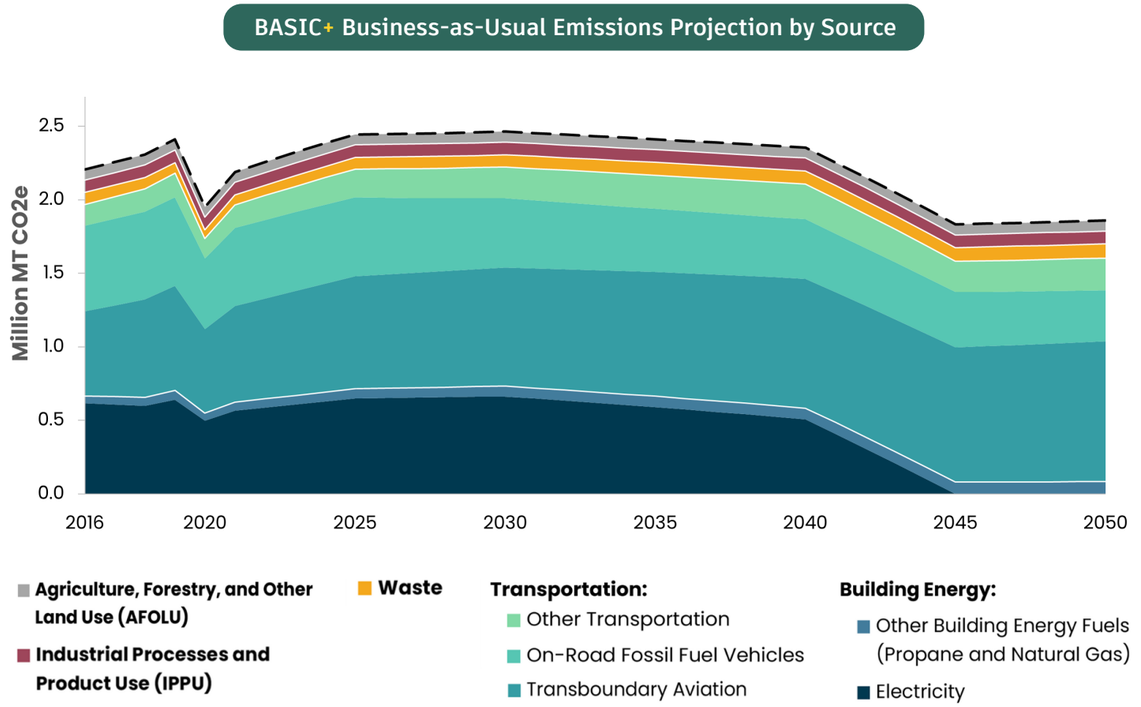
In the History of Climate Action section (pg. 67) of this plan, we discussed the powerful building blocks that created the foundation of our work. However, there is still substantial work to be done.

Worsening climate impacts paired with rising natural resource demand from Maui County's growing resident and visitor population pose significant regional challenges.

CCRS completed a "Business-as-Usual" projection of Maui County's BASIC+ GHG emissions through 2050 using 2016 as the baseline year, integrating the HCEI commitment of 100% renewable electricity by 2045, and building out an EV network (the County of Maui expects 30% of all vehicles to be electric by 2050). A "Business-as-Usual" projection models future GHG emissions if the County of Maui did not take any further action to reduce GHG emissions.

When accounting for BASIC+ GHG emissions, and in a "Business-as-Usual" scenario, Maui County's GHG emissions are expected to decrease by only 16% by 2050—missing the goal of an 84% decrease to reach net zero GHG emissions.

Significant action is needed by all residents and visitors to reduce the large gap between net zero and projected GHG emissions.



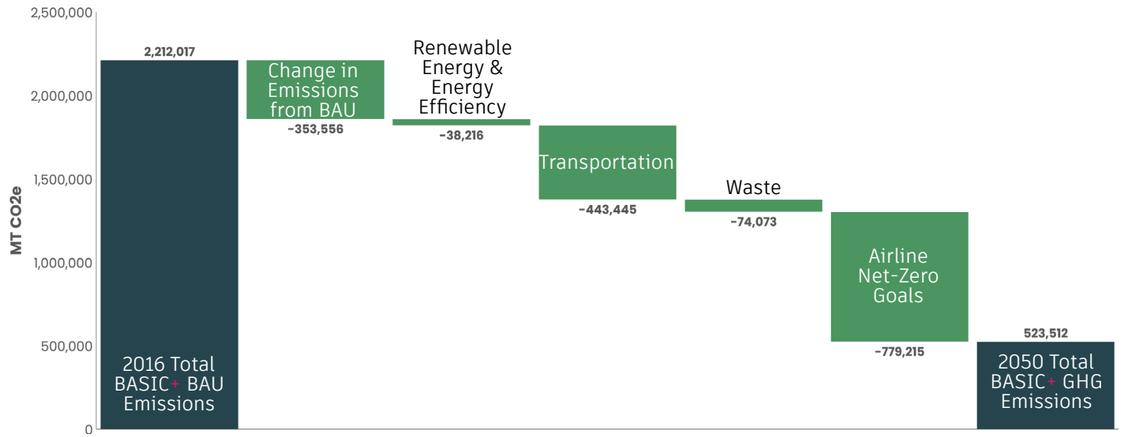
Towards Net Negative Carbon

Overview of Action

In a "Business-as-Usual" scenario, Maui County's BASIC+ GHG emissions would decrease by 16% by 2050 compared to the 2016 baseline. With the strategies and actions identified, BASIC+ GHG emissions are expected to decrease by 76% by 2050. GHG emissions in 2050 are expected to be 523,512 mt CO_2e if all strategies and actions are implemented, and major airlines meet their goals of net-zero by 2050.

2050 BASIC+ GHG Emission Totals

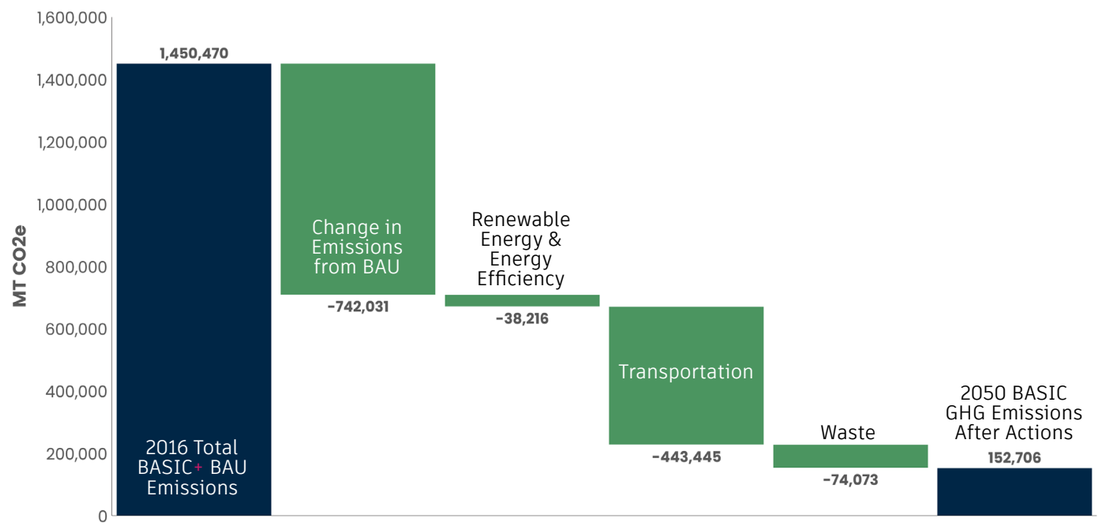
These are the expected BASIC+ emission totals in 2050 if all identified actions were to be implemented. Airlines reaching their net-zero goals have the greatest impact on Maui County BASIC+ emissions.



Maui County's BASIC GHG emissions (BASIC emissions do not include transboundary aviation, industrial process and product use, and other minor sources) would decrease by 48% in a "Business-as-Usual" scenario by 2050 compared to the 2016 baseline. This decrease is driven by the exclusion of airline GHG emissions and renewable energy generation capacity expected to be added to the grid. With the actions identified, BASIC GHG emissions are expected to decrease by 89% by 2050 from the 2016 baseline. Actions to reduce some BASIC+ GHG emissions, such as airline GHG emissions, are limited. **The County of Maui has greater control over BASIC sources and can make significant progress in reducing GHG emissions from these sources.**

2050 BASIC GHG Emission Totals

These are the expected BASIC emission totals in 2050 if all identified actions that impact BASIC emission sources were to be implemented.



Mitigation Strategies & Actions

THE FOLLOWING STRATEGIES & ACTIONS were ***identified and vetted*** by Maui County community stakeholders.

HOW TO READ THESE PAGES

The mitigation strategies and actions of the CARP are organized by sector within the following section.

Please note that many strategies and actions identified throughout the CARP are already underway through current County of Maui initiatives, community nonprofits, and public and private entities. Including initiatives in the CARP that are already underway is intended to highlight and account for their climate action and resiliency contributions, as well as to emphasize the need for these strategies and actions to continue to be supported and prioritized.

Key Partners

Key implementation partners are the community groups, nonprofit organizations, governmental departments and agencies, and other stakeholders whose input, leadership, and partnership will be critical for the successful implementation of the proposed strategies and actions.

Prioritization of Action

Based on input from community members and subject matter experts, the actions are ranked as **LOW**, MEDIUM, and HIGH priority.

Alignment with Aloha+ Challenge and UN SDGs

The Aloha+ Challenge is a statewide commitment to achieve the State of Hawai'i's sustainability goals. It is a locally-driven framework that also supports the implementation of the United Nations Sustainable Development Goals. See symbols on the following page.

Equity Impacts

Climate change will disproportionately impact underserved and marginalized groups and amplify existing economic and social inequality. A key focus for the mitigation and resiliency strategies and actions that make up the core of the CARP is to protect community members who are the most vulnerable to climate change.

GHG Reduction Potential

This refers to the degree to which the action will reduce heat-trapping gases in the atmosphere. **LOW** is defined as actions that have a less than 1% reduction in GHG emissions. MEDIUM is between 1 to 3%. HIGH is over 3%.

Expected Level of Difficulty of Implementation

The implementation difficulty is a reflection of the time, resources, people, and community buy-in that will be required to successfully implement the action.

Timeframe for Implementation

Provides a general estimate of the timeline for implementing the action. This also identifies whether the action is a one-time action or an ongoing action.

Estimated Cost of Implementation

This refers to the estimated budget and funding required to implement the action. More precise budgets for the actions within the CARP will need to be developed as they move closer to implementation. $ indicates low cost, $$ inicates medium cost, and $$$ indicates high cost.

Mitigation Strategies & Actions

SYMBOLS SUMMARY

The Aloha+ Challenge is a statewide public-private commitment to achieve Hawai'i's social, economic, and environmental goals by 2030.
VISIT: https://alohachallenge.hawaii.gov

CLEAN ENERGY TRANSFORMATION

SMART SUSTAINABLE COMMUNITIES

GREEN WORKFORCE & EDUCATION

NATURAL RESOURCE MANAGEMENT

LOCAL FOOD PRODUCTION & CONSUMPTION

SOLID WASTE REDUCTION

The Sustainable Development Goals are a universal call to action to end poverty, protect the planet, and improve the lives and prospects of everyone, everywhere. The 17 Goals were adopted by all United Nations Member States in 2015 as part of the 2030 Agenda for Sustainable Development.
VISIT: https://www.un.org/sustainabledevelopment/development-agenda/

NO POVERTY

ZERO HUNGER

GOOD HEALTH & WELL-BEING

QUALITY EDUCATION

GENDER EQUALITY

CLEAN WATER & SANITATION

AFFORDABLE & CLEAN ENERGY

DECENT WORK & ECONOMIC GROWTH

INDUSTRY, INNOVATION, & INFRASTRUCTURE

REDUCED INEQUALITIES

SUSTAINABLE CITIES & COMMUNITIES

RESPONSIBLE CONSUMPTION & PRODUCTION

CLIMATE ACTION

LIFE BELOW WATER

LIFE ON LAND

PEACE, JUSTICE, & STRONG INSTITUTIONS

PARTNERSHIPS FOR THE GOALS

Municipal

The County of Maui government will play an integral role in the success of the CARP.

As Maui County experiences the effects and challenges of climate change, CCRS is working to advocate for the community's most urgent concerns.

Of the total GHG emissions produced in Maui County, county operations account for 8% of BASIC GHG emissions and 5% of BASIC+ GHG emissions. The following strategies and actions directly impact Maui County's fleet, buildings, landfills, and staff, and have been identified for completion to better achieve our sustainability goals.

Landfill management through landfill gas flaring, waste diversion, and the utilization of landfill gas are all opportunities to reduce GHG emissions.

GHG emissions from landfills owned and operated by the County of Maui make up 53% of the County of Maui's total organizational GHG emissions.

It is important to note that the waste generated by actual County of Maui operations, not including residential or commercial waste, only accounts for less than 1/2 of a percent of overall community wide GHG emissions.

Mitigation Strategies & Actions

Municipal

STRATEGY 1

Establish a permanent County of Maui Office of Climate Change, Resiliency, and Sustainability (CCRS) to further enhance climate action and resiliency throughout Maui County.

KEY PARTNERS: *County of Maui*

ACTION 1 HIGH PRIORITY

Officially establish CCRS as a County of Maui Department or as a division within an existing county department (such as Department of Management) by dedicating funds annually to adequately staff the Office of CCRS and provide a meaningful operating budget to advance the county's climate action, resiliency, and sustainability goals. At a minimum, establish Chief Resiliency Officer and Deputy Resiliency Officer positions, while also maintaining the existing Energy Commissioner, Environmental Coordinator, Green Building and Resilient Housing Specialist, and Grants and Contracts Specialist positions. Ensure that the officially-established Office of CCRS coordinates and facilitates climate and resiliency actions across all County of Maui Departments and serves as a climate action and resiliency liaison between Office of the Mayor, County Council, and the community at large.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
HIGH	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

ACTION 2 HIGH PRIORITY

Update the County of Maui's CARP at least once every 5 years and report regularly on progress of implementing its strategies and actions. Enforce that the CARP is a living document by reviewing, updating, and publicly reporting on progress to ensure that the County of Maui is meeting our carbon reduction and resiliency commitments and targets.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

ACTION 3 HIGH PRIORITY

Secure funding to hire a Mobility and Clean Transportation Specialist within the Office of CCRS to leverage opportunities to increase micromobility services and clean transportation adoption across Maui County.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

Mitigation Strategies & Actions

Municipal

ACTION 4 HIGH PRIORITY

Secure funding to hire an Equity Specialist within the Office of CCRS who will develop an equity decision-making framework for the County of Maui to improve how the implementation of climate and resiliency actions will benefit, engage, and empower communities, especially for those underserved, difficult to reach, and vulnerable community members.

Aloha+ Challenge

UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

STRATEGY 2

Achieve net zero emissions for County of Maui operations by 2045 or sooner.

KEY PARTNERS: *County of Maui, Energy Services Companies (ESCOs), Hawaiian Electric Company, Hawai'i Energy*

ACTION 1 HIGH PRIORITY

Pursue aggressive energy efficiency measures and maximize onsite renewable power generation and clean energy storage at County of Maui-owned sites, including County of Maui-owned rooftops, parking lots, and other previously developed lands.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
HIGH	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

Mitigation Strategies & Actions

Municipal

ACTION 2 HIGH PRIORITY

Continue to increase County of Maui participation in grid services programs for county operations, such as energy demand response programs. Identify flexible sources of energy demand and leverage these to integrate intermittent sources of renewable energy. By engaging in meaningful demand response programs and encouraging pricing structures that incentivize such engagement, the County of Maui's energy usage can contribute to providing grid services that support overall decarbonization and stability of the county's electrical grid.

Aloha+ Challenge

UN SDGs

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

ACTION 3 HIGH PRIORITY

Continue the CCRS Grants Program and Climate Adaptation/Mitigation CCRS budget line item to ensure funding for climate action and resiliency programs.

Aloha+ Challenge

UN SDGs

MEDIUM Equity Impacts
LOW GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Adopt policy for all new construction undertaken by the County of Maui to achieve a minimum of LEED silver certification or an equivalent green building certification.

Aloha+ Challenge

UN SDGs

LOW Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

ACTION 5 MEDIUM PRIORITY

Establish a tracking system for buildings owned and/or operated by the County of Maui. Collect the annual energy data of buildings. Track, benchmark, and report the data using tools such as ENERGY STAR Portfolio Manager, Arc Skoru, or a locally-developed and recognized tool to help with data organization for ongoing performance reporting.

Aloha+ Challenge

UN SDGs

LOW Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

Mitigation Strategies & Actions

Municipal

ACTION 6 MEDIUM PRIORITY

Pursue LEED for Cities and Communities Certification for County of Maui facilities.

Aloha+ Challenge

UN SDGs

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$ $ $

STRATEGY 3

Develop a clean fuel fleet plan for the County of Maui and increase the county's fleet of Clean Fuel Vehicles to achieve a 100% renewable-powered fleet by 2035.

KEY PARTNERS: *County of Maui*

ACTION 1 HIGH PRIORITY

Continue to replace all existing internal combustion engine (ICE) vehicles in the County of Maui's mass transit fleet with Clean Fuel Vehicles, including EVs, biofuel vehicles, and hydrogen vehicles.

Aloha+ Challenge

UN SDGs

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$ $ $

ACTION 2 HIGH PRIORITY

Develop and adopt an electric bus purchasing policy for the County of Maui's bus fleet to reach 100% renewable-powered vehicles by 2035.

Aloha+ Challenge

UN SDGs

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$ $ $

Mitigation Strategies & Actions

Municipal

ACTION 3 LOW PRIORITY

Develop charging protocols for EVs and electric buses in the County of Maui fleet to facilitate integration of intermittent renewable energy, helping to smooth the intermittency of renewable energy sources like wind and solar PV. Utilize programs such as time of use, onsite DC PV-powered EV charging, battery energy storage, and vehicle-to-grid in order to achieve this.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

STRATEGY 4

Support enhanced green waste diversion at the landfill by funding and building infrastructure for a countywide commercial composting facility.

KEY PARTNERS: *County of Maui, State of Hawai'i Department of Health*

ACTION 1 HIGH PRIORITY

Secure additional funding to support design, construction, and permitting of a state-of-the-art large-scale composting facility in Maui County.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

Mitigation Strategies & Actions

Municipal

STRATEGY 5

Find ways to reduce greenhouse gas emissions produced by County of Maui-owned and operated landfills.

KEY PARTNERS: *County of Maui, State of Hawai'i Department of Health*

ACTION 1 HIGH PRIORITY

Capture and flare landfill gas at landfills where no capture or flaring is already occurring. Partner with each landfill that does not currently capture methane, with a priority towards capture and use whenever feasible. Support each landfill in acquiring the infrastructure to either install a methane-to-energy or gas-to-fuel collection system or flare methane (if that is the only viable alternative). Note that the County of Maui is currently working to create a Landfill Gas Utilization Project at the Central Maui Landfill.

Aloha+ Challenge | **UN SDGs**

LOW	Equity Impacts
HIGH	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 2 MEDIUM PRIORITY

Pursue low carbon-emitting solid and liquid waste-to-energy (WTE) technologies. Support the Department of Environmental Management (DEM) in exploring and pursuing clean WTE technologies, such as Pyrolysis, Dendro Liquid Energy, and Hydrothermal Carbonization as a solid and liquid WTE strategy.

Aloha+ Challenge | **UN SDGs**

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
HIGH	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Capture and track waste-related GHG emissions data for DEM programs. Establish a mandate that requires the collection, analysis, reporting, and monitoring of GHG emissions associated with solid waste operations across Maui County.

Aloha+ Challenge | **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Mitigation Strategies & Actions

Municipal

STRATEGY 6

Reduce waste at County of Maui owned facilities and public areas.

KEY PARTNERS: *County of Maui, State of Hawai'i Department of Health*

ACTION 1 MEDIUM PRIORITY

Establish a Sustainable (Low GHG) Procurement Policy for the County of Maui. A sustainable procurement policy will reduce Maui County's waste as well as upstream GHG emissions associated with production of imported goods and materials. This will serve as a starting point for considering carbon pollution reduction as a factor in all County of Maui decision-making.

Aloha+ Challenge | **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 2 MEDIUM PRIORITY

Expand the location of public drinking water fountains and retrofit existing public drinking fountains to include devices capable of refilling reusable water flasks, cups, and containers with clean filtered water. Require all new water fountains to be designed to enable easy bottle filling.

Aloha+ Challenge | **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

Building Energy

Building energy sector GHG emissions are created by the electricity, natural gas, and propane used to power Maui County's households and businesses. In 2019, this sector made up 29% of the community BASIC+ GHG emissions. At 90%, electricity usage made up the greatest source of GHG emissions for this sector. Commercial electricity usage accounted for 66% of GHG emissions, while residential electricity use made up 34%.

With current efforts underway by the County of Maui, the State of Hawai'i, Hawaiian Electric Company, and other community partners, electricity is expected to be 100% renewable and locally produced by 2045.

As a result, GHG emissions from the building energy sector are projected to decrease by 88% by 2045 (based on a 2016 baseline), despite a rise in population and tourism. Propane and natural gas used for space heating, water heating, and cooking account for the remaining building energy emissions.

Energy equity is also a critical element of the CARP. This equity focus will ensure that underserved LMI households—those least able to access and benefit from clean energy technologies and services—are able to take part in our clean energy economy.

> **Living on an island and being dependent on a single energy source is not a good plan. Efficient cooling systems are going to be a necessity in the near future.**
>
> *- Maui County Resident*

100% RENEWABLE ENERGY
by 2045 based on a 2016 baseline

30% INCREASE IN ENERGY EFFICIENCY
by 2045 based on a 2016 baseline

The County of Maui's policies to expand renewable energy, decarbonize the electricity sector, and increase energy efficiency will play a major role in the state's ability to achieve this ambitious target. These strategies and actions will reduce consumption and ensure all residents benefit from new clean energy technologies in the built environment. The success of these strategies and actions will significantly impact the long-term resiliency of Maui County.

In 2021, 50% of electricity consumed in Maui County was produced from renewable sources.[1] However, building energy in Maui County is still dependent on imported fossil fuels for electricity production and for space cooling and water heating. 2.9 million barrels of petroleum, fuel oil, or diesel were imported for electricity production for Maui County in 2021.[2]

Dependency on fossil fuel imports puts Maui County's energy sector at risk of impacts from price fluctuations, natural disasters, infrastructure (rail lines and highways in the US), supply chain disruptions (e.g. ocean shipping disruptions), and terrorist attacks.

1 Hawaiian Electric 2021 Renewable Portfolio Standard Status Report https://www.hawaiianelectric.com/documents/clean_energy_hawaii/rps_report_2021.pdf

2 Hawai'i's Electricity Industry: 2020-2021 Analysis and Recent Trends https://files.hawaii.gov/dbedt/economic/data_reports/reports-studies/ElectricityTrendsReport2022.pdf

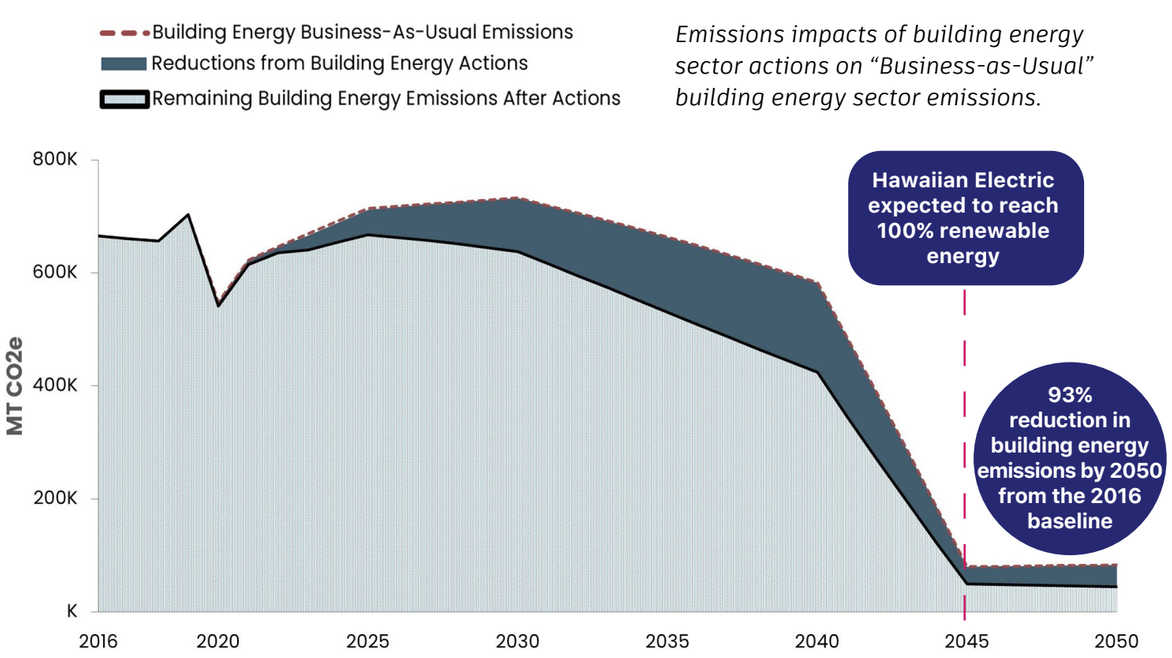
Mitigation Strategies & Actions

Building Energy

Based on the 2016 baseline, we expect that these strategies and actions will further reduce building energy sector GHG emissions by 6% by 2050, for a total expected reduction in GHG emissions of 93%.

By 2050, actions targeted towards building electrification and high efficiency cooling technologies provide the greatest GHG emissions reductions in the building energy sector. As Maui County's electric grid increases the amount of renewable energy production, replacing natural gas or propane equipment with electric equipment is a powerful strategy for reducing building energy GHG emissions. With a 100% renewable electricity grid, electrification results in a complete reduction of equipment emissions as no emissions from electricity production are produced.

Projected Emissions Reductions from Building Energy Sector Actions



Emissions impacts of building energy sector actions on "Business-as-Usual" building energy sector emissions.

5.6% ELECTRICITY LOST
IN TRANSMISSION AND DISTRIBUTION
(the process of moving from the power plant to consumer)

AVERAGE ANNUAL ELECTRICITY USE PER RESIDENCE

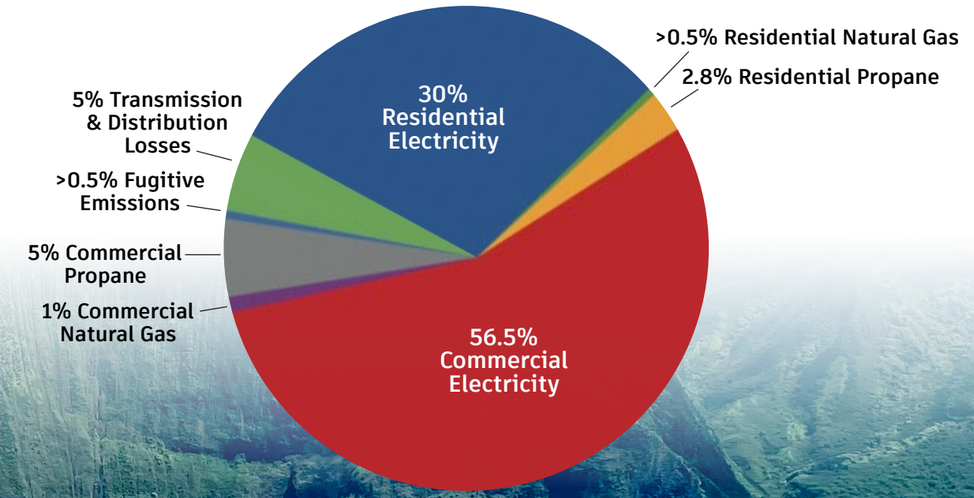
5,574 kWh	6,513 kWh	3,942 kWh
Lānaʻi	Maui Island	Molokaʻi

Source: Maui County Data Book, "Energy and Science," Section 7, (2020), 133. https://sbdc.dev.hyperspective.com/wp-content/uploads/2021/10/2020-Chapter07.pdf

40.8% RENEWABLE ENERGY
ELECTRIC GRID

Source: Hawaiian Electric https://www.hawaiianelectric.com/documents/about_us/news/2021/20210215_hawaiian_electric_exceeds_RPS_target.pdf

Stationary Emissions Details (mt CO_2e)



Building Energy

INCREASING RESIDENTIAL SOLAR *ACCESS*

52% OF RESPONDENTS **RANKED THIS ACTION AS MOST IMPORTANT**

Increasing residential solar photovoltaic (PV) and solar hot water access for low- to moderate-income (LMI) households was ranked ***as the most important building energy action*** for the community by respondents to a community survey.

79% of respondents ranked this action within their top 3 most important building energy actions.

STRATEGY 1

Increase residential solar photovoltaic (PV) and solar hot water access for all Maui County residents. Ensure that low- to moderate-income (LMI) households are able to access and pay for solar PV, battery energy storage, and solar hot water systems through partnerships, outreach, and dedicated funding.

KEY PARTNERS: *County of Maui, Public Utilities Commission, Hawaiian Electric Company, Hawai'i Energy, Hawai'i State Energy Office (HSEO), local community nonprofit organizations, Renewable Energy Developers*

ACTION 1 HIGH PRIORITY

Launch a Solarize Maui County program with community-based organizations and leaders to increase residential solar access by leveraging a strategy of community bulk-purchasing to reduce costs and address outreach barriers.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$ $ $

ACTION 2 HIGH PRIORITY

Improve the process and reduce the time it takes to permit distributed solar PV systems (including distributed battery technologies). Actively involve local communities in the renewable energy permitting process to ensure that the planning process is guided by shared community benefits and equity-enhancing measures.

Aloha+ Challenge | **UN SDGs**

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$ $ $

Building Energy

ACTION 3 HIGH PRIORITY

Promote the development of and participation in community-based renewable energy (CBRE) programs, especially in underserved communities. Actively participate in CBRE projects, including siting CBRE projects on County of Maui-owned land, as appropriate.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost
$$$

ACTION 4 MEDIUM PRIORITY

Enact policy requiring PV readiness for all new construction—residential or commercial—including roof space, equipment space, and conduit to the roof.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

ACTION 5 HIGH PRIORITY

Enact policy requiring PV on all new construction of multi-family dwellings and single-family affordable housing projects.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

ACTION 6 MEDIUM PRIORITY

Enact policy to allow all HOAs and AOAO owners or groups of owners to pursue renewable energy projects that are allowable under existing County of Maui permitting rules.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

Building Energy

STRATEGY 2

Expand renewable energy planning and expedite permitting.

KEY PARTNERS: *County of Maui, Public Utilities Commission, Hawaiian Electric Company, Hawai'i State Energy Office, Renewable Energy Developers*

ACTION 1 HIGH PRIORITY

Streamline permitting for utility-scale renewable energy projects and battery energy storage systems.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 2 HIGH PRIORITY

Support funding for new County of Maui positions in the Planning Department and Department of Public Works to streamline permitting for utility-scale renewable energy projects.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
LOW GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

STRATEGY 3

Reduce energy demand by increasing energy efficiency and continue to support energy efficiency programs, policies, and incentives.

KEY PARTNERS: *County of Maui, Public Utilities Commission, Hawaiian Electric Company, Hawai'i Energy, Hawai'i State Energy Office, local community nonprofits and organizations*

ACTION 1 HIGH PRIORITY

Increase funding and partner with community organizations to provide additional incentives for energy efficiency programs, with a focus on offering incentives and conducting outreach to LMI households. Provide incentives in addition to what is already provided by existing programs (e.g. Hawai'i Energy) for energy efficiency improvements.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
HIGH GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

Building Energy

ACTION 2 MEDIUM PRIORITY

Incentivize building electrification and high-efficiency cooling technologies (e.g. air source heat pumps, solar hot water heaters, heat pump water heaters, and seawater air conditioning).

Aloha+ Challenge

UN SDGs

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short to Medium-term, Ongoing

Estimated Cost

$$$

STRATEGY 4

Proactively adopt and enforce the latest International Energy Conservation Code (IECC) to the highest national and state standards.

KEY PARTNERS: *County of Maui, Public Utilities Commission, Hawaiian Electric Company, Hawai'i Energy, Hawai'i State Energy Office, local community nonprofits and organizations, State of Hawai'i Building Code Council, Maui EV Alliance, Drive Electric Hawai'i*

ACTION 1 HIGH PRIORITY

Update building codes to the most recent code within one year of release. Ensure adequate funding is provided to implementing departments for staff training.

Aloha+ Challenge

UN SDGs

MEDIUM Equity Impacts
HIGH GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

Mitigation Strategies & Actions

Building Energy

ACTION 2 HIGH PRIORITY

Actively enforce building codes to ensure compliance through educational materials, easy-to-follow procedures, and County of Maui staff support. Ensure adequate funding is provided to implementing departments for necessary staffing.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

ACTION 3 HIGH PRIORITY

Adopt a commercial requirement to complement existing PV- and EV-Ready measures in the current code to reduce costs for future rooftop solar and EV adoption.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 4 HIGH PRIORITY

Adopt IECC strengthening amendments that require EV charging such as EV-capable, EV-ready, or EV-installed at residential and commercial buildings.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 5 HIGH PRIORITY

Adopt a voluntary energy stretch code that incentivizes increased commercial and multi-family building energy performance.

Aloha+ Challenge **UN SDGs**

LOW Equity Impacts
MEDIUM GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

Mitigation Strategies & Actions

Building Energy

ACTION 6 MEDIUM PRIORITY

Increase energy efficient lighting requirements in the code for both interior and exterior lighting to keep us aligned with market advancement and rapid progress being made by lighting manufacturers. Ensure that lighting impacts to wildlife and human health and well-being are also prioritized.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short-term

Estimated Cost

$ $ $

STRATEGY 5

Create a building energy performance rating and disclosure policy that requires commercial, municipal, and multi-family buildings equal to or greater than specified square footage to publicly report annual energy usage.

KEY PARTNERS: *County of Maui, Hawai'i State Energy Office, Hawai'i State Legislature, Hawaiian Electric Company*

ACTION 1 MEDIUM PRIORITY

Require energy benchmarking for commercial and multi-family buildings of 10,000 sq ft or more.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$ $ $

Building Energy

ACTION 2 MEDIUM PRIORITY

Require new commercial and multi-family buildings to pursue Energy Star certification and to achieve a minimum Energy Star score of 70 as a part of new construction.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$ $ $

STRATEGY 6

Encourage, support, and incentivize beyond code green building projects.

KEY PARTNERS: *County of Maui, Hawai'i State Energy Office, Hawai'i State Legislature, Hawaiian Electric Company*

ACTION 1 MEDIUM PRIORITY

Provide incentives for construction of new and existing buildings pursuing LEED, Living Building Challenge, or another recognized and robust green building rating system (e.g. LEED Zero, LEED True, etc.).

Incentives could include:
Providing expedited review or permitting processes to buildings achieving certification; provide density or height bonus allowing for percentage increases in Floor Area Ratio or other measures of density contingent upon certification; provide tax credits or tax exemptions for buildings achieving certification; provide permitting fee reduction or waivers for buildings achieving certification.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$ $ $

Mitigation Strategies & Actions

Transportation

In community workshops and surveys, Maui County residents shared their mana‘o (thought, idea, advice) for reducing local emissions and improving transportation.

> **Meet the needs for reliable public transport in our rural communities. Make sure bike pathways will accommodate electric bicycles. Require hotel resorts to provide shuttle services for guests who don’t need or want to rent vehicles.**
>
> *- Maui County Resident*

Transportation is the most significant contributor to the county’s overall GHG emissions and is mainly driven by the tourism industry and large demand for imports.

In 2019, the transportation sector accounted for 61% of Maui County’s community-wide GHG emissions. Within this sector, transboundary aviation and road gasoline were the greatest emitters, accounting for 48% and 36% of transportation GHG emissions respectively.

In a “Business-as-Usual” scenario, by 2050, transportation GHG emissions are expected to increase by 17% from a 2016 baseline, and transportation GHG emissions are projected to account for 82% of Maui County’s GHG emissions in 2050.

Even with the expected increase of EVs without further action from the County of Maui (30% by 2050), GHG emissions are being driven upwards by the expected increase in air travel to and from Maui County.

The majority of the proposed strategies and actions below focus on reducing GHG emissions within road transportation. While aviation and waterborne GHG emissions are significant emitters, they are less easily addressed through policy changes.

However, several major airlines have committed to reaching net-zero GHG emissions by 2050. While these commitments are not included as strategies or actions from the County of Maui, GHG emissions reductions from airlines reaching their net-zero goals are incorporated into overall reductions from this sector.

> **Reduce the number of rental cars on the road. Raise taxes on rental cars and incentivize using public transportation for tourists. Tourists should have an easy way to get from the airport to their hotel without needing a taxi or rental car.**
>
> *- Maui County Resident*

If Maui County successfully meets sector goals and implements the following strategies and actions, it will reduce total transportation GHG emissions by 18% by 2050 from a 2016 baseline. When airline net-zero goals are included in these reductions, total transportation GHG emissions will decrease by 77% by 2050.

Aside from the airline net-zero goals, the strategy to increase EV and clean fuel adoption will provide the greatest GHG emissions reductions for Maui County. As EVs produce additional GHG emissions from the electricity used to charge them, GHG emissions reductions from this strategy are dependent upon the electricity grid reaching 100% renewable by 2045.

The actions to increase pedestrian walkways and bike paths, create transportation hubs, and increase access to micromobility devices provide the second greatest decrease in GHG emissions and are not reliant on other strategies or actions to achieve the expected reductions.

With all strategies, actions, and the airline net-zero goals, transportation sector GHG emissions are expected to be 296,965 mt CO_2e in 2050, a 77% reduction in transportation GHG emissions from the 2016 baseline.

Mitigation Strategies & Actions

Transportation

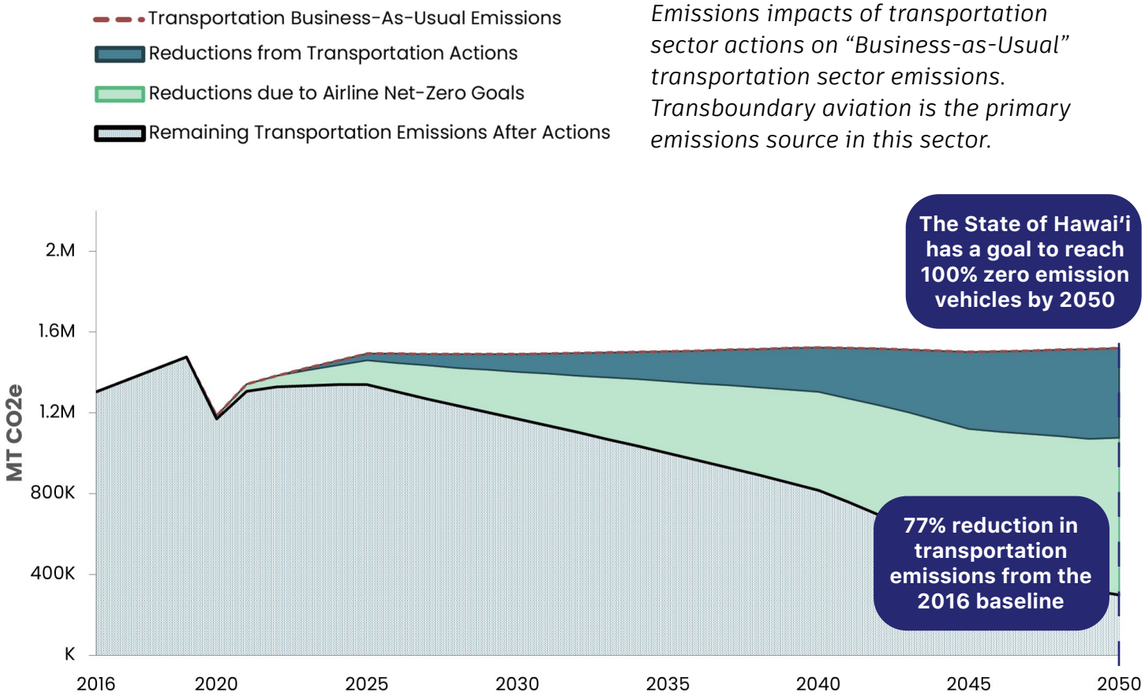
The remaining GHG emissions are primarily from waterborne transportation, local aviation (small planes that both take off and land within Maui County), and other aviation GHG emissions from airlines without net-zero goals.

The majority of GHG emissions reductions in this sector are due to commitments from major airlines.

The County of Maui acknowledges the need to continue to look for ways to reduce GHG emissions from aviation that do not rely on stated goals from private entities.

New partnerships, programs, policies, and technologies should be leveraged to push for continued reductions in the transportation sector.

Projected Emissions Reductions from Transportation Sector Actions



Emissions impacts of transportation sector actions on "Business-as-Usual" transportation sector emissions. Transboundary aviation is the primary emissions source in this sector.

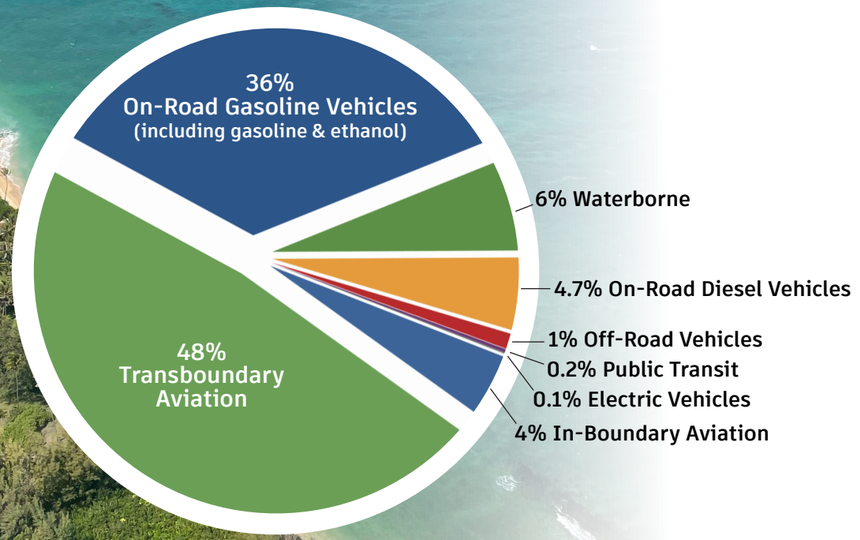
GOALS

100% RENEWABLE FUEL BY 2045
for all ground transportation

100% RENEWABLE FUEL BY 2035
for all public fleet vehicles

REDUCE THE DEMAND FOR IMPORTS
by creating a local circular economy

Stationary Emissions Details (mt CO2e)



Transportation

ABOUT
3,694,000
TONS OF SUPPLIES
pass through the Kahului Harbor each year compared to about 60,000 tons of cargo and mail that pass through the Kahului Airport, **making water transport the primary way that goods reach Maui County.**[1]

1 Maui County Data Book, "Communication & Transportation," Section 6, (2020), 112. https://sbdc.dev.hyperspective.com/wp-content/

IN 2019
3,000,000+
PEOPLE VISITED MAUI COUNTY
The population of residents and visitors in Maui County on any given day (de facto population) in 2019 was 227,479. 166,000 of those 227,479 individuals are considered residents. **This means that approximately 61,479 visitors are visiting Maui County, on any given day.**[1]

1 Maui County Data Book, "Visitor Industry & Recreation," Section 10, (2020), 178-210. https://sbdc.dev.hyperspective.com/wp-content/uploads/2021/10/2020-Chapter10.pdf

IN 2021
ONLY 1% OF ALL VEHICLES *WERE ELECTRIC*
IN MAUI COUNTY

SOURCE: State of Hawai'i Department of Business, Economic Development, & Tourism Economic Data Warehouse. https://dbedt.hawaii.gov/economic/datawarehouse/

Community survey respondents ranked the "create island-wide networks of interconnected bicycle and pedestrian pathways" action as the most important transportation action for the community. 50% of respondents ranked this action as within the top 3 most important.

STRATEGY 1

Increase EVs and adoption of other clean fuel vehicles by creating additional incentives with prioritization for LMI households.

KEY PARTNERS: *County of Maui, Hawai'i Energy, Public Utilities Commission, Hawai'i State Energy Office, Hawai'i State Legislature, Maui Economic Development Board, Maui Nui EV, local community nonprofits and organizations*

ACTION 1 **HIGH** PRIORITY

Provide additional incentives to local residents for clean fuel vehicle purchases, in addition to existing federal and state tax credits, with a focus on supporting LMI households.

Aloha+ Challenge

UN SDGs

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short to Medium-term

Estimated Cost
$$$

Transportation

ACTION 2 MEDIUM PRIORITY

Implement EV policies for ridesharing (i.e. Uber and Lyft services), especially to and from popular destinations such as airports. Encourage ridesharing hubs in frontline communities.

Aloha+ Challenge

UN SDGs

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short to Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Ensure equal access to sustainable transportation options and cost savings. Develop policy to create a "retire and replace" rebate program to support purchases of low- and zero-emission vehicles for LMI residents. Provide additional public transportation benefits to residents willing to retire high-emission vehicles.

Aloha+ Challenge

UN SDGs

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short to Medium-term

Estimated Cost

$$$

STRATEGY 2

Expand EV charging and clean fuel refueling infrastructure in public, residential, multifamily, municipal, and commercial areas.

KEY PARTNERS: *County of Maui, Hawai'i State Department of Transportation, Hawai'i State Energy Office, Public Utilities Commission, Hawai'i Energy, Hawaiian Electric Company, Private/Commercial Landowners and Developers, Maui EV Alliance, Maui Metropolitan Planning Organization, local community nonprofit organizations, Maui Nui EV*

ACTION 1 HIGH PRIORITY

Secure funding to expand the County of Maui's EV charging network. Install EV charging stations at easily accessible county facilities.

Aloha+ Challenge

UN SDGs

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

Transportation

ACTION 2 MEDIUM PRIORITY

Secure funding to support the development of biofuel and hydrogen refueling, distribution, and processing infrastructure.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
HIGH Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

ACTION 3 HIGH PRIORITY

Enact policy and secure funding to expand clean fuel refueling infrastructure in public, residential, multifamily, municipal, and commercial areas ensuring EV-ready infrastructure in new constructions and retrofits.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

Estimated Cost
$$$

STRATEGY 3

Enable and provide multiple modes of green transportation prioritizing access in underserved communities.

KEY PARTNERS: *County of Maui, Hawai'i State Department of Transportation, Maui Metropolitan Planning Organization, local community nonprofit organizations, Private sector partners*

ACTION 1 MEDIUM PRIORITY

Identify locations and funding opportunities to build new bike lanes, pedestrian pathways, access to micromobility services, and devices to limit single-occupancy vehicle travel and encourage multimodal transportation options. Provide funding for micromobility incentives and/or shared micromobility devices, with additional support for LMI households. This action may be performed congruently with transportation hubs.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short to Medium-term

Estimated Cost
$$$

Transportation

ACTION 2 MEDIUM PRIORITY

Secure funding to upgrade equipment on all buses, such as bicycle racks and mobile fare technology (similar to O'ahu's Holo Card).

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Create transportation hubs designed to facilitate the transfer of one mode of transportation to another. Design connection services between different modes of transportation at central "hubs". This could also include a universal trip planning and fare app to inform residents and visitors about multimodal transportation options.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Increase non-vehicular transportation mode share in new multi-family housing and commercial developments through Transportation Management & Design (TMD) programs. Working through the permitting process, identify opportunities to implement ongoing TDM programs with the aim to reduce GHG emissions.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 5 MEDIUM PRIORITY

Secure funding to identify candidate projects and develop dedicated bus lanes along high-occupancy transit corridors and expand reliable mainline bus service.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Transportation

ACTION 6 MEDIUM PRIORITY

Launch bike and scooter share network in congested areas. Develop creative partnerships to deploy micromobility sharing services in select locations to help alleviate traffic and offer visitors an alternative to vehicles.

Aloha+ Challenge

UN SDGs

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

STRATEGY 4

Increase connectivity through infrastructure improvements, multimodal transit design integration in new developments, and mixed-use zoning.

KEY PARTNERS: *County of Maui, Maui Metropolitan Planning Organization, Grassroot Institute of Hawai'i, local developers*

ACTION 1 MEDIUM PRIORITY

Reduce minimum vehicle parking requirements across Maui County and repurpose underutilized public parking into multimodal transportation infrastructure, urban greenery, and public-serving spaces. Continue to support alternative transportation modes and walkable live, work, and play communities to reduce residents' and visitors' dependence on single passenger vehicles. As alternative transportation options continue to be developed, reduce the number of parking stalls in existing and new parking areas.

Aloha+ Challenge

UN SDGs

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Transportation

ACTION 2 HIGH PRIORITY

Implement "complete streets" design into existing and planned road projects and prioritize old degraded roads and development in high density population areas. Ensure these projects are sited in less vulnerable geographic areas (i.e. not in sea level rise zones or tsunami inundation zones). Work with the private sector to provide connectivity and streetscape infrastructure in new developments to support complete streets principles. Incorporate sidewalk widening, shade trees, space for bike/alternative transport parking, and contributions for bike lanes in new development.

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

ACTION 3 HIGH PRIORITY

Create increased opportunities to live near workplaces through mixed-use zoning and affordable housing. Build affordable housing in urban areas with easy access to employment opportunities. Encourage transit networks that connect affordable housing neighborhoods with commercial business centers. Amend zoning codes to accommodate more residential density in urban commercial areas.

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
HIGH GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium to Long-term

Estimated Cost
$$$

STRATEGY 5

Mitigate emissions from internal combustion engine (ICE) vehicles through emissions standards and disincentivizing ICE vehicle use.

KEY PARTNERS: *County of Maui, Hawai'i State Department of Transportation, Maui Metropolitan Planning Organization*

ACTION 1 MEDIUM PRIORITY

Require vehicle emissions testing. In collaboration with the State of Hawai'i, identify funding to build and support vehicle GHG emissions testing infrastructure and enact a policy that would require vehicle GHG emissions testing, with provisions for LMI households.

Aloha+ Challenge | UN SDGs

MEDIUM Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short to Medium-term

Estimated Cost
$$$

Mitigation Strategies & Actions

Transportation

ACTION 2 MEDIUM PRIORITY

Encourage alternatives to vehicle idling. Eliminate the need for vehicle idling by creating shaded parking (e.g. solar canopies and tree cover) and develop education campaigns on the negative impacts of idling.

Aloha+ Challenge

UN SDGs

MEDIUM	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Increase the annual vehicle registration fee on new ICE vehicles and eliminate premiums applied to vehicle registration fees on new and used clean fuel vehicles. Disincentivize the purchase of new ICE vehicles by placing an additional fee on new ICE vehicle annual registrations. Provide rebates to LMI households to ensure no negative impact on LMI and underserved communities.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Mitigation Strategies & Actions

Waste

GHG emissions from the waste and wastewater sectors made up 4% and 1% of Maui County's total GHG emissions, respectively, in 2019. While waste policies may not dramatically impact Maui County's total GHG emissions, they are still a top priority.

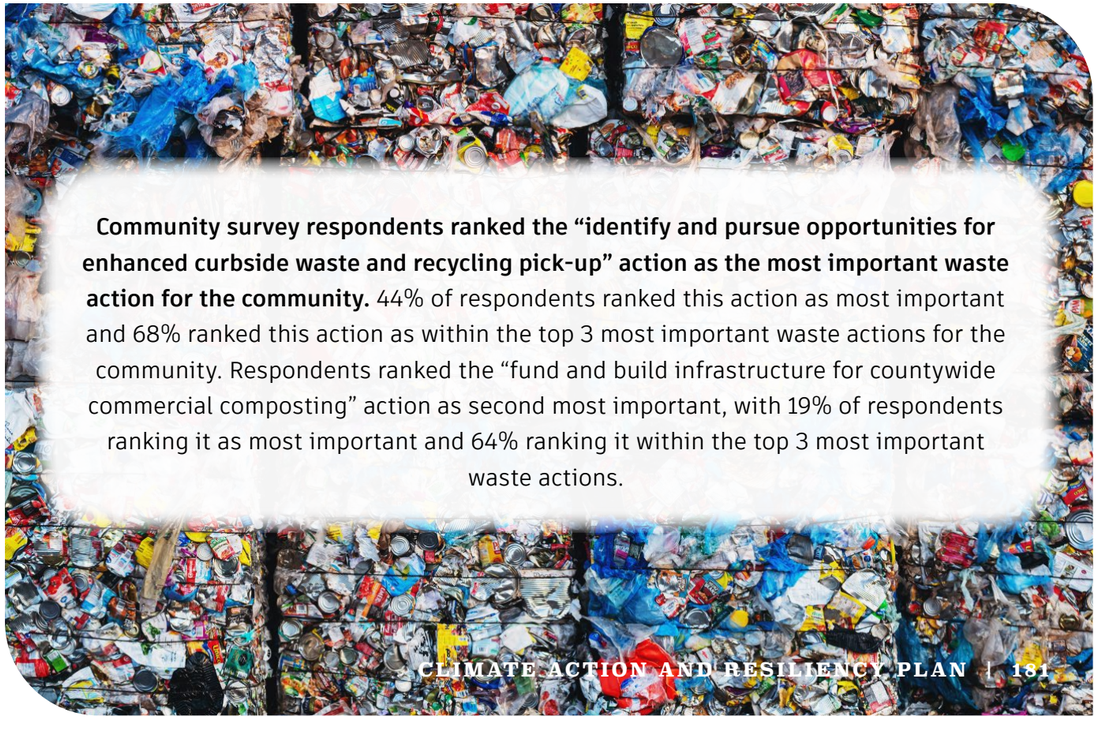
> **All of Maui should have curbside recycling and just one small garbage pickup per week. Currently, I have to take recycling into a recycling center (which I don't) and my giant garbage can is picked up twice a week. It's noisy to have trash picked up twice a week and doesn't encourage people to recycle at all.**
>
> *- Maui County Resident*

In a "Business-as-Usual" scenario, GHG emissions from the waste and wastewater sector are expected to increase by 21%. This is driven directly by an expected increase in the residential population and tourism industry.

Policies to reduce landfill waste and increase composting and recycling have a number of benefits, in addition to GHG emissions reductions. Landfills release high concentrations of methane gas, which is a GHG with much greater global warming potential than CO_2. Essentially, this means that methane is better able to absorb heat and survive in the atmosphere than CO_2. Over a 20-year period, methane gas is 80 times more potent than carbon dioxide. Methane is also the primary contributor to ground-level ozone formation, which degrades local air quality and contributes to 1 million premature deaths globally each year.[1] Therefore, waste diversion and reduction policies would positively impact the local community. The County of Maui owns and operates all of the county's landfills, giving it power and jurisdiction to implement influential and ambitious policies within this sector.

If the County of Maui successfully meets our sector goals and implements the following strategies and actions in this section, and those pertaining to waste in the Municipal section, they will reduce waste GHG emissions by 70% from a 2016 baseline.

GHG emissions from solid waste in landfills make up the majority of GHG emissions from this sector and all identified strategies and actions focus on reducing GHG emissions from landfilled waste. GHG emissions from wastewater treatment make up a small portion of overall waste GHG emissions (11% in 2019). No strategies or actions are identified for reducing wastewater treatment GHG emissions. When wastewater GHG emissions are not considered, the identified strategies and actions reduce landfilled waste GHG emissions by 83%.



Community survey respondents ranked the "identify and pursue opportunities for enhanced curbside waste and recycling pick-up" action as the most important waste action for the community. 44% of respondents ranked this action as most important and 68% ranked this action as within the top 3 most important waste actions for the community. Respondents ranked the "fund and build infrastructure for countywide commercial composting" action as second most important, with 19% of respondents ranking it as most important and 64% ranking it within the top 3 most important waste actions.

1 United Nations Environment Programme, "Methane emissions are driving climate change. Here's how to reduce them," UNEP, 2021, https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them

Mitigation Strategies & Actions

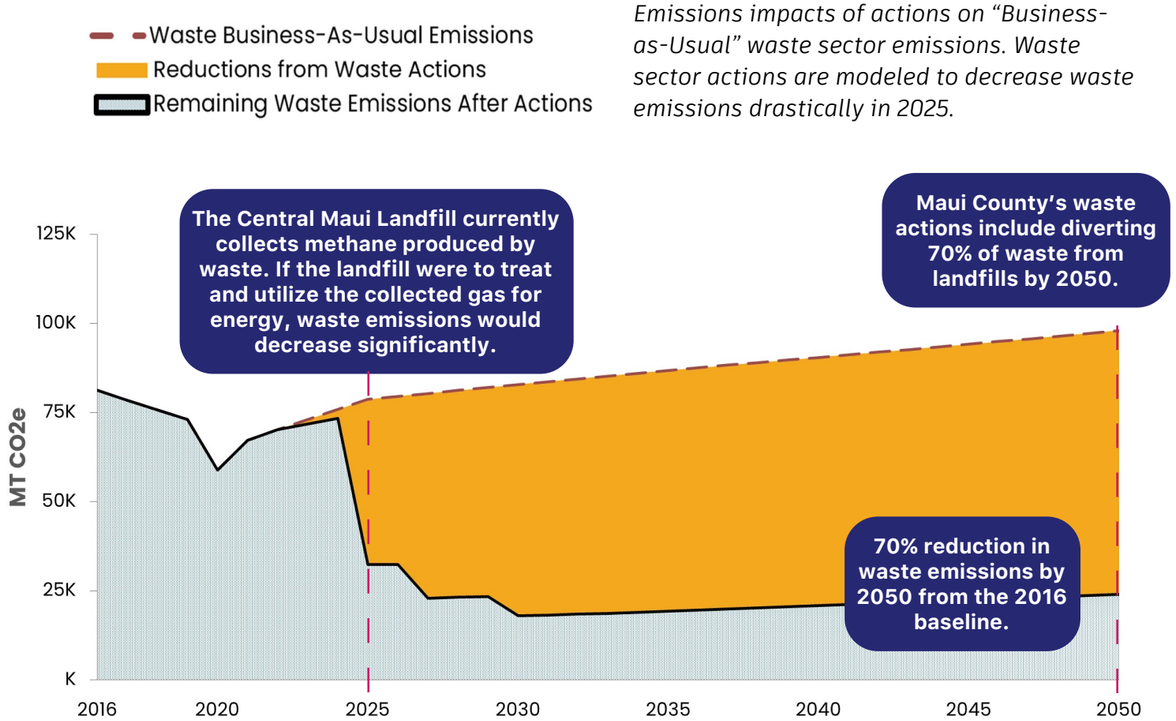
Waste

By 2050, all strategies and actions that will increase the amount of waste diverted away from landfills toward recycling or composting will provide the greatest GHG emissions reductions in this sector.

The action to implement landfill gas capture, flaring, and utilization results in the greatest immediate reduction in solid waste GHG emissions. If landfill gas utilization were implemented at the Central Maui Landfill in 2025, waste GHG emissions would decrease by 56% that year. Landfill gas utilization greatly reduces the amount of methane that reaches the atmosphere from landfills.

Together, waste diversion and landfill gas utilization are effective strategies to reduce waste GHG emissions.

Projected Emissions Reductions from Waste Sector Actions



Emissions impacts of actions on "Business-as-Usual" waste sector emissions. Waste sector actions are modeled to decrease waste emissions drastically in 2025.

1 County of Maui Department of Environmental Management. "Waste Composition Analysis Central Maui Landfill." SAIC, 2012.

70% REDUCTION IN WASTE STREAM
prior to disposal by developing diversion programs for divertible materials with the highest current landfill rates, including paper products, food waste, and plastic containers and packaging by 2030[1]

90% INCREASE IN LANDFILL DIVERSION
in County of Maui by 2050

The following goals are from the County of Maui's draft Solid Waste Management Plan that is currently under development. The CARP aims to help achieve these goals.

INFRASTRUCTURE & SYSTEM

- Manage waste in a cost-effective manner that promotes, in order of priority: waste reduction, reuse, and recycling.
- Enhance and improve the overall efficiency of waste and recyclables collection, transfer, and disposal.
- Build the infrastructure needed to provide maximum recycling and waste diversion opportunities.
- Ensure that collection infrastructure is flexible and adaptable to changing recycling and waste diversion practices.
- Ensure that the County of Maui's solid waste system is in full compliance with the appropriate rules and regulations.

Waste

SUSTAINABILITY

- Manage waste as a resource to increase local job opportunities and support economic development.
- Consider environmental impacts to climate, air, water, and land that are associated with waste generation, transportation, handling, recycling, and disposal.
- Ensure that the County of Maui's solid waste system has an equitable and sustainable funding mechanism.
- Ensure that the County of Maui's development community is aware of and invested in less wasteful and more sustainable building and development practices.

EDUCATION

- Encourage people in the county to act on the basis of their understanding of the societal, environmental, health, and financial impacts of their consumption and disposal choices. This includes their impact on climate change.
- Encourage people and businesses to make responsible choices about what they produce and consume, and what they generate as waste.

OUTSIDE INFLUENCES

- Promote and support life cycle product stewardship and industry advancements in packaging standards that lead to less waste generation.
- Incorporate Zero Waste principles to consider the entire life cycle of a product to manage materials in ways that preserve value, minimize environmental impacts, and conserve natural resources.
- Support changes to federal and state regulations and policies that support increased recycling opportunities and waste diversion.

CURRENTLY

22% OF WASTE

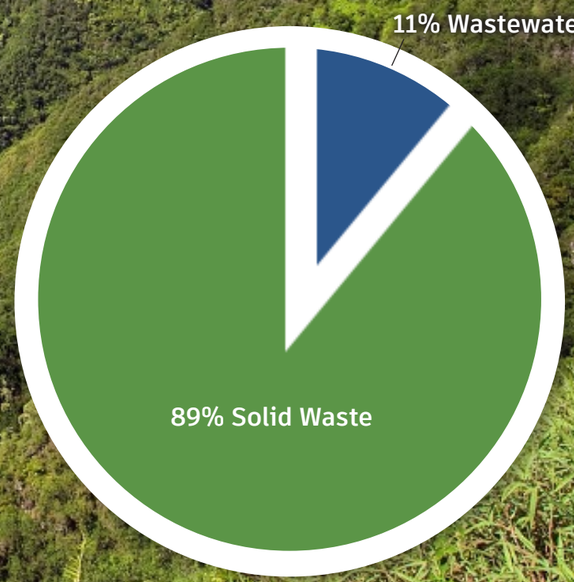
is diverted through composting and recycling efforts.[1]

1 Data provided by County Staff.

75% OF LANDFILLS

in Maui County provide recycling and composting infrastructure.

Waste Emissions Details (mt CO2e)



Waste

STRATEGY 1

Enhance County of Maui waste collection programs and increase the appropriate infrastructure for all categories of waste management and diversion, prioritizing accessibility.

KEY PARTNERS: *County of Maui, Maui Disposal, local waste haulers, State of Hawai'i Department of Health*

ACTION 1 HIGH PRIORITY

Identify and pursue opportunities for enhanced curbside waste and recycling pick-up. This could include establishing curbside pick-up programs for green waste, compostable waste, recycling, e-waste, etc. This effort would be within the County of Maui's refuse collection system and also explore opportunities for collaboration with local waste haulers to identify how curbside waste and recycling pick-up services can be made available to all residents prioritizing areas that do not have easy access to waste and recycling centers. Consider how county-provided funding can support the establishment of such programs.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
HIGH	Level of Difficulty

Timeframe: Immediate, Ongoing

Estimated Cost

$$$

STRATEGY 2

Maximize waste diversion efforts community-wide and directly support the implementation of improved diversion strategies with particular focus on organic and recyclable waste.

KEY PARTNERS: *County of Maui, Habitat for Humanity ReStore, Goodwill Industries, State of Hawai'i Department of Health*

ACTION 1 LOW PRIORITY

Require owners and managers of multi-family dwellings and multi-tenant commercial buildings to provide recycling services.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Mitigation Strategies & Actions

Waste

ACTION 2 MEDIUM PRIORITY

Secure funding and continue public-private partnerships with organizations to develop reuse centers at existing waste and recycling outlets within Maui County.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Secure funding to develop and implement a "Stop Wasting Food" program that requires the diversion of commercial edible food waste to benefit programs such as local food banks. Also, partner with local organizations to minimize food waste through outreach and education, encouraging the community to divert edible food to local food banks and compost food waste both in backyard/residential settings.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 4 LOW PRIORITY

Require recycling in public areas and during public events.

Aloha+ Challenge | UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 5 MEDIUM PRIORITY

Secure funding to explore materials ban and reuse programs to maximize source reduction.

Aloha+ Challenge | UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Waste

ACTION 6 MEDIUM PRIORITY

Enact policy that requires paper recycling in the commercial sector.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

STRATEGY 3

Maximize waste resource efficiency.

KEY PARTNERS: *County of Maui, State of Hawai'i Department of Health*

ACTION 1 LOW PRIORITY

Develop a construction and demolition (C&D) diversion ordinance that requires C&D waste materials to be sorted for reusable or recyclable materials. Consider complementing the policy with funding mechanisms that either incentivize or disincentivize C&D waste disposal.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
HIGH	Level of Difficulty

Timeframe: Long-term

Estimated Cost

$$$

Mitigation Strategies & Actions

Waste

ACTION 2 HIGH PRIORITY

Create infrastructure for island-wide compost collection by setting up systems at transfer stations for communities to use green waste and compost-produced methane for biofuel production.

Aloha+ Challenge	UN SDGs
MEDIUM	Equity Impacts
LOW	GHG Reduction Potential
HIGH	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Develop end-of-life strategies for solar PV and other relevant renewable energy technologies, including battery storage.

Aloha+ Challenge	UN SDGs
LOW	Equity Impacts
LOW	GHG Reduction Potential
HIGH	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Secure funding to develop and implement collection systems for non-recyclable plastic to be used for building materials or WTE/WTF.

Aloha+ Challenge	UN SDGs
LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 5 MEDIUM PRIORITY

Secure funding to pursue local options/ technologies for reuse and recycling rather than shipping materials overseas to be recycled.

Aloha+ Challenge	UN SDGs
LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Mitigation Strategies & Actions

Agriculture, Land Use, & Natural Resources

Climate change and natural resource crises are inextricably linked. Aligning work to take climate action and protect natural resources is an opportunity to make significant progress in both areas. This approach will ensure the response to the climate crisis improves and protects the resilience of natural ecosystems.

Greenhouse Gas Emissions from Local Agriculture

The agricultural sector makes up 3% of Maui County's GHG emissions and is expected to make up 4% of the County's GHG emissions by 2050. Addressing current agricultural practices and the use of fallow fields resulting in GHG emissions is critical to utilizing a whole systems approach to benefit local environmental conditions and natural resource systems.

GHG emissions from the agriculture sector are driven by livestock (cattle, sheep, goats, pigs, horses, and poultry), usage of urea and fertilizer—which negatively affects fresh and marine water quality—and the missed opportunity of utilizing fallow fields as a carbon sink. Even with the strategies and actions listed on the following pages, GHG emissions in this sector are expected to stay constant.

The strategies and actions do not significantly reduce GHG emissions from agriculture, but they consider the critical link between land use, natural resource systems, and climate action.
The County of Maui is in a unique position to support a cooperative approach to growing regenerative practices, whether it's in new practices and innovations or training and education. The utilization of regenerative and cooperative strategies is important to continue local agriculture, with consideration of impact to the nearby streams, resources, and natural systems.

This whole systems approach in conjunction with regenerative practices will ensure a thriving agricultural economy and improved land use practices. For example, smaller farms that are close to local resort towns could help to develop organic and regenerative farming and provide produce to a farm-to-table restaurant that will reduce GHG emissions and minimize negative impacts from conventional farming.

There is still an excess of fallow land in Maui County due to the closing of the sugar plantation industry in the last century. Fallow land is arable, depleted land that has been left unplanted and weed-infested for a period of time. When fallow land is left unattended and unplanted for too long, it is prone to being overtaken by invasive species. It can also be a major fire risk, especially in the drier parts of the archipelago, which may become exacerbated by climate change. Much of the fallow land in Hawai'i today is from abandoned pineapple and sugar plantations. **The County of Maui has the opportunity to control this issue by setting limits on the amount of time our agricultural land leases are left fallow.**

Agriculture, Land Use, & Natural Resources

Greenhouse Gas Emissions from Importing Food

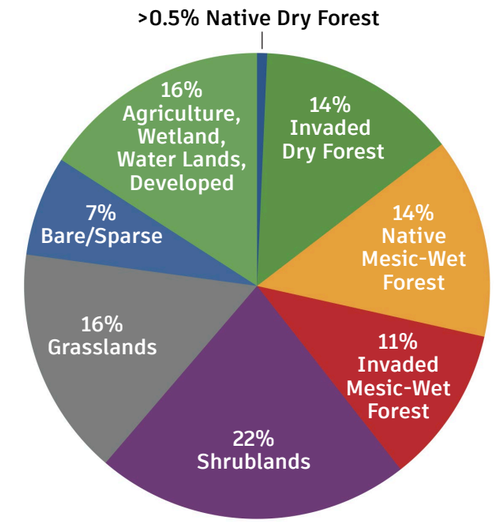
Importing food to the Hawaiian Islands poses a heavy carbon load. A large jetliner emits about 245 pounds of carbon dioxide per air mile. A cargo plane carrying food to Hawai'i emits almost 600,000 pounds of carbon dioxide. In 2020, more than 60,000 tons of cargo and mail passed through Kahului Airport, and about 3,694,000 tons passed through Kahului Harbor. Continuing to develop a strong food system focused on locally-grown or locally-produced food will support food security and help reduce our carbon load.

Locavore food systems may mitigate a high level of GHG emissions from food transport simply because less fuel is burned in the process by omitting the necessity of transport to Maui County.

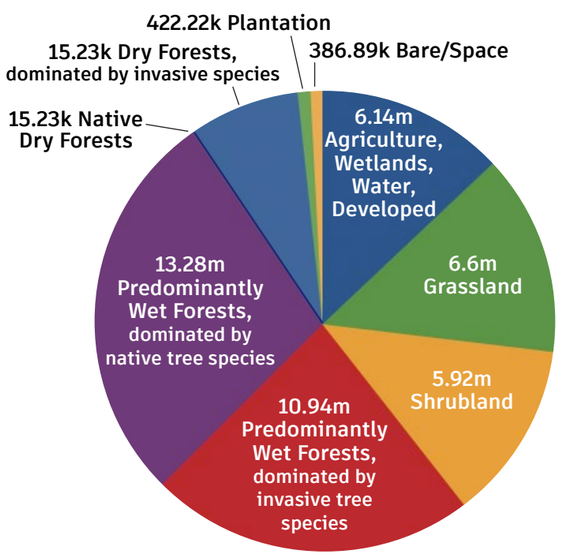
Nature-based Solutions

Nature-based solutions offer a practical approach to integrating climate and biodiversity policy for all sectors. They can remove carbon from the atmosphere, restore fallow land, improve watershed conditions, protect natural resources, and build resilience to the impacts of climate change. Strategic land management tactics restore native and natural ecosystems and in turn improve the resilience of Maui County's water resources, while decreasing erosion and restoring soil health. Concurrently, sustainable land management will naturally support biodiversity and the health of natural resource systems.

Maui County Land Cover Distribution



Carbon Storing (MT Carbon) by Land Type



18% of Hawai'i's land is located within Maui County, and 18% of Hawai'i's carbon is stored within the County of Maui's lands. In total, nearly 60% of the county's carbon is stored within forests, both native and invasive. Nature-based solutions offer a practical approach for integrating climate and biodiversity policies for all sectors. Native wet forests hold the largest carbon stock for Maui County.

It is critical that the County of Maui preserve these areas not only for their carbon value, but also to protect native species and water resources.

The land cover type that holds the second-largest amount of carbon is the invaded mesic-wet forests. These lands will likely degrade further without intervention due to invasive species and erosion. One way to protect the carbon stock is by installing fences around native forest areas to prevent further degradation from invasive ungulates.

Reforesting degraded areas is another option for increasing the carbon stock in Maui County. Not only can reforestation increase the carbon stock, but also provides runoff and flood prevention, reef protection, increased freshwater replenishment, and endangered species habitat restoration.

Organic farming, especially *regenerative* organic farming, and the restoration of traditional agricultural practices can boost island resilience. At the same time, supplementing the locavore food system with maritime food transport reduces the carbon footprint per food item significantly.

Maritime food transport uses a smaller amount of fuel for a larger cargo load, whereas cargo jets carry smaller loads and consume larger amounts of fuel. The County of Maui can work with local partners, including the state government, to reduce or subsidize the cost of land and expand local agricultural production.

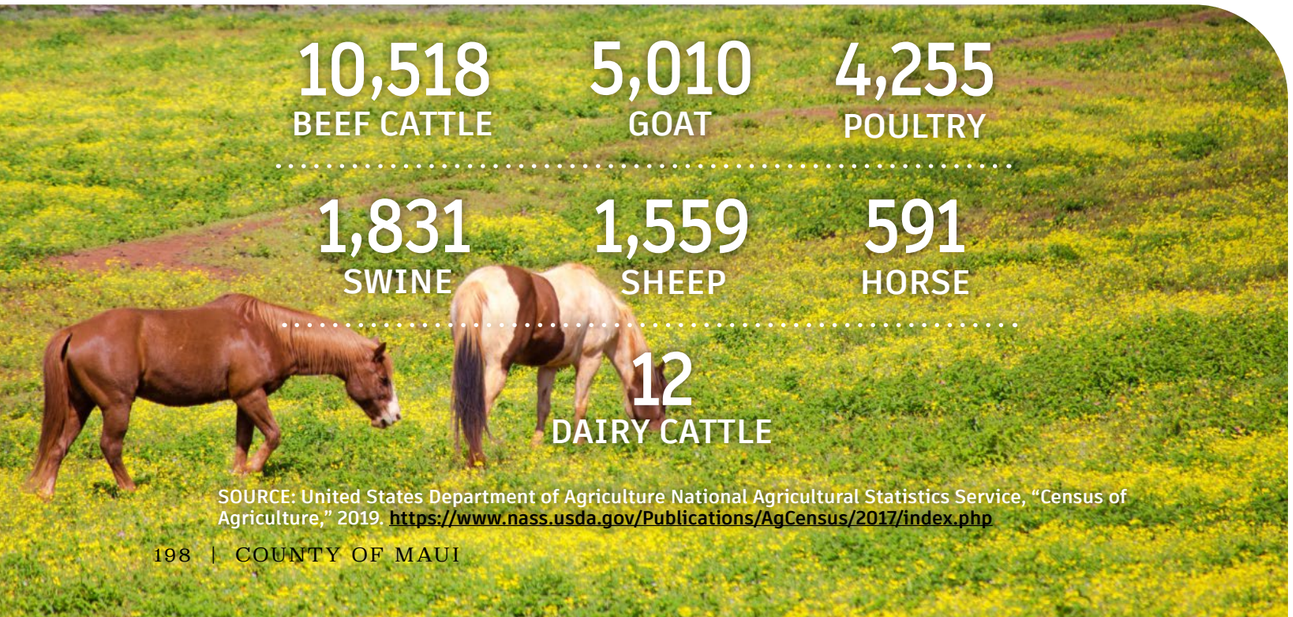
Agriculture, Land Use, & Natural Resources

REVERSE THE TREND OF NATURAL RESOURCE LOSS
from mauka to makai by increasing watershed protection, community-based marine management, invasive species prevention and control, and restoration of native species

AT LEAST
DOUBLE LOCAL FOOD PRODUCTION
with a goal of 20 to 30% of food consumed being grown locally

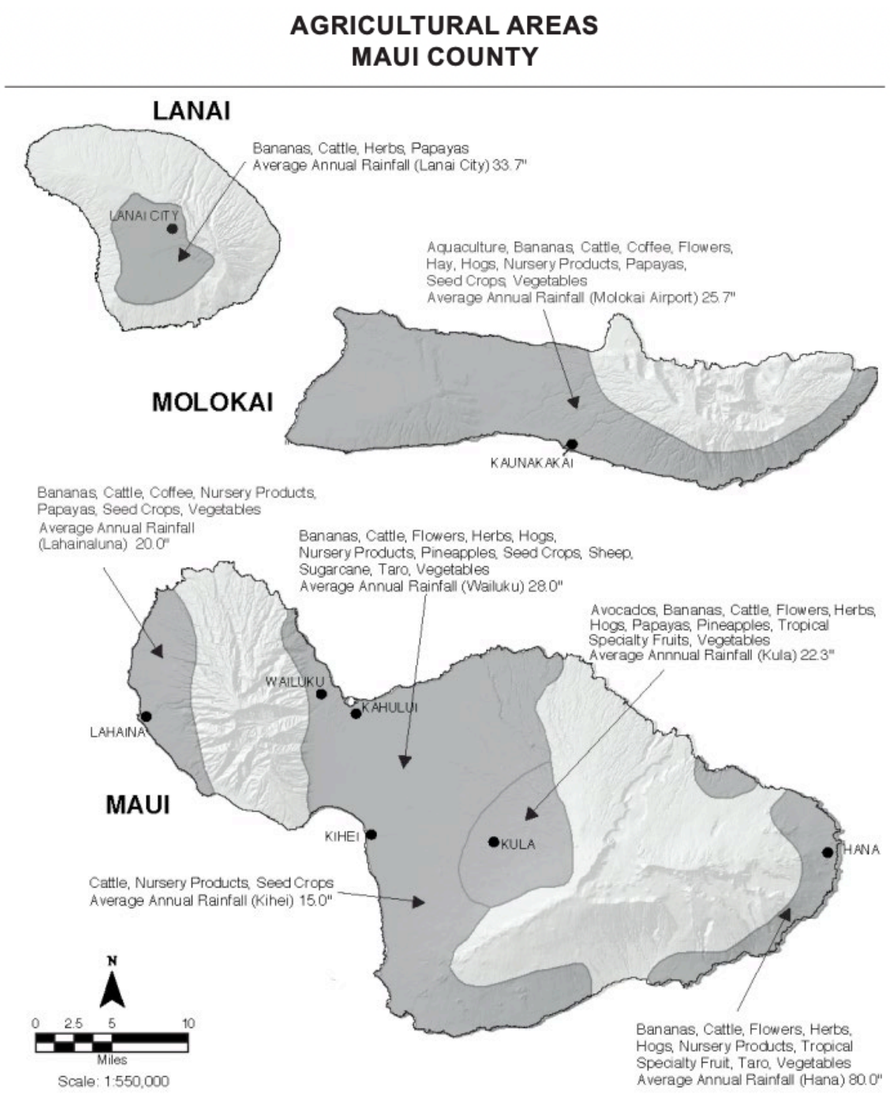
1,408 FARMS in Maui County, 2017

SOURCE: Maui County Data Book, "Agriculture & Aquaculture," Section 5, (2020), 100.
https://sbdc.dev.hyperspective.com/wp-content/uploads/2021/10/2020-Chapter06.pdf



SOURCE: United States Department of Agriculture National Agricultural Statistics Service, "Census of Agriculture," 2019. https://www.nass.usda.gov/Publications/AgCensus/2017/index.php

As sugar and pineapple plantations have closed, the diversification of agriculture has continued throughout Maui County.



SOURCE: HAWAI'I DEPARTMENT OF AGRICULTURE, AGRICULTURAL DEVELOPMENT DIVISION, AND U.S. DEPARTMENT OF AGRICULTURE, NATIONAL AGRICULTURAL STATISTICS SERVICE. STATISTICS OF HAWAI'I AGRICULTURE, 2011.

Agriculture, Land Use, & Natural Resources

STRATEGY 1

Bolster local and community-based efforts to advance nature-based solutions.

KEY PARTNERS: *County of Maui, State of Hawai'i Department of Land and Natural Resources, local community nonprofits and organizations, watershed partners, local farmers*

ACTION 1 **LOW** PRIORITY

Actively participate in the state's carbon credit program and create opportunities for local involvement in this program. Focus on opportunities for agriculture, land use, and forestry sector involvement. Delineate how different-sized entities could be involved (i.e. community scale, organizational/ company scale, household scale, individual scale, etc.).

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Long-term

Estimated Cost

$$$

ACTION 2 **HIGH** PRIORITY

Foster collaboration and alignment of conservation efforts between local organizations and the County of Maui. This connectivity could be led by the County of Maui with the goal of unifying efforts and sharing information with local conservation organizations.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

STRATEGY 2

Actively support regenerative agriculture and sustainable land reclamation.

KEY PARTNERS: *County of Maui, State of Hawai'i Department of Land and Natural Resources, local community nonprofits and organizations*

ACTION 1 **HIGH** PRIORITY

Support soil health, manure management, and composting by providing technical assistance and financial resources through microgrants.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 2 **HIGH** PRIORITY

Enact policies and secure funding for programs that encourage the reforestation of undeveloped or vacant deforested (fallow) lands. Prioritize xeriscaping and drought tolerant native plant species.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

Agriculture, Land Use, & Natural Resources

STRATEGY 3

Implement innovative and best practices for natural resource management in the built environment.

KEY PARTNERS: *County of Maui, Native Nursery, Maui Green and Beautiful*

ACTION 1 MEDIUM PRIORITY

Secure funding to establish program and planning efforts to include planting native and endemic trees as part of roadway rehabilitation projects to provide shade and better air quality for residents.

Aloha+ Challenge | UN SDGs

MEDIUM	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 2 MEDIUM PRIORITY

Require residential and commercial landscape designs to include native and endemic species that serve as carbon sinks.

Aloha+ Challenge | UN SDGs

MEDIUM	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Enact policy and conduct research to better regulate the species of plants sold at local stores, ensuring that plants offered to the public add value to the landscape such as drought resistance and non-invasive species.

Aloha+ Challenge | UN SDGs

MEDIUM	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Outreach & Education

Outreach and Education are essential mechanisms to improve learning, promote civic engagement, and strengthen communities by addressing societal needs.

Outreach programs create partnerships between communities and educational institutions. Strategies and actions are stronger if they are backed by robust outreach and education campaigns. The following section provides a list of strategies and actions that support specific outreach and education campaigns.

GOALS

COMMUNICATE CLIMATE CHANGE ACTION
opportunities to increase adoption of the Climate Action and Resiliency Plan recommendations

INCREASE LOCAL GREEN JOBS
and education to implement the targets laid out in the Aloha+ Challenge

STRATEGY 1

Expand and improve sector-specific public education and awareness programs.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, Hawai'i Energy*

ACTION 1 **LOW** PRIORITY

Secure funding to partner with local organizations to launch a public education campaign promoting building efficiency and electrification options. Tailor education to frontline communities who are more likely to live in substandard housing.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

ACTION 2 **LOW** PRIORITY

Secure funding to further support organizations who provide zero-waste education to youth and our community. Start reuse education, outreach, and public awareness campaigns to encourage public participation and use of the reuse centers. Host composting and recycling workshops.

Aloha+ Challenge | UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

Outreach & Education

ACTION 3 MEDIUM PRIORITY

Secure funding to further support organizations that promote educational resources for EV purchasing and charging infrastructure, focusing on youth, commuters, and the elderly.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Secure funding to launch a public education campaign promoting transit services, tailoring them to target populations such as youth, commuters, and the elderly. This can be in conjunction with transportation hubs and updating technology for easy access.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

STRATEGY 2

Expand and leverage community partnerships for climate action education.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations*

ACTION 1 MEDIUM PRIORITY

Secure funding and collaborate with partners to develop a business waste audit and education program to foster waste reduction within the local business community.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 2 MEDIUM PRIORITY

Secure funding and collaborate with partners to develop a visitor industry waste reduction education program.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Mitigation Strategies & Actions

Outreach & Education

ACTION 3 MEDIUM PRIORITY

Partner with local organizations, such as public institutions, universities, and airlines, to provide climate change-related education to the community.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$ $ $

ACTION 4 MEDIUM PRIORITY

Continue to engage youth in the community engagement process, including convening the Mayor's Youth Council to better foster collaboration between County of Maui and local young people.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$ $ $

Resiliency Strategies & Actions

THE OCEANIC GEOGRAPHY

and sensitive ecosystems across Maui County make the region highly susceptible to the impacts of climate change.

Future climate modeling and projections indicate that over the coming decades, rising temperatures, ocean acidification, sea level rise, and extreme weather events will become increasingly frequent and severe in Maui County, assuming the current "Business-as-Usual" GHG emissions trajectory (**RCP**8.25).

The magnitude and scope of these climate impacts depend on the success of global efforts to reduce GHG emissions and increase carbon sequestration.

Resiliency Strategies & Actions

Climate Primer & Vulnerability Overview

PREDICTING THE EFFECTS **of climate change and implementing cautionary resiliency measures are critical to protecting Maui County's community and environment. The County of Maui is committed to taking proactive steps to secure the community, infrastructure, and natural systems against current and future climate threats.**

The CARP works to integrate the concepts of self-sufficiency, nature-based solutions, resilient infrastructure, and strategic relocation.

As a series of islands that are relatively isolated from manufacturing centers, Maui County relies heavily on global supply chains that will be increasingly susceptible to disruptions in the future. Therefore, **the movement toward greater self-sufficiency will positively impact the local economy, local workers, and our overall resilience** while protecting the community against supply chain disruptions. This is particularly important in regard to food security.

Nature-based solutions that strengthen the integrity of Maui's marine, freshwater, and terrestrial ecosystems will protect those systems against the impacts of climate change, which will in turn benefit local residents and visitors. Integrating resilience considerations into ongoing infrastructure development will protect those investments from the impacts of climate change over time.

Finally, communities with significant infrastructure along marine coastlines must address the question of when to stop maintaining coastal infrastructure and instead move to safer locations. Long-term planning with thresholds that will help determine that transition is critically important to ensure that important community investments serve their highest and best use in an era of changing climate conditions.

> **The COVID-19 pandemic and the resulting isolation and vulnerability to external forces beyond our control showed us that we need to be more forward-thinking and plan for the longterm, including being more sustainable as a family and as an island.**
>
> *- Maui County Resident*

Resiliency Strategies & Actions

The figure below details future climate projections and impacts in Maui County, given current GHG emissions trajectories.

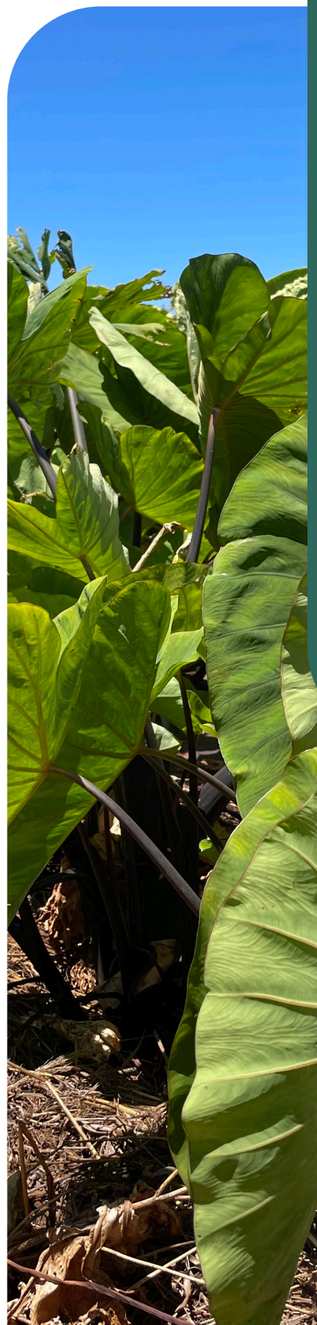
Projected Trends for Maui County	Mid-century (2050s)	Late-century (2080s)
Average temperature[5]	↑ +2 to +6°F	↑ +3 to +9°F
Number of days with extreme heat[9]	↑↑	↑↑↑
Percent change in wet season precipitation[7]	↓ −15%	↓ −23%
Percent change in dry season precipitation[7]	↓ −37%	↓ −52%
Drought severity and frequency[3,9]	↑	↑↑
Frequency of heavy rains and flooding	↑	↑↑
Northeasterly tradewinds[10]	↓↓	↓↓↓
Sea level rise (global average)[2]	↑ ~1 foot	↑ 2 to 3 feet
Ocean temperature (global average)[16]	—	↑ +5°F by 2100
Frequency of coral bleaching events[16]	↑ yearly	—
Declines in ocean fishery productivity[16]	↓ −15%	↓ −50%

Vulnerability to climate impacts varies considerably across regions, racial and ethnic groups, and socioeconomic levels.

At the global scale, underdeveloped and low-income nations are significantly more vulnerable to climate threats. However, this discrepancy is also evident within our country and communities. Even in a developed nation like the United States, socioeconomic status, inequity, and historical social marginalization influence a person's vulnerability to climate change.[1]

A key focus for the proposed resiliency strategies and actions is protecting low-income and marginalized community members who are the most vulnerable to the impacts of climate change.

1 Environmental Protection Agency, "EPA Report Shows Disproportionate Impact of Climate Change on Socially Vulnerable Populations in the United States," EPA, 2021, https://www.epa.gov/newsreleases/epa-report-shows-disproportionate-impacts-climate-change-socially-vulnerable



A 2018 assessment of natural system vulnerability in Maui County (Maui, Moloka'i, and Lāna'i) concluded that most habitats and services are moderately to highly vulnerable to climate change.

The resilience strategies and actions proposed in the CARP prioritize efforts to address climate change-driven vulnerabilities in the following natural systems in Maui County:

- **Coastal beaches due to erosion and inundation.**
- **Dry forest due to changes in precipitation and soil moisture and resulting fires.**

In addition, they address the most vulnerable services:

- **Cultural knowledge and heritage due to the potential loss of native ecosystems and species, and inundation of cultural sites.**
- **Flood and erosion control due to flash floods, drought, and wildfire.**
- **Freshwater supply due to more drought, changing precipitation, watershed function, and sea level rise.**

SOURCE: R.M Gregg, "Hawaiian Island Climate Vulnerability and Adaptation Synthesis," (2018), EcoAdapt, quoted in, County of Maui ,"County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 6.

Recognizing the multitude of factors that influence climate vulnerability, the resilience strategies and actions are divided into three pillars: people, infrastructure, and natural systems. Maui County and community partners will help to strengthen the resilience of the community and environment by supporting the strategies and actions listed on the next page.

Resiliency Strategies & Actions

Each resilience pillar is organized into strategies and related actions that align with the vetting criteria outlined below. Please note that many strategies and actions identified throughout this section are already underway through current Maui County initiatives, local community nonprofits, and public and private entities.

- **Alignment with Aloha+ Challenge and UN SDGs.** The Aloha+ Challenge is a statewide commitment to achieve the State of Hawai'i's sustainability goals. It is a locally-driven framework that also supports the local implementation of the United Nations Sustainable Development Goals.
- **Equity Impacts.** Climate change will disproportionately impact underserved and marginalized groups and amplify existing economic and social inequality. A key focus for the climate and resiliency actions that make up the core of the CARP is to protect community members who are the most vulnerable to climate change.
- **Greenhouse Gas Emissions Reduction Potential.** This refers to the degree to which the action will reduce heat-trapping gases in the atmosphere. LOW is defined as actions that have a less than 1% reduction in GHG emissions. MEDIUM is between 1 to 3%. HIGH is over 3%.
- **Expected Level of Difficulty of Implementation.** The implementation difficulty is a reflection of the time, resources, people, and community buy-in that will be required to successfully implement the action.
- **Estimated Cost of Implementation.** This refers to the estimated budget and funding required to implement the action. More precise budgets for the actions within the CARP will need to be developed as they move toward implementation.
- **Timeframe for Implementation**. Provides a general estimate of the timeline for implementing the action. This also identifies whether the action is a one-time action or an ongoing action.
- **Prioritization of Action.** Based on input from community members and subject matter experts, the actions are ranked as LOW, MEDIUM, and HIGH priority.
- **Key Implementation Partners.** Key partners are the community groups, local nonprofit organizations, governmental departments and agencies, and other stakeholders whose input, leadership, and partnership will be critical for the successful implementation of the proposed strategies and actions.

Secure Our People

Maui County's culture is rooted in our people. The "Secure Our People" resilience pillar focuses on protecting the health, safety, and well-being of Maui County's diverse community as climate change poses significant threats.

Natural disasters, declining air quality, mental health impacts, illness, displacement, and increasing inequality are only a few of these risks. In response to climate threats, the County of Maui will work toward strengthening natural disaster planning, help expand health and social services, and act to protect multi-generational families and Native Hawaiian populations from displacement. The strategies and actions that follow outline proactive steps to ensure our community's thriving and equitable future.

> **"Social services funding requires a significant boost (this includes funding) for the epidemic of drug use with vulnerable Maui County youth, actual affordable housing, immediate remedial action of homelessness, and remedial services of mentally ill residents.**
>
> *- Maui County Resident*

Secure Our People

STRATEGY 1

Provide easily accessible education programs and resources to grow community awareness of climate resiliency.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, Maui Economic Development Board, University of Hawai'i*

ACTION 1 MEDIUM PRIORITY

Partner with community organizations and secure funding to enhance countywide outreach and education campaigns to engage the general public, businesses, and other stakeholders on local renewable energy opportunities and resource efficient behaviors (including energy storage and electrification of transportation/clean fuels), energy efficiency programs, water conservation/efficiency, and solid waste diversion. In particular, focus on bringing these services to underserved and difficult to reach communities.

Aloha+ Challenge	UN SDGs
HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$ $ $

ACTION 2 HIGH PRIORITY

Allocate County of Maui funding and secure additional funding to establish or support existing programs that cultivate leadership and environmental stewardship in local youth. Partner with local schools and universities, Native Hawaiian organizations, and other nonprofits with climate action and resiliency programs. Build climate and resiliency action and eco-literacy for youth through education, outreach materials, focused internships, and leadership development opportunities.

Aloha+ Challenge	UN SDGs
HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$ $ $

ACTION 3 MEDIUM PRIORITY

Secure funding to develop educational signage for visitors and community members on native plants used for landscaping on County of Maui property and create educational materials to share about the differences between native, non-native, and invasive plants.

Aloha+ Challenge	UN SDGs
MEDIUM	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$ $ $

Secure Our People

STRATEGY 2

Expand funding for microgrants that support community driven projects that enhance community resilience, climate action, and community cohesion.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, Maui Economic Development Board*

ACTION 1 MEDIUM PRIORITY

Secure funding to establish microgrants that help increase the adoption of renewable energy, energy storage, and electrification of transportation, with particular emphasis on supporting LMI households.

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost
$$ $

ACTION 2 MEDIUM PRIORITY

Secure funding to establish microgrants that support home and small business retrofits to make structures more resilient to natural hazards such as hurricanes, flooding, extreme heat, sea level rise, and wildfires, with particular emphasis on supporting LMI households.

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost
$$ $

STRATEGY 3

Enhance the ability of our community to prepare for, respond to, and recover from climate change impacts.

KEY PARTNERS: *County of Maui, Federal Emergency Management Agency (FEMA), Maui District Health Office, local hospitals and mental health facilities, local community nonprofits and organizations, Maui Economic Development Board*

ACTION 1 MEDIUM PRIORITY

Allocate funding and partner with local community organizations to train workforce in relevant professions and trades needed across Maui County to increase local resilience to climate change impacts and disturbances (including preparedness, response, and recovery to observed and expected shocks and stressors).

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost
$ $ $

Secure Our People

ACTION 2 HIGH PRIORITY

Secure funding to develop a disaster recovery program. This program should include a resilience plan framework and additional resources to better help local businesses and nonprofits develop a plan for climate change-related disturbances. As part of the disaster recovery framework, identify which current resources are available to local businesses and nonprofits in the case of a disaster.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

ACTION 3 HIGH PRIORITY

Expand funding for community organizations and County of Maui agencies to increase training opportunities on emergency preparedness, response, and recovery. Training workshops provide public education and resources for residents to learn how to prepare for and respond to events such as wildfires, flooding, and hurricanes.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Increase affordability and eligibility of disaster-related insurance (e.g. flood and hurricane insurance) for Maui County residents by adopting FEMA's Building National Flood Insurance Program (NFIP) and Building Code Effectiveness Grading Schedule (BCEGS). Implement programs that help owners of properties that face chronic flooding understand and access FEMA buyout funds.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our People

STRATEGY 4

Support, develop, and expand community goods and services that enhance local food security and agricultural resilience across Maui County.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations*

ACTION 1 MEDIUM PRIORITY

Establish a permanent County of Maui Food Security and Regenerative Agriculture Council made up of farming leaders to guide and advise the county on best practices to foster a more robust local food and regenerative farming industry in Maui County.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 2 HIGH PRIORITY

Establish a County of Maui Emergency Food and Essential Goods Supply and Storage Plan. Focus on providing sufficient emergency food and essential goods supplies in communities, regularly inventory critical assets, and ensure that adequate backup supplies are on hand for extended emergencies.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Allocate County of Maui funds to expand community programs (e.g. Maui Food Hub and Common Ground Collective) focused on increasing access to healthy locally-grown food, farmers markets, and other local food networks, and ensure affordability, particularly for LMI residents and families.

Aloha+ Challenge | **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

Secure Our People

ACTION 4 MEDIUM PRIORITY

Expand funding support for microgrants that help to cover startup and scaling up costs for local regenerative agriculture practices and equipment, including efficient irrigation equipment, water catchment, and feral ungulate control measures for small-scale and local farmers. Provide support for permitting, best management practices, and implementation needs of applicants.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

ACTION 5 MEDIUM PRIORITY

Secure funding to establish a community garden program to convert vacant lots, rooftops, or other available spaces into public community gardens. A public community garden program would support the conversion of private or County of Maui-owned lots into community spaces.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

STRATEGY 5

Protect public health, safety, and community well-being.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, local hospitals and mental health facilities, State of Hawai'i, State of Hawai'i Department of Health, State of Hawai'i Department of Education, University of Hawai'i*

ACTION 1 MEDIUM PRIORITY

Allocate County of Maui funds and secure additional funding to support positions in the County of Maui and local nonprofit organizations that can develop and implement programs that support the mental and physical health of residents affected by climate change. This could consist of strengthening existing healthcare systems, addressing the healthcare workforce recruitment gap, and assisting vulnerable and historically underserved residents in accessing healthcare services.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our People

ACTION 2 MEDIUM PRIORITY

Create a County of Maui monitoring plan and program to anticipate new vector-borne diseases due to climate change impacts (e.g. warming and flooding) and partner with local nonprofits and state agencies (e.g. DOH, DOE, and the University of Hawai'i) to educate the community on potential vector-borne diseases.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

STRATEGY 6

Preserve and protect historic and vital cultural resources against climate change impacts and continue to foster traditional knowledge of land management and cultural practice to help combat climate change.

KEY PARTNERS: *County of Maui, Hawai'i State Historic Preservation Division, local cultural organizations, local community nonprofits and organizations, The Office of Hawaiian Affairs*

ACTION 1 MEDIUM PRIORITY

Secure funds to develop a countywide mapping system to help identify at-risk culturally sensitive areas, including burial sites, and partner with community organizations and government agencies with existing cultural mapping and data. Engage with families and relevant communities to discuss their preference on protecting or relocating at-risk burial and other cultural sites. Based on these evaluations, develop a plan to support community driven management practices to best address at-risk cultural sites and continue to support mapping efforts from County of Maui Archaeologists (cultural site overlays), Parks Department (beach park vulnerability study), and evaluate current plans (e.g. Mana'e GIS Mapping Project).

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our People

ACTION 2 MEDIUM PRIORITY

Secure funding to develop a cultural plan and support community driven management measures that connect arts and culture with the County of Maui's sustainability and resiliency goals. The countywide cultural plan would support sustainability and resiliency objectives and further art and cultural infrastructure as an element of community engagement and awareness.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 HIGH PRIORITY

Support the charter amendment passage and creation of the Department of ʻŌiwi Resources. Establish and encourage cultural training for staff and community members.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Secure funding to further incorporate cultural and traditional practices of the ahupuaʻa management system to help implement an integrated ridge-to-reef framework for greater ecological and wildlife protection.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
HIGH	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 5 HIGH PRIORITY

Secure funding to conduct a comprehensive assessment of climate change impacts on Maui's Native Hawaiian cultural resources and practices.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

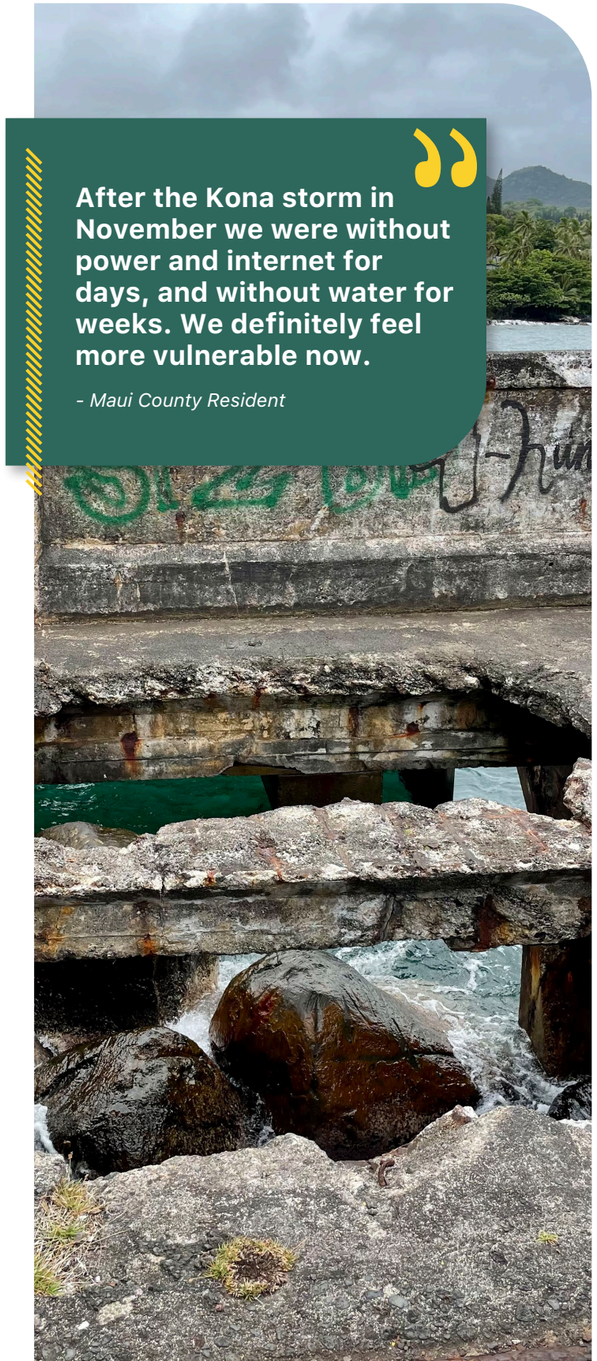
$$$

Secure Our Infrastructure

Rising sea level and extreme weather events threaten to damage or destroy the County of Maui's buildings and infrastructure systems. Climate models project a 1 to 3 ft rise in sea levels by the end of the century, with a potential rise as high as 6 to 9 ft.[1]

Efforts to reduce GHG emissions play a significant role in reducing the degree of future sea level rise. However, even with drastic GHG emissions reductions, sea level rise is already underway, and a certain level of additional rise is inevitable. Climate projections also forecast an increase in severe storms, coastal and inland flooding, and wildfires in Maui County. The following strategies and actions outline steps to strengthen community systems against these threats by upgrading infrastructure, accelerating natural disaster and managed retreat planning[2], and improving community self-reliance.

1 Hawai'i Climate Change Mitigation and Adaptation Commission, "Hawai'i Sea Level Rise Vulnerability and Adaptation Report," (2017), quoted in County of Maui, "County of Maui, Hawai'i Climate and Community Trends Primer," (2022), 20.
2 A planning framework for moving people and infrastructure away from coastlines and other geographically vulnerable areas.



> **After the Kona storm in November we were without power and internet for days, and without water for weeks. We definitely feel more vulnerable now.**
>
> *- Maui County Resident*

STRATEGY 1

Strengthen and restore aging infrastructure across Maui County.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, Hawaiian Electric Company, communication utilities, State of Hawai'i Department of Transportation, State of Hawai'i Department of Land and Natural Resource, Federal Emergency Management Agency*

ACTION 1 **MEDIUM** PRIORITY

In coordination with private utilities such as Hawaiian Telcom, Spectrum, and Verizon, as well as with community stakeholder groups such as the Statewide Broadband Hui, secure funding and pursue projects to strengthen and expand communications infrastructure, including high-speed internet connectivity, particularly in more rural and isolated areas of our county. Deploy projects to remote parts of the county that increase access to high speed internet (e.g. Maui Wifi Bus).

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Infrastructure

ACTION 2 HIGH PRIORITY

Secure funding to support education on emergency telecommunications systems, such as ham radio, radio stations, and satellite phones. Fund ongoing trainings for ham radio operators, provide detailed information and access to community members on radio stations to tune into in case of an emergency (stations that can be accessed through car radios), and ensure resilience hubs in every community across the county are equipped with emergency satellite phones, ham radios, and proper connectivity.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 HIGH PRIORITY

Secure funding to further identify Maui County's critical loads at emergency facilities and essential services that require backup power during widespread outages or disasters. Determine minimum daily runtime requirements for the identified emergency facilities and essential services. Demonstrate that the County of Maui, utility, or service provider can supply power to identified emergency facilities and essential services in meeting their minimum daily runtime. Ensure functional generators in all emergency facilities.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

In coordination with Hawaiian Electric Company, pursue Performance Excellence in Electricity Renewal (PEER) certification to address aging energy infrastructure, identify cost savings opportunities, build for resiliency, enhance tracking to identify deficiencies and prevent failures, and share best practices. PEER certification (https://peer.gbci.org/) enables power system owners and operators to reduce climate risk with resilient design, improve energy system performance, and demonstrate value to investors.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
HIGH	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 5 MEDIUM PRIORITY

Secure funding and partner with the State of Hawai'i to develop a study assessing the resiliency of Maui County commercial harbors, shipping ports, and other boating facilities. The study needs to identify strategies to ensure resilience to sea level rise, larger storms, tsunamis, storm surge, king tides, coastal erosion, and other climate change impacts.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Infrastructure

ACTION 6 HIGH PRIORITY

Reduce taxpayer expense and increase renewable energy, energy efficiency, energy storage, and electrification of transportation for County of Maui-owned facilities and vehicle fleets by pursuing a countywide Energy Savings Performance Contract (ESPC).

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

STRATEGY 2

Ensure adequate supply of fresh water, proper management of stormwater and wastewater, and irrigation management.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, State of Hawai‘i Department of Health, State of Hawai‘i*

ACTION 1 MEDIUM PRIORITY

Invest in resilient water supply infrastructure, including resilient water storage, treatment, and distribution infrastructure. Ensure that critical water supply systems have sufficient redundancy and resiliency to address climate change impacts such as water shortages resulting from drought; potential water infrastructure damage resulting from sea level rise, coastal erosion, king tides, or flooding; and sustained power outages resulting from electrical grid failures.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

Secure Our Infrastructure

ACTION 2 MEDIUM PRIORITY

Secure funding to develop and improve infrastructure that reduces the use of potable water and utilizes the use of non-potable R-1 water for landscaping and agricultural irrigation. For example, complete the Upcountry agricultural waterline project to deliver non-potable irrigation water to Upcountry farmers and explore the increased use of brackish irrigation wells for landscape irrigation.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Establish a Stormwater Enterprise Fund to better finance water management and expand the existing MS4 program managed by the County of Maui Public Works Department. Additional funding will help to regularly repair and maintain facilities, as well as meet increasing federal and state management requirements.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 4 HIGH PRIORITY

Promote stormwater as a resource by funding and implementing stormwater capture, infiltration, and reuse technologies wherever feasible. Apply these stormwater management design concepts (e.g. LID) to County of Maui facilities, increase LID concepts in building code standards, and work with appropriate large landowners to partner in the deployment of stormwater as a resource.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 5 HIGH PRIORITY

Secure funding to continue building out wastewater reuse infrastructure (enhancing existing wastewater facilities) and updating the wastewater management plan to include relocation of coastal facilities with exposure to climate change impacts such as sea level rise and coastal erosion (e.g. Moloka'i).

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Infrastructure

ACTION 6 MEDIUM PRIORITY

Secure County of Maui, State of Hawai'i, and federal funding to continue to support residents in cesspool conversions across Maui County.

Aloha+ Challenge

UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 7 MEDIUM PRIORITY

Develop a comprehensive countywide stormwater master plan evaluating expanding the municipal separate storm sewer system (MS4) program to reduce pollutant transfer to nearshore and reef ecosystems.

Aloha+ Challenge

UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

STRATEGY 3

Improve the ability of infrastructure and the built environment to withstand climate change shocks and stressors while maintaining provision of essential services.

KEY PARTNERS: *County of Maui, Hawaiian Electric Company, local community nonprofits and organizations, local hospitals and mental health facilities, State of Hawai'i*

ACTION 1 MEDIUM PRIORITY

Secure funding to continually update Maui County's Disaster Recovery Plan, identifying what will be prioritized in the recovery and rebuild process and how community systems will be strengthened to better withstand the impacts of natural disasters. Align disaster recovery plan with the County of Maui's Hazard Mitigation Plan.

Aloha+ Challenge

UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Infrastructure

ACTION 2 MEDIUM PRIORITY

Form a task force to decide where to set resiliency thresholds, define those thresholds, and set management strategies for when the county reaches tipping points. Require the task force to create a publicly available document on defined thresholds and their importance to resiliency.

Aloha+ Challenge

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

UN SDGs

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Develop a network of resilience hubs, emergency shelters, and community-based emergency management organizations that actively collaborate in their efforts and increase community-wide education on resiliency hubs to amplify their role in our county.

Aloha+ Challenge

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

UN SDGs

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Develop a road maintenance plan that includes thresholds and triggers for upgrades and improvements and a relocation plan incorporating LID and Complete Streets for coastal roads with exposure to climate change impacts such as sea level rise and coastal erosion.

Aloha+ Challenge

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

UN SDGs

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 5 MEDIUM PRIORITY

Strengthen evacuation routes and planning, with particular emphasis in areas with single points of access that are vulnerable to being cut off from climate change impacts such as sea level rise, coastal erosion, flooding, wildfires, and landslides.

Aloha+ Challenge

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

UN SDGs

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Infrastructure

ACTION 6 MEDIUM PRIORITY

Secure funding for additional planning to implement nature-based solutions into the design of resilience hubs and incorporate resilience hubs into existing land use regulation.

Aloha+ Challenge	UN SDGs
HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$ $ $

ACTION 7 HIGH PRIORITY

Develop resilient building design guidelines and modify zoning, permitting processes, and standards to support best practices for smart, sustainable, resilient development and reduce exposure to climate change hazards. Design guidelines should include consideration of future precipitation, sea level rise, wildfire, and heat projections. During the design phase, plan for climate change projections for lifespan of development and any beneficial resilience retrofits. Resilient design guidelines should protect public health and safety and prioritize inclusion of nature-based solutions. Regularly update the Title 19 and County of Maui Building Codes to align with modified zoning ordinances and county planning efforts.

Aloha+ Challenge	UN SDGs
HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$ $ $

ACTION 8 MEDIUM PRIORITY

Enact policy to require LID for new development to minimize runoff, maximize recharge, and reduce demands on infrastructure. Ensure reduction of the heat island effect by reducing hardscapes (e.g. concrete and asphalt surfaces) and increasing natural landcover and high solar reflectance index (SRI) surfaces (e.g. cool roofs) where hardscapes are necessary.

Aloha+ Challenge	UN SDGs
HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$ $ $

ACTION 9 MEDIUM PRIORITY

Secure funding to develop thresholds and standards for current and new development to support and incentivize the implementation of high-efficiency solutions to reduce the use of water resources.

Aloha+ Challenge	UN SDGs
HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$ $ $

Secure Our Infrastructure

STRATEGY 4

Plan for managed retreat and infrastructure relocation.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, State of Hawai'i Department of Land and Natural Resource*

ACTION 1 HIGH PRIORITY

Develop a threshold-based system built on the degree of climate change vulnerability and risk exposure for managed retreat of coastal infrastructure, so that the risk to physical structures and infrastructure across Maui County can be addressed with the least possible disruptions to residents and the economy over time.

Aloha+ Challenge | UN SDGs

MEDIUM	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 2 MEDIUM PRIORITY

Continue to update coastal parks adaptation and relocation plans with exposure to climate change impacts such as sea level rise and coastal erosion by performing vulnerability assessments and adopting updated adaptation plans.

Aloha+ Challenge | UN SDGs

MEDIUM	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Secure funding to establish a revolving fund for managed retreat and an interest-bearing account to support targeted projects.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Infrastructure

STRATEGY 5

Support resilient housing initiatives and reduce additional cost burdens.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations*

ACTION 1 HIGH PRIORITY

Secure funding and create programs that increase housing affordability for local residents and encourage sustainable construction by creating denser (smaller lot sizes) and creative housing developments, increasing types of housing that are in the County of Maui's zoning code, developing pre-approved green housing design standards that could be fast-tracked, and alleviating permitting requirements by reducing non-essential infrastructure requirements such as reducing parking.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 2 HIGH PRIORITY

Enact legislation prohibiting new construction in high risk areas and continue to adopt updated shoreline setback rules for shoreline development based on the latest data available for rising sea levels, coastal erosion, storm surge, and king tides. Collaborate with the County of Maui Planning Commission and county agencies.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Launch residential and small business hurricane retrofit programs to strengthen properties vulnerable to hurricanes, with particular emphasis on financially supporting LMI households to implement these improvements.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Infrastructure

ACTION 4 HIGH PRIORITY

Enact policy to ensure climate resilient affordable housing is available for existing residents, with a focus on LMI households affected by rising prices, by ensuring all new affordable housing developments are not built in areas of high environmental risk and are built beyond code standards for resistance to hurricanes and other natural disasters.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

ACTION 5 MEDIUM PRIORITY

Secure funding to conduct a housing needs assessment addressing housing supply affordability, diversity of housing stock by unit and ownership type, community demographics, and displacement risk assessment for new projects as applicable.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

STRATEGY 6

Plan for climate-ready transportation network and grid services.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, Department of Transportation, Hawaiian Electric Company*

ACTION 1 MEDIUM PRIORITY

Provide electricity grid resilience services through grid-integrated vehicle programs. Pilot and expand a variety of grid resilience services—such as demand response, emergency back-up, and demand charge reduction—through 3 modes of EV integration: Grid-to-Vehicle, Vehicle-to Building, and Vehicle-to-Grid.

Aloha+ Challenge **UN SDGs**

LOW Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

ACTION 2 HIGH PRIORITY

Support expansion and management of active transportation networks with an emphasis on equitable access to multi-modal transportation for all community members and prioritizing historically underserved communities. Decisions will be made with community input that leads to transportation networks that will support health and well-being, environmental sustainability, and equitable access to resources and opportunities.

Aloha+ Challenge **UN SDGs**

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

Secure Our Natural Systems

Climate change, development, and tourism are already diminishing Maui County's valuable natural resources. The "Secure Our Natural Systems" resilience pillar provides strategies and actions to reverse natural resource loss and protect the natural environment from mauka to makai.

Sustaining natural systems and biodiversity is critical, not only for limiting the progression of climate change, but for building resilience against climate change impacts. The County of Maui is committed to protecting our natural systems. Through collaboration with Native Hawaiians, scientists, and conservationists, the county can support native species restoration, regenerative agriculture, and the protection of our diverse ecosystems.

> **Loss of ecosystem/ natural buffers (beaches, dunes, reefs, wetlands) due to coastal hazards and sea level rise, [are] a top concern for me. Changing shoreline conditions will reduce community resilience in many ways.**
>
> *- Maui County Resident*

STRATEGY 1

Improve invasive species management to increase biodiversity and protect the natural environment.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, State of Hawai'i, Hawai'i Department of Land and Natural Resources, Hawai'i Department of Fish and Wildlife, University of Hawai'i, watershed partners*

ACTION 1 **HIGH** PRIORITY

Secure additional funding to actively manage invasive ungulate populations by supporting private/public partnerships and deploying population management solutions to reduce erosion, protect native ecosystems, and ensure the protection of our natural systems.

Aloha+ Challenge

UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

Secure Our Natural Systems

ACTION 2 HIGH PRIORITY

Expand County of Maui funding to support ungulate management for small farmers. For example, continue to support and expand the county's Feral Animal Relief and Recovery Grant Program for Farmers and Ranchers.

Aloha+ Challenge

UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

ACTION 3 HIGH PRIORITY

Actively control invasive plant populations by supporting private/public partnerships, employing effective control strategies, combining mapping data, and expanding the early detection program. Expand County of Maui funding and secure additional funding from other sources to support the management of invasive species.

Aloha+ Challenge

UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Partner with state and federal agencies such as the State Department of Agriculture and the United States Department of Agriculture (USDA) to expand biosecurity protocols and capacity across Maui County. This could include funding additional agricultural inspectors.

Aloha+ Challenge

UN SDGs

LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Natural Systems

STRATEGY 2

Protect and improve the integrity of open space, parks, and green spaces.

KEY PARTNERS: *County of Maui, Hawai'i Department of Lands and Natural Resources, local community nonprofits and organizations*

ACTION 1 MEDIUM PRIORITY

Update open space and community park plans as needed, including master plans, general development plans, and natural resource management plans to ensure habitat continuity and to protect open space and parkland against climate change impacts.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 2 MEDIUM PRIORITY

Secure funding to purchase more open spaces and SLRA-XA setbacks in Maui County to further preserve our diverse ecosystems.

Aloha+ Challenge | UN SDGs

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 HIGH PRIORITY

Enact policies to ensure that current greenspaces used as parks or open space are not converted to housing or commercial development.

Aloha+ Challenge | UN SDGs

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Create community forests in urban areas to provide greenspaces, natural connectivity, and valued recreational areas. Prioritize the use of drought tolerant native plant species that minimize the need for supplemental irrigation whenever possible.

Aloha+ Challenge | UN SDGs

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Secure Our Natural Systems

STRATEGY 3

Promote sustainable water supply and use.

KEY PARTNERS: *County of Maui, Hawai'i Department of Fish and Wildlife, University of Hawai'i, local community nonprofits and organizations*

ACTION 1 HIGH PRIORITY

Reduce potable water demand by supporting water conservation efforts and efficiency policies and programs to ensure an adequate supply of fresh water for people, businesses, and agriculture. Replace potable water use with non-potable water whenever possible.

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

ACTION 2 MEDIUM PRIORITY

Increase funding for continued watershed management through community partners. Continue implementing land management practices that support ecosystem function and healthy watersheds.

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
LOW GHG Reduction Potential
LOW Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost
$$$

ACTION 3 HIGH PRIORITY

Secure funding to develop an ecosystem management plan for priority watersheds, aquifers, and stream segments with key partners. Implement land management practices that support healthy ecosystems by determining the carrying capacity and ecological flow standards of aquifers and watersheds.

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

Estimated Cost
$$$

ACTION 4 MEDIUM PRIORITY

Continue to work with the Commission on Water Resource Management (CWRM) and other community stakeholder groups to reduce stream diversions that negatively affect traditional agriculture, cultural practices, natural freshwater flora and fauna, and healthy stream ecosystem function.

Aloha+ Challenge | UN SDGs

HIGH Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

Secure Our Natural Systems

STRATEGY 4

Protect native ecosystems and improve environmental quality.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations, Hawai'i Department of Land and Natural Resources, University of Hawai'i, University of Hawai'i Sea Grant*

ACTION 1 MEDIUM PRIORITY

Promote sustainable, regenerative, and nature-based solutions to address nutrient loading and sedimentation of freshwater and marine environments by adopting a whole systems approach, such as a beach cell system management approach to mitigate coastal erosion.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$ $ $

ACTION 2 HIGH PRIORITY

Secure funds to develop a countywide mapping system to help identify at-risk environmentally sensitive areas, including sand dunes and wetlands, and engage the community in this process. Develop a plan to support community and county-driven management measures to best address environmentally sensitive areas. Continue to support current mapping efforts from key partners.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$ $ $

STRATEGY 5

Increase resiliency of shoreline areas through active coastal management.

KEY PARTNERS: *County of Maui, Hawai'i Department of Land and Natural Resources, Hawai'i Department of Fish and Wildlife, University of Hawai'i, local community nonprofits and organizations*

ACTION 1 HIGH PRIORITY

Protect beaches and coastal safety by updating shoreline management rules and adopting shoreline development setbacks based on sea level rise/erosion maps. Provide incentives to reconfigure and retreat from high-hazard areas.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$ $ $

Resiliency Strategies & Actions

Secure Our Natural Systems

ACTION 2 MEDIUM PRIORITY

Secure funding to continue to protect and restore wetlands to address sedimentation and flooding by establishing a wetland and stream evaluation system. This will inform prioritization of actions, increase coastal resilience, and protect shoreline ecosystems by increasing capacity for dune restoration and shoreline habitat management.

Aloha+ Challenge

UN SDGs

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Increase coastal resilience and coral reef health by promoting community-led marine resource management, sustainable fishing practices, proper sunscreen use, use of reef-friendly landscaping applications particularly on the coast, and cross-referencing existing Coral Reef Ecosystem Studies (CREST).

Aloha+ Challenge

UN SDGs

MEDIUM Equity Impacts
LOW GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

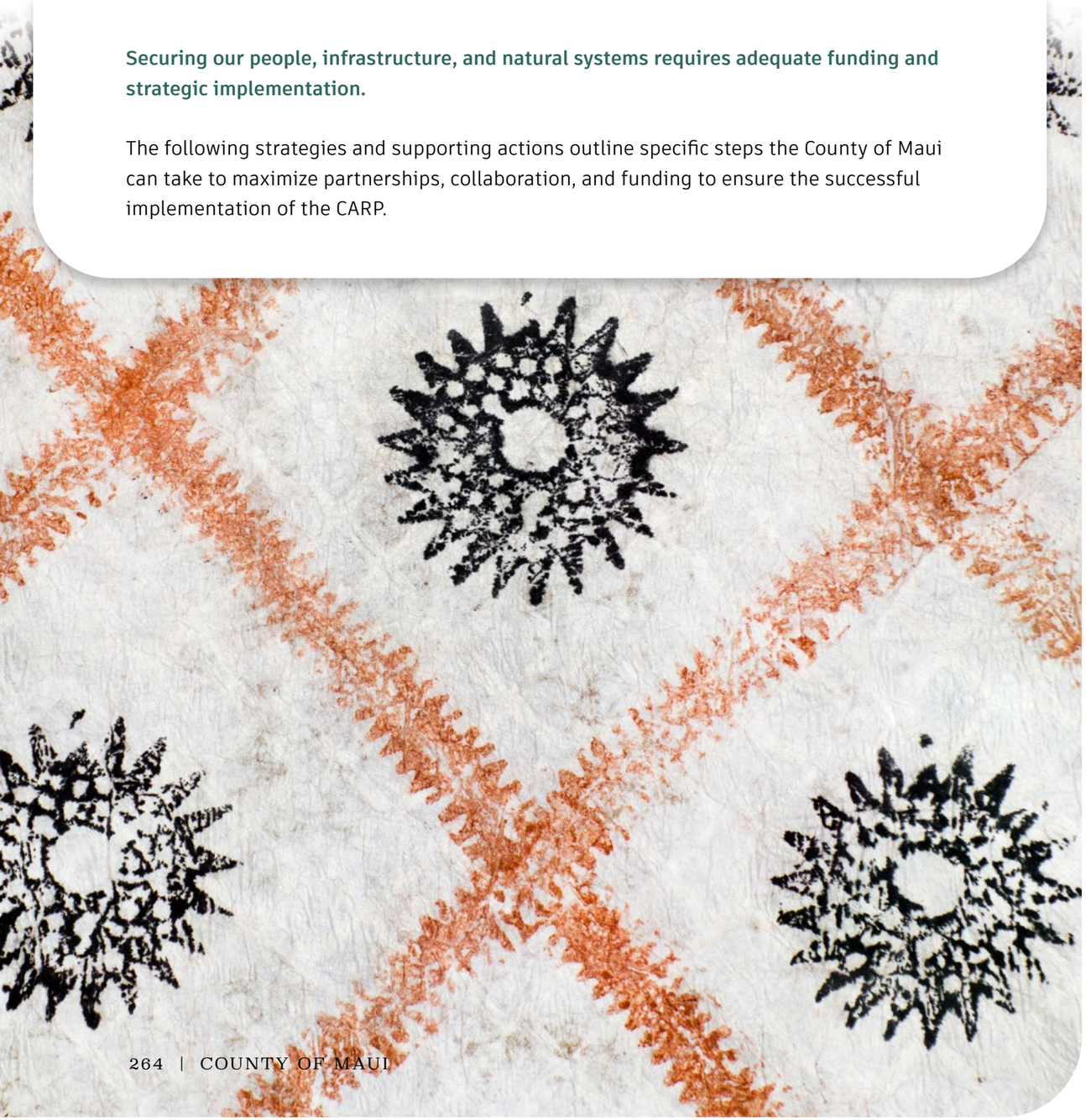
Estimated Cost

$$$

Funding & Implementation

Securing our people, infrastructure, and natural systems requires adequate funding and strategic implementation.

The following strategies and supporting actions outline specific steps the County of Maui can take to maximize partnerships, collaboration, and funding to ensure the successful implementation of the CARP.



STRATEGY 1

Build county capacity and departmental collaboration to ensure the successful implementation of the CARP.

KEY PARTNERS: *County of Maui*

ACTION 1 **HIGH** PRIORITY

CCRS to continue administering the Resiliency Hui, requiring each department to identify one person to act as the Resiliency Point Person to help implement climate actions and resiliency strategies identified in the CARP that fall under County of Maui's jurisdiction. In addition, the Resiliency Hui will work to strengthen collaboration and coordination of County of Maui departments to better implement the CARP's elements.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term, Ongoing

Estimated Cost

$$$

Funding & Implementation

ACTION 2 HIGH PRIORITY

Develop a plan and structure to track and measure progress for implementation of the CARP.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Establish a Place-Based Resilience Training Program for new elected leaders and local government staff to ensure understanding of the climate change and resiliency goals and actions identified and currently underway across Maui County. This program will offer an understanding of departmental efforts to reduce duplication of work and promote departmental collaboration.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

STRATEGY 2

Strengthen County of Maui partnerships to leverage and expand available resources for climate resilient actions.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations*

ACTION 1 MEDIUM PRIORITY

Improve County of Maui community relationships through volunteerism in order to foster awareness and connectivity among County of Maui staff and the Maui nonprofit community, advance positive community work, and ultimately create stronger collaboration between the County of Maui and nonprofits. For example, the county could create a Volunteer Time Match Program for employees that wish to volunteer time for charitable community work.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Funding & Implementation

ACTION 2 MEDIUM PRIORITY

Enhance engagement with communities across the county to foster stronger County of Maui community relationships, encourage participation in county decision-making, and further enhance community understanding of the county's climate initiatives.

Aloha+ Challenge **UN SDGs**

HIGH	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term, Ongoing

Estimated Cost

$$$

STRATEGY 3

Necessary processes and planning for continued climate action and resilience.

KEY PARTNERS: *County of Maui, local community nonprofits and organizations*

ACTION 1 MEDIUM PRIORITY

Develop guidance for capital planning, including resilient design standards for County of Maui infrastructure upgrades that consider climate change projections, and develop a resiliency standard certificate to highlight individuals that have exceeded expectations and chosen to go above and beyond.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

Funding & Implementation

ACTION 2 HIGH PRIORITY

Streamline permitting processes and incentivize activities that build climate resilience by improving project applications through the provision of scoping tools and publications of standard best management practices, and allowing permitting processes to incorporate environmental data. Create a checklist for resiliency standards and permitting.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

Estimated Cost
$$$

ACTION 3 MEDIUM PRIORITY

Pursue and achieve LEED for Cities and Communities certification for County of Maui facilities (https://www.usgbc.org/leed/rating-systems/leed-for-cities-communities).

Aloha+ Challenge **UN SDGs**

LOW Equity Impacts
HIGH GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Medium-term

Estimated Cost
$$$

STRATEGY 4

Proactively shift to a sustainable tourism management model for Maui County.

KEY PARTNERS: *County of Maui, State of Hawai'i, Maui Visitors Bureau, Hawai'i Tourism Authority, local community nonprofits and organizations*

ACTION 1 HIGH PRIORITY

Identify sustainable tourism targets and collaborate with partners to create a Maui County Sustainable Destination Management Action Plan that manages local tourism in a responsible and regenerative manner.

Aloha+ Challenge **UN SDGs**

MEDIUM Equity Impacts
MEDIUM GHG Reduction Potential
MEDIUM Level of Difficulty

Timeframe: Short-term

Estimated Cost
$$$

Funding & Implementation

ACTION 2 MEDIUM PRIORITY

Develop programs and resource materials that encourage visitors to support and engage in conservation efforts to help Maui County meet our climate resilience goals through volunteerism and educational opportunities.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 3 MEDIUM PRIORITY

Increase coastal resilience and coral reef health by educating the visitor industry through specialized outreach materials and marketing efforts.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 4 MEDIUM PRIORITY

Secure funding to explore and establish a green fee or fee-based program for all visitors to Maui County, with the fee supporting climate action and resiliency activities on the islands where they visit.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
LOW	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Medium-term

Estimated Cost

$$$

ACTION 5 MEDIUM PRIORITY

In alignment with Resolution No. 22-232, Urging the County of Maui and its Tourism Industry to Adopt Sustainable Tourism Practices and Certification, pursue a sustainable destination management certification for Maui County, such as those endorsed by the Global Sustainability Tourism Council.

Aloha+ Challenge **UN SDGs**

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
MEDIUM	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

Funding & Implementation

STRATEGY 5

Prepare for upcoming funding opportunities from state, federal, and grant programs to ensure the County of Maui is competitive in securing funding.

KEY PARTNERS: *County of Maui*

ACTION 1 HIGH PRIORITY

Secure funding for a new position in the Office of Climate Change, Resiliency, and Sustainability to help explore proven financing tools and emerging grant opportunities to fund resilience-focused projects. Coordinate resiliency planning to best position the County of Maui to be competitive for state and federal funding opportunities. Explore other financing tools, such as energy savings performance contracts.

Aloha+ Challenge | **UN SDGs**

LOW	Equity Impacts
MEDIUM	GHG Reduction Potential
LOW	Level of Difficulty

Timeframe: Short-term

Estimated Cost

$$$

Moving Forward

THERE IS STILL TIME

to mitigate climate change. However, the window to avert climate catastrophe is rapidly shrinking. We must act now.

For every fraction of a degree of warming, the threats to our natural and human systems compound and become more complex. The urgency of aggressive and widespread climate action cannot be overstated. Every day we delay action and continue releasing GHG emissions into the atmosphere, our task becomes more challenging.

The County of Maui has committed to implementing the strategies and actions laid out throughout the CARP while keeping the following guiding principles front and center:

- **Protect, restore, and sustainably manage our natural environment for current and future generations.**
- **Reduce local GHG emissions to achieve net negative carbon.**
- **Optimize resiliency within local communities.**
- **Cultivate local cultural practices rooted in ecological knowledge and values.**
- **Advance social equity and community inclusion.**
- **Grow a thriving local circular economy.**
- **Sustainably address current and future community infrastructure needs.**
- **Commit to both institutional and individual action and local implementation of climate action and resiliency strategies and actions.**

These are ambitious goals and to succeed the County of Maui needs the support of our community—a community that cares so deeply for Maui County. Together, we can and *must* achieve net negative carbon by 2045 while becoming more proactively resilient to climate change.

Track our progress: https://www.resilientmauinui.org

Appendix

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Acronyms, Abbreviations, and Definitions

AFOLU	Agriculture, Forestry, and Other Land Use
ALICE	Asset Limited, Income Constrained, Employed
BCEGS	Building Code Effectiveness Grading Schedule
C&D	Construction and Demolition
CARPAC	Climate Action and Resiliency Plan Action Committee
CARP	Climate Action and Resiliency Plan
CBRE	Community-based Renewable Energy
CCRS	Office of Climate Change, Resiliency, and Sustainability
CDP	Carbon Disclosure Project
CO_2	Carbon Dioxide
CREST	Coral Reef Ecosystem Studies
CWRM	Commission on Water Resource Management
DEM	Department of Environmental Management
DLNR	Department of Land and Natural Resources
DOE	Department of Education
DOH	Hawai'i State Department of Health
e.g.	For Example
EPA	United States Environmental Protection Agency
ESCO	Energy Service Companies
ESPC	Energy Savings Performance Contract
EV	Electric Vehicle
FEMA	Federal Emergency Management Agency
FPL	Federal Poverty Line
GHG	Greenhouse Gas
GIS	Geographic Information System
GPC	Global Protocol for Greenhouse Gas Inventories
HCEI	Hawai'i Clean Energy Initiative
HDOT	Hawai'i Department of Transportation
HECO	Hawaiian Electric Company
HSEO	Hawai'i State Energy Office
ICE	Internal Combustion Engine
ICLEI	International Council for Local Environmental Initiatives
IECC	International Energy Conservation Code
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
kWh	Kilowatt Hours
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
LMI	Low- to Moderate-income
MEDB	Maui Economic Development Board
MS4	Municipal Separate Storm Sewer System
MT	Metric Ton
$mtCO_2e$	Metric Tons of Carbon Dioxide Equivalent
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
PEER	Performance Excellence in Electricity Renewal
PPM	Parts per million
PV	Photovoltaics
RCP	Regional Concentration Pathways
RH	Resiliency Hui
SDGs	Sustainable Development Goals
SLRA-XA	Sea Level Rise Exposure Area
SRI	Solar Reflectance Index

TMD	Transportation Management and Design
UHERO	University of Hawai‘i Economic Research Organization
UNSDG	United Nations Sustainable Development Goals
USDA	United States Department of Agriculture
VAT	Value-Added Tax
WTE	Waste-to-Energy

Hawaiian Word Translation

Papa Wehewehe ʻŌlelo i Pili i Kēia Palapala
ʻOiai ua loaʻa ʻē kekahi o kēia mau poke a huaʻōlelo ma Māmaka Kaiao, he mau ʻōlelo nō kekahi me ka manaʻo i hoʻonui ʻia aku, a i ʻole he mau ʻōlelo hou i kumu hoʻi nā huaʻōlelo kūmau.

ʻĀina	Land
Āina Momona	Abundance
ahi hihiu wale	Wildfire
ahu kalapona	carbon stock
Ahupua’a	Subdivision of Land
ʻaila hoʻānu	refrigerant
ʻāina	environment (sometimes used interchangeably with *kaiapunui*)
ʻāina ʻoiʻenehana	developed country
ʻano kūpilikiʻi	severity
ʻāpana ʻoihana alakau	transportation sector
au ʻoiʻenehana	industrial times
ʻāwili hewa o ke kai me ka wai lalo honua	saltwater intrusion
haka kahua ʻōnaehana	infrastructure
hōʻakika	acidify
hōʻakika ʻia ʻana o ka moana	ocean acidification
hōʻano hou ʻana iho	adaptation
hōʻaui kahawai	diversion (of streams)
hoʻēʻe kai	inundation (also kai hoʻēʻe)
hoʻokahua kaiaulu	development (of communities)
hoʻokanahaʻi	reduce
hoʻokuakea pūkoʻa ʻana	coral bleaching
hoʻokūpaʻa kaiaulu	(ʻē/hou) resiliency
hoʻokūpaku	regenerative
hoʻokūpaku ʻāina	land restoration
hoʻōlapa uila	electricity transmission
hoʻolilo ikehu ʻuhaʻuha ʻole	energy efficiency
hoʻomalele māhuea hoʻomehana honua	to emit greenhouse gases
hoʻopiha hou ʻia o ka waihona wai lalo honua	aquifer recharge
holoholona maiʻao	ungulate
holopapa lāʻau kahiki	invaded (by a foreign plant species)
Hui	Join, Unite
ikehu kumu hōʻano hou ʻia	renewable energy
ʻino ʻoʻolokū	severe storm
ʻIke Kūpuna	Ancestral Wisdom
kaʻahele kaʻa palena ʻāina	transboundary travel
kaʻakālai	approach (also, *strategy*)
kahua hōkele	resort

Kai	Ocean Water
kai hoʻēʻe	indundation (also hoʻēʻe kai)
kaiapuni	environment (sometimes used interchangeably with ʻāina)
(kakalina) kikele	diesel
kalapona pili honua	terrestrial carbon
kāloaʻa-kūmaumau	business-as-usual
Kamaʻāina	Person of the Land, Local
kāmuku	less developed
kanahaʻi	reduction
Kānaka Maoli	Native Hawaiians
Keiki	Children
ke kō iho ka MH ____	by the year _____
Kuleana	Responsibility, Privilege
kūʻokoʻa meaʻai a makelia hoʻolako nohona	food and goods independence
Lāhui Hawaiʻi	Hawaiian People
lele kaʻa palena	transboundary aviation
lele kūloko	in-boundary aviation
Lewa	Air
Limu	Seaweed
Loʻi Kalo	Taro Patch
Loko Iʻa	Fishpond
māhuea hoʻomehana honua (MHH)	greenhouse gas
māhuea puhi	natural gas
maikonia	miconia
makaʻāinana	resident
Makai	Ocean
Mālama	Care For
malele māhuea hoʻomhehana honua (MHH)	greenhouse gas emission
Mana	Energy
Manaʻo	Thought, Opinion, Advice
manaʻo alakaʻi	values (as in guiding principles)
Mauka	Mountain
mea omo kalapona	carbon sink
meaulu wao	land cover
meheu kalapona	carbon footprint
Moku	Land District
nohona hoʻokō pono kaiapuni	sustainability (of lifestyle)
ʻOhana	Family
ʻōhuka a ʻāhiu	feral
ʻŌiwi	Indigenous
ʻoihana hoʻokipa malihini	tourism
ʻŌlelo Hawaiʻi	Hawaiian Language
ʻole malele kalapona	net negative carbon
omo a hoʻopaʻa	sequester (as with carbon)
ʻona kiwikā ʻia	municipal-owned
papaha	scenario
piʻi ʻilikai	sea level rise
Pilina	Connection
pono kākomo	imported goods
uila ʻōnaehana pūnaewele	grid supply electricity

uila kumu hōʻano hou ʻia	renewable electricity
Wai	Fresh Water
wai kele	waste water
wai lalo honua	groundwater
waihona wai lalo honua	aquifer
wao ʻilima	shrublands
wao koa	mesic wet forest
wao nahele Kona	dry forest

Snapshot of Commitments

International Council for Local Environmental Initiatives (ICLEI) Race to Zero

ICLEI's Race to Zero commits the County of Maui to get to zero GHG emissions by 2050 (at the latest). The County of Maui is also required to set a 2030 interim target reflecting maximum fair share effort to reach 50% global carbon dioxide (CO_2) reductions.[1]

Aloha+ Challenge

The Aloha+ Challenge aims to create He Nohona ʻAeʻoia—a culture of sustainability. The County of Maui has committed to this challenge through the following actions:

- **Clean Energy:** 100% renewable electricity by 2045.
- **Local Food:** At least double the local food production with a goal of 20 to 30% of food consumed being grown locally.
- **Natural Resource Management:** Reverse the trend of natural resource loss mauka to makai by increasing watershed protection, community-based marine management, invasive species prevention and control, and restoration of native species.
- **Waste Reduction:** Reduce the solid waste stream prior to disposal by 70% through source reduction, recycling, bioconversion, and landfill diversion methods.
- **Smart Sustainable Communities:** Increase livability and resilience in the built environment through planning and implementation at the state and county levels.
- **Green Workforce and Education:** Increase local green jobs and education to implement these targets.

Hawaiʻi Green Growth Local 2030 Hub

The Hawaiʻi Green Growth Local 2030 Hub aims to advance "locally and culturally appropriate" sustainability solutions by implementing Hawaiʻi's Aloha+ Challenge: He Nohona ʻAeʻoia as a local framework to achieve the United Nations Sustainable Development Goals.

Paris Climate Agreement

Hawaiʻi and the County of Maui have made commitments to meet the Paris Climate Agreement goals as individual entities. These commitments include "We Are Still In" and "State of Hawaiʻi Act 032," which are highlighted below:

- **Goal:** To keep global temperature rise this century well below 3.6° F (2° C) above pre-industrial levels and limit temperature increase to no more than 2.7° F (1.5° C) above pre-industrial levels.
- **Plan:** Plan the climate actions necessary (nationally-determined contributions) to achieve the long-term goals.
- **Report:** Report GHG emissions inventories yearly and progress on nationally-determined contributions every 5 years.

We Are Still In

We Are Still In[1] commits the County of Maui to:

- **Pledge:** Pledge to continue to support the goals of the Paris Climate Agreement and work towards GHG emissions reductions equal to or greater than the U.S. goal under the Paris Climate Agreement.
- **Declare:** Declare climate action contributions that an organization will take to meet the GHG emissions reduction goal.
- **Partner:** Partner with other U.S. organizations and governments to advocate for national climate policies and take collective action.
- **Quantify:** Estimate and publicly report GHG emissions through the Carbon Disclosure Project (CDP) or The Climate Registry.

1 For more information see: https://icleiusa.org/race-to-zero/

1 For more information see: https://www.wearestillin.com/organization/county-maui

Renewable Ground Transportation Commitment

The Renewable Ground Transportation Commitment[1] commits the County of Maui to transition public and private ground transportation to 100% renewable electricity by 2045 and transition public fleet vehicles to 100% renewable by 2035.

Maui County Sea Level Rise Proclamation

The Maui County Sea Level Rise Proclamation acknowledges the threat of sea level rise from climate change and directs the County of Maui's departments to implement the Hawai'i Sea Level Rise Vulnerability and Adaptation Report[2] in programs and planning regulations.[3]

Mayors for Solar Energy

The County of Maui is committed to Environment America's Mayors for Solar Energy, which supports efforts to advance solar energy in local communities, states, and the nation.[4]

1 Learn more about the commitment: https://www.honolulu.gov/cms-csd-menu/site-csd-sitearticles/985-site-csd-news-2017-cat/29848-12-12-17-hawai%25CA%25BBi%25E2%2580%2599s-mayors-commit-to-shared-goal-of-100-percent-renewable-ground-transportation-by-2045.html

2 For more information see: https://climateadaptation.hawaii.gov/wp-content/uploads/2017/12/SLR-Report_Dec2017.pdf

3 For more information see: https://www.mauicounty.gov/DocumentCenter/View/111851/032718_Item-E_-DLNR-OCCL-Sea-Level-Rise-Rpt_SLR-Proclamation?bidId=

4 For more information see: https://environmentamerica.org/feature/ame/mayors-solar-energy

Crosswalking

The plans and policy document below were referenced and considered throughout the development of the CARP.

- A Framework For Addressing Climate Change Adaptation in Hawai'i was established in 2009, before the state had comprehensive guidelines for climate adaptation. The framework, developed by the multi-stakeholder Ocean Resources Management Plan Working Group, provides a guide for adaptation planning.[1]
- Austin Climate Equity Plan is a roadmap for achieving net-zero community-wide GHG emissions by 2040. This plan is centered around equity with an international focus on the intersection between climate change and racial and social inequity.[2]
- County of Maui 2030 General Plan is a comprehensive Policy Plan for the islands of Maui County to the year 2030. The plan also incorporates the goals, objectives, policies, and implemented actions for the County of Maui to foster sustainability in its communities and ensure a vibrant island home for future generations.[3]
- County of Maui Integrated Solid Waste Management Plan is currently in draft form and in the process of an update and revision with input across several department and community stakeholders. The final plan will include recommendations for increasing efficiency, diverting waste, and reducing landfill risk, as well as a blueprint for practical implementation.
- Focus Maui Nui was a community process seeking the input of local citizens in a discussion about what residents want for the future of our islands (Maui, Moloka'i, Lāna'i, and Kahoolawe) which together make up Maui County. The project is designed to bring individuals, organizations, and communities throughout Maui County together to identify and prioritize shared values and to send clear messages to local leaders about what we want for our islands, our communities, and our future.[4]
- Guidance for Addressing Sea Level Rise in Community Planning in Hawai'i is a statewide community resilience resource. The guidance documents provide community tools to address coastal hazards and sea level rise, and disaster-recovery frameworks that can be implemented at the county level.[5]
- Hawai'i 2050 Sustainability Plan serves as the state's strategic climate and sustainability action roadmap. The plan prioritizes key focus areas, strategies, and actions to pursue over the next decade to advance global climate goals.[6]
- Hawai'i Highways Climate Adaptation Action Plan identifies the most pressing future climate threats to the transportation systems and the most appropriate steps to adapt to these threats. The Action Plan provides prioritized action recommendations

1 For more information see: https://files.hawaii.gov/dbedt/op/czm/ormp/reports/climate_change_adaptation_framework_final.pdf
2 For more information see: https://www.austintexas.gov/sites/default/files/files/Sustainability/Climate%20Equity%20Plan/Climate%20Plan%20Full%20Document__FINAL.pdf
3 For more information see: https://www.mauicounty.gov/420/Countywide-Policy-Plan

4 For more information see: https://www.focusmauinui.com/
5 For more information see: https://seagrant.soest.hawaii.edu/guidance-for-addressing-slr-in-community-planning-in-hi-2/
6 For more information see: https://planning.hawaii.gov/sustainability/hawaii2050/

in a multi-year Implementation Plan across all HDOT's core functions and programs.[1]

- Hele Mai Maui Long-Range Transportation Plan 2040 outlines Maui's transportation needs and opportunities to 2040. The plan was guided by a public engagement process and outlines a number of recommended programs, policies, and projects based on data and local input.[2]
- Maui County Energy Alliance was published in 2009 and provides recommendations for expanding renewable energy efficiency and increasing renewable energy. These recommendations were created by 5 working groups of public, private, and government sector volunteers.[3]
- Maui Island Plan provides goals, objectives, policies, and actions to achieve its vision for Maui's future. These actions are related to the following core themes: protect the natural environment, preserve local cultures and traditions, improve education, strengthen social and healthcare services, expand housing opportunities for residents, strengthen the local economy, improve parks and public facilities, diversify transportation options, improve physical infrastructure, promote sustainable land use and growth management, and strive for good governance. In addition, the General Plan provides a policy framework for the Maui Island Plan and 9 Community plans.[4]
- Maui Transportation Improvement Program FFY 2022-2025 (TIP) builds on the Hele Mai Maui 2040 Transportation Plan and represents a coordinated effort across state and local transportation departments to determine priority projects for federal transportation funding in Maui. The TIP includes transportation projects to improve roads, bridges, bus transit, trails, paths, and sidewalks.[5]
- O'ahu Resilience Strategy is O'ahu's comprehensive plan to promote resilience across 4 key areas including: affordability, resilience against natural disasters, climate security, and community cohesion. The plan provides 44 specific actions to ensure a resilient, safe, and self-sufficient future for the island.[6]
- One Climate One O'ahu is O'ahu's climate action plan. The plan outlines O'ahu's current GHG emissions and forecasts future GHG emissions given current policies and trends. The plan also provides a roadmap with key focus areas, actions, and strategies to reduce community-wide GHG emissions and meet O'ahu's ultimate goal of carbon neutrality by 2045.[7]
- South Maui Community Plan provides recommended planning strategies and resources for the South Maui region to address natural hazards and climate stress. The plan focuses on fostering greater social equity and community resilience amid a changing climate.[8]
- Trends Maui Nui is a report that contextualizes economic data in Maui County with interviews and community voices. Through comparative data and narratives, this plan provides information for the Maui County community to make decisions that benefit the community.[9]
- West Maui Community Plan outlines goals and recommended policies for growth and development in the West Maui region over the next 20 years. This plan covers the majority of the traditional moku of Lāhainā‘ and Kā‘anapali.[10]
- ALICE in Hawai‘i: A Financial Hardship Study prepared by the Aloha United Way provides ALICE (Asset-Limited, Income-Constrained, Employed) data which aims to accurately reflect how much income families need to live and work in the modern Hawaiian economy.[11]

Academic studies, research projects, and government resources were also cross-referenced throughout the development of the CARP. These resources are summarized below:

- Department of Hawaiian Homelands | Maui includes access to the State of Hawai'i General Plan, Island Plan, Regional Plans, as well as environmental assessments and reviews, information on renewable energy projects, water treatment, etc.
- Department of Transportation | Resilience provides an interactive dashboard with statewide transportation hazards and links to the HDOT Climate Resilience Action Plan and Exposure Assessments.
- Research and conservation work by Native Hawaiians
  - Haunani Kane, a researcher and assistant professor at the School of Geographical Sciences and Urban Planning at Arizona State University is conducting research

1 For more information see: https://files.hawaii.gov/dbedt/op/czm/ormp/reports/climate_change_adaptation_framework_final.pdf
2 For more information see: https://mauimpo.org/hele-mai-maui-2040
3 For more information see: https://www.mauicounty.gov/DocumentCenter/View/12762/MCEA-Expo-Long-Version-Final-Sep-09?bidId=
4 For more informations see: https://www.mauicounty.gov/1503/Maui-Island-Plan
5 For more information see: https://www.mauicounty.gov/DocumentCenter/View/12762/MCEA-Expo-Long-Version-Final-Sep-09?bidId=
6 For more information see: https://www.resilientoahu.org/resilience-strategy
7 For more information see: https://hidot.hawaii.gov/wp-content/uploads/2021/07/HDOT-Climate-Resilience-Action-Plan-and-Appendices-May-2021.pdf
8 For more information see: https://southmaui.wearemaui.org/about-the-project/#community-planning
9 For more information see: https://www.medb.org/wp-content/uploads/2021/07/TRENDS_MAUI_NUI_2021.pdf
10 For more information see: https://www.mauicounty.gov/DocumentCenter/View/131915/West-Maui-Community-Plan-January-2022
11 For more information see: unitedforalice.org/attachements/allreports/2020ALICEREPORT_HI.pdf

at Papahānaumokuākea Marine National Monument to identify potential biogeological linkages that enable or limit island resilience to storms and sea level rise on island resilience to storms and sea level rise. The research team is made up of all Native Hawaiian scientists.[1]

1 For more information see: https://news.asu.edu/20210113-asu-professor-uses-background-hawaiian-voyager-climate-scientist-provide-inclusive

CARP Engagement Strategies

CCRS Website and Social Media Engagement: CCRS created a website (www.resilientmauinui.org) to share climate change data, scientific background information, and invitations to public events. Polls, surveys, and other resources are utilized to engage the public in developing and implementing climate change mitigation and resiliency solutions. Social media posts were shared through County of Maui channels on Facebook and Instagram to further climate change engagement.

Vulnerability Workshops: A climate change vulnerability workshop was held over 2 days in March 2022 with 58 participants, including CARPAC members, Resiliency Hui members, and other community stakeholders representing various community systems. These workshops discussed the science behind climate change, including specific data relevant to Maui County. The workshop participants reviewed vulnerabilities that had already been identified, expanded and refined the list, and created a prioritized list of climate-related vulnerabilities across Maui County.

Community Forums: 7 Maui County-wide community forums on climate change vulnerabilities and strategies were held to gather stakeholder input. To identify several of our more remote communities to learn from unique needs and ensure that their voices were heard and included in the CARP, forums were held virtually in East Maui, Lāna‘i, and Moloka‘i.

Community Engagement: Additional meetings and in-person engagement activities were held throughout the CARP process. In total, the County of Maui conducted more than 31 outreach activities spanning all regions of Maui County.

Community Polls and Surveys: To broaden community participation, polls and surveys were posted on www.resilientmauinui.org and sent to community partners to share with their individual communities. The polls were publicized through the County of Maui’s media releases. Surveys were publicized on the County of Maui’s social media and shared through other community social pages.

Native Hawaiian and Cultural Review: Native Hawaiian, cultural, and ‘ōlelo Hawai‘i experts collaborated on the CARP from the beginning. Each step of the CARP process, as well as all materials presented, underwent cultural reviews. Key portions of the CARP, including the 20-page Executive Summary, have been and will be translated into ‘ōlelo Hawai‘i.

Maui County Climate Mitigation Action Survey

The following strategies and actions are presented in order of priority based on a survey completed by almost 300 Maui County residents. Note that many of the strategies and actions listed were not included in this survey. Instead, they came from additional research, feedback, and stakeholder engagement. Others were reworded and expanded upon based on community feedback. Therefore, if a strategy or action is *not* listed below, it was either not included in the survey or altered to better reflect our community’s needs.

Actions Ranked By Survey Responses

1. Increase residential solar photovoltaic (PV) and solar hot water access for low- to moderate-income (LMI) households
2. Streamline permitting for rooftop solar and utility-scale solar PV and energy storage.
3. Promote participation in community solar programs especially in under-served communities.
4. Provide additional incentives for energy efficiency programs with a focus on offering incentives and providing outreach to LMI households.
5. Incentivize building electrification and high efficiency cooling technologies.
6. Regularly adopt the latest building energy codes.
7. Revise building energy codes to accommodate EV charging.
8. Create a building energy performance rating and disclosure policy.

9. Increase EV and other clean fuel vehicle adoption by creating additional incentives.
10. Create island-wide networks of interconnected bicycle and pedestrian pathways on Maui, Moloka'i, and Lāna'i.
11. Expand EV charging and clean fuel refueling infrastructure in public, municipal, and commercial areas.
12. Increase community access to micromobility services and devices prioritizing access in underserved communities.
13. Create transportation hubs designed to facilitate the transfer of one mode of transportation to another.
14. Require vehicle emissions testing.
15. Encourage alternatives to vehicle idling.
16. Increase the annual vehicle registration fee on new ICE vehicles and eliminate premiums applied to vehicle registration fees on new and used clean fuel vehicles.
17. Reduce minimum vehicle parking requirements across Maui County.
18. Improve accessibility of transit especially in underserved communities.
19. Implement "complete streets" design into existing and planned road projects and prioritize old degraded roads and development in high density population areas.
20. Increase opportunities to work nearby where you live through mixed-use zoning and affordable housing.
21. Identify and pursue opportunities for enhanced curbside waste and recycling pick-up in priority areas that do not have easy access to waste and recycling centers.
22. Fund and build infrastructure for countywide commercial composting.
23. Support enhanced green waste diversion at the landfill (divert green waste to designated green waste/composting facility).
24. Develop and implement a 'Stop Wasting Food' program requiring and supporting diversion of commercial food waste to benefit programs such as local food banks.
25. Develop a construction and demolition (C&D) diversion ordinance that requires C&D waste materials to be sorted for reusable or recyclable materials.
26. Identify and pursue local options for recycling to decrease GHG emissions associated with transporting recyclables overseas.
27. Prioritize waste reduction strategies to decrease the amount of overall waste to be managed.
28. Mandate commercial food waste diversion for larger-scale generators of food waste.
29. Pursue low carbon emitting solid and liquid waste-to-energy (WTE) technologies.
30. Capture and use or flare gas at landfills where no capture or flaring is occurring.
31. Ensure that waste-to-energy (WTE) technologies that are implemented in Maui County are carbon neutral.
32. Capture and track waste-related GHG emissions data for DEM programs.
33. Actively support regenerative agriculture.
34. Develop a County of Maui sponsored tree planting program.
35. Plant trees as part of roadway rehabilitation projects to provide shade for pedestrian, bicycle, and transit infrastructure and promote comfort for frequent trips.
36. Encourage landscape designs to include native species that serve as a carbon sink.
37. Support a local food movement.
38. Better control of fallow land.
39. Actively participate in the state's carbon credit program and create opportunities for local involvement in this program.
40. Continue the CCRS Grants Program and Climate Adaptation/Mitigation CCRS budget line item to ensure funding for voluntary GHG reduction programs.
41. Support and promote watershed protection and invasive species management.
42. Foster collaboration and alignment of conservation efforts between local organizations and the County of Maui.

Resiliency strategies and action were not vetted through a survey and were instead analyzed by our CARPAC, Resiliency Hui, County of Maui Shoreline Planning team, and Office of the Mayor through extensive workshops.

Acknowledgments

The development of the CARP would not have been possible without the significant contributions in time, energy, and mana‘o of many. Mahalo to everyone who gave their time to provide input as we developed the County of Maui’s first Climate Action and Resiliency Plan.

COUNTY OF MAUI: OFFICE OF THE MAYOR
Administrative Lead

Mayor Michael P. Victorino

Office of the Mayor Staff:

- Darlene Ane, Executive Secretary
- Claire Kamalu Carroll, Community Liaison
- Terilynne Gorman, Public Information Officer
- Zeke Kalua, Executive Assistant
- Tyson Miyake, Chief of Staff
- Ipo Mossman, Community Liaison
- LeeAnn Nomura Matsui, Secretary
- Kumu Cody Pueo Pata, Hawaiian Cultural Advisor to the Mayor
- Brian Perry, Communications Director
- Michelle Santos, Office Operations Assistant
- Stacy Takahashi, Administrative Officer
- Shane Tegarden, Public Information Officer
- Michele Yoshimura, Budget Director

COUNTY OF MAUI: OFFICE OF CLIMATE CHANGE, RESILIENCE & SUSTAINABILITY (CCRS)
Project Team:

- Allison Cleghorn, Environmental Coordinator
- Alex de Roode, Energy Commissioner
- Maria Ornellas, CCRS Grants Manager
- Hannah Shipman, Green Building and Resilient Housing Specialist

County Staff:

- Shayne Agawa, Department of Environmental Management
- Gina Albanese, Maui Emergency Management Agency
- Herman Andaya, Maui Emergency Management Agency
- Sandy Baz, Department of Management
- Eva Blumenstein, Department of Water Supply
- Kate Blystone, Department of Planning
- James Buika, Department of Planning
- Christy Chung, Department of Public Works
- Karen Comcowich, Department of Planning
- Jeffrey Dack, Department of Planning
- Rowena Dagdag-Andaya, Department of Housing and Human Concerns
- Robert DeRobles, Department of Water Supply
- Erin Derrington, Department of Planning
- Pam Eaton, Maui Metropolitan Planning Organization
- Tamara Farnsworth, Department of Environmental Management
- Jordan Hart, Department of Planning
- Michael Kehano, Department of Environmental Management
- Annalise Kehler, Department of Planning
- Daniel Kunkel, Corporation Counsel
- Keanu LauHee, Department of Management
- Jennifer Maydan, Department of Parks and Recreation
- Michelle McLinden Nuijen, Department of Environmental Management
- Cecile McMahon, Department of Environmental Management
- Eric Nakagawa, Department of Environmental Management
- Josiah Nishita, Department of Management
- Kristi Ono, Department of Public Works
- Tara Owens, University of Hawai‘i Sea Grant
- Karla Peters, Department of Parks and Recreation
- Chico Rabara, Department of Public Works
- Diego Sanchez-Gomez, Department of Planning
- John Smith, Department of Public Works
- Marc Takamori, Department of Transportation
- Wendy Taomoto, Department of Water Supply
- Dave Taylor, Department of Management

- Richelle Thomson, Department of Corporation Counsel
- LoriAnn Tsuhako, Department of Housing and Human Concerns
- Erin Wade, Department of Management
- Keola Whittaker, Department of Corporation Counsel
- David Yamashita, Department of Parks and Recreation
- Clayton Yoshida, Department of Planning

County Council:
- Alice L. Lee, Council Chair
- Keani Rawlins-Fernandez, Council Vice-Chair
- Tasha Kama, Presiding Officer Pro Tempore
- Gabe Johnson, Councilmember
- Kelly Takaya King, Councilmember
- Mike Molina, Councilmember
- Tamara Paltin, Councilmember
- Shane Sinenci, Councilmember
- Yuki Lei Sugimura, Councilmember

COMMUNITY ENGAGEMENT PARTNERS AND ADVISORY COMMITTEES:

Climate Action and Resiliency Plan Advisory Committee (CARPAC):
The CARPAC was composed of 20 members, including residents, subject matter experts, government, business, and cultural representatives. The committee met an average of once per month throughout the duration of the project for 2-hour collaborative sessions. The group participated in multiple activities, such as developing the guiding principles, identifying vulnerabilities, suggesting mitigation strategies, reviewing resiliency strategies, and much more. The CARPAC also served as a bridge to the community in helping to identify other key stakeholders that needed greater representation.

- Makale'a Ane, Community-Based Program Manager, The Nature Conservancy
- Lauren Armstrong, Executive Director, Maui Metropolitan Planning Organization
- Lori Buchanan, Coordinator/Commissioner Moloka'i: Maui Invasive Species Committee, Planning Commission
- Gary Bulson, Chief Engineer (Retired), Hyatt Regency Maui
- Kainoa Casco, Project Manager-Farming and Sustainability, Mahi Pono
- Scott Crawford, Executive Director, Kipahulu Ohana
- Frank DeRego, Director of Business Development Projects, Maui Economic Development Board
- Scott Fisher, Director of ʻĀina Stewardship, Hawai'i Land Trust
- Kainoa Horcajo, Principal, Mo'olelo Group
- Sol Kaho'ohalahala, Hawaiian Culture and Community Environmental Steward
- Mahina Martin, Director, Government and Community Affairs, Hawaiian Electric Company
- Dick Mayer, Coordinator, Alliance of Maui Community Associations; Professor (Retired), Maui Community College
- Gail Miyahira, Maui County Area Coordinator (Retired), Hawai'i Healthcare Emergency Management
- Tyson Miyake, Chief of Staff, County of Maui Office of the Mayor
- Tara Owens, Extension Faculty, Coastal Processes Specialist, University of Hawai'i Sea Grant Program
- Keani Rawlins-Fernandez, Council Vice-Chair, Maui County Council
- Jonathan Stenger, Analyst, Kamehameha Schools
- Nicolette Van Der Lee, Program Manager, Hana Career Pathways/University of Hawai'i
- Nicholas Winfrey, President /Chief Professional Officer, Maui United Way
- Jenny Worth, Disaster Program Manager, American Red Cross

County of Maui Resiliency Hui (RH) comprises more than 50 personnel from 11 County of Maui departments and agencies. The Resiliency Hui was engaged in monthly 2-hour meetings to review and provide input on the CARP. During the meetings, CARP contractors and other subject matter experts shared detailed climate-related information. Since this is an integrated plan, many actions will be the kuleana of different departments. It was critical to have them involved in the development of the CARP. The RH was established prior to the CARP and will continue to meet on resiliency matters going forward.

- Corporation Counsel
- Department of Environmental Management
- Department of Housing and Human Concerns
- Department of Management
- Department of Parks and Recreation
- Department of Planning

- Department of Public Works
- Department of Transportation
- Department of Water Supply
- Maui Emergency Management Agency
- Maui Metropolitan Planning Organization

COMMUNITY PARTNERS AND RESOURCES:

- American Red Cross
- City and County of Honolulu, Office of Climate Change, Sustainability and Resiliency
- Council for Native Hawaiian Advancement
- East Maui Ready
- Four Counties Sustainability Network
- Hawai'i Land Trust-Waihe'e Coastal Dunes and Wetlands Refuge
- Hawai'i Off Grid
- Hawai'i Energy
- Hawai'i Green Growth
- Hawai'i Solar Energy Association
- Hawaiian Electric Company
- Kahanu Garden and Preserve
- Kaupapa Lo'i o Ka'amola conservation area, Keawe Nui Fishpond and a kalo family farm
- Kipahulu 'Ohana
- Lāna'i Hawai'i Farmers Union
- Lāna'i High and Elementary School Agrofarm Program
- Lāna'i Limu Restoration Project
- Local Governments for Sustainability
- Mahele Community Farm
- Maui Invasive Species Committee
- Maui Ocean Center / Maui Ocean Center Marine Institute
- National Disaster Preparedness Training Center
- National Oceanic and Atmospheric Association
- Pūlama Lāna'i
- Roxanne Morita (County of Maui Lāna'i Council Member Gabe Johnson's office)
- Skyline Eco Adventures forestry and biochar projects
- State of Hawai'i Department of Transportation
- Sust'āinable Molokai
- U.S. Green Building Council

CONSULTANT SUPPORT:

- Geos Institute
- Lotus Engineering and Sustainability
- Map-Collective
- Sustainable Pacific

STATE AGENCY COLLABORATIONS AND RESEARCH:

- Department of Hawaiian Homelands
- Department of Land and Natural Resources
- Hawai'i Insurance Commissioner
- Hawai'i State Energy Office
- Institute for Sustainability and Resilience at University of Hawai'i Manoa
- University of Hawai'i School of Ocean and Earth Science and Technology
- University of Hawai'i Economic Research Organization
- University of Hawai'i Sea Grant