

4 | HAZARD MITIGATION

A. INTRODUCTION

Hazards from natural forces have been measured in Hawai'i since the early 1800s. Yet, preparation for the different types of hazards and knowledge of their associated risks is limited within the community. In 2002, the USGS published the Atlas of Natural Hazards in the Hawaiian Coastal Zone that compiled the historical trends and natural factors that influence whether a site is vulnerable to hazards. The USGS report cautions that:

...given the small size of Hawai'i State, an area that does not have a prerecorded history of a natural hazard occurrence does not preclude it from being affected in the future.¹¹

In the USGS report, historical records provide an estimated recurrence cycle of every 23 years for a damaging tsunami reaching Moloka'i and Lāna'i. However, prior to the recent tsunamis generated by earthquakes in Chile (2010) and Japan (2011), it had been over 50 years since the last damaging tsunami hit Moloka'i in 1957. No human lives were lost from the last two tsunamis, but damage to the docks at Mānele Bay were estimated to cost between \$1.5 million to \$2 million.

Across the nation, disaster recovery workers are facing the challenge of how to build resiliency into communities. The first step to building resiliency is for people to recognize the inherent risks associated with where and how they choose to live. The community must then adopt "approaches that eliminate, reduce, mitigate, or transfer those risks in ways that make them more manageable over the long haul."¹²

Recent resiliency studies have found that:

Communities with strong disaster resilience capabilities were often those that were already doing well at the things citizens and businesses most value – having leaders that people trust and institutions that work, having a healthy environment, having a regularly maintained infrastructure designed to anticipate stresses, and having a flexible economy that provides opportunities for broad cross-sections of workers and investors.¹³

Hazard mitigation plans seek to reduce the risk of natural and human created hazards on people and property. The County of Maui Multi-Hazard Mitigation Plan 2010 covers the natural hazards identified in the USGS report in addition to other hazards, including dam failure, drought, wildfire, and hazardous substances.¹⁴

¹¹ Fletcher, Charles H., et al. (2002). *Atlas of Natural Hazards in the Hawaiian Coastal Zone* (United States Geological Survey).

¹² Coastal Recovery Commission of Alabama (2010). *A Roadmap to Resilience: Towards a Healthier Environment, Society and Economy for South Alabama*.

¹³ *Ibid.*

¹⁴ Martin & Chock, Inc., (2010). *County of Maui Multi-Hazard Mitigation Plan 2010* (prepared for County of Maui, Civil Defense Agency).

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Existing Conditions

Hazardous conditions that have increased significantly over time are erosion, drought, and the risk of sea-level rise with climate change. These hazards are influenced by human activities. With Lānaʻi City located at a high elevation, most of the community lives in an area relatively safe from coastal flooding and tsunami dangers. However, recreational activities take residents and visitors to the low-lying coastal areas that are susceptible to coastal flooding, coastal inundation from tsunamis and sea-level rise, and storm surge. The resort area at Mānele and the entire campground at Hulopoʻe are located in these inundation zones. There are two sirens on island, each with a half-mile radius for disaster warnings; one is located in Lānaʻi City and the other is located above Mānele Resort. Helicopters are used to provide disaster warnings in the remote coastal areas.

As one of the most arid of the inhabited Hawaiian islands, Lānaʻi is susceptible to drought conditions and wildfires. Nine out of ten wildfires are caused by people and threaten life, property, and natural resources. Lānaʻi has been fortunate to experience only two wildfires in the past 27 years, but these two fires alone burned over 3,500 acres. Currently, Lānaʻi City contains the island's only fire station, which is staffed with a five-person crew. There is no fire station at Mānele and only one paved access road to the area.

B. ISSUES AND STRATEGIES

Issue 1: Public awareness of disaster preparation, response, and post-disaster recovery planning is poor.

Strategy 1: Increasing disaster preparedness and interagency coordination will improve the community's resiliency to disasters. Improve the distribution of information on disaster preparation and response to residents and visitors.

Issue 2: The entire island is at high risk of wildfires.

Strategy 2A: The State Division of Forestry and Wildlife (DOFAW) and County Fire and Police Departments need to coordinate the community's wildfire response and evacuation plan. Distribute public information on fire prevention and evacuation routes to residents and resort employees.

Strategy 2B: Prepare wildfire response by maintaining fire breaks and evaluating the adequacy of the water supply for fire emergencies.

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Issue 3: Kaumālapa`u Harbor and Mānele Bay Resort are located in the tsunami zone.

Strategy 3: Prepare for disaster response by planning for the phased relocation of critical structures and long-term strategic retreat of buildings.

Issue 4: Sea-level rise will increase the risk of storm surge inundation affecting developments in coastal areas.

Strategy 4: Coordinate with State agencies to obtain information and maps on sea-level rise. Plan for a phased relocation of critical structures, long-term strategic retreat of buildings, and adequate setback for new development.

C. GOAL, POLICIES, ACTIONS

GOAL Lāna`i will be prepared for natural disasters.

Policies

1. Promote public education on the risks and impacts of hazards to increase community awareness and preparation.
2. Adopt approaches to risk management that eliminate, reduce, mitigate, or transfer hazard risks.
3. Encourage economic diversity, environmental health, infrastructure maintenance, and hazard preparedness to improve the community's resiliency.
4. Locate critical infrastructure outside of areas projected to become evacuation and inundation zones as sea levels continue to rise.
5. Encourage the construction of buildings capable of withstanding Category 4 hurricanes and serving as temporary emergency shelters.
6. Support the provision of adequate resources to meet the community's post-disaster needs.
7. Require shoreline developments to analyze shoreline hazards, including sea-level rise, during the entitlement and permitting process.

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Actions

Table 4.1 Hazard Mitigation Actions				
No.	Action	Policy No.	Lead County Agency	Partners
4.01	Establish a Lānaʻi-based community coordinator for County emergency operations. Develop a network of community volunteers to assist emergency responders. Improve disaster preparation, response time, and coordination among emergency-response agencies and the community.	1	Civil Defense Agency	American Red Cross Civil Air Patrol Department of Police (MPD)
4.02	Implement the County of Maui Multi-Hazard Mitigation Plan 2010 and subsequent updates when consistent with the community plan.	1, 2	Civil Defense Agency	MPD
4.03	Seek information on and investigate sites that could contain hazardous waste and remediate when needed.	2	Department of Environmental Management (DEM)	DOH Mayor's Office (Environmental Coordinator) Pūlama Lānaʻi
4.04	Distribute information on hazard mitigation including: <ul style="list-style-type: none"> • Disaster planning, evacuation routes, formalized evacuation plans, and shelter location; • Steps for homeowners or businesses to strengthen and harden their buildings against disasters; • Fire prevention; and • Household and small business BMPs for the disposal of toxic and hazardous waste, including pharmaceuticals and heavy metals. 	1	Civil Defense Agency	MFD Mayor's Office (Environmental Coordinator)
4.05	Evaluate the need for additional shelter space capable of withstanding hurricane force winds or other natural hazards, and identify potential shelter locations. Provide sufficient back-up resources to ensure communication and emergency services are available during power outages. Evaluate the coverage of existing sirens.	3	Civil Defense Agency	

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No.	Action	Policy No.	Lead County Agency	Partners
4.06	Identify critical infrastructure, lifelines, roads, and structures that are vulnerable to coastal hazards, such as sea-level rise. Develop a coordinated emergency response system that includes well-defined and mapped evacuation routes. Distribute emergency response information at camping sites and through school programs.	1, 2, 4	Civil Defense Agency	Pūlama Lāna`i Four Seasons Resort DLNR DOE
4.07	Identify critical infrastructure, lifelines, roads, and structures that are vulnerable to wildfires. Develop a coordinated emergency response system that includes well-defined and mapped evacuation routes. Provide training to develop volunteer emergency response and firefighting crews. Formalize current practices on the use of heavy equipment during fires.	2	MFD	DOFAW State-trained Volunteer Fire Crew Pūlama Lāna`i Four Seasons Resort
4.08	Develop a post-disaster recovery and reconstruction plan to increase resilience.	6	Civil Defense Agency	Community Pūlama Lāna`i American Red Cross
4.09	Provide information on opportunities to participate in discussions on the impacts that climate change may have on the community. Conduct a Community Self-Assessment.	1	Civil Defense Agency	Department of Planning
4.10	Develop detailed mapping of the hazard risks and vulnerabilities assessment in the County of Maui Multi-Hazard Mitigation Plan 2010.	1	Civil Defense Agency	Department of Planning
4.11	Improve emergency notification procedures along Lāna`i's eastern coast.	3	Civil Defense Agency	MPD DLNR

5 | CULTURAL, HISTORIC, AND SCENIC RESOURCES

A. INTRODUCTION

Most of the cultural or historic resources of Lāna`i's early Hawaiian settlements and plantation era (1922-1992) remain in good to excellent condition. There may still be undiscovered Hawaiian artifacts or structures as vast areas of the island are undeveloped.

Lāna`i City symbolizes an important part of the island's history when immigrants from Asia and Europe arrived to work on the pineapple plantation. The town's plantation cottages and buildings were constructed in the 1920s along an orderly grid of streets with a central town park and shops (see Map 5.1). During World War II, two plantation era buildings, the jail and the courthouse, served as temporary internment sites.

Early archaeological surveys conducted by Kenneth Emory and the Bishop Museum in the 1920s and 1970s have partially documented the cultural artifacts and structures found throughout the island. Some of the sites documented in the surveys include massive heiau complexes at Ka`enaiki, Lōpā, Kāhe`a, and Kaunolū; sites associated with major ali`i, such as Kalani`ōpu`u at the fortified ridge of Ho`oki`o, and Kamehameha I at Kaunolū; as well as numerous small settlements including Hulopo`e, Kapiha`ā, and Kalamanui. There is also an abundance of petroglyph sites, such as Luahiwa, Kāhe`a, and Kaunolū. Luahiwa is one of Hawai`i's most important petroglyph sites with over 1,000 ancient stone carvings. The Maui County Cultural Resources Survey¹⁵ revisited about half of the sites noted in the previous surveys, and found many of the sites remain in good to excellent condition.

Lāna`i's eastern coast, stretching from Maunalei to Halepalaoa along the island's windward side, is known to have significant archaeological resources and historic sites from Lāna`i's pre-western contact and sugar plantation periods. Early native Hawaiians constructed lo`i kalo (taro pond terraces) along the island's only perennial stream in Maunalei Valley, which still exist today. They also constructed loko i`a (fishponds) within sheltered coves along the coast. Lāna`i's first plantation, Maunalei Sugar Company, developed a narrow gauge railroad between Keomuku Village and Halepalaoa, and constructed a wharf at Halepalaoa. Remains of the plantation include the wharf foundation stones and Buddhist cemetery at Halepalaoa, segments of the railroad beds, remnants of the sugar mill, a church and associated cemetery at Keomuku, and numerous buried structural foundations in the former village.

¹⁵ Pacific Legacy (October 2009). *Maui County Cultural Resources Survey*.

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Existing Conditions

The Lānaʻi community is actively involved in protecting and restoring its cultural and historic resources. Appendix 5.1 provides a partial record of the cultural and historic sites and protection actions that were identified during the 1998 community plan process.

The Lānaʻi Culture & Heritage Center, which serves as the home for many artifacts collected on Lānaʻi, and other nonprofit organizations are active in preserving, documenting, studying, and organizing programs for cultural and historical resources. Lānaʻi Culture & Heritage Center has recently conducted an ethnographic study, traditional cultural properties study, and limited archaeological reconnaissance survey for the Kaʻā ahupuaʻa in the northwest region of the island.¹⁶ Most of the sites documented were not previously described, indicating a full archaeological survey of the area is needed to adequately document sites and assess the full cultural significance of the region. Current stewardship programs are focused on preserving sites on the eastern coast and the last plantation pineapple-harvesting machine in the Palawai Basin. Recently, construction was completed that stabilized and restored the Ka Lanakila o Ka Malamalama Church at Keomuku Village on the eastern coast.

In Lānaʻi City, Dole Park remains the center of most commercial and community activities and is an important resource for residents, visitors, and Pūlama Lānaʻi. While design guidelines currently exist for the Country Town Business (B-CT) District, there is no clear strategy to protect the town's numerous historic structures. A number of historic structures, including the old firehouse and old post office, have been demolished. In 2014, a National Park Service study on World War II internment sites recognized the Lānaʻi City jail and courthouse as potentially eligible for listing as a secondary site in the National Register of Historic Places. "Secondary sites are those that were used as prisons for fewer prisoners, usually for shorter periods of time."¹⁷

Past meetings between the Lānaʻi community and Castle & Cooke Resorts, LLC (CCR) were held in an effort to support the goal of preserving the historic character of Lānaʻi City. Preservation methods that were discussed include utilizing the B-CT zoning ordinance and B-CT design guidelines, and nominating the area for designation on the National Register of Historic Places.

Scenic Sites and Resources

Scenic views and scenic view corridors are abundant and diverse on Lānaʻi. Scenic views combine land, sky, sea, and historic structures at a variety of scales and locations, including urban, rural, agricultural, and open natural settings. Views of nature, such as the ocean, hill slopes, valleys, ridgelines, and coastlines, are abundant from the roadways that cross the island or follow the coast. The Maui County General Plan 2030 Scenic Resources Inventory and Mapping Methodology

¹⁶ Maly, Kepā and Maly, Onaona (May 2011). "Hanohano Lānaʻi - Lānaʻi is Distinguished" An Ethnography of Kaʻā Ahupuaʻa and the Island of Lānaʻi (prepared for Lānaʻi Culture & Heritage Center).

¹⁷ United States Department of Interior, National Park Service (July 2014). *Honouliuli Gulch and Associated Sites Draft Special Resource Study and Environmental Assessment*.

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provides guidance on visual quality ratings based on eleven factors.¹⁸ A partial photo inventory of Lāna`i's scenic resources was conducted, and resources were mapped but not rated for resource value.

Section 2.80B.070(E)(9), MCC, requires the community plan to contain "...a list of scenic sites and resources." This chapter contains policies and actions that focus efforts to complete the inventory and rating of Lāna`i's scenic resources.

B. ISSUES AND STRATEGIES

Issue 1: Lāna`i City's historic buildings are being lost to demolition or neglect.

Strategy 1: Protect Lāna`i's unique small-town character and plantation heritage by supporting collaborative efforts to develop a vision and master plan for the preservation of historic resources in Lāna`i City. Explore various methods of preservation, including use of the B-CT zoning ordinance and design guidelines, or nominations to National or State historic registers, particularly for the jail and courthouse for their significance to World War II internment history.

Issue 2: Cultural and archaeological sites are vulnerable to destruction, theft, and environmental degradation.

Strategy 2: Prioritize areas for protection, preservation, and restoration based on new and completed inventories, studies, and mapping that identify areas of high concentration of cultural significance or historical structures.

Issue 3: Cultural and environmental degradation affects the ability of contemporary practitioners of Hawaiian culture to exercise their traditional practices, including subsistence gathering.

Strategy 3: Revive traditional resource management practices and local stewardship to protect or restore cultural and natural resources that are essential to traditional Hawaiian cultural practices. Community place-based traditional resource management, such as ahupua`a, can be combined with other resource management practices and regulations to build community stewardship and ensure the continuation of traditional and subsistence practices.

Issue 4: Scenic resources are vulnerable when not identified.

¹⁸ Chris Hart & Partners, Inc. (June 2006). *Maui County General Plan 2030 Scenic Resources Inventory & Mapping Methodology* (prepared for County of Maui, Department of Planning, Long-Range Planning Division).

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Strategy 4: Integrate scenic resources into mapping and protection efforts for historic and cultural resources. The community can identify viewsheds that are vulnerable to impacts from development.

C. GOAL, POLICIES, AND ACTIONS

GOAL Lāna`i's diverse cultural, archaeological, and historic resources and practices, and scenic resources will be protected for future generations.

Policies

1. Protect Lāna`i City's historically significant buildings, plantation era design, and plantation cultural resources.
2. Protect all of Lāna`i's significant archaeological sites, and historic and cultural resources.
3. Support the current list, and the addition of sites, of significant historic properties on the State and National Register of Historic Places, particularly for the jail and courthouse.
4. Support all Lāna`i-based organizations' cultural and historic education, restoration, and stewardship events, and ongoing maintenance of sites.
5. Support the protection and preservation of Lāna`i's historic and cultural resources through controlled, informed, and guided access to historic, archaeological, and culturally important sites.
6. Support and maintain the Lāna`i Archaeological Committee (LAC).
7. Support access for subsistence hunting, fishing, and gathering.
8. Support the protection of native Hawaiian rights customarily and traditionally exercised for subsistence, cultural, and religious purposes in accordance with Article XII, Section 7, Hawai`i State Constitution, and Hawai`i law.
9. Require developments to mitigate their impacts on historic, cultural, natural, and scenic resources.
10. Protect scenic roadway views and significant view corridors and viewsheds. Protect significant views of ridgelines and hill-slopes to maintain open space scenic character.
11. Increase community awareness, appreciation, and stewardship of Lāna`i's historic and cultural resources.

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12. Support the development of a comprehensive archaeological survey for the Ka`ā ahupua`a.

Actions

No.	Action	Policy No.	Lead County Agency	Partners
5.01	Facilitate community meetings to determine the best methods for protecting and preserving the historic character of Lāna`i. <ul style="list-style-type: none"> Educate and assist property owners on the benefits of and process for historic designation. Evaluate use of the B-CT zoning ordinance and design guidelines. 	1, 3, 9, 11	Department of Planning	LAC Lāna`i Culture & Heritage Center Pūlama Lāna`i
5.02	Develop a comprehensive cultural resource protection plan for Lāna`i.	1, 2, 4, 5, 8, 9	Department of Planning	LAC NGOs Lāna`i Culture & Heritage Center Pūlama Lāna`i Cultural Resources Commission Maui Lāna`i Islands Burial Council
5.03	Assist with developing of a comprehensive cultural resource protection plan for the eastern coast. Conduct a feasibility study for the restoration of the Federation Camp and fisherman shacks. Conduct study for Maunalei Gulch.	2, 4, 5, 8, 9	Department of Planning	Pūlama Lāna`i NGOs Lāna`i Culture & Heritage Center Cultural Resources Commission Maui Lāna`i Islands Burial Council
5.04	Identify and inventory old plantation camps.	1, 2, 3	Department of Planning	NGOs Lāna`i Culture & Heritage Center
5.05	Provide assistance to landowner to restore and preserve the Brown House (Social Hall) for continued community use.	1, 3	Department of Planning	NGOs Lāna`i Culture & Heritage Center Pūlama Lāna`i

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No.	Action	Policy No.	Lead County Agency	Partners
5.06	Provide educational materials, websites, events, and visitor brochures to educate and involve the community and visitors with Lānaʻi's history, cultural resources, and cultural practices. Support cultural and historical festivals at Dole Park.	1, 2, 3, 4, 5, 9, 11	OED	Lānaʻi Culture & Heritage Center Uhane Pohaku Na Moku O Hawaiʻi, Inc. Lānaʻi Community Association Lānaʻi Chamber of Commerce NGOs LAC Pūlama Lānaʻi Four Seasons Resort Department of Planning
5.07	Promote and include visitors and community members in public involvement events and restoration projects.	4, 11	OED	LAC NGOs Lānaʻi Culture & Heritage Center Pūlama Lānaʻi Four Seasons Resort
5.08	Increase support of all Lānaʻi-based nonprofit organizations seeking additional funding sources for community stewardship.	4	OED	LAC NGOs Lānaʻi Culture & Heritage Center Pūlama Lānaʻi Department of Planning
5.09	Investigate and encourage the nomination of historic sites and structures to the State and National Register of Historic Places.	1, 3, 4	Department of Planning	Lānaʻi Culture & Heritage Center LAC Pūlama Lānaʻi Cultural Resources Commission Maui Lānaʻi Islands Burial Council
5.10	Provide assistance to landowners, upon request, to nominate the jail, courthouse, or other structures to the National Register of Historic Places.	3	Department of Planning	Lānaʻi Culture & Heritage Center LAC Pūlama Lānaʻi

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No.	Action	Policy No.	Lead County Agency	Partners
5.11	Collaborate with State and community groups to implement an ahupua`a/moku-based natural and cultural resources management system to protect sensitive cultural sites, trails, and landscapes.	2, 4, 5, 6, 7, 8, 9, 11	Mayor's Office (Environmental Coordinator)	DLNR (Nā Ala Hele Trail and Access System) NGOs LAC Lāna`i Culture & Heritage Center Pūlama Lāna`i Cultural Resources Commission Maui Lāna`i Islands Burial Council
5.12	Provide assistance to landowner to protect all petroglyphs from human disturbance and hillside erosion.	2, 4, 5, 12	Department of Planning	LAC NGOs Lāna`i Culture & Heritage Center Pūlama Lāna`i
5.13	Complete a visual inventory and analysis of key scenic corridors and viewsheds. Develop BMPs for development to protect identified priority view corridors or viewsheds. Provide education on Lāna`i scenic BMPs.	9, 10	Department of Planning	NGOs Lāna`i Culture & Heritage Center

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A. INTRODUCTION

Lānaʻi faces a number of unique challenges that require thoughtful collaboration between the County, the major landowner, the community, and the State. The island's greatest economic challenge is developing a sustainable economic strategy that supports the island's population while also preserving its close-knit sense of community and natural, cultural, and historic resources.

Background

In 1922, James Dole's Hawaiian Pineapple Company purchased the island of Lānaʻi and developed thousands of agricultural acres into what would at the time become the world's largest pineapple plantation. The plantation supported a vast majority of the island's workforce for over 50 years. However, in the 1980s and 1990s, stiff competition from producers in Latin America and the Philippines brought declining profitability to the pineapple industry.

David Murdock purchased 98 percent of the island in 1985 and shifted the economic model to luxury tourism and real estate sales with the opening of the Lodge at Kōʻele in 1990 and the Mānele Bay Hotel one year later. By the last pineapple harvest in 1992, many of Lānaʻi's workers had transitioned from plantation to visitor-industry employment. Some were unable to make the transition and moved off island.

In 2012, Murdock sold most of his holdings on Lānaʻi to Larry Ellison, Oracle Corporation founder and Chief Executive Officer (CEO). After the purchase, Ellison established a new management company, Pūlama Lānaʻi.

Existing Conditions

The State of Hawaiʻi faces a unique set of economic challenges, including:

- Limited local market capacity and competition from its small, isolated population.
- Higher costs and limited product transportation options creating barriers to market entry.
- Heavy dependence on the tourism industry, resulting in a high concentration of low-wage jobs and vulnerability to economic cycles.
- Over-reliance on fossil-fuel based imports for transportation of people, food, and materials, as well as electricity generation.

The economic challenges on Lānaʻi are exacerbated by a heavy dependence on luxury resort tourism, a very limited water supply, higher energy and transportation costs, and a very small population.

Lānaʻi has few options for low-cost visitor accommodations. The choices are between the eleven-room Hotel Lānaʻi and a small number of bed and breakfast (B&B) homes. In addition,

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because most of the island's real estate is controlled by a single entity, residents and entrepreneurs have limited opportunities to purchase their own residential, commercial, or industrial property.

The island's two luxury resort hotels and associated real estate ventures have not achieved their anticipated occupancy and sales volume. The development of the Kō`ele and Mānele PDs is incomplete, only having been built to half of their original size, with only 10 percent of the entitled resort housing units sold. The recession of 2007 to 2009 hit Lāna`i's economy hard. The island's largest employers, Castle & Cooke Resorts, LLC, and resort management firm, Four Seasons Resort, laid off a substantial number of workers. The significant loss of jobs forced many Lāna`i residents to leave the island in search of other employment options.

Limited airline service to Lāna`i makes ferry transport far more important than on other islands. Flight delays and cancellations have become recurring problems, and airline fares have consistently been among the highest in the state. Many of these problems stem from the limited capacity of the Lāna`i Airport to accommodate larger planes. Larry Ellison's purchase of Island Air and proposed purchase of go! Airlines in 2013 were efforts to improve the island's air travel and transport service.

Since the 2012 change in ownership of the island, the new owner has presented preliminary plans to address economic diversification through strategic infrastructure investments such as airport enhancements, harbor improvements, and expansion of support facilities. Pūlama Lāna`i plans to develop water desalination facilities to improve water management and increase available daily fresh water from the current four million gallons (MG) to ten MG. The company also intends to develop additional solar power generation capacity and implement smart grid technology to enhance the electrical grid's efficiency.

Pūlama Lāna`i also plans to enhance the offerings at its resort properties. In June 2013, it requested County approval of a \$27 million makeover of its Mānele Bay resort. The company is also considering building a third resort at Halepalaoa. Pūlama Lāna`i would like to foster the growth of small businesses by providing support in key areas, such as marketing and human resources, and by expanding the amount of commercial and industrial space available for lease and for sale. In 2013, the company pledged to match the County's Small Business Revitalization Grant Program, which supports local companies with fewer than 10 employees. In addition, the company has proposed creating a robust education sector by building a world-class research institute to study sustainability, and by improving K-12 education.

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B. ISSUES AND STRATEGIES

Issue 1: Lāna`i's economy is too reliant on one industry - luxury tourism.

Strategy 1A: Diversify Lāna`i's economy by attracting and developing new industries, providing appropriate infrastructure, and increasing the supply of commercial and industrial spaces.

Strategy 1B: Support business management, financial literacy, and community economic development education for prospective entrepreneurs and small business owners.

Strategy 1C: Promote the identification of untapped agricultural niche markets and value-added products to support the growth of small-scale agriculture.

Issue 2: Tourism accommodations and activities are primarily targeted towards the luxury market.

Strategy 2: Encourage the development of a greater variety of accommodations, activities, and marketing efforts aimed at a broad range of tourist markets to increase visitor options and foster small business expansion and development.

Issue 3: Limited and expensive transportation options contribute to the high cost of goods and services and the low number of visitors to the island.

Strategy 3: Advocate for improved passenger and cargo service to and from Lāna`i via airline and ferry.

Issue 4: Limited pool of qualified and trained workers on Lāna`i limits local employment potential and makes recruitment of new businesses more challenging.

Strategy 4: Support workforce training and educational programs in order to develop an ample pool of well qualified workers.

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C. GOAL, POLICIES, ACTIONS

GOAL A stable, sustainable, and diverse economy that is consistent and compatible with Lāna`i's rural island lifestyle.

Policies

1. Support diversification of Lāna`i's economy.
2. Support improvements in education and training programs at all levels to ensure a well-educated and well-trained workforce.
3. Support the development of scalable sustainable agriculture and value-added products.
4. Support small business assistance and training programs.
5. Support the growth of kama`āina tourism, cultural tourism, eco-tourism, agri-tourism, sports tourism, hunting tourism, and other alternative tourism ventures.
6. Support the growth of permitted B&Bs, small inns, guest houses, and other alternative lodging units.
7. Advocate for Lāna`i's interests with shippers, airlines, and regulators.
8. Encourage and support lease and fee simple land ownership options for residential, commercial, and industrial properties.
9. Support community education and business development by developing state-of-the-art information and communication technology infrastructure.

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Actions

Table 6.1 Economic Development Actions				
No.	Action	Policy No.	Lead County Agency	Partners
6.01	Create an economic development position, specializing in rural communities, to address Lāna`i's economic development challenges and opportunities.	1, 2, 3, 4, 5, 7	OED	Lāna`i Changes Maui Economic Opportunity, Inc. (MEO)
6.02	Identify, target, and recruit new industries and businesses, such as TV and film production and post-production, agricultural operations, aquaculture, and information technology.	1,3,4, 8	OED	MEO Pūlama Lāna`i
6.03	Cultivate entrepreneurship through small business training and loan programs; partner with MEO's Small Business Development Program to provide workforce development and business education workshops on Lāna`i.	1, 2, 4	OED	UH Hawaii Maui College (UHMC) Pūlama Lāna`i MEO
6.04	Develop a tourism strategic plan to guide the diversification of Lāna`i's tourism sector.	1, 5, 6	OED	Maui Visitors Bureau (Lāna`i Chapter) Pūlama Lāna`i
6.05	Assess alternative shipping options, including utilizing the ferry as a small cargo carrier between Maui and Lāna`i.	5, 7	OED	Expeditions and other future ferry operators.
6.06	Work with inter-island airlines to keep airfares affordable and service frequency adequate to accommodate the needs of Lāna`i visitors, residents, and businesses.	7	OED	Island Air Hawaiian Air Mokulele Air Cargo carriers
6.07	Work with inter-island shippers and the Public Utilities Commission to keep shipping costs affordable and service frequency adequate.	7	OED	Public Utilities Commission Expeditions Young Brothers
6.08	Work with the State Department of Transportation (HDOT) to implement improvements at Kaumālapa`u Harbor and Mānele Small Boat Harbor (MSBH).	1, 7	OED	HDOT DLNR
6.09	Work with the HDOT to expedite enhancement and improvement of the airport.	7	OED	HDOT Pūlama Lāna`i

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No.	Action	Policy No.	Lead County Agency	Partners
6.10	Develop an agriculture strategic plan for Lānaʻi, focusing on both larger agri-businesses and small farms.	1, 3, 4	OED	CTAHR
6.11	Provide business courses to farm owners and agricultural entrepreneurs; educate them about state and federal loan and grant opportunities.	3, 4	OED	DOA United States Department of Agricultural (USDA) (Farm Service Agency)
6.12	Establish agricultural education and vocational programs at the community college and high school.	2, 3, 4	OED	UHMC DOE Hawaiʻi Future Farmers of America Foundation (FFA) 4-H
6.13	Identify funding sources for Lānaʻi's community-development organizations.	1, 4	OED	Lānaʻi Changes MEO

7 | INFRASTRUCTURE AND UTILITIES

A. INTRODUCTION

The infrastructure and public services on the island are a mixture of publicly and privately owned facilities. The major landowner owns and operates the island's water utility company, Lāna`i Water Company, Inc. (LWC), a wastewater treatment facility and pump stations at Mānele, and a tertiary wastewater treatment facility in Lāna`i City. The County operates the Lāna`i City Wastewater Treatment Facility (WWTF) and provides public services such as police, fire protection, and parks and recreation. Maui Electric Company, Limited (MECO), owns and operates the major electric power plant. Pūlama Lāna`i owns and operates the solar photovoltaic (PV) farm. Most major paved roads on the island are under either County or State jurisdiction. The Airports Division of HDOT operates the Lāna`i Airport, while the Harbors Division operates Kaumālapa`u Harbor. The DLNR's Division of Boating and Ocean Recreation (DOBOR) operates the MSBH (see Table 7.1).

Even though these infrastructure systems are owned and operated by a mix of public and private entities, it is important to understand human habitation and settlement on the island depends on all these facilities functioning together. Creating a more sustainable future for the island requires some systems to be reconsidered; that is, it will be necessary to think about how to create green infrastructure, how to make some systems perform double duties, and how to use and restore natural systems where possible.

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System / Service	Facilities	Ownership
Water	Water system (wells, pumps, transmission, etc.)	LWC
Wastewater	Lāna`i City WWTF Lāna`i City Auxiliary WWTF Mānele WWTF	DEM LWC LWC
Solid waste	County landfill Solid waste hauling	DEM DEM and private haulers
Recycling	Miki Basin	Maui Disposal
Energy	Power plant Lā Ola Solar Farm	MECO Pūlama Lāna`i
Transportation – Air	Lāna`i Airport	HDOT (Airports)
Transportation – Sea	Kaumālapa`u Harbor MSBH	HDOT (Harbors) DLNR (DOBOR)
Transportation – Highways	Kaumālapa`u Highway Mānele Road	HDOT (Highways) HDOT (Highways)
Transportation – Streets	Lāna`i City	DPW Pūlama Lāna`i
Transportation – Dirt roads and trails		Pūlama Lāna`i
Stormwater drainage	Mānele Kō`ele Lāna`i City	Pūlama Lāna`i Pūlama Lāna`i DPW
Telecommunications	Telephone and cellular phone Cable Internet	Multiple providers Multiple providers Multiple providers