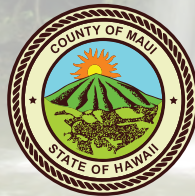


# COUNTY OF MAUI COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

CEDS



Released December 2016



**me** maui**economic**  
**DB** DEVELOPMENT BOARD

This report was prepared by MEDB and funded by the County of Maui Mayor's Office of Economic Development (OED) and the State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT), under an Award from the U.S. Department of Commerce, Economic Development Administration (EDA)

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# EXECUTIVE SUMMARY

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- Maui County consists of the Hawaiian islands of Maui, Lānaʻi and Molokaʻi (excluding Kalawao County, location of the Kalaupapa community). In 2015, the County had a population of 164,726 and an official labor force of 84,200. The dominant economic activity in the County is the visitor industry, which in terms of direct and indirect employment, accounts for around two-thirds of the economy.
- Among the major challenges Maui County faces in economic development are diversification of the economy; increasing the number and proportion of living wage jobs; increasing the stock of affordable housing which affects quality of life and presents a barrier to attracting and retaining skilled workers; and improving the business environment which faces complex regulation, high shipping costs, and some issues engendering public animosity.
- A consensus exists among residents and stakeholders that Maui County's economic development should be measured by increased sustainability and resilience, especially considering Maui's isolated geographic location and the likelihood of potential natural disasters or periodic economic downturns.
- There is also a consensus that the desirability of developing a vibrant, diversified economy must be balanced by sensitivity to residents' needs and the County's unique natural and cultural resources.
- The Comprehensive Economic Development Strategy (CEDS), mandated by the Economic Development Administration (EDA) of the US Department of Commerce, is an economic roadmap to diversify and strengthen regional economies – in our case, Maui County.
- Usually conducted every 5 years, the purpose of the CEDS is to create a locally-based strategy for economic development and create an environment for economic prosperity and resilience. EDA and other Federal funding for projects, as well as some State and County funding, is informed by the CEDS and uses it as a criterion for decision making.
- The CEDS was coordinated by the Maui Economic Development Board (MEDB), with similar exercises conducted on other Hawaiian islands by their respective EDBs. A Strategy Committee was formed to develop, guide, and review the CEDS process, composed of representatives from major stakeholders in the community.

- The CEDS process is cluster based; a cluster is defined as a network of connected businesses, suppliers and associates in a specific field that are all located in the same geographical area. The Strategy Committee identified the main economic clusters in Maui County driving the economy: Agriculture; Construction; Creative Industries; Energy; Health and Wellness; Science, Technology and Innovation; Sports and Recreation; and the Visitor Industry. In addition, geographical clusters for Hāna, Lānaʻi and Molokaʻi were identified, recognizing that economic priorities in these communities are different.
- Focus Groups were established for each cluster, composed of representatives from businesses and entities engaged in the cluster. Focus Group meetings were held to discuss a Vision Statement for Maui County, conduct a SWOT exercise (Strengths, Weaknesses, Opportunities and Threats), and establish goals and strategies for the cluster for the next five years and beyond.
- In their meetings, Focus Groups were tasked with crafting a Maui County Vision Statement and identifying the most important overarching goals of economic development for the cluster. They were also asked to devise strategies that would result in actions to realize the goals, especially those that could contribute to resilience.
- The CEDS Strategy Committee was convened on several occasions during this process to review Focus Group input and refine the goals and strategies. The Focus Group goals were established as follows:

***Agriculture:***

- *Develop and improve agriculture infrastructure*
- *Explore and identify opportunities with major stakeholders for public/private partnerships*
- *Increase awareness of programs that develop entrepreneurial Ag skills*

***Construction:***

- *Streamline and reorganize Government regulatory and permitting processes*
- *Increase investment in, and development of, infrastructure*
- *Create incentives for more affordable housing*

***Creative Industries:***

- *Triple the economic impact of creative industries in the next five years*
- *Create an arts and entertainment district in Wailuku*

***Energy:***

- *Support expansion of renewable energy including community based options*
- *Increase energy efficiency and conservation and demand response efforts*
- *Reduce the cost of energy for business and the importation of energy fuels for electricity generation by 2045 through renewable energy using the most suitable technologies*

**Health and Wellness:**

- *Provide a greater range and higher quality of health care services*
- *Improve the recruitment and retention of healthcare practitioners and technicians*
- *Encourage and incentivize collaboration among provider organizations in the continuum of care*
- *Promote Wellness as an industry*

**Science, Technology and Innovation:**

- *Better connect Maui globally and improve business attraction and retention*
- *Support world class science and technical activities*
- *Further develop, attract, and retain educated workforce in STEM fields*

**Sports and Recreation:**

- *Streamline permitting process with State and County*
- *Develop a comprehensive sports plan for Maui County*
- *Support the creation of State Sports Commission with participation from Counties*

**Visitor Industry:**

- *Improve transportation access to and from other islands and beyond*
- *Closely monitor Customs and Immigration issues and react accordingly*
- *Keep ahead of the competition*
- *Maintain and improve visitor satisfaction*
- *Improve facilities (Maui as a “mature” destination)*

**Hana:**

- *(Ag Cluster) Complete Hāna Marketplace or a similar center for sustainable, local products*
- *(Ag/Energy Clusters) Create a community commercial kitchen, including packing and processing facility for ag products, supplied by renewable energy*
- *(Ag Cluster) Establish an Agricultural Cooperative*
- *(Construction Cluster) Partner with a Land Trust to direct plan to preserve open shoreline space and plan for affordable housing and rentals to be built by local labor*
- *(Construction Cluster) Fix back road through Kipahulu/Kaupo*

**Lānaʻi:**

- *Increase career and economic opportunities*
- *Build population to sustainable level while maintaining uniqueness on the island*
- *Diversify visitor base*

**Molokaʻi:**

- *Fast-track and improve permitting for County and SMA process and transfer more authority to Molokaʻi (especially for restoration and improvement projects)*
  - *Establish an integrated plan for Kaunakakai as a Waterfront Town*
  - *Partner with National Park Service to Restore Traditional Use of Waikolu Valley*
  - *Fix causeway with flow-through culverts to remediate South Shore reef sedimentation*
- Strategies associated with these goals can be found in Section 6 below.
  - This report includes cluster data and an economic narrative that informs recent trends in Maui County's economy and factors affecting the identified clusters.
  - The Maui County CEDS report is a self-standing document for planning, decision-making, and informational purposes; it also informs, and is included in, the State of Hawai'i CEDS document that combines and integrates findings for each island.



# Maui County CEDS Process: Methodology

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The Comprehensive Economic Development Strategy (CEDS) for Maui County was coordinated by the Maui Economic Development Board, Inc. (MEDB). As mandated by the Economic Development Administration (EDA) of the U.S. Department of Commerce, a Strategy Committee was formed to develop, guide, and review the CEDS process. As required, MEDB enlisted a cross-section of all major interests in the community to take advantage of local skills and resources in strategy formulation and implementation.

The Strategy Committee therefore includes representatives of local government, business, industry, finance, agriculture, organized labor, utilities, education, community organizations, public health agencies, minorities, and women. Composition of the Maui County CEDS Strategy Committee, which convened on several occasions between September 2015 and June 2016, is as follows:

Sandy Baz, Budget Director, County of Maui	Frances “Effie” Ort, Community Volunteer
Grant Chun, A&B Properties, Inc.	Teena Rasmussen, County of Maui OED
Ryan Churchill, Pacific Rim Land	Cynthia Reeves, UH Maui College (CTAHR)
Ned Davis, Maui Innovation Group	Bill Russell, American Savings Bank
Jamie Dinkelacker, Google Niantic Labs	Alvin Shima, Hawai’i Dept. of Education
G. Riki Hokama, County Council Member	Jeanne Skog, MEDB, Inc.
Lui Hokoana, UH Maui College Chancellor	Josh Stone, Realtor and Restaurateur
Tom Lambert, Morgan Stanley	Sharon Suzuki, Maui Electric Co.
Todd Lawson, KaiHonua	Jeff Tarpey, United Airlines
Ivan Lay, HI Regional Council of Carpenters	Pam Tumpap, Maui Chamber of Commerce
Wesley Lo, Maui Memorial Medical Center	Terryl Vencl, Maui Visitors Bureau
Doug McCleod, DKK Energy Services LLC	Warren Watanabe, Maui Co. Farm Bureau
Helen Nielsen, Community Volunteer	Leslie Wilkins, MEDB, Inc.

In the process of formulating an in-depth analysis of the economic challenges and opportunities for Maui County, the Strategy Committee identified the main economic clusters considered to be economic drivers for Maui County’s economy. The CEDS process requires a cluster-based strategic approach, where clusters are defined as a group of firms, related economic actors, and institutions that are located near one another and that draw productive advantage from their mutual proximity and connections. They may be connected by functional relationship (e.g. suppliers and purchasers, producers and distributors) or by competition for similar markets. Cluster-based strategies provide numerous benefits including economies of scale, access to labor and knowledge, improved logistics, and greater opportunities to innovate.

The clusters identified for Maui County, in alphabetical order, are:

- Agriculture
- Construction
- Creative Industries
- Energy
- Health and Wellness
- Science, Technology and Innovation
- Sports and Recreation
- Visitor Industry

The government, retail, and education sectors were also considered; the Strategy Committee concluded that, like small business, they are fundamental to all clusters and are threaded through them.

The Strategy Committee recognized that economic development priorities in Lānaʻi and Molokaʻi were likely to be different and decided to treat these communities as distinct geographical clusters. It also recognized that while Hāna represented a distinct community, economic development goals and strategies should be aligned with those for Maui island.

To further inform the choice of clusters, MEDB surveyed 1,473 residents at the September Maui Fair regarding the perceived relative importance of eight clusters in offering future economic opportunities. Survey format and results are presented in Appendix 1 to this report.

As an integral part of the CEDS process, Focus Groups representing each of the identified clusters and geographical locations were convened to gather input on economic development challenges, opportunities, actions, and projects relevant to the formulation of the CEDS for Maui County. Invitations to the Focus Groups were extended to representatives from the public, private, and nonprofit spheres in each cluster. All of the Focus Group meetings were held in October and November 2015. In early 2016, further small-group as well as one-on-one meetings were held with individuals unable to attend the Focus Group sessions to augment the information gathered and provide greater depth. A listing of Focus Group participants is provided in Appendix 2.

Focus Group meeting participants were presented with an overview of the CEDS process and a brief economic background and history for Maui County, including demographic trends and labor force data. Participants were asked for input on a draft Vision Statement that had been agreed by the Strategy Committee, and were guided in a SWOT exercise (analysis of Strengths, Weaknesses, Opportunities, and Threats). Each Focus Group then defined and prioritized goals and identified strategies and action steps to achieve the goals. A total of 115 participants contributed during this process, and their input is incorporated into this CEDS report.

# MAUI COUNTY CEDS: VISION STATEMENT

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*The following Vision Statement incorporates input and feedback from the Strategy Committee and the cluster Focus Groups. In addition, a Core Values Statement reflects related contributions gathered during the consultation process that participants felt were important to include.*

## MAUI COUNTY VISION STATEMENT

Our unique island communities of Maui, Molokaʻi and Lānaʻi innovate and diversify to ensure shared economic vitality.

## CORE VALUES STATEMENT

- We value economic opportunity for all
- We value resilience
- We value and embrace diversity
- We value lifelong learning
- We value cultural traditions
- We value stewardship of the environment
- We value respect and collaboration
- We value broad-based community engagement
- We value global relationships

*In addition, the Molokaʻi and Hāna Focus Groups crafted their own Vision Statements as they voiced the sentiment that their communities are fundamentally different to the rest of Maui County and that their values and alternative vision should reflect this. These Vision Statements are included in this report as Appendix 3.*

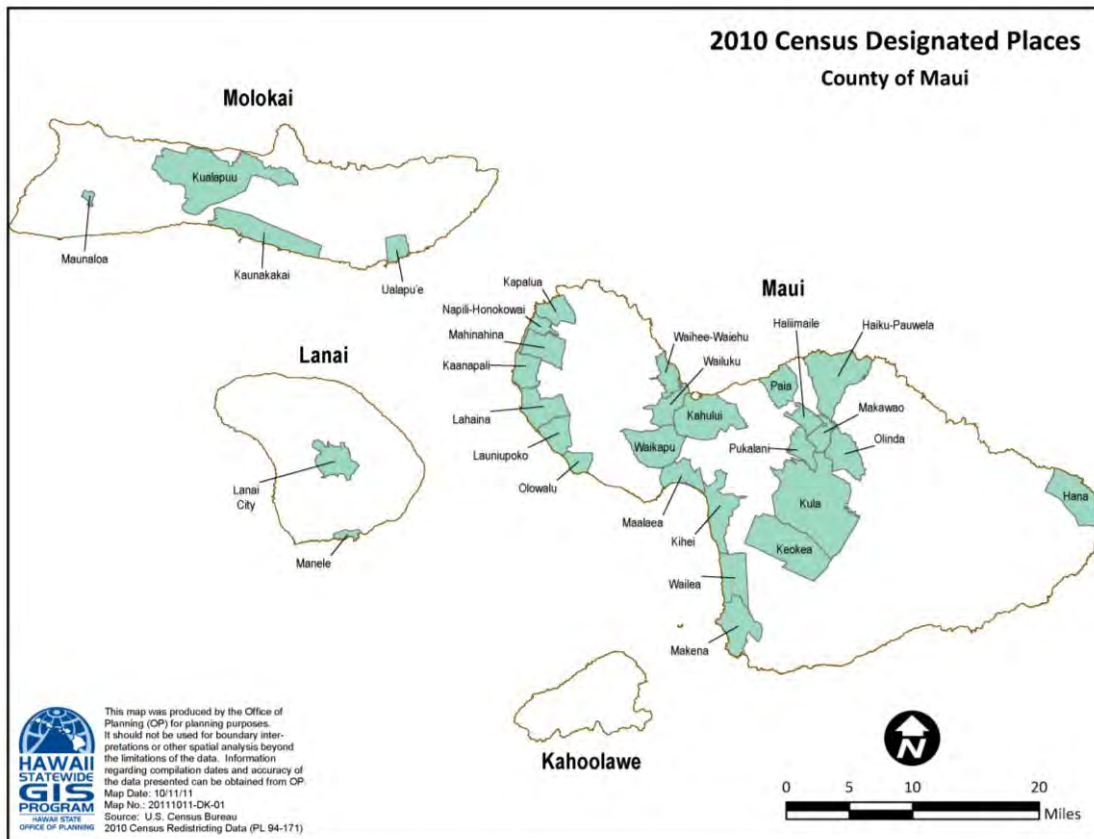
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# MAUI COUNTY: ECONOMIC BACKGROUND

## Introduction

The County of Maui is the second largest county by land area in the State of Hawai‘i. It consists of four main islands: Maui, Moloka‘i, Lāna‘i, and Kaho‘olawe. The combined area of these islands is 1,171 square miles, including over 9 square miles of inland water; the island of Maui is the largest, with 734.5 square miles, and the islands have a total coastline of 210 statute miles. Kalawao County, a state-managed hospital community (Kalaupapa), is situated on the island of Moloka‘i. The island of Kahooolawe is uninhabited and is in the process of being restored from a military practice site to a cultural reserve.

Chart 1: Maui County, 2010 Census Designated Places



The island of Maui is the economic center and home to most of the County's residents and businesses; the town of Wailuku is the seat of county government, and the contiguous town of Kahului is the primary commercial center.

## Transportation

Maui County is connected with the rest of the State by regular air and sea transportation links. The island of Maui's primary airport (OGG) is located in Kahului, the main business center; the airport also provides general aviation, commuter, and helicopter services. The airport handles just over 6 million passengers per year, and the Kahului-Honolulu corridor is ranked as one of the busiest in the United States with 986,000 passengers in 2015. The largest interisland carrier is Hawaiian Airlines, which provides frequent service to Honolulu (more than 20 direct flights per day), as well as Hilo (4 direct flights daily) and Kona on the Big Island (5 direct flights) and Lihue on Kauai (4 direct flights daily). A smaller airline, Island Air, also flies from Kahului to Honolulu (10 direct daily flights) with connecting service to Lihue. Mokulele Airlines' fleet of 9-passenger aircraft connect Kahului to Hāna on Maui, Honolulu and Kalaeloa on Oahu, Kona and Kamuela on the Big Island, and Ho'olehua on Moloka'i. There is no direct scheduled air service between Kahului and Lāna'i City. For residents of Moloka'i and Lāna'i, the limited availability of air transportation is generally regarded as a challenge for economic development. Aloha Airlines, which had competed with Hawaiian Airlines as the state's main interisland carrier since the 1950s, ceased operation in 2008.



*Kahului Airport*

Kahului airport also has direct air links to the mainland with the major carriers including Air Canada, Alaska Airlines, American Airlines, Delta Air Lines, Hawaiian Airlines, United Airlines, Virgin Airlines, and West Jet. Additional flights and connections, including direct international routes, are available from Honolulu. A smaller, secondary airport on Maui is located close to the

resort areas in West Maui at Kapalua (JHM), offering interisland service. Hāna, in East Maui, also has a small airport (HNM), with service mainly to Kahului. For the airports located on Molokaʻi (MKK) at Hoʻolehua and on Lānaʻi (LNY), the most frequent scheduled service is to Honolulu. A small airport links the isolated hospital community at Kalaupapa on Molokaʻi with Honolulu and Hoʻolehua (MKK).

Maritime transportation is the primary means by which goods reach Maui County; about 3.7 million tons of cargo passes through the principal commercial port at Kahului in Maui annually, about 79% of which is manufactured equipment, machinery and manufactured products<sup>1</sup>, and most of which is shipped via Honolulu. Kahului is the only deep-draught harbor in the County and is the busiest port in the State outside Oahu.



*Kahului Harbor*

Protected by two large breakwaters, the three-pier harbor occupies 45 acres of secured facility, and accommodates cruise ships as well as interisland freight barges, container vessels, other cargo vessels, tug boats, and gasoline and fuel oil tankers (most of the County's electricity is generated from diesel oil). In 2014, the harbor accommodated over 1,000 vessel arrivals (excluding domestic fishing craft). Because of Kahului Harbor's size and commercial importance, the Harbors Division, Department of Transportation (DoT), State of Hawai'i, has devoted special care to long-range planning, and the 2035 Harbor Master Plan and the Kahului Harbor Development Plan address planning issues. The Hawai'i Superferry, a high-speed catamaran ferry service carrying up to 280 vehicles and over 800 passengers began service in late 2007 between Honolulu and Kahului but was discontinued in March 2009 due to legal challenges.

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<sup>1</sup> Maui County Data Book 2015

In addition, smaller boat harbors at Mā‘alaea and Lahaina accommodate private recreational vessels and larger boats offering ocean activities, primarily for the visitor market (fishing, snorkeling, whale watching, etc.). Scheduled passenger ferry services from Lahaina to Lāna‘i and Moloka‘i are important transportation links for those islands; however, the Moloka‘i ferry service was reduced from 2015, mainly due to airfare price competition among carriers, and subject to cancellation. The main harbor on Moloka‘i is located in Kaunakakai; on Lāna‘i, the harbor at Kaunakakai handles commercial traffic, and the newly refurbished Manele Harbor serves as the destination for the passenger ferry and public boating activities.



*Kahului Harbor (DoT photo)*

## Utilities

All public service companies providing utilities on Maui are regulated by the Hawai‘i Public Utilities Commission (PUC). The County’s electricity provider is the Maui Electric Company (MECO), which serves over 70,000 customers.<sup>2</sup> MECO reports its total “firm” (dispatchable) generating capacity as 278 megawatts (MW), 212 MW from its Mā‘alaea oil-fired plant and 38 MW from its Kahului plant; 12 MW for Moloka‘i, and 10 MW for Lāna‘i. Maui County’s variable power generation includes 72 MW from three wind farms on Maui and 72 MW from customer

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<sup>2</sup> All MECO data is as of 12/31/15; taken from Maui Electric website.



generated PV. MECO estimates the percentage of renewable energy it supplies as 35% of the total, one of the highest proportions in the nation. MECO's parent company, Hawaiian Electric Industries (HEI) has been in acquisition discussions with NextEra, a Florida-based utility; the acquisition was reviewed by the Hawai'i PUC and rejected in July 2016.

Maui's sole gas utility is Hawaii Gas, which serves 420 accounts, as of 2013<sup>3</sup>. Unlike Oahu, Maui does not have a Synthetic Natural Gas (SNG) underground pipeline network. Instead, utility customers use liquid propane, which is metered and some of which is supplied by underground lines. Other customers on Maui use non-utility service supplied by propane from cylinders and tanks; Maui Gas Service, a subsidiary of Amerigas, also provides non-utility gas service.

The public water system is managed by the Department of Water Supply (DWS), an agency of the County of Maui. DWS provides water to approximately 35,700 services on Maui and Moloka'i (the water system on Lāna'i is privately owned). On Moloka'i, the state's Molokai Irrigation System serves a majority of agricultural and homestead users; Molokai Ranch, DHHL and the Kawela Plantation also provide water<sup>4</sup>. There are a number of private water companies on Maui that are regulated as utilities by the PUC.



*First Wind's Kaheawa 51 MW wind farm*

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<sup>3</sup> DBEDT Strategic Industries data

<sup>4</sup> County of Maui website, <http://www.co.maui.hi.us/faq.aspx?TID=76>

## Environment and Resources

The County of Maui enjoys a generally tropical climate, although there is a wide range of climatic and weather conditions due to the proximity of the ocean, the elevation of the mountains, irregular topography, and variable trade wind flow. Three-quarters of the island of Maui lies within 5 miles of the coastline, and no point on the island is further than 10½ miles from the ocean. All points in Molokaʻi and Lānaʻi lie within 5 miles of the ocean. Haleakala is the highest point (10,023 feet) on Maui (Puʻu Kukui, at 5,788 feet is the highest point in the West Maui watershed). The highest peak on Molokaʻi is Kamakou (4,961 feet); on Lānaʻi, Lanaiʻhale stands at 3,366 feet. Mean altitude is 2,390 feet on Maui, 1,150 feet on Molokaʻi, and 1,140 feet on Lānaʻi.

There are generally regarded to be two seasons in Hawaiʻi: the cooler, wetter winter months (November-April), and the warmer, dryer summer (May-October). Daily sea-level temperatures in Maui County generally average 67° F. to 84° F. Even in the hotter summer months, sea-level temperatures rarely exceed the low 90s, even in the dryer leeward areas. In winter, nighttime temperatures rarely fall below 60° F. although in Upcountry areas, winter nighttime temperatures typically fall into the 40s. Maui enjoys a year-round growing season.

It is estimated that the “natural” level of rainfall for the area of the Pacific Ocean that Maui occupies (that is, if the Hawaiian Islands did not exist) is about 25 inches a year. However, the actual average rainfall for Maui is about 70 inches, because the mountainous topography and proximity of so much of the land to the ocean. The driest areas of Maui (such as Kihei and leeward coasts) receive less than 20 inches of rain per year, on average, while in other areas, such as the lower windward slopes of Haleakala, annual rainfall is over 200 inches. Puu Kukui in the West Maui Mountains is claimed to be one of the wettest place on earth with over 400 inches of rain per year.

Of Maui island’s 465,800 acres, 94% is zoned by the State Land Use Commission as Agricultural or Conservation, the same as for Lānaʻi (89,856 acres); for Molokaʻi (166,976 acres), the proportion is 97%. A majority of the remainder on each island is zoned urban<sup>5</sup>. On Maui, 16% of total land is classified as State-owned Forest Reserve, with a further 11% as Private Forest Land within Conservation district. On Molokaʻi, Forest Reserve accounts for 10% of total land area, and on Lānaʻi, 7% is Private Forest Land. Although most of Maui is essentially rural, discussions at the Federal level have cast doubt on Maui retaining its valuable HUBZone<sup>6</sup> status beyond 2018. This is due to a statistical calculation that combines the populations of the adjacent communities of Kahului and Wailuku (each with about 25,000 residents), automatically triggering re-designation of the whole of Maui as “metropolitan”. Such reclassification would likely apply also to the rural communities of Molokaʻi and Lānaʻi and have distinctly negative,

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<sup>5</sup> Maui County Data Book, 2015

<sup>6</sup> Historically Underutilized Business Zone

far-reaching ramifications for the entire County. Although no decisions have been finalized to date, the possibility of HUBZone re-designation would present a serious challenge to economic development.

In addition to its miles of sandy beaches and world-class reefs, Maui's natural attractions that draw more than 2.5 million visitors a year<sup>7</sup> include the 10,000-foot dormant volcano, Haleakala; the winding road to Hāna featuring tropical rainforest and sweeping ocean panoramas; 'Iao Valley, one of Maui's most important and spectacular watersheds; snorkeling and diving havens such as Molokini; the rolling landscapes and ranch lands Upcountry; and surfing and windsurfing meccas such as Jaws (at Peahi) and Ho'okipa. Maui's environment and natural assets are proving to be much more than visitor attractions; Maui Nui is blessed with an abundance of resources that hold the potential to transform the sources of the County's energy, which promises to end the present reliance on imported fossil fuels. Among these sustainable resources are significant trade winds, reliable sunshine, strong ocean currents, ever-present waves, and geothermal activity. Extensive fertile acreage exists to potentially grow biofuels and biomass sources of energy, although a recent collaboration between Sandia National Labs and the County of Maui suggested the available acreage (including HC&S lands) was insufficient for providing Maui's transportation fuel needs, for example.

## Infrastructure

Maui County has 636 miles of streets and highways, of which 579 miles are paved. The County of Maui currently funds a public bus system that provides service in and between various Central, South, West, and Upcountry Maui communities. Ridership was estimated at about 2.5 million in 2015<sup>8</sup>, almost a tenfold increase over the 29,000 passengers in 2004, the bus system's inaugural year. In 2014, there were 177,635 registered vehicles in Maui County, an increase of 14% over the previous ten year period, averaging 8,409 miles of travel per year<sup>9</sup>.

In 2014, there were 71,467 housing units in Maui County, 25% of which were vacant or used seasonally. 63% were single-unit structures, and 37% multi-unit structures. 57% of the total was owner-occupied. There were 53,131 households in Maui County with an average size of 2.9 people. Families made up 68% of households<sup>10</sup>. In May 2016 the median price of a single-family home on Maui island was \$619,500 and the median price of a condominium unit in the same month was \$429,000. For Moloka'i, median listing price was \$219,000 in 2016, and \$598,000 for Lāna'i<sup>11</sup>. For a discussion of the affordable housing crisis in Maui County that is unquestionably affecting prospects for economic development and is a major concern of the

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<sup>7</sup> DBEDT data for 2015.

<sup>8</sup> Maui News, November 21, 2015.

<sup>9</sup> Maui County Data Book, 2015.

<sup>10</sup> US Census Bureau.

<sup>11</sup> Realtor.com data.

community, see the section below on Maui’s housing market (page 38) and Construction industry cluster data.

There are four hospitals in the County: Maui Memorial Medical Center (MMMC), with 213 acute-care beds, over 200 attending physicians, and about 1,400 employees. It has the second-busiest ER in the state with an average of 3,500 visits per month. Kula Hospital and Clinic has 113 beds (5 acute care and the remainder intermediate and long-term care), a 24-hour emergency room and outpatient clinic with lab and x-ray services. Lānaʻi Community Hospital has 14 beds (of which 10 are for long-term care), 2 ER beds, and a staff of 43. Molokaʻi General Hospital has 15 critical-access beds and a staff of 80 (60 of whom are full-time).



*Maui Memorial Medical Center*

In terms of education, the University of Hawaiʻi Maui College (UHMC) currently offers 21 associate degrees and 3 four-year baccalaureate degrees. It also offers certification courses and continuing education courses. In 2015-16, UHMC had 3,593 students enrolled; the previous year it awarded 660 degrees. There are five public high schools in the County, with enrollment levels ranging from about 350 (Molokaʻi High School) to 1,900 (Maui High School), and several private high schools. Hāna and Lānaʻi have multi-level schools that include high school. In 2015, there were over 24,000 students enrolled in all K-12 schools (public and private) in Maui County, of which 86% were enrolled in public schools<sup>12</sup>.

The County’s solid waste and wastewater system is managed by the County of Maui’s Department of Environmental Management. The County operates about 70% of all wastewater systems on Maui, 80% on Molokaʻi, and the wastewater treatment plant on Lānaʻi (some

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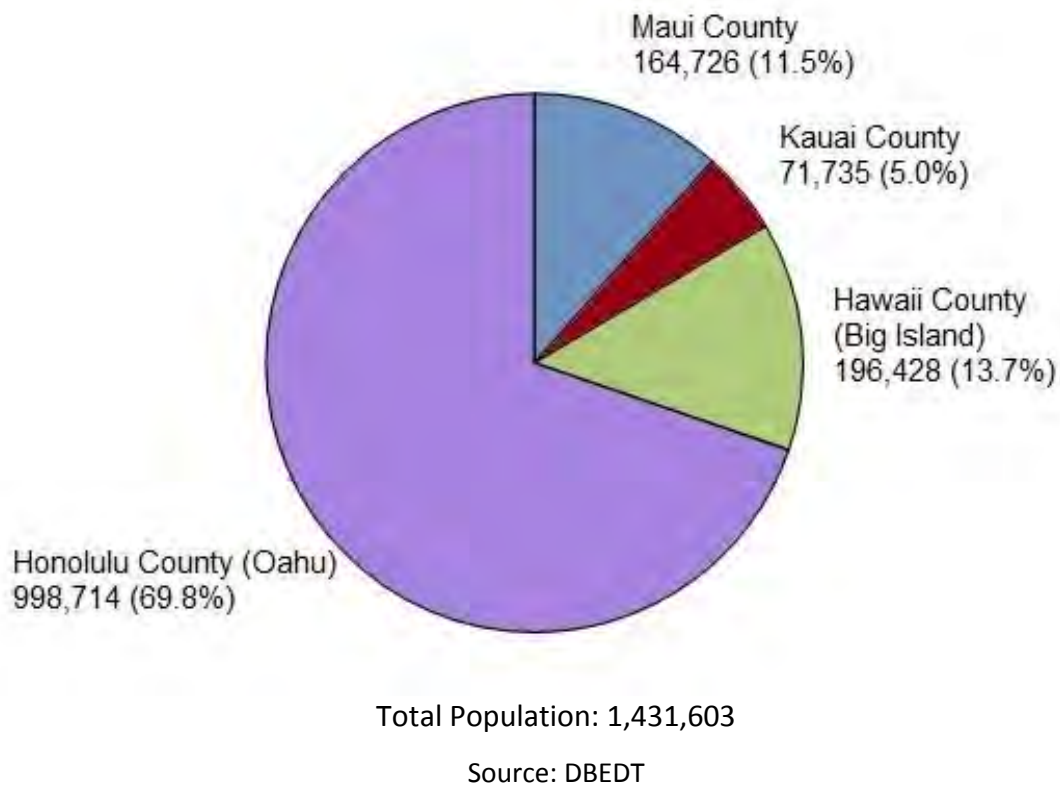
<sup>12</sup> Maui County Data Book, 2015

secondary treatment to R-1 standards is conducted via a private system). The remaining systems in the County are private.

## Population

Maui County is the third most populous county in the state after Honolulu County (Oahu) and the Big Island of Hawai'i with a resident population of 164,726 (July 2015), which represents 11.5% of the state population (an increase from 10.6% in 2000 and 9.1% in 1990)<sup>13</sup>.

Chart 2: State of Hawai'i Population by County, 2015

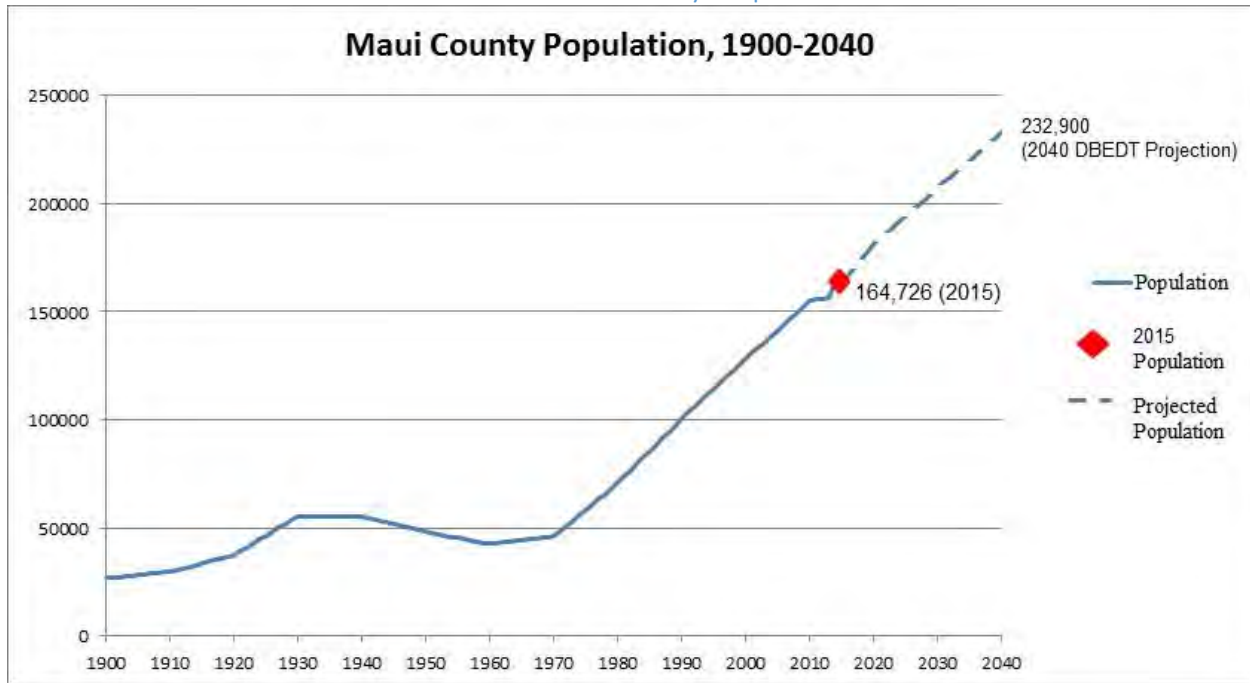


Since Hawai'i became the 50<sup>th</sup> State in 1959, Maui's population growth rate has been the most pronounced of any County. Census data show that more than half of the current resident population of Maui County was born elsewhere.

The population of Maui County has grown dramatically over the last 50 years, with almost a quadrupling since 1970 (from about 42,500).

<sup>13</sup> DBEDT/U.S. Census Bureau, Population Division.

Chart 3: Maui County Population



Source: U.S. Bureau of the Census

Maui County’s resident population has grown by 28% since 2000. The growth rate for the period 2000-2015 is second only to Hawai’i County (32%) in the state. The State of Hawai’i, by comparison, has seen a population growth of 18% since 2000.

Table 1: County of Maui Population 1900-2010, and Percentage Change

Year	Population	% Change
<b>1900</b>	26,743	11.3
<b>1910</b>	29,762	25.6
<b>1920</b>	37,385	25.6
<b>1930</b>	55,541	48.6
<b>1940</b>	55,534	0.0
<b>1950</b>	48,179	-13.2
<b>1960</b>	42,576	-11.6
<b>1970</b>	45,984	8.0
<b>1980</b>	70,847	54.1
<b>1990</b>	100,504	41.9
<b>2000</b>	128,241	27.6
<b>2010</b>	155,068	20.9
<b>2015</b>	164,726	6.2*

Source: U.S. Bureau of the Census

\* 5-year period only.

Within Maui County, over 93% of the population resides on the island of Maui. For the County as a whole, according to Census Bureau data, 47% of the growth in population numbers between 2010 and 2015 is due to a natural net increase in resident population (numbers of births exceeding deaths), with 53% due to net in-migration. Of this latter group, about three-quarters were from international locations and one-quarter from other U.S. states. This proportion of international migrants represents a significant increase over 2000-2010 immigration trends.<sup>14</sup>

Table 2: Resident Population of Maui County by Island, 1990 to 2010

Year	1990	2000	2010
<b>Maui (island)</b>	91,491	117,044	144,588
<b>Moloka'i</b>	6,587	7,404	7,345
<b>Lāna'i</b>	2,426	3,193	3,135
Maui County TOTAL	100,504	128,241	155,068

Source: DBEDT/U.S. Census Bureau, Population Division  
 Note: Population data by island available in census years only

Over the period 1990-2015, the population of Maui County has increased at a faster rate than any other county and more than double the state average:

Table 3: Annual Average Growth Rate in Resident Population by County, 1990 to 2015

Date	Hawai'i (Total)	Maui County	Honolulu County	Kauai County	Hawai'i County
<b>1990-1995</b>	1.5%	3.0%	1.0%	2.0%	2.9%
<b>1995-2000</b>	0.2%	1.8%	-0.1%	0.5%	1.2%
<b>2000-2005</b>	0.9%	1.5%	0.6%	1.0%	2.0%
<b>2005-2010</b>	1.0%	1.2%	0.9%	1.3%	1.2%
<b>2010-2015</b>	1.2%	2.8%	1.0%	1.4%	1.2%
1990-2015	<b>1.2%</b>	<b>2.6%</b>	<b>0.8%</b>	<b>1.6%</b>	<b>2.5%</b>

Source: DBEDT and U.S. Bureau of the Census

<sup>14</sup> U.S. Census Bureau, Population Division, Table 4 (Cumulative Estimates of Resident Population Change for Counties of Hawai'i), from DBEDT website.

## Population by Race/Ethnicity

Maui County's population, like the rest of the state, is made up of diverse ethnic groups. The largest single group in 2015 is White (Caucasian), with 36% of the total, an increase from 34% in 2000. Those of Asian (29%), Native Hawaiian (11%), and persons of mixed race (21%) are also well-represented:

Table 4: Resident Population of Maui County and the State of Hawai'i in 2000, 2010, and 2015

	Maui County			State of Hawai'i		
	2000	2010	2015	2000	2010	2015
<i><u>One Race:</u></i>						
<b>White</b>	33.9%	34.4%	35.9%	24.3%	24.7%	25.7%
<b>Asian</b>	31.1%	28.8%	28.7%	41.6%	38.6%	39.1%
<b>Filipino</b>	17.0%	17.6%	n/a	14.1%	14.5%	n/a
<b>Japanese</b>	10.1%	7.4%	n/a	16.7%	13.6%	n/a
<b>Chinese</b>	0.9%	0.7%	n/a	4.7%	4.0%	n/a
<b>Korean</b>	0.6%	0.6%	n/a	1.9%	1.8%	n/a
<b>Vietnamese</b>	0.3%	0.3%	n/a	0.6%	0.7%	n/a
<b>Other Asian</b>	2.2%	2.2%	n/a	3.6%	3.9%	n/a
<b>Native Hawaiian &amp; Pacific Islander</b>	10.7%	10.4%	10.7%	9.4%	10.0%	10.2%
<b>Nat. Hawaiian</b>	8.9%	7.4%	n/a	6.6%	5.9%	n/a
<b>Tongan</b>	0.7%	n/a	n/a	n/a	n/a	n/a
<b>Micronesian</b>	0.6%	n/a	n/a	n/a	n/a	n/a
<b>Samoa</b>	0.2%	0.3%	n/a	1.3%	1.3%	n/a
<b>Other</b>	0.3%	2.7%	n/a	1.4%	2.7%	n/a
<b>African American</b>	0.4%	0.6%	0.9%	1.8%	1.6%	1.7%
<b>American Indian or Alaska Native</b>	0.4%	0.4%	0.6%	0.3%	0.3%	0.4%
<b>Some Other Race</b>	1.3%	1.9%	n/a	1.3%	1.2%	n/a
<i><u>Two or More Races:</u></i>	22.2%	23.5%	23.2%	21.4%	23.6%	23.1%
<b>Hispanic or Latino (of any race)</b>	7.8%	10.1%	11.0%	7.2%	8.9%	8.9%

Source: DBEDT/U.S. Census Bureau

Note: Hispanic or Latino population is included in the ethnic categories above.

Each island in Maui County has a very different racial and ethnic composition. 2010 Census data showed that Maui island has a plurality of Caucasians (36%); Moloka'i has a plurality of those reporting themselves as two or more races (41%) and Native Hawaiians and Pacific Islanders

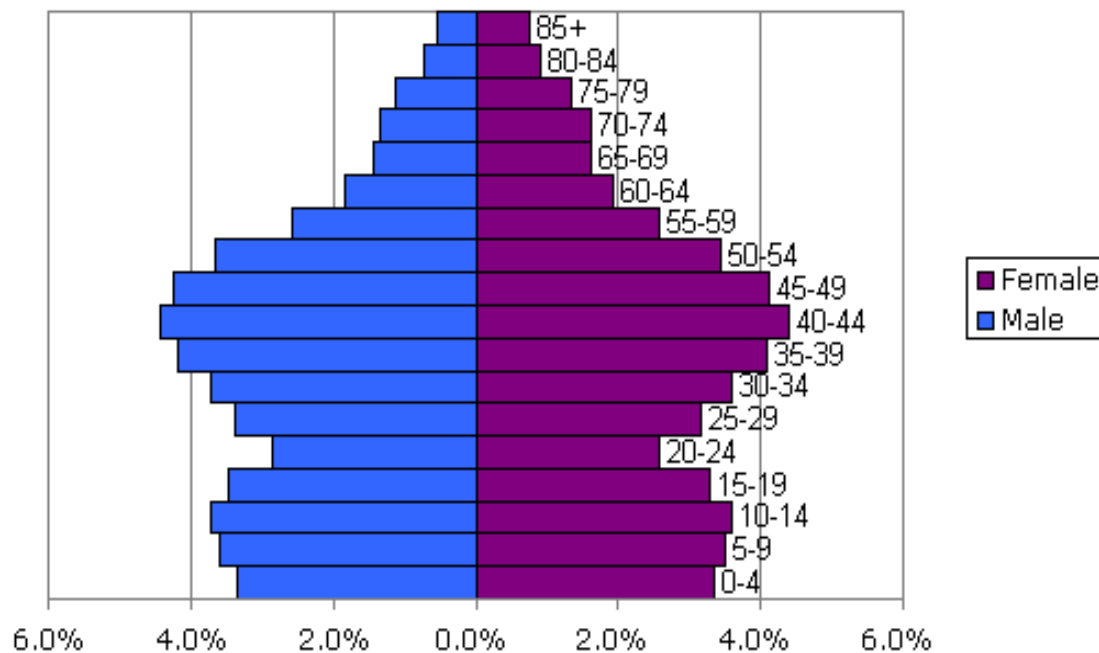


(26%); and Lānaʻi has a majority of Asians (56%) with a large Filipino contingent. (Census Bureau data on ethnicity since the 2010 Census are not disaggregated by island within Maui County). The fastest growing population subgroup in Maui County between 2000 and 2010 has been Hispanic and Latinos; the group comprised 10.4% of the total population of Maui County in 2010 compared to 7.8% in 2000.

### Population by Age

In terms of age distribution, Maui’s population is aging, and at a faster rate than statewide; median age in 2014 was 41.2, compared to 39.6 years in 2010 and 36.8 years in 2000<sup>15</sup>, in part reflecting older cohorts in-migrating. Evidence of Maui’s maturing population is shown in the following charts that show age distribution for 2000 (Chart 4) and 2014 (Chart 5). The age distribution in 2000 is more pyramid-like in structure, with a preponderance of residents in the 35 to 49 year-old age groups, largely reflecting the in-migration of working-age adults in previous decades and Maui residents returning home after pursuing education or career experience and credentials. It also shows a pronounced “waistline”: young adults aged 15 to 24 leaving Maui for college or work opportunities.

Chart 4: Maui County Population by Age and Sex, 2000



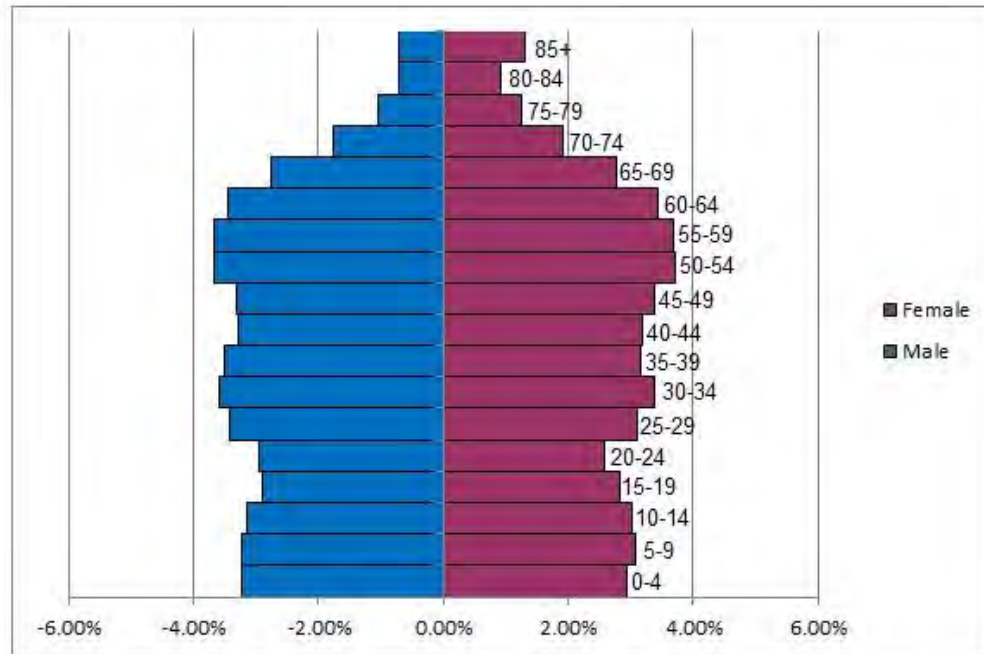
Source: 2000 Census, U.S. Census Bureau

In comparison, the 2014 distribution shows the largest demographic group has aged (now 50-64), with a more even distribution by age. The young adult “waistline” is also evidenced, if less pronounced. The 2014 age data for Maui follows a similar general trend as the state, with the traditional “pyramid” progressively aging and becoming more uniform (rectangular) in shape.

<sup>15</sup> American Community Survey and Census data.

Figure 1 in Appendix 4 shows the same historic trend for the state, with older age groups progressively representing an increasing share of the population. Figure 2 in Appendix 4 confirms that the ratio of the working-age to the retirement-age population continues its precipitous decline since 1900.

Chart 5: Maui County Population by Age and Sex, 2014



Source: 2014 American Community Survey, U.S. Census Bureau

Despite the disproportionately robust growth of in-migration of retirement-age individuals to Maui County over recent years, there is still a lower proportion of those aged 65 and over (15.1% of the population in 2014) compared to Hawai'i as a whole (16.1%). Of particular note for this age group is the increase in females aged 85 or older over the 2000 to 2014 period.

### Visitor Numbers/De Facto Population

The resident population of Maui is consistently augmented by a significant number of visitors. In 2014, the average daily visitor count for Maui County was 54,446<sup>16</sup>. In peak months (December, January, February), this number is typically 10,000 higher. Total number of visitors to Maui County in 2014 was over 2.5 million, a level that has remained relatively stable over the long-term since 1990, with noticeable troughs in 2001 because of 9/11 and 2008-2011 due to the recession. The average *de facto* population<sup>17</sup> of Maui County in 2014 was estimated by DBEDT as 211,050, so that almost one-quarter of the population at any time consisted of visitors.

<sup>16</sup> DBEDT, [2014 Annual Visitor Research Report](#).

<sup>17</sup> De facto population defined by DBEDT as including all persons physically present, regardless of military status or usual place of residence; includes visitors present but excludes residents temporarily absent.

## Economic History

### Overview to 2000

For more than a century, dating back to mid-1800s, large-scale plantation agriculture – sugar, together with pineapple from the 1920s -- dominated the economy of Maui County. By the 1980s, the traditional economic driver was in serious decline as the high cost of labor and equipment, together with periodic water shortages resulting from drought adversely affected the profitability of these products. The effects of falling global prices and increased international competition were even more pronounced across the state and agricultural companies scaled back operations and were forced to explore alternative business strategies.



*Pineapple harvesting on Maui*



*Sugar fields in Central Maui*

By the time Hawai'i became the 50<sup>th</sup> State in 1959, the resident population of Maui County stood at 42,576, a decline of almost 13,000 (or 23%) compared to 1940. The state was to be transformed by a landmark event that took place during the year of Statehood – the first Boeing 707 jet landed in Honolulu, signaling the beginning of large-scale tourism and resort development. In the early 1960s, Ka'anapali in West Maui was developed by American Factors (Amfac) as a premier, master planned resort – the first in the state – and tourism began to supplant agriculture as the dominant economic force in the islands. In the 1970s, other planned resorts opened -- Kapalua in West Maui and Wailea in South Maui, and Maui began to be marketed as an upscale tourist destination distinct from Honolulu, Waikiki, and other islands.

A condominium building boom increased inventory for visitors seeking the unique qualities that Maui has to offer so that by the mid-1970s, the 1 million per year visitor mark was surpassed. By the time the Makena resort opened in the mid-1980s, and as island activities and amenities continued to flourish, 2 million visitors were arriving per year. Meanwhile the County's resident population grew to 46,000 in 1970, with a jump of more than 50% over the next decade, to 71,000 by 1980. The next two decades saw a further dramatic increase in population: an increase of 42% between 1980 and 1990, and 28% between 1990 and 2000. Between 1960 and 2000, Maui County's population more than tripled, reaching a little over 128,000.



*Early days of jet-era tourism*

The islands of Maui County each wrestled with this transition during this period, adopting different strategies to manage economic change. Since the 1920s, Lānaʻi was known as “The Pineapple Island”, and was largely a plantation owned by Hawaiian Pineapple Company (which became Dole Pineapple). In 1985, Castle & Cooke, Inc., controlled by David H. Murdock, purchased 98% of the island; the pineapple industry was replaced by two large upscale resorts, Manele Bay and The Lodge at Koele, that opened in the early 1990s. On Molokaʻi, pineapple (Libby and Del Monte) also dominated the economy until the mid-1980s. Some diversification of the island’s fragile economy followed, with tourism providing the main uplift, although visitor numbers peaked in the early 1990s.



*Kaʻanapali Hotel postcard from the 1960s*

In 1982, business and community leaders and elected officials recognized the need to diversify the economy and reduce Maui County's reliance on tourism and agriculture as well as to minimize the uncertainties of external economic conditions and events. As a result, these leaders worked to establish the Maui Economic Development Board (MEDB), charged with a mission of broadening the economic base of the County to provide a wider spectrum of economic opportunities, including high-skill, higher-paying jobs that allow for a living wage. The science and technology cluster was identified as a priority for development because of its potential for increasing resilience and creating a "critical mass" of knowledge-based jobs and innovation industries. MEDB's founders also planned to address the demand for STEM (science, technology, engineering and math) skills of students that would be critical for realizing success in the 21<sup>st</sup> century; these continue to be priorities for MEDB to the present day. Other clusters that have seen significant growth over this period are health and wellness, sports and recreation, and creative industries. The Maui Research and Technology Park in Kihei was also created and entitled in the early 1980s to achieve a similar purpose of diversifying the economy.

During the 1990s, Maui County, like the rest of the state of Hawai'i, experienced a prolonged economic downturn. A series of events converged upon the islands including the Gulf War (1991), Hurricane Iniki (1992), and recession in Japan and Southeast Asia (early to mid-1990s). The effect of the Asian "crisis" was exacerbated on Maui by the housing "bubble" created by Asian (and especially Japanese) investment that skewed normal market forces. Visitor arrivals slowed and the county's tourism-dependent economy stagnated; unemployment reached a high of 6.8% in 1997. The Maui economy began a steady recovery in the late 1990's and into 2000, with visitor arrivals regaining ground and unemployment dropping steadily to 3.7% in 2000.

### Into the 21<sup>st</sup> Century: 2000 to the Present

The events of September 11, 2001 once again brought the visitor industry to a halt, and presented the islands with a short-term economic calamity. However, growth resumed in 2002 and economic expansion saw robust growth in employment, income, and tax revenues until 2008. In 2007, unemployment in Maui County was below 3% for the third successive year. The growth during this period was driven mainly by the construction, real estate, visitor and retail industries.

In early 2008, however, after more than a decade of expansion, the economic downturn experienced by the U.S. economy made itself felt in Maui County. The impact of the decline in tourism in turn contributed to the closure of Aloha Airlines and ATA, major carriers servicing Maui. Reduction in cruise ship schedules, higher gas prices, tighter credit markets, and the first decline in real estate sales and construction activity since the mid-1990s further exacerbated the decline. Construction permits fell by 30% in 2008 compared to the previous year, and single family homes sales declined by 27% (first half of 2008 compared to the same period in 2007).

The declines in construction and real estate affected Maui to a greater extent than the rest of the state, in large part because Maui's economy is driven more by real estate than commerce, especially when compared to Honolulu, for example. By late 2010, at the low-point of the recession cycle, non-farm jobs were down 11% compared to 2007 (pre-recession), the most significant shortfall across the State. Regulatory changes in Maui County over this period, such as the workforce housing ordinance setting higher affordable housing requirements for new development, the "Show Me the Water" bill, tightening water availability criteria for development, and stricter regulations affecting short-term vacation rental properties (Transient Vacation Rentals of TVRs), acted as constraints on certain types of economic activity. At the same time, many in the community welcomed these changes as prudent policies.

Since the trough of the recession in 2010, Maui County's economy has rebounded, led by growth and robust construction spending, especially in publicly-funded projects (such as Kahului Airport improvements), and commercial projects (such as the development of the Maui Business Park in Kahului.) Residential construction has lagged but by 2015 is once again on the upswing, and house prices have recovered, though not quite to levels seen in 2007. Visitor numbers have increased in every year since 2011, with the 3.8% growth in 2015 establishing new record numbers. Direct flights to Maui increased by 20% in 2015, the largest increase in the state, with most of the increase occurring in the buoyant domestic (mainland) market; this segment accounts for 72% of all arrivals at a time when Canadian visitor numbers are flat and Asian numbers are down -- mainly reflecting the Japanese market (see Figures 3 and 4, Appendix 5).

Visitor spending on Maui has also increased, recovering to pre-recession levels, but remaining flat in real terms in 2014-2015 (see Figure 5, Appendix 4). This long-term declining trend in expenditures is evident for all islands (see Figure 6, Appendix 4). Because of increased room rates since the recession (see Figure 7, Appendix 4), non-accommodation spending (for example, shopping, leisure, food, and entertainment) has declined. While some economists believe that visitor arrivals are approaching maximum capacity due to the absence of any major new resort development since the early 1990s, several new Visitor Industry properties have opened since the recession, such as The Courtyard Marriott, which opened in Kahului in 2012 with 138 rooms, and the Residence Inn Marriott in Wailea, scheduled to open in September 2016, with 200 new rooms. In addition, some resorts have undergone renovations, such as Hotel Wailea, which completed a \$15 million renovation after changing ownership in 2008. Hyatt hotels opened the Andaz Maui at Wailea Resort in September 2013, on the property formerly occupied by the Renaissance. In all, according to the County Office of Economic Development, 1,278 new hotel and time-share rooms will be completed by 2018. Timeshare ownership has become an increasingly significant part of the visitor landscape, in common with the rest of Hawaii. Some hotel and resort properties have either added rooms dedicated to timeshare or converted entirely to timeshare ownership, such as the Makena Beach and Golf Resort (formerly the Maui Prince), which made the announcement regarding

conversion of 310 rooms in 2016. Long-term lodging capacity for Maui (1965-2015) is shown in Figure 8, Appendix 4.

Maui has seen five consecutive years of job growth since the recession, with the labor force growth proving stronger than any other island, partly reflecting population trends. Household income in Maui County has also risen consistently since the recession. A major challenge for Maui County's labor market is the closure of the last sugar plantation in the state, announced by HC&S in 2016. This will result in the loss of an estimated 675 jobs by the end of 2016, with job losses expected in other related businesses, including those outside the agriculture cluster – for example, suppliers and transportation providers. A further setback was the announcement in March 2016 of the closure of the Makena Resort from July 1<sup>st</sup> 2016 and the loss of 385 jobs. The Resort is to be converted over a 30-month period to luxury condominiums, and it is expected that at least as many jobs will be created.

Data relating to each economic cluster identified for Maui County is presented in Section 6 below. A broad overview of the relative shares of industries in Maui County's economy is provided in Figure 9 of Appendix 4.

### Future Outlook

The Department of Labor and Industrial Relations (DLIR) issued a positive short-term and long-term jobs forecast in the fall of 2015. Advertised hirings in Maui County, one measure of labor market strength, quadrupled between 2009 and 2014. DLIR also forecast a continued economic rebound through 2016, with less robust growth thereafter. Greatest employment gains are expected to occur in healthcare and education services; professional and business services; leisure and hospitality; trade, transportation, and utilities; and construction. In May 2016, The University of Hawai'i Economic Research Organization (UHERO) forecast that "prospects remain good for the next few years, supported by health in the US economy, local labor markets, and construction." The forecast predicted growth rates to trend lower as each county converges towards its long-term growth path and as construction moves beyond its next cyclical peak. Visitor industry growth is expected by UHERO to continue in Maui County, although at more restrained rates. Residential construction is projected to continue its rebound, with a more limited upswing than pre-recession. The accommodation and food service cluster as well as healthcare and retail trade are expected to see strong short-term job growth.

In a May 2016 presentation to the Maui Chamber of Commerce, UHERO Executive Director Carl Bonham noted that employment in Maui County grew by 3.5% in the first quarter of 2016, exceeding the robust 3% growth rate recorded in 2015 and easily eclipsing the number of HC&S jobs that will be lost. Bonham expects many of the HC&S skilled workers losing their jobs to find similar employment in the positive jobs market, even if wages may not be comparable. Bonham also expects the visitor and construction clusters to reach their peaks in the next couple of

years, with a possible cyclical recession occurring by 2019 or 2020 as the global economy slows down. Bonham and UHERO believe that the long-term future for Maui County -- extending 20 to 30 years -- lies in the science, technology, and innovation sphere currently being led by agencies he identified such as Maui Economic Development Board, the Maui Food Innovation Center at UHMC and the Maui Redevelopment Agency.

Another recent forecast published by First Hawaiian Bank also anticipates a strong visitor component for Maui’s economy, reflecting the increased airline seat capacity, and construction to remain strong as publicly-funded infrastructure leads into more residential building activity. Even so, employment numbers in the cluster are expected to remain below pre-recession peak.

## Labor Force Trends and Sector Composition

The 19% increase in the labor force between 1990 and 2015 mirrors, but lags a little behind, the population trend over the same period (a rise of 28%):

Table 5: Labor Force Data<sup>18</sup>, Maui County, 2000-2016

Year (June)	Total Labor Force	Number Employed	Number Unemployed	Unemployment Rate (%)
<b>2000</b>	70,950	67,800	3,150	4.5%
<b>2001</b>	73,250	70,000	3,250	4.5%
<b>2002</b>	71,550	68,350	3,200	4.5%
<b>2003</b>	71,650	68,350	3,300	4.6%
<b>2004</b>	73,600	70,850	2,750	3.7%
<b>2005</b>	75,700	73,400	2,300	3.0%
<b>2006</b>	77,600	75,150	2,450	3.2%
<b>2007</b>	79,550	77,200	2,350	2.9%
<b>2008</b>	79,950	76,100	3,850	4.8%
<b>2009</b>	77,050	69,600	7,450	9.7%
<b>2010</b>	79,850	72,650	7,150	9.0%
<b>2011</b>	81,600	74,700	6,900	8.4%
<b>2012</b>	79,900	74,150	5,700	7.1%
<b>2013</b>	80,150	75,750	4,400	5.5%
<b>2014</b>	83,200	79,000	4,200	5.1%
<b>2015</b>	84,200	80,500	3,750	4.4%
<b>2016<sup>19</sup></b>	85,950	83,050	2,900	3.4%

Source: State of Hawai’i DLIR

<sup>18</sup> Civilian labor force (numbers employed and registered as unemployed), annual averages.

<sup>19</sup> Preliminary number, March 2016.



Table 6 (below) shows the proportions of the labor force in each sector of the economy over the period 2000-2015. Most of the Maui County labor force throughout this period is in service-providing sectors. The visitor industry, which is considered statistically to consist of Accommodations and Food Service, and Retail Trade, has directly accounted for an average of 45% of all employment in Maui County over the period. It is estimated that together with indirect employment connected to the visitor industry, at least two-thirds of all jobs in the County are accounted for by this sector. Other sectors showing significant decline over the period are Manufacturing and Construction; for Construction, this reflects that the peak of building visitor infrastructure such as resorts and hotels occurred before 2000. The proportion employed in financial activities has also shrunk. Although the count of workers in agriculture is no longer collected by the Department of Labor, data show that the percentage of all employment in the sector was 5% in 1990, but only 2% in 2010. The closure of HC&S in 2016 and the loss of 675 sugar industry jobs are likely to result in a further diminution of the sector. Conversely, areas of Maui County’s economy that have shown consistent growth since 1990 are a range of service sectors -- Professional and Business, Education, and Miscellaneous – as well as Healthcare and Social Assistance, and Government.

Table 6: Employment by Sector, As Percent of Non-Agriculture Wage and Salary Jobs, Maui County, 1990-2015

Sector:	1990	2000	2010	2015
Employment as % of total	100%	100%	100%	100%
Accommodation, Food & Beverage Services	30.7%	30.1%	27.5%	29.1%
Retail & Wholesale Trade	16.0%	15.5%	15.7%	15.2%
Government	11.9%	13.4%	15.4%	13.4%
Federal Jobs	1.0%	1.2%	1.7%	1.1%
State Jobs	8.0%	8.9%	9.2%	8.5%
County Jobs	3.0%	3.3%	4.5%	3.8%
Construction, Natural Resources	7.2%	5.1%	4.3%	5.1%
Professional/Business Services	5.9%	8.3%	9.4%	9.4%
Misc. Services	3.5%	4.0%	4.5%	4.1%
Transportation & Utilities	5.3%	4.8%	4.5%	5.3%
Financial Activities	5.5%	4.1%	3.7%	4.0%
Healthcare & Social Assistance	5.1%	6.1%	7.8%	7.4%
Manufacturing	4.3%	2.8%	1.5%	1.6%
Art, Entertainment, Recreation	2.9%	3.3%	2.8%	3.0%
Information Services	1.2%	1.5%	1.1%	0.8%
Education Services	0.6%	1.0%	1.5%	1.5%

Source: DLIR

Note: Numbers for June of each year. Non-agriculture wage and salary jobs.  
Data for State Government include Department of Education

On Molokaʻi, more than half of total employment is in the Government, Healthcare, and Education sectors. On Lānaʻi, about half of all those in employment are in the Accommodation and Food Service sector, with Government and Professional and Business Services together accounting for a further 30%.

Compared to the other counties of Hawaiʻi, Maui has a larger Accommodations and Food Services sector, and smaller Construction, Agriculture, Healthcare and Government sectors measured by employment. State Department of Labor (DLIR) data for 2014 indicate there are more than 5,000 employers in Maui County employing an average of over 72,000 employees that are covered by employment security law (see Table 7 below). DLIR data show that 76% of all employers in Maui County (excluding government and the self-employed) have fewer than 10 employees, accounting for 18% of all employment; 56% have fewer than 5 employees. In contrast, the 2% of employers with more than 100 employees account for 38% of Maui County's employed.

In addition, DBEDT reported in 2009 that IRS data suggest that the self-employed, who are not included in official labor force statistics, may represent as much as 20% of those counted as employed, bring the total employment count in Maui County to more than 100,000. These individuals report they are operating businesses that are subject to Federal income tax, but with no employees<sup>20</sup>. The principal sectors with significant numbers of self-employed (1,000 or more individuals) include Miscellaneous Services, Professional and Technical Services, Real Estate, Rental, and Leasing, Arts, Entertainment and Recreation, Construction, Administrative and Waste Management, Retail, and Healthcare.

Data relating to each economic cluster identified for Maui County is presented in Section 6 below.

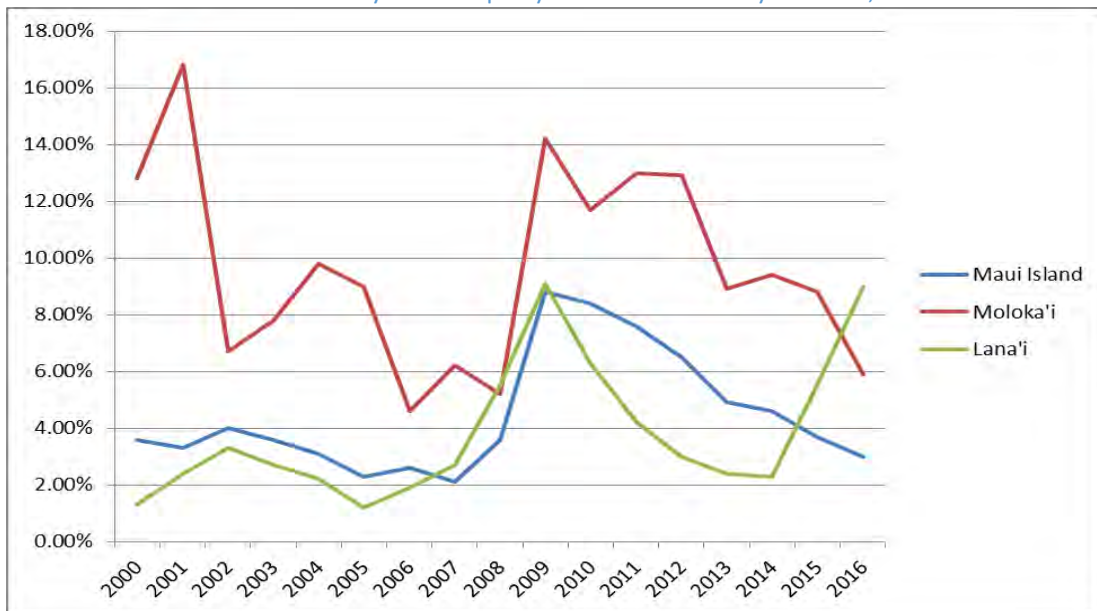
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<sup>20</sup> The businesses, according to the IRS, may or may not be a main source of income.

## Unemployment

Unemployment rates in Maui County for the period 2000 to 2016 are shown above in Table 5. While rates on Lānaʻi have mirrored the County average over the long-term, those on Molokaʻi have been consistently and significantly higher over the entire period (see Chart 6 below). The sustained high rate of unemployment on Molokaʻi between 2009 and 2012 reflected the closure of Molokaʻi Ranch and the lack of alternative employment opportunities on a similar scale. Since 2012, Molokaʻi unemployment rates have fallen significantly, but remain higher (5.9% in April 2016) than Maui island. The rise in unemployment rates on Lānaʻi in the 2015-16 period reflect the temporary closure of the island's main resorts for construction and remodeling. The Four Seasons Resort Lānaʻi at Manele Bay reopened in February 2016 and the Four Seasons Lānaʻi Lodge at Koele is expected to reopen later in the year. Once this work is completed, unemployment rates are expected to resume their long-term, lower levels. It is worth noting that The Four Seasons employees were retained on payrolls, with some accepting temporary reassignment or opportunities to work on community projects if they so chose.

Chart 6: Maui County Unemployment Rate<sup>21</sup> by Island, 2000-2016



Source: DLIR

<sup>21</sup> Unemployed as % of total civilian labor force, annual averages

## Income Data

State Department of Labor data indicate that the average wage in Maui County in 2014 was \$40,469. Table 7 ranks annual average income from highest to lowest by industry classification:

Table 7: Employment and Wages by Industry (NAICS)<sup>22</sup>, Maui County, 2014

Industry	Employers/Units	Av. Employment	Av. Ann. Wage
<b>Total</b>	<b>5,166</b>	<b>72,543</b>	
Utilities	22	498	\$89,728
Management	44	311	\$65,986
Construction	585	3,338	\$58,730
Government	3	9,569	\$56,462
Professional & Technical Services	481	1,401	\$55,838
Wholesale Trade	176	1,464	\$53,058
Finance, Insurance	177	837	\$52,557
Information <sup>23</sup>	79	590	\$51,229
Real Estate & Housing <sup>24</sup>	326	1,933	\$43,743
Healthcare & Social Assistance <sup>25</sup>	442	5,145	\$43,738
Natural Resources <sup>26</sup>	67	1,502	\$42,663
<b>Average Annual Wage</b>			<b>\$40,469</b>
Manufacturing	134	1,215	\$38,999
Accommodation & Food Services	553	21,109	\$36,428
Educational Services	92	1,064	\$36,234
Other Services (excl. Public) <sup>27</sup>	528	2,747	\$31,018
Retail Trade	761	9,333	\$29,538
Admin & Waste <sup>28</sup>	383	5,202	\$28,906
Arts, Entertainment, Recreation	139	2,073	\$24,530

Source: DLIR, Employment and Payrolls in Hawai'i 2014, published October 2015

Note: Data for workers in Maui County covered by Hawai'i Employment Security Law and Unemployment Compensation for Federal Employees

Of particular note is the relatively low average wage in accommodation and food service, and retail trade, which together account for over 40% of all employment in Maui County. Occupational data for 2015 published by the DLIR shows that the highest paid occupations in Maui County were legal (average of \$105,030), healthcare practitioners and technical

<sup>22</sup> North American Industry Classification System

<sup>23</sup> Publishing, Film, Broadcasting, Telecommunications, Data Processing, and other information services

<sup>24</sup> Includes rentals

<sup>25</sup> Covered by Hawaii Employment Security law and unemployment compensation

<sup>26</sup> Includes agriculture and mining

<sup>27</sup> Repair and maintenance, personal and laundry services, private services, membership organizations

<sup>28</sup> Administration, Employment Services, Travel, Security Services, Services to buildings and dwellings

(\$89,430), management (\$81,290), computer and math occupations (\$80,590), and architecture and engineering (\$70,560). Among the lowest paid are personal care and service occupations (\$32,290), food preparation and service (\$32,390), sales and related occupations (\$32,770), and building maintenance and cleaning (\$33,430).

Per capita income in Maui County over the past 25 years or so has been consistently lower than that for Oahu but higher than other neighbor islands. Since the recession of 2008, Maui per capita income has lagged in relation to Oahu and the longer-term trend (see Figures 10, 11, and 12, Appendix 4). Per capita income for Maui County has doubled over the 1990 to 2014 period, as Table 8 shows:

Table 8: Per Capita Income, Maui County and State of Hawai'i, 1990-2014

Year	Maui County	State of Hawai'i	Maui PCI as % of State
<b>1990</b>	\$19,580	\$21,529	91%
<b>1995</b>	\$21,909	\$25,004	88%
<b>2000</b>	\$25,217	\$28,931	87%
<b>2001</b>	\$25,819	\$29,648	87%
<b>2002</b>	\$26,876	\$30,693	88%
<b>2003</b>	\$27,248	\$30,536	89%
<b>2004</b>	\$29,630	\$33,830	88%
<b>2005</b>	\$31,446	\$35,669	88%
<b>2006</b>	\$33,883	\$37,023	92%
<b>2007</b>	\$35,600	\$40,024	89%
<b>2008</b>	\$36,517	\$41,643	88%
<b>2009</b>	\$36,585	\$42,152	87%
<b>2010</b>	\$35,006	\$41,594	84%
<b>2011</b>	\$36,194	\$42,938	84%
<b>2012</b>	\$38,240	\$44,504	86%
<b>2013</b>	\$37,831	\$44,314	85%
<b>2014</b>	\$39,439	\$46,034	86%

Source: U.S. Department of Commerce, Bureau of Economic Analysis

## Maui's Housing Market

The existing lack of affordable housing<sup>29</sup> has increasingly acted as a hurdle to attracting and sustaining a qualified workforce and thus limited economic diversification and growth. It has also negatively impacted the quality of life for many residents. In 2015, an HUD online newsletter<sup>30</sup> commented that “Like most of Hawai'i, the county of Maui faces a shortage of affordable and market-rate housing.” At issue is not just the supply of new affordable housing failing to match demand; some residential housing stock has been lost to visitor use such as transient-vacation rentals, gentrification of formerly affordable neighborhoods and the targeting of some developments to offshore buyers.

Furthermore, because of the island-based geography of Maui County, far from other counties and thousands of miles away from other states on the mainland, and limited available transportation options, it is not generally possible for the workforce to commute from more affordable locations as it is on the mainland. It is therefore imperative that affordable housing is located in Maui County. The economy cannot grow without qualified workers and since they cannot live outside of the county, future economic development is strongly tied to the availability of affordable workforce housing.

Maui County's housing costs are among the highest in the nation, and despite the economic downturn of 2008-10, rents continued to rise due to lack of inventory and persistent and rising demand. Affordable housing is consistently viewed by Maui County's community as a critical issue because without it, workforce essential to the economy cannot afford to live here. Affordable housing is also related to the quality of life, including better health, higher educational achievement and positive childhood development, and is an important cause of homelessness, which continues to grow in Maui County<sup>31</sup>. The extent of this acute problem is evidenced by the opening of a 28-unit affordable development in Wailuku in 2014. All of the units were occupied within ten days of the opening and more than 500 households were placed on a waiting list.

Historically, housing growth was robust during the 1970s during the development boom, and housing unit growth outpaced population growth until 2000, when it slowed significantly. Reduced supply fueled rising prices, a shortage of rentals, and an increase in rents. Median single family home prices more than doubled over the period 2000 to 2007, and since the pre-recession peak in prices, the decline in home prices of more than 50 percent has reversed. However, median prices remain below pre-recession levels. Latest monthly data, for May 2016, show a median single family home price of \$619,500, which remains unaffordable for many

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<sup>29</sup> According to the US Census Bureau, housing is defined as affordable when housing costs are 30% or less of household income.

<sup>30</sup> HUD User, PD&R Edge newsletter, 2015.

<sup>31</sup> A report by Partners in Care, [2016 Hawaii Statewide Point in Time Count – Topline Overview of Report](#), estimates the number of homeless on Maui at 1,145 in 2016, a 1% increase over 2015. An estimated 58% of this total is unsheltered.

families on Maui. A recent Maui News front-page lead story bore the headline, “Local Buyers Being Priced Out of Maui Real Estate Market.”<sup>32</sup> The elevated prices on Maui also act as a disincentive for qualified professionals to move to Maui (as articulated by the Health and Wellness and Science and Technology focus groups, for example) as house values in many parts of the mainland seem significantly more attractive in comparison.

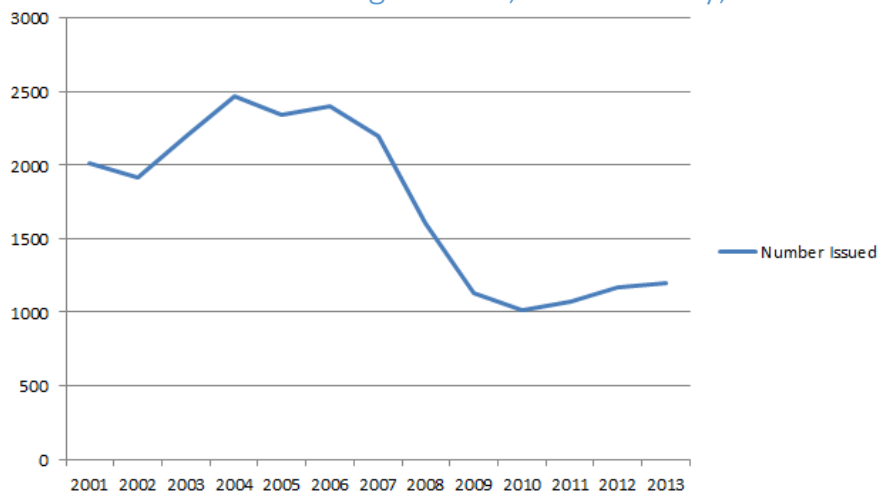
Chart 3: Housing Sales and Median Price, Maui County, 2000-2016



Source: Realtors Association of Maui

Since the recession, the value of building permits in Maui County has remained at low levels, suggesting no near-term improvement in the affordable housing market, although forecasts expect recovery in the residential housing market due to pent-up demand. Long-term quarterly trends in building permits are shown in Figure 13, Appendix 4.

Chart 4: Number of Building Permits, Maui County, 2001 – 2013



Source: DBEDT

<sup>32</sup> The Maui News, Sunday July 17, 2016.

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# MAUI COUNTY CEDS: SWOT ANALYSIS

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*Following a summary analysis of the Focus Group and Strategy Committee SWOT exercises, aggregated groupings of factors cited are presented in bar charts. Strengths and weaknesses reflect perceived qualities internal to the Maui County community --“who we are.” Opportunities and threats reflect external factors and “where we are going.”*

## Strengths

Maui’s natural environment was most commonly cited as a strength by all Focus Groups, with specific references to the climate and weather, the appeal of Maui’s natural beauty, the oceans, and the prevalence of open space. Multiple clusters also articulated that environmental factors specifically affect their respective industries: for example, the Agriculture Focus Group cited the climate in terms of year-round growth capabilities; the Energy and Science, Technology, and Innovation Focus Groups cited the abundant availability of renewable energy sources such as wind and the sun for solar power. The Sports and Recreation group cited the significance that the environment has on professional sports such as golf as well as a range of ocean sports, attracting international competitions. Additionally, the rural communities of Hāna and Moloka’i both discussed the importance of the environment for their reliance on local agriculture and their subsistence economies.

The host culture was also a commonly cited strength. A consensus among Focus Groups is that the community is diverse and engaged in community issues. Additionally, the mindset of ‘ohana (family) and the sense of Aloha Spirit – a unique friendliness and willingness to help – was cited by multiple cluster Focus Groups, and which facilitates collaboration and partnerships in the business community. The Creative Industries cluster, for example, discussed in detail how their collaborative community leads to groups establishing unique partnerships that break down barriers and create innovative solutions. The host culture is especially significant to the representatives of the rural communities of Hāna, Moloka’i, and Lāna’i, where the populations feature a higher percentage of Native Hawaiians than Maui County as a whole.

Additionally, multiple economic factors were cited as strengths. The significance of Maui as a brand was noted by Agriculture as an asset for exporting products and by Sports and Recreation as top worldwide destination which draws significant external interest. The Construction focus group cited the demand for housing and development and the well-trained workforce as specific economic strengths for the cluster. The Energy cluster noted that the 2045 Hawai’i Clean Energy Initiative (HCEI) goal promotes economic support for renewable energy growth. Science, Technology, and Innovation noted the location's unique reach to both the East coast and to Asia, which increases business capabilities and the appeal of Maui as a science destination.

# Maui County Strengths

Category:	Most Important Factors Cited:
<b>Environmental (24)</b>	Natural beauty, premier destination, climate, ocean/surf, beaches, environmentally diverse
<b>Quality of Life (18)</b>	Stable and safe, Aloha spirit, welcoming, caring residents, recreational opportunities, "so many choices", "da lifestyle"
<b>Cultural (12)</b>	Culture/culturally rich, culturally diverse, multi-cultural, ethnic diversity, multiple islands
<b>Science and Technology (12)</b>	Renewable energy resources, scientific facilities, AMOS conference
<b>Perception (8)</b>	Globally recognized brand, unique, connected with the rest of the world, isolated
<b>Economic (5)</b>	Strong export economy, diverse business community, attracts investors to Maui, low real estate property taxes
<b>Community Assets (4)</b>	Maui College, artist community, highly competent students in workforce pipeline, involved community

Note: The numbers in parentheses represent the total mentions of the factors cited that fall into each category.

## Weaknesses

Economic factors were the most commonly cited weakness throughout the Focus Groups. Specific factors most commonly cited include the high costs of doing business, limited access to resources, and high shipping and import costs. Additionally, the regulatory environment (e.g. the County permitting process) was cited as a significant weakness and a barrier to further economic growth by several groups: Construction, Health and Wellness, Science, Technology, and Innovation, and Sports and Recreation. The high cost of living was also cited by most focus groups, and multiple clusters identified the challenge of attracting and retaining a skilled workforce due to the disparity between cost of living and salaries compared to the mainland United States.

Inadequate infrastructure was also frequently mentioned. The Construction group reported the overall lack of infrastructure as a barrier to future development. The Energy group and Science, Technology, and Innovation both cited the limited infrastructure of the power grid; specifically, increased renewable energy can only be brought online effectively once grid capacity is increased. Sports and Recreation cited the limited number of facilities and buildings that support the cluster's activities as a major limitation.

Community factors were also a cited weakness. The "Not in My Backyard" (NIMBY) mentality was mentioned by multiple focus groups, especially Construction and the rural community of Lānaʻi. Similarly, community polarization was a common point of discussion: the Energy cluster specifically referenced the influence of vocal minorities on community perspectives. Education was also frequently cited by multiple clusters: Creative Industries referenced the lack of inclusion of the arts in school curricula and programs, and Health and Wellness cited both the lack of wellness educational programs for youth and families as well as the limited higher educational programs available to local residents. Limited education and career opportunities have also resulted in a "brain drain", especially for the 15 to 24 year-old age group that consistently leaves Maui County to seek out necessary experience and certifications to develop a successful career. This "brain drain" dynamic was specifically discussed in the Health and Wellness, Science, Technology, and Innovation, and Lānaʻi focus groups.

# Maui County Weaknesses

<b>Category:</b>	<b>Most Important Factors Cited:</b>
<b>Economic (18)</b>	Limited job opportunities, low wage jobs, failing agriculture, food & oil dependence, burdensome regulation, business costs
<b>Community and Education (13)</b>	Drug addiction, homelessness, education, entrenched systems, distrust of government, divisive community, extremist positions
<b>Cost of Living (12)</b>	Cost of living, expensive
<b>Infrastructure (12)</b>	Roads, inadequate housing, transportation, electricity, reliance on state investment, lack of alternative air and sea ports
<b>Medical (7)</b>	Inadequate expertise, services/health care, facilities
<b>Growth (4)</b>	Anti-growth, anti-tech, anti-business growth, fragile consensus on what growth means
<b>Other (4)</b>	Politics, Honolulu-centric, property rights, leaders adverse to change

Note: The numbers in parentheses represent the total mentions of the factors cited that fall into each category.

## Opportunities

Economic opportunities in the visitor industry were cited by all Focus Groups. For example, Creative Industries reported the importance of artistic programs and cultural experiences as attractions for visitors, as well as potential investors. The Energy group stressed Maui's high visibility and renewable energy penetration as a factor that will help draw more pilot projects to the County. The Health and Wellness group advocated for the opportunity represented by Maui as a worldwide destination for Wellness retreats. Sports and Recreation discussed the international awareness of Maui's reputation as an ideal destination, and the possibility of attracting future professional and large scale sporting events. The rural communities of Hāna, Lānaʻi, and Molokaʻi discussed opportunities to develop new tourism activities as a way to develop more revenue, such as ecotourism, "voluntourism", and new economic activities that connect to the host culture.

Infrastructure was frequently mentioned as an opportunity for economic development. With an increased water storage capacity and agricultural park space, the Agriculture cluster agreed that farming capabilities and provision of food for the local population could be expanded. Improved water and sewer infrastructure would also positively impact the Construction cluster, allowing for development to support the growing population. The Energy group cited increased energy storage and development of the smart grid as significant opportunities for Maui County to continue to strive towards the goal of 100% renewable energy by 2045. Lānaʻi discussed the general opportunity of infrastructure to support the growing community, both in terms of housing for residents and new businesses arriving to the island.

Other specific business activities discussed as opportunities were diverse and tended to be specific to the different clusters. For example, Agriculture cited developing local amendments, drawn from a rock quarry, as an opportunity to improve the local economy and reduce costly imports. Construction advocated for a radical improvement and updating of systems and standards that would facilitate consistent regulatory enforcement and innovative housing development. Creative Industries cited the improvement of broadband and technology inputs as significant opportunities to increase business activity. The Energy cluster discussed the opportunity to pursue new types of energy generation, such as geothermal, bioenergy, and waste-to-energy initiatives. Science, Technology, and Innovation discussed establishing new technology projects or pursuing remote telecommuting jobs for local tech workers. Hāna and Molokaʻi discussed improving natural resources in support of the local subsistence economies and increasing self-sufficiency.

# Maui County Opportunities

Category:	Most Important Factors Cited:
Science, Technology, and Energy (23)	Renewable energy/entrepreneurship, energy independence, broadband cable, sensor applications, remote working, test bed
Other Business Activity (15)	Aging population services, cannabis & Ag, medical, farm to table, global economy, Chinese investment, increased bandwidth
Tourism (10)	Voluntourism, additional travel markets, pre-clearance at international airports, Asian tourism, inter-island airlines
Construction and Development (7)	Improving infrastructure, housing, lengthening airport runway, high demand for housing and development
Environmental (5)	Recycling completed here, indigenous sustainability practices, native reforestation, solid waste treatment
Other (5)	Homeless solutions, think tank, education destination, Maui brand unique from rest of Hawai'i

Note: The numbers in parentheses represent the total mentions of the factors cited that fall into each category.

## Threats

The most commonly cited external threats cited by the Focus Groups as having the potential to significantly impact Maui County's economy were environmental concerns such as natural disasters, changing weather patterns and climate change. The Agriculture group discussed the very real threat of drought or climate change on agricultural outputs; the Construction cluster discussed the impact of unusual weather patterns (e.g. extensive rain) on construction project timelines; and the Energy group cited the potential threat of a natural disaster to sea-level power plants. Concern about the environmental threat to natural resources was also discussed, such as the impacts of climate change and pollution on shoreline reefs, which supports both local fishing activities and visitor industry enterprises.

Maui County's geographic isolation is a potential threat affecting several clusters if shipping services are disrupted for any reason. The threat of shipping disruption or increase in shipping costs due to external factors was raised by multiple Focus Groups. Similarly, the threat of airline strikes or increased travel costs that could contribute to decreased tourism and an economic downturn. This threat was discussed by multiple groups, and was especially cited as a significant threat to the rural community of Lānaʻi, which has limited transportation links.

Increasing regulations were frequently cited as a threat to businesses. The Agriculture group discussed the potential strain that additional regulation would add to small, local farmers; the Construction cluster cited it as a threat to future development; and Energy cited the increased costs and time that result from increased bureaucracy and permitting processes. Likewise, Health and Wellness cited the impact of regulations on reducing opportunities for collaboration as well as reduced healthcare reimbursements; Sports and Recreation cited increased regulations and inadequate permitting processes that make it more challenging for tournaments to be planned and hosted in Maui County; the Hāna group agreed that increased regulation as a threat to ongoing business success; and Molokaʻi advocated for an on-island Planning Department presence that was enabled to make local decisions in a timely and equitable manner.

Cost of living was another commonly perceived threat. Already cited as a significant weakness, external factors that could increase the cost of living would have negative impacts throughout Maui County, affecting businesses and residents alike.

Overall, many of the Focus Groups acknowledged the reality that the occurrence of just one major external threat would likely have far-reaching impacts on various aspects of the economy and overall quality of life in Maui County. For example, a terrorism event, either in Hawaiʻi or on the mainland, could seriously impact the visitor industry and the economy as a whole, as was experienced after 9/11.

# Maui County Threats

Category:	Most Important Factors Cited:
<b>Economic (45)</b>	Fossil fuel supply & cost, food & resource dependence, loss of sugar, shipping, global economy, external shocks, isolation
<b>Community Issues (14)</b>	Uneducated public/activists, anti-science, failing USA emphasis on STEM ed., homelessness, resistant to change, vocal minority
<b>Tourism (14)</b>	Travel disruption, losing tourism cachet, terrorism
<b>Environmental (14)</b>	Natural disasters, invasive species, agricultural pests, global climate change, environmental change
<b>Other (13)</b>	All forms of fundamentalism, lawsuits and legislation, NIMBY-ism, a more restrictive regulatory environment

Note: The numbers in parentheses represent the total mentions of the factors cited that fall into each category.



# MAUI COUNTY CEDS STRATEGIC DIRECTION AND ACTION PLAN: PRIORITY GOALS AND STRATEGIES

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## Introduction

As directed by the EDA, the CEDS Strategic Direction and Action Plan flows from the SWOT analysis and reflects the input of the cluster Focus Groups and the Strategy Committee. It takes account of the critical internal and external factors that speak to a region's assets and limitations and its role in capacity building. CEDS guidelines state that the goals should reflect the desires of most regional stakeholders and should also be realistic and limited to a manageable number. Some goals should address objectives that can be realized within a short period of time, while others require a longer period for implementation. The vision, goals and strategies will provide a framework for public and private decision-making and serve as the basis for the formulation and focus of economic development activities.

CEDS guidelines require the identification of a limited number of cluster-based<sup>33</sup> economic development goals, strategies and activities with the highest priority and potential for regional impact. The clusters identified by the Strategy Committee and endorsed by the Focus Groups were chosen because of their status as important economic drivers for the economy of Maui County, either in terms of labor force share, revenue and income generation, or growth potential. Other clusters were considered such as retail, education, and government; the Strategy Committee concluded that, like small business, they are fundamental to all clusters and are threaded through them.

The priority goals articulated by cluster Focus Groups were approved by the Maui County CEDS Strategy Committee. Most of the Focus Groups identified three or four key goals together with a number of strategies that answer the question "How do we get there?" The following complete groupings of Focus Group Goals and Strategies distill the vision and goals into concrete, specific actions to achieve the aspirations of the region's stakeholders while improving economic resilience<sup>34</sup> and managed economic growth.

It is important to note that the issue of affordable housing was raised during the SWOT exercises, and discussed at cluster Focus Group meeting. Affordable housing is referred to in strategies that follow (for example, Construction, Hāna, Lāna'i), and there was a consensus throughout that affordable housing is the most important, overarching obstacle to economic diversification and a fundamental hurdle in maintaining an adequate, qualified workforce. A

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<sup>33</sup> Clusters are a network of connected businesses, suppliers and associates in a specific field and region.

<sup>34</sup> Resilience is a key criterion as articulated in EDA CEDS Guidelines. This report includes Appendix 5 that summarizes relevant resources related to resilience for Maui County.

recent report by the International City/County Management Association (ICMA) noted that the issue of housing affordability is increasingly cited by local leaders nationwide as a barrier to economic development and in this regard Maui County is not alone. In an ICMA survey, over 30% of local governments cited lack of affordable housing as a barrier to economic development, more than double the proportion in 2009.

## Agriculture: Goals and Strategies

### SWOT

Opportunities identified focused on development of infrastructure, education and training, and applying knowledge and entrepreneurship to create and market value added products.

#### Goal 1: Develop and improve agriculture infrastructure

*Objective: Increase agriculture opportunities*

##### Strategies:

- Develop an Agriculture Value-Added processing facility that meets all government regulations
- Assure reliable, adequate and affordable water sources for all ag ventures
- Support a modern, state-of-the-art slaughterhouse
- Support a commercial composting facility to generate locally produced amendments and reduce waste

#### Goal 2: Explore and identify opportunities with major stakeholders for public/private partnerships

*Objective: Create new diversified Ag initiatives*

##### Strategies:

- Support research of alternative crops and diversified agriculture models to utilize available lands
- Improve access to Federal and State farm programs, including the creation of an Ag Clearinghouse and an Ag Business Center to provide technical assistance
- Formalize collaboration of various Ag Advisory Groups to proactively advise government and stakeholders

#### Goal 3: Increase awareness of programs that develop entrepreneurial Ag skills

*Objective: Increase participation in programs and reduce the obstacles for new and existing agribusiness*

##### Strategies:

- Expand agricultural business incubator center
- Encourage value-added Ag business/development
- Promote supportive Ag incentive programs and legislation

## Agriculture: Cluster Analysis

In keeping with Maui’s classification as a largely rural community, agriculture was a leading economic activity until the 1960s and the rapid growth of the visitor industry. Through the 1980s and beyond, large-scale agriculture predominated with sugar and pineapple plantations and cattle ranches. Labor-intensive small-scale farming, especially upcountry, has always been an important part of the agriculture cluster. The pineapple industry steadily contracted until 2009 when the Maui Pineapple Company Ltd., a subsidiary of Maui Land and Pineapple, Inc. ceased operation. Hawaiian Commercial and Sugar Co. (HC&S), the last commercial sugar plantation in the state, announced its closure in 2016. It is estimated that between 85 and 90% of food consumed in Hawaii is imported<sup>35</sup>, providing an opportunity for an expansion of agriculture to supply more locally grown food and thereby increasing self-sufficiency and resilience. An ongoing issue that affects the growth of agriculture and land use is the availability of water and the maintenance and development of infrastructure. Water rights disputes and restoration of stream flows on Maui are currently matters under consideration by the State Commission on Water Resource Management and the court system.

Table 9: Maui County Agriculture Job Count, 2000-2012

Year	2000	2001	2002	2003	2004	2005	2006
<b>Job Count</b>	1,950	1,800	2,050	1,500	1,700	1,650	1,750

Year	2007	2008	2009	2010	2011	2012
<b>Job Count</b>	1,750	1,700	1,700	1,450	1,600	1,600

Source: DLIR

Numbers employed in the agriculture sector between 2000 and 2012<sup>36</sup> continued their long-term decline and the share of all employees in agriculture has likewise fallen (see Table 9 and Chart 5 below.) In 1960, 22% of the employed labor force in Maui County worked in agriculture, with a further 28% reported as working in Food and Kindred Manufacturing, mostly in pineapple canneries and sugar mills for a total of 50%<sup>37</sup>. In 1960, 17% of the population of Maui lived on plantations<sup>38</sup> and 33% of the employed labor force worked in agriculture statewide.<sup>39</sup> Anecdotal evidence points to an aging workforce in agriculture in Maui County currently, with young people reluctant to enter farming as a career. The attraction of other career

<sup>35</sup> State of Hawaii Department of Agriculture report, Food Self-Sufficiency in Hawaii (2008)

<sup>36</sup> DLIR data on agricultural employment was not published after 2012

<sup>37</sup> 1960 Census of the Population

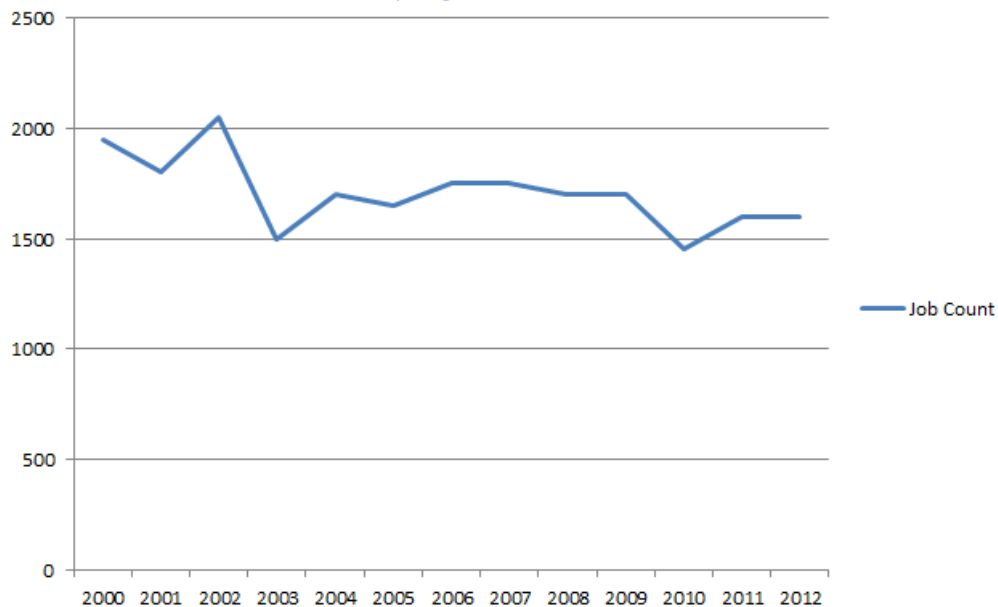
<sup>38</sup> General Plan 2030, Maui Island Plan. County of Maui Department of Long-Range Planning. No residents have lived on plantations in recent decades.

<sup>39</sup> U.S. Bureau of the Census.

opportunities and the reduction in farming and training programs in schools are contributing factors to the workforce challenge facing agriculture in Maui County.

USDA data indicate declining farm acreage in Maui County, from 355,000 acres in 1992 (48% of all land) to 229,000 in 2012 (31%). Farm size has progressively shrunk, from an average of 419 acres per farm in 1992 to 203 acres in 2012. The total number of farms increased over the period 2002 to 2007, primarily reflecting land use changes: residential properties exceeding 2 acres were zoned for agricultural use and counted for statistical purposes as farm units. However, a small decline of 2% between 2007 and 2012 is probably due to more stringent classification of what constitutes farming activity on smaller agricultural-zoned properties. Reflecting these trends, almost two-thirds of farms in Maui County produced less than \$10,000 in sales in 2012.

Chart 5: Maui County Agriculture Job Count, 2000-2012



Source: DLIR

In terms of crops grown on Maui and value of agricultural products, the growth of the seed industry (especially seed corn) in the state has accelerated dramatically, accounting in large part for the growth in the product value in Maui County. A snapshot of different types of agriculture production in Maui County for the 2003-2008 period is shown in Figure 14 of Appendix 4. According to the Hawaii Department of Agriculture, by 2009 seed corn was the largest agricultural commodity in the state, representing nearly 30% of total value of agriculture in Hawaii. In Maui County, Monsanto and Dow AgroSciences experienced rapid growth in their operations and they rank among the largest private employers on Moloka'i. Other agricultural activities that have seen growth over recent years are floriculture and nursery products,

aquaculture, herbs, vegetable crops and melons. Agri-tourism is another market segment that has experienced growth and offers potential opportunities of cross-marketing with the visitor industry.

Table 10: Value of Agricultural Products, Maui County, 1998-2012

	1997	2002	2007	2012
(\$ Millions)				
<b>Crops (including greenhouse and nursery)</b>	116,084	116,645	132,058	181,480
<b>Livestock, Poultry and their products</b>	12,301	7,866	7,268	6,620
<b>Total</b>	128,385	124,511	139,326	188,100

Source: USDA Agriculture Census

The largest agricultural business in Maui County for decades has been Hawaiian Commercial and Sugar Co. (HC&S), which produced over 200,000 tons of sugar annually on its 37,000 acre plantation in Central Maui. The company was one of the largest employers in Maui County with a workforce in 2016 of 675 employees<sup>40</sup>. In January 2016, parent company Alexander & Baldwin announced the closure of HC&S’s sugar operations by the end of the year, with a proposed transition to a diversified farm model. As of mid-2016, the company website reports plans to divide the plantation into smaller farms with varied agricultural uses to optimize the land, potentially including energy crops, food crops, orchards, grazing land and support for the local cattle industry, and the development of an agriculture park.

<sup>40</sup> Data on HC&S taken from HC&S website: <http://www.hcsugar.com>

# CONSTRUCTION: Goals and Strategies

## SWOT

Opportunities identified focused on the positive effects of improved permitting and regulation process and infrastructure improvement.

### Goal 1: Streamline and reorganize Government regulatory and permitting processes

*Objective: Increase efficiency of the permitting process and reduce timelines*

#### Strategies:

- Research other successful models where there is greater accountability and performance measurement standards and make a recommendation within one year
- Establish an ombudsman function to assist applicants with the permitting process and with delays
- Encourage allowance for third-party review of Maui County building process with goal of improving efficiency

### Goal 2: Increase investment in, and development of, infrastructure

*Objective: To better meet Maui's needs and planned growth*

#### Strategies:

- Invest in infrastructure such as wastewater and water supply improvements that support planned growth
- Fund increased harbor capacity and improvements, and maritime industry activity and skills (e.g. dry-docking of Maui-based vessels)
- Increase airport runway capacity and upgrade terminal buildings
- Secure federal and state funding for local infrastructure
- Expand capacity and reliability of Honoapi'ilani Highway (West Maui)

### Goal 3: Create incentives for more affordable housing

*Objective: Improve supply of needed projects*

#### Strategies:

- Reduce government impact fees and infrastructure requirements for development
- Provide tax break incentives for developers and buyers of affordable housing
- Support development of infrastructure in desired geographical areas of growth

# CONSTRUCTION: Cluster Analysis

The Construction cluster has been particularly important in the economic growth of Maui County since the 1960s when Visitor industry infrastructure began to be developed. Census data shows that home ownership has risen in Hawaii since 1960, rising from 41% to 58% in 2010, moving closer to the national average of 65%. As a recent DBEDT report<sup>41</sup> noted, “Construction demand is influenced by the growth of population and the growth of other industries including hotel, retail, education, healthcare...The Construction industry differs from other industries in that, not only does it add economic value to the current year, but it also contributes to the capital stock to be used in future years. This is significant because capital stock is one of the main factors determining long-term economic growth.”

Table 11: Construction Job Count: Maui County Labor Force Data, 2000 – 2015

Year	2000	2001	2002	2003	2004	2005	2006	2007
<b>Job Count</b>	3,200	31,50	3,050	30,00	3,100	3,800	4,400	4,950

Year	2008	2009	2010	2011	2012	2013	2014	2015
<b>Job Count</b>	4,500	3,400	2,700	2,600	3,000	3,100	3,300	3,500

Source: DLIR

The construction industry is important as an economic driver for Maui County and accounts for a significant number of jobs (see Table 11 and Chart 6 below). The 65% rise in employment in the cluster between 2003 and 2007 largely reflected the strength of the residential homes market (see Maui’s Housing Market, Section 4 of this report). With the deep recession from 2008 through 2010, the residential market was severely and negatively impacted, and it was public spending on construction projects as part of the federal government’s stimulus program and commercial development that kept employment in the construction cluster at levels not far below those of the early 2000s.

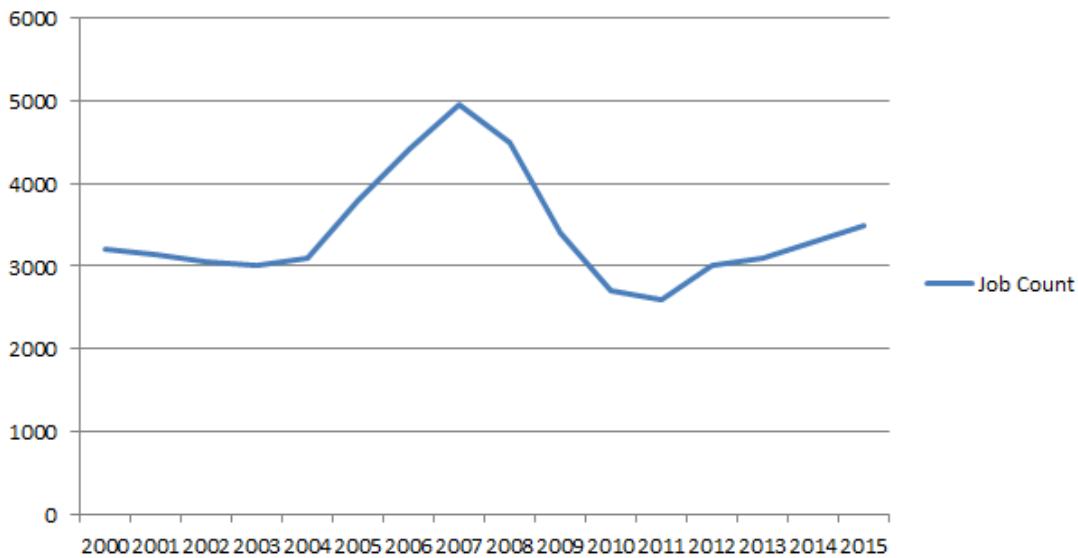
A jobs forecast published in the fall of 2015 by DLIR<sup>42</sup> predicted continued growth in construction, especially in skilled trades. Infrastructure construction continues on Maui with airport improvements -- notably, the airport access road and rental car facility and the development of the Kahului Business Park. UHERO is also forecasting ongoing growth in residential construction, but with the upswing more limited than in past recovery cycles. A recent First Hawaiian Bank analysis<sup>43</sup> expects the trend to be boosted by recent Maui County decision to relax constraints from residential workforce requirements, and the issuance of more residential water meters, especially Upcountry.

<sup>41</sup> Construction and Hawaii’s Economy, DBEDT, 2014.

<sup>42</sup> Hawaii Labor Market Dynamics, DLIR, 2015.

<sup>43</sup> First Hawaiian Bank, Economic Forecast, 2015-2016

Chart 6: Construction Job Count: Maui County Labor Force Data, 2000 – 2015



Source: DLIR

Construction is also a significant cluster because of generally high wages. The average annual wage in the Construction industry was \$58,730, 45% higher than the average annual wage in Maui County for all occupations of \$40,469. All occupational categories for which data is available (see Table 12 below) show wages above the County average.

Table 12: Average Wage and Numbers Employed, Construction Occupations, Maui County, 2015

<u>Occupation</u>	<u>Numbers</u>	<u>Average Wage</u>
First-line Supervisors	250	\$83,580
Painters and Construction Maintenance	200	\$67,890
Sheet Metal Workers	n/a	\$66,610
Plumbers, Pipefitters, etc.	320	\$66,580
Carpenters	690	\$65,070
Electricians	n/a	\$60,390
Equipment Operators, etc.	190	\$54,230
Concrete Masons, etc.	90	\$51,780
Construction and Building Inspectors	40	\$51,710
Roofers	n/a	\$48,130
Construction Laborers	340	\$44,710

Source: DLIR and BLS (May 2015 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates). Note: Data exclude the Self-Employed



The availability of affordable housing has been a major social and economic issue for Maui County. It has been cited consistently as a limiting factor to economic development across all clusters. This concern reflects recent trends in the housing market as demand has outpaced supply, driving up prices, with the resident workforce facing competition for housing from those in-migrating and real estate investors who view Maui as a desirable, premium location. Table 13 (below) shows the median price of single family homes more than doubled between 2000 and 2006, and a tripling of condominium prices between 2000 and 2008. Prices fell between 2008 and 2011, but the median price of a single family home in 2016 has risen to \$619,500. This compares with a U.S. median price for new home sales in 2015 of \$296,400, according to the Census Bureau<sup>44</sup>.

Table 13: Housing Sales and Median Price, Maui County, 2000-2016

Year	Single Family Homes Sold	Single Family Home Median Price	Condominiums Sold	Condominium Median Price
2000	951	\$275,000	1,456	\$181,750
2001	986	\$299,000	1,309	\$190,000
2002	978	\$375,000	1,551	\$195,000
2003	1,410	\$440,000	1,986	\$241,622
2004	1,221	\$550,000	1,933	\$310,000
2005	1,317	\$679,000	2,000	\$390,000
2006	1,088	\$693,000	1,210	\$505,000
2007	1,138	\$630,069	1,179	\$550,000
2008	907	\$577,867	788	\$575,000
2009	693	\$498,106	824	\$450,000
2010	814	\$460,000	1,147	\$377,500
2011	898	\$433,500	1,155	\$310,000
2012	933	\$470,000	1,248	\$358,995
2013	980	\$530,000	1,334	\$374,500
2014	943	\$570,000	1,199	\$415,000
2015	1,089	\$580,000	1,199	\$410,000
2016 (YTD) <sup>45</sup>	434	\$619,500	535	\$429,000

Source: Realtors Association of Maui

A further measure of construction industry activity is the number and value of building permits (Table 14, below). While showing increases since 2010, numbers are still running well below levels recorded before the recession. Analysts expect these numbers to rise in response to pent-up residential housing demand. A recent DBEDT analysis showed that Maui County needs an additional 1,400 new homes a year over the next decade to keep up with population growth

<sup>44</sup> <https://www.census.gov/construction/nrs/pdf/uspriceann.pdf>

<sup>45</sup> Through May 2016

and the demand for housing<sup>46</sup>. The same source quantified the extent of Maui’s homeless crisis, with 49 homeless per 10,000 people reported by the National Alliance to End Homelessness, a rate that continues to rise.

Table 14: Number and Estimated Value of Building Permits, Maui County, 2001 – 2013

<b>*Year</b>	<b>Number Issued</b>	<b>Estimated Value (\$1000)</b>
<b>2001</b>	2,012	312,737
<b>2002</b>	1,915	273,716
<b>2003</b>	2,199	469,277
<b>2004</b>	2,472	448,831
<b>2005</b>	2,348	831,416
<b>2006</b>	2,404	979,412
<b>2007</b>	2,196	727,772
<b>2008</b>	1,607	443,840
<b>2009</b>	1,130	224,437
<b>2010</b>	1,016	194,607
<b>2011</b>	1,076	243,683
<b>2012</b>	1,169	366,994
<b>2013</b>	1,200	325,014

Source: DBEDT

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<sup>46</sup> Maui News, June 21, 2016.

# CREATIVE INDUSTRIES: Goals and Strategies

## SWOT

Opportunities identified included targeting events and attractions to a broader visitor base and more diverse audience, developing a sustainable movie industry, and establishing an arts-specific district to give the cluster more of a “critical mass.”

### Goal 1: Triple the economic impact of creative industries in the next five years

*Objective: Grow the cluster as an economic driver on multiple fronts*

#### Strategies:

- Increase broadband capacity and access
- Create incentive package for Creative Industry production facility (e.g. film and digital media)
- Broaden the marketing and financing strategies of the arts sector in Maui County

### Goal 2: Create an arts and entertainment district in Wailuku

*Objective: Establish a dynamic “core” area that spurs collaboration, results in efficiencies of scale, and grows the creative arts cluster*

#### Strategies:

- Develop Restoration Plan for historic buildings
- Establish performance and community space, including adequate parking
- Develop partnerships with all stakeholders from public, private, and non-profits

## CREATIVE INDUSTRIES: Cluster Analysis

The State of Hawaii has identified the development of creative industries as an important economic development strategy because Hawaii’s cultural diversity and its Hawaiian host culture are important attractions for millions of visitors and the spending they bring<sup>47</sup>. In addition, the unique nature of Hawaii’s creative, artistic and cultural cluster contribute to Hawaii’s creative products compete globally and generate export revenues. Further, the cluster and its workforce are major sources of concepts and content for Hawaii’s emerging Science, Technology and Innovation cluster.

Employment data for the Arts and Entertainment sector, which also includes sports and recreation, show an increasing trend in numbers employed between 2001 and 2007, with its share of the total employed labor force holding steady. During the downturn and recession of 2008 to 2010, numbers employed and sectoral share both declined significantly, reflecting in part the fall in visitor numbers. By 2014, numbers employed in Arts, Entertainment and Recreation were gradually recovering but were still below pre-recession peak levels.

Table 15: Numbers Employed in Arts, Entertainment, and Recreation, Maui County, 2001-2014

Year	TOTAL	As % of Total Employed
2001	2,069	3.0%
2002	1,964	2.9%
2003	1,954	2.9%
2004	2,060	2.9%
2005	2,061	2.8%
2006	2,345	3.1%
2007	2,344	3.0%
2008	2,250	3.0%
2009	2,020	2.9%
2010	1,790	2.5%
2011	1,819	2.4%
2012	1,857	2.5%
2013	1,849	2.3%
2014	<b>2,073</b>	<b>2.6%</b>

Source: DLIR (Job Count by Industry, not seasonally adjusted)

<sup>47</sup> [Hawaii’s Creative Industries: Update Report 2015](#), DBEDT, March 2015

The component subgroups within the sector have changed over the period. Those in performing arts and spectator sports increased from 311 (15% of the total) in 2001 to 729 (31%) in 2007 and 779 (38%) in 2014. Those employed in amusement and recreation, the largest subgroup, showed a downward trend over the period: 1,587 (77%) in 2001, to 1,441 (61%) in 2007, and 1,144 (55%) in 2014. The balance of employment in the sector (7 to 8%) worked at museums, historical sites and parks. It is worth noting that, as is the case in agriculture especially, official numbers employed in the cluster almost certainly underestimate those engaged in economic activity; many individuals are self-employed, work as volunteers, or are not counted because they work part-time or are not covered by unemployment provisions.

Available wage data for occupations in the Creative Industry cluster (which like other clusters exclude managers, directors, supervisors, etc.) show that remunerations levels below the average for all occupations in Maui County of \$40,469:

Table 16: Average Wage and Numbers Employed, Creative Industries Occupations, Maui County, 2015

<u>Occupation</u>	<u>Numbers</u>	<u>Average Wage</u>
<b>1. Art, Design, Entertainment</b>		
Audio and Video Equipment Technicians	50	\$40,440
Graphic Designers	70	\$39,570
Music Directors and Composers	40	\$39,080
Merchandise Displayers and Window Trimmers	40	\$28,280
<b>2. Personal Care and Service Occupations</b>		
Locker Room and Coatroom Attendants	60	\$38,380
Amusement and Recreation Attendants	320	\$31,790
Ushers, Lobby Attendants, Ticket Takers	220	\$24,940

Source: DLIR and BLS (May 2015 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates). Note: Data exclude the Self-Employed

Hawaii’s Department of Business, Economic Development and Tourism (DBEDT) produced an update report of Hawaii’s Creative Industries in 2015<sup>48</sup>, which combined NAICS<sup>49</sup> data with estimates provided by Economic Modeling Specialists, Inc. (EMSI) that include proprietors and

<sup>48</sup> [Hawaii’s Creative Industries: Update Report 2015](#), DBEDT, March 2015.

<sup>49</sup> North American Industrial Classification System.

self-employed jobs and estimates for very small industries that are not reported by Federal agencies. The report covered a broadened scope of Creative Industries to include some digital media and internet activities that official data series typically classify as Science, Technology and Innovation employment and other groups such as engineering, research and development, business consulting, and art education. Using these definitions, Maui County accounted for 6,173 Creative Industry jobs in 2014, with an average annual increase in jobs of 0.8%, compared to growth of 1.1% for the state. Average earnings (\$31,250) were significantly below all occupations in Maui County (\$40,469), the average for creative industry jobs in the state (\$32,936) and the national average (\$40,295).

Table 17: Creative Industry Jobs and Earnings, Maui County, 2004-14

Industry Group	Growth Class	Jobs 2004	Jobs 2014	Av. Annual Job Growth	Av. Annual Earnings (2014)
Music	Growth	105	516	17.3%	\$20,830
Design Services	Growth	229	317	3.3%	\$28,147
Radio & TV Broadcasting	Emerg.	93	138	4.0%	\$39,813
Cultural Activities	Transtn.	42	54	2.6%	\$37,401
Business Consulting	Transtn.	265	405	4.3%	\$56,024
Marketing, Photography, etc.	Transtn.	1,275	1,405	1.0%	\$20,103
Computer & Digital Media	Transtn.	281	361	2.5%	\$70,944
Art Education	Transtn.	65	80	2.1%	\$14,231
Performing & Creative Arts	Decline	2,266	2,061	-0.9%	\$21,513
Engineering and R&D	Decline	438	355	-2.1%	\$73,915
Publishing and Information	Decline	346	280	-2.1%	\$50,739
Film, TV, Video Production	Decline	66	51	-2.5%	\$37,997
Architecture	Decline	223	151	-3.8%	\$38,716
<b>TOTAL CREATIVE INDUSTRY</b>	<b>Transtn.</b>	<b>5,695</b>	<b>6,173</b>	<b>0.8%</b>	<b>\$31,250</b>

Source: [Hawaii's Creative Industries: Update Report 2015](#), DBEDT, March 2015

Note: Growth class abbreviations -- Emerg. = Emerging; Transtn. = Transitioning; Decline = Declining

A report published in 2007<sup>50</sup> by a non-profit organization assessed the economic impact of non-profit arts and culture in Maui County; this is the latest document providing such analysis. The report estimated that over \$22 million in economic activity was generated annually by nonprofit organizations and in event-related spending by audiences, and that 544 full-time equivalent jobs were supported, directly or indirectly. Two-thirds of event attendees were Maui residents, with the rest from off-island, with the latter group spending almost triple per person

<sup>50</sup> [Arts and Economic Prosperity III](#), Americans for the Arts, 2007.

(183%) than residents. The report further estimated that for every \$100,000 spent by Arts and Culture non-profit organizations, two full-time jobs were supported and \$49,000 generated in resident household income, with almost \$5,000 in resulting state and local government revenue.

An article published in 2015 by Pacific Business News<sup>51</sup> analyzed the economic impact of Maui's "crown jewel" of its Creative Arts cluster, the Maui Arts & Cultural Center (MACC), which opened in 1994. The MACC offers more than 1,800 events annually for residents and visitors alike with a diversity of programs, performances and shows. The MACC employs 40 people, can accommodate 270,000 visitors a year, and generates \$4.35m. annually. The article estimates that 89 percent of spending benefits Maui businesses, with each ticket holder spending a further \$24.60 on dinner, shopping, transportation, gas, or parking.

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<sup>51</sup> [http://www.bizjournals.com/pacific/blog/morning\\_call/2015/03/a-closer-look-at-the-economic-impact-of-the-maui.html](http://www.bizjournals.com/pacific/blog/morning_call/2015/03/a-closer-look-at-the-economic-impact-of-the-maui.html)

# ENERGY: Goals and Strategies

## SWOT

Identified opportunities included development of a smart grid implementing innovative and renewable technologies (e.g. storage, geothermal, pumped hydro, biofuel), and demand response tariffs

### Goal 1: Reduce the cost of energy for business and the importation of energy fuels for electricity generation by 2045 through renewable energy using the most suitable technologies

*Objective: Improve business competitiveness and meet State mandated targets for renewable energy*

#### Strategies:

- Promote energy independence by bringing Maui's electric utility up to date to allow for all renewable energy sources
- Explore options for renewable energy that will benefit all ratepayers (e.g. low-cost financing, storage incentives, reduce time required to create a Power Purchase Agreement, etc.)
- Encourage community solar projects in locations that provide maximum usable output at lowest cost

### Goal 2: Support expansion of renewable energy including community-based options

*Objective: Increase renewable energy penetration and provide customers with choice*

#### Strategies:

- Encourage the addition of complementary products such as energy storage
- Ensure tax credit and property tax exemptions for solar PV include storage
- Promote discussion within the community on methods of connecting choices for renewable energy with overarching issues such as resilience, sustainability and self-sufficiency

### Goal 3: Increase energy efficiency and conservation and demand response efforts

*Objective: Reduce consumption and the need for imported fossil fuels*

#### Strategies:

- Expand Efficiency Program awareness, resources, and personnel
- Explore regulatory and/or code compliance to increase energy efficiency (e.g. new building impact fees or incentives for new energy efficient buildings, existing building regulations, rate schedule revision to increase demand response, etc.)
- Work with grid operator so "behind the meter" assets can be used to support the grid



## ENERGY: Cluster Analysis

Energy is an important and growing cluster in Maui County, and the county is a national leader in renewable energy grid penetration. The utility, Maui Electric Company (MECO), estimates that in 2015, renewable energy accounted for 35.3% of total energy generation needs, trailing only the Big Island of Hawai'i with 49% (in large part because of its geothermal resources,) and comparing with 17% on Oahu. MECO reports 26% of energy generated from wind, biomass, hydro, large-scale solar, and biofuel sources; this percentage does not include individual customer-sited grid-connected PV systems.<sup>52</sup>

Maui County's Energy cluster is underserved in terms of published employment, occupational and wage data. Employment numbers produced by the Hawaii Department of Labor and Industrial Relations (DLIR) aggregate Utilities with Transportation and Warehousing. The only disaggregation, for numbers in air transportation, show that this subgroup accounted for 600 of the 4,000 total jobs in the sector in 2015. MECO, the largest energy employer in the County, is staffed by 358 workers as of June 2016<sup>53</sup>. A DBEDT report<sup>54</sup> that combined NAICS data with estimates provided by Economic Modeling Specialists, Inc. (EMSI) which include proprietors, self-employed jobs, and estimates for very small industries that are not reported by Federal agencies, reported Alternative Power Generation as a growth industry, but with only 46 jobs as of 2015. However, those jobs averaged annual earnings of \$105,015, more than two and a half times the County average.

Renewable energy rapidly emerged as a growth sector with great potential in Maui County over the last decade with the implementation of a number of renewable energy projects. The Governor introduced the Hawaii Clean Energy Initiative (HCEI) in October, 2008 to be undertaken in concert with the U.S. Department of Energy. The initial goal of HCEI was for efficiencies and renewable resources to meet 70% of Hawaii's energy requirements by 2030. The current goal is for the state to achieve 100% clean energy by 2045.

MECO data for sources of grid-supplied power as of 2015 are shown in Table 18 (below). In January 2016, following the announcement that HC&S would cease sugar operations by the end of 2016, the company notified MECO that the plantation's Pu'unene Mill would no longer provide power to the island's electricity grid, terminating the power purchase agreement between the two companies. MECO announced that it plans to replace the HC&S power that was especially important as an emergency backup for the grid with demand-response

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<sup>52</sup> MECO website.

<sup>53</sup> Number provided by MECO by personal communication.

<sup>54</sup> Hawaii's Targeted & Emerging Industries: 2015 Update Report, DBEDT December 2015

programs, distributed generation, additional utility-scale generation and emergency generators. Since 2015, HC&S has provided little power to MECO, partly because of the increase in system-wide renewable generation.

Table 18: MECO Power Generation by Type of Source, 2015

Type of Generation	Megawatts (MW)	Type of Power
<b>Firm Generation (TOTAL)</b>	278	
Ma'alaea plant	212	Oil Fired
Kahului plant	38	Oil Fired
Lāna'i	10	Oil Fired
Moloka'i	12	Oil Fired
Hāna	2	Dispersed Generation
<b>Independent Power Producers (TOTAL)</b>	4	
HC&S	4	Bagasse, Coal, Hydro
<b>Variable Generation (TOTAL)</b>	146	
Kaheawa Phase I (2006)	30	Wind
Kaheawa Phase II (2012)	21	Wind
Auwahi (2012)	21	Wind
Makila Hydro	1	Hydro

Source: Maui Electric Company (website, 2016)

Further utility-scale solar projects are currently underway: in February 2016, the State Public Utilities Commission (PUC) conditionally approved a power purchase agreement between MECO and Lahaina-based Kuia Solar LLC for a 2.87 megawatt project in Lahaina. An agreement was also approved between MECO and South Maui Renewables Resources which plans a 2.87 megawatt project near the Maui Research and Technology Park in Kihei. These are the first utility-scale solar projects on Maui (a 1.2 megawatt solar facility, La Ola PV solar farm began operation on Lāna'i in 2011). A proposed 3.87 megawatt Moloka'i Island Energy solar farm has also been announced.

The growth of renewable energy over the last decade, and especially customer-sited PV systems, has impacted the amount of power generated and sold by MECO as Table 19 indicates. Customer numbers have continued to increase, reflecting the growing population, but since 2005, power sold and annual average use by customers have fallen as rooftop solar systems are substituting for centrally generated grid supply. MECO estimates that as of 2015 there are 7,000 customers with Net Energy Metering (NEM) agreements with the utility, which account for 47 megawatts of power. MECO's published plan to the PUC calls for 65% renewable energy by 2030 and bills that will be 20% lower, and 100% renewables by 2045.

Table 19: Major Energy Indicators, Maui County, 2000- 2013

Year	Customers (Number)	Grid Capacity (MW) <sup>55</sup>	Power Sold (1,000kWh)	Average Annual Use (kWh) <sup>56</sup>	
				Residential	Other
<b>2000</b>	57,601	272.6	1,105,463	7,816	87,836
<b>2005</b>	63,901	254.9	1,252,113	8,376	85,550
<b>2010</b>	67,739	284.2	1,191,559	7,501	79,969
<b>2013</b>	69,577	284.2	1,134,873	6,688	75,893

Source: DBEDT, HEI Company Inc.

DBEDT data for Hawaii indicate that more than half of the state’s total energy demand originates in the transportation sector, and Maui data show that this is evenly divided between vehicle and airline transportation use. Electricity generation accounts for another one-third of energy use, with all residential, commercial and industrial making up about 16% of the total.

Over the last few years, Maui has proved to be an excellent test-bed for new energy technologies. Because of limited driving distances, abundant sources of variable renewable energy and a well-developed infrastructure of charging stations, electric vehicles are the centerpiece of the demonstration JUMPSmartMaui (JSM) program funded primarily by NEDO, the Japanese New Energy and Industrial Technology Development Organization. In March 2016, there were 693 registered electric vehicles on Maui, 82 Level 2 charging station ports, and 35 fast-charge Level 3 ports. The JSM project aims at improving integration of variable renewable energy resources such as solar and wind power, and preparing the electric grid for widespread adoption of all-electric vehicles. The project aims to improve management of distributed energy resources and to create a more efficient, sustainable, and reliable clean energy grid for Maui that can be scaled to other, larger grids in Hawaii and internationally. Smart meter pilot programs have also been successfully implemented on Maui as part of Smart Grid initiatives.

<sup>55</sup> Generating and Firm Purchased.

<sup>56</sup> Maui island only.

# HEALTH AND WELLNESS: Goals and Strategies

## SWOT

Opportunities identified included promotion of Maui as a wellness destination, further expansion of healthcare services and incentivized recruitment, expansion of continuing education and public health education, and facilitation of provider collaboration.

### Goal 1: Provide a comprehensive, higher quality of healthcare services

*Objective: Growth of more reliable, modern medical infrastructure to make Maui a more attractive place to live and work*

#### Strategies:

- Secure an exemplary private hospital system
- Restore and develop a full complement of services such as cardiac care, behavioral healthcare, etc.)
- Create a pipeline of career opportunities through support of educational and continuing education programs
- Attract further external investment to build critical mass to expand and grow services

### Goal 2: Improve the recruitment and retention of healthcare practitioners and technicians

*Objective: Support the “critical mass” of health services*

#### Strategies:

- Bring in experts, send staff to training (professional development and advancement opportunities)
- Encourage visiting medical professional programs
- Work with existing providers to support the expansion of Trauma Services and support becoming a Regional Referral Center in key specialties (Maui County, Hawaii County)
- Recruit/incentivize physicians, physician assistants, and physician extenders to locate their business on Maui

### Goal 3: Encourage and incentivize collaboration among provider organizations in the continuum of care (all aspects, e.g. wellness, primary, acute, behavioral, end-of-life)

*Objective: Improve the quality and lower the cost of care*

#### Strategies:

- Facilitate integration between various providers
- Support reimbursement reform to support private practice and incentivize the movement of patients to the least expensive, appropriate level of care
- Identify roadblocks to collaboration and strategize solutions

#### Goal 4: Promote Wellness as an industry

*Objective: Emphasize wellness/well-being through increased accessibility to preventative education (e.g. youth programs, school nurse program, yoga, martial arts, mental health education for youth, and tech/apps)*

##### Strategies:

- Encourage/expand medical tourism through Health and Wellness Retreat Centers
- Improve online accessibility
- Encourage funding from for-profit sponsors

## HEALTH AND WELLNESS: Cluster Analysis

As the Maui County General Plan<sup>57</sup> states, “Obtaining quality health care is an essential part of every resident’s life and will continue to grow in importance as Maui’s population ages. The traditional and alternative medicine sectors are identified as growth sectors, and opportunities exist to create a robust niche industry that can provide viable employment. To build a solid foundation for the provision of quality health care services, including mental health and substance abuse services, and realize the economic potential of these sectors, Maui needs to develop and provide access to a comprehensive and integrated spectrum of health care services and improve the quality of medical facilities.” These sentiments were echoed by the cluster CEDS Focus Group, which placed emphasis on building a “critical mass” that will allow an expansion of services and further grow the cluster. With Maui’s population continuing to grow, those of retirement age in-migrating in disproportionately large numbers, and the growth of the wellness industry related both to the resident population and the burgeoning of wellness tourism, the sector is expected to keep expanding despite potential constraints such as the high cost of housing, limited facilities, and access to quality education.

Numbers employed in Healthcare and Social Assistance in Maui County (a proxy for the Health and Wellness Cluster) have risen steadily since 1990, from 2,600 (and a share of 4.8% of the labor force) to 3,700 in 2000 (5.5%), 5,000 in 2010 (6.9%) and 5,200 in 2014 (6.6%)<sup>58</sup>. Over this period, about two-thirds of the total are employed in Healthcare, with the remaining one-third engaged in Social Assistance, which includes individual and family services, emergency and relief services, vocational rehabilitation services, and child day-care services. In terms of long-term trend, the cluster was notable for holding its own during the economic downturn of 2008 to 2010, even adding a small number of jobs (150) during that period when most other industries grew saw significant contraction and total employment in Maui County fell by almost 10%. Even by the downturn, the cluster was the fifth largest in terms of Maui County

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<sup>57</sup> Maui County General Plan 2030, Maui Island Plan

<sup>58</sup> DLIR data, Job count by Industry: hiwi.org

employment, following Accommodation and Food Service, Retail Trade, Government, and Professional and Business Services.

Table 20: Maui County Health Care and Social Assistance Job Count, 2000-2014

Year	Job Count
2000	3,700
2001	3,900
2002	4,000
2003	4,050
2004	4,200
2005	4,400
2006	4,550
2007	4,650
2008	4,850
2009	4,950
2010	5,000
2011	5,000
2012	5,000
2013	5,200
2014	5,200

Source: DLIR (Job Count by Industry, not seasonally adjusted)

The largest Healthcare employer in the County (and one of the largest employers in Maui County) is Maui Memorial Medical Center (MMMC). According to the Hospital’s website, it has 214 patient beds and employs more than 1,350 employees and has 400 physicians on staff, representing numerous specialties, including behavioral health, cardiac care, general surgery, neurosurgery, oncology, orthopedics, pediatrics, stroke care, and wellness. MMMC also operates one of the State’s busiest Emergency Rooms (ER), with over 45,000 patient visits in 2015. MMMC is the largest acute care facility within the Hawaii Health Systems Corporation (HHSC). In September 2015, the HHSC Board selected Kaiser Permanente to manage, operate and provide healthcare services at its facilities, which include Kula Hospital (113-bed long-term care facility with ER services) and Lanai Community Hospital (a 14-bed critical access hospital.)<sup>59</sup> This arrangement is expected to be implemented in late 2016. In July 2016, ground was broken in Lahaina for the West Maui Hospital and Medical Center, a much-anticipated 25-bed critical-access hospital with a 24-hour ER, a 40-bed skilled nursing facility, and a 40-unit assisted living facility. The project’s target completion date is late 2018<sup>60</sup>.

<sup>59</sup> Data from MMMC’s Partnership Proposal Packet, Maui Region, MMMC website

<sup>60</sup> [The Maui News](#), July 7, 2016

Table 21: Average Wage and Numbers Employed, Health and Wellness Occupations, Maui County, 2015

<u>Occupation</u>	<u>Numbers</u>	<u>Average Wage</u>
<b>1. Healthcare Practitioners and Technical Occupations</b>		
Physicians and Surgeons	n/a	\$215,440
Family and General Practitioners	130	\$154,990
Pharmacists	110	\$118,660
Nurse Practitioners	n/a	\$88,260
Registered Nurses	730	\$84,210
Physician Assistants	n/a	\$73,480
Dental Hygienists	90	\$70,140
Radiologic Technologists	90	\$66,120
Licensed Practical & Vocational Nurses	140	\$44,410
Dispensing Opticians	n/a	\$37,890
Pharmacy Technicians	180	\$37,790
Medical Records & Health Info Technicians	50	\$33,250
<b>2. Healthcare Support Occupations</b>		
Massage Therapists	180	\$63,910
Healthcare Support Workers	90	\$40,000
Dental Assistants	180	\$35,120
Medical Assistants	280	\$32,990
Nursing Assistants	520	\$31,990

Source: DLIR and BLS (May 2015 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates). Note: Data exclude the self-employed

Average annual wages in Healthcare and Social Assistance are above the average for the County; in 2014, the Healthcare and Social Assistance average was \$43,738 compared to the County average for all industries of \$40,469; however, this average was depressed by the one-third of employees in the industry in the Social Assistance category, for whom the average annual wage was \$22,670. Bureau of Labor Statistics (BLS) data on occupational employment in Maui County in 2015 provide an illuminating insight into the wide range of compensation in the cluster. The data disaggregate average mean wage for two categories: healthcare practitioners and technical occupations; and healthcare support occupations (Table 21).

Other Health and Social Assistance categories are shown by the same BLS source in other occupational groupings, as shown in Table 22:

Table 22: Average Wage and Numbers Employed, Other Health and Wellness Occupations, Maui County, 2015

<u>Occupation</u>	<u>Numbers</u>	<u>Average Wage</u>
Social and Community Service Managers <sup>61</sup>	50	\$70,770
Medical and Health Service Managers	140	\$63,160
Fitness Trainers and Aerobics Instructors <sup>62</sup>	n/a	\$55,990
Child, Family, and School Social Workers <sup>63</sup>	180	\$58,340
Medical Secretaries <sup>64</sup>	100	\$39,280
Health Educators	40	\$53,690
Community and Social Service Specialists	80	\$48,970
Community Health Workers	50	\$35,440
Social and Human Service Assistants	190	\$33,960

Source: DLIR and BLS (May 2015 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates). Note: Data exclude the self-employed.

<sup>61</sup> First two listings Included in Management occupations

<sup>62</sup> Included in Personal Care and Service occupational grouping

<sup>63</sup> This and following occupations included in Community and Social Service occupational grouping

<sup>64</sup> Included in Office and Administrative Support occupations



# SCIENCE, TECHNOLOGY AND INNOVATION: Goals and Strategies

## SWOT

Opportunities proposed include improved connectivity, capitalizing on Maui's unique location, promoting leadership in many areas of excellence, and capitalizing on Maui's reputation as a unique test-bed.

### Goal 1: Support world class science and technical activities

*Objective: Continue diversification of Maui economy by supporting creation of well-paid jobs and encouraging entrepreneurship*

#### Strategies:

- Support a business development team to lead effort
- Support partnerships between public, private, and nonprofit groups
- Develop funding opportunities to support and strengthen Technology sectors
- Create an incubation workspace designed to support entrepreneurial innovation with technical assistance and mentoring
- Educate local community on value of hi-tech activities and benefits to Maui County, Hawaii, and the world

### Goal 2: Better connect Maui globally and improve business attraction and retention

*Objective: Significantly improve and sustain high-speed, reliable, affordable and secure connectivity*

#### Strategies:

- Convene hi-tech industry leaders to create a master plan for high speed and affordable connectivity and advocate for expedited implementation
- Create funding mechanism for expanding affordable broadband/fiber capacity

### Goal 3: Further develop, attract, and retain educated workforce in STEM fields

*Objective: Provide home-grown and home-based qualified workforce for STEM occupations*

#### Strategies:

- Encourage and expand IT and STEM for both students and educators throughout the educational system (K-12 and post-secondary)
- Expand technical assistance and support for entrepreneurial small and medium-sized tech businesses
- Encourage opportunities in innovative industries such as Energy, the "internet of things," GIS, software development, artificial intelligence, cyber security, green businesses, 3-D printing, and agriculture

# SCIENCE, TECHNOLOGY AND INNOVATION: Cluster Analysis

Back in the early 1980s when the science and technology cluster was at a fledgling stage in Maui County, business and community leaders recognized its potential as the “third leg” of the economy stool that could add balance to the share of the economy traditionally dominated by the visitor industry and agriculture. This foresight stemmed from the perception that the national economy, like other developed nations, was transitioning from a post-industrial economy to one based on knowledge and innovation. Technology brings with it high-skill jobs and highly competitive wages, and the opportunity to train a resident workforce through STEM programs in County K-12 schools and post-secondary education, giving employers the advantage of avoiding relocating and transplanting staff. One outcome of this recognition was the creation of the Maui Economic Development Board with its mission, in part, to diversify the economy and to support and help expand the technology cluster as a strategic component of Maui County’s economic base. Despite its isolated location, Maui enjoys several competitive advantages in attracting science, technology, and innovation enterprises, such as its time zone that bridges the U.S. mainland and Asian technology markets; its desirable environment and quality of life; and incentive programs such as SBA HubZone<sup>65</sup> and Foreign Trade Zone.

Maui County’s Science, Technology and Innovation cluster is underserved in terms of published occupational and wage data, for example, and for some statistics a degree of overlap exists between the cluster and healthcare, energy, and agriculture. Nevertheless, growth in this sector, as measured by numbers employed in the cluster, has been marked since the early 1980s when MEDB was established with the mission of helping to diversify the economy. From an estimated 175 jobs or so in the early 1980s, an employment peak of 2,350 was recorded in 2004, representing 3.3% of all those employed. Numbers then stabilized through the beginning of the downturn in 2008, declined by more than 10% through 2011, and have shown a small increase since although not reaching pre-downturn levels. By 2015, with total employment numbers increasing, Science, Technology and Innovation jobs represented 2.5% of the total. The official numbers collected by the state Department of Labor exclude Federal employees, especially those in the military, which includes Air Force Research Laboratory (AFRL) and related personnel stationed in Maui County, many of whom are engaged in science and technology work<sup>66</sup>. The job count data are also presented in Chart 7, below. In terms of State

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<sup>65</sup> The Small Business Administration HUBZone designation (Historically Underutilized Business Zone)

<sup>66</sup> Other DLIR data estimate a total of 800 Federal employees in Maui County in 2015:  
[https://www.hiwi.org/admin/gsipub/htmlarea/uploads/LFR\\_CES\\_JC2015.xls](https://www.hiwi.org/admin/gsipub/htmlarea/uploads/LFR_CES_JC2015.xls)

jobs in the cluster, Maui has the largest number of private-sector technology-related jobs after Oahu.

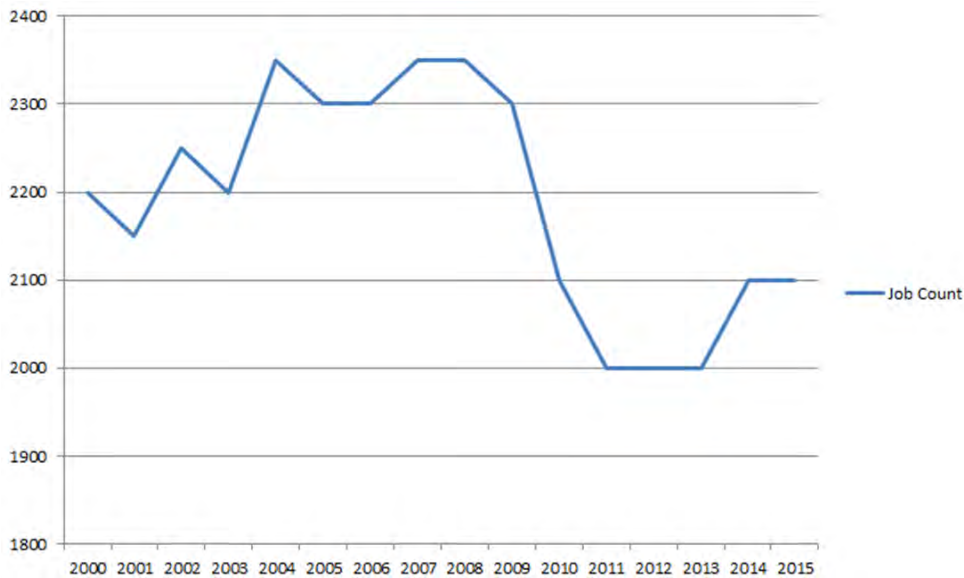
Table 23: Professional, Scientific & Technical Services Job Count, Maui County, 2000-2015

Year	Job Count	% of All Employed
2000	2,200	3.2%
2001	2,150	3.1%
2002	2,250	3.3%
2003	2,200	3.2%
2004	2,350	3.3%
2005	2,300	3.1%
2006	2,300	3.1%
2007	2,350	3.0%
2008	2,350	3.1%
2009	2,300	3.3%
2010	2,100	2.9%
2011	2,000	2.7%
2012	2,000	2.7%
2013	2,000	2.6%
2014	2,100	2.7%
2015	2,100	2.5%

Source: DLIR

Note: Includes Information & Telecommunications; excludes Federal employees (DoD etc.)

Chart 7: Professional, Scientific & Technical Services Job Count, Maui County



Source: DLIR

Limited Department of Labor and Industrial Relations (DLIR) data for Maui County (Table 24) dating from 2013 confirm that technology-related occupations offer wages well above the average for all occupations :

Table 24: Selected Science and Technology Occupational Wage Data, Maui County, 2013

Occupation	Mean	Median
Computer & Information System Managers	\$104,231	\$94,278
Computer & Math Occupations	\$74,604	\$68,842
Computer System Analysts	\$65,207	\$61,261
Computer Programmers	\$60,209	\$59,395
Systems Software Developers	\$97,501	\$98,915
Web Developers	\$65,631	\$62,053
Network & Computer Systems Administrators	\$65,624	\$65,304
Life & Physical Science Occupations	\$77,113	\$53,473
Environmental Scientists and Specialists	\$49,707	\$45,712
Electrical Engineers	\$93,925	\$91,880

Source: DLIR and BLS (May 2015 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates). Note: Data exclude the self-employed

The most recent and pertinent published study of the cluster dates is the Hawaii Science and Technology (HISciTech) Institute’s 2008 report, Innovation and Technology in Hawaii: An Economic and Workforce Profile. The main findings of this report are as follows:

- In 2007, the private tech sector contributed an estimated \$106.4million to the Maui economy (2.7% total earnings)
- Average private sector tech earnings in 2007 were \$56,443 – almost 50% higher than the Maui County average;
- For Hawaii as a whole, employment in the tech sector has grown consistently faster than in the rest of the economy;
- Fastest growth has been in renewable energy, agricultural biotechnologies, and ocean sciences;
- The most significant tech market segments in Maui County (ranking by employment):
  - ICT (Information & Communications Technology)
  - Defense/Aerospace
  - Engineering/Professional Services
  - Environmental
  - Agricultural Biotechnologies
  - Ocean Sciences
  - Biotechnology
  - Renewable Energy

- Between 2002 and 2007, Maui's tech sector grew on average 3.7% per year (compared to 2.5% growth statewide)
- In 2007, Maui County had an estimated 163 technology companies (about 3% of the total). Average company size was 12 employees;
- The tech sector also supported more than 1,500 jobs in supplier companies or service providers in non-tech sectors.

# SPORT and RECREATION: Goals and Strategies

## SWOT

Opportunities acknowledged in creating world-class facilities to promote state, national and international events and programs (e.g. Olympic training), resolving bottlenecks in event and activity permitting, and taking advantage of the growing Asian market.

### Goal 1: Streamline permitting process with State and County

*Objective: Facilitate event and activities planning in a timely manner and simplify process*

#### Strategies:

- Create a “one-stop shop” in the County administration to facilitate activities and event permit applicants (e.g. Office of Special Events model, San Diego)
- Review standardization of procedures as different users have different issues and allow for flexibility (e.g. weather conditions)
- Revise Maui County codes to create timeline for approvals
  - Title 13 – Parks and Recreation, Title 16 – Buildings, Title 19 – Planning

### Goal 2: Develop a comprehensive sports plan for Maui County encompassing youth, recreational, competitive, professional sports, and sports tourism opportunities based on a consensus of which sports Maui can support and deliver with excellence

*Objective: Position Maui to maximize resources and expertise for national- and world-class activities and events*

#### Strategies:

- Develop definitive list based on facility/coaching resources
- Collect and analyze sports cluster data
- Create “rolling” comprehensive sports calendar for Maui
- Evaluate the need, scope, and location for the construction and maintenance of world-class facilities
- Expand and designate infrastructure to better support visitor and residential ocean activities

### Goal 3: Support the creation of a State Sports Commission with participation from counties

*Objective: Promotion of Hawaii as sports destination and effectively represent Maui at State level*

#### Strategies:

- Create County Sports Board to represent Maui to the State Sports Commission
- Create County Sports Commissioner position to expand economic opportunities

## SPORT and RECREATION: Cluster Analysis

Maui County’s Sports and Recreation cluster is underserved in terms of published data as occupational and wage information is not disaggregated by the Department of Labor and is instead combined with Arts and Entertainment. Job count data for this sector, therefore, are included in Table 15 above (page 60, Creative Industries section). The Maui County CEDS Focus Group for this cluster agreed that Sports and Recreation data (including recreational leisure activities) should be collected and published separately from Arts and Entertainment (including amusements). This was viewed as particularly important as the cluster is regarded as having great potential as an economic driver both for residents and visitors, for whom Maui is seen as a destination location.

Likewise, occupational and wage data are very limited, with the only disaggregated occupations related to the cluster shown in Table 25:

Table 25: Average Wage and Numbers Employed, Sports and Recreation Occupations, Maui County, 2015

<u>Occupation</u>	<u>Numbers</u>	<u>Average Wage</u>
<b>Coaches and Scouts</b>	200	\$48,640
<b>Recreation Workers</b>	310	\$38,650

Source: DLIR and BLS (May 2015 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates). Note: Data exclude the self-employed

A number of attempts have been made to quantify the economic impact of sports events held in Maui County and the state. In 2015, for example, a recent Maui Now article<sup>67</sup> estimated that the EA Sports Maui Invitational College Basketball tournament, held each year during Thanksgiving week, generated \$13.3 million in spending, mainly by 5,000 additional visitors. As Terry Vencl, executive director of the Maui Visitors and Convention Bureau stated in the same article, the nationally televised event “makes an immediate economic impact in our community and showcases the island for millions of viewers, and potential visitors, around the world.” The 2015 event was viewed by an estimated 4.5 million TV and online viewers. Since its debut in 1984, tournament officials say that the event has boosted the Maui County economy by more than \$190 million. Other major annual sports events include the PGA golf tournament (Hyundai Tournament of Champions) held each January at Kapalua, which raised \$341,000 for six Maui charitable beneficiaries in 2015, and over \$5 million since the inaugural event in 1999; the Maui Marathon in September, the XTERRA World Championship (December), the Molokai 2 Oahu

<sup>67</sup> <http://mauinow.com/2015/03/05/local-economy-gets-13m-boost-from-2014-maui-invitational/>

Paddleboard World Championship (July), and the Maui Makani Classic professional windsurfing competition (October).

Statewide, the Hawaii Tourism Authority (HTA) supports nearly 20 events that result in an estimated \$150 million in economic impact and generate more than 350 hours in national and international media exposure. Events on other islands, such as the NFL Pro Bowl (Honolulu), the PGA Sony Open (Honolulu), the Ironman World Championship (Kona, Big Island), the Honolulu Marathon and the Sheraton College Football Bowl game (Honolulu) generate visitor spending on Maui as visitors and participants also travel to other islands. The Pro Bowl alone drew almost 50,000 attendees and 11.4 million viewers, with an estimated economic impact of \$25.3 million in 2012. The Ironman triathlon generated \$21.7 million in the same year, and the PGA tour events in Hawaii, \$27.5 million. The 2011 Honolulu Marathon attracted over 20,000 registered runners, many from Asia (Japan in particular) and accounted for \$107.7 million in visitor spending. Sports event and visitor spending also translate into higher tax revenues for the state and counties. Most club and high school state athletic championships and tournaments are held on Oahu, but with improved facilities in Maui County, there is a consensus that “if you build it, they will come.”



# VISITOR INDUSTRY: Goals and Strategies

## Goal 1: Improve transportation access to and from other islands and beyond

*Objective: Broaden market potential*

### Strategies:

- Promote airlift increase
- Expand airport terminal capacity and runway capacity
- Develop ocean/ferry service

## Goal 2: Closely monitor Customs and Immigration issues and react accordingly

*Objective: Maximize benefit from new direct-flight visitor markets*

### Strategies:

- Support preclearance for Maui visitors from international markets
- Advocate if necessary for Customs and Immigration facility at Kahului Airport

## Goal 3: Keep ahead of the competition

*Objective: Preserve and enhance Maui's competitive advantage as a destination*

### Strategies:

- Improve infrastructure (roads, parks, restrooms, broadband, wireless etc.)
- Maintain clean beaches and parks
- Encourage investment and revitalization of visitor accommodations
- Create expedited "one-stop shop" for event permits
- Create a plan for sustainable eco-tourism that accounts for environmental protection and alien species mitigation (e.g. plants, fire ants, zika virus, coqui frogs, etc.) and draws on best practices worldwide (e.g. New Zealand)

## Goal 4: Maintain/and improve visitor satisfaction

*Objective: Strengthen Maui's unique reputation and standard of visitor experience*

### Strategies:

- Maintain and improve infrastructure (parks, beach sanitation, etc.)
- Support excellence in customer service experience ("with aloha")
- Improve road infrastructure to West Maui and Hana (Keanae to Kahikinui)

## Goal 5: Improve facilities (Maui as a "mature" destination)

*Objective: Maintain Maui's reputation as a premium, mature visitor destination*

### Strategies:

- Encourage/incentivize revitalization and upgrades to visitor accommodations
- Expedite permitting process for buildings, renovation

## VISITOR INDUSTRY: Cluster Analysis

Maui is one of the most popular visitor destinations globally and the island has won many awards as best island destination in the world. As the Maui County General Plan 2030 states, from the beginning of Maui’s visitor boom in the 1960s, “it has been County policy to maximize the economic benefits of the visitor industry by attracting higher-spending visitors rather than maximizing the number of visitors to the island.” The visitor industry serves as the main driving force of Maui County’s economic engine, and Maui County’s economy is more reliant on the cluster than other Hawai’i counties. It is therefore important to nurture a vibrant visitor industry while developing other clusters and diversifying to increase resilience. The industry is highly dependent on the health of the global economy as demonstrated in recent times by the economic impact of the events of 9/11 and the economic recession of 2008 to 2010. Measures of the importance of the visitor industry to Maui include the 40% of real property tax collections that it contributes and the 40% of direct employment (a percentage that has gradually declined since 2001) for which it accounts and an estimated further 25 to 30% in jobs supported indirectly by tourism. For example, considerable employment is generated in agriculture, health services, construction and real estate, entertainment and recreation.

The components of visitor industry employment over the last decade are as follows:

Table 26: Numbers Employed in the Visitor Industry, Maui County, 2000-2015

Year	Accommodation	Food Service	Retail	As of % of Total Employment
2000	11,400	6,900	8,300	39.2%
2001	11,400	7,200	8,800	39.1%
2002	10,850	7,250	8,750	39.3%
2003	11,100	7,350	8,850	39.9%
2004	11,550	7,750	9,300	40.4%
2005	11,700	7,950	9,500	39.7%
2006	11,800	8,350	9,700	39.7%
2007	11,600	8,350	10,000	38.8%
2008	11,700	8,100	9,750	38.8%
2009	10,600	7,300	8,900	38.5%
2010	10,400	7,600	8,800	36.9%
2011	10,800	8,100	8,800	37.1%
2012	11,400	8,600	8,900	39.0%
2013	11,700	8,900	9,100	39.2%
2014	11,900	9,200	9,300	38.5%
2015	11,800	9,500	9,700	38.5%

Source: DLIR

Changes in visitor numbers directly affect Maui County’s economy. As Table 27 and Chart 8 (below) show, visitor arrivals during the downturn (2009) dropped below two million for the first time since the 1980s; even with the drop-off following 9/11 in 2001, visitor numbers remained over the two million mark. In 2009, 23% fewer visitors came to Maui County compared to two years earlier. The decline in visitor numbers for Maui County during the downturn was steeper than the rest of the State. The decline in 2008 of 15.6% compared with 10.4% statewide; in 2009, the drop in Maui County was 9.2% compared with 4.4% for the state. In part, this reflects Maui’s higher accommodation rates and the greater reliance on visitors from the U.S. and especially California and the West Coast, compared to Oahu, which has a significant share of the Japanese and first-time visitor markets that were less affected by the downturn<sup>68</sup>.

Table 27: Visitor Arrivals by Air, Maui County, 1990 and 2000-2014

Year	Maui Co. (Total)	Maui Co. % growth	Moloka’i	Lāna’i
1990	2,284,862	----	103,477	46,052
2000	2,304,665	0.9%	64,559	87,663
2001	2,104,478	-8.7%	70,233	84,907
2002	2,139,427	1.7%	75,134	80,874
2003	2,196,447	2.7%	94,106	91,445
2004	2,207,826	0.5%	72,099	73,388
2005	2,346,840	6.3%	73,506	73,292
2006	2,498,234	6.5%	86,335	94,269
2007	2,522,043	1.0%	83,164	100,350
2008	2,129,042	-15.6%	68,883	80,867
2009	1,933,860	-9.2%	48,707	61,334
2010	2,134,902	10.4%	50,253	68,884
2011	2,211,413	3.6%	55,250	75,004
2012	2,353,329	6.4%	53,323	72,649
2013	2,401,733	2.1%	55,157	74,310
2014	2,449,714	2.0%	59,647	67,948
2015	2,527,204	3.2%	64,156	58,105

Source: DBEDT, Historical Visitor Statistics (<http://hawaii.gov/dbedt/info/visitor-stats>)

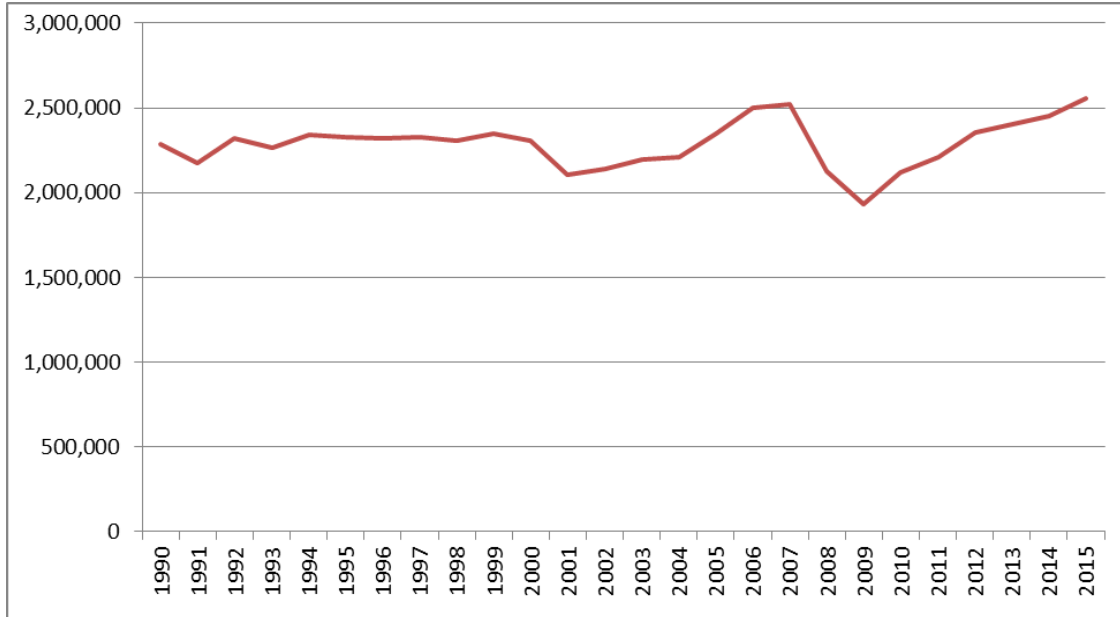
Visitor numbers for Maui County have steadily increased since the downturn, finally returning to the peak levels recorded in 2007 of more than 2.5 million (see Figure 15, Appendix 4). With hotel occupancy rates exceeding 70% there is some room for further increase in visitor numbers as Figures 16 and 17 in Appendix 4 suggest. A recent HTA report<sup>69</sup> for 2015 noted an increase of 15% in overall number of lodging units (rooms) over the previous year, due mostly

<sup>68</sup> Maui News, 8/22/09.

<sup>69</sup> Visitor Plant Inventory, Hawaii Tourism Authority, 2015.

to increases in vacation rental units, which more than made up for the decline of 7% in units in the previous two years.

Chart 8: Visitor Arrivals by Air, Maui County, 1990-2015



Source: DBEDT

Of particular note are the dramatic declines in visitor numbers for both Moloka'i and Lāna'i during the economic downturn of 2008 and 2009 (see Table 27). Visitor numbers dropped by 39% on Lāna'i and by more than 41% on Moloka'i, due in part to the closure of the largest business in the sector -- Moloka'i Ranch. The Ranch, with two hotel properties, a working livestock operation, and related businesses and amenities, was the island's largest employer. Visitor numbers for Moloka'i in 2015 had recovered to more than 30% above 2009 levels. The fall in Lāna'i visitor numbers in 2015 was connected to the temporary closure of the island's Four Seasons resorts for remodeling.

As dominant a cluster as the Visitor Industry is in Maui County's economy in terms of employment and revenue, wage data show that the cluster's service jobs are remunerated at levels below the average for all earners. Table 28 (below) shows that there are fewer occupations commanding above-average wages, and that the numbers involved in those occupations are relatively small. Conversely, some of the largest occupations in Maui County that are in the visitor industry have incomes significantly below the average. For example, retail salespersons represent about 4.3% of the employed workforce and earn only 66% of the average wage for all those employed; cashiers make up 2.5% of the workforce and earn 64% of the average. It should be noted that occupational statistics do not disaggregate job categories for many employees (for example, tour guides, equipment rentals, visitor activities).

Table 28: Average Wage and Numbers Employed, Selected Visitor Industry Occupations, Maui County, 2015

<u>Occupation</u>	<u>Numbers</u>	<u>Average Wage</u>
Lodging Managers	120	\$71,800
Food Service Managers	220	\$61,200
Chefs and Head Cooks	270	\$52,830
Bartenders	760	\$45,210
Cooks (Institutions, cafeterias)	160	\$43,650
Concierges	200	\$41,760
Customer Service Representatives	850	\$41,210
<b>Average Annual Wage (Maui County)</b>		<b>\$40,469</b>
Retail Sales Supervisors	1,050	\$40,280
Hotel, Motel and Resort Desk Clerks	550	\$39,500
Cooks (restaurants)	1,650	\$37,530
Waiters	2,920	\$36,430
Food Service First-line Supervisors	700	\$35,950
Dining Room Attendants and Bar Helpers	850	\$34,690
Counter and Rental Clerks	450	\$32,100
Reservation, Transportation Agents/Clerks	320	\$33,370
Baggage Porters and Bellhops	310	\$28,250
Dishwashers	900	\$26,740
Retail Salespersons	3,430	\$26,860
Restaurant Hostesses/Hosts	620	\$26,240
Cashiers	1,970	\$25,740
Food Preparation Workers	1,140	\$24,800

Source: DLIR and BLS (May 2015 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates). Note: Data exclude the self-employed. A number of occupations were not reported.

*Note that a Visitor Industry Strategic Plan for Maui is currently being prepared by the Maui Visitor Bureau and is expected to be completed in 2017.*

# HĀNA: Goals and Strategies

## SWOT

Opportunities identified included capitalizing to a greater extent on the daily influx of visitors by road, setting an example as a more self-sufficient local economy, and eco-tourism

### Goal 1: (Ag) Complete the Hāna Marketplace or a similar center for sustainable and local products

*Objective: Create a tangible focus for the local economy that will attract visitors and increase visitor spending*

#### Strategies:

- Define scope to bring the Hana Marketplace into compliance or identify alternate project
- Prepare a business plan for completion and identify funding sources

### Goal 2: (Ag) Create a community commercial kitchen, including packing and processing facility for Ag products, supplied by renewable energy

*Objective: Fill a community need and provide a source of value-added products*

#### Strategies:

- Identify a location
- Approach County (Office of Economic Development) to complete needs assessment
- Instigate design and program/operations development

### Goal 3: (Ag) Establish an Agricultural Cooperative

*Objective: Strengthen Hāna's agriculture cluster*

#### Strategy:

- Undertake feasibility study to assess outside/external needs for growers and distribution

### Goal 4: (Constr.) Partner with a Land Trust (e.g. Hawaiian Islands Land Trust or Habitat for Humanity) to direct plan to preserve open shoreline space and plan for affordable housing

*Objective: Preserve Hāna's unique environment while addressing housing shortage, ensuring perpetual affordability and using local labor*

#### Strategies:

- Identify partners and stakeholders for land donation to a Land Trust
- Commission conceptual design including affordable housing and rentals
- Establish partnerships between Land Trust and County, State, and Federal agencies
- For local labor, establish a job training center and mentorships for community (expand on University of Hawaii Maui Campus to include traditional trades)

## Goal 5: (Constr.) Fix “back road” (southern coast) through Kipahulu/Kaupo

*Objective: Improve access for visitors and residents, especially as an emergency route*

### Strategies:

- Obtain detailed status of road repair and reconstruction from County Dept. of Public Works
- Make representations to County for road to feature in road repair rotation

## HĀNA: Cluster Analysis

Hana is a rural and geographically isolated community at the eastern end of Maui island, reached mainly by the winding and scenic 52-mile long Hana Highway that stretches along Maui’s north shore; the road was completed in 1926. The economy of the community is driven largely by agriculture and the visitor industry (mainly day-visitors) and due to its relatively small size and distance from other communities, Hana is distinguished by unique characteristics and challenges. In common with other rural communities such as Moloka’i, Hāna has a significant subsistence economy that is both undocumented and unofficial and an informal trade and barter network.

The Hana Census Division, which includes communities from Kanae to the northwest and Kahikinui to the southwest, recorded a population of 2,291 in 2010, an increase of 24% over 2000 and 61% compared to 1980. The town of Hana itself (defined as a Census Designated Place) has grown by 80% since 1990 and approximately doubled since 1980.

Table 29: Hana Population (Hana Division and CDP), 1980-2010

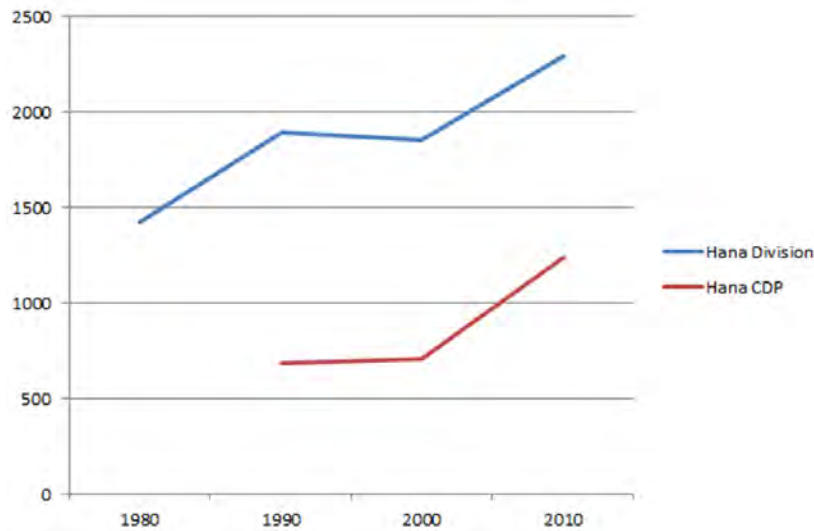
Year	Hana Division	Hana CDP <sup>70</sup>	Households	Av. Per Household
1980	1,423	-	-	
1990	1,895	683	589	3.2
2000	1,855	709	592	3.1
2010	2,291	1,235	823	2.8

Source: U.S. Census Bureau

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<sup>70</sup> Census Designated Place

Chart 9: Hana Population, 1980-2010



Source: Source: U.S. Census Bureau

Census data show the median age for the Hana CDP in 2010 was 30.9 compared with 39.6 for Maui County. Per capita income was \$18,763, compared with \$35,006 in Maui County; this figure for Hana was an increase of 28% over the 2000 figure of \$14,672. In contrast to Maui County as a whole, almost three-quarters of Hana’s population are recorded as Native Hawaiian or multi-racial; the equivalent proportion for the County is about one-third.

Table AP-21: Hana (CDP) Population by Ethnicity, 2010

Race	Percentage
Caucasian	22%
Asian	5%
Native Hawaiian/Pacific Islander	29%
Two or More Races	43%
Other	1%
Total	100%

Source: U.S. Census Bureau. DBEDT



# LĀNA‘I: Goals and Strategies

## SWOT

Opportunities identified included developing the population and economic base to a more sustainable level, becoming a benchmark sustainable, green community, and developing new activities and initiatives to benefit the economy.

### Goal 1: Increase career and economic opportunities

*Objective: Improve viability, sustainability and resilience of the community*

#### Strategies:

- Encourage businesses that will increase economic diversity
- Use technology to connect Lāna‘i to the world and tap into markets and demand and bring back to Lāna‘i (IT, GIS, etc.)
- Expand entrepreneurial programs and business assistance
- Explore new models/collaborations/partnerships to grow new business, e.g. ecotourism, cottage industries, health and wellness, commercial kitchen, co-op
- Determine assistance necessary to support growth of existing businesses; identify inhibitors (e.g. lack of water)
- Convene on-island emerging industry clusters
- Explore partnerships/collaboration to pursue opportunities for economic development initiatives

### Goal 2: Improve physical and service infrastructure to support population growth at a sustainable level while maintaining the uniqueness of the island

*Objective: Build the community to a “critical mass”*

#### Strategies:

- Encourage social health and other services appropriate to evolving island society
- Develop more resources, educational programs and activities to empower our youth
- Expand the housing inventory to include affordable rentals and ownership properties and a variety of housing options not solely reliant on the major landowner
- Develop water resources to provide additional capacity

### Goal 3: Diversify the visitor base

*Objective: Maximize visitor markets, especially in-state and short-term visitors*

#### Strategies:

- Collaborate with resort management to support clientele with products and services from the Lāna‘i business community
- Explore additional revenue generation from hunting activity

- Encourage short-term rental and Bed and Breakfasts to obtain permits to expand visitor accommodations
- Explore additional revenue generation from day-visitors
- Expand sports and recreation tourism (e.g. ocean, hiking, fishing, golf, riflery, archery, tennis), voluntourism, cultural tourism, ag tourism, eco-tourism
- Support expansion of destination sporting events with marketing
- Support inventory of moderately priced, legal accommodations to encourage local visitors

## LĀNA‘I: Cluster Analysis

Lāna‘i is known as “The Pineapple Island” because at one time it produced 75% of the world’s pineapples; production ended in 1992. In 2012, Larry Ellison, co-founder and Chairman of the Board of Oracle, purchased 98% of Lāna‘i island from Castle & Cooke; the remaining 2% is owned by individuals, the County of Maui, and the state of Hawaii. The mission of Ellison’s company, Pūlama Lāna‘i, is to “develop, advance, and nurture a sustainable future for the island of Lāna‘i”, and Ellison has stated that his goal is to have the island be “the first economically viable, 100% green community.”

Since the transition in ownership, several renovation projects have been completed, including the community theater (now state-of-the-art,) Hospice House, pharmacy, physical therapy service, housing, and community pool. Both major resorts were closed for renovation in June 2015. The Four Seasons Resort Lāna‘i at Manele Bay – the property originally opened in 1991 -- reopened in February 2016 as a 217-room premium destination, and the Four Seasons Lāna‘i The Lodge at Koele, dating from 1990 and which temporarily accommodated construction personnel working on the Manele Bay resort, will reopen later in 2017. Future plans by Pūlama Lāna‘i involve adding an expanded airport, tennis facilities, and improved infrastructure.

The population of Lāna‘i in 2010 is close to that in 1950, and although there was a significant increase between 1990 and 2000 reflecting the addition of the two main hotel properties (now Four Season Resorts.) This relative stability is in contrast to the consistent population growth for Maui County as a whole.

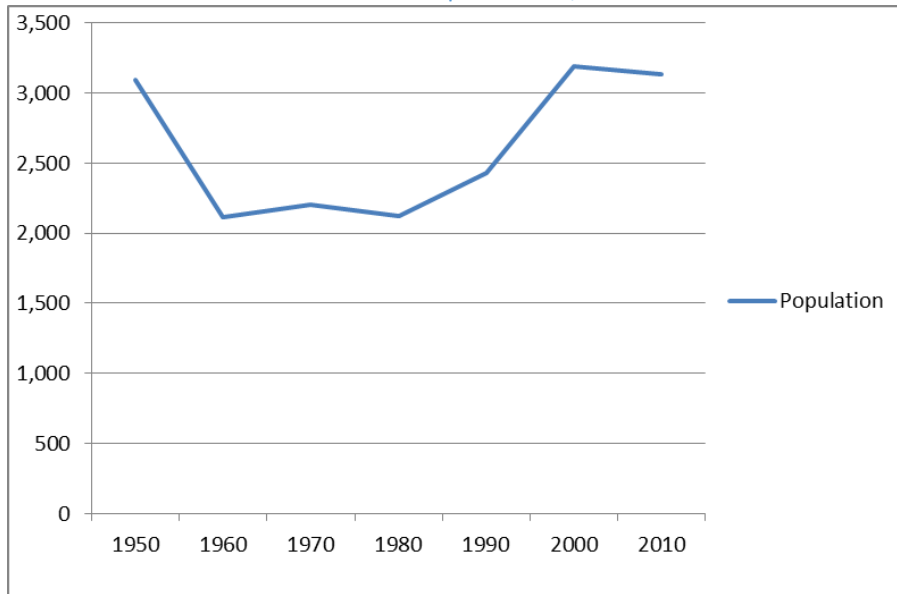
Table 31: Lāna‘i Population, 1950-2010

Year	Population	% Change
<b>1950</b>	3,091	
<b>1960</b>	2,115	-35%
<b>1970</b>	2,204	+4%
<b>1980</b>	2,119	-4%
<b>1990</b>	2,426	+15%
<b>2000</b>	3,193	+32%
<b>2010</b>	3,135	-2%

Source: U.S. Census Bureau

It is anticipated that the population of Lānaʻi will grow in the future as additional facilities and infrastructure are put in place, with plans to create a more sustainable “critical mass.” All but about 1% of the island’s population live in Lānaʻi City.

Chart 10: Lānaʻi Population, 1950-2010



Source: U.S. Census Bureau

Census data show that more than half of the population of Lānaʻi classify themselves as Asian, with a majority of Filipino heritage, having settled on Lānaʻi originally to work on the pineapple plantation.

Table 32: Lānaʻi Population by Ethnicity, 2010

Ethnicity	Lānaʻi	Maui County
Caucasian	14%	36%
Asian	56%	29%
Native Hawaiian/Pacific Islander	7%	11%
Two or More Races	23%	23%
Other	>1%	1%
<b>Total</b>	<b>100%</b>	<b>100%</b>

Source: U.S. Census Bureau

Department of Labor and Industrial Relations (DLIR) employment data show a significant long-term reduction in the job count on Lānaʻi that was particularly pronounced with the downturn that began in 2008. Between the pre-recession peak in 2007 and the employment low-point in 2011, the job count fell by as much as 25% (see Table 33):

Table 33: Lānaʻi Job Count, 2000-2015

Year	2000	2001	2002	2003	2004	2005	2006	2007
<b>Job Count</b>	1800	1800	1750	1700	1650	1650	1750	1750
Year	2008	2009	2010	2011	2012	2013	2014	2015
<b>Job Count</b>	1700	1600	1350	1300	1400	1500	1500	1400

Source: DLIR

DLIR data show that about half of the island’s employed are engaged in Leisure and Hospitality, primarily at the resort properties:

Table 34: Lānaʻi Job Count by Industry, September 2015

Industry	Job Count
<b>Private:</b>	1,200
<b>Leisure and Hospitality</b>	700
<b>Trade, Transport, Utilities</b>	100
<b>Financial Activities</b>	100
<b>Professional/Business Services</b>	200
<b>Other</b>	100
<b>Government</b>	200
<b>Total</b>	<b>1,400</b>

Source: DLIR

Note: “Other” category includes non-government educational and health services, social assistance, construction, agriculture, fishing, forestry, and manufacturing.

Further disaggregated data on employment by industry is available for Lānaʻi in Census years. 2010 Census data showed the importance to the Lānaʻi economy of the visitor industry, with 60% of all employment in the accommodation and food service sector:

Table 35: Lānaʻi Employment by Industry, 2010

Industry	Numbers Employed
<b>Accommodation, Food Services</b>	574
<b>Management (companies, business)</b>	118
<b>Arts, Entertainment, Recreation</b>	55
<b>Retail and Wholesale Trade</b>	47
<b>Real Estate, Rental/Leasing</b>	47
<b>Healthcare and Social Assistance</b>	27
<b>Construction</b>	20
<b>Administration, Waste Management</b>	18

Source: U.S. Census Bureau

Notes: Includes jobs covered by Unemployment Insurance; includes Federal jobs; excludes State and County jobs.

# MOLOKA'I: Goals and Strategies

## SWOT

The Moloka'i Focus Group acknowledged that opportunities remained consistent with the October 2010 CEDS report: Development of agriculture and sustainability initiatives, improving food security, and simplifying and facilitating the permitting and SMA process.

### Goal 1: Fast-track and improve permitting for County and SMA process and transfer more authority to Moloka'i (especially for restoration and improvement projects)

*Objective: Facilitate entrepreneurship, business development, and residential improvement*

#### Strategies:

- Create full-time staff for Moloka'i Satellite Office with improved communication and authority
- Establish corresponding liaison function in Wailuku (secondarily, office could also serve other permitting matters)
- Establish response and approval time limits

### Goal 2: Establish an integrated plan for Kaunakakai as a Waterfront Town

*Objective: Transform population hub for benefit of residents, visitors, and the local economy*

#### Strategies:

- Finish Malama Park, Including a Visitor/Cultural Center and Pavilion
  - Involve Moloka'i STEM Students in Design and Planning Process (e.g. CAD, GIS)
- Undertake feasibility study for cottage industry Artisan Park
- Establish a community-based nonprofit to manage Malama Park
- Support expansion of destination sports events (e.g. canoe races) with marketing
- Encourage relocation of fuel tanks to Pala'au Industrial Park

### Goal 3: Partner with the National Park Service to restore traditional use of Waikolu Valley

*Objective: Create a model of self-sufficiency and sustainability for other valleys*

#### Strategies:

- Initiate dialogue with National Park Service on Kalaupapa planning process toward restoring traditional use of Waikolu Valley as model for economic value of food security for the State
- Keep Hawaii's Congressional Delegation informed about this dialogue as well as Department of Land and Natural Resources, Office of Hawaiian Affairs, and the Moloka'i Planning Commission
- Establish performance measurements

**Goal 4: Fix the Causeway with flow-through culverts to remediate South Shore reef sedimentation**  
*Objective: Restore a key feature (at Kaunakakai Harbor) of Moloka'i's unique marine environment which is an integral part of Moloka'i's subsistence economy*

**Strategies:**

- Review current status with Department of Harbors, County, and Environmental Protection Agency to determine accountability, and request timely response to this existing manmade disaster (e.g. 1 month)
- Approach Economic Development Administration and other Federal and State agencies and foundations for funding to protect the health of the reef

## MOLOKA'I: Cluster Analysis

As one member of the Moloka'i CEDS focus group observed, "Moloka'i has very different issues than the island of Maui." The Moloka'i business community has expressed concern that the economy is suffering from lack of investment and static or declining sales, and that specific actions are necessary to even maintain economic viability.

Population data and many economic indicators for Moloka'i are only available in decennial Census years. The population of Moloka'i has grown by 46% during the 50 year period 1960 to 2010, compared to the quadrupling for Maui County as a whole. As Table 36 shows, the consistent growth of the past few decades was no longer evident between 2000 and 2010. This was due in large part to out-migration, to Maui island, Oahu, other Hawaiian islands, and the mainland as economic opportunities proved hard to come by and unemployment rates significantly exceeded Maui and the rest of the state.

Table 36: Moloka'i Population, 1960-2010

Year	Population	% Change
1960	5,023	-4.9%
1970	5,261	4.7%
1980	6,049	15.0%
1990	6,717	11.0%
2000	7,404	10.2%
2010	7,345	-0.8%

Source: U.S. Census Bureau

Note: Includes Kalawao County (population of 90 in 2010)

As Table 37 (below) shows, the ethnicity of Moloka'i residents differs from that of Maui County as a whole. Two-thirds report themselves as Native Hawaiian or with ethnicity of two or more races; for Maui County as a whole, the proportion is only one-third. Conversely, whereas Asians and Caucasian make up two-thirds of Maui County's population, these groups account for only one-third of Moloka'i's.

Table 37: Moloka‘i and Maui County Population by Ethnicity, 2010 Census

Ethnicity	Moloka‘i	Maui County
Native Hawaiian/ Pacific Islander	36%	11%
Two or More Races	31%	23%
Asian	18%	29%
Caucasian	14%	36%
African American/ Other	>1%	1%

Source: U.S. Census Bureau, DBEDT

Historically, Moloka‘i has had a delicate, tenuous economy, particularly since the closure in the 1970s and 1980s of the pineapple plantations that long dominated its economy. There is evidence of a significant subsistence economy that is both undocumented and unofficial, and which constitutes a significant economic driver. Many residents continue cultural traditions of hunting and gathering, both on land and in the ocean, to provide food for the family (as opposed to purely recreational purposes). In addition, there is an informal trade and barter network and a “cash economy” typical of rural communities with limited resources. Over recent years, the island has benefited from economic diversification and a strong sense of entrepreneurship, including both small and larger-scale agricultural enterprises. At the same time, several events over recent years have had a negative effect on Moloka‘i’s economy. The most significant of these was the closure in 2008 of the 61,000 acre Molokai Ranch and the loss of over 100 jobs. Not only was the Ranch the island’s largest employer, but its closure also meant the demise of community amenities: a hotel a beach resort, a golf course, gas station, movie theater, and rodeo arena. Several other businesses also shut their doors as a result.

Table 38: Moloka‘i Labor Force by Industry, 2010

Industry	Job Count	% of Labor
Agriculture, Forestry, Fishing, Hunting	446	30.7%
Healthcare, Social Assistance	280	19.3%
Retail Trade	201	13.8%
Accommodation & Food Services	144	9.9%
Public Administration	58	4.0%
Transportation/Warehouse	51	3.5%
Construction	45	3.1%
Finance & Insurance	25	1.7%
Real Estate	24	1.7%
Professional, Scientific, Tech Services	16	1.1%
Wholesale Trade	16	1.1%
Manufacturing	12	0.8%
Misc. Services	94	4.6%
All Other	42	2.9%
<b>Total Primary Jobs</b>	<b>1,454</b>	<b>100%</b>

Source: U.S. Census Bureau

Note: Includes jobs covered by Unemployment Insurance; includes Federal Jobs; excludes State and County Jobs (approx. 500+)

As of 2010, as the economic downturn was ending, five industries accounted for about 80% of Moloka'i's employment: Agriculture, government (State and County), healthcare and social assistance, retail trade, and accommodation and food services. Census data (Table 38) and Department of Labor data (Table 39) together show the significance of government employment and agriculture as the two most important employers on the island.

Table 39: Moloka'i Job Count, 2008-2014

Industry	2008	2009	2010	2011	2012	2013	2014
<b>TOTAL Non-Agriculture</b>	1,800	1,750	1,600	1,500	1,600	1,600	1,700
<b>Private Sector</b>	1,200	1,750	1,600	1,500	1,600	1,600	1,700
<b>Goods Producing</b>	*	*	*	*	*	*	100
<b>Natural Resources, Construction</b>	**	**	*	*	*	*	*
<b>Manufacturing</b>	**	**	**	**	**	**	**
<b>Service Providing</b>							
<b>Retail Trade</b>	200	200	200	200	200	200	200
<b>Transportation &amp; Utilities</b>	*	*	*	*	*	*	*
<b>Education &amp; Health Services</b>	400	350	300	300	300	400	300
<b>Leisure &amp; Hospitality</b>	350	200	200	200	200	200	200
<b>Financial Activities</b>	*	*	*	*	*	*	*
<b>Other Services</b>	100	100	100	100	100	100	*
<b>Government</b>	600	600	500	500	500	500	500
<b>Federal</b>	*	*	*	*	*	*	**
<b>State</b>	400	400	400	300	300	300	300
<b>State Education (DOE &amp; UH)</b>	200	200	200	200	200	200	200
<b>Local (County of Maui)</b>	200	200	200	200	200	100	100
<b>Agriculture</b>	150	200	300	n/a	n/a	n/a	n/a

Source: DLIR

Notes: Wage and Salary Jobs; \*50-100; \*\*Fewer than 50

Census data also show that 27% of those employed on Moloka'i earned less than \$15,000 per year; 50% earned \$15,000 to \$40,000; and 23% earned more than \$40,000, the County average.



# Goals and Strategies: Evaluation and Performance Measures

No plan can succeed without good measures of success. Ideally, performance measures relate directly to stated goals, use data that can be easily collected at regular intervals, and lend themselves to benchmarking against historical performance, or against the performance of others. This section focuses on the quantifiable measurements that can measure progress toward economic development goals over the next five to ten years. However, not all of the goals articulated in this CEDS lend themselves to such measurements. Therefore, the following indicators should not be considered all-inclusive, nor the final word on evaluation of the county's economic development. Rather, these measures should be used in conjunction with qualitative observations about the environment, culture, and quality of life to gauge Maui County's progress toward its desired economic future:

- Creating new jobs through activities identified in CEDS projects
- Keeping the average annual unemployment rate on each island below its historical average from 2000 to 2016 (5% for Maui and Lanai, and 8% for Molokai)
- Increasing the percentage of jobs that pay a living wage
- Increasing median income as a by-product of job creation
- Maintaining market share in tourism compared to recent years, both in terms of visitor numbers and expenditures
- Mitigating net outmigration of residents, especially in younger age groups
- Increasing the inventory of affordable housing
- Increasing resident homeownership rate compared to recent years
- Stabilizing the average cost of renting
- Making improved connections between industries and employers, high schools and the college system. Offer stronger programs in technical and high-skill fields including 4-year programs where necessary
- For each island in Maui County, improving the proportion of adults with a Bachelor's degree or higher
- For each island in Maui County, improving the percentage of graduating high school seniors progressing to higher education so that it exceeds the Statewide average
- Balancing efforts to grow the local economy against consideration of the demands on existing infrastructure (e.g., roads, sewers) and natural resources (e.g., water, energy)
- Balancing efforts to grow the local economy against the need to maintain a culture and lifestyle consistent with the values and priorities of Maui County's residents
- Ensuring that existing essential systems for transportation, water, energy, etc., are adequately maintained, efficient, and secure

- Ensuring that comprehensive plans exist for the use of water and energy resources, and that they are appropriately distributed and used
- Increasing the proportion of food grown and consumed in Maui County
- Ensuring that National and State Parks, historic and cultural sites, coastal and marine resources are well preserved, maintained, and utilized in appropriate ways
- Encouraging public and private stakeholders to invest in preservation and restoration (where appropriate) of natural resources, cultural and historic sites
- Expanding renewable energy production
- Expanding recycling industry both in tonnage and as a proportion of total waste

# Appendix 1: Survey of Residents Attending the 2015 Maui Fair

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As an initial step in gathering community opinion and perceptions on the relative importance of Maui County's economic drivers, or clusters, in providing economic opportunity, the Maui Economic Development Board (MEDB) surveyed residents attending the 93<sup>rd</sup> Annual Maui Fair held in September 2015. The purpose of the survey was to inform the CEDS Strategy Committee in its analysis and determination of key economic drivers.

The Maui Fair (formerly the Maui County Fair), held in Wailuku, the county seat, attracts a crowd of nearly 100,000 people each year, almost all of whom are Maui residents. In addition to amusement rides and carnival games, the Fair features a variety of vendor and special interest booths, which allow residents and visitors alike to learn more about what is happening in the Maui community. Each year, MEDB has a booth and conducts a survey to take the pulse of the community. Aligning with the 2015-16 CEDS process, the 2015 Maui Fair survey provided residents with the opportunity to review eight economic clusters identified by the Strategy Committee and rate those clusters by importance in offering economic opportunities in the future.

## Survey Format

A copy of the survey respondents were asked to complete is shown below. The survey was structured to provide information in three categories:

- Respondents were asked to cite which of eight clusters offered opportunities for Maui's economy. Respondents were not restricted in their choices so that multiple clusters could be recorded. In addition, respondents were invited to list other activities or clusters that they perceived could offer economic opportunity.
- Respondents were asked to give reasons why they chose the highest priority economic clusters.
- Personal information was requested (this was not mandatory). Data were sought on gender, years spent living on Maui, location, and occupation. Those offering responses that did not live in Maui County did not complete the survey.

Figure 1: MEDB County Fair Survey, 2015



### Maui County Economy Survey

I. Which of the following opportunities should we pursue for Maui County's economy?  
 (Please indicate your priority with 5 being the highest priority and 1 being the lowest priority.)

	1	2	3	4	5
Agriculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Construction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creative Industries*	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health and Wellness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science, Innovation, and Technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sports and Recreation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visitor Industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\*Creative Industries include arts and arts-oriented innovation, entertainment, media, design, etc.

II. For those you chose as "highest priority," please explain why?

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**ABOUT YOU (optional)**    Gender:  FEMALE    MALE   Age: \_\_\_\_\_

Years Living in Maui County: \_\_\_\_\_    Where do you live? \_\_\_\_\_

What is Your Occupation?

Government    Business (incl. self-employed)    Non-Profit    Retired

Student    Other: \_\_\_\_\_

### Survey Demographics

A total of 1,473 surveys were taken over the four-day event (Thursday 24 September through Sunday 27 September.) This represents almost 1% of the population of Maui. The survey was mostly self-reporting -- respondents filled in survey information themselves, unless they requested help to do so.

56% (827) of the respondents were female and 37% (546) were male; 7% (100) provided no information on gender.

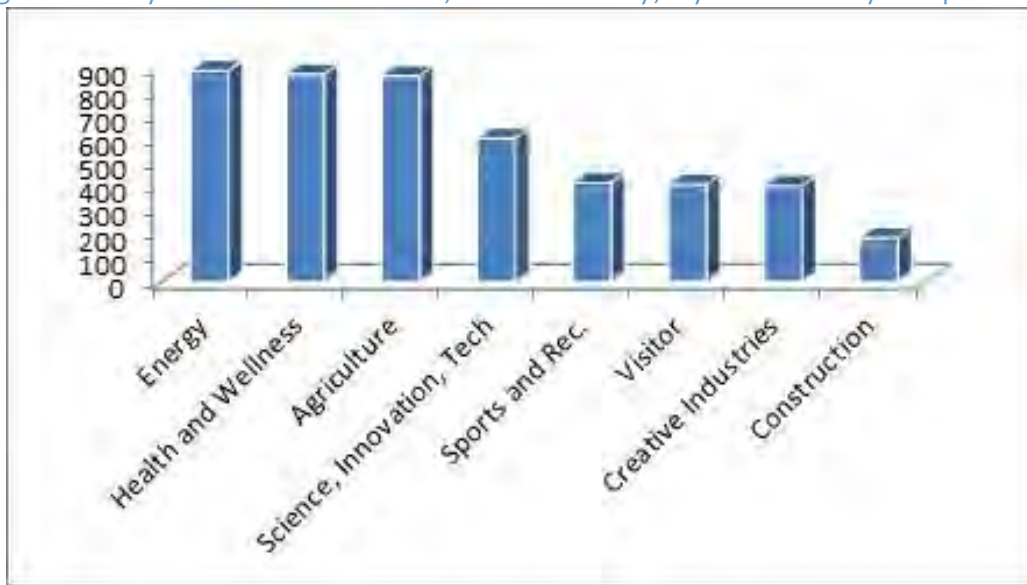
Of the total who provided information on years lived on Maui (1,242), a majority (54%) had lived here for 24 years or less; this number includes those born on Maui aged under 25. A further 33% had lived here for between 25 and 49 years, and 13% for at least 50 years.

In terms of location, 40% of survey respondents live in Central Maui (where Wailuku is located), 22% live in Upcountry Maui, 12% live in South Maui, and approximately 8% live in West Maui. The remaining 18% did not specify location or live off-island – four reported living on Molokaʻi or Lānaʻi.

## Survey Results

Across all demographics, the three clusters in Maui County perceived to offer the most economic opportunity moving forward were Energy, Health and Wellness, and Agriculture. The overall ranking of clusters for all respondents is shown in Figure 1 below:

Figure 2: Key Economic Clusters, Maui County, by Fair Survey Respondents



As anticipated, different demographic groups cited different top priorities. For example, residents living in the more rural and agricultural Upcountry Maui reported Agriculture as the priority cluster. Contrastingly, residents of leeward South Maui, one of the sunniest and warmest areas of Maui, rated Energy as the top priority. Both younger respondents of 24 years and under, as well as older respondents (75 years or older), rated Health and Wellness as the priority cluster.

Overall, female respondents rated more clusters as priority economic drivers than men, resulting in the Agriculture, Creative Industries, Energy, Health and Wellness, Sports and

Recreation, and Visitor Industry categories to receive approximately twice as many mentions by women than by men.

The Construction cluster received significantly fewer mentions as an economic driver than any other. There are multiple factors, anecdotally, that contributed to this result, such as mixed public perceptions of ongoing development, road building, and new commercial projects especially in Central Maui. Additionally, respondents may not have considered housing as a part of the Construction cluster. Affordable housing is a “live” issue of public concern in Maui County, but as Strategy Committee members noted, if Housing had been explicitly linked to the Construction cluster, that category would likely have received more attention as a priority.

Overall, respondents recognized the importance of Maui County’s principal economic drivers and made numerous comments consistent with the Vision Statement and SWOT contained in this report. Themes cited that emerged and recurred in survey responses included the need for self-sufficiency, sustainability and resiliency, the positive qualities of Maui’s unique environment allowing for innovation and collaboration, the importance of protecting our environment and cultural resources, and the strong desire for Maui County to thrive holistically.

Finally, approximately 10% of respondents offered their own suggestions for “Other” clusters that could provide economic opportunity. These ranged widely, with education and/or training, affordable housing, and culture the most common “write-in” suggestions. Transportation, water storage, and environmental conservation were also cited multiple times, as well as suggestions ranging from marine wildlife, homelessness, and recycling.

# Maui Fair Survey Highlights



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## Appendix 2: Focus Group Participants

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Alphabetical Listing:

Last Name	First Name	Affiliation
Agcaoili	Monty	Ka Ipu Kukui Fellow Program
Agtarap	Epi	Lānaʻi Resident
Akinaka	Elias	Akinaka Inc.
Alakai	Cliff	Maui Medical Group
Alvarado	Annie	Pacific Whale Foundation
April	Jay	Akaku
Armstrong	J.D.	Institute for Astronomy
Balangitao	Joe	Maui Interscholastic League (MIL)
Ball	Kim	Hi Tech Surf Sports
Ballantyne	Ian	Hāna Tropicals
Betsill	Dwayne	Betsill Brothers Construction
Bhattacharya	Debassis	University of Hawaiʻi Maui College
Bicoy	Julie	Molokaʻi Visitors Association
Bisset	Walter	Maui Chamber Orchestra
Breman	Joe	International Underwater Explorations, LLC
Buchter	Alix	Naish Sails
Buckingham	Charlie	Colliers International
Bunn	Bradley	Lānaʻi Chamber of Commerce
Chong	Richard	Maui High Performance Computing Center
Chun	Grant	A&B Properties
Cunningham	Jud	Aloha House
Dascoulias	Alexis	Maui Onstage
Davis	Ned	Maui Innovation Group
Day	Cynthia	Hana Resident
DeJetley	Alberta	Agriculture, Publisher
Devey	Graham	Maui Economic Development Board
Dinkelacker	Jamie	Google Niantic Labs
Dowling	Everett	Dowling Co.
Dread	Marty	Five Corners Records
Drummond	Douglas	Lumeria Maui
Emerson	Jon	Sports Events (organizer, timer, etc.)
Enomoto	Walter	Hawaiʻi Energy Leidos
Filipovic	Aleks	Valley Isle Soccer Academy
Gammie	Paul	Gammie Homecare
Gima	Kelli	Lānaʻi Planning Commission
Haliniak	Barbara	Business Depot
Haller	Marion	Realtors Association of Maui (RAM)

Harmon	Peggy	Maui Academy of Performing Arts (MAPA)
Helle	Barry	Wailea Golf, Radio Sports Broadcaster
Helle	Jordan	Radio Sports Broadcaster, MIL Referee
Hercik	Cecilia	Olavine Spa
Hew	Garret	East Maui Irrigation, HC&S
Hew	Mary	Kaiser Permanente
Higgins	Clare	Hospice Maui
Jakeway	Rebecca	Om Maui
Janes Brown	Paul	Writer, Performer
Jencks	Charlie	Pacific Rim Land
Johnson	Jerry	Paddler's Inn
Kane	Dain	ORMAT Technologies, Inc.
Kapua'ala	Tricia	Hawai'i Soccer Federation
Kapua'ala	Vern	Hawai'i Soccer Federation
Kelso	T.S.	Analytical Graphics, Inc.
Keyser	Harold	University of Hawai'i Maui College, Soil Expert
Killhour	Caroline	Hui No'eau Visual Arts Center
Kimizuka	Kevin	State of Hawai'i Dept. of Labor and Industrial Relations
Kobayashi	Kal	County of Maui
Kramp	Maggie	Maui Soil and Water Conservation District
Kristiansen	Michael	Entabeni Gardens
Kristiansen	Terry	Entabeni Gardens
Kuoha	Iolani	DOE, Moloka'i Middle School
LaGoy	Greg	Hospice Maui
Lawson	Todd	KaiHonua LLC
Leahy	Jim	Haleakala Solar
Liu	Peter	Mbloom
Lo	Wes	Maui Memorial Medical Center
Lono	Dawn	County of Maui
Mardfin	Ward	Hana Resident
McCleod	Doug	Former Energy Commissioner, County of Maui
McCrary	Lynn	Pulama Lāna'i
McNeff	Mat	Maui Electric Company
Mentzel	Chris	Energy Consultant
Meidell	Scott	Haleakala Ranch, Maui Soil and Water Conservation District
Munsell	Linda	County of Maui, Housing & Human Concerns
Murata	Kiyoshi	Architect
Nakahata	Mae	HC&S, Maui Soil and Water Conservation District
Neiss	Jim	Maui Architectural Group
Nishikawa	Clayton	Nishikawa Architects
Notestone	Michele	American Medical Response
Okamoto	Linda Kay	Okamoto Realty
Opgenorth	Michael	Kahanu Gardens

Rayner	Andrew	Hāna Business Council
Reed	Tom	Aloha Recycling
Reilly	Pat	Lānaʻi Resident
Rice	Wendy	Kaʻonoʻulu Ranch
Ritte	Walter	Native Hawaiian Activist, Educator
Rixey	George	Architect
Rogers	Doug	Construction, Molokaʻi Planning Commission Vice-Chair
Ross	Gerry	Kupaʻa Farms Coffee
Ryan	Sandy	Maui Economic Development Board
Saka	Patrick	Maui Memorial Medical Center
Santiago	Cynthia	Ohana Makamae
Scharnhorst	Anne	University of Hawaiʻi Maui College
Schreck	Jerrod	HC&S Renewable Energy
Shimabuku	Ray	IBEW Local 1186
Shirkhodai	Ray	Pacific Disaster Center
Soulas	Kathi	Hawaiian Paddle Sports
Spenser	Robbie	Eha Pictures
Stoltzfus	David	Monsanto
Suzuki	Jennifer	Maui Waena Intermediate
Suzuki	Sharon	Maui Electric Company
Suzuki	Don	Morikawa and Associates
Ulibarri	Laura	Maui High Performance Computing Center
Vasey	Martin	Hāna Farms, Hāna Business Council
Vuori	Tapani	Maui Ocean Center
Waros	Teri	Kalele Books
Watanabe	Warren	Maui Farm Bureau
Watanabe	Maria	Import Gifts
White	Melinda	Maui Economic Development Board
Wilbur	Lindsey	Akimeka
Williams	Stacie	U.S. Air Force
Wright	Carolyn	Maui Academy for Performing Arts (MAPA)
Yamamura	Kenneth	County of Maui Agricultural Specialist
Yumol	Ella	Ka Ipu Kukui Fellow Program
Zemen	Albert	Hāna Ohana Marketplace

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## Appendix 3: Hāna and Moloka‘i Vision Statements

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The Hāna and Moloka‘i Focus Groups crafted their own Vision Statements as they voiced the sentiment that their communities are fundamentally different to the rest of Maui County and that their values and alternative vision should reflect this.

### Hāna:

*Hāna is a community built on strong values of ‘ohana (family), rich cultural heritage, and the natural and physical environment. We aim to preserve these unique qualities while diversifying and collaborating on community-centric projects, which provide reliable jobs, housing, and education for our residents. We use our isolation to our advantage by improving our self-sufficiency and maximizing our potential within our resources.*

### Moloka‘i:

*We envision a Moloka‘i that leaves for its children a visible legacy: An island momona (abundant) with natural and cultural resources, people who kokua (help) and look after one another, and a community that strives to build an even better future on the pa‘a (firm) foundation left to us by those whose iwi (bones) guard our land.*

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# Appendix 4: Supporting Economic Data Analysis for Maui County

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Consultant economist Paul Brewbaker (TZ Economics) briefed the Maui County CEDS Strategy Committee in October 2015 on strategic issues affecting the Maui County economy. Excerpts from his presentation are included in this appendix.

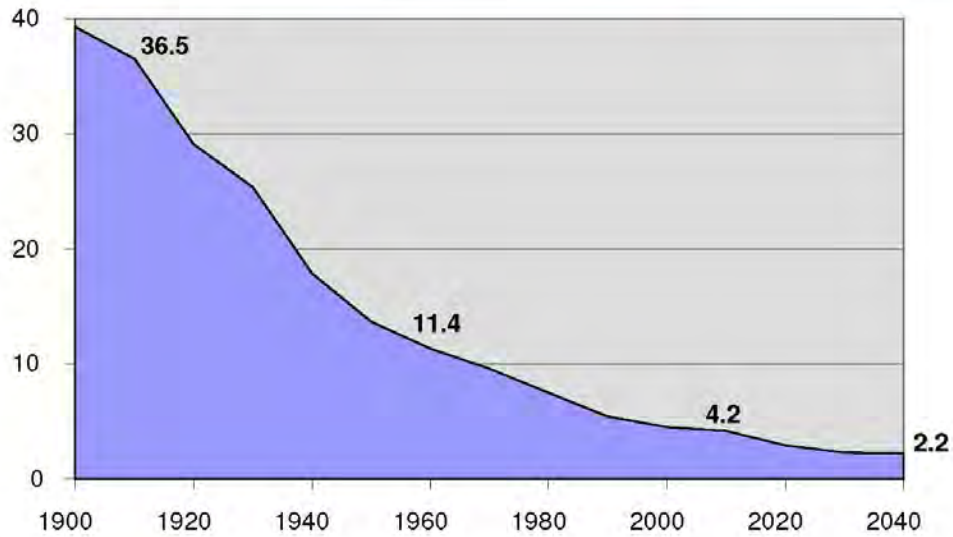






Figure 2: Ratio of Working Age to Retirement Age Populations, Hawaii, 1900-2040

### Ratio of Hawaii working-age population (20-64) to traditional retirement-age population (65+)



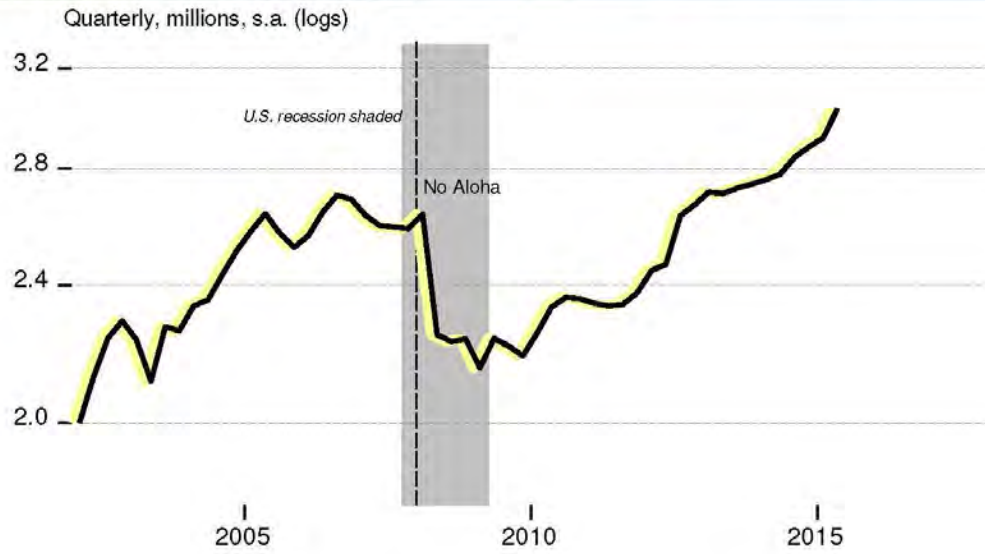
Slide copyright 2015 TZ

Sources: Bob Schmitt *Historical Statistics of Hawaii* (1976) UH Press, U.S. Bureau of the Census, Hawaii DBEDT Long Range Projections 2040 Series

65

Figure 3: Scheduled Air Passenger Seats, Hawaii, 2000-2015

### Scheduled air passenger seats statewide total: carriers have been enabling expansion



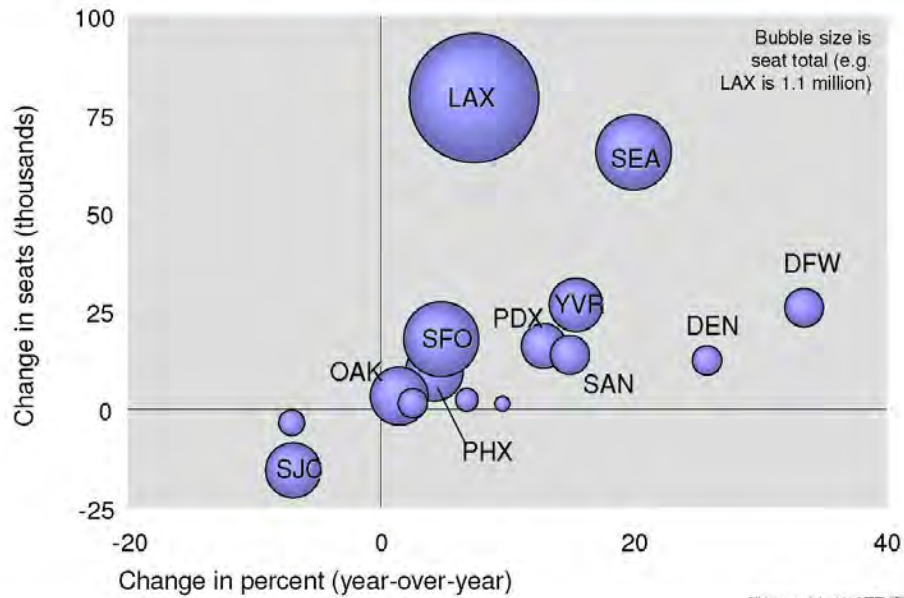
Slide copyright 2015 TZE

Source: Hawaii Tourism Authority, Hawaii DBEDT, BEA; seasonal adjustment by TZE

10

**Figure 4: Mainland Airport of Departure for Neighbor Island Visitors, 2014 Compared to 2013**

**N. Isle non-stop seats grew in 2014: more lift enabled by ability to raise lodging utilization**

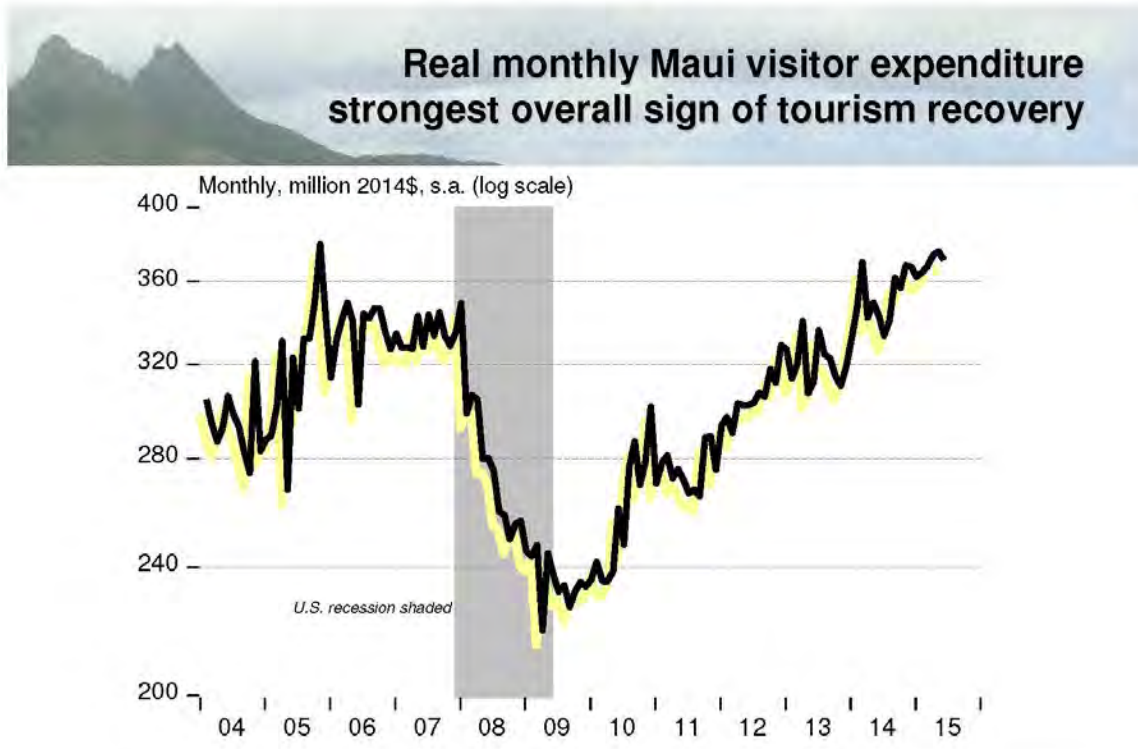


Sources: Annual data from Hawaii Tourism Authority, proportionate increase for year 2014: 8.2%

**Key:**

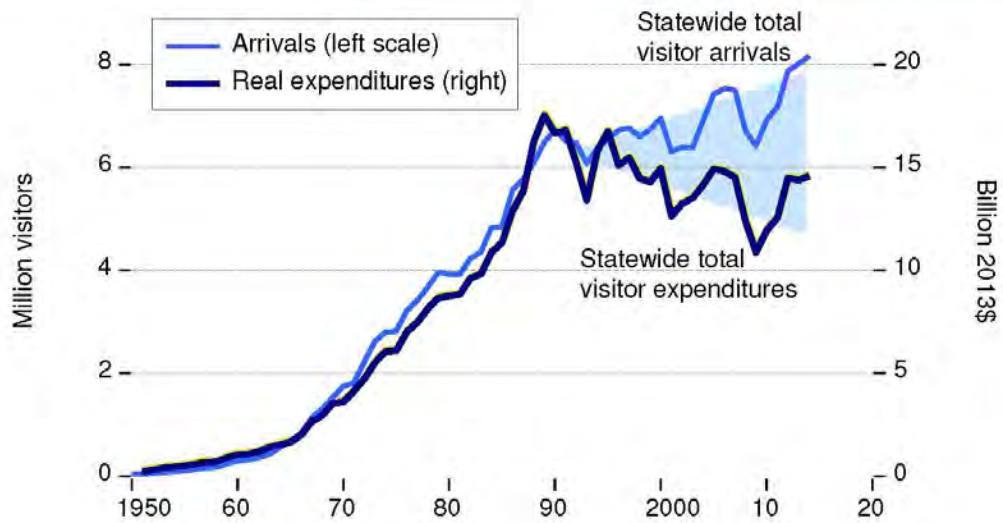
- DEN Denver
- DFW Dallas-Fort Worth
- LAX Los Angeles
- OAK Oakland
- PDX Portland
- PHX Phoenix
- SAN San Diego
- SEA Seattle-Tacoma
- SFO San Francisco
- SJC San Jose
- YVR Vancouver

Figure 5: Monthly Visitor Expenditures, Maui County, 2004-2015



Slide copyright 2015 TZE  
Source: Hawaii Tourism Authority, Hawaii DBEDT, BEA; seasonal adjustment, deflation using U.S. personal consumption expenditure deflator by TZE 9

Figure 6: Visitor Expenditures and Arrivals, Hawaii, 1950-2013



Slide copyright 2015 TZE

Sources: Hawaii Tourism Authority, Hawaii DBEDT (monthly visitor arrivals and expenditure estimates), Bureau of Labor Statistics (annual Honolulu consumer price index); deflation calculations by TZE

Figure 7: Visitor Lodging Daily Room Rates, Maui County, 1980-2015

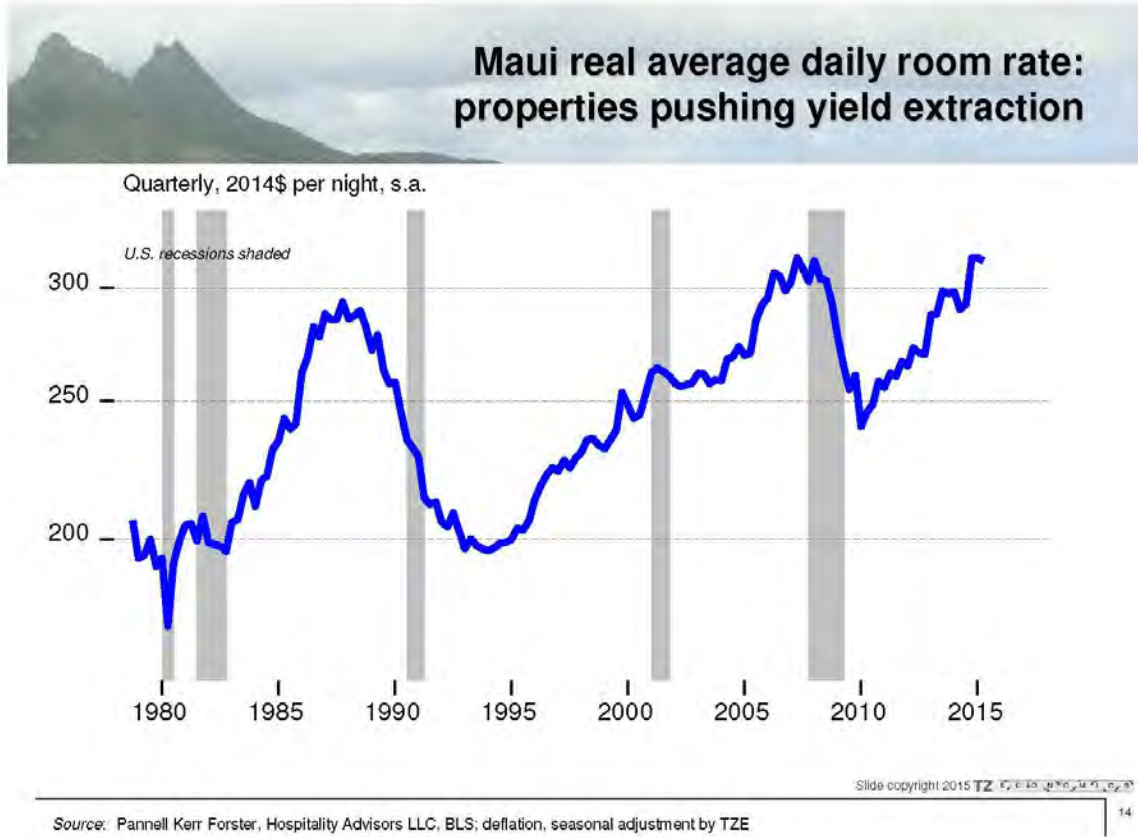
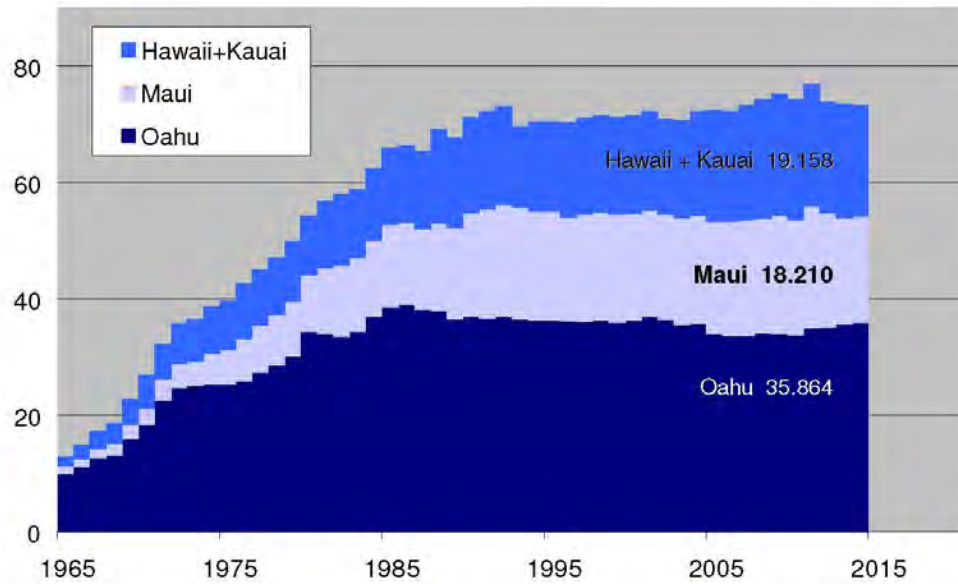


Figure 8: Visitor Lodging Room Numbers, Maui County and Other Islands, 1965-2015

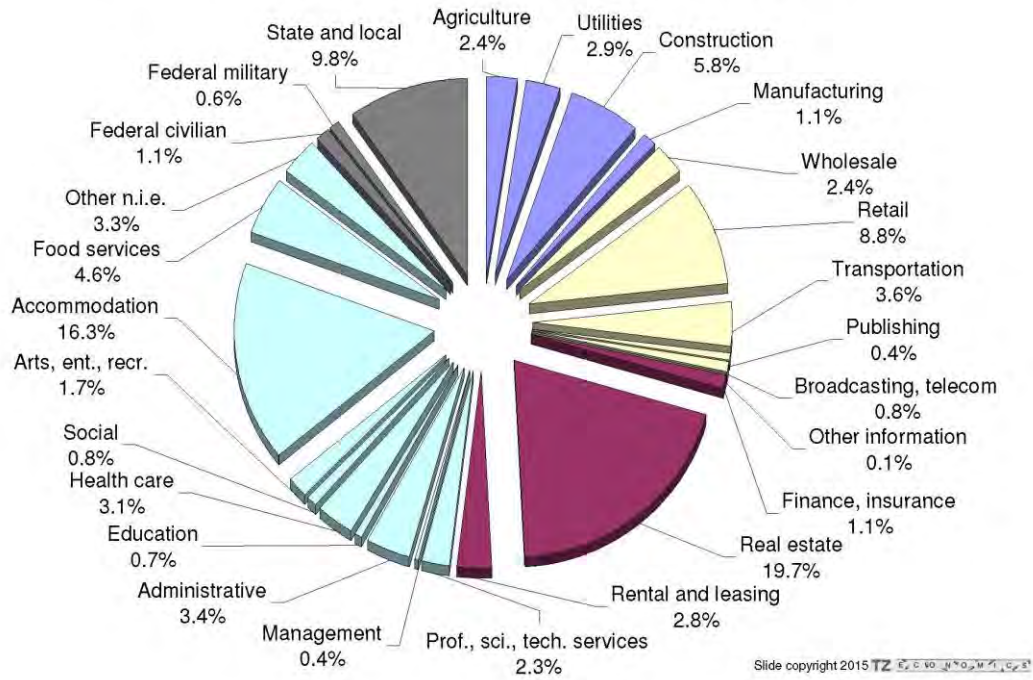
Lodging capacity growth essentially was halted around 1990



Slide copyright 2015 TZ  
Source: Hawaii Tourism Authority, Hawaii DBEDT (2015), *Visitor Plant Inventory*; data include vacation rentals enumerated at around 8,000 units, believed to be an underestimate. 90

Figure 9: Shares of GDP by Industry, Maui County, 2013

Maui value-added (GDP) by industry 2013

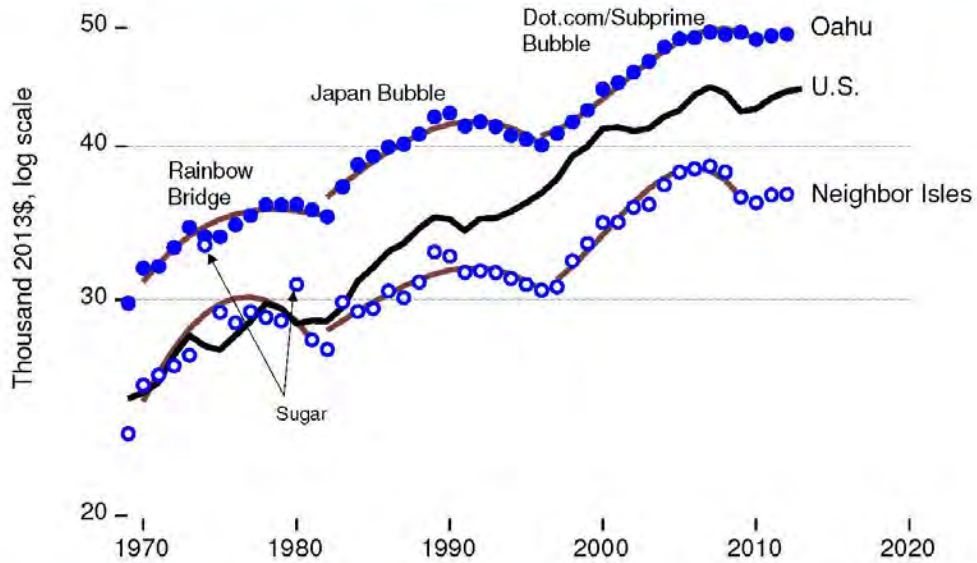


Slide copyright 2015 TZE. Source: BEA.gov; re-aggregation by TZE 44



Figure 10: Comparison of Per Capita Income, Neighbor Islands, Oahu and U.S, 1970-2013

## Oahu and Neighbor Island economies' real per capita personal income—three growth waves

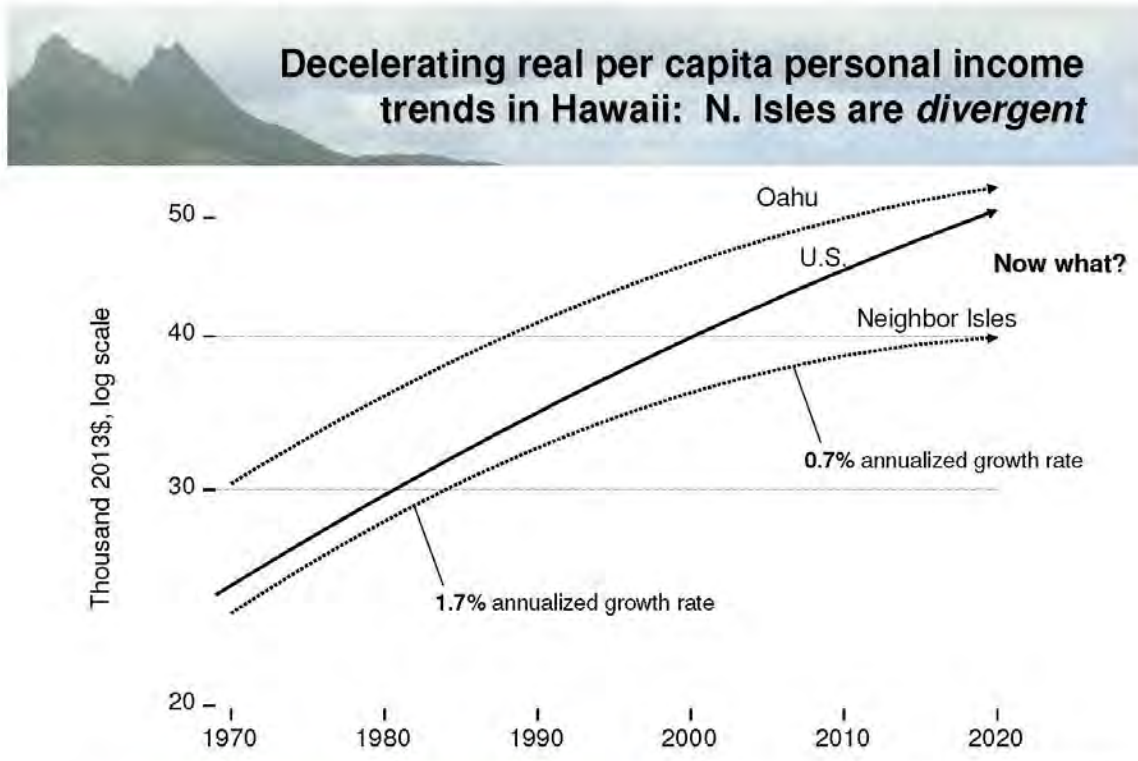


Slide copyright 2015 TZE

Sources: BEA (<http://bea.gov/regional/index.htm>), BLS (<http://data.bls.gov/cgi-bin/survey/most?9>); deflation using Honolulu CPI-U by TZE; three pulses are from interval regressions on changes in natural logarithms of real per capita personal income on linear and polynomial functions of time trend

27

Figure 11: Per Capita Income Growth, Neighbor Islands, Ohau and U.S., 1970-2015



Slide copyright 2015 TZE. Sources: BEA (<http://bea.gov/regional/index.htm>), BLS (<http://data.bls.gov/cgi-bin/surveys/most?3>); deflation using Honolulu CPI-U by TZE; three pulses are from interval regressions on changes in natural logarithms of real per capita personal income on linear and polynomial functions of time trend.

Figure 12: GDP and Real Personal Income Trend, Maui County, 2001-2014

### Maui County real GDP 2001-2014 and projection on real personal income trend growth 1994-2013\*



Slide copyright 2015 TZ

Sources: BEA Real GDP by MSA (September 23, 2015) ([http://bea.gov/newsreleases/regional/gdp\\_metro/gdp\\_metro\\_newsrelease.htm](http://bea.gov/newsreleases/regional/gdp_metro/gdp_metro_newsrelease.htm)), BLS; projected trend growth rate is annualized change in real Maui personal income, and as noted (equivalent)

Figure 13: Residential Building Permits, Maui County, 1970-2015

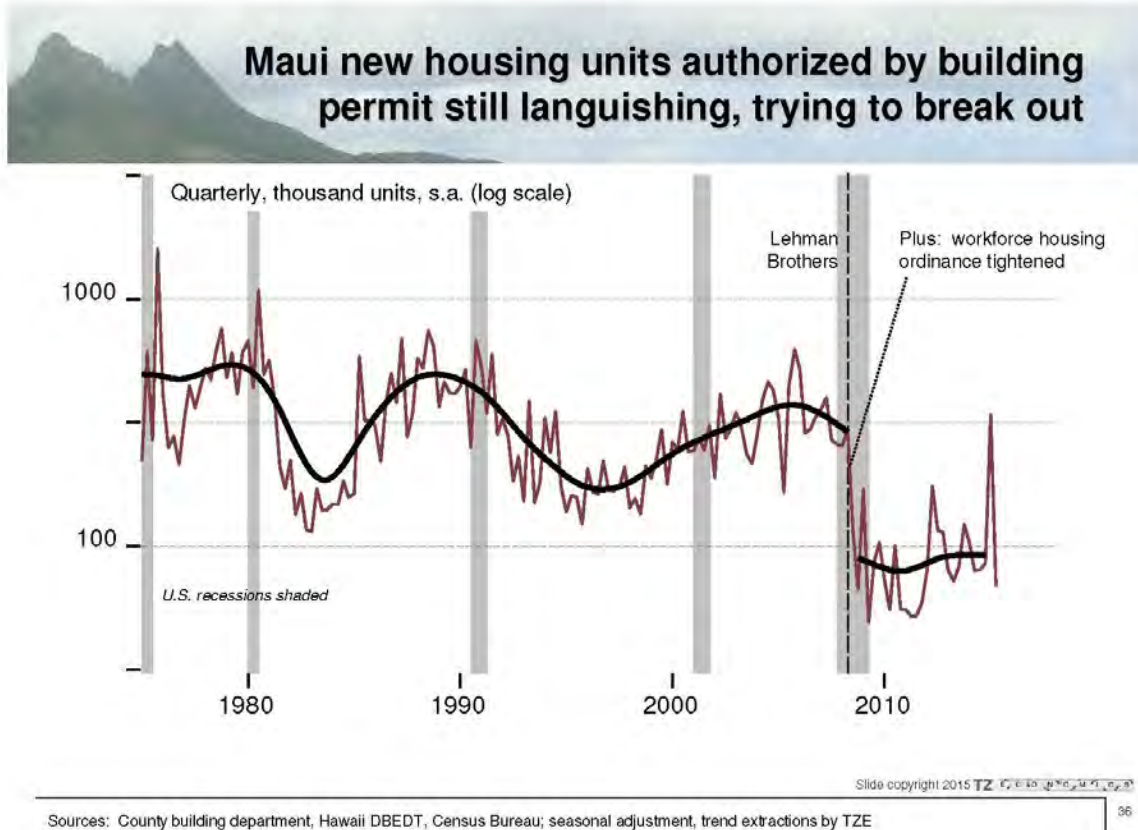
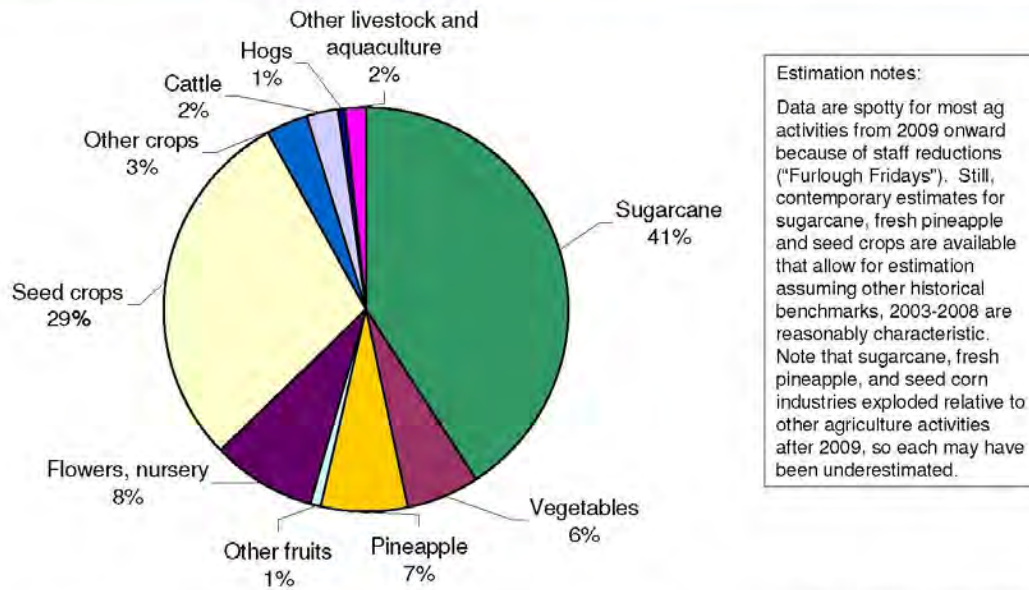


Figure 14: Share of Agricultural Production by Type, Maui County, 2003-2008

**Estimated Maui agricultural shares: diversification an outcome, not a goal, of exporting**



Estimation notes:  
 Data are spotty for most ag activities from 2009 onward because of staff reductions ("Furlough Fridays"). Still, contemporary estimates for sugarcane, fresh pineapple and seed crops are available that allow for estimation assuming other historical benchmarks, 2003-2008 are reasonably characteristic. Note that sugarcane, fresh pineapple, and seed corn industries exploded relative to other agriculture activities after 2009, so each may have been underestimated.

Sources: Hawaii Department of Agriculture, U.S. Department of Agriculture, *Statistics of Hawaii Agriculture* (various) ([http://www.nass.usda.gov/Statistics\\_by\\_State/Hawaii/Publications/Annual\\_Statistical\\_Bulletin/](http://www.nass.usda.gov/Statistics_by_State/Hawaii/Publications/Annual_Statistical_Bulletin/))

Figure 15: Visitor Arrivals by Island, 1990-2016

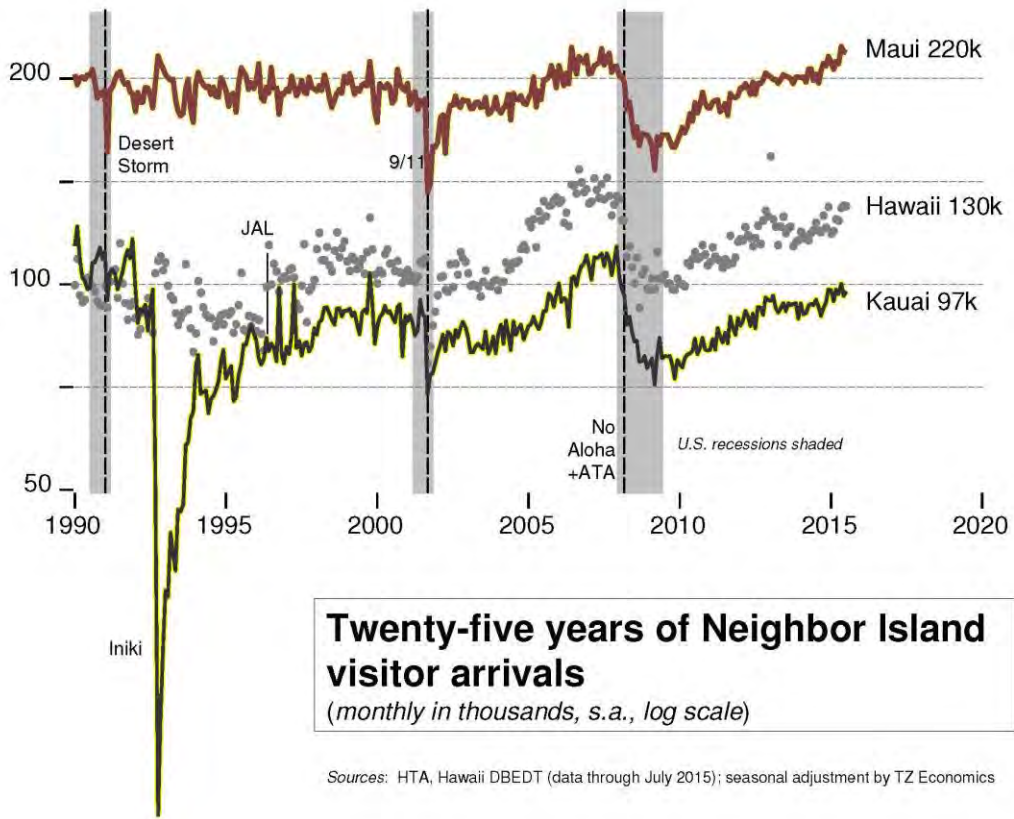


Figure 16: Hotel Occupancy Rates, Maui County, 1980-2015

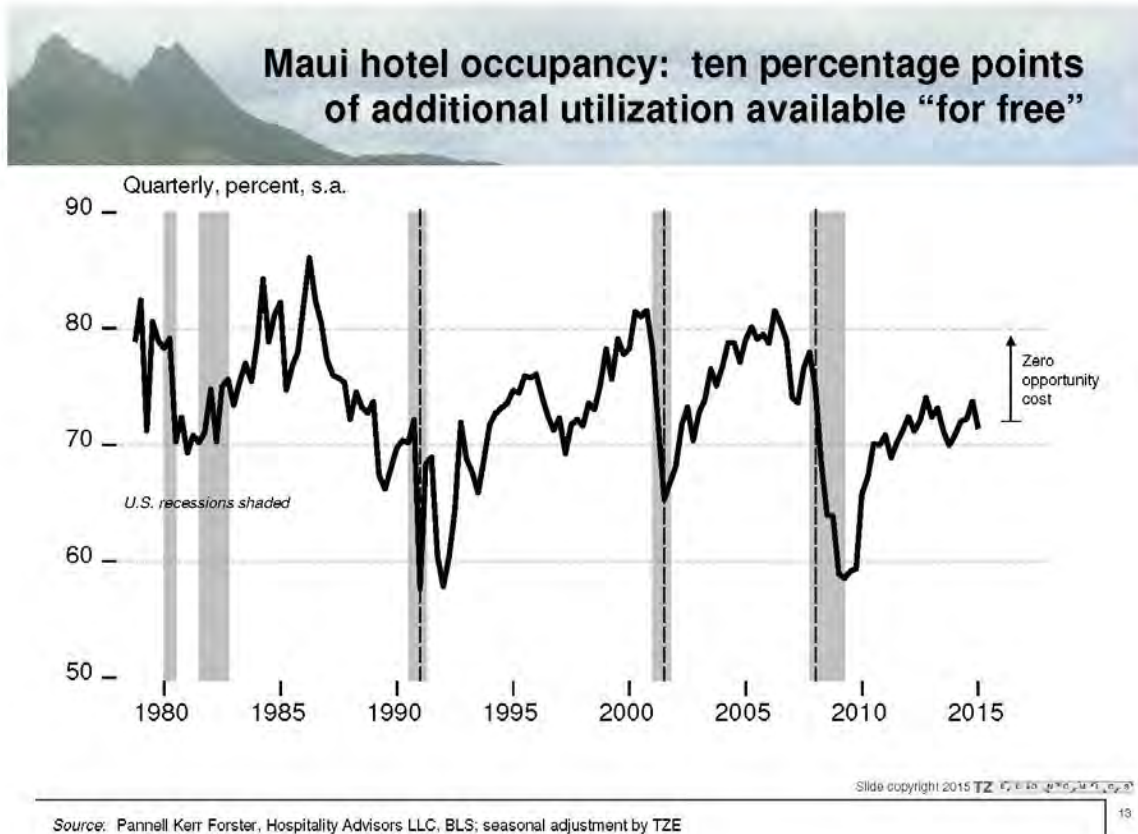
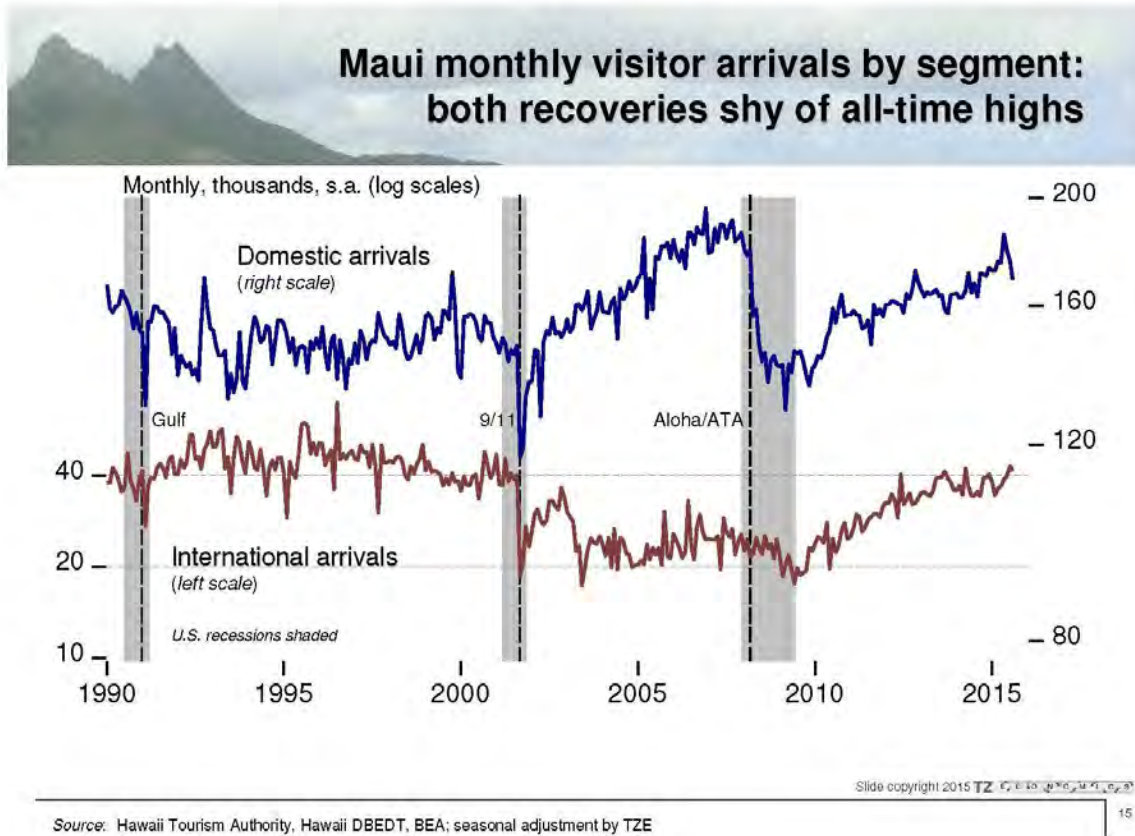


Figure 17: Visitor Arrivals, Maui County, by Source, 1990-2015





## Appendix 5: Current Resiliency Plans in Maui County and Beyond

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The documents listed in this appendix all speak to factors impacting Maui County’s resilience. These documents address issues such as natural disasters and risk mitigation, resilience of our natural environment and community ecosystem, and increased collaboration across organizations and industries to lead to a more effective community. Additionally, the NACO publication highlights the efforts taken in Maui County over the past three decades to strengthen economic resilience.

### Maui County Multi Hazard Mitigation Plan: <http://www.co.maui.hi.us/1832/Multi-Hazard-Mitigation-Plan>

This comprehensive 484-page document was updated in August 2015, following the original publication in 2005 and an update in 2010. “The Maui Multi-Hazard Mitigation Plan (HMP) is a master plan for the County that identifies the hazards and risks posed by natural and technological disasters, identifies hazard mitigation actions and activities to reduce losses from such disasters, and establishes priorities and a long-term sustained process to implement those actions.”

This plan focuses on mitigating hazards to critical facilities and special populations or areas. Critical facilities include those public and private facilities that need to be operational during and after a hazard event to meet public health and safety needs, or to speed economic recovery.”

Types of natural disasters and hazards addressed include tropical cyclones, landslides, earthquakes, tsunamis, flooding, high surf, coastal erosion, wind damage, drought, wildfires, all of which have affected the County at some point in recent years and are expected to recur, especially with unpredictable levels of climate change.

One of the stated guiding principles of the HMP is “To promote a sustainable economy and protect the livelihood of the local population.” The Plan includes an assessment of the effects of each hazard on infrastructure essential to the economy.

## NACO: Strategies to Bolster Economic Resilience

<http://www.naco.org/sites/default/files/documents/Strategies%20to%20Bolster%20Economic%20Resilience.pdf>

This document, published in 2013 by the National Association of Counties (NACO), highlights examples of innovative efforts to bolster economies from eight different counties across the U.S., one of which is Maui County. A premise of the study is that counties, regions, and communities that can foresee and adapt to and leverage changing conditions to their advantage are best positioned to attract and grow new businesses, retain skilled workers and families and promote a high quality of life. To create healthy, vibrant and economically resilient communities, counties must think creatively about their local and regional strengths and how to translate those assets into economic growth. Regions that are economically resilient are better able to withstand catastrophe, recover quickly and thrive amid changing circumstances.

Based on a series of interviews with county leaders and key partners conducted during this process, three consistent themes emerged:

- Long-range planning can identify strengths and weaknesses and build capacity to increase resilience to changing economic conditions
- Support for targeted industries, local businesses, and entrepreneurs can be facilitated by counties becoming knowledgeable about industry trends and cultivating relationships with business leaders to ensure mutual benefit for both industry and community needs
- Aligning economic development activities with workforce development initiatives and education can meet sector-specific demands by creating a ready and qualified labor supply and linking job training with job creation.

In the case of Maui County, stakeholders initiated conversations about the economic future in the early 1980s, resulting in the creation of the Maui Economic Development Board (MEDB) to act as liaison between government and the private sector and to lead a major economic diversification effort. Until then, the county had a high dependence on agriculture and tourism, two industries that were extremely vulnerable to external forces outside of Maui's control. Emphasis has been placed on the pursuit of a diversified economy by tapping into the Science and Technology industry – optical, space surveillance and renewable energy in particular – taking advantage of Maui's physical advantages and attributes such as Haleakala and clean energy resources. Another principal focus of MEDB had been leadership in the creating opportunities for students to obtain STEM careers. The NACO report observes that "Because Maui's leaders had the foresight to invest in long-term planning, the community has reaped the benefits of a more resilient economy."

Other examples provided in the report for strengthening economic resilience include:

- Intergovernmental collaboration in economic development
- Economic diversification through value-added agriculture
- Leveraging infrastructure assets to attract private investment
- Funding business training programs and developing business incubators
- Investing in youth education initiatives in STEM-related fields.

## NOAA Coastal Community Resilience Directory

<https://coast.noaa.gov/CCRD/workspace/RequestAccount.aspx>

“The CCR Directory is a searchable repository of documents related to resilience from U.S. associated nations, states, and territories in the Pacific. The documents include everything from training opportunities to hazard assessment documents and can be easily searched by type of document, author’s organization, and geography.”

“The directory provides access to resources and resource providers. The resources are plans, policies, reports, trainings, and grant programs from hundreds of resource providers in the State of Hawai’i and Pacific Island countries and U.S. territories. The directory is a single location where communities can easily download this information and current and past documents, both for their own locations and others.”

## Hawai’i Green Growth (HGG)

<http://Hawai’igreengrowth.org/hgg-blog/107-maui-sustainability-briefing>

HGG is a partnership of more than 50 leaders from government, non-governmental organizations, business and academia across Hawai’i collaborating on key strategies to develop the state’s green economy. The organization facilitates collaboration across government, nonprofit organizations, business and academia to advance action on an integrated approach to sustainability and resilience. The partnership honors Hawaiian cultural values and focuses on the interdependence of food, energy, natural resources, waste, smart growth, climate change, workforce development and education.

“As the most isolated population on the planet, Hawai’i exemplifies the urgent need for action on the global priority for green growth. Hawai’i’s people depend on imports for 95% of their energy and 85-90% of their food, at an estimated annual cost of \$8.6 billion. Hawai’i is also known as a hot spot for biodiversity loss. Like all islands across the Asia Pacific region, Hawai’i will be on the forefront responding to climate change impacts.”

Inspired by the Global Island Partnership, a partnership of small island developing states, Hawai’i’s six Chief Executives (Governor, four Mayors, and Office of Hawaiian Affairs) launched the Aloha+ Challenge in July 2014, committing to six ambitious targets to build a more secure, sustainable and resilient economy for Hawai’i by 2030:

- Clean Energy: 70% clean energy - 40% from renewables & 30% from efficiency
- Local Food: Double local food production - 20-30% of food consumed is grown locally
- Natural Resource Management: Reverse the trend of natural resource loss *mauka* to *makai* by increasing freshwater security, watershed protection, community-based marine management, invasive species 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 liveability and resilience in the built environment through planning and implementation at the state and county levels
- Green Workforce: Increase local green jobs and education to implement these targets

## 100 Resilient Cities (100RC) – Rockefeller Foundation

<http://www.100resilientcities.org/>

This project, pioneered by the Rockefeller Foundation, aims at helping cities and communities around the world become more resilient to the physical, social and economic challenges that are a growing part of the 21<sup>st</sup> century.

The website states that “Resilient cities demonstrate seven qualities that allow them to withstand, respond to, and adapt more readily to shocks and stresses.” These qualities are:

- Reflective: Using past experience to inform future decisions
- Resourceful: Recognizing alternative ways to use resources
- Robust: Well-conceived, constructed, and managed systems
- Redundant: Spare capacity purposefully created to accommodate disruption
- Flexible: Willingness and ability to adopt alternative strategies in response to changing circumstances
- Inclusive: Prioritize broad consultation to create a sense of shared ownership in decision making
- Integrated: Bring together a range of distinct systems and institutions.

100RC supports the adoption and incorporation of a view of resilience that includes not just the shocks—earthquakes, fires, floods, etc.—but also the stresses that weaken the fabric of a city on a day to day or cyclical basis. Examples of these stresses include high unemployment; an overtaxed or inefficient public transportation system; endemic violence; or chronic food and water shortages. By addressing both the shocks and the stresses, a city becomes more able to respond to adverse events, and is overall better able to deliver basic functions in both good times and bad, to all populations. Honolulu is one of the cities included in the project, and the principles and lessons to be learned apply equally to a more rural community such as Maui County.