

Appendix 1. Evaluation Framework (continued on pg. 58)

Economic Indicators	Region	2010	2011	2012	2013	2014	2015
Gross Domestic Product (in Millions)	Hawaii					76,425	79,745
	<i>% change</i>					3.30	4.30
	U.S.	14,964,400	15,517,900	16,155,300	16,691,500	17,393,100	18,036,600
	<i>% change</i>	3.8	3.7	4.1	3.3	4.2	3.7
Real Gross Domestic Product (in Millions)	Hawaii					69,662	70,845
	<i>% change</i>					0.8	1.7
	U.S.	14,783,800	15,020,600	15,354,600	15,612,200	15,982,300	16,397,200
	<i>% change</i>	2.5	1.6	2.2	1.7	2.4	2.6
Labor Force							
Total Jobs	Hawaii	837,800	848,700	860,800	876,300	886,100	896,600
Employed	Hawaii	602,282	615,319	608,722	619,088	639,148	652,939
Unemployment Rate	Hawaii	6.9	6.8	6.0	4.9	4.4	3.6
	U.S.	9.6	8.9	8.1	7.4	6.2	5.3
Average Per Capita Income	Hawaii	41,594	42,938	44,504	44,314	46,034	47,753
	U.S.	40,277	42,453	44,266	44,438	46,049	47,669
	<i>Hawaii/U.S.</i>	1.03	1.01	1.01	1.00	1.00	1.00
Direct Income From Major Export Industries (Traded Clusters)	Hawaii				107.72 B	11.41 B	

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	U.S				7.4 T	7.6 T	
Economic Indicators	Region						
		2010	2011	2012	2013	2014	2015
Education							
High School Graduation Rate (cohort start)	Hawaii	75.40%	80%	82%			
	U.S.	78.20%	79%	80%			
	Hawaii/U.S.	0.964194373	1.012658228	1.025			
College Graduation Rate (6-year/150%)	Hawaii	47.30%	51.80%	52.20%	51.80%		
	U.S.				57.60%		
	Hawaii/U.S.				0.899305556		

The Evaluation Framework provides a baseline to measure Hawaii’s economic progress. This format is meant to serve as a template to be annually updated with ease for the next 5 years.

Sources:

BEA

<http://www.bea.gov/national/index.htm#gdp>

BLS

<http://www.bls.gov/home.htm>

DBEDT

<http://dbedt.hawaii.gov/economic/qser/outlook-economy/>

EMSI

<http://www.economicmodeling.com/>

NCES

<https://nces.ed.gov/ccd/index.asp>

Appendix 2. Hawaii Traded Cluster Analysis

State of Hawaii Clusters

Consisting of seven (7) islands with a population base of 1.4 million residents, the State of Hawaii as an economic engine generates approximately \$76.5 billion in Gross Regional Product annually, and a trade surplus of \$47.93 billion. The State's economic activity results in approximately 897,500 jobs playing average annual earnings of \$53,200 and an unemployment rate of 3.7%³³

For the State of Hawaii, the U.S. Cluster Mapping Project, funded by the U.S. Department of Commerce, Economic Development Administration identifies seven (7) strong Traded and Local Clusters.³⁴ These clusters demonstrate high employment specialization in the State of Hawaii, ranking in the top 25% of regions by specialization in 2013.

1. Hospitality and Tourism
2. Water Transportation
3. Environmental Services
4. Apparel
5. Jewelry
6. Music
7. Fishing

The following section consists of comprehensive review of each of Hawaii's traded clusters identified in the U.S. Cluster Mapping Project using jobs as a common unit of measure and labor market information as the consistent data source. Each of the cluster reports includes a historical review from 2004-2014 to provide the reader with a broad context for the performance of the each traded cluster. The reports then provide forecast data for the period of 2015-2020. This provides the reader with a comprehensive understanding of how the traded cluster has performed historically and its projected performance trajectory through 2020.

Following the review of the traded cluster, the individual reports provide the reader with a comprehensive analysis of the industries that make up the traded clusters. Reported at the 6-digit North American Industry Classification System (NAICS) level, the reports identify projected job changes during the same time period for each industry that transacts business activities within the traded cluster.

Last, each of the reports on the individual traded clusters then applies that Bureau of Labor Statistics Staffing Patterns to identify occupations (based on Standard Occupational Codes (SOC)) that have a high location quotient or concentration within the industries operating in the traded cluster. Identifying high concentration in job (high location quotient) is critical for

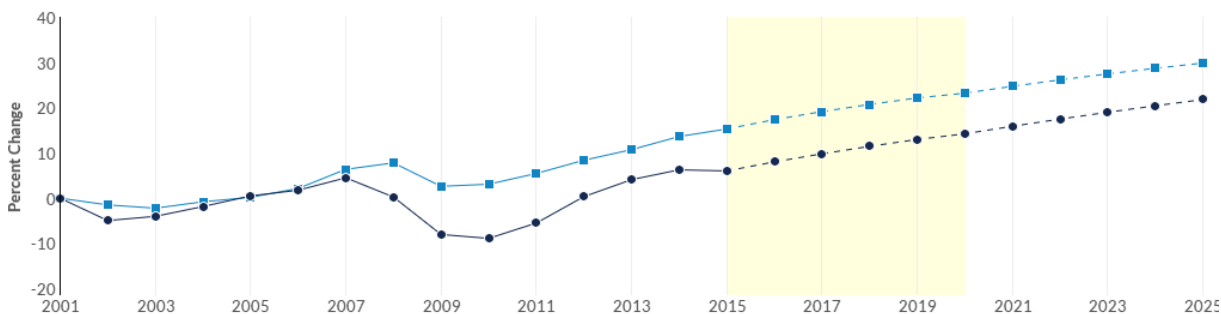
³³ U.S. Department of Labor, Bureau of Labor Statistics, [Hawaii at a Glance](#), August 2015.

³⁴ Institute for Strategy and Competition, Harvard Business School, [U.S. Cluster Mapping Project](#), A Project Funded by the U.S. Department of Commerce, Economic Development Administration.

the reader to understand how Hawaii's businesses respond to consumer demand based on job concentrations.

Cluster Review and Analysis - Hospitality and Tourism Cluster (Traded Cluster Only)³⁵

The Hospitality and Tourism Cluster in the State of Hawaii consists of twenty-five (25) industries and an estimate 1,493 organizations contributing payroll to Hawaii’s residents. In 2015, this cluster provided 59,468 jobs paying an average annual earning of \$45,324, 40.48% higher than the national cluster average of \$32,263.



Historical Trends (2004-2014)

	Region	2004 Jobs	2014 Jobs	Change	% Change
●	Region	55,052	59,607	4,555	8.3%
●	Nation	2,721,732	3,117,776	396,044	14.6%

During the period of 2004-2014, the Hospitality and Tourism Cluster added 4,555 new jobs to the economy of the State of Hawaii. This was an increase of 8.3%, which was slower than the national job growth rate for this cluster of 14.6%.

³⁵ Source: Statistics other than noted, were derived from the Economic Modeling Specialist, Inc. (EMSI), Developer for the period of 2015 to 2020. Data reflects the following parameters: State of Hawaii, 2014 – 2015, QCEW, non-QCEW, Self Employed and Extended Proprietors.

Forecast (2015-2020)

	Region	2015 Jobs	2020 Jobs	Change	% Change
•	Region	59,468	64,075	4,607	7.7%
•	Nation	3,163,541	3,380,870	217,329	6.9%

For the period of 2015 to 2020, the forecast for new jobs in Hospitality and Tourism is positive. The forecast estimates the creation of 4,607 new jobs or a growth rate of 7.7%. At this rate, Hawaii’s Hospitality and Tourism cluster is forecast to grow 11.59% faster than the national growth rate of 6.9%.

Sector Review & Analysis of Industries within the Hospitality and Tourism

Cluster (Overlap with WIOA Planning Initiatives)

The positive forecast in job growth is attributable to new jobs in the twenty five (25) industries within this cluster. The forecast for the individual industries from 2015 to 2020 are listed below.

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2015 - 2020 % Change
721110	Hotels (except Casino Hotels) and Motels	38,242	40,267	2,025	5%
712110	Museums	2,024	2,657	633	31%
487210	Scenic and Sightseeing Transportation, Water	2,544	3,081	537	21%
713990	All Other Amusement and Recreation Industries	3,085	3,384	299	10%
487110	Scenic and Sightseeing Transportation, Land	1,843	2,095	252	14%
721199	All Other Traveler Accommodation	824	1,044	220	27%
561520	Tour Operators	3,394	3,605	211	6%
711219	Other Spectator Sports	697	828	131	19%
532292	Recreational Goods Rental	781	897	116	15%
712120	Historical Sites	341	449	108	32%

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NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2015 - 2020 % Change
561599	All Other Travel Arrangement and Reservation Services	552	660	108	20%
721191	Bed-and-Breakfast Inns	363	427	64	18%
561591	Convention and Visitors Bureaus	113	168	55	49%
713930	Marinas	195	245	50	26%
713120	Amusement Arcades	169	213	44	26%
721310	Rooming and Boarding Houses	352	394	42	12%
487990	Scenic and Sightseeing Transportation, Other	535	568	33	6%
712130	Zoos and Botanical Gardens	564	591	27	5%
713290	Other Gambling Industries	52	63	11	21%
713110	Amusement and Theme Parks	282	291	9	3%
114210	Hunting and Trapping	21	26	5	24%
712190	Nature Parks and Other Similar Institutions	15	19	4	27%
721214	Recreational and Vacation Camps (except Campgrounds)	54	47	(7)	(13%)
453920	Art Dealers	883	872	(11)	(1%)
561510	Travel Agencies	1,543	1,184	(359)	(23%)
		59,468	64,075	4,607	8%

The outlook for industries within the hospitality and tourism are positive. With the exception of Recreational and Vacation Campus (except Campgrounds) (721214), Art Dealers (453920) and Travel Agencies (561510), the remaining twenty-three (23) sectors are forecast for positive growth.

The forecast suggests that industries with the largest forecasted growth are lodging and outdoor and recreational activities. This is consistent with data from the Hawaii Visitors Industry. "Lodging, the largest expenditure category by all visitors to Hawai'i, increased 3.8

percent to \$6.3 billion and accounted for 42 percent of total visitor expenditures in 2014”³⁶
“Spending on entertainment and recreation rose 6.2% to \$1.3 billion, while transportation expenditures were similar (+0.4% to \$1.3 billion) to last year.”³⁷

Sector Analysis by Job Concentration

The forecast for Hospitality and Tourism Cluster is positive. As stated above, the cluster is forecast to create 4,607 new jobs. The new jobs are fueled by increases in production in 92% of the twenty-five (25) industries. Much of the growth is forecast for the lodging and entertaining recreational industries.

In addition to understanding the general growth patterns by industry, it is also important to understand employment concentration with the Hospitality and Tourism Cluster. Employment concentration provides a better understanding of how the 1,493 businesses contributing to payroll in this cluster will be responding to consumer demand.

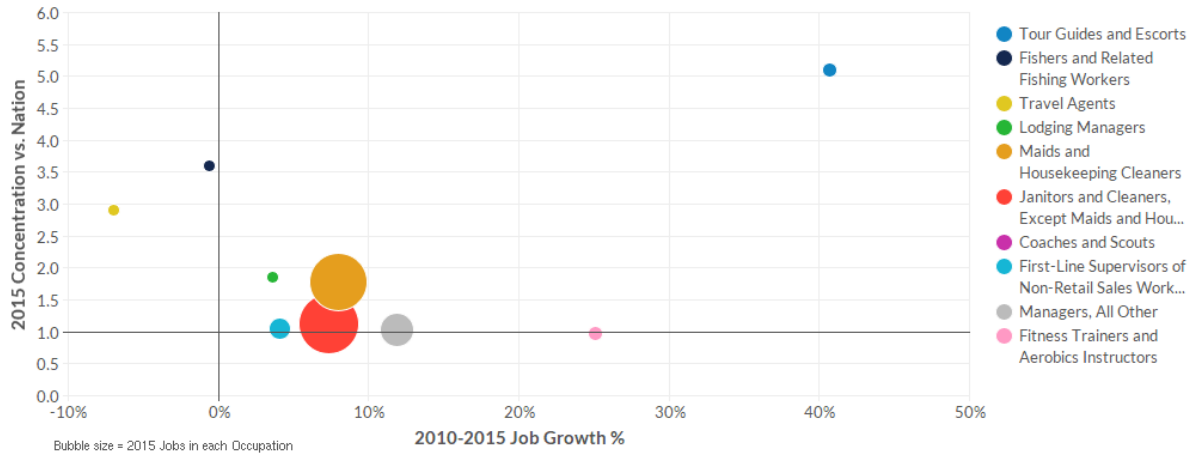
The rationale in understanding employment concentration is businesses create new jobs in response to consumer spending behavior. By understanding the concentration of employment by occupation in Hawaii’s Hospitality and Tourism Cluster, we can better understand how Hawaii’s business competes in the national and global Hospitality and Tourism Cluster.

³⁶ Hawaii Tourism Authority, 2014 Annual Report, Honolulu, HI. Pg. 2
http://hawaiitourismauthority.org/default/assets/File/2014%20HTA%20Annual%20Report_FINAL3B_LR.PDF

³⁷ Hawaii Tourism Authority, 2014 Annual Report, Honolulu, HI. Pg. 3
http://hawaiitourismauthority.org/default/assets/File/2014%20HTA%20Annual%20Report_FINAL3B_LR.PDF

Growing Hawaii’s Competitive Advantage in the Hospitality and Tourism Cluster

Concentration of jobs demonstrates how Hawaii’s businesses compete on the national and global level. The data suggest that the occupations with high job concentrations and forecast for new job growth that will allow Hawaii to remain competitive in the national and global traded cluster of Hospitality and Tourism are in the following occupations.



SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
39-7011	Tour Guides and Escorts	5.11	1,940	2,204	\$13.48/hr	\$13.58/hr
45-3011	Fishers and Related Fishing Workers	3.61	1,063	1,138	\$16.22/hr	\$16.13/hr
41-3041	Travel Agents	2.91	1,278	1,110	\$15.02/hr	\$15.44/hr
11-9081	Lodging Managers	1.86	1,049	1,080	\$17.90/hr	\$20.01/hr
37-2012	Maids and Housekeeping Cleaners	1.77	16,178	16,951	\$15.20/hr	\$14.88/hr
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1.12	16,753	18,337	\$12.39/hr	\$12.93/hr
27-2022	Coaches and Scouts	1.08	1,812	1,978	\$15.81/hr	\$16.90/hr

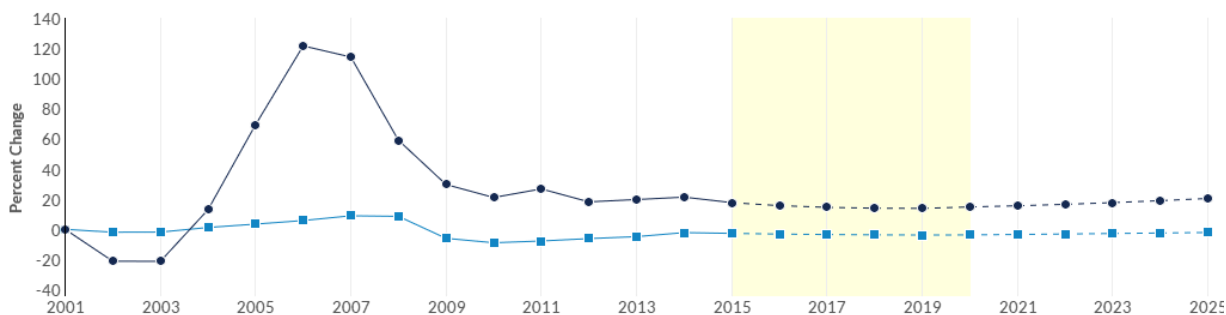
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SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
41-1012	First-Line Supervisors of Non-Retail Sales Workers	1.06	4,103	4,180	\$17.33/hr	\$19.28/hr
11-9199	Managers, All Other	1.03	8,504	9,247	\$25.66/hr	\$25.66/hr
39-9031	Fitness Trainers and Aerobics Instructors	0.98	1,999	2,300	\$16.52/hr	\$17.16/hr
	Total	2.25	54,679	58,525	\$16.19/hr	\$16.52/hr

Cluster Review and Analysis – Water Transportation

The Water Transportation Cluster includes the operation and maintenance of vessels that take cargo and people over water. These vessels travel to and from foreign ports across the ocean, to domestic ports along the coasts, across the Great Lakes, and along the country’s many inland waterways.³⁸

The Water Transportation Cluster in the State of Hawaii consists of nine (9) industries and seventy-seven (77) businesses contributing payroll to the State’s economy. In 2015, this cluster provided 3,609 jobs which is 193% above the national cluster average. These jobs pay an average annual earning per job of \$98,326, 18.37% higher than the national average. This cluster has a job multiplier of 5.56 suggesting that each new job added to this cluster creates 4.56 new jobs to Hawaii’s economy.



Historical Trend (2004-2005)

	Region	2004 Jobs	2014 Jobs	Change	% Change
●	Region	3,464	3,721	257	7.4%
●	Nation	269,157	260,142	-9,015	-3.3%

During the period of 2004-2014, the Water Transportation Cluster added 257 new jobs to Hawaii’s economy, a growth rate of 7.4%. Over the same period of time, jobs in the national Water Transportation Cluster declined by -3.3%.

³⁸ Bureau of Labor Statistics, Occupational Outlook Handbook, Water Transportation Occupation., <http://www.bls.gov/ooh/Transportation-and-Material-Moving/Water-transportation-occupations.htm>

Forecast (2015-2020)

	Region	2015 Jobs	2020 Jobs	Change	% Change
•	Region	3,609	3,521	-88	-2.4%
•	Nation	258,767	256,039	-2,728	-1.1%

For the period of 2015-2020, the forecast is for a loss of -88 jobs, a decline of 2.4%. The forecast indicates that Hawaii’s Water Transportation Cluster will lose jobs at a faster rate than the nation’s -1.1% decline.

Sector Review & Analysis of Industries within the Water Transportation Cluster (Overlap with WIOA Planning Initiative)

The forecast in decline in jobs is attributable to the net decline in business/employment activity in the following industries nine (9) industry sectors.

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2015 - 2020 % Change
483113	Coastal and Great Lakes Freight Transportation	657	1,021	364	55%
336611	Ship Building and Repairing	713	748	35	5%
488330	Navigational Services to Shipping	161	182	21	13%
336612	Boat Building	36	31	(5)	(14%)
483212	Inland Water Passenger Transportation	118	112	(6)	(5%)
488390	Other Support Activities for Water Transportation	50	27	(23)	(46%)
488320	Marine Cargo Handling	1,031	990	(41)	(4%)
483114	Coastal and Great Lakes Passenger Transportation	822	400	(422)	(51%)
483111	Deep Sea Freight Transportation	21	<10	Insf. Data	Insf. Data
		3,609	3,521	(88)	(2%)

The outlook suggests that not all industry sectors in the Water Transportation Sector are forecast to decline. The declining sectors of Boat Building (336612) and Inland Water

Passenger Transportation (483212) are smaller business reporting to through these NAICS codes with businesses that produce smaller recreational sporting goods. The industry sector for Other Support Activities for Water Transportation (488390) consists of businesses providing indirect supply and support services to the Water Transportation in addition to other clusters. The Marine Cargo Handling (488320) consists of one businesses entity and does not include larger shipping businesses like Horizon Lines.

Job growth opportunities are forecast for this cluster in industry sectors that include Coastal and Great Lakes Freight Transport (483113), Ship Building and Repair (336611), and Navigational Services to Shipping (488330). These sections forecast a total of 420 new jobs during the 2015-2020 period. These growing industry sectors are servicing larger surface vessels that provide costal area freight and defense activities.

Sector Analysis by Job Concentration

The industry dissected forecast for Water Transportation indicates that larger surface vessel transportation servicing freight and national defense show positive job growth of 420 new jobs while smaller recreational boating activities and coastal area passenger transport will be reducing.

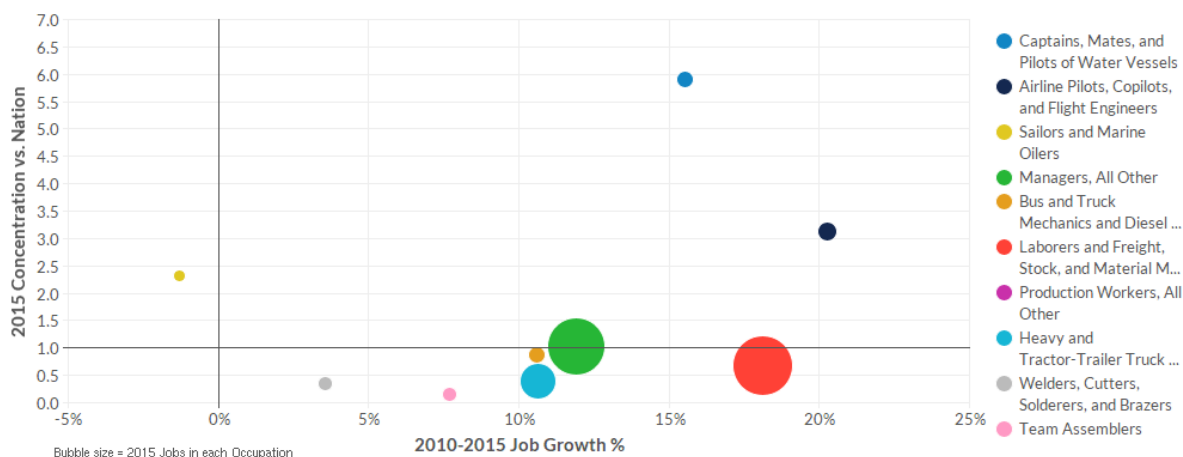
In addition to understanding the general growth and decline patters by industry for this cluster, it is also important to understand concentration of occupations (jobs) within Water Transportation Cluster. Occupational Concentration provides a better understanding of how the seventy-seven (77) businesses contributing to payroll in this cluster respond to consumer demand.

The rationale in understanding occupational concentration is businesses will create new jobs in response to consumer spending behavior. By analyzing the concentration of occupations within the Water Transportation cluster simultaneously, with the forecast job growth, we can better understand how Hawaii's businesses compete in the national and global traded cluster of Water Transportation.

Growing Hawaii's Competitive Advantage in the Water Transportation Cluster

Concentration in occupations demonstrates how Hawaii's businesses complete in the Water Transportation Traded Cluster on the national and global levels. The data suggests that the occupations with high job concentrations and forecast for new job growth that will allow Hawaii to remain competitive in the national and global traded cluster are in the following occupations:

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SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
53-5021	Captains, Mates, and Pilots of Water Vessels	5.91	1,223	1,319	\$24.77/hr	\$27.88/hr
53-2011	Airline Pilots, Copilots, and Flight Engineers	3.14	1,486	1,575	\$64.35/hr	\$77.77/hr
53-5011	Sailors and Marine Oilers	2.32	320	334	\$23.89/hr	\$27.24/hr
11-9199	Managers, All Other	1.03	8,504	9,247	\$25.66/hr	\$25.66/hr
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	0.88	1,188	1,238	\$24.86/hr	\$24.90/hr
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	0.68	8,684	8,812	\$13.73/hr	\$15.17/hr
51-9199	Production Workers, All Other	0.49	626	661	\$13.87/hr	\$14.76/hr
53-3032	Heavy and Tractor-Trailer Truck Drivers	0.40	4,479	4,727	\$20.45/hr	\$20.61/hr

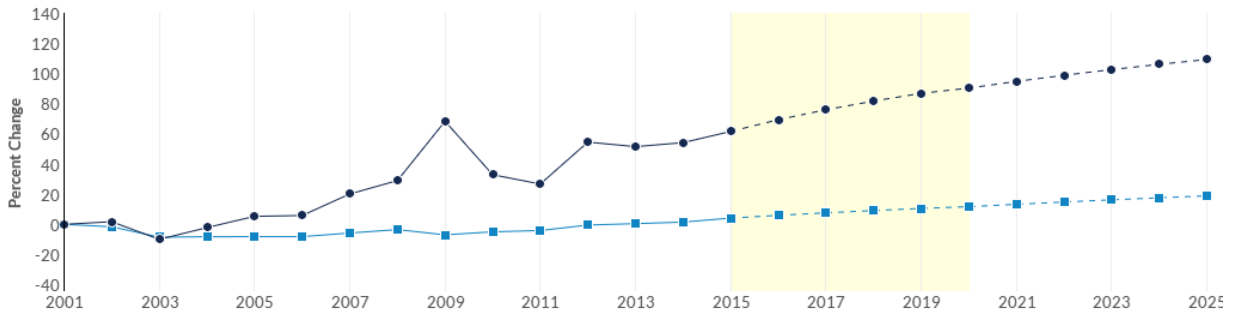
Hawaii Comprehensive Economic Development Strategy

SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
51-4121	Welders, Cutters, Solderers, and Brazers	0.36	736	755	\$26.67/hr	\$26.24/hr
51-2092	Team Assemblers	0.15	843	853	\$10.98/hr	\$12.77/hr
	Total	2.51	28,089	29,523	\$22.56/hr	\$24.00/hr

Cluster Review and Analysis – Environmental Services

The Environmental Service Cluster contains industries whose business establishments that primarily engage in the collection, treatment processing and disposal of both hazardous and non-hazardous waste.³⁹

The Environmental Services Cluster consists of six (6) industry sectors that contain a total of thirty-two (32) businesses contributing payroll to the State’s economy. In 2015, this cluster provided 503 jobs which is 3% below the national average. These jobs pay an average annual earning per job of \$78,246, 7.21% higher than the national average. This cluster has a job multiplier of 3.13 suggesting that each new job added to this cluster creates 2.13 new jobs to Hawaii’s economy.



Historical Trend (2004-2014)

	Region	2004 Jobs	2014 Jobs	Change	% Change
●	Region	304	479	175	57.6%
●	Nation	95,776	105,920	10,144	10.6%

During the period of 2004-2014, the Environmental Services Cluster added 175 jobs new jobs to Hawaii’s economy, a growth rate 57.6%. Over the same period of time, Hawaii’s job growth rate outpaced the nation job growth rate was 10.6%.

Forecast (2015-2020)

³⁹ Institute for Strategy and Competition, Harvard Business School, U.S. Cluster Mapping Project, A Project Funded by the U.S. Department of Commerce, Economic Development Administration.
<http://clustermapping.us/sites/default/files/files/page/Traded%20Clusters%20Appendix.pdf>

	Region	2015 Jobs	2020 Jobs	Change	% Change
•	Region	503	592	89	17.7%
•	Nation	108,695	116,596	7,901	7.3%

For the period of 2015-2020, the forecast is for an additional 89 new jobs, and increase of 17.7%. The forecast indicates that Hawaii’s Environmental Services Cluster will add jobs at a faster rate than the nation’s 7.3% job growth rate for this cluster.

Sector Review & Analysis of Industries within the Environmental Services Cluster

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2015 - 2020 % Change
562920	Materials Recovery Facilities	161	217	56	35%
562213	Solid Waste Combustors and Incinerators	168	196	28	17%
562119	Other Waste Collection	15	28	13	87%
562998	All Other Miscellaneous Waste Management Services	94	103	9	10%
562219	Other Nonhazardous Waste Treatment and Disposal	32	26	(6)	(19%)
562211	Hazardous Waste Treatment and Disposal	33	23	(10)	(30%)
		503	592	89	18%

(Overlap with WIOA Planning Initiative)

The forecast in job growth is attributable to the net increases in business and employment activities in the following six (6) industry sectors.

The forecast suggests that not all industry sectors in the Environmental Services Cluster are projected to realized job growth from 2015-2020. Business enterprises within the industry sectors of Other Nonhazardous Water Treatment and Disposal (562219) and Hazardous Waste Treatment and Disposal (562211) have anticipated job loss of -16 jobs in total.

The simultaneously, new jobs are projected for materials recovery and recycling as well as waste collection, treatment and management. These industry sectors are driving the net increase in jobs for the Environmental Services Cluster.

Sector Analysis by Job Concentration

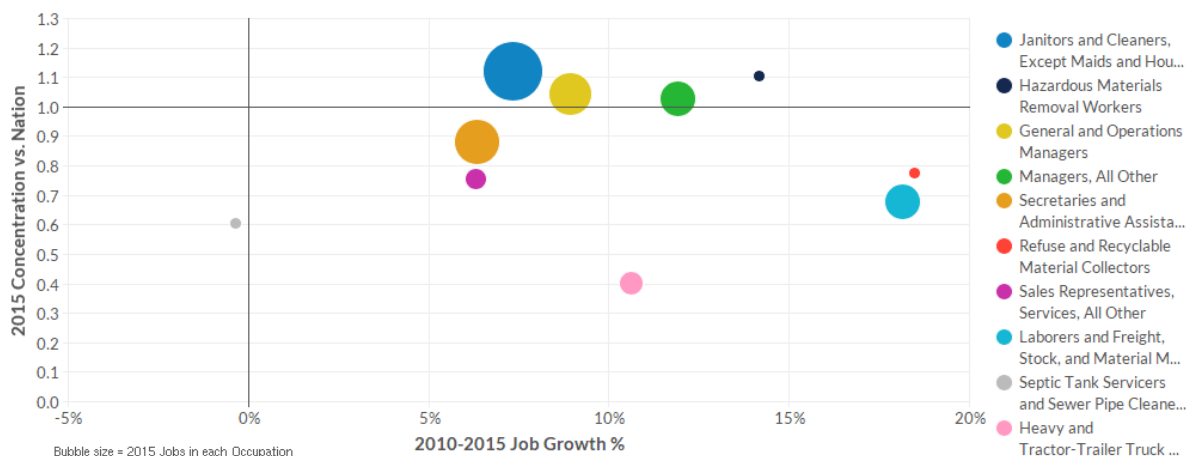
In addition to understanding the general growth and decline patterns by industry for this cluster, it is also important to understand the concentration of occupations (types of jobs) within the Environmental Services Cluster. Occupational concentration provides a better understanding of how the thirty-two (32) business enterprises contributing to payroll in this cluster respond to consumer demand.

The rationale in understanding occupational concentration is businesses will invest in new jobs in response to consumer spending behavior. By analyzing the concentration of

occupations within the Environmental Services Cluster simultaneously with forecast job growth, we can better understand how Hawaii’s businesses complete in the national and global traded cluster of Environmental Services.

Growing Hawaii’s Competitive Advantage in the Environmental Services Cluster

Concentration in occupations demonstrates how Hawaii’s businesses compete in the Environmental Services Traded Cluster on the national and global levels. The data suggests that the high concentration occupations within this cluster that are projected for job growth that will allow Hawaii to remain competitive in the national and global traded cluster are in the following occupations:



SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1.12	16,753	18,337	\$12.39/hr	\$12.93/hr
47-4041	Hazardous Materials Removal Workers	1.10	230	245	\$24.91/hr	\$27.26/hr
11-1021	General and Operations Managers	1.04	11,374	11,920	\$38.79/hr	\$45.68/hr
11-9199	Managers, All Other	1.03	8,504	9,247	\$25.66/hr	\$25.66/hr

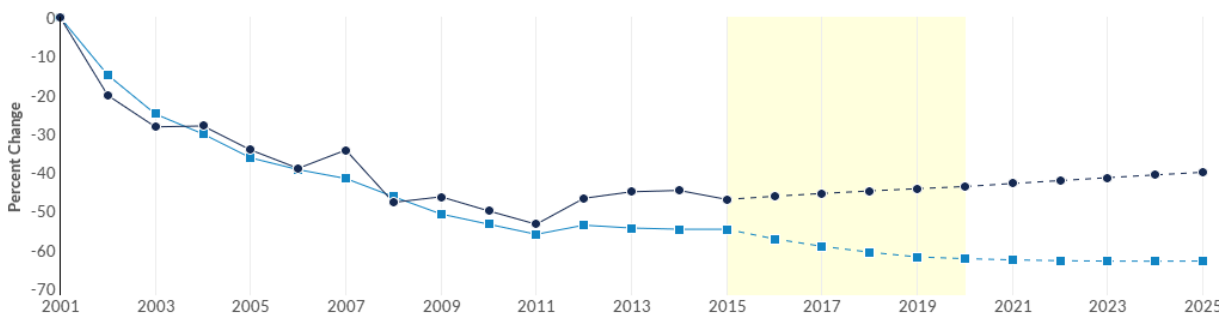
Hawaii Comprehensive Economic Development Strategy

SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	0.88	11,912	12,555	\$17.62/hr	\$18.00/hr
53-7081	Refuse and Recyclable Material Collectors	0.78	527	581	\$18.41/hr	\$17.79/hr
41-3099	Sales Representatives, Services, All Other	0.76	3,839	4,105	\$19.16/hr	\$22.95/hr
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	0.68	8,684	8,812	\$13.73/hr	\$15.17/hr
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	0.60	83	93	\$16.86/hr	\$17.18/hr
53-3032	Heavy and Tractor-Trailer Truck Drivers	0.40	4,479	4,727	\$20.45/hr	\$20.61/hr
	Total	0.77	66,385	70,622	\$20.78/hr	\$22.59/hr

Cluster Review and Analysis – Apparel

The Apparel Cluster contains establishments that focus on manufacturing clothing and fabric accessories (for example, hats, gloves, and neckties) for men, women and children.⁴⁰

The Apparel Cluster consists of five (5) industry sectors that contain a total 73 businesses contributing to payroll to the State’s economy. In 2015, this cluster provided 1,195 jobs which is 32% above the national average. These jobs pay an average annual earning per job of \$36,175, 17.13% lower than the national average of \$43,655. This cluster has a job multiplier of 1.81 suggesting that each new job added to this cluster creates .81 new jobs to Hawaii’s economy.



Historical Trend (2004-2014)

	Region	2004 Jobs	2014 Jobs	Change	% Change
●	Region	1,623	1,248	-375	-23.1%
●	Nation	292,456	189,580	-102,876	-35.2%

During the period of 2004-2014 the Apparel Cluster lost 375 jobs in Hawaii’s economy, a rate of decline of -23.1%. Over the same period of time, Hawaii’s job loss was less than the national job loss for the Apparel Cluster of -35.2%.

⁴⁰ Institute for Strategy and Competition, Harvard Business School, U.S. Cluster Mapping Project, A Project Funded by the U.S. Department of Commerce, Economic Development Administration.
<http://clustermapping.us/sites/default/files/files/page/Traded%20Clusters%20Appendix.pdf>

Forecast (2015-2020)

	Region	2015 Jobs	2020 Jobs	Change	% Change
•	Region	1,195	1,270	75	6.3%
•	Nation	189,563	157,821	-31,742	-16.7%

For the period of 2015-2020, the forecast is for an addition of seventy-five (75) new jobs, an increase of 6.3%. The forecast indicates that Hawaii’s Apparel industry will perform counter to the national traded cluster which will continue to decline at a rate of -16.7%.

Sector Review & Analysis of Industries within the Apparel Cluster (Overlap with WIOA Planning Initiative)

The forecast in job growth is attributable to the net increase in business and employment activities in the following five (5) industry sectors.

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2015 - 2020 % Change
315240	Women's, Girls', and Infants' Cut and Sew Apparel Manufacturing	470	505	35	7%
315210	Cut and Sew Apparel Contractors	388	420	32	8%
314999	All Other Miscellaneous Textile Product Mills	71	95	24	34%
315990	Apparel Accessories and Other Apparel Manufacturing	68	64	(4)	(6%)
315220	Men's and Boys' Cut and Sew Apparel Manufacturing	198	187	(11)	(6%)
		1,195	1,270	75	6%

The forecast suggests that not all industry sectors in the Apparel Cluster are projected to realized positive job growth. The Apparel Accessories and Other Apparel Manufacturing (315990) and Men’s and Boy’s Cut and Sew Apparel Manufacturing (315220) are forecast to have a collective job loss of -15 jobs.

Simultaneously, new jobs are projected in the industries of Women’s, Girls’, and Infants’ Cut and Sew Apparel Manufacturing (315240), Cut and Sew Apparel Contractors (315210), and All Other Miscellaneous Textile Product Mills (315990) are projected to add a total of 91 new jobs.

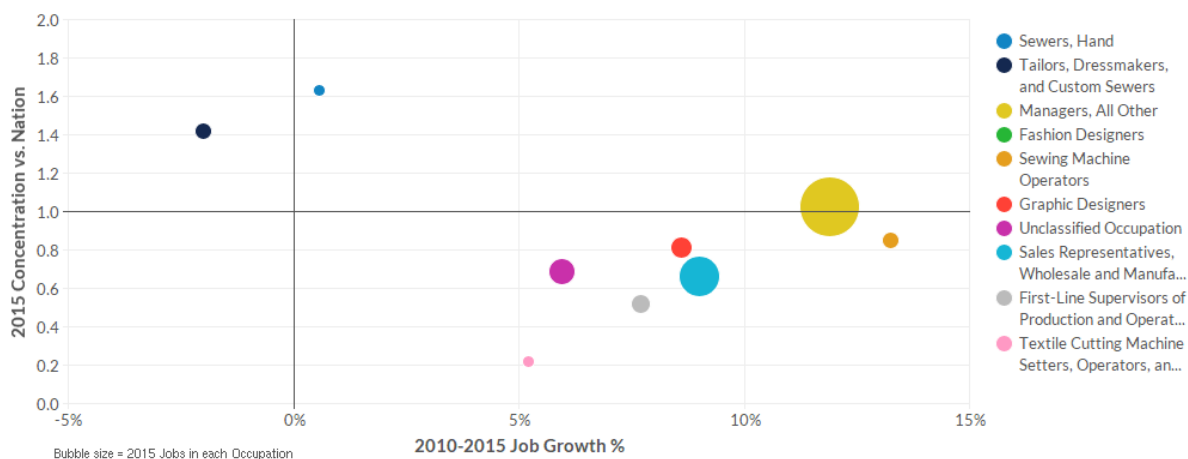
Sector Analysis by Job Concentration

In addition to understanding the general growth and decline patterns by industry for this cluster, it is also important to understand the concentration of occupations (type of jobs) within the Apparel Cluster. Occupational concentration provides a better understanding of how the seventy-three (73) business enterprises contributing to payroll in this cluster respond to consumer demand.

The rationale in understanding occupational concentration is businesses will invest in new jobs in response to consumer spending behavior. By analyzing the concentration of occupations within the Apparel Cluster simultaneously with forecast job growth, we can better understand how Hawaii’s businesses compete in the national and global traded cluster of Apparel.

Growing Hawaii’s Competitive Advantage in the Apparel Cluster

Concentration in occupations demonstrates how Hawaii’s businesses compete in the Apparel Cluster on the national and global levels. The data suggests that the high concentration occupation occupations within this cluster that have projected job growth, allowing Hawaii to remain competitive in the national and global traded cluster are in the following occupations:



SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
51-6051	Sewers, Hand	1.63	176	183	\$9.14/hr	\$9.26/hr
51-6052	Tailors, Dressmakers, and Custom Sewers	1.42	881	888	\$8.99/hr	\$9.29/hr
11-9199	Managers, All Other	1.03	8,504	9,247	\$25.66/hr	\$25.66/hr

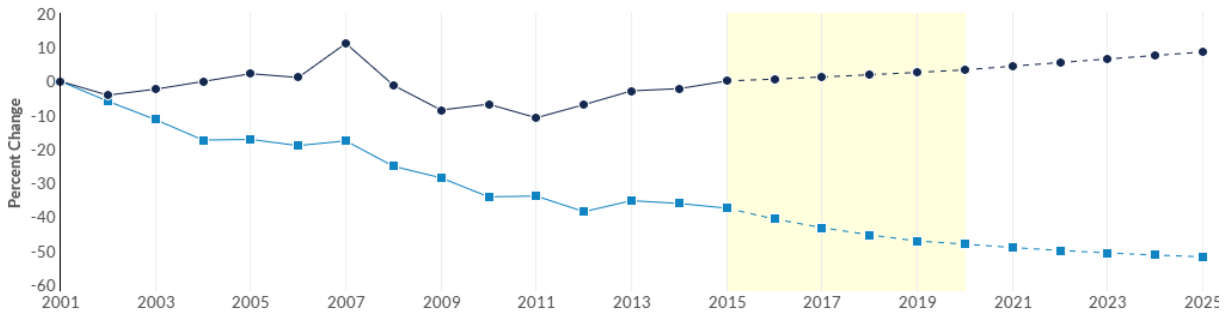
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27-1022	Fashion Designers	1.00	152	171	\$26.49/hr	\$27.17/hr
51-6031	Sewing Machine Operators	0.85	759	778	\$11.53/hr	\$11.71/hr
27-1024	Graphic Designers	0.81	1,659	1,815	\$17.57/hr	\$18.02/hr
99-9999	Unclassified Occupation	0.69	2,732	2,894	\$20.24/hr	\$20.06/hr
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	0.66	5,420	5,805	\$21.64/hr	\$22.96/hr
51-1011	First-Line Supervisors of Production and Operating Workers	0.52	1,595	1,643	\$21.44/hr	\$24.43/hr
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	0.22	15	14	\$9.98/hr	\$10.74/hr
	Total	0.93	21,893	23,438	\$21.75/hr	\$22.33/hr

Cluster Review and Analysis – Jewelry and Precious Metals

The Jewelry and Precious Metals Cluster contains business establishments that manufacture jewelry, silverware, and fine tableware. This cluster also includes the upstream manufacturing of jewelry parts and the processing of gemstones.⁴¹

The Jewelry and Precious Metals Cluster consists of only one (1) industry sector. Jewelry and Silverware Manufacturing (339910) in Hawaii has thirty-two (32) businesses contributing payroll to the State’s economy. In 2015, this cluster provided 661 jobs, 246% above the national average. These jobs pay an average annual earning per job of \$32,715, 38.95% below the national average of \$53,584. This cluster has a job multiplier of 1.46 suggesting that each new job added by this cluster creates .46 new jobs to Hawaii’s economy.



Historical Trend (2004-2014)

	Region	2004 Jobs	2014 Jobs	Change	% Change
●	Region	660	646	-14	-2.1%
●	Nation	52,997	41,005	-11,992	-22.6%

During the period of 2004-2014 the Jewelry and Precious Metal Cluster lost 14 jobs in Hawaii’s economy, a rate of decline of -2.1%. Over the same period of time, Hawaii’s job rate of decline in job loss was less than the national job loss rate of -22.6%.

⁴¹ Institute for Strategy and Competition, Harvard Business School, U.S. Cluster Mapping Project, A Project Funded by the U.S. Department of Commerce, Economic Development Administration.
<http://clustermapping.us/sites/default/files/files/page/Traded%20Clusters%20Appendix.pdf>

Forecast (2015-2020)

	Region	2015 Jobs	2020 Jobs	Change	% Change
•	Region	661	683	22	3.3%
•	Nation	40,111	33,306	-6,805	-17.0%

For the period of 2015-2020, the forecast is for an addition of twenty-two (22) new jobs, an increase of 3.3%. The forecast indicates that Hawaii’s Jewelry and Precious Metals Cluster will perform counter to the national traded cluster, which will continue to decline at a rate of -17%.

Sector Review & Analysis of Industries within the Jewelry and Precious Metals Cluster (Overlap with WIOA Planning Initiative)

As the Jewelry and Precious Metals Cluster consists of only one (1) industry, Jewelry and Silverware Manufacturing (339910), the forecast for the twenty-two (22) new jobs is attributable solely to this industry sector.

Sector Analysis by Job Concentration

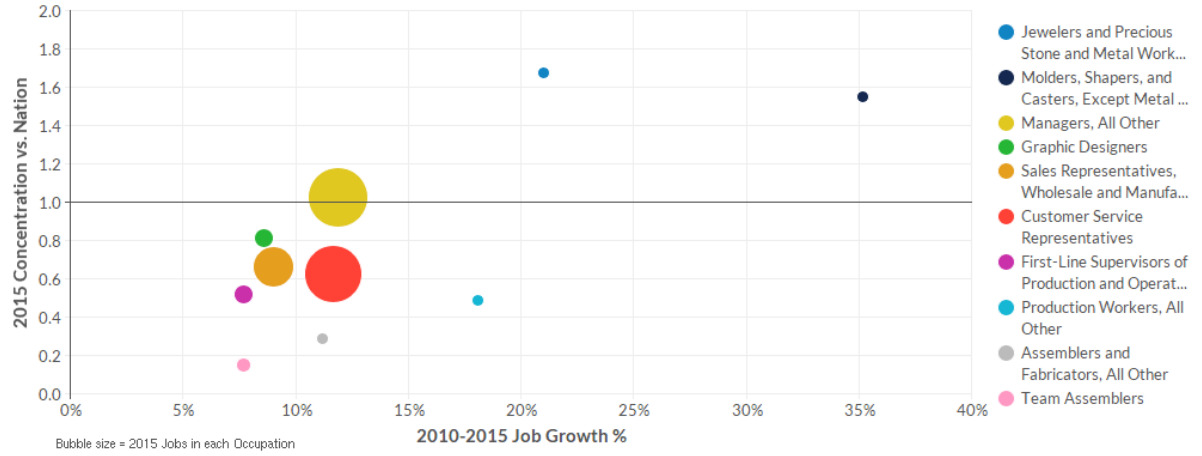
In addition to understanding the growth in the Jewelry and Silverware Manufacturing industry sector, it is also important to understand the concentration of occupations (job types) within the Jewelry and Precious Metal Cluster. Occupational concentration provides a better understanding of how the thirty-two (32) business enterprises contributing to payroll in this cluster respond to consumer demand.

The rationale in understanding occupational concentration is businesses will invest in new jobs in response to consumer spending behavior. By analyzing the concentration of occupations within the Jewelry and Precious Metals Cluster simultaneously with forecast job growth, we can better understand how Hawaii’s businesses compete in the national and global traded cluster of Jewelry and Precious Metals.

Growing Hawaii’s Competitive Advantage in the Jewelry and Precious Metals Cluster

Concentration in occupations demonstrates how Hawaii’s businesses compete in the Jewelry and Precious Metals Cluster on the national and global levels. The data suggests that the high concentration occupations within this cluster that have projected job growth allowing Hawaii to remain competitive in the national and global traded cluster are in the following occupations.

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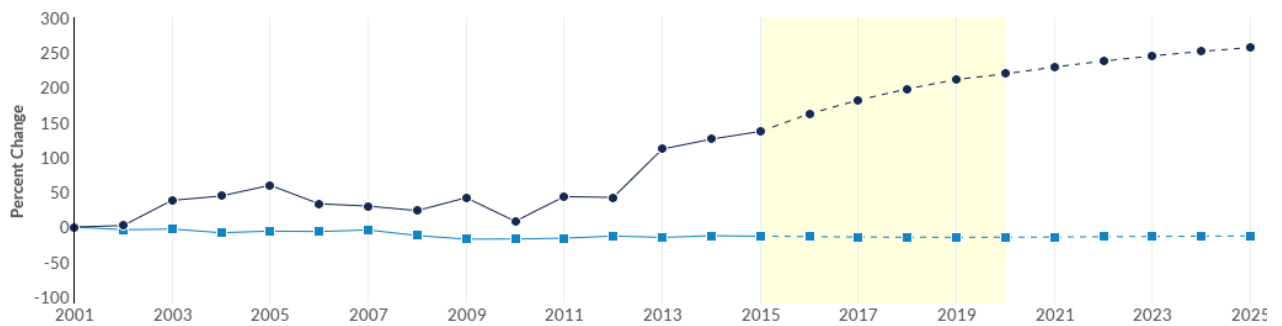
Hawaii Comprehensive Economic Development Strategy

SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
51-9071	Jewelers and Precious Stone and Metal Workers	1.68	646	664	\$14.78/hr	\$15.22/hr
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	1.55	428	484	\$16.15/hr	\$16.45/hr
11-9199	Managers, All Other	1.03	8,504	9,247	\$25.66/hr	\$25.66/hr
27-1024	Graphic Designers	0.81	1,659	1,815	\$17.57/hr	\$18.02/hr
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	0.66	5,420	5,805	\$21.64/hr	\$22.96/hr
43-4051	Customer Service Representatives	0.62	8,087	8,448	\$16.28/hr	\$17.17/hr
51-1011	First-Line Supervisors of Production and Operating Workers	0.52	1,595	1,643	\$21.44/hr	\$24.43/hr
51-9199	Production Workers, All Other	0.49	626	661	\$13.87/hr	\$14.76/hr
51-2099	Assemblers and Fabricators, All Other	0.29	362	360	\$13.09/hr	\$13.88/hr
51-2092	Team Assemblers	0.15	843	853	\$10.98/hr	\$12.77/hr
	Total	1.00	28,171	29,981	\$20.27/hr	\$21.07/hr

Cluster Review and Analysis – Music and Sound Recording

The Music and Sound Recording Cluster contains establishments primarily involved in the production and distribution of music and other sound recordings.

The Music and Sound Recording Cluster consists of four (4) industry sectors that contain a total of twelve (12) businesses contributing payroll to the State’s economy. In 2015, this cluster provided 207 jobs, which is 40% above the national average. These jobs pay an average annual earning per job of \$45,363, 12.25% lower than the national average of \$51,695. This cluster has a job multiplier of 2.40 suggesting that each new job added to the cluster creates 1.40 new jobs to Hawaii’s economy.



Historical Trends (2004-2014)

	Region	2004 Jobs	2014 Jobs	Change	% Change
●	Region	126	197	71	56.3%
●	Nation	32,772	31,218	-1,554	-4.7%

During the period of 2004-2014 the Music and Sound Recording Cluster added 71 new jobs to Hawaii’s economy, a growth rate of 56.3%. Over the same period of time, the nation experience a -4.7% decline in jobs in this cluster.

Forecast (2015-2020)

	Region	2015 Jobs	2020 Jobs	Change	% Change
•	Region	207	279	72	34.8%
•	Nation	30,998	30,489	-509	-1.6%

For the period of 2015-2020, the forecast is for an additional seventy-two (72) new jobs in Hawaii, a growth rate of 34.8%. The forecast indicates that Hawaii’s growth rate is counter to the national trend for the Music and Sound Recording Cluster. Nationally the cluster is forecast to lose -509 jobs a rate of decline of -1.6%.

Sector Review & Analysis of Industries within the Music and Sound Recording Cluster (Overlap with WIOA Planning Initiative)

The forecast in job growth is attributed to an overall cluster job growth in all four (4) industry sector of the Music and Sound Recording Cluster.

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2015 - 2020 % Change
512290	Other Sound Recording Industries	61	90	29	48%
512210	Record Production	65	90	25	38%
512240	Sound Recording Studios	53	65	12	23%
512220	Integrated Record Production/Distribution	27	34	7	26%
		207	279	72	35%

The forecast suggests that all of the industry sectors in the Music and Sound Recording Cluster are projected to realize positive job growth.

Sector Analysis by Job Concentration

In addition to understanding the overall all job growth in all industry sectors of the Music and Sound Recording Cluster, it is also important to understand the concentration of occupations (types of jobs) within the Cluster. Occupational concentration provides a better understanding of how the twelve (12) business enterprises contributing to payroll in this cluster respond to consumer demand.

The rationale in understanding occupational concentration is businesses will invest in new jobs in response to consumer spending behavior. By analyzing the concentration of occupations with the Music and Sound Recording Cluster simultaneously with forecast job growth, we can better understand how Hawaii’s businesses compete in this national and global traded cluster.

Growing Hawaii’s Competitive Advantage in Music and Sound Recording

Concentration in occupations demonstrates how Hawaii’s businesses compete in the Music and Sound Recording Cluster on the national and global levels. The data suggests that the high concentration occupations within this cluster that have projected job growth, allowing Hawaii to remain competitive in the national and global traded cluster are in the following occupations:



SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
27-4011	Audio and Video Equipment Technicians	1.52	684	739	\$17.73/hr	\$19.08/hr
27-2042	Musicians and Singers	1.11	2,586	2,733	\$20.55/hr	\$22.66/hr
11-1021	General and Operations Managers	1.04	11,374	11,920	\$38.79/hr	\$45.68/hr
11-9199	Managers, All Other	1.03	8,504	9,247	\$25.66/hr	\$25.66/hr
43-9061	Office Clerks, General	1.00	16,356	16,587	\$14.97/hr	\$15.36/hr
27-4014	Sound Engineering Technicians	0.95	120	145	\$27.76/hr	\$29.25/hr

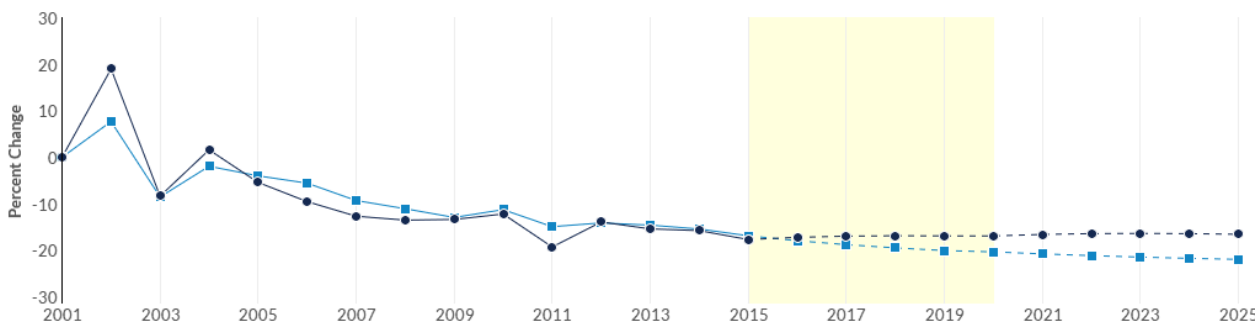
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SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	0.91	1,017	1,054	\$32.61/hr	\$31.29/hr
27-2012	Producers and Directors	0.90	644	653	\$24.02/hr	\$25.53/hr
27-2041	Music Directors and Composers	0.88	482	509	\$16.21/hr	\$16.37/hr
41-3099	Sales Representatives, Services, All Other	0.76	3,839	4,105	\$19.16/hr	\$22.95/hr
	Total	1.04	45,605	47,692	\$24.16/hr	\$26.48/hr

Cluster Review and Analysis – Fishing and Fishing Products

The Fishing and Fishing Products Cluster consists of business establishments that are engaged primarily in catching fish and other seafood and processing the catch for consumption.

The Fishing and Fishing Products Cluster consists of three (3) industry sectors that contain a total of sixty-five (65) businesses contributing payroll to the State’s economy. In 2015, this cluster provided 1,603 jobs, which is 196% above the national average. These jobs pay an average annual earning per job of \$20,587, 52.79% lower than that national average of \$43,607. The cluster has a job multiplier of 1.43 suggesting that for each new job added to the cluster, .43 new jobs are created in Hawaii’s economy.



Historical Trend (2004-2014)

Region	2004 Jobs	2014 Jobs	Change	% Change
● Region	1,978	1,640	-338	-17.1%
● Nation	134,208	115,746	-18,462	-13.8%

During the period of 2004-2014 the Fishing and Fishing Products Cluster lost -338 jobs in Hawaii’s economy, a job decline -17.1%. Over the same period of time, the nation also experienced a similar decline of -13.8% in jobs in this cluster.

Forecast (2015-2020)

Region	2015 Jobs	2020 Jobs	Change	% Change
● Region	1,603	1,618	15	0.9%
● Nation	113,750	109,014	-4,736	-4.2%

For the period of 2015-2020, the forecast for this cluster in Hawaii is for an additional fifteen (15) new jobs, a growth rate of .9%. The forecast indicates that Hawaii’s growth rate is counter to the national trend which is projected to decline by -4,736, a rate of decline of -4.2%.

Sector Review and Analysis of Industries within the Fishing and Fishing Products Cluster (Overlap with WIOA Planning Initiative)

The forecast in job growth is attributable to a net increase in the three (3) industries that constitute the Fishing and Fishing Products Cluster.

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2015 - 2020 % Change
114112	Shellfish Fishing	586	777	191	33%
311710	Seafood Product Preparation and Packaging	75	88	13	17%
114111	Finfish Fishing	943	753	(190)	(20%)
		1,603	1,618	15	1%

The outlook suggests that Finfish Fishing (114111) is projected to decline by -190 jobs a significant, 20% reduction for the industry sector. This significant decline is negating the projected 204 new jobs from Shellfish Fishing (114112) and Seafood Product Preparation and Packaging (331710).

Sector Analysis by Job Concentration

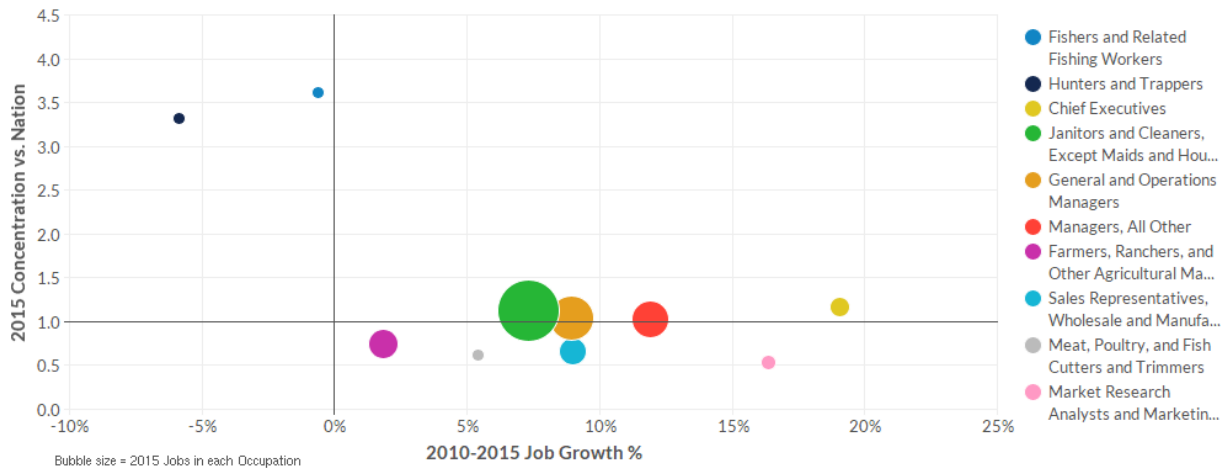
In addition to understanding the individual industry sector impact on the net job growth for the Fishing and Fishing Products Cluster, it is also important to understand the concentration of occupations (types of jobs) within the cluster. Occupation concentration provides a better understanding of how the sixty-five (65) business enterprises contributing to payroll in the cluster respond to consumer demand.

The rationale in understanding occupational concentration is businesses will invest in new jobs in response to consumer spending behavior. By analyzing the concentration of occupations within the Fishing and Fishing Products Cluster simultaneously with forecast job growth, we can better understand how Hawaii’s businesses compete in this national and global traded cluster.

Growing Hawaii’s Competitive Advantage in Fishing and Fishing Products

Concentration in occupations demonstrates how Hawaii’s businesses compete in the Fishing and Fishing Products Cluster on the national and global levels. The data suggests that the high concentration occupations within this cluster that have projected job growth, allowing Hawaii to remain competitive in the national and global traded cluster are in the following occupations:

Hawaii Comprehensive Economic Development Strategy



SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
45-3011	Fishers and Related Fishing Workers	3.61	1,063	1,138	\$16.22/hr	\$16.13/hr
45-3021	Hunters and Trappers	3.32	462	464	\$12.37/hr	\$12.46/hr
11-1011	Chief Executives	1.17	3,330	3,591	\$51.35/hr	\$55.82/hr
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1.12	16,753	18,337	\$12.39/hr	\$12.93/hr
11-1021	General and Operations Managers	1.04	11,374	11,920	\$38.79/hr	\$45.68/hr
11-9199	Managers, All Other	1.03	8,504	9,247	\$25.66/hr	\$25.66/hr
11-9013	Farmers, Ranchers, and Other Agricultural Managers	0.75	6,600	6,941	\$12.03/hr	\$11.84/hr

Hawaii Comprehensive Economic Development Strategy

SOC	Key Occupation	Concentration	2015 Jobs	2020 Jobs	Median Hourly Earnings	Average Hourly Earnings
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	0.66	5,420	5,805	\$21.64/hr	\$22.96/hr
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	0.61	466	491	\$13.22/hr	\$13.11/hr
13-1161	Market Research Analysts and Marketing Specialists	0.54	1,607	1,872	\$23.43/hr	\$24.67/hr
	Total	2.62	55,579	59,806	\$23.41/hr	\$25.39/hr



Appendix 3

HAWAII'S CLUSTER ECONOMIC PERFORMANCE



Department of Business, Economic Development and Tourism

June 2016



Hawaii Department of Business, Economic Development & Tourism
June 2016

Table of Contents

	EXECUTIVE SUMMARY	4
I.	INTRODUCTION	9
	The Data and Methodology Used in the Harvard Study	9
	The Clusters Based On DBEDT Definition	12
II.	COMPARISON OF TOTAL JOBS AND AVERAGE ANNUAL EARNINGS BY CLUSTERS BETWEEN HAWAII AND THE U.S.	16
	Comparison of Total Jobs	16
	Comparison of Annual Average Earnings	19
III.	HAWAII'S CLUSTER PORTFOLIO	26
	Job Growth by Cluster	26
	National Competitiveness of the Clusters	27
	Industry Concentration – Hawaii's Clusters	29
	The Performance Map Framework: Identifying Emerging Clusters	31
IV.	STATE CLUSTER PORTFOLIO PERFORMANCE	33
V.	COUNTY CLUSTER PORTFOLIO PERFORMANCE	36
	City & County of Honolulu	36
	Hawaii County	38
	Maui County	40
	Kauai County	42
VI.	APPENDIX: DETAILED STATE DATA AND COUNTY JOBS BY CLUSTERS	44

EXECUTIVE SUMMARY

In 2011, Professor Michael E. Porter of Harvard Business School provided a study titled *Hawaii Competitiveness: State and Cluster Economic Performance* (Porter et al., 2011). The main contribution of the Harvard Study was the creation of standardized clusters defined by North American Industry Classification System (NAICS), establishing a framework for Hawaii's industry clusters to be compared to the overall U.S. economy and over time.

This Harvard study grouped employment by industries into 41 traded clusters, 16 local clusters, and several resource-based clusters for all states and the U.S. as a whole. The traded clusters include industries that sell products and services across regions and often to other countries. Traded clusters locate in a particular region based, not on resources, but on broader comparative advantages. For the local clusters, employment is evenly distributed across all regions. Local clusters are composed of industries that provide goods and services primarily to the local market, with only a small fraction of the goods and services leaving the region. Resource-based clusters are composed of resource dependent industries and a majority of the employment is located near the resource. However, in contrast to local clusters, industries related to natural resource clusters often compete outside the region.

The Harvard Study included both broad and narrow cluster definitions. Broad cluster definitions included all the industries within a cluster, and a specific industry may have been included in more than one cluster. Narrow cluster definitions assigned each industry to the single cluster with which it had the strongest locational correlation. The Harvard Study only provided detailed cluster data based on the narrow definitions.

One of the limitations of the Harvard Study was that the cluster definitions were based on an analysis of industry data at the national level. While this approach standardizes categories and allows for comparisons across states, it does not account for regional variations in cluster composition. For example, electricity generation in a state bordering other states would be defined as a traded industry; however, for Hawaii, this should be considered a local industry because the state's grid is not interconnected with other states.

The main purpose of this study was to reclassify the Hawaii industry level data into clusters based on industry definitions and knowledge unique to Hawaii industries. EMSI data was used to determine clusters in Hawaii. The EMSI 2001-2014 annual data by NAICS includes total jobs, annual earnings, and the number of establishments.

The DBEDT Cluster Definition

Based on the narrow cluster definitions from the Harvard Study and adjustments for Hawaii's unique economic structure, Hawaii's private sector was first grouped into 292 industry groups based on different NAICS level. The 292 industry groups are then grouped into 32 traded clusters, 16 local clusters, and 1 resource-based cluster.

Table S-1 below provides an overview of the 32 traded clusters, and their 2014 jobs. The traded clusters accounted for about 171,216 jobs or 24.4% of total private sector jobs in Hawaii in 2014. The top 15 traded clusters accounted for more than 97% of total jobs in all traded clusters.

Table S-1. Hawaii 2014 Jobs by Traded Clusters Based on DBEDT Definition

Cluster No.	Cluster Name	Jobs 2014	% of Total Jobs	% of Traded Jobs	Cumulative Share
1	Hospitality and Tourism	56,829	8.1	33.2	33.2
2	Transportation and Logistics	14,746	2.1	8.6	41.8
3	Business Services	22,290	3.2	13.0	54.8
4	Education and Knowledge Creation	15,537	2.2	9.1	63.9
5	Distribution Services	5,726	0.8	3.3	67.2
6	Entertainment	7,271	1.0	4.2	71.5
7	Financial Services	16,263	2.3	9.5	81.0
8	Processed Food	6,013	0.9	3.5	84.5
9	Sporting, Recreational and Children's Goods	892	0.1	0.5	85.0
10	Fishing and Fishing Products	1,511	0.2	0.9	85.9
11	Publishing and Printing	1,834	0.3	1.1	87.0
12	Agricultural Products	14,113	2.0	8.2	95.2
13	Information Technology	1,309	0.2	0.8	96.0
14	Jewelry and Precious Metals	1,389	0.2	0.8	96.8
15	Oil and Gas Products and Services	1,109	0.2	0.6	97.4
16	Building Fixtures, Equipment and Services	173	0.0	0.1	97.5
17	Apparel	1,098	0.2	0.6	98.2
18	Plastics	313	0.0	0.2	98.4
19	Metal Manufacturing	466	0.1	0.3	98.6
20	Construction Materials	310	0.0	0.2	98.8
21	Furniture	519	0.1	0.3	99.1
22	Textiles	283	0.0	0.2	99.3
23	Medical Devices	265	0.0	0.2	99.4
24	Forest Products	176	0.0	0.1	99.5
25	Chemical Products	468	0.1	0.3	99.8
26	Machinery Manufacturing	140	0.0	0.1	99.9
27	Automotive	23	0.0	0.0	99.9
28	Leather and Related Products	91	0.0	0.1	100.0
29	Lighting and Electrical Equipment	48	0.0	0.0	100.0
30	Other transportation equipment manufacturing	-	-	-	100.0
31	Aerospace Product and Parts Manufacturing	12	0.0	0.0	100.0
32	Tobacco	-	-	-	100.0
	Total Traded Clusters	171,216	24.4	100.0	
	Total Private Sector Jobs	702,555	100.0		

Source: DBEDT compilation based on EMSI data

Table S-2 below provides an overview of the 16 local clusters and their 2014 total jobs. In 2014, the local clusters accounted for about 530,016 total jobs or 75.4% of total private sector jobs in Hawaii.

Table S-2. Hawaii 2014 Jobs by Local Clusters Based on DBEDT Definition

Cluster No.	Cluster Name	Jobs 2014	% of Total Jobs	% of Traded Jobs	Cumulative Share
1	Local Hospitality Establishments	79,394	11.3	15.0	15.0
2	Local Health Services	68,517	9.8	12.9	27.9
3	Local Commercial Services	88,197	12.6	16.6	44.5
4	Local Real Estate, Construction, and Development	94,525	13.5	17.8	62.4
5	Local Retail Clothing and Accessories	29,723	4.2	5.6	68.0
6	Local Community and Civic Organizations	20,982	3.0	4.0	71.9
7	Local Food and Beverage Processing and Distribution	29,396	4.2	5.5	77.5
8	Local Motor Vehicle Products and Services	14,797	2.1	2.8	80.3
9	Local Financial Services	13,120	1.9	2.5	82.8
10	Local Education and Training	11,809	1.7	2.2	85.0
11	Local Personal Services (Non-Medical)	36,797	5.2	6.9	91.9
12	Local Entertainment and Media	15,973	2.3	3.0	94.9
13	Local Logistical Services	9,381	1.3	1.8	96.7
14	Local Household Goods and Services	6,291	0.9	1.2	97.9
15	Local Utilities	5,851	0.8	1.1	99.0
16	Local Industrial Products and Services	5,262	0.7	1.0	100.0
	Total Local Clusters	530,016	75.4	100.0	
	Total Traded Clusters	171,216	24.4		
	Total Resource-Dependent Clusters	1,322	0.2		
	Sub-Total All Clusters	702,555	100.0		

Source: DBEDT compilation based on EMSI data

Performance of the Cluster Portfolio

Table S-3 shows how each of the respective traded clusters was classified on a performance matrix. Combined, the traded clusters accounted for about 171,216 jobs in Hawaii's economy in 2014. Based on job growth alone, the leading traded clusters were Financial Services, Sporting, Recreational and Children's Goods, Oil and Gas Products and Services, Education and Knowledge Creation, and Business Services. The earnings average of the traded clusters was \$49,617 in 2014, which was slightly higher than the statewide private sector average of \$49,283.

Overall, the traded clusters added 16,971 jobs between 2001 and 2014 in Hawaii. This amounted to an 11.0 percent increase in jobs. In contrast, total private sector jobs in Hawaii increased 19.2 percent during the same period. There were three traded clusters that qualified as high performing base-growth clusters. Base-growth clusters accounted for about 5.7 percent of jobs in traded clusters. Three traded clusters were included in the emerging category. These clusters accounted for about 21.8 percent of the total traded cluster jobs. Five traded clusters fell into the transitioning category. Transitioning clusters accounted for about 55.9 percent of jobs in traded clusters. Five traded clusters fell into the declining quadrant of the performance map. These clusters accounted for about 16.6 percent of total traded cluster jobs.

Table S-3. State of Hawaii Traded Clusters Mapped by Performance, 2001-2013

Total Traded Clusters Jobs, 2014: 171,216					
Average Traded Cluster Annual Earnings, 2014: \$49,617					
Net Change in Traded Cluster Jobs, 2001-2014: 11.0%					
Transitioning Group: 55.9% of Traded Cluster Jobs			Base-Growth Group: 5.7% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Financial Services	60.5%	\$ 47,659	Oil and Gas Products and Services	41.3%	\$ 119,360
Education and Knowledge Creation	37.2%	\$ 40,909	Entertainment	21.7%	\$ 39,458
Distribution Services	11.9%	\$ 50,795	Jewelry and Precious Metals	6.0%	\$ 36,502
Information Technology	11.1%	\$ 69,217			
Hospitality and Tourism	3.1%	\$ 46,569			
Declining Group: 16.6% of Traded Cluster Jobs			Emerging Group: 21.8% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Processed Food	-1.8%	\$ 41,219	Sporting, Recreational and Children's Goods	54.5%	\$ 37,258
Transportation and Logistics	-3.5%	\$ 75,875	Business Services	28.1%	\$ 65,182
Fishing and Fishing Products	-19.9%	\$ 19,176	Agricultural Products	3.4%	\$ 28,251
Other Traded Clusters 1/	-25.2%	\$ 51,477			
Publishing and Printing	-27.0%	\$ 43,870			

1/ Includes clusters #16 to #32 in Table S-1.

Source: DBEDT compilation based on EMSI data.

Table S-4 shows how each of the respective local clusters fell on the performance map based on the 2001 to 2014 performance measures. Combined, the local clusters accounted for about 530,016 jobs in Hawaii's economy in 2014. Based on job growth alone, the leading performers of the local clusters were Local Utilities, Local Real Estate, Construction, and Development, Local Health Services, Local Commercial Services, and Local Personal Services (Non-Medical). The earnings average of the local clusters was \$43,363 in 2014, which was lower than the statewide private sector average of \$49,283.

Overall, the local clusters added 95,554 jobs between 2001 and 2014 in Hawaii. This amounted to a 22.0 percent increase in jobs. There were five local clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 49.6 percent of jobs in local clusters. Four local clusters were included in the emerging category. They accounted for about 6.3 percent of the total local cluster jobs. Five local clusters fell into the transitioning category. Transitioning clusters accounted for about 40.1 percent of jobs in local clusters. Two clusters fell into the declining quadrant, accounting for about 4.0 percent of total local cluster jobs.

Table S-4. State of Hawaii Local Clusters Mapped by Performance, 2001-2013

Total Local Clusters Jobs, 2014: 530,016					
Average Local Cluster Annual Earnings, 2014: \$43,363					
Net Change in Local Cluster Jobs, 2001-2014: 22.0%					
Transitioning Group: 40.1% of Local Cluster Jobs			Base-Growth Group: 49.6% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Personal Services (Non-Medical)	25.5%	\$ 27,434	Local Real Estate, Construction, and Development	36.0%	\$ 52,374
Local Health Services	31.6%	\$ 62,399	Local Commercial Services	29.0%	\$ 46,155
Local Hospitality Establishments	18.3%	\$ 23,758	Local Community and Civic Organizations	22.0%	\$ 33,969
Local Education and Training	14.8%	\$ 44,155	Local Retail Clothing and Accessories	12.0%	\$ 30,465
Local Entertainment and Media	1.0%	\$ 25,354	Local Food and Beverage Processing and Distribution	10.3%	\$ 31,848
Declining Group: 4.0% of Local Cluster Jobs			Emerging Group: 6.3% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Motor Vehicle Products and Services	-3.4%	\$ 45,215	Local Utilities	37.8%	\$ 103,896
Local Household Goods and Services	-8.0%	\$ 43,581	Local Logistical Services	23.8%	\$ 48,900
			Local Industrial Products and Services	15.6%	\$ 69,525
			Local Financial Services	0.7%	\$ 71,201

Source: DBEDT compilation based on EMSI data.

I. INTRODUCTION

On February 26, 2011, Professor Michael E. Porter of Harvard Business School published a study titled *Hawaii Competitiveness: State and Cluster Economic Performance* (the Harvard Study). In the Harvard study, industry employment data were grouped into 41 traded clusters, 16 local clusters, and several resource-based clusters for all states and the U.S. as a whole. The 2008 employment and wages by traded and local clusters in Hawaii were included with a comparison of Hawaii's share of national employment between 1998 and 2008.

The main contribution of the Harvard Study was the creation of standardized cluster definitions by NAICS codes for traded clusters, local clusters, and resource-based clusters. According to the study, traded clusters include industries that sell products and services across regions and often to other countries. Traded clusters locate in a particular region (state) based on competitive factors, rather than natural resources or servicing the local market. In contrast, local clusters provide goods and services primarily to the local market. Such industries compete in only a limited way with other regions. Resource-based clusters locate near the respective natural resource. Similar to traded clusters, these resource-based clusters compete with domestic and international markets outside of the cluster region.

The Harvard Study first assigned the industry level data from the U.S. Census County Business Pattern (CBP) data into traded, local, and resource-based industries. These industries were then grouped into clusters based on the possible externalities present. The study designed broad and narrow cluster definitions. Broad cluster definitions included all the industries within a cluster and a specific industry could be included in more than one cluster. On the other hand, narrow cluster definitions assign one industry to one cluster based on the strongest locational correlation. The Harvard Study only provided detailed data for the narrow cluster definitions. If an industry is included in both Cluster A and Cluster B under the broad definitions, data regarding the overlap of industries among various clusters was not included.

This study builds on the Harvard study by establishing a cluster framework for Hawaii's unique economic structure. The first step of this study was to analyze the data sources and methodology of the Harvard Study. The next step was to allocate the data by North American Industry Classification System (NAICS) from Economic Modeling Specialists Inc. (EMSI) to traded, local, and resource dependent clusters based on the narrow definitions using an alternative methodology (the DBEDT methodology). After the industries were allocated, the study compared the employment and average wages between Hawaii and the nation from 2001 to 2014, including the growth rates.

The Data and Methodology Used in the Harvard Study

The data sources and methodology used in the February 2011 Harvard Study were similar to the data sources and methodology used in an earlier paper published in the August/October 2003 Regional Studies (the 2003 Study) by the same author. In the 2003 Study, first the 1996 annual County Business Pattern (CBP) data, covering employment, establishments, and wages by county (and by state) at the four-digit SIC (Standard Industrial Classification) level for all states and the nation were used to separate industries into three groups (traded, local, and resource dependent). The CBP data excluded government and military employment but covered the majority of the private sector, excluding only agricultural workers, railroad workers and household employment. The 879 industries in the SIC system were initially separated into traded or local categories, mainly based on the location quotient (LQ) of the industries (or the relative share of the industry in a region over the relative share of the industry in the nation). The logic behind this methodology was that the share of employment in a local industry should be similar in all regions; in other words, a location quotient (LQ) equal to one. Industries, with an LQ

greater than one, have a greater regional concentration than the nation overall and are likely to export part of their output outside the region.

The 2003 Study used three measures of the variation of industry employment across states to separate industries: (1) the share of national employment for all states with an LQ greater or equal to 1; (2) the mean LQ for the top five states ranked by LQ; and (3) the employment GINI coefficient. The cutoffs were established for each variable: employment in states with an LQ greater or equal to 1 or above 50% of total employment; mean LQ of the top five states greater or equal to 2; and employment GINI of 0.3. The vast majority of the 879 industries in the SIC system were traded or local based on all three criteria. For the industries that met two but not all three criteria, the 2003 Study examined the actual distribution of employment as well as the industry definitions. Of those 62 industries, 18 were categorized as traded and the rest were local. The 2003 Study also identified a number of industries that were traded based on all three criteria but were local based on the industry definitions. These industries were classified as local industries. This process resulted in 241 local industries and 638 traded industries. 48 of the 638 traded industries were then assigned to resource-dependent clusters. Only industries clearly dominated by resource endowments were assigned to resource-dependent industries. In the 2011 Harvard Study, the 2008 annual CBP data by NAICS were used to separate industries into traded, local, and resource-dependent industries.

In the 2003 Harvard Study, a cluster was defined as a geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field, linked by externalities of various types. To determine the clusters, the 2003 Harvard Study used the locational correlation of employment across industries to reveal externalities and define cluster boundaries. The Study utilized states as the base unit of geography for computing locational correlations. Using CBP data for 1996, the Study identified pairs and then groups of tightly linked industries based on statistically significant locational correlations. To build up clusters, the 2003 Study started with small groups of obviously related industries and then traced correlation patterns to other industries. The Study employed a sequence of steps to eliminate spurious correlations. First, it used detailed four-digit SIC industry definitions and lists of products included in each industry, combined with industry knowledge, to identify the presence of logical externalities. Focused case studies were conducted in unfamiliar industries to better understand the possible externalities present. Second, where there were no apparent externalities, the 2003 Study used the National 1992 Input-Output (I-O) Accounts from the Bureau of Economic Analysis to look for meaningful cross-industry flows. Where there was no logical externality and the I-O data revealed no meaningful product flows, a correlation pair was excluded as spurious. This process resulted in 41 traded clusters in the U.S. economy, with an average of about 29 industries each.

Table 1 shows the 2008 Hawaii employment by traded clusters provided by the Harvard Study. The top 15 traded clusters accounted for more than 97% of all jobs in the traded clusters. Jobs in all traded clusters accounted for about 25.4% of total jobs in Hawaii.

Table 1. Hawaii 2008 Employment by Traded Clusters Based on Harvard Definition

Cluster No.	Cluster Name	Jobs 2008	% of Total Jobs	% of Traded Jobs	Cumulative Share
1	Hospitality and Tourism	56,985	10.9	42.7	42.7
2	Transportation and Logistics	16,784	3.2	12.6	55.3
3	Business Services	13,571	2.6	10.2	65.5
4	Education and Knowledge Creation	10,768	2.1	8.1	73.6
5	Distribution Services	5,487	1.0	4.1	77.7
6	Entertainment	5,099	1.0	3.8	81.5
7	Financial Services	4,660	0.9	3.5	85.0
8	Processed Food	4,385	0.8	3.3	88.3
9	Heavy Construction Services	4,214	0.8	3.2	91.5
10	Power Generation and Transmission	1,750	0.3	1.3	92.8
11	Publishing and Printing	1,663	0.3	1.2	94.0
12	Agricultural Products	1,442	0.3	1.1	95.1
13	Information Technology	1,280	0.2	1.0	96.1
14	Jewelry and Precious Metals	766	0.1	0.6	96.6
15	Apparel	742	0.1	0.6	97.2
16	Building Fixtures, Equipment and Services	624	0.1	0.5	97.7
17	Oil and Gas Products and Services	535	0.1	0.4	98.1
18	Plastics	366	0.1	0.3	98.3
19	Metal Manufacturing	315	0.1	0.2	98.6
20	Construction Materials	267	0.1	0.2	98.8
21	Furniture	217	0.0	0.2	98.9
22	Textiles	150	0.0	0.1	99.1
23	Medical Devices	150	0.0	0.1	99.2
24	Forest Products	150	0.0	0.1	99.3
25	Sporting, Recreational and Children's Goods	136	0.0	0.1	99.4
26	Biopharmaceuticals	133	0.0	0.1	99.5
27	Fishing and Fishing Products	120	0.0	0.1	99.6
28	Chemical Products	90	0.0	0.1	99.6
29	Heavy Machinery	89	0.0	0.1	99.7
30	Automotive	79	0.0	0.1	99.8
31	Leather and Related Products	70	0.0	0.1	99.8
32	Footwear	70	0.0	0.1	99.9
33	Lighting and Electrical Equipment	60	0.0	0.0	99.9
34	Production Technology	30	0.0	0.0	99.9
35	Prefabricated Enclosures	30	0.0	0.0	100.0
36	Analytical Instruments	30	0.0	0.0	100.0
37	Motor Driven Products	10	0.0	0.0	100.0
38	Communications Equipment	10	0.0	0.0	100.0
39	Aerospace Engines	-	-	-	100.0
40	Aerospace Vehicles and Defense	-	-	-	100.0
41	Tobacco	-	-	-	100.0
	Total Traded Clusters	133,327	25.4	100.0	
	Total Jobs	524,941	100.0		

Source: Michael E. Porter, 2011 (the Harvard 2011 Study)

Table 2 shows the 2008 Hawaii employment by local clusters provided by the Harvard Study. Based on the classification of the Harvard Study, employment in all local clusters accounted for about 74.4 percent of total employment in Hawaii.

Table 2. Hawaii 2008 Employment by Local Clusters Based on Harvard Definition

Cluster No.	Cluster Name	Jobs 2008	% of Total Jobs	% of Traded Jobs	Cumulative Share
1	Local Hospitality Establishments	65,017	12.4	16.6	16.6
2	Local Health Services	57,617	11.0	14.8	31.4
3	Local Commercial Services	54,644	10.4	14.0	45.4
4	Local Real Estate, Construction, and Development	52,949	10.1	13.6	58.9
5	Local Retail Clothing and Accessories	29,138	5.6	7.5	66.4
6	Local Community and Civic Organizations	22,558	4.3	5.8	72.2
7	Local Food and Beverage Processing and Distribution	20,910	4.0	5.4	77.5
8	Local Motor Vehicle Products and Services	15,470	2.9	4.0	81.5
9	Local Financial Services	14,807	2.8	3.8	85.3
10	Local Education and Training	13,123	2.5	3.4	88.6
11	Local Personal Services (Non-Medical)	10,581	2.0	2.7	91.4
12	Local Entertainment and Media	8,749	1.7	2.2	93.6
13	Local Logistical Services	8,428	1.6	2.2	95.8
14	Local Household Goods and Services	7,831	1.5	2.0	97.8
15	Local Utilities	5,397	1.0	1.4	99.1
16	Local Industrial Products and Services	3,359	0.6	0.9	100.0
	Total Local Clusters	390,578	74.4	100.0	
	Total Traded Clusters	133,327	25.4		
	Total Resource-Dependent Clusters	1,036	0.2		
	Sub-Total All Clusters	524,941	100.0		

Source: Michael E. Porter, 2011 (the Harvard 2011 Study)

The CBP data was suppressed if the disclosure would compromise the data for a particular company. If the data was suppressed, a range was reported for the employment data. The Harvard Study utilized the mid-point in the range. Since the employment for these industries were estimated by the mid-point of the given range, the total employment of all clusters do not match the total employment of the region. For example, total Hawaii employment in 2008 by clusters provided by the Harvard Study was about 6,700 higher than the data from CBP.

The Harvard Study also subdivided each cluster into sub-clusters. In all, there were 264 sub-clusters for narrowly defined clusters. In the 2011 Harvard Study, the 2008 Hawaii employment in the top 50 sub-clusters by national employment share was also provided.

The Clusters Based On DBEDT Definition

In this study, we will reclassify the Hawaii industry level data into clusters based on industry definitions and knowledge about Hawaii industries (the DBEDT Definition). The 2001 to 2014 data from EMSI were used to determine clusters in Hawaii based on the DBEDT methodology. The EMSI 2001 to 2014 annual data by NAICS included total jobs, annual earnings, and the number of establishments.

The clusters defined in the Harvard Study were based on complicated methodology and detailed industry level data by state. Without the detailed clusters by NAICS data, we were unable to verify the

classifications of clusters provided by the Harvard Study. Furthermore, since the clusters in the Harvard Study were classified based on national economic patterns, this may not perfectly match Hawaii's industry patterns. For example, electricity generation in a state interconnected with other states would be a traded industry. However, this should be classified as a local industry for Hawaii since Hawaii is not interconnected with other states.

After estimating the employment and annual earnings data by NAICS industry codes, we first tried to match the industries with the sub-clusters provided by the Harvard Study. In some cases, a NAICS code could clearly be assigned to a sub-cluster. For example, NAICS 6111 (elementary and secondary schools) was assigned to the sub-cluster: elementary and secondary schools, which is included in the Local Education and Training Cluster. In some other cases, a NAICS code could not be clearly assigned to a sub-cluster or even a cluster. For example, NAICS 6117 (educational support services) might be assigned to either Traded Cluster 4 (Education and Knowledge Creation) or Local Cluster 11 (Local Education and Training). In addition, some NAICS industry codes could not be assigned to a sub-cluster provided by the Harvard Study. For example, NAICS 62412 (services for the elderly and persons with disabilities) might be assigned to the Local Health Services Cluster; however, it was difficult to match this with any of the 9 sub-clusters included in the Local Health Services Cluster. For these NAICS codes, we used industry definitions and knowledge about Hawaii's industries to assign them to the traded or local clusters.

In determining whether an industry should be assigned to a traded cluster, we used the following two criteria: (1) whether the goods or services were mainly consumed by local residents or visitors (and/or exported) and (2) did the producers of the goods or services compete heavily with out-of-state producers. For example, since hotels are mainly consumed by visitors, the hotel industry was assigned to a traded cluster. On the other hand, since food services and drinking places were mainly consumed by local residents, this industry was assigned to a local cluster. The two criteria were not always consistent. In some cases, goods or services produced by an industry were mainly consumed by local residents, but the producers competed seriously with importers or out-of-state producers. In these cases, the industry was assigned to a traded cluster.

After examining industry definitions and the EMSI data, the detailed NAICS industries were combined into 292 industries at alternative detailed NAICS levels, from 2-digit to 6-digit. These NAICS industries were assigned to the same clusters as provided in the Harvard Study where possible. The list of the 292 NAICS industries and their assigned clusters are provided in the Appendix Table A-1. The number of local clusters remained the same as Table 2, but the number of traded clusters was reduced from 41 to 32. Some of the traded clusters in Table 1 were combined with other clusters based on the EMSI data, some clusters were moved from traded to local clusters. Specifically, among the 41 traded clusters from the Harvard Study, 34 of them could be matched with the 2012 NAICS industries. Two of these 34 traded clusters, Power Generation and Transmission and Heavy Construction Services were moved from traded clusters to local clusters (combined with the corresponding local clusters). In addition, since Footwear Manufacturing (NAICS 3162) was part of the Leather and Related Products cluster (NAICS 316), the Footwear cluster was removed in the DBEDT definition; therefore, the 34 traded clusters which could be matched with NAICS industries in the Harvard Study were reclassified into 31 traded clusters for the DBEDT definition. The seven traded clusters in the Harvard Study, which could not be matched with the 2012 NAICS code industries, had very few or no jobs in Hawaii. Among the seven clusters, Aerospace Engines and Aerospace Vehicles and Defense, were combined into one cluster, Aerospace Products and Parts Manufacturing (NAICS 3364). Therefore, the DBEDT definition included 32 traded clusters. The NAICS industries with names similar to the other five clusters were already included in other related clusters for the DBEDT definition. For example, the Biological Product industry (NAICS 325414) (similar to the Biopharmaceuticals cluster in the Harvard Study) was included in the Chemical Products cluster (NAICS 325).

Table 3 and Table 4 show the 2014 Hawaii total jobs by traded and local clusters, based on the DBEDT definition. In 2014, the 16 local clusters accounted for 75.4% of total private sector jobs, the 33 traded clusters accounted for 24.4% of total private sector jobs. The top 15 traded clusters accounted for more than 97% of total jobs in all traded clusters. Hawaii had no jobs in three of the traded clusters (No. 30-32).

Table 3. Hawaii 2014 Jobs by Traded Clusters Based on DBEDT Definition

Cluster No.	Cluster Name	Jobs 2014	% of Total Jobs	% of Traded Jobs	Cumulative Share
1	Hospitality and Tourism	56,829	8.1	33.2	33.2
2	Transportation and Logistics	14,746	2.1	8.6	41.8
3	Business Services	22,290	3.2	13.0	54.8
4	Education and Knowledge Creation	15,537	2.2	9.1	63.9
5	Distribution Services	5,726	0.8	3.3	67.2
6	Entertainment	7,271	1.0	4.2	71.5
7	Financial Services	16,263	2.3	9.5	81.0
8	Processed Food	6,013	0.9	3.5	84.5
9	Sporting, Recreational and Children's Goods	892	0.1	0.5	85.0
10	Fishing and Fishing Products	1,511	0.2	0.9	85.9
11	Publishing and Printing	1,834	0.3	1.1	87.0
12	Agricultural Products	14,113	2.0	8.2	95.2
13	Information Technology	1,309	0.2	0.8	96.0
14	Jewelry and Precious Metals	1,389	0.2	0.8	96.8
15	Oil and Gas Products and Services	1,109	0.2	0.6	97.4
16	Building Fixtures, Equipment and Services	173	0.0	0.1	97.5
17	Apparel	1,098	0.2	0.6	98.2
18	Plastics	313	0.0	0.2	98.4
19	Metal Manufacturing	466	0.1	0.3	98.6
20	Construction Materials	310	0.0	0.2	98.8
21	Furniture	519	0.1	0.3	99.1
22	Textiles	283	0.0	0.2	99.3
23	Medical Devices	265	0.0	0.2	99.4
24	Forest Products	176	0.0	0.1	99.5
25	Chemical Products	468	0.1	0.3	99.8
26	Machinery Manufacturing	140	0.0	0.1	99.9
27	Automotive	23	0.0	0.0	99.9
28	Leather and Related Products	91	0.0	0.1	100.0
29	Lighting and Electrical Equipment	48	0.0	0.0	100.0
30	Other transportation equipment manufacturing	-	-	-	100.0
31	Aerospace Product and Parts Manufacturing	12	0.0	0.0	100.0
32	Tobacco	-	-	-	100.0
	Total Traded Clusters	171,216	24.4	100.0	
	Total Private Sector Jobs	702,555	100.0		

Source: DBEDT compilation based on EMSI data

Table 4. Hawaii 2014 Jobs by Local Clusters Based on DBEDT Definition

Cluster No.	Cluster Name	Jobs 2014	% of Total Jobs	% of Traded Jobs	Cumulative Share
1	Local Hospitality Establishments	79,394	11.3	15.0	15.0
2	Local Health Services	68,517	9.8	12.9	27.9
3	Local Commercial Services	88,197	12.6	16.6	44.5
4	Local Real Estate, Construction, and Development	94,525	13.5	17.8	62.4
5	Local Retail Clothing and Accessories	29,723	4.2	5.6	68.0
6	Local Community and Civic Organizations	20,982	3.0	4.0	71.9
7	Local Food and Beverage Processing and Distribution	29,396	4.2	5.5	77.5
8	Local Motor Vehicle Products and Services	14,797	2.1	2.8	80.3
9	Local Financial Services	13,120	1.9	2.5	82.8
10	Local Education and Training	11,809	1.7	2.2	85.0
11	Local Personal Services (Non-Medical)	36,797	5.2	6.9	91.9
12	Local Entertainment and Media	15,973	2.3	3.0	94.9
13	Local Logistical Services	9,381	1.3	1.8	96.7
14	Local Household Goods and Services	6,291	0.9	1.2	97.9
15	Local Utilities	5,851	0.8	1.1	99.0
16	Local Industrial Products and Services	5,262	0.7	1.0	100.0
	Total Local Clusters	530,016	75.4	100.0	
	Total Traded Clusters	171,216	24.4		
	Total Resource-Dependent Clusters	1,322	0.2		
	Sub-Total All Clusters	702,555	100.0		

Source: DBEDT compilation based on EMSI data

II. COMPARISON OF TOTAL JOBS AND AVERAGE ANNUAL EARNINGS BY CLUSTERS BETWEEN HAWAII AND THE U.S.

As outline above, the detailed industry NAICS codes were assigned to 32 traded clusters for the DBEDT definition, and these were further reduced to 16 traded clusters due to clusters 16-32 being combined into the “Other Traded Clusters” category (these had small job counts). Resource dependent industries (small in Hawaii) were combined into one cluster. The following are comparisons of total jobs and average annual earnings by clusters between Hawaii and the U.S. in 2014 and 2001.

Comparison of Total Jobs

Table 5 compares 2014 total jobs by traded clusters between Hawaii and the nation. The top five traded clusters in Hawaii were: (1) Hospitality and Tourism, (2) Business Services, (3) Financial Services, (4) Education and Knowledge Creation, and (5) Transportation and Logistics. These five clusters accounted for 73.4 percent of total jobs in all traded clusters and about 17.9 percent of total private sector jobs in Hawaii. The Hospitality and Tourism cluster alone accounted for 33.2 percent of traded cluster jobs in Hawaii. Traded clusters numbered 16-32 in the table below accounted for only 2.6 percent of traded cluster jobs. Total traded clusters accounted for about 24.4 percent of total private sector jobs in Hawaii in 2014.

The top five U.S. traded clusters in 2014 were: (1) Business Services, (2) Financial Services, (3) Education and Knowledge Creation, (4) Agricultural Production, and (5) Hospitality and Tourism. These five clusters accounted for about 60.6 percent of total jobs in all traded clusters. In the U.S., the Business Services cluster accounted for about 20.2 percent of jobs in all traded clusters; the Hospitality and Tourism cluster accounted for only 7.1 percent; and traded clusters 16-32 accounted for 19.7 percent of jobs in all traded clusters. Total traded clusters accounted for about 25.4 percent of total private sector jobs in the U.S., slightly higher than the corresponding share in Hawaii.

Table 5. Comparison of 2014 Jobs by Traded Clusters

Cluster No.	Cluster Name	2014 Jobs		Share of Total Jobs		Share of Traded	
		Hawaii	U.S.	Hawaii	U.S.	Hawaii	U.S.
1	Hospitality and Tourism	56,829	2,943,939	8.1	1.8	33.2	7.1
2	Transportation and Logistics	14,746	1,631,400	2.1	1.0	8.6	3.9
3	Business Services	22,290	8,344,932	3.2	5.1	13.0	20.2
4	Education and Knowledge Creation	15,537	4,578,631	2.2	2.8	9.1	11.1
5	Distribution Services	5,726	1,675,757	0.8	1.0	3.3	4.0
6	Entertainment	7,271	1,034,611	1.0	0.6	4.2	2.5
7	Financial Services	16,263	5,938,867	2.3	3.6	9.5	14.3
8	Processed Food	6,013	1,138,793	0.9	0.7	3.5	2.8
9	Sporting, Recreational and Children's Goods	892	220,526	0.1	0.1	0.5	0.5
10	Fishing and Fishing Products	1,511	86,136	0.2	0.1	0.9	0.2
11	Publishing and Printing	1,834	1,018,880	0.3	0.6	1.1	2.5
12	Agricultural Products	14,113	3,283,228	2.0	2.0	8.2	7.9
13	Information Technology	1,309	1,008,090	0.2	0.6	0.8	2.4
14	Jewelry and Precious Metals	1,389	127,444	0.2	0.1	0.8	0.3
15	Oil and Gas Products and Services	1,109	222,763	0.2	0.1	0.6	0.5
16-32	Other Traded Clusters	4,384	8,136,459	0.6	5.0	2.6	19.7
	Total Traded Clusters	171,216	41,390,456	24.4	25.4	100.0	100.0
	Total Private Sector Jobs	702,555	162,771,519	100.0	100.0		

Source: DBEDT compilation based on EMSI data

Table 6 compares 2014 total jobs by local clusters between Hawaii and the nation. The top five local clusters in Hawaii were: (1) Local Real Estate, Construction, and Development, (2) Local Commercial Services, (3) Local Hospitality Establishments, (4) Local Health Services, and (5) Local Personal Services (Non-Medical). These five clusters accounted for 69.3 percent of total jobs in all local clusters and 52.3 percent of total private sector jobs in Hawaii. The Local Hospitality Establishments cluster accounted for 15.0 percent of the jobs in all local clusters in Hawaii. Total local clusters accounted for about 75.4 percent of total private sector jobs in Hawaii in 2014.

In 2014, the top five local clusters in the U.S. were: (1) Local Commercial Services, (2) Local Real Estate, Construction, and Development, (3) Local Health Services, (4) Local Hospitality Establishments, and (5) Local Personal Services (Non-Medical). The top five local clusters in the U.S. and in Hawaii were the same, only the ranks of the top four local clusters are different. The top five local clusters in the U.S. accounted for 67.1 percent of total jobs in all local clusters and 49.5 percent of total private sector jobs in the U.S., about 2-3 percentage points lower than the corresponding shares in Hawaii. Total local clusters accounted for 73.7 percent of total private sector jobs in the U.S. in 2014, slightly lower than the corresponding share in Hawaii.

Table 6. Comparison of 2014 Jobs by Local Clusters

Cluster No.	Cluster Name	2014 Jobs		Share of Total Jobs		Share of Traded	
		Hawaii	U.S.	Hawaii	U.S.	Hawaii	U.S.
1	Local Hospitality Establishments	79,394	13,806,262	11.3	8.5	15.0	11.5
2	Local Health Services	68,517	18,997,453	9.8	11.7	12.9	15.8
3	Local Commercial Services	88,197	19,932,720	12.6	12.2	16.6	16.6
4	Local Real Estate, Construction, and Development	94,525	19,723,291	13.5	12.1	17.8	16.4
5	Local Retail Clothing and Accessories	29,723	5,515,245	4.2	3.4	5.6	4.6
6	Local Community and Civic Organizations	20,982	4,782,358	3.0	2.9	4.0	4.0
7	Local Food and Beverage Processing and Distribution	29,396	5,815,003	4.2	3.6	5.5	4.8
8	Local Motor Vehicle Products and Services	14,797	4,699,013	2.1	2.9	2.8	3.9
9	Local Financial Services	13,120	4,151,878	1.9	2.6	2.5	3.5
10	Local Education and Training	11,809	1,425,925	1.7	0.9	2.2	1.2
11	Local Personal Services (Non-Medical)	36,797	8,038,480	5.2	4.9	6.9	6.7
12	Local Entertainment and Media	15,973	3,645,347	2.3	2.2	3.0	3.0
13	Local Logistical Services	9,381	3,930,818	1.3	2.4	1.8	3.3
14	Local Household Goods and Services	6,291	1,749,652	0.9	1.1	1.2	1.5
15	Local Utilities	5,851	1,486,479	0.8	0.9	1.1	1.2
16	Local Industrial Products and Services	5,262	2,266,012	0.7	1.4	1.0	1.9
	Total Local Clusters	530,016	119,965,936	75.4	73.7	100.0	100.0
	Total Traded Clusters	171,216	41,390,456	24.4	25.4		
	Total Resource-Dependent Clusters	1,322	1,415,127	0.2	0.9		
	Sub-Total All Clusters	702,555	162,771,519	100.0	100.0		

Source: DBEDT compilation based on EMSI data

Table 7 compares 2001 total jobs by traded clusters between Hawaii and the nation. From 2001 to 2014, the top six traded clusters in Hawaii remained the same; only the share of these six clusters in total traded cluster jobs increased from 79.7 percent in 2001 to 82.9 percent in 2014. However, from 2001 to 2014, the traded clusters' share of total private sector jobs decreased in Hawaii. In 2001, total traded clusters accounted for about 26.2 percent of total private sector jobs in Hawaii, 1.8 percentage points higher than that in 2014.

From 2001 to 2014, the top five traded clusters in the U.S. remained the same. These five clusters accounted for about 51.7 percent of total jobs in all traded clusters. From 2001 to 2014, the traded clusters' share of total private sector jobs also decreased in the U.S. In 2001, total traded clusters

accounted for about 27.4 percent of total private sector jobs in the U.S., 2.0 percentage points higher than that in 2014.

Table 7. Comparison of 2001 Jobs by Traded Clusters

Cluster No.	Cluster Name	2001 Jobs		Share of Total Jobs		Share of Traded	
		Hawaii	U.S.	Hawaii	U.S.	Hawaii	U.S.
1	Hospitality and Tourism	55,127	2,824,098	9.4	2.0	35.7	7.2
2	Transportation and Logistics	15,283	1,627,562	2.6	1.1	9.9	4.2
3	Business Services	17,403	7,311,815	3.0	5.1	11.3	18.8
4	Education and Knowledge Creation	11,323	3,088,987	1.9	2.2	7.3	7.9
5	Distribution Services	5,118	1,431,313	0.9	1.0	3.3	3.7
6	Entertainment	5,977	990,646	1.0	0.7	3.9	2.5
7	Financial Services	10,134	3,433,247	1.7	2.4	6.6	8.8
8	Processed Food	6,122	1,133,997	1.0	0.8	4.0	2.9
9	Sporting, Recreational and Children's Goods	578	275,570	0.1	0.2	0.4	0.7
10	Fishing and Fishing Products	1,886	103,236	0.3	0.1	1.2	0.3
11	Publishing and Printing	2,513	1,567,874	0.4	1.1	1.6	4.0
12	Agricultural Products	13,647	3,467,534	2.3	2.4	8.8	8.9
13	Information Technology	1,178	790,506	0.2	0.6	0.8	2.0
14	Jewelry and Precious Metals	1,310	130,672	0.2	0.1	0.8	0.3
15	Oil and Gas Products and Services	785	240,308	0.1	0.2	0.5	0.6
16-32	Other Traded Clusters	5,862	10,537,521	1.0	7.4	3.8	27.1
	Total Traded Clusters	154,245	38,954,887	26.2	27.4	100.0	100.0
	Total Private Sector Jobs	589,218	141,994,101	100.0	100.0		

Source: DBEDT compilation based on EMSI data

Table 8 compares 2001 total jobs by local clusters between Hawaii and the nation. From 2001 to 2014, the top five local clusters in Hawaii remained the same, however, their share of total local cluster jobs increased from 65.9 percent in 2001 to 69.3 percent in 2014. In addition, from 2001 to 2014, the local cluster share of total private sector jobs also increased in Hawaii. In 2001, total local clusters accounted for 73.7 percent of total private sector jobs in Hawaii, 1.7 percentage points lower than that in 2014.

From 2001 to 2014, the top five local clusters in the U.S. also remained the same, however, their share of total local cluster jobs increased from 63.7 percent in 2001 to 67.1 percent in 2014. From 2001 to 2014, the local cluster share of total private sector jobs increased in the U.S. In 2001, total local clusters accounted for about 72.0 percent of total private sector jobs in the U.S., 1.7 percentage points lower than that in 2014.

Table 8. Comparison of 2001 Jobs by Local Clusters

Cluster No.	Cluster Name	2001 Jobs		Share of Total Jobs		Share of Traded	
		Hawaii	U.S.	Hawaii	U.S.	Hawaii	U.S.
1	Local Hospitality Establishments	67,105	10,683,286	11.4	7.5	15.4	10.4
2	Local Health Services	52,066	13,534,739	8.8	9.5	12.0	13.2
3	Local Commercial Services	68,391	17,426,025	11.6	12.3	15.7	17.0
4	Local Real Estate, Construction, and Development	69,517	17,203,958	11.8	12.1	16.0	16.8
5	Local Retail Clothing and Accessories	26,535	5,015,916	4.5	3.5	6.1	4.9
6	Local Community and Civic Organizations	17,203	4,298,925	2.9	3.0	4.0	4.2
7	Local Food and Beverage Processing and Distribution	26,644	5,569,260	4.5	3.9	6.1	5.4
8	Local Motor Vehicle Products and Services	15,324	4,648,536	2.6	3.3	3.5	4.5
9	Local Financial Services	13,035	4,161,747	2.2	2.9	3.0	4.1
10	Local Education and Training	10,289	1,169,341	1.7	0.8	2.4	1.1
11	Local Personal Services (Non-Medical)	29,320	6,291,829	5.0	4.4	6.7	6.2
12	Local Entertainment and Media	15,821	3,459,955	2.7	2.4	3.6	3.4
13	Local Logistical Services	7,577	3,289,888	1.3	2.3	1.7	3.2
14	Local Household Goods and Services	6,836	1,969,847	1.2	1.4	1.6	1.9
15	Local Utilities	4,247	1,461,507	0.7	1.0	1.0	1.4
16	Local Industrial Products and Services	4,553	2,048,541	0.8	1.4	1.0	2.0
	Total Local Clusters	434,462	102,233,301	73.7	72.0	100.0	100.0
	Total Traded Clusters	154,245	38,954,887	26.2	27.4		
	Total Resource-Dependent Clusters	511	805,913	0.1	0.6		
	Sub-Total All Clusters	589,218	141,994,101	100.0	100.0		

Source: DBEDT compilation based on EMSI data

Comparison of Annual Average Earnings

Table 9 shows Hawaii's annual average earnings by clusters in 2001 and 2014. From 2001 to 2014, the average annual earnings of all clusters in Hawaii increased 52.5 percent, from \$32,316 to \$49,283; the average earnings of all traded clusters increased 38.3 percent from \$35,875 to \$49,617; the average earnings of all local clusters increased 39.7 percent from \$31,037 to \$43,363.

From 2001 to 2014, the average earnings for all traded clusters increased, except for the Fishing and Fishing Products cluster. The Business Services cluster increased the most among all traded clusters, followed by Other Traded clusters, Hospitality and Tourism, Sporting, Recreational and Children's Goods, and Entertainment. The traded clusters with low growth were Financial Services, Publishing and Printing, Jewelry and Precious Metals, Information Technology, and Distribution Services.

Among the local clusters, the average earnings for the Local Utilities cluster increased the most from 2001 to 2014, followed by Local Household Goods and Services, Local Food and Beverage Processing and Distribution, Local Real Estate, Construction, and Development, and Local Education and Training. Local clusters with low growth are Local Entertainment and Media, Local Commercial Services, Local Community and Civic Organizations, Local Retail Clothing and Accessories, and Local Logistical Services.

Among Hawaii's traded clusters, the Oil and Gas Products and Services cluster paid the highest average earnings in 2014, followed by Transportation and Logistics, Information Technology, Business Services, and other Traded Clusters; the Fishing and Fishing Products cluster paid the lowest average earnings, followed by Agricultural Products, Jewelry and Precious Metals, Sporting, Recreational and Children's Goods, and Entertainment.

Among the local clusters, the Local Utilities cluster paid the highest average earnings in 2014, followed by Local Financial Services, Local Industrial Products and Services, Local Health Services, and Local Real Estate, Construction, and Development. Conversely, the Local Hospitality Establishments cluster paid the lowest average wage, followed by Local Entertainment and Media, Local Personal Services (Non-Medical), Local Retail Clothing and Accessories, and Local Food and Beverage Processing and Distribution.

Table 9. Hawaii Annual Average Earnings and Growth Rate from 2001 to 2014 by Clusters

Cluster No.	Cluster Name	Average Earnings in Hawaii			Rank in	
		\$/Year 2001	\$/Year 2014	% Growth	2014 Earnings	Growth Rate
1	Hospitality and Tourism	31,758	46,569	46.6	8	3
2	Transportation and Logistics	56,929	75,875	33.3	2	8
3	Business Services	42,749	65,182	52.5	4	1
4	Education and Knowledge Creation	29,276	40,909	39.7	11	6
5	Distribution Services	40,713	50,795	24.8	6	11
6	Entertainment	27,686	39,458	42.5	12	5
7	Financial Services	44,025	47,659	8.3	7	15
8	Processed Food	31,072	41,219	32.7	10	9
9	Sporting, Recreational and Children's Goods	26,118	37,258	42.7	13	4
10	Fishing and Fishing Products	19,810	19,176	-3.2	16	16
11	Publishing and Printing	40,197	43,870	9.1	9	14
12	Agricultural Products	21,914	28,251	28.9	15	10
13	Information Technology	56,705	69,217	22.1	3	12
14	Jewelry and Precious Metals	30,416	36,502	20.0	14	13
15	Oil and Gas Products and Services	88,339	119,360	35.1	1	7
16-32	Other Traded Clusters	33,890	51,477	51.9	5	2
	Total Traded Clusters	35,875	49,617	38.3		
1	Local Hospitality Establishments	17,309	23,758	37.3	16	11
2	Local Health Services	44,887	62,399	39.0	4	8
3	Local Commercial Services	35,603	46,155	29.6	7	15
4	Local Real Estate, Construction, and Development	36,405	52,374	43.9	5	4
5	Local Retail Clothing and Accessories	22,477	30,465	35.5	13	13
6	Local Community and Civic Organizations	25,621	33,969	32.6	11	14
7	Local Food and Beverage Processing and Distribution	22,073	31,848	44.3	12	3
8	Local Motor Vehicle Products and Services	31,929	45,215	41.6	8	6
9	Local Financial Services	51,232	71,201	39.0	2	9
10	Local Education and Training	31,077	44,155	42.1	9	5
11	Local Personal Services (Non-Medical)	19,760	27,434	38.8	14	10
12	Local Entertainment and Media	22,168	25,354	14.4	15	16
13	Local Logistical Services	36,016	48,900	35.8	6	12
14	Local Household Goods and Services	29,118	43,581	49.7	10	2
15	Local Utilities	68,645	103,896	51.4	1	1
16	Local Industrial Products and Services	49,284	69,525	41.1	3	7
	Total Local Clusters	31,037	43,363	39.7		
	Total Resource-Dependent Clusters	44,534	2,371,655	5,225.5		
	All Clusters	32,316	49,283	52.5		

Source: DBEDT compilation based on EMSI data

Table 10 shows U.S. average earnings by clusters for 2001 and 2014. From 2001 to 2014, the average earnings of all clusters in the U.S. increased 32.7 percent (19.8 percentage points lower than that of Hawaii) from \$38,630 to \$51,255; the average earnings of all traded clusters increased 38.7 percent (0.4 of a percentage point higher than that of Hawaii) from \$50,184 to \$69,617; the average earnings of all local clusters increased 30.5 percent (9.2 percentage points lower than that of Hawaii) from \$34,049 to \$44,429.

Table 10. U.S. Annual Average Earnings and Growth Rate from 2001 to 2014 by Clusters

Cluster No.	Cluster Name	Average Earnings in U.S.			Rank in	
		\$/Year	\$/Year	%	2014	Growth
		2001	2014	Growth	Earnings	Rate
1	Hospitality and Tourism	26,301	34,845	32.5	14	13
2	Transportation and Logistics	55,496	77,272	39.2	5	8
3	Business Services	60,856	81,445	33.8	4	12
4	Education and Knowledge Creation	38,780	56,725	46.3	12	6
5	Distribution Services	47,206	65,384	38.5	8	9
6	Entertainment	50,101	68,197	36.1	7	10
7	Financial Services	77,935	84,870	8.9	3	16
8	Processed Food	43,592	58,872	35.1	11	11
9	Sporting, Recreational and Children's Goods	44,165	63,984	44.9	10	7
10	Fishing and Fishing Products	22,097	33,503	51.6	15	3
11	Publishing and Printing	48,635	64,070	31.7	9	14
12	Agricultural Products	19,316	28,280	46.4	16	5
13	Information Technology	79,504	129,345	62.7	1	1
14	Jewelry and Precious Metals	40,291	50,050	24.2	13	15
15	Oil and Gas Products and Services	77,509	125,196	61.5	2	2
16-32	Other Traded Clusters	51,904	76,503	47.4	6	4
	Total Traded Clusters	50,184	69,617	38.7		
1	Local Hospitality Establishments	15,200	20,178	32.7	16	9
2	Local Health Services	41,461	55,722	34.4	5	5
3	Local Commercial Services	43,504	57,960	33.2	4	8
4	Local Real Estate, Construction, and Development	36,576	43,709	19.5	8	15
5	Local Retail Clothing and Accessories	20,325	25,851	27.2	14	12
6	Local Community and Civic Organizations	22,260	29,770	33.7	12	7
7	Local Food and Beverage Processing and Distribution	22,687	29,603	30.5	13	10
8	Local Motor Vehicle Products and Services	32,954	40,851	24.0	9	13
9	Local Financial Services	56,601	85,612	51.3	2	2
10	Local Education and Training	24,292	37,137	52.9	11	1
11	Local Personal Services (Non-Medical)	20,424	23,840	16.7	15	16
12	Local Entertainment and Media	30,650	37,675	22.9	10	14
13	Local Logistical Services	38,448	50,151	30.4	6	11
14	Local Household Goods and Services	34,124	45,853	34.4	7	6
15	Local Utilities	54,083	76,505	41.5	3	4
16	Local Industrial Products and Services	59,374	87,341	47.1	1	3
	Total Local Clusters	34,049	44,429	30.5		
	Total Resource-Dependent Clusters	59,770	91,749	53.5		
	All Clusters	38,630	51,255	32.7		

Source: DBEDT compilation based on EMSI data

From 2001 to 2014, the average earnings in the Information Technology cluster increased most among all traded clusters in the U.S., followed by Oil and Gas Products and Services, Fishing and Fishing Products, Other Traded clusters, and Agricultural Products. Traded clusters in the U.S. with the low earnings growth were Financial Services, Jewelry and Precious Metals, Publishing and Printing, Hospitality and Tourism, and Business Services.

Among the U.S. local clusters, the average earnings in the Local Education and Training cluster increased the most from 2001 to 2014, followed by Local Financial Services, Local Industrial Products and Services, Local Utilities, and Local Health Services. The U.S. Local clusters with low earnings growth were Local Personal Services (Non-Medical), Local Real Estate, Construction, and Development, Local Entertainment and Media, Local Motor Vehicle Products and Services, and Local Retail Clothing and Accessories.

Among the U.S. traded clusters for 2014, the Information Technology cluster paid the highest average earnings, followed by Oil and Gas Products and Services, Financial Services, Business Services, and Transportation and Logistics. Conversely, the Agricultural Products cluster had the lowest average earnings, followed by Fishing and Fishing Products, Hospitality and Tourism, Jewelry and Precious Metals, and Education and Knowledge Creation.

Among the U.S. local clusters, the Local Industrial Products and Services cluster paid the highest average earnings in 2014, followed by Local Financial Services, Local Utilities, Local Commercial Services, and Local Health Services. In contrast, the Local Hospitality Establishments cluster had the lowest average earnings, followed by Local Personal Services (Non-Medical), Local Retail Clothing and Accessories, Local Food and Beverage Processing and Distribution, and Local Community and Civic Organizations.

Table 11 compares the 2014 average earnings between the U.S. and Hawaii by clusters. In 2014, the average earnings of all clusters in Hawaii was about 3.8 percent lower than the average earnings of the U.S.; the average earnings of all traded clusters in Hawaii was about 28.7 percent lower than that of the nation; and the average earnings of all local clusters in Hawaii was about 2.4 percent lower than that of the U.S.

Among the traded clusters, only the Hospitality and Tourism cluster had significantly higher earnings in Hawaii relative to that of the nation. The remaining traded clusters had higher earnings for the U.S. overall than Hawaii, with the largest earnings gap in the Information Technology cluster, followed by Financial Services, Fishing and Fishing Products, Entertainment, and Sporting, Recreational and Children's Goods.

Among the 16 local clusters, 10 clusters had higher average earnings in Hawaii compared with the nation in 2014. The largest negative earnings gap between Hawaii and the U.S. was for the Local Entertainment and Media cluster, followed by Local Industrial Products and Services, Local Commercial Services, Local Financial Services, and Local Household Goods and Services. The local clusters with higher average earnings in Hawaii were Local Utilities, Local Real Estate, Construction, and Development, Local Education and Training, Local Retail Clothing and Accessories, and Local Hospitality Establishments.

Table 11. Comparison of Hawaii and U.S. Average Earnings by Clusters in 2014

Cluster No.	Cluster Name	Average Earnings in 2014		
		\$/Year Hawaii	\$/Year U.S.	HI above U.S. %
1	Hospitality and Tourism	46,569	34,845	33.6
2	Transportation and Logistics	75,875	77,272	-1.8
3	Business Services	65,182	81,445	-20.0
4	Education and Knowledge Creation	40,909	56,725	-27.9
5	Distribution Services	50,795	65,384	-22.3
6	Entertainment	39,458	68,197	-42.1
7	Financial Services	47,659	84,870	-43.8
8	Processed Food	41,219	58,872	-30.0
9	Sporting, Recreational and Children's Goods	37,258	63,984	-41.8
10	Fishing and Fishing Products	19,176	33,503	-42.8
11	Publishing and Printing	43,870	64,070	-31.5
12	Agricultural Products	28,251	28,280	-0.1
13	Information Technology	69,217	129,345	-46.5
14	Jewelry and Precious Metals	36,502	50,050	-27.1
15	Oil and Gas Products and Services	119,360	125,196	-4.7
16-32	Other Traded Clusters	51,477	76,503	-32.7
	Total Traded Clusters	49,617	69,617	-28.7
1	Local Hospitality Establishments	23,758	20,178	17.7
2	Local Health Services	62,399	55,722	12.0
3	Local Commercial Services	46,155	57,960	-20.4
4	Local Real Estate, Construction, and Development	52,374	43,709	19.8
5	Local Retail Clothing and Accessories	30,465	25,851	17.8
6	Local Community and Civic Organizations	33,969	29,770	14.1
7	Local Food and Beverage Processing and Distribution	31,848	29,603	7.6
8	Local Motor Vehicle Products and Services	45,215	40,851	10.7
9	Local Financial Services	71,201	85,612	-16.8
10	Local Education and Training	44,155	37,137	18.9
11	Local Personal Services (Non-Medical)	27,434	23,840	15.1
12	Local Entertainment and Media	25,354	37,675	-32.7
13	Local Logistical Services	48,900	50,151	-2.5
14	Local Household Goods and Services	43,581	45,853	-5.0
15	Local Utilities	103,896	76,505	35.8
16	Local Industrial Products and Services	69,525	87,341	-20.4
	Total Local Clusters	43,363	44,429	-2.4
	Total Resource-Dependent Clusters	2,371,655	91,749	2,485.0
	All Clusters	49,283	51,255	-3.8

Source: DBEDT compilation based on EMSI data

Table 12 compares the 2001 average earnings between the U.S. and Hawaii by cluster. In 2001, the average earnings of all clusters in Hawaii was about 16.3 percent lower than the average earnings of the U.S. (12.5 percentage points below the earnings gap in 2014); the average earnings of all traded clusters in Hawaii was about 28.5 percent lower than that of the U.S. (about the same as the earnings gap in 2014); and the average earnings of all local clusters in Hawaii was about 8.8 percent lower than that of the U.S. (6.4 percentage points below the earnings gap in 2014).

In 2001, among the 16 traded clusters, 4 clusters had higher average earnings in Hawaii, and 12 clusters had lower average earnings in Hawaii compared with the nation. The negative average earnings gap between Hawaii and the U.S. was the largest for the Entertainment cluster, followed by Financial Services, Sporting, Recreational and Children's Goods, Other Traded clusters, and Business Services. In 2001, the four traded clusters with higher average earnings in Hawaii were Hospitality and Tourism, Oil and Gas Products and Services, Agricultural Products, and Transportation and Logistics.

Among the 16 local clusters, 6 clusters had higher average earnings and 10 clusters had lower average earnings in Hawaii compared with the nation in 2001. The negative average earnings gap between Hawaii and the U.S. was largest for the Local Entertainment and Media cluster, followed by Local Commercial Services, Local Industrial Products and Services, Local Household Goods and Services, and Local Financial Services. The local clusters with higher average earnings in Hawaii in 2001 were Local Education and Training, Local Utilities, Local Community and Civic Organizations, Local Hospitality Establishments, and Local Retail Clothing and Accessories.

Table 12. Comparison of Hawaii and U.S. Average Earnings by Clusters in 2001

Cluster No.	Cluster Name	Average Earnings in 2001		
		\$/Year Hawaii	\$/Year U.S.	HI above U.S. %
1	Hospitality and Tourism	31,758	26,301	20.8
2	Transportation and Logistics	56,929	55,496	2.6
3	Business Services	42,749	60,856	-29.8
4	Education and Knowledge Creation	29,276	38,780	-24.5
5	Distribution Services	40,713	47,206	-13.8
6	Entertainment	27,686	50,101	-44.7
7	Financial Services	44,025	77,935	-43.5
8	Processed Food	31,072	43,592	-28.7
9	Sporting, Recreational and Children's Goods	26,118	44,165	-40.9
10	Fishing and Fishing Products	19,810	22,097	-10.4
11	Publishing and Printing	40,197	48,635	-17.3
12	Agricultural Products	21,914	19,316	13.5
13	Information Technology	56,705	79,504	-28.7
14	Jewelry and Precious Metals	30,416	40,291	-24.5
15	Oil and Gas Products and Services	88,339	77,509	14.0
16-32	Other Traded Clusters	33,890	51,904	-34.7
	Total Traded Clusters	35,875	50,184	-28.5
1	Local Hospitality Establishments	17,309	15,200	13.9
2	Local Health Services	44,887	41,461	8.3
3	Local Commercial Services	35,603	43,504	-18.2
4	Local Real Estate, Construction, and Development	36,405	36,576	-0.5
5	Local Retail Clothing and Accessories	22,477	20,325	10.6
6	Local Community and Civic Organizations	25,621	22,260	15.1
7	Local Food and Beverage Processing and Distribution	22,073	22,687	-2.7
8	Local Motor Vehicle Products and Services	31,929	32,954	-3.1
9	Local Financial Services	51,232	56,601	-9.5
10	Local Education and Training	31,077	24,292	27.9
11	Local Personal Services (Non-Medical)	19,760	20,424	-3.3
12	Local Entertainment and Media	22,168	30,650	-27.7
13	Local Logistical Services	36,016	38,448	-6.3
14	Local Household Goods and Services	29,118	34,124	-14.7
15	Local Utilities	68,645	54,083	26.9
16	Local Industrial Products and Services	49,284	59,374	-17.0
	Total Local Clusters	31,037	34,049	-8.8
	Total Resource-Dependent Clusters	44,534	59,770	-25.5
	All Clusters	32,316	38,630	-16.3

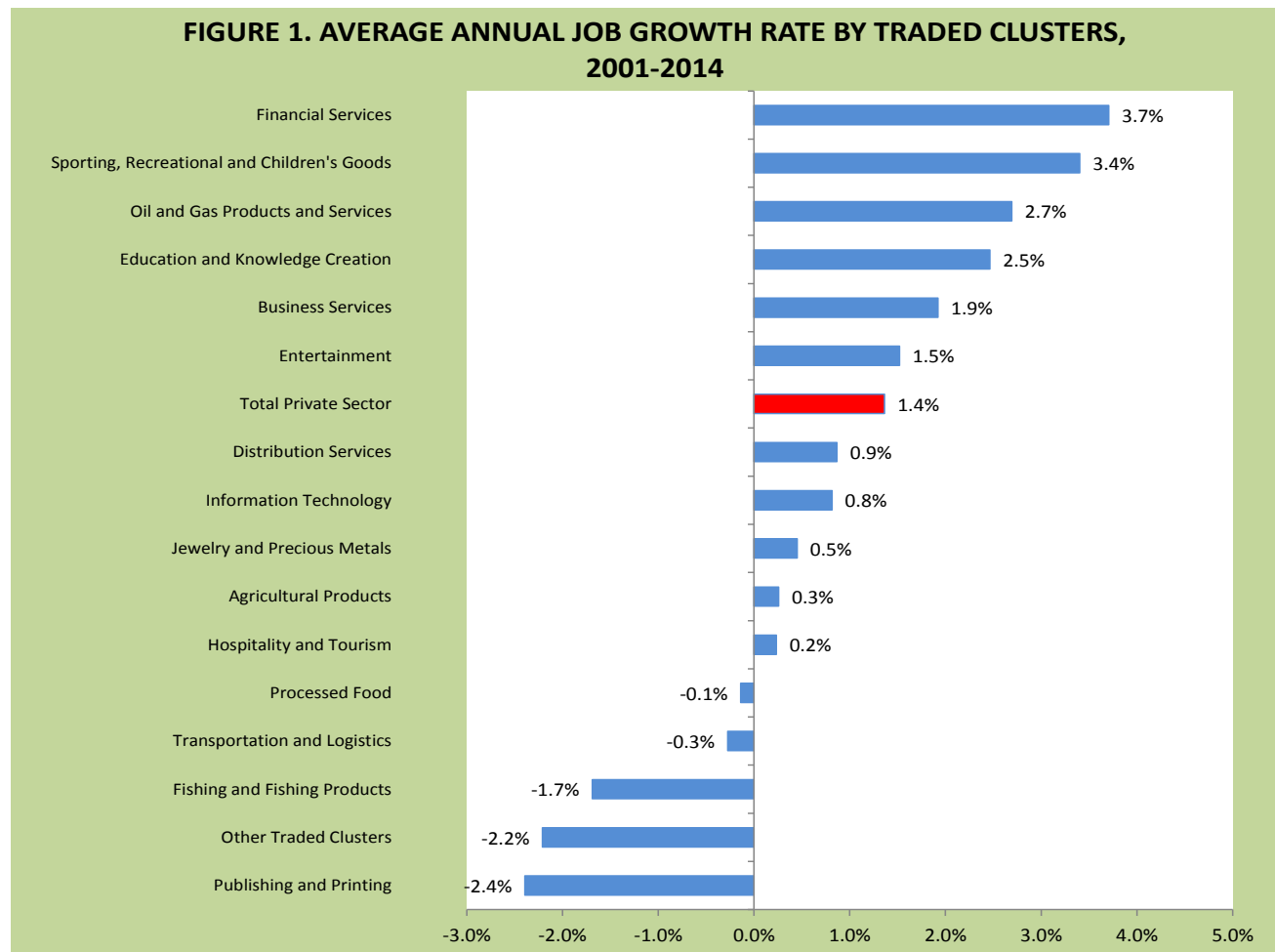
Source: DBEDT compilation based on EMSI data

III. HAWAII'S CLUSTER PORTFOLIO

As described earlier, the private sector can be separated into traded clusters, local clusters, and resource-based clusters using EMSI data. There are 33 traded clusters, 16 local clusters, and 1 resource-based cluster. Since traded cluster numbers 16 to 33 were very small, we combined them into one group. This section will examine the performance of the 16 traded clusters and 16 local clusters.

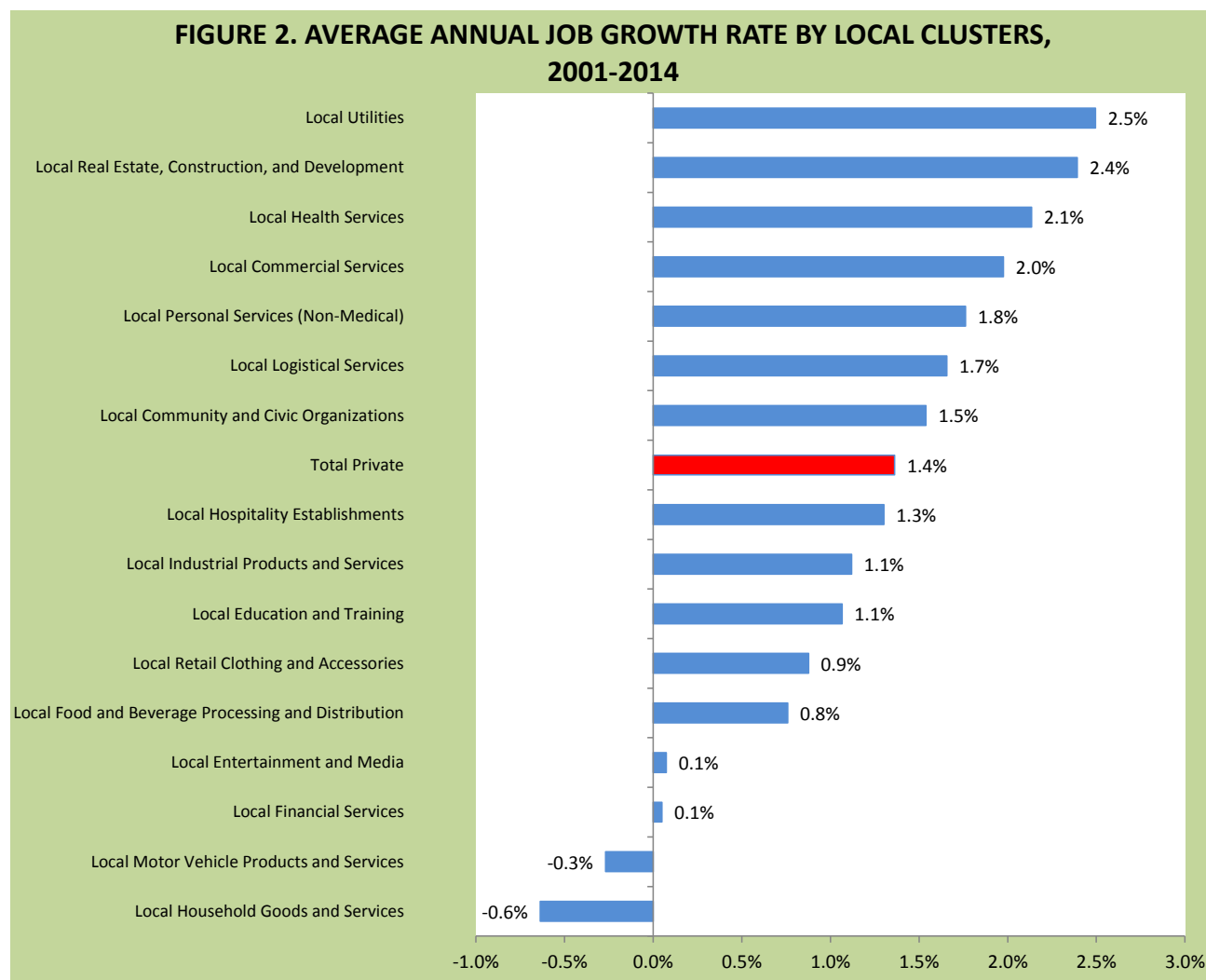
Job Growth by Clusters

From 2001 to 2014, the traded clusters' job growth was lower than that of the average job growth for all Hawaii's private industries combined. As shown in Figure 1, of the 16 traded clusters, 11 clusters showed net job growth over the period but only six had an average annual job growth rate above the overall state private sector average of 1.4%. Financial Services topped the list with a 3.7% average annual growth, followed by Sporting, Recreational and Children's Goods. Combined traded clusters gained 0.8% jobs per year on average from 2001 to 2014.



Source: DBEDT compilation based on EMSI data.

From 2001 to 2014, the local clusters' job growth was slightly higher than that of the average job growth for all of Hawaii's private industries combined. As shown in Figure 2, of the 16 local clusters, 14 clusters showed net job growth over the period and seven clusters had an average annual job growth rate above the overall state private sector average of 1.4%. Local Utilities topped the list with a 2.5% average annual growth. This was followed by Local Real Estate, Construction, and Development. The local clusters combined gained 1.5% jobs per year on average from 2001 to 2014.

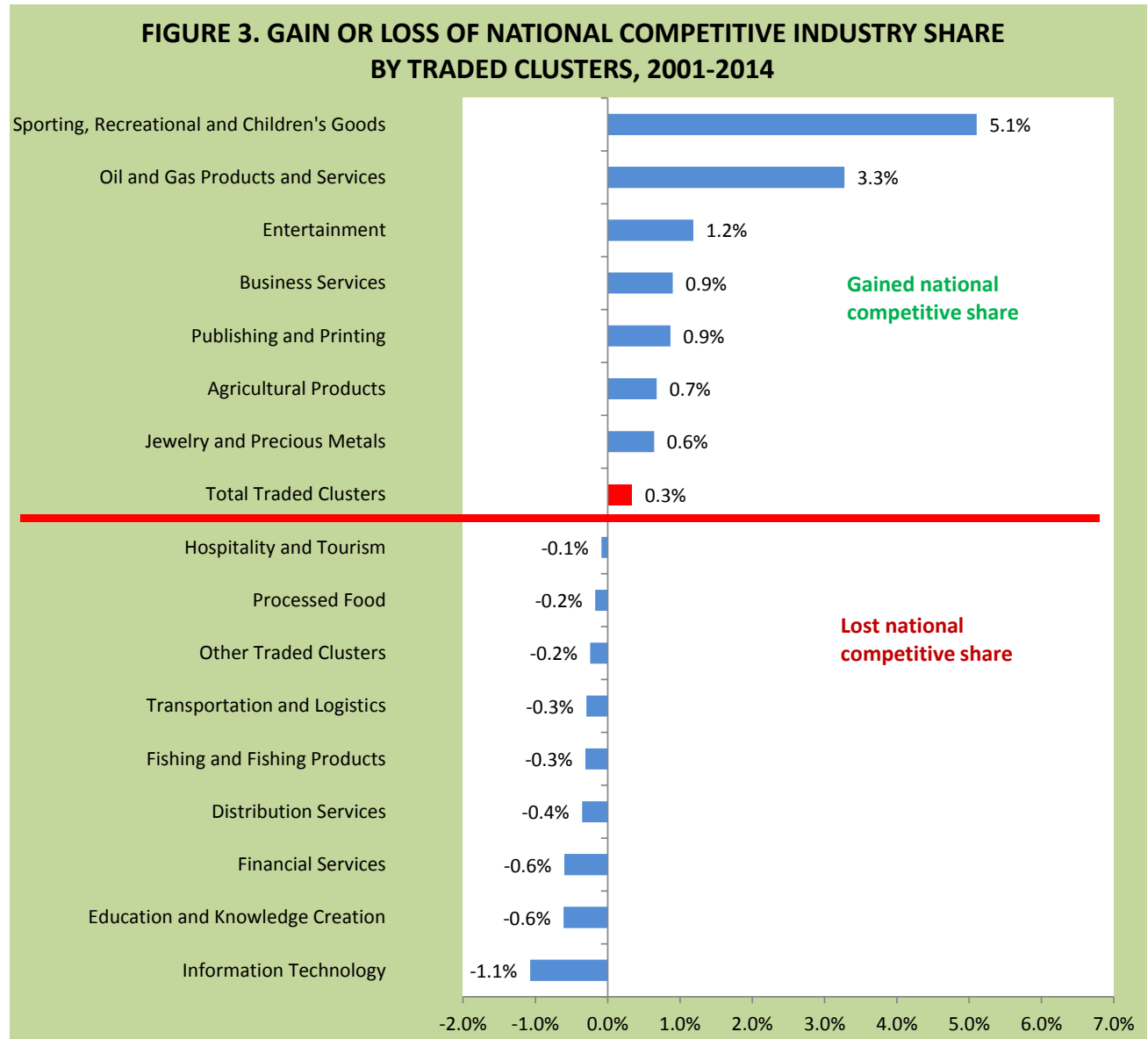


Source: DBEDT compilation based on EMSI data.

National Competitiveness of the Clusters

Another measure that can help shed light on the clusters is their performance compared with the national industry average for each cluster. If a Hawaii's cluster average annual job growth rate is higher than the national average for the same cluster, the Hawaii cluster is effectively increasing its competitive share of the total national industry. Conversely, if Hawaii's growth rate for each respective cluster is less, then Hawaii's competitive share of the national industry is declining for that cluster. Figure 3 shows how much more or less Hawaii's traded clusters grew per year on average compared with the same clusters

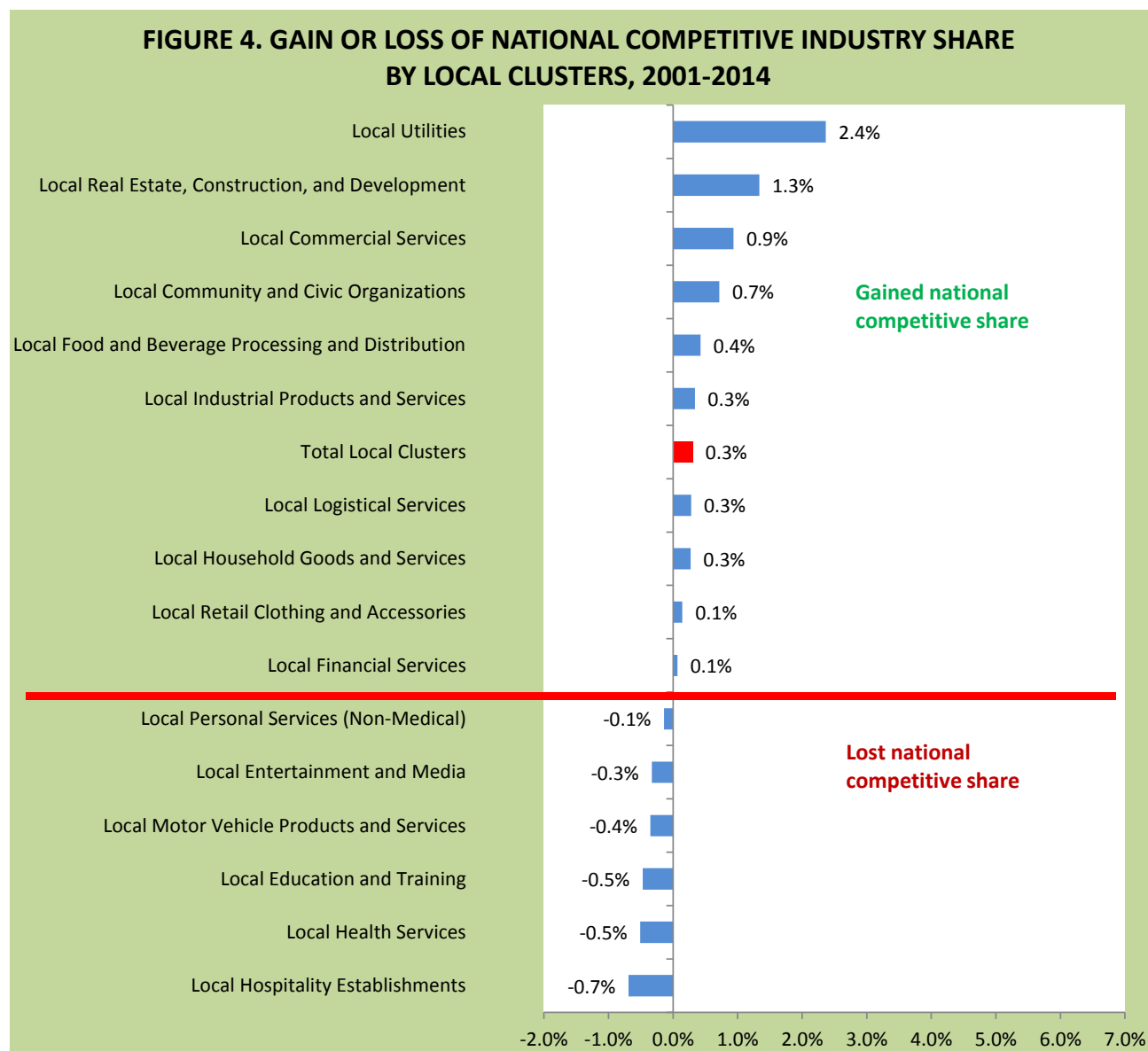
nationally. For example, over the 2001 to 2014 period, jobs in the Sporting, Recreational and Children's Goods cluster grew at an average annual rate that was 5.1% higher in Hawaii than the same cluster nationally. Thus, Hawaii's Sporting, Recreational and Children's Goods cluster increased its competitive national industry share. On the other hand, Information Technology lost national industry share due to an average annual growth rate that was 1.1% below the national cluster growth rate.



Source: DBEDT compilation based on EMSI data.

Of the 16 traded clusters, nine clusters lost national competitive share over the 2001-2014 period. Clusters that have both positive job growth and an increase in competitive national industry share represent the best performing clusters over a given period of time. Generally, Hawaii clusters with a higher competitive share metric have a comparative advantage over the respective national cluster.

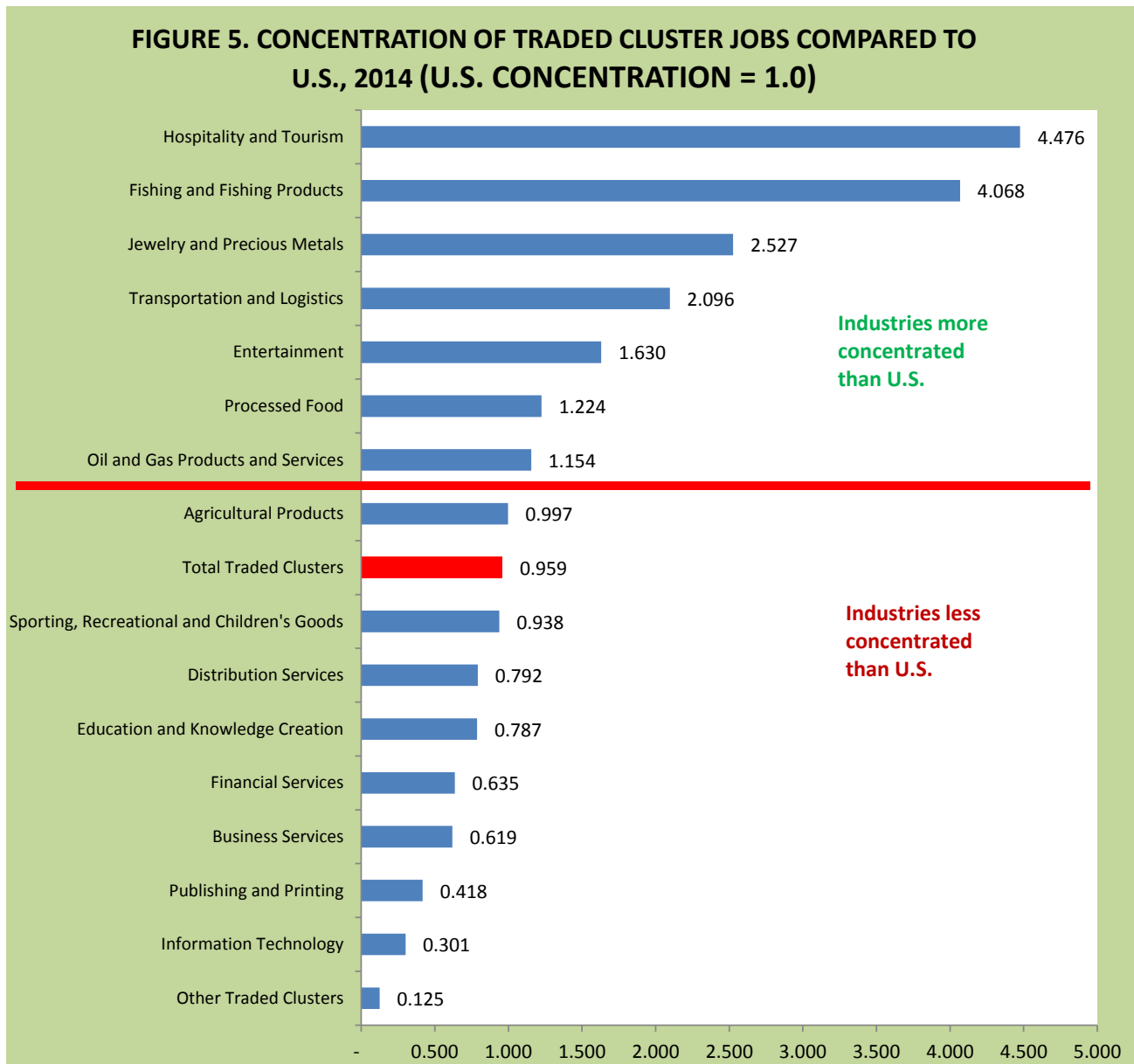
Figure 4 shows how much more or less Hawaii's local clusters grew per year on average compared with the same clusters nationally. Of the 16 local clusters, six clusters lost national competitive share over the 2001-2014 period.



Source: DBEDT compilation based on EMSI data.

Industry Concentration – Hawaii's Clusters

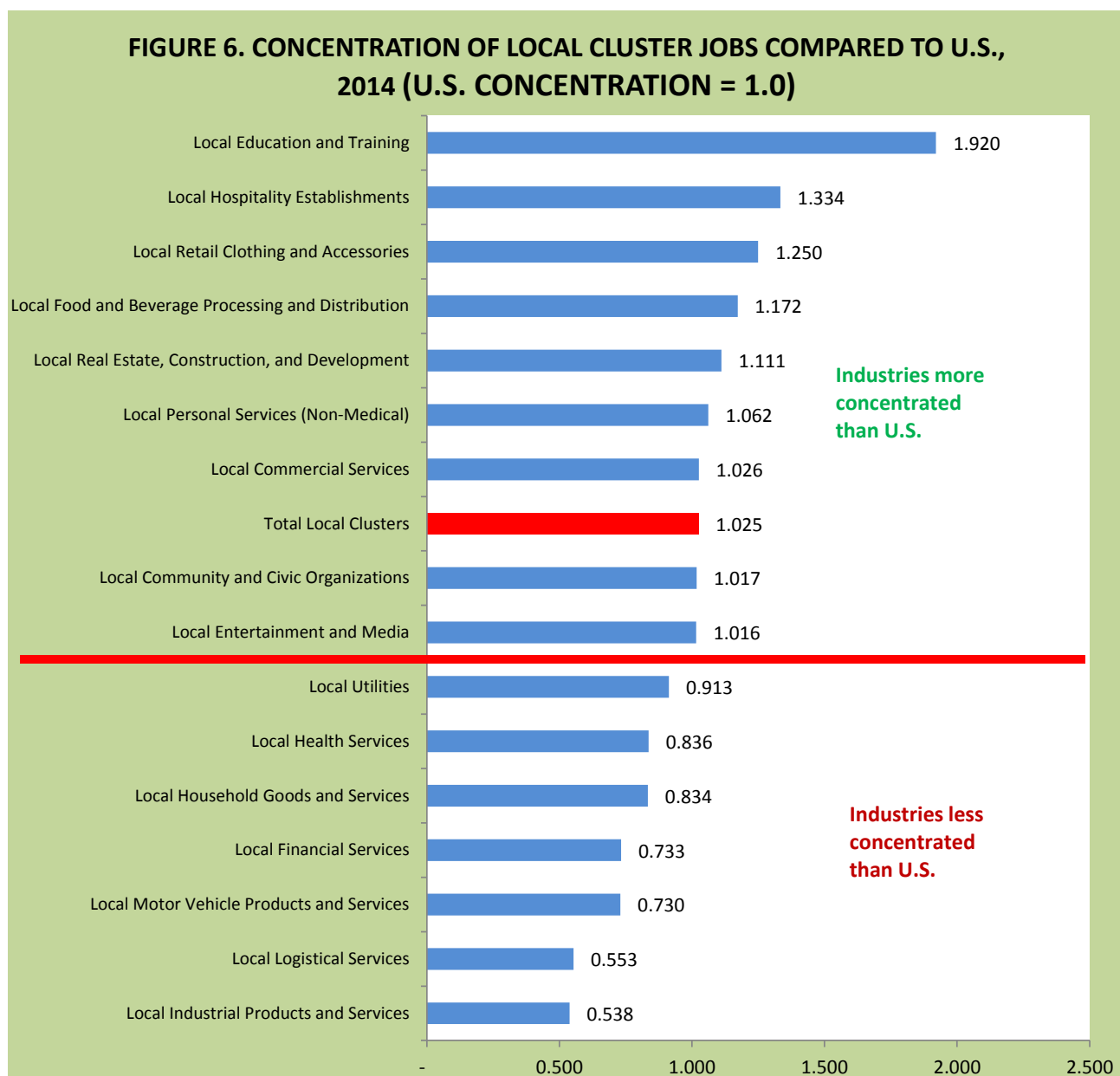
A third performance metric that helps in the evaluation of a clusters' portfolio is cluster job concentration. This is a measure of the state's level of specialization in each respective cluster and helps shed light on the clusters' export potential. Export activity brings new money into the state and is a basis for long-term industry growth. While it is difficult to identify export activity for each cluster, it is possible to identify *likely* export clusters by measuring the concentration of their employment in the state's economy. As explained above, a cluster that employs a higher proportion of jobs in Hawaii than the same cluster nationally, is relatively more concentrated and is more likely to exporting a portion of its output.



Source: DBEDT compilation based on EMSI data.

As explained in the introduction, cluster concentration is measured by a metric called the Location Quotient (LQ). The LQ for a cluster at the state level that is exactly the same as the U.S. level is 1.0. Hawaii clusters with a LQ measure of greater than 1.0 are more concentrated in the state's economy than the same cluster for the U.S. as a whole. Conversely, those clusters that are less than 1.0 are less concentrated in state's economy than the U.S. as whole.

As shown in Figure 5, of the 16 traded clusters, 7 clusters had a concentration level in Hawaii's economy that was higher than the same cluster nationally. Traded clusters with an LQ value of greater than one are probably exporting a portion of their output, and traded clusters with an LQ value of less than one are probably consuming a majority of the output locally. As shown in Figure 6, of the 16 local clusters, 9 clusters had a concentration level in Hawaii that was higher than the same cluster nationally.



Source: DBEDT compilation based on EMSI data.

The Performance Map Framework: Identifying Emerging Clusters

A framework to better understand the overall implications of these key performance metrics is the performance map adapted from the industry life cycle model. The performance map breaks industries in the economy into four generalized stages of life, starting with an *emerging* phase, moving to a *base-growth* industry phase, followed by a mature or *transitioning* phase and finally a *declining* phase. Of course, not all industries fit nicely into this notion, especially over short periods of time. However, with some qualifications, this notion of development stages can help us evaluate the status of the cluster portfolio. Using the three performance metrics from Figures 1, 3 and 5, the clusters can be placed into one of four life-cycle quadrants according to the criteria shown in Table 13 and described below.

TABLE 13. Performance Map Criteria

TRANSITIONING	BASE-GROWTH
<ul style="list-style-type: none"> • Positive job growth • Losing competitive national industry share 	<ul style="list-style-type: none"> • Positive job growth • Highly concentrated in the economy • Increasing competitive national industry share
DECLINING	EMERGING
<ul style="list-style-type: none"> • Losing jobs over period 	<ul style="list-style-type: none"> • Positive job growth • Current low concentration in the economy • Increasing competitive national industry share

Emerging Quadrant: These are clusters that are potentially in the early, take-off stage. They have been performing well by showing both job growth and an increase in their competitive share of the national cluster. However, these clusters have yet to achieve a concentration in the state's economy equal to the same cluster for the U.S. as a whole. An *emerging* cluster is one that has found a competitive niche in the economy and is gaining in competitive national industry share. At some point, if the process continues, the cluster's concentration will exceed the national level and the emerging cluster will graduate to a base-growth cluster in the state's economy.

Base-Growth Quadrant: These are clusters that have become potential economic drivers. They are growing their job counts and are increasing their competitive national industry share. Moreover, they have exceeded the national level of industry concentration in the economy and are probably exporting a proportion of their output.

Transitioning Quadrant: Transitioning clusters are still maintaining or growing their workforce, however they are losing competitive national industry share (growing slower than the same cluster nationally). This is typical of mature clusters that are still important to the economy but are having difficulty maintaining national market share. They are considered transitioning because they could either continue to lose industry share and eventually fall into decline, or reinvigorate themselves and begin to regain industry share and continue growing. Also in this quadrant may be former emerging clusters that never reached base-growth status before losing competitive national industry share. Another group could be declining clusters that are fighting to regain competitiveness.

Declining Quadrant: The declining quadrant contains clusters showing job losses over the period. All of these clusters have lost jobs to some extent between 2001 and 2014. Most clusters that are losing jobs are also losing competitive national industry share. However, while they are declining in jobs for the period, these clusters are not necessarily dying industries. A number of temporary circumstances may have put some of Hawaii's clusters into the declining quadrant for the period of the analysis. Their appearance in the declining quadrant is a red flag that warrants more careful analysis to understand the problem.

IV. STATE CLUSTER PORTFOLIO PERFORMANCE

Table 14 shows how each of the respective traded clusters fell on the performance map based on the 2001 to 2014 performance measures. Combined, the traded clusters accounted for about 171,216 jobs in Hawaii's economy in 2014.

Table 14. State Traded Clusters Mapped by Performance, 2001-2014

Total Traded Clusters Jobs, 2014: 171,216					
Average Traded Cluster Annual Earnings, 2014: \$49,617					
Net Change in Traded Cluster Jobs, 2001-2014: 11.0%					
Transitioning Group: 55.9% of Traded Cluster Jobs			Base-Growth Group: 5.7% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Financial Services	60.5%	\$ 47,659	Oil and Gas Products and Services	41.3%	\$ 119,360
Education and Knowledge Creation	37.2%	\$ 40,909	Entertainment	21.7%	\$ 39,458
Distribution Services	11.9%	\$ 50,795	Jewelry and Precious Metals	6.0%	\$ 36,502
Information Technology	11.1%	\$ 69,217			
Hospitality and Tourism	3.1%	\$ 46,569			
Declining Group: 16.6% of Traded Cluster Jobs			Emerging Group: 21.8% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Processed Food	-1.8%	\$ 41,219	Sporting, Recreational and Children's Goods	54.5%	\$ 37,258
Transportation and Logistics	-3.5%	\$ 75,875	Business Services	28.1%	\$ 65,182
Fishing and Fishing Products	-19.9%	\$ 19,176	Agricultural Products	3.4%	\$ 28,251
Other Traded Clusters	-25.2%	\$ 51,477			
Publishing and Printing	-27.0%	\$ 43,870			

Source: DBEDT compilation based on EMSI data.

Overall, the traded clusters added 16,971 jobs between 2001 and 2014 in Hawaii. This amounted to an 11.0 percent increase in jobs. In contrast, total private sector jobs in Hawaii increased 19.2 percent during the same period. Based on job growth alone, the leading performers of the traded clusters were Financial Services, Sporting, Recreational and Children's Goods, Oil and Gas Products and Services, Education and Knowledge Creation, and Business Services. The earnings average of the traded clusters was \$49,617 in 2014, which was slightly higher than the statewide private sector average of \$49,283.

There were three traded clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. They were Oil and Gas Products and Services, Entertainment, and Jewelry and Precious Metals. Base-growth clusters accounted for about 5.7 percent of jobs in traded clusters.

The traded clusters in the emerging category were composed of Sporting, Recreational and Children's Goods, Business Services, and Agricultural Products. These clusters accounted for about 21.8 percent of the total traded cluster jobs in 2014.

Five traded clusters fell into the transitioning category for the 2001 to 2014 period; these ranged from the Financial Services category (60.5 percent job increase) to the Hospitality and Tourism category (3.1 percent job increase). However, while these Hawaii clusters grew, they grew at a slower pace than the same clusters nationally. As a result, they lost some ground in terms of competitive industry share. Transitioning clusters accounted for about 55.9 percent of traded cluster jobs.

The five clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 16.6 percent of total traded cluster jobs in 2014. Publishing and Printing had the largest job decrease, followed by Other Traded Clusters, Fishing and Fishing Products, Transportation and Logistics, and Processed Food.

Table 15 shows each of the respective local clusters categorized by the performance map based on the 2001 to 2014 performance measures. Combined, the local clusters accounted for about 530,016 jobs in Hawaii's economy in 2014.

Table 15. State Local Clusters Mapped by Performance, 2001-2014

Total Local Clusters Jobs, 2014: 530,016					
Average Local Cluster Annual Earnings, 2014: \$43,363					
Net Change in Local Cluster Jobs, 2001-2014: 22.0%					
Transitioning Group: 40.1% of Local Cluster Jobs			Base-Growth Group: 49.6% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Personal Services (Non-Medical)	25.5%	\$ 27,434	Local Real Estate, Construction, and Development	36.0%	\$ 52,374
Local Health Services	31.6%	\$ 62,399	Local Commercial Services	29.0%	\$ 46,155
Local Hospitality Establishments	18.3%	\$ 23,758	Local Community and Civic Organizations	22.0%	\$ 33,969
Local Education and Training	14.8%	\$ 44,155	Local Retail Clothing and Accessories	12.0%	\$ 30,465
Local Entertainment and Media	1.0%	\$ 25,354	Local Food and Beverage Processing and Distribution	10.3%	\$ 31,848
Declining Group: 4.0% of Local Cluster Jobs			Emerging Group: 6.3% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Motor Vehicle Products and Services	-3.4%	\$ 45,215	Local Utilities	37.8%	\$ 103,896
Local Household Goods and Services	-8.0%	\$ 43,581	Local Logistical Services	23.8%	\$ 48,900
			Local Industrial Products and Services	15.6%	\$ 69,525
			Local Financial Services	0.7%	\$ 71,201

Source: DBEDT compilation based on EMSI data.

Overall, the local clusters added 95,554 jobs between 2001 and 2014 in Hawaii. This amounted to a 22.0 percent increase in jobs. Based on job growth alone, the leading performers of the local clusters were Local Utilities, Local Real Estate, Construction, and Development, Local Health Services, Local Commercial Services, and Local Personal Services (Non-Medical). The earnings average of the local clusters was \$43,363 in 2014, which was lower than the statewide private sector average of \$49,283.

There were five local clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. They were Local Real Estate, Construction, and Development, Local Commercial Services, Local Community and Civic Organizations, Local Retail Clothing and Accessories, and Local Food and Beverage Processing and Distribution. Base-growth clusters accounted for about 49.6 percent of local cluster jobs in 2014.

The local clusters in the emerging category were composed of Local Utilities, Local Logistical Services, Local Industrial Products and Services, and Local Financial Services. These clusters accounted for about 6.3 percent of the total local cluster jobs in 2014.

Five local clusters fell into the transitioning category for the 2001 to 2014 period. These ranged from the Local Health Services (31.6 percent job increase) to Local Entertainment and Media (1.0 percent job increase). Transitioning clusters accounted for about 40.1 percent of jobs in local clusters.

The two clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 4.0 percent of total local cluster jobs in 2014. Local Household Goods and Services had the largest job decrease, followed by Local Motor Vehicle Products and Services.

V. COUNTY CLUSTER PORTFOLIO PERFORMANCE

The following tables summarize the 2001 to 2014 county cluster performance. Performance has been organized by *Best Performing Targets* (registering as base-growth & emerging clusters and *Other Targeted Industry Performance* (those that fell into the transitioning and declining categories).

City & County of Honolulu

Table 16 shows how each of the respective traded clusters fell on the performance map based on the 2001 to 2014 performance measures of Honolulu. Combined, the traded clusters accounted for about 108,993 jobs in Honolulu.

Table 16. Honolulu County Traded Clusters Mapped by Performance, 2001-2014

Total Traded Clusters Jobs, 2014: 108,993					
Average Traded Cluster Annual Earnings, 2014: \$53,914					
Net Change in Traded Cluster Jobs, 2001-2014: 10.5%					
Transitioning Group: 54.0% of Traded Cluster Jobs			Base-Growth Group: 9.7% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Financial Services	55.3%	\$ 52,210	Entertainment	33.7%	\$ 41,514
Education and Knowledge Creation	32.1%	\$ 39,094	Oil and Gas Products and Services	29.0%	\$ 128,613
Distribution Services	5.1%	\$ 53,119	Processed Food	8.2%	\$ 40,420
Information Technology	4.3%	\$ 73,851			
Hospitality and Tourism	3.1%	\$ 46,017			
Declining Group: 19.4% of Traded Cluster Jobs			Emerging Group: 16.9% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Transportation and Logistics	-7.7%	\$ 82,390	Sporting, Recreational and Children's Goods	53.5%	\$ 37,344
Jewelry and Precious Metals	-8.6%	\$ 39,924	Business Services	27.5%	\$ 68,676
Agricultural Products	-16.8%	\$ 29,716			
Publishing and Printing	-32.8%	\$ 46,402			
Fishing and Fishing Products	-33.3%	\$ 31,190			
Other Traded Clusters	-35.0%	\$ 50,883			

Source: DBEDT compilation based on EMSI data.

Overall, the traded clusters added 10,378 jobs between 2001 and 2014 in Honolulu. This amounted to a 10.5 percent increase in jobs. In contrast, total private sector jobs in Honolulu increased 18.1 percent during the same period. The earnings average of the traded clusters was \$53,914 in 2014, which was higher than the Honolulu private sector average of \$50,158.

There were three traded clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 9.7 percent of jobs in traded clusters.

The emerging category included two traded clusters. These clusters accounted for about 16.9 percent of the total traded cluster jobs in 2014.

Five traded clusters fell into the transitioning category for the 2001 to 2014 period. Transitioning clusters accounted for about 54.0 percent of jobs for traded clusters.

The six clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These accounted for about 19.4 percent of total traded cluster jobs in 2014.

Table 17 shows how each of the respective local clusters were categorized on the performance map based on the 2001 to 2014 performance measures. Combined, the local clusters accounted for about 378,939 jobs in Honolulu.

Table 17. Honolulu County Local Clusters Mapped by Performance, 2001-2014

Total Local Clusters Jobs, 2014: 378,939					
Average Local Cluster Annual Earnings, 2014: \$46,863					
Net Change in Local Cluster Jobs, 2001-2014: 20.4%					
Transitioning Group: 37.1% of Local Cluster Jobs			Base-Growth Group: 49.5% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Personal Services (Non-Medical)	24.4%	\$ 28,488	Local Real Estate, Construction, and Development	40.4%	\$ 57,539
Local Health Services	32.7%	\$ 66,016	Local Commercial Services	25.5%	\$ 51,817
Local Education and Training	8.0%	\$ 46,241	Local Community and Civic Organizations	15.4%	\$ 36,665
Local Hospitality Establishments	14.3%	\$ 22,946	Local Retail Clothing and Accessories	12.5%	\$ 30,603
			Local Food and Beverage Processing and Distribution	6.5%	\$ 32,502
Declining Group: 9.4% of Local Cluster Jobs			Emerging Group: 4.0% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Motor Vehicle Products and Services	-2.7%	\$ 47,448	Local Utilities	40.1%	\$ 102,846
Local Financial Services	-3.0%	\$ 74,638	Local Logistical Services	21.0%	\$ 53,504
Local Entertainment and Media	-7.6%	\$ 26,575	Local Industrial Products and Services	20.0%	\$ 74,678
Local Household Goods and Services	-7.9%	\$ 48,787			

Source: DBEDT compilation based on EMSI data.

Overall, the local clusters added 64,247 jobs between 2001 and 2014 in Honolulu, which was a 20.4 percent increase. The earnings average of the local clusters was \$46,863 in 2014, which was below the Honolulu private sector average of \$50,158.

There were five local clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 49.5 percent of jobs in local clusters.

The emerging category included three local clusters. These clusters accounted for about 4.0 percent of the total Honolulu local cluster jobs in 2014.

Four local clusters fell into the transitioning category for the 2001 to 2014 period. Transitioning clusters accounted for about 37.1 percent of jobs in local clusters.

The four clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 9.4 percent of total local cluster jobs in 2014.

Hawaii County

Table 18 shows how each of the respective traded clusters were positioned on the performance map based on the 2001 to 2014 performance measures of Hawaii County. Combined, the traded clusters accounted for about 24,125 jobs in Hawaii County.

Table 18. Hawaii County Traded Clusters Mapped by Performance, 2001-2014

Total Traded Clusters Jobs, 2014: 24,125					
Average Traded Cluster Annual Earnings, 2014: \$35,273					
Net Change in Traded Cluster Jobs, 2001-2014: 12.8%					
Transitioning Group: 18.2% of Traded Cluster Jobs			Base-Growth Group: 29.7% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Financial Services	90.9%	\$ 21,825	Jewelry and Precious Metals	142.0%	\$ 24,285
Business Services	21.4%	\$ 39,601	Agricultural Products	21.7%	\$ 21,293
Transportation and Logistics	10.6%	\$ 58,397			
Entertainment	5.3%	\$ 26,281			
Declining Group: 39.2% of Traded Cluster Jobs			Emerging Group: 12.9% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Fishing and Fishing Products	-4.9%	\$ 8,369	Education and Knowledge Creation	70.0%	\$ 49,576
Hospitality and Tourism	-7.7%	\$ 42,686	Oil and Gas Products and Services	70.0%	\$ 68,824
Processed Food	-8.2%	\$ 45,437	Information Technology	70.0%	\$ 39,137
Publishing and Printing	-16.2%	\$ 26,130	Distribution Services	54.7%	\$ 41,000
			Sporting, Recreational and Children's Goods	50.1%	\$ 26,512
			Other Traded Clusters	37.6%	\$ 61,438

Source: DBEDT compilation based on EMSI data.

Overall, the traded clusters added 2,742 jobs between 2001 and 2014 in Hawaii County, a 12.8 percent increase. In contrast, total private sector jobs in Hawaii County increased 26.6 percent during the same period. The earnings average of the traded clusters was \$35,273 in 2014, which was slightly lower than the Hawaii County private sector average of \$35,925.

There were two traded clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 29.7 percent of jobs in traded clusters.

The emerging category included six traded clusters. These clusters accounted for about 12.9 percent of the total traded cluster jobs in 2014.

Four traded clusters fell into the transitioning category for the 2001 to 2014 period. Transitioning clusters accounted for about 18.2 percent of traded cluster jobs.

The four clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 39.2 percent of total traded cluster jobs in 2014.

Table 19 shows how each of the respective local clusters fell on the performance map based on the 2001 to 2014 performance measures. Combined, the local clusters accounted for about 61,140 jobs in Hawaii County.

Table 19. Hawaii County Local Clusters Mapped by Performance, 2001-2014

Total Local Clusters Jobs, 2014: 61,140					
Average Local Cluster Annual Earnings, 2014: \$35,634					
Net Change in Local Cluster Jobs, 2001-2014: 32.6%					
Transitioning Group: 7.0% of Local Cluster Jobs			Base-Growth Group: 53.7% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Personal Services (Non-Medical)	15.1%	\$ 25,159	Local Hospitality Establishments	41.9%	\$ 25,400
			Local Education and Training	30.7%	\$ 39,648
			Local Utilities	27.0%	\$ 104,472
			Local Real Estate, Construction, and Development	26.3%	\$ 41,673
			Local Entertainment and Media	26.2%	\$ 19,472
			Local Food and Beverage Processing and Distribution	23.6%	\$ 30,976
			Local Retail Clothing and Accessories	15.9%	\$ 30,716
Declining Group: 5.1% of Local Cluster Jobs			Emerging Group: 34.3% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Industrial Products and Services	-0.8%	\$ 52,312	Local Community and Civic Organizations	104.1%	\$ 28,639
Local Motor Vehicle Products and Services	-3.0%	\$ 40,496	Local Commercial Services	57.2%	\$ 30,633
Local Household Goods and Services	-6.1%	\$ 31,451	Local Logistical Services	54.8%	\$ 38,155
			Local Health Services	42.4%	\$ 49,335
			Local Financial Services	16.6%	\$ 49,362

Source: DBEDT compilation based on EMSI data.

Overall, the local clusters added 15,016 jobs between 2001 and 2014 in Hawaii County. This amounted to a 32.6 percent increase in jobs. The earnings average of the local clusters was \$35,634 in 2014, which was slightly lower than the Hawaii County private sector average of \$35,925.

There were seven local clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 53.7 percent of jobs in local clusters.

The emerging category included five local clusters. These clusters accounted for about 34.3 percent of the total local cluster jobs in Hawaii County.

Only one local cluster was categorized as transitioning for the 2001 to 2014 period. Transitioning clusters accounted for about 7.0 percent of jobs in local clusters.

The three clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 5.1 percent of total local cluster jobs in 2014.

Maui County

Table 20 shows how each of the respective traded clusters was categorized on the performance map based on the 2001 to 2014 performance measures of Maui. Combined, the traded clusters accounted for about 27,050 jobs in Maui.

Table 20. Maui County Traded Clusters Mapped by Performance, 2001-2014

Total Traded Clusters Jobs, 2014: 27,050					
Average Traded Cluster Annual Earnings, 2014: \$47,542					
Net Change in Traded Cluster Jobs, 2001-2014: 10.5%					
Transitioning Group: 5.2% of Traded Cluster Jobs			Base-Growth Group: 63.6% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Education and Knowledge Creation	23.1%	\$ 37,180	Oil and Gas Products and Services	133.2%	\$ 84,623
Distribution Services	13.0%	\$ 54,362	Jewelry and Precious Metals	46.9%	\$ 30,286
			Transportation and Logistics	37.9%	\$ 48,013
			Sporting, Recreational and Children's Goods	32.5%	\$ 39,833
			Hospitality and Tourism	7.8%	\$ 49,925
Declining Group: 16.5% of Traded Cluster Jobs			Emerging Group: 14.7% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Agricultural Products	-7.4%	\$ 38,559	Financial Services	90.5%	\$ 52,872
Fishing and Fishing Products	-8.0%	\$ 9,172	Information Technology	57.3%	\$ 44,887
Entertainment	-15.8%	\$ 35,492	Business Services	50.0%	\$ 50,041
Processed Food	-30.1%	\$ 45,367	Publishing and Printing	30.0%	\$ 35,599
			Other Traded Clusters	7.8%	\$ 47,740

Source: DBEDT compilation based on EMSI data.

Overall, the traded clusters added 2,563 jobs between 2001 and 2014 in Maui County. This amounted to a 10.5 percent increase in jobs. However, total private sector jobs in Maui County increased 19.4 percent during the same period. The earnings average of the traded clusters was \$47,542 in 2014, which was lower than the Maui County private sector average of \$52,964.

There were five traded clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 63.6 percent of jobs in traded clusters.

The emerging category included five traded clusters. These clusters accounted for about 14.7 percent of the total traded cluster jobs in 2014.

Two traded clusters fell into the transitioning category for the 2001 to 2014 period. Transitioning clusters accounted for about 5.2 percent of traded cluster jobs.

The four clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 16.5 percent of total traded cluster jobs in 2014.

Table 21 shows how each of the respective local clusters were positioned on the performance map based on the 2001 to 2014 performance measures. Combined, the local clusters accounted for about 63,309 jobs in Maui County.

Table 21. Maui County Local Clusters Mapped by Performance, 2001-2014

Total Local Clusters Jobs, 2014: 63,309					
Average Local Cluster Annual Earnings, 2014: \$37,146					
Net Change in Local Cluster Jobs, 2001-2014: 23.1%					
Transitioning Group: 36.1% of Local Cluster Jobs			Base-Growth Group: 40.4% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Health Services	21.5%	\$ 54,988	Local Education and Training	79.3%	\$ 41,974
Local Logistical Services	17.5%	\$ 41,781	Local Personal Services (Non-Medical)	39.7%	\$ 27,652
Local Hospitality Establishments	17.0%	\$ 27,937	Local Real Estate, Construction, and Development	30.7%	\$ 44,002
Local Industrial Products and Services	10.1%	\$ 64,146	Local Food and Beverage Processing and Distribution	23.4%	\$ 34,509
Local Retail Clothing and Accessories	8.7%	\$ 32,337	Local Entertainment and Media	18.5%	\$ 23,199
Declining Group: 3.9% of Local Cluster Jobs			Emerging Group: 19.7% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Motor Vehicle Products and Services	-7.7%	\$ 42,539	Local Commercial Services	34.8%	\$ 32,776
Local Household Goods and Services	-11.8%	\$ 35,147	Local Utilities	34.4%	\$ 97,820
			Local Community and Civic Organizations	14.6%	\$ 33,337
			Local Financial Services	6.7%	\$ 55,342

Source: DBEDT compilation based on EMSI data.

Overall, the local clusters added 11,871 jobs between 2001 and 2014 in Maui County, a 23.1 percent increase. The earnings average of the local clusters was \$37,146 in 2014, which was lower than the Maui County private sector average of \$52,964.

There were five local clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 40.4 percent of local cluster jobs.

The emerging category included four local clusters. These clusters accounted for about 19.7 percent of the total local cluster jobs in Maui County.

Five local clusters were in the transitioning category for the 2001 to 2014 period. Transitioning clusters accounted for about 36.1 percent of local cluster jobs.

The two clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 3.9 percent of total local cluster jobs in 2014.

Kauai County

Table 22 shows how each of the respective traded clusters were positioned on the performance map based on the 2001 to 2014 performance measures of Kauai. Combined, the traded clusters accounted for about 11,047 jobs in Kauai.

Table 22. Kauai County Traded Clusters Mapped by Performance, 2001-2014

Total Traded Clusters Jobs, 2014: 11,047					
Average Traded Cluster Annual Earnings, 2014: \$45,179					
Net Change in Traded Cluster Jobs, 2001-2014: 13.2%					
Transitioning Group: 5.3% of Traded Cluster Jobs			Base-Growth Group: 67.5% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Financial Services	54.1%	\$ 22,103	Jewelry and Precious Metals	83.6%	\$ 22,242
			Hospitality and Tourism	7.8%	\$ 46,782
			Transportation and Logistics	2.0%	\$ 55,002
			Agricultural Products	1.3%	\$ 33,198
Declining Group: 9.0% of Traded Cluster Jobs			Emerging Group: 18.1% of Traded Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Publishing and Printing	-1.4%	\$ 29,871	Sporting, Recreational and Children's Goods	749.3%	\$ 45,149
Processed Food	-1.6%	\$ 37,514	Education and Knowledge Creation	227.1%	\$ 57,335
Fishing and Fishing Products	-3.6%	\$ 7,440	Oil and Gas Products and Services	123.8%	\$ 78,525
Entertainment	-5.7%	\$ 45,341	Information Technology	53.9%	\$ 79,957
Other Traded Clusters	-10.9%	\$ 39,033	Distribution Services	38.0%	\$ 43,769
			Business Services	18.7%	\$ 62,499

Source: DBEDT compilation based on EMSI data.

Overall, the traded clusters added 1,288 jobs between 2001 and 2014 in Kauai County. This amounted to a 13.2 percent increase in jobs. However, total private sector jobs in Kauai County increased 18.4 percent during the same period. The earnings average of the traded clusters was \$45,179 in 2014, which was lower than the Kauai County private sector average of \$63,069.

There were four traded clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 67.5 percent of jobs in traded clusters.

The emerging category included six traded clusters. These clusters accounted for about 18.1 percent of the total traded cluster jobs in 2014.

Only one traded cluster was in the transitioning category for the 2001 to 2014 period. Transitioning clusters accounted for about 5.3 percent of jobs in traded clusters.

The five clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 9.0 percent of total traded cluster jobs in 2014.

Table 23 shows how each of the respective local clusters fell on the performance map based on the 2001 to 2014 performance measures. Combined, the local clusters accounted for about 26,627 jobs in Kauai County.

Table 23. Kauai County Local Clusters Mapped by Performance, 2001-2014

Total Local Clusters Jobs, 2014: 26,627					
Average Local Cluster Annual Earnings, 2014: \$35,143					
Net Change in Local Cluster Jobs, 2001-2014: 19.9%					
Transitioning Group: 23.7% of Local Cluster Jobs			Base-Growth Group: 51.1% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Logistical Services	15.6%	\$ 36,959	Local Personal Services (Non-Medical)	34.1%	\$ 21,981
Local Health Services	10.3%	\$ 57,364	Local Hospitality Establishments	31.1%	\$ 23,608
Local Retail Clothing and Accessories	6.0%	\$ 30,909	Local Real Estate, Construction, and Development	22.6%	\$ 42,042
Local Food and Beverage Processing and Distribution	2.0%	\$ 29,852	Local Entertainment and Media	11.6%	\$ 15,331
Declining Group: 5.0% of Local Cluster Jobs			Emerging Group: 20.1% of Local Cluster Jobs		
Group	Change in Jobs	Average Earnings	Group	Change in Jobs	Average Earnings
Local Education and Training	-2.0%	\$ 31,724	Local Financial Services	72.6%	\$ 69,541
Local Household Goods and Services	-4.0%	\$ 35,831	Local Utilities	47.9%	\$ 105,554
Local Motor Vehicle Products and Services	-5.7%	\$ 44,058	Local Community and Civic Organizations	37.0%	\$ 26,064
Local Industrial Products and Services	-45.5%	\$ 50,872	Local Commercial Services	22.6%	\$ 31,447

Source: DBEDT compilation based on EMSI data.

Overall, the local clusters added 26,627 jobs between 2001 and 2014 in Kauai County. This amounted to a 19.9 percent increase in jobs. The earnings average of the local clusters was \$35,143 in 2014, which was lower than the Kauai County private sector average of \$63,069.

There were four local clusters that qualified as high performing base-growth clusters for the 2001 to 2014 period. Base-growth clusters accounted for about 51.1 percent of jobs in local clusters.

The emerging category included four local clusters. These clusters accounted for about 20.1 percent of the total local cluster jobs in Kauai County.

Four local clusters fell into the transitioning category for the 2001 to 2014 period. Transitioning clusters accounted for about 23.7 percent of jobs in local clusters.

The four clusters that lost jobs in the 2001 to 2014 period fell into the declining quadrant of the performance map. These clusters accounted for about 5.0 percent of total local cluster jobs in 2014.

VI. APPENDIX: DETAILED STATE DATA AND COUNTY JOBS BY CLUSTERS

Appendix Table A-1. State of Hawaii NAICS Level Clusters Based on DBEDT Definition

No.	NAICS	NAICS CODE DESCRIPTION	2014 Jobs	Cluster
1	713	Amusement, gambling, and recreation industries	10,075	LC1
2	722	Food services and drinking places	65,029	LC1
3	45322	Gift, novelty, and souvenir stores	3,567	LC1
4	532292	Recreational goods rental	722	LC1
5	622	Hospitals	14,844	LC2
6	623	Nursing and residential care facilities	9,353	LC2
7	6211	Offices of physicians	10,377	LC2
8	6212	Offices of dentists	4,487	LC2
9	6213	Offices of other health practitioners	7,016	LC2
10	6214	Outpatient care centers	3,493	LC2
11	6215	Medical and diagnostic laboratories	1,709	LC2
12	6216	Home health care services	6,126	LC2
13	6219	Other ambulatory health care services	881	LC2
14	8122	Death care services	612	LC2
15	44611	Pharmacies and drug stores	3,747	LC2
16	44613	Optical goods stores	432	LC2
17	62412	Services for the elderly and persons with disabilities	5,262	LC2
18	532291	Home health equipment rental	178	LC2
19	517	Telecommunications	4,270	LC3
20	4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	1,194	LC3
21	5323	General rental centers	186	LC3
22	5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	992	LC3
23	5411	Legal services	5,002	LC3
24	5412	Accounting, tax preparation, bookkeeping, and payroll services	5,420	LC3
25	5418	Advertising, public relations, and related services	2,047	LC3
26	55111	Management of Companies and Enterprises	8,808	LC3
27	5611	Office administrative services	1,539	LC3
28	5613	Employment services	20,902	LC3
29	5616	Investigation and security services	7,831	LC3
30	5617	Services to buildings and dwellings	19,027	LC3
31	5619	Other support services	1,729	LC3
32	8112	Electronic and precision equipment repair and maintenance	480	LC3
33	8113	Commercial machinery repair and maintenance	856	LC3
34	45321	Office supplies and stationery stores	789	LC3
35	54138	Testing laboratories	213	LC3
36	54194	Veterinary services	1,113	LC3
37	54199	All other professional, scientific, and technical services	5,435	LC3
38	532299	All other consumer goods rental	364	LC3
39	236	Construction of buildings	12,370	LC4
40	237	Heavy and civil engineering construction	4,745	LC4
41	238	Specialty trade contractors	25,566	LC4
42	321	Wood product manufacturing	609	LC4
43	3274	Lime and Gypsum Product Manufacturing	5	LC5
44	531	Real estate	43,790	LC4
45	3273	Cement and concrete product manufacturing	718	LC4
46	4233	Lumber and other construction materials merchant wholesalers	1,004	LC4
47	44411	Home centers	2,817	LC4
48	44412	Paint and wallpaper stores	84	LC4
49	44419	Other building material dealers	667	LC4
50	45393	Manufactured (Mobile) Home Dealers	5	LC4

Appendix Table A-1. State of Hawaii NAICS Level Clusters Based on DBEDT Definition

No.	NAICS	NAICS CODE DESCRIPTION	2014 Jobs	Cluster
51	54131	Architectural services	1,593	LC4
52	54132	Landscape architectural services	370	LC4
53	54135	Building inspection services	152	LC4
54	54136	Geophysical surveying and mapping services	31	LC4
55	452	General merchandise stores	13,800	LC5
56	4481	Clothing stores	9,428	LC5
57	4482	Shoe stores	1,075	LC5
58	4533	Used merchandise stores	802	LC5
59	44831	Jewelry stores	2,175	LC5
60	44832	Luggage and leather goods stores	262	LC5
61	45113	Sewing, needlework, and piece goods stores	475	LC5
62	53222	Formal wear and costume rental	78	LC5
63	453998	All other miscellaneous store retailers (except tobacco stores)	1,629	LC5
64	525	Funds, trusts, and other financial vehicles	1,252	LC6
65	6242	Community Food and Housing, and Emergency and Other Relief Services	729	LC6
66	8131	Religious organizations	5,142	LC6
67	8132	Grantmaking and giving services	1,342	LC6
68	8133	Social advocacy organizations	984	LC6
69	8134	Civic and social organizations	1,773	LC6
70	81391	Business associations	299	LC6
71	81392	Professional organizations	121	LC6
72	81393	Labor unions and similar labor organizations	938	LC6
73	81394	Political organizations	18	LC6
74	81399	Other similar organizations	5,315	LC6
75	814	Private Households	3,068	LC6
76	3116	Animal slaughtering and processing	446	LC7
77	4248	Beer, wine, and distilled alcoholic beverage merchant wholesalers	1,241	LC7
78	4451	Grocery stores	12,972	LC7
79	4452	Specialty food stores	2,211	LC7
80	4453	Beer, wine, and liquor stores	240	LC7
81	4542	Vending machine operators	268	LC7
82	4543	Direct selling establishments	6,957	LC7
83	42443	Dairy product (except dried or canned) merchant wholesalers	268	LC7
84	42444	Poultry and poultry product merchant wholesalers	71	LC7
85	42446	Fish and seafood merchant wholesalers	629	LC7
86	42447	Meat and meat product merchant wholesalers	116	LC7
87	42448	Fresh fruit and vegetable merchant wholesalers	1,083	LC7
88	42494	Tobacco and tobacco product merchant wholesalers	5	LC7
89	45391	Pet and pet supplies stores	544	LC7
90	311991	Perishable prepared food manufacturing	1,144	LC7
91	312111	Soft drink manufacturing	481	LC7
92	312113	Ice manufacturing	105	LC7
93	453991	Tobacco stores	616	LC7
94	447	Gasoline stations	2,210	LC8
95	4411	Automobile dealers	4,479	LC8
96	4413	Automotive parts, accessories, and tire stores	2,040	LC8
97	8111	Automotive repair and maintenance	3,835	LC8
98	42311	Automobile and other motor vehicle merchant wholesalers	81	LC8
99	42312	Motor vehicle supplies and new parts merchant wholesalers	327	LC8
100	42313	Tire and tube merchant wholesalers	68	LC8

Appendix Table A-1. State of Hawaii NAICS Level Clusters Based on DBEDT Definition

No.	NAICS	NAICS CODE DESCRIPTION	2014 Jobs	Cluster
101	42314	Motor vehicle parts (used) merchant wholesalers	5	LC8
102	44121	Recreational vehicle dealers	5	LC8
103	81293	Parking lots and garages	1,451	LC8
104	441228	Motorcycle, ATV, and All Other Motor Vehicle Dealers	296	LC8
105	5221	Depository credit intermediation	6,137	LC9
106	5222	Nondepository credit intermediation	1,310	LC9
107	5223	Activities related to credit intermediation	1,002	LC9
108	5241	Insurance carriers	4,672	LC9
109	6111	Elementary and secondary schools	10,072	LC10
110	6243	Vocational rehabilitation services	1,737	LC10
111	6244	Child day care services	5,737	LC11
112	8114	Personal and household goods repair and maintenance	3,146	LC11
113	8121	Personal care services	7,169	LC11
114	8123	Drycleaning and laundry services	2,060	LC11
115	44314	Electronics and Appliance Stores	1,471	LC11
116	44612	Cosmetics, beauty supplies, and perfume stores	1,198	LC11
117	44619	Other health and personal care stores	1,007	LC11
118	62411	Child and youth services	2,423	LC11
119	62419	Other individual and family services	2,808	LC11
120	81291	Pet care (except veterinary) services	398	LC11
121	81292	Photofinishing	98	LC11
122	81299	All other personal services	7,506	LC11
123	541921	Photography studios, portrait	1,774	LC11
124	711	Performing arts, spectator sports, and related industries	9,461	LC12
125	4512	Book, periodical, and music stores	458	LC12
126	5111	Newspaper, periodical, book, and directory publishers	1,757	LC12
127	42391	Sporting and recreational goods and supplies merchant wholesalers	315	LC12
128	42392	Toy and hobby goods and supplies merchant wholesalers	129	LC12
129	42393	Recyclable material merchant wholesalers	546	LC12
130	42492	Book, periodical, and newspaper merchant wholesalers	327	LC12
131	45111	Sporting goods stores	2,039	LC12
132	45112	Hobby, toy, and game stores	672	LC12
133	45114	Musical instrument and supplies stores	156	LC12
134	53223	Video tape and disc rental	112	LC12
135	484	Truck transportation	3,520	LC13
136	486	Pipeline transportation	2	LC13
137	493	Warehousing and storage	836	LC13
138	562	Waste management and remediation services	2,093	LC13
139	4854	School and employee bus transportation	1,039	LC13
140	4855	Charter bus industry	66	LC13
141	4859	Other transit and ground passenger transportation	1,228	LC13
142	4884	Support activities for road transportation	449	LC13
143	53212	Truck, trailer, and RV rental and leasing	147	LC13
144	442	Furniture and home furnishings stores	1,532	LC14
145	3271	Clay product and refractory manufacturing	272	LC14
146	4232	Furniture and home furnishing merchant wholesalers	297	LC14
147	4237	Hardware and plumbing merchant wholesalers	688	LC14
148	4442	Lawn and garden equipment and supplies stores	273	LC14
149	4531	Florists	919	LC14
150	42362	Household Appliances, Electric Housewares, and Con. Electronics Wholesalers	138	LC14

Appendix Table A-1. State of Hawaii NAICS Level Clusters Based on DBEDT Definition

No.	NAICS	NAICS CODE DESCRIPTION	2014 Jobs	Cluster
151	42382	Farm and garden machinery and equipment merchant wholesalers	96	LC14
152	42399	Other miscellaneous durable goods merchant wholesalers	915	LC14
153	42493	Flower, nursery stock, & florists' supplies merchant wholesalers	341	LC14
154	44413	Hardware stores	647	LC14
155	53221	Consumer electronics and appliances rental	172	LC14
156	492	Couriers and messengers	1,776	LC15
157	2211	Electric power generation, transmission and distribution	3,291	LC15
158	2212	Natural gas distribution	316	LC15
159	2213	Water, sewage and other systems	463	LC15
160	491	Postal Service	5	LC15
161	425	Wholesale electronic markets and agents and brokers	2,294	LC16
162	4235	Metal and mineral (except petroleum) merchant wholesalers	115	LC16
163	4246	Chemical and allied products merchant wholesalers	235	LC16
164	42361	Elec. equip. and wiring merchant wholesalers	373	LC16
165	42369	Other electronic parts and equipment merchant wholesalers	109	LC16
166	42383	Industrial machinery and equipment merchant wholesalers	504	LC16
167	42384	Industrial supplies merchant wholesalers	187	LC16
168	42385	Service establishment equipment and supplies merchant wholesalers	132	LC16
169	42386	Other transport. goods merchant wholesalers	27	LC16
170	42495	Paint, varnish, and supplies merchant wholesalers	102	LC16
171	42499	Other miscellaneous nondurable goods merchant wholesalers	1,184	LC16
172	4853	Taxi and limousine service	2,879	TC1
173	487	Scenic and sightseeing transportation	4,558	TC1
174	721	Accommodation	40,275	TC1
175	4851	Urban transit systems	5	TC1
176	5615	Travel arrangement and reservation services	5,547	TC1
177	53211	Passenger car rental and leasing	2,524	TC1
178	336612	Boat building	26	TC1
179	441222	Boat dealers	91	TC1
180	483112	Deep sea passenger transportation	-	TC1
181	483114	Coastal and great lakes passenger transportation	924	TC1
182	481	Air transportation	8,623	TC2
183	482	Rail Transportation	5	TC2
184	4832	Inland water transportation	168	TC2
185	4852	Interurban and rural bus transportation	5	TC2
186	4881	Support activities for air transportation	2,147	TC2
187	4882	Support Activities for Rail Transportation	-	TC2
188	4883	Support activities for water transportation	1,202	TC2
189	4885	Freight transportation arrangement	706	TC2
190	4889	Other support activities for transportation	119	TC2
191	33995	Sign manufacturing	363	TC2
192	336611	Ship building and repairing	705	TC2
193	483111	Deep sea freight transportation	14	TC2
194	483113	Coastal and great lakes freight transportation	690	TC2
195	334	Computer and electronic product manufacturing	265	TC3
196	5414	Specialized design services	1,694	TC3
197	5415	Computer systems design and related services	6,344	TC3
198	5612	Facilities support services	1,308	TC3
199	5614	Business support services	2,080	TC3
200	33994	Office supplies (except paper) manufacturing	12	TC3

Appendix Table A-1. State of Hawaii NAICS Level Clusters Based on DBEDT Definition

No.	NAICS	NAICS CODE DESCRIPTION	2014 Jobs	Cluster
201	54133	Engineering services	3,954	TC3
202	54134	Drafting services	303	TC3
203	54161	Management consulting services	4,434	TC3
204	54162	Environmental consulting services	714	TC3
205	54191	Marketing research and public opinion polling	344	TC3
206	54193	Translation and interpretation services	436	TC3
207	541922	Commercial photography	403	TC3
208	533	Lessors of nonfinancial intangible assets	14	TC4
209	5417	Scientific research and development services	2,214	TC4
210	6112	Junior colleges	712	TC4
211	6113	Colleges, universities, and professional schools	4,977	TC4
212	6114	Business schools and computer and management training	695	TC4
213	6115	Technical and trade schools	820	TC4
214	6116	Other schools and instruction	4,443	TC4
215	6117	Educational support services	595	TC4
216	54137	Surveying and mapping (except geophysical) services	282	TC4
217	54169	Other scientific and technical consulting services	784	TC4
218	4242	Drugs and druggists' sundries merchant wholesalers	591	TC5
219	4243	Apparel, piece goods, and notions merchant wholesalers	837	TC5
220	4245	Farm product raw material merchant wholesalers	153	TC5
221	4541	Electronic shopping and mail-order houses	1,067	TC5
222	42441	General line grocery merchant wholesalers	1,314	TC5
223	42442	Packaged frozen food merchant wholesalers	445	TC5
224	42445	Confectionery merchant wholesalers	534	TC5
225	42449	Other grocery and related products merchant wholesalers	544	TC5
226	42491	Farm supplies merchant wholesalers	241	TC5
227	512	Motion picture and sound recording industries	2,281	TC6
228	515	Broadcasting (except Internet)	1,213	TC6
229	712	Museums, historical sites, and similar institutions	2,885	TC6
230	45392	Art dealers	892	TC6
231	521	Monetary Authorities-Central Bank	-	TC7
232	523	Securities, commodity contracts, investments	10,427	TC7
233	5242	Agencies, brokerages, and other insurance related activities	5,836	TC7
234	3111	Animal food manufacturing	30	TC8
235	3112	Grain and oilseed milling	50	TC8
236	3113	Sugar and confectionery product manufacturing	849	TC8
237	3114	Fruit and vegetable preserving and specialty food manufacturing	454	TC8
238	3115	Dairy product manufacturing	379	TC8
239	3117	Seafood product preparation and packaging	62	TC8
240	3118	Bakeries and tortilla manufacturing	2,670	TC8
241	31191	Snack food manufacturing	357	TC8
242	31192	Coffee and tea manufacturing	516	TC8
243	31193	Flavoring syrup and concentrate manufacturing	35	TC8
244	31194	Seasoning and dressing manufacturing	175	TC8
245	31212	Breweries	58	TC8
246	31213	Wineries	35	TC8
247	31214	Distilleries	60	TC8
248	311999	All other miscellaneous food manufacturing	61	TC8
249	312112	Bottled water manufacturing	222	TC8
250	33992	Sporting and athletic goods manufacturing	538	TC9

Appendix Table A-1. State of Hawaii NAICS Level Clusters Based on DBEDT Definition

No.	NAICS	NAICS CODE DESCRIPTION	2014 Jobs	Cluster
251	33993	Doll, Toy, and Game Manufacturing	37	TC9
252	33999	All other miscellaneous manufacturing	318	TC9
253	114	Fishing, hunting and trapping	1,511	TC10
254	322	Paper manufacturing	45	TC11
255	323	Printing and related support activities	1,200	TC11
256	4241	Paper and paper product merchant wholesalers	589	TC11
257	111	Crop Production	10,148	TC12
258	112	Animal Production and Aquaculture	1,666	TC12
259	1151	Support activities for crop production	2,143	TC12
260	1152	Support activities for animal production	156	TC12
261	518	Data processing, hosting and related services	685	TC13
262	519	Other information services	443	TC13
263	5112	Software publishers	181	TC13
264	33991	Jewelry and silverware manufacturing	628	TC14
265	42394	Jewelry merchant wholesalers	760	TC14
266	324	Petroleum and coal products manufacturing	507	TC15
267	4247	Petroleum and petroleum products merchant wholesalers	602	TC15
268	42381	Construction equipment merchant wholesalers	173	TC16
269	315	Apparel manufacturing	1,098	TC17
270	326	Plastics and rubber products manufacturing	313	TC18
271	331	Primary Metal Manufacturing	32	TC19
272	332	Fabricated metal product manufacturing	434	TC19
273	3272	Glass and glass product manufacturing	133	TC20
274	3279	Other nonmetallic mineral product manufacturing	177	TC20
275	337	Furniture and related product manufacturing	519	TC21
276	313	Textile mills	47	TC22
277	314	Textile product mills	236	TC22
278	3391	Medical equipment and supplies manufacturing	265	TC23
279	113	Forestry and logging	104	TC24
280	1153	Support activities for forestry	72	TC24
281	325	Chemical manufacturing	468	TC25
282	333	Machinery manufacturing	140	TC26
283	3361	Motor Vehicle Manufacturing	-	TC27
284	3362	Motor vehicle body and trailer manufacturing	5	TC27
285	3363	Motor vehicle parts manufacturing	18	TC27
286	316	Leather and allied product manufacturing	91	TC28
287	335	Electrical equipment, appliance, and component manufacturing	48	TC29
288	3369	Other transportation equipment manufacturing	-	TC30
289	3365	Railroad Rolling Stock Manufacturing	-	TC30
289	3364	Aerospace Product and Parts Manufacturing	12	TC31
290	3122	Tobacco Manufacturing	-	TC32
291	21	Mining, quarrying, and oil and gas extraction	1,322	R

Source: DBEDT compilation based on EMSI data
1/ LC=Local Cluster, TC=Traded Cluster, R=Resourced-Based Cluster

Appendix Table A-2. Comparison of Job Growth of Honolulu County, State, and Nation by Traded Clusters

Cluster No.	Cluster Name	Honolulu Jobs in		Avg. Ann. Job Growth 2001-2014		
		2001	2014	County	State	U.S.
1	Hospitality and Tourism	27,207	28,044	0.2%	0.2%	0.3%
2	Transportation and Logistics	13,121	12,116	-0.6%	-0.3%	0.0%
3	Business Services	13,847	17,712	1.9%	1.9%	1.0%
4	Education and Knowledge Creation	9,606	12,751	2.2%	2.5%	3.1%
5	Distribution Services	3,890	4,091	0.4%	0.9%	1.2%
6	Entertainment	4,220	5,644	2.3%	1.5%	0.3%
7	Financial Services	8,252	12,830	3.5%	3.7%	4.3%
8	Processed Food	3,796	4,106	0.6%	-0.1%	0.0%
9	Sporting, Recreational and Children's Goods	418	659	3.6%	3.4%	-1.7%
10	Fishing and Fishing Products	972	648	-3.1%	-1.7%	-1.4%
11	Publishing and Printing	2,085	1,404	-3.0%	-2.4%	-3.3%
12	Agricultural Products	3,502	2,916	-1.4%	0.3%	-0.4%
13	Information Technology	1,029	1,064	0.3%	0.8%	1.9%
14	Jewelry and Precious Metals	1,085	992	-0.7%	0.5%	-0.2%
15	Oil and Gas Products and Services	648	848	2.1%	2.7%	-0.6%
16-33	Other Traded Clusters	4,683	3,117	-3.1%	-2.2%	-2.0%
	Total Traded Clusters	98,362	108,942	0.8%	0.8%	0.5%
	Total Private Sector Jobs	412,994	487,859	1.3%	1.4%	1.1%

Source: DBEDT compilation based on EMSI data

Appendix Table A-3. Comparison of Job Growth of Honolulu County, State, and Nation by Local Clusters

Cluster No.	Cluster Name	Honolulu Jobs in		Avg. Ann. Job Growth 2001-2014		
		2001	2014	County	State	U.S.
1	Local Hospitality Establishments	46,288	52,916	1.0%	1.3%	2.0%
2	Local Health Services	39,805	52,848	2.2%	2.1%	2.6%
3	Local Commercial Services	53,057	66,502	1.8%	2.0%	1.0%
4	Local Real Estate, Construction, and Development	45,697	64,170	2.6%	2.4%	1.1%
5	Local Retail Clothing and Accessories	18,777	21,153	0.9%	0.9%	0.7%
6	Local Community and Civic Organizations	13,382	15,483	1.1%	1.5%	0.8%
7	Local Food and Beverage Processing and Distribution	18,693	19,887	0.5%	0.8%	0.3%
8	Local Motor Vehicle Products and Services	10,825	10,505	-0.2%	-0.3%	0.1%
9	Local Financial Services	11,182	10,844	-0.2%	0.1%	0.0%
10	Local Education and Training	8,403	9,089	0.6%	1.1%	1.5%
11	Local Personal Services (Non-Medical)	20,632	25,656	1.7%	1.8%	1.9%
12	Local Entertainment and Media	10,855	10,030	-0.6%	0.1%	0.4%
13	Local Logistical Services	5,551	6,714	1.5%	1.7%	1.4%
14	Local Household Goods and Services	4,647	4,278	-0.6%	-0.6%	-0.9%
15	Local Utilities	2,822	3,989	2.7%	2.5%	0.1%
16	Local Industrial Products and Services	3,699	4,439	1.4%	1.1%	0.8%
	Total Local Clusters	314,315	378,504	1.4%	1.5%	1.2%
	Total Traded Clusters	98,362	108,942	0.8%	0.8%	0.5%
	Total Resource-Dependent Clusters	317	414	2.1%	7.6%	4.4%
	Sub-Total All Clusters	412,994	487,859	1.3%	1.4%	1.1%

Source: DBEDT compilation based on EMSI data

Appendix Table A-4. Comparison of Job Shares of Honolulu County, State, and Nation by Traded Clusters

Cluster No.	Cluster Name	Share of 2014 Total Jobs			Share of 2014 Traded Jobs		
		County	State	U.S.	County	State	U.S.
1	Hospitality and Tourism	5.7%	8.1%	1.8%	25.7%	33.2%	7.1%
2	Transportation and Logistics	2.5%	2.1%	1.0%	11.1%	8.6%	3.9%
3	Business Services	3.6%	3.2%	5.1%	16.3%	13.0%	20.2%
4	Education and Knowledge Creation	2.6%	2.2%	2.8%	11.7%	9.1%	11.1%
5	Distribution Services	0.8%	0.8%	1.0%	3.8%	3.3%	4.0%
6	Entertainment	1.2%	1.0%	0.6%	5.2%	4.2%	2.5%
7	Financial Services	2.6%	2.3%	3.6%	11.8%	9.5%	14.3%
8	Processed Food	0.8%	0.9%	0.7%	3.8%	3.5%	2.8%
9	Sporting, Recreational and Children's Goods	0.1%	0.1%	0.1%	0.6%	0.5%	0.5%
10	Fishing and Fishing Products	0.1%	0.2%	0.1%	0.6%	0.9%	0.2%
11	Publishing and Printing	0.3%	0.3%	0.6%	1.3%	1.1%	2.5%
12	Agricultural Products	0.6%	2.0%	2.0%	2.7%	8.2%	7.9%
13	Information Technology	0.2%	0.2%	0.6%	1.0%	0.8%	2.4%
14	Jewelry and Precious Metals	0.2%	0.2%	0.1%	0.9%	0.8%	0.3%
15	Oil and Gas Products and Services	0.2%	0.2%	0.1%	0.8%	0.6%	0.5%
16-33	Other Traded Clusters	0.6%	0.6%	5.0%	2.9%	2.6%	19.7%
	Total Traded Clusters	22.3%	24.4%	25.4%	100.0%	100.0%	100.0%
	Total Private Sector Jobs	100.0%	100.0%	100.0%			

Source: DBEDT compilation based on EMSI data

Appendix Table A-5. Comparison of Job Shares of Honolulu County, State, and Nation by Local Clusters

Cluster No.	Cluster Name	Share of 2014 Total Jobs			Share of 2014 Local Jobs		
		County	State	U.S.	County	State	U.S.
1	Local Hospitality Establishments	10.8%	11.3%	8.5%	14.0%	15.0%	11.5%
2	Local Health Services	10.8%	9.8%	11.7%	14.0%	12.9%	15.8%
3	Local Commercial Services	13.6%	12.6%	12.2%	17.6%	16.6%	16.6%
4	Local Real Estate, Construction, and Development	13.2%	13.5%	12.1%	17.0%	17.8%	16.4%
5	Local Retail Clothing and Accessories	4.3%	4.2%	3.4%	5.6%	5.6%	4.6%
6	Local Community and Civic Organizations	3.2%	3.0%	2.9%	4.1%	4.0%	4.0%
7	Local Food and Beverage Processing and Distribution	4.1%	4.2%	3.6%	5.3%	5.5%	4.8%
8	Local Motor Vehicle Products and Services	2.2%	2.1%	2.9%	2.8%	2.8%	3.9%
9	Local Financial Services	2.2%	1.9%	2.6%	2.9%	2.5%	3.5%
10	Local Education and Training	1.9%	1.7%	0.9%	2.4%	2.2%	1.2%
11	Local Personal Services (Non-Medical)	5.3%	5.2%	4.9%	6.8%	6.9%	6.7%
12	Local Entertainment and Media	2.1%	2.3%	2.2%	2.7%	3.0%	3.0%
13	Local Logistical Services	1.4%	1.3%	2.4%	1.8%	1.8%	3.3%
14	Local Household Goods and Services	0.9%	0.9%	1.1%	1.1%	1.2%	1.5%
15	Local Utilities	0.8%	0.8%	0.9%	1.1%	1.1%	1.2%
16	Local Industrial Products and Services	0.9%	0.7%	1.4%	1.2%	1.0%	1.9%
	Total Local Clusters	77.6%	75.4%	73.7%	100.0%	100.0%	100.0%
	Total Traded Clusters	22.3%	24.4%	25.4%			
	Total Resource-Dependent Clusters	0.1%	0.2%	0.9%			
	Sub-Total All Clusters	100.0%	100.0%	100.0%			

Source: DBEDT compilation based on EMSI data

Appendix Table A-6. Comparison of Job Growth of Hawaii County, State, and Nation by Traded Clusters

Cluster No.	Cluster Name	Hawaii County Jobs in		Avg. Ann. Job Growth 2001-2014		
		2001	2014	County	State	U.S.
1	Hospitality and Tourism	8,549	7,894	-0.6%	0.2%	0.3%
2	Transportation and Logistics	726	804	0.8%	-0.3%	0.0%
3	Business Services	1,357	1,647	1.5%	1.9%	1.0%
4	Education and Knowledge Creation	859	1,459	4.2%	2.5%	3.1%
5	Distribution Services	496	767	3.4%	0.9%	1.2%
6	Entertainment	506	533	0.4%	1.5%	0.3%
7	Financial Services	734	1,401	5.1%	3.7%	4.3%
8	Processed Food	978	898	-0.7%	-0.1%	0.0%
9	Sporting, Recreational and Children's Goods	49	73	3.2%	3.4%	-1.7%
10	Fishing and Fishing Products	516	490	-0.4%	-1.7%	-1.4%
11	Publishing and Printing	204	171	-1.4%	-2.4%	-3.3%
12	Agricultural Products	5,788	7,043	1.5%	0.3%	-0.4%
13	Information Technology	47	81	4.2%	0.8%	1.9%
14	Jewelry and Precious Metals	53	129	7.0%	0.5%	-0.2%
15	Oil and Gas Products and Services	56	95	4.2%	2.7%	-0.6%
16-33	Other Traded Clusters	467	642	2.5%	-2.2%	-2.0%
	Total Traded Clusters	21,384	24,125	0.9%	0.8%	0.5%
	Total Private Sector Jobs	67,564	85,565	1.8%	1.4%	1.1%

Source: DBEDT compilation based on EMSI data

Appendix Table A-7. Comparison of Job Growth of Hawaii County, State, and Nation by Local Clusters

Cluster No.	Cluster Name	Hawaii County Jobs in		Avg. Ann. Job Growth 2001-2014		
		2001	2014	County	State	U.S.
1	Local Hospitality Establishments	6,151	8,727	2.7%	1.3%	2.0%
2	Local Health Services	5,088	7,244	2.8%	2.1%	2.6%
3	Local Commercial Services	5,879	9,242	3.5%	2.0%	1.0%
4	Local Real Estate, Construction, and Development	9,925	12,536	1.8%	2.4%	1.1%
5	Local Retail Clothing and Accessories	2,893	3,352	1.1%	0.9%	0.7%
6	Local Community and Civic Organizations	1,121	2,287	5.6%	1.5%	0.8%
7	Local Food and Beverage Processing and Distribution	3,387	4,188	1.6%	0.8%	0.3%
8	Local Motor Vehicle Products and Services	1,992	1,932	-0.2%	-0.3%	0.1%
9	Local Financial Services	832	971	1.2%	0.1%	0.0%
10	Local Education and Training	987	1,289	2.1%	1.1%	1.5%
11	Local Personal Services (Non-Medical)	3,709	4,271	1.1%	1.8%	1.9%
12	Local Entertainment and Media	1,520	1,919	1.8%	0.1%	0.4%
13	Local Logistical Services	783	1,213	3.4%	1.7%	1.4%
14	Local Household Goods and Services	871	818	-0.5%	-0.6%	-0.9%
15	Local Utilities	628	797	1.9%	2.5%	0.1%
16	Local Industrial Products and Services	357	355	-0.1%	1.1%	0.8%
	Total Local Clusters	46,124	61,140	2.2%	1.5%	1.2%
	Total Traded Clusters	21,384	24,125	0.9%	0.8%	0.5%
	Total Resource-Dependent Clusters	57	299	13.7%	7.6%	4.4%
	Sub-Total All Clusters	67,564	85,565	1.8%	1.4%	1.1%

Source: DBEDT compilation based on EMSI data

Appendix Table A-8. Comparison of Job Shares of Hawaii County, State, and Nation by Traded Clusters

Cluster No.	Cluster Name	Share of 2014 Total Jobs			Share of 2014 Traded Jobs		
		County	State	U.S.	County	State	U.S.
1	Hospitality and Tourism	9.2%	8.1%	1.8%	32.7%	33.2%	7.1%
2	Transportation and Logistics	0.9%	2.1%	1.0%	3.3%	8.6%	3.9%
3	Business Services	1.9%	3.2%	5.1%	6.8%	13.0%	20.2%
4	Education and Knowledge Creation	1.7%	2.2%	2.8%	6.0%	9.1%	11.1%
5	Distribution Services	0.9%	0.8%	1.0%	3.2%	3.3%	4.0%
6	Entertainment	0.6%	1.0%	0.6%	2.2%	4.2%	2.5%
7	Financial Services	1.6%	2.3%	3.6%	5.8%	9.5%	14.3%
8	Processed Food	1.0%	0.9%	0.7%	3.7%	3.5%	2.8%
9	Sporting, Recreational and Children's Goods	0.1%	0.1%	0.1%	0.3%	0.5%	0.5%
10	Fishing and Fishing Products	0.6%	0.2%	0.1%	2.0%	0.9%	0.2%
11	Publishing and Printing	0.2%	0.3%	0.6%	0.7%	1.1%	2.5%
12	Agricultural Products	8.2%	2.0%	2.0%	29.2%	8.2%	7.9%
13	Information Technology	0.1%	0.2%	0.6%	0.3%	0.8%	2.4%
14	Jewelry and Precious Metals	0.2%	0.2%	0.1%	0.5%	0.8%	0.3%
15	Oil and Gas Products and Services	0.1%	0.2%	0.1%	0.4%	0.6%	0.5%
16-33	Other Traded Clusters	0.8%	0.6%	5.0%	2.7%	2.6%	19.7%
	Total Traded Clusters	28.2%	24.4%	25.4%	100.0%	100.0%	100.0%
	Total Private Sector Jobs	100.0%	100.0%	100.0%			

Source: DBEDT compilation based on EMSI data

Appendix Table A-9. Comparison of Job Shares of Hawaii County, State, and Nation by Local Clusters

Cluster No.	Cluster Name	Share of 2014 Total Jobs			Share of 2014 Local Jobs		
		County	State	U.S.	County	State	U.S.
1	Local Hospitality Establishments	10.2%	11.3%	8.5%	14.3%	15.0%	11.5%
2	Local Health Services	8.5%	9.8%	11.7%	11.8%	12.9%	15.8%
3	Local Commercial Services	10.8%	12.6%	12.2%	15.1%	16.6%	16.6%
4	Local Real Estate, Construction, and Development	14.7%	13.5%	12.1%	20.5%	17.8%	16.4%
5	Local Retail Clothing and Accessories	3.9%	4.2%	3.4%	5.5%	5.6%	4.6%
6	Local Community and Civic Organizations	2.7%	3.0%	2.9%	3.7%	4.0%	4.0%
7	Local Food and Beverage Processing and Distribution	4.9%	4.2%	3.6%	6.8%	5.5%	4.8%
8	Local Motor Vehicle Products and Services	2.3%	2.1%	2.9%	3.2%	2.8%	3.9%
9	Local Financial Services	1.1%	1.9%	2.6%	1.6%	2.5%	3.5%
10	Local Education and Training	1.5%	1.7%	0.9%	2.1%	2.2%	1.2%
11	Local Personal Services (Non-Medical)	5.0%	5.2%	4.9%	7.0%	6.9%	6.7%
12	Local Entertainment and Media	2.2%	2.3%	2.2%	3.1%	3.0%	3.0%
13	Local Logistical Services	1.4%	1.3%	2.4%	2.0%	1.8%	3.3%
14	Local Household Goods and Services	1.0%	0.9%	1.1%	1.3%	1.2%	1.5%
15	Local Utilities	0.9%	0.8%	0.9%	1.3%	1.1%	1.2%
16	Local Industrial Products and Services	0.4%	0.7%	1.4%	0.6%	1.0%	1.9%
	Total Local Clusters	71.5%	75.4%	73.7%	100.0%	100.0%	100.0%
	Total Traded Clusters	28.2%	24.4%	25.4%			
	Total Resource-Dependent Clusters	0.3%	0.2%	0.9%			
	Sub-Total All Clusters	100.0%	100.0%	100.0%			

Source: DBEDT compilation based on EMSI data

Appendix Table A-10. Comparison of Job Growth of Maui County, State, and Nation by Traded Clusters

Cluster No.	Cluster Name	Maui Jobs in		Avg. Ann. Job Growth 2001-2014		
		2001	2014	County	State	U.S.
1	Hospitality and Tourism	14,238	15,345	0.6%	0.2%	0.3%
2	Transportation and Logistics	1,022	1,409	2.5%	-0.3%	0.0%
3	Business Services	1,175	1,763	3.2%	1.9%	1.0%
4	Education and Knowledge Creation	649	798	1.6%	2.5%	3.1%
5	Distribution Services	549	621	0.9%	0.9%	1.2%
6	Entertainment	822	692	-1.3%	1.5%	0.3%
7	Financial Services	760	1,448	5.1%	3.7%	4.3%
8	Processed Food	1,119	782	-2.7%	-0.1%	0.0%
9	Sporting, Recreational and Children's Goods	98	130	2.2%	3.4%	-1.7%
10	Fishing and Fishing Products	242	223	-0.6%	-1.7%	-1.4%
11	Publishing and Printing	139	181	2.0%	-2.4%	-3.3%
12	Agricultural Products	2,976	2,757	-0.6%	0.3%	-0.4%
13	Information Technology	69	109	3.5%	0.8%	1.9%
14	Jewelry and Precious Metals	126	186	3.0%	0.5%	-0.2%
15	Oil and Gas Products and Services	53	124	6.7%	2.7%	-0.6%
16-33	Other Traded Clusters	447	482	0.6%	-2.2%	-2.0%
	Total Traded Clusters	24,486	27,050	0.8%	0.8%	0.5%
	Total Private Sector Jobs	75,951	90,679	1.4%	1.4%	1.1%

Source: DBEDT compilation based on EMSI data

Appendix Table A-11. Comparison of Job Growth of Maui County, State, and Nation by Local Clusters

Cluster No.	Cluster Name	Maui Jobs in		Avg. Ann. Job Growth 2001-2014		
		2001	2014	County	State	U.S.
1	Local Hospitality Establishments	10,382	12,149	1.2%	1.3%	2.0%
2	Local Health Services	4,631	5,626	1.5%	2.1%	2.6%
3	Local Commercial Services	6,443	8,685	2.3%	2.0%	1.0%
4	Local Real Estate, Construction, and Development	9,695	12,677	2.1%	2.4%	1.1%
5	Local Retail Clothing and Accessories	3,308	3,596	0.6%	0.9%	0.7%
6	Local Community and Civic Organizations	1,992	2,283	1.1%	1.5%	0.8%
7	Local Food and Beverage Processing and Distribution	3,023	3,729	1.6%	0.8%	0.3%
8	Local Motor Vehicle Products and Services	1,812	1,673	-0.6%	-0.3%	0.1%
9	Local Financial Services	664	709	0.5%	0.1%	0.0%
10	Local Education and Training	691	1,239	4.6%	1.1%	1.5%
11	Local Personal Services (Non-Medical)	3,471	4,850	2.6%	1.8%	1.9%
12	Local Entertainment and Media	2,602	3,085	1.3%	0.1%	0.4%
13	Local Logistical Services	936	1,099	1.2%	1.7%	1.4%
14	Local Household Goods and Services	893	788	-1.0%	-0.6%	-0.9%
15	Local Utilities	568	764	2.3%	2.5%	0.1%
16	Local Industrial Products and Services	326	359	0.7%	1.1%	0.8%
	Total Local Clusters	51,439	63,309	1.6%	1.5%	1.2%
	Total Traded Clusters	24,486	27,050	0.8%	0.8%	0.5%
	Total Resource-Dependent Clusters	26	320	21.2%	7.6%	4.4%
	Sub-Total All Clusters	75,951	90,679	1.4%	1.4%	1.1%

Source: DBEDT compilation based on EMSI data

Appendix Table A-12. Comparison of Job Shares of Maui County, State, and Nation by Traded Clusters

Cluster No.	Cluster Name	Share of 2014 Total Jobs			Share of 2014 Traded Jobs		
		County	State	U.S.	County	State	U.S.
1	Hospitality and Tourism	16.9%	8.1%	1.8%	56.7%	33.2%	7.1%
2	Transportation and Logistics	1.6%	2.1%	1.0%	5.2%	8.6%	3.9%
3	Business Services	1.9%	3.2%	5.1%	6.5%	13.0%	20.2%
4	Education and Knowledge Creation	0.9%	2.2%	2.8%	3.0%	9.1%	11.1%
5	Distribution Services	0.7%	0.8%	1.0%	2.3%	3.3%	4.0%
6	Entertainment	0.8%	1.0%	0.6%	2.6%	4.2%	2.5%
7	Financial Services	1.6%	2.3%	3.6%	5.4%	9.5%	14.3%
8	Processed Food	0.9%	0.9%	0.7%	2.9%	3.5%	2.8%
9	Sporting, Recreational and Children's Goods	0.1%	0.1%	0.1%	0.5%	0.5%	0.5%
10	Fishing and Fishing Products	0.2%	0.2%	0.1%	0.8%	0.9%	0.2%
11	Publishing and Printing	0.2%	0.3%	0.6%	0.7%	1.1%	2.5%
12	Agricultural Products	3.0%	2.0%	2.0%	10.2%	8.2%	7.9%
13	Information Technology	0.1%	0.2%	0.6%	0.4%	0.8%	2.4%
14	Jewelry and Precious Metals	0.2%	0.2%	0.1%	0.7%	0.8%	0.3%
15	Oil and Gas Products and Services	0.1%	0.2%	0.1%	0.5%	0.6%	0.5%
16-33	Other Traded Clusters	0.5%	0.6%	5.0%	1.8%	2.6%	19.7%
	Total Traded Clusters	29.8%	24.4%	25.4%	100.0%	100.0%	100.0%
	Total Private Sector Jobs	100.0%	100.0%	100.0%			

Source: DBEDT compilation based on EMSI data

Appendix Table A-13. Comparison of Job Shares of Maui County, State, and Nation by Local Clusters

Cluster No.	Cluster Name	Share of 2014 Total Jobs			Share of 2014 Local Jobs		
		County	State	U.S.	County	State	U.S.
1	Local Hospitality Establishments	13.4%	11.3%	8.5%	19.2%	15.0%	11.5%
2	Local Health Services	6.2%	9.8%	11.7%	8.9%	12.9%	15.8%
3	Local Commercial Services	9.6%	12.6%	12.2%	13.7%	16.6%	16.6%
4	Local Real Estate, Construction, and Development	14.0%	13.5%	12.1%	20.0%	17.8%	16.4%
5	Local Retail Clothing and Accessories	4.0%	4.2%	3.4%	5.7%	5.6%	4.6%
6	Local Community and Civic Organizations	2.5%	3.0%	2.9%	3.6%	4.0%	4.0%
7	Local Food and Beverage Processing and Distribution	4.1%	4.2%	3.6%	5.9%	5.5%	4.8%
8	Local Motor Vehicle Products and Services	1.8%	2.1%	2.9%	2.6%	2.8%	3.9%
9	Local Financial Services	0.8%	1.9%	2.6%	1.1%	2.5%	3.5%
10	Local Education and Training	1.4%	1.7%	0.9%	2.0%	2.2%	1.2%
11	Local Personal Services (Non-Medical)	5.3%	5.2%	4.9%	7.7%	6.9%	6.7%
12	Local Entertainment and Media	3.4%	2.3%	2.2%	4.9%	3.0%	3.0%
13	Local Logistical Services	1.2%	1.3%	2.4%	1.7%	1.8%	3.3%
14	Local Household Goods and Services	0.9%	0.9%	1.1%	1.2%	1.2%	1.5%
15	Local Utilities	0.8%	0.8%	0.9%	1.2%	1.1%	1.2%
16	Local Industrial Products and Services	0.4%	0.7%	1.4%	0.6%	1.0%	1.9%
	Total Local Clusters	69.8%	75.4%	73.7%	100.0%	100.0%	100.0%
	Total Traded Clusters	29.8%	24.4%	25.4%			
	Total Resource-Dependent Clusters	0.4%	0.2%	0.9%			
	Sub-Total All Clusters	100.0%	100.0%	100.0%			

Source: DBEDT compilation based on EMSI data

Appendix Table A-14. Comparison of Job Growth of Kauai County, State, and Nation by Traded Clusters

Cluster No.	Cluster Name	Kauai Jobs in		Avg. Ann. Job Growth 2001-2014		
		2001	2014	County	State	U.S.
1	Hospitality and Tourism	5,146	5,545	0.6%	0.2%	0.3%
2	Transportation and Logistics	427	436	0.2%	-0.3%	0.0%
3	Business Services	944	1,120	1.3%	1.9%	1.0%
4	Education and Knowledge Creation	161	526	9.5%	2.5%	3.1%
5	Distribution Services	175	242	2.5%	0.9%	1.2%
6	Entertainment	426	402	-0.5%	1.5%	0.3%
7	Financial Services	378	582	3.4%	3.7%	4.3%
8	Processed Food	213	210	-0.1%	-0.1%	0.0%
9	Sporting, Recreational and Children's Goods	4	34	17.9%	3.4%	-1.7%
10	Fishing and Fishing Products	155	149	-0.3%	-1.7%	-1.4%
11	Publishing and Printing	80	79	-0.1%	-2.4%	-3.3%
12	Agricultural Products	1,381	1,399	0.1%	0.3%	-0.4%
13	Information Technology	26	40	3.4%	0.8%	1.9%
14	Jewelry and Precious Metals	45	82	4.8%	0.5%	-0.2%
15	Oil and Gas Products and Services	19	43	6.4%	2.7%	-0.6%
16-33	Other Traded Clusters	180	160	-0.9%	-2.2%	-2.0%
	Total Traded Clusters	9,760	11,047	1.0%	0.8%	0.5%
	Total Private Sector Jobs	32,078	37,965	1.3%	1.4%	1.1%

Source: DBEDT compilation based on EMSI data

Appendix Table A-15. Comparison of Job Growth of Kauai County, State, and Nation by Local Clusters

Cluster No.	Cluster Name	Kauai Jobs in		Avg. Ann. Job Growth 2001-2014		
		2001	2014	County	State	U.S.
1	Local Hospitality Establishments	4,273	5,601	2.1%	1.3%	2.0%
2	Local Health Services	2,525	2,785	0.8%	2.1%	2.6%
3	Local Commercial Services	2,900	3,556	1.6%	2.0%	1.0%
4	Local Real Estate, Construction, and Development	4,172	5,114	1.6%	2.4%	1.1%
5	Local Retail Clothing and Accessories	1,509	1,600	0.5%	0.9%	0.7%
6	Local Community and Civic Organizations	678	929	2.5%	1.5%	0.8%
7	Local Food and Beverage Processing and Distribution	1,537	1,568	0.2%	0.8%	0.3%
8	Local Motor Vehicle Products and Services	710	670	-0.4%	-0.3%	0.1%
9	Local Financial Services	329	567	4.3%	0.1%	0.0%
10	Local Education and Training	196	192	-0.2%	1.1%	1.5%
11	Local Personal Services (Non-Medical)	1,492	2,001	2.3%	1.8%	1.9%
12	Local Entertainment and Media	808	902	0.8%	0.1%	0.4%
13	Local Logistical Services	314	363	1.1%	1.7%	1.4%
14	Local Household Goods and Services	416	399	-0.3%	-0.6%	-0.9%
15	Local Utilities	205	303	3.1%	2.5%	0.1%
16	Local Industrial Products and Services	143	78	-4.6%	1.1%	0.8%
	Total Local Clusters	22,207	26,627	1.4%	1.5%	1.2%
	Total Traded Clusters	9,760	11,047	1.0%	0.8%	0.5%
	Total Resource-Dependent Clusters	111	290	7.6%	7.6%	4.4%
	Sub-Total All Clusters	32,078	37,965	1.3%	1.4%	1.1%

Source: DBEDT compilation based on EMSI data

Appendix Table A-16. Comparison of Job Shares of Kauai County, State, and Nation by Traded Clusters

Cluster No.	Cluster Name	Share of 2014 Total Jobs			Share of 2014 Traded Jobs		
		County	State	U.S.	County	State	U.S.
1	Hospitality and Tourism	14.6%	8.1%	1.8%	50.2%	33.2%	7.1%
2	Transportation and Logistics	1.1%	2.1%	1.0%	3.9%	8.6%	3.9%
3	Business Services	2.9%	3.2%	5.1%	10.1%	13.0%	20.2%
4	Education and Knowledge Creation	1.4%	2.2%	2.8%	4.8%	9.1%	11.1%
5	Distribution Services	0.6%	0.8%	1.0%	2.2%	3.3%	4.0%
6	Entertainment	1.1%	1.0%	0.6%	3.6%	4.2%	2.5%
7	Financial Services	1.5%	2.3%	3.6%	5.3%	9.5%	14.3%
8	Processed Food	0.6%	0.9%	0.7%	1.9%	3.5%	2.8%
9	Sporting, Recreational and Children's Goods	0.1%	0.1%	0.1%	0.3%	0.5%	0.5%
10	Fishing and Fishing Products	0.4%	0.2%	0.1%	1.4%	0.9%	0.2%
11	Publishing and Printing	0.2%	0.3%	0.6%	0.7%	1.1%	2.5%
12	Agricultural Products	3.7%	2.0%	2.0%	12.7%	8.2%	7.9%
13	Information Technology	0.1%	0.2%	0.6%	0.4%	0.8%	2.4%
14	Jewelry and Precious Metals	0.2%	0.2%	0.1%	0.7%	0.8%	0.3%
15	Oil and Gas Products and Services	0.1%	0.2%	0.1%	0.4%	0.6%	0.5%
16-33	Other Traded Clusters	0.4%	0.6%	5.0%	1.4%	2.6%	19.7%
	Total Traded Clusters	29.1%	24.4%	25.4%	100.0%	100.0%	100.0%
	Total Private Sector Jobs	100.0%	100.0%	100.0%			

Source: DBEDT compilation based on EMSI data

Appendix Table A-17. Comparison of Job Shares of Kauai County, State, and Nation by Local Clusters

Cluster No.	Cluster Name	Share of 2014 Total Jobs			Share of 2014 Local Jobs		
		County	State	U.S.	County	State	U.S.
1	Local Hospitality Establishments	14.8%	11.3%	8.5%	21.0%	15.0%	11.5%
2	Local Health Services	7.3%	9.8%	11.7%	10.5%	12.9%	15.8%
3	Local Commercial Services	9.4%	12.6%	12.2%	13.4%	16.6%	16.6%
4	Local Real Estate, Construction, and Development	13.5%	13.5%	12.1%	19.2%	17.8%	16.4%
5	Local Retail Clothing and Accessories	4.2%	4.2%	3.4%	6.0%	5.6%	4.6%
6	Local Community and Civic Organizations	2.4%	3.0%	2.9%	3.5%	4.0%	4.0%
7	Local Food and Beverage Processing and Distribution	4.1%	4.2%	3.6%	5.9%	5.5%	4.8%
8	Local Motor Vehicle Products and Services	1.8%	2.1%	2.9%	2.5%	2.8%	3.9%
9	Local Financial Services	1.5%	1.9%	2.6%	2.1%	2.5%	3.5%
10	Local Education and Training	0.5%	1.7%	0.9%	0.7%	2.2%	1.2%
11	Local Personal Services (Non-Medical)	5.3%	5.2%	4.9%	7.5%	6.9%	6.7%
12	Local Entertainment and Media	2.4%	2.3%	2.2%	3.4%	3.0%	3.0%
13	Local Logistical Services	1.0%	1.3%	2.4%	1.4%	1.8%	3.3%
14	Local Household Goods and Services	1.1%	0.9%	1.1%	1.5%	1.2%	1.5%
15	Local Utilities	0.8%	0.8%	0.9%	1.1%	1.1%	1.2%
16	Local Industrial Products and Services	0.2%	0.7%	1.4%	0.3%	1.0%	1.9%
	Total Local Clusters	70.1%	75.4%	73.7%	100.0%	100.0%	100.0%
	Total Traded Clusters	29.1%	24.4%	25.4%			
	Total Resource-Dependent Clusters	0.8%	0.2%	0.9%			
	Sub-Total All Clusters	100.0%	100.0%	100.0%			

Source: DBEDT compilation based on EMSI data

Kaua`i Economic Development Plan Update

Comprehensive Economic Development Strategy (CEDS) 2016-2020



Prepared by

KAUAI ECONOMIC DEVELOPMENT BOARD

In partnership with



**County of Kaua`i
Office of Economic Development**

This report was prepared under an Award from
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Table of Contents

Executive Summary	4
Summary Background	5
CEDS Update Methodology Summary.....	8
Economic Highlights About Kaua'i.....	11
Brief Facts About Kaua'i County.....	12
Tourism, the Largest Economic Engine.....	16
Diversifying Kaua'i's Economy.....	18
SWOT Analysis	20
Strengths.....	21
Weaknesses.....	23
Opportunities.....	25
Threats.....	26
CEDS Update Survey Highlights.....	29
Strategic Direction & Action Plan	30
Vision Statement.....	30
Guiding Principles of Economic Development on Kaua'i.....	32
Characteristics of a Core Task Force.....	33
Goals, Objectives & Actions.....	34
Kaua'i Economic Development Goals 2016-2020.....	34
Overview of Goals and Objectives.....	35
Summary List of the 49 Highest Priority Actions.....	37
Goal #1: Build, attract and retain a 21st century workforce.....	42
Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.....	45
Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.....	47
Goal #4: Increase collaboration.....	48
Goal #5: Ensure sustainable development.....	50
Goal #6: Achieve greater food self-sufficiency.....	54
Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters.....	55
Goal #8: Enhance the community's ability to thrive.....	57
Food & Agriculture	59
Jobs & Earnings.....	59
Survey Highlights.....	62
Additional Data.....	63
Goals, Objectives & Actions.....	65

Sustainable Technologies & Practices	81
Jobs & Earnings	81
Survey Highlights	82
Additional Data	84
Goals, Objectives & Actions	85
Science & Technology	104
Jobs & Earnings	104
Survey Highlights	106
Additional Data	107
Goals, Objectives & Actions	108
Health & Wellness	123
Jobs & Earnings	123
Survey Highlights	125
Kaua'i Vision 2024 & A Note About Additional Data.....	126
Goals, Objectives & Actions	127
Sports & Recreation	143
Jobs & Earnings	143
Survey Highlights	145
Goals, Objectives & Actions	146
Arts & Culture	160
Jobs & Earnings	160
Survey Highlights	162
Additional Data	163
Goals, Objectives & Actions	165
Evaluation Framework	177
References	178

Executive Summary

Talent. Infrastructure. Capital. These are the three critical factors for economic development that have been identified by the Hawai'i State Department of Business, Economic Development and Tourism (DBEDT) and also by the stakeholders who contributed to the Comprehensive Economic Development Strategy (CEDS) update for Kaua'i for 2016-2020.

Kaua'i's fast-growing population was a significant consideration regarding the economic development strategy for the next five years, as were many local issues including housing, growth management, land use and sustainability. Marketplace factors that were considered included climate change, the globalization of business, the Internet and social media, and grassroots movements of passionate citizens. It was clear from the analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT) that Kaua'i is a talent-rich community in need of more job creation, workforce development, infrastructure improvements and greater access to capital.

The Goals, Objectives and Actions that emerged in light of these circumstances focus on:

1. **Workforce development** through greater education and training;
2. **Innovation and small businesses** through more resources for entrepreneurs;
3. **Adaptability and resilience** through further disaster and climate change planning;
4. **Collaboration** within, between and beyond industry clusters;
5. **Sustainable development** of natural resources;
6. **Greater food self-sufficiency** through increased local farming and consumption of local produce and livestock;
7. **Capacity building for economic development** for industry clusters through planning and assessment; and
8. **Enhancing the community's ability to thrive** in terms of health and wellness, technology and affordable housing.

Ultimately, the greatest outcome of updating the Kaua'i CEDS was the engagement of leaders from all aspects of government, business and the community in moving Kaua'i forward together. This report captures their input and the current state of Kaua'i's economy as best as possible during the CEDS update as of February 2016. However, there is recognition in the community that the CEDS is in actuality a living document to be championed, adapted and built upon as more ideas, strategies and action items emerge. The outcomes from the CEDS over the next five years will depend on the community's ownership, commitment and efforts to be bold in seizing the opportunities at hand, collaborative in addressing challenges, willing to find compromise among diverse perspectives, and steadfast in the vision for Kaua'i's future.

Summary Background

The County of Kauaʻi is at an economic crossroad. With the highest percentage of conservation-zoned land and the smallest population of the counties of the State of Hawaiʻi¹, Kauaʻi is celebrated and treasured as a stronghold of untouched natural beauty and small towns, and a thriving melting pot of Hawaiian and other cultures. Simultaneously, these assets draw increasing numbers of visitors and new residents to Kauaʻi, resulting in a fast-growing population, infrastructure strain, increasing traffic, and pressing questions about land use and economic development for this burgeoning island community.

The balancing of Kauaʻi's rural identity and the vision for its future is top-of-mind for local leaders in government, business and the community, and the update of the County's Comprehensive Economic Development Strategy (CEDS) for 2016-2020 comes at a critical time. Following the guidelines set forth by the U.S. Economic Development Administration (EDA), the CEDS is a strategy-driven plan for regional economic development, the result of a regionally owned planning process designed to build capacity and guide the economic prosperity and resiliency of an area or region. Regions must update their CEDS at least every five years to qualify for EDA assistance under its Public Works and Economic Adjustment Assistance programs, and a CEDS is a prerequisite for designation by EDA as an Economic Development District (EDD).² The Kauaʻi CEDS update was spearheaded by the Kauaʻi Economic Development Board (KEDB) with the partnership of the County of Kauaʻi Office of Economic Development and input from numerous stakeholders and leaders throughout the community, who are listed and acknowledged in the Appendix. It was funded by the U.S. EDA and done in concert with the CEDS updates for the other Counties in the State of Hawaiʻi and the statewide CEDS update under the auspices of the Economic Development Alliance of Hawaiʻi (EDAH) and the Office of Planning under the State of Hawaiʻi Department of Business, Economic Development & Tourism (DBEDT).

At the time of this report, there were also several other major strategic planning and assessment initiatives underway or recently completed for the County of Kauaʻi, namely:

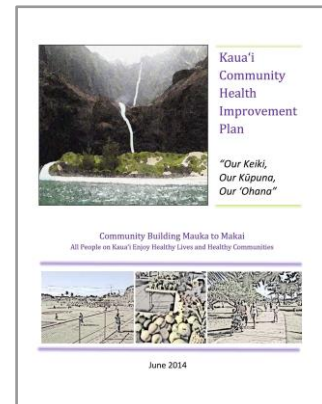
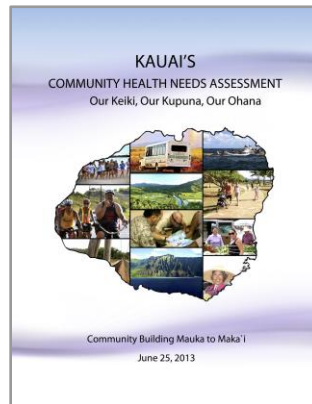
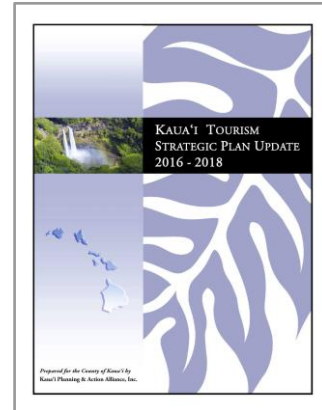
1. [The Kauaʻi County General Plan Update: 2016-2035](#), which is the top-level policy document that guides growth management and land use, housing, town character, infrastructure priorities, natural resource management and conservation, cultural and heritage resources, economic development, agricultural lands, sustainability and renewable energy, climate change and hazard preparedness, public access, parks and open space, public services, pedestrian networks, bicycle networks, transit, roads and traffic, harbors and airports, public health and community design. The update of the General Plan began in November 2014 and the draft final plan is anticipated to be submitted to the Kauaʻi County Planning Commission in the fall of 2016. (plankauai.com)



¹ State of Hawaiʻi Data Book 2014, State of Hawaiʻi Department of Business, Economic Development & Tourism.

² U.S. Economic Development Administration Comprehensive Economic Development Strategy (CEDS) Content Guidelines: Recommendations for Creating an Impactful CEDS, January 2016.

2. [The Kaua'i Tourism Strategic Plan Update: 2016-2018](http://www.kauai.gov/OED), which examines challenges and opportunities in the visitor industry, Kaua'i's largest industry and primary economic driver. (<http://www.kauai.gov/OED>)
3. The Agriculture Master Plan.
4. Kaua'i's Community Health Needs Assessment (CHNA) Update 2016, which is required by the Affordable Care Act every three years and, on Kaua'i, is truly a community effort that involves numerous partners from the public and private sectors. The CHNA identifies five priority themes for the improvement of public health and health care on Kaua'i, namely: 1) Health and Wellness (Upstream Prevention); 2) Medical Care; 3) Education and Lifelong Learning; 4) Housing; and 5) Community Design and Planning. At the time of this CEDS update report, the CHNA update for 2016 was beginning; consequently, our references were the [existing CHNA report from 2013](http://health.hawaii.gov/kauai/) (<http://health.hawaii.gov/kauai/>) and the [Kaua'i Community Health Improvement Plan](https://www.livehealthykauai.org/media/1443/kauai-plan-june-2014-8-8-14.pdf) from June 2014, which is the comprehensive plan that is being implemented through the Kaua'i County Health Improvement Initiative (<https://www.livehealthykauai.org/media/1443/kauai-plan-june-2014-8-8-14.pdf>).



In addition, the [Lihue Community Plan Update](http://lihuecp.com/) was completed and signed into law in June 2015 under Ordinance No. 989 to provide a guide for growth in Kaua'i's government and commercial center. (<http://lihuecp.com/>)



Finally, the [South Kaua'i Community Plan](#) was adopted in July 2015 and established three Special Planning Areas with updated policies and guidelines for development in the Planning District that includes the towns of Po'ipū, Kukui'ula, Kōloa, 'Ōma'o, Lāwa'i and Kalāheo.

(<http://www.kauai.gov/Government/Departments-Agencies/Planning-Department/Long-Range-Division/South-Kauai-Community-Plan>)



This CEDS update report takes into consideration the materials from those other strategic planning initiatives wherever possible and available as of February 2016. Also, many leaders who were part of the CEDS update were also spearheading or participating in the other initiatives mentioned above and provided input that helps to unify the various documents. It will be important in the implementation of the CEDS to align to these other strategic plans and initiatives wherever possible. For a full list of reports referenced during this CEDS update, see the References section.

CEDES Update Methodology Summary

The Kaua'i CEDES update for 2016-2020 was conducted according to the U.S. EDA's [Comprehensive Economic Development Strategy \(CEDES\) Content Guidelines](http://eda.gov/ceds) available on eda.gov/ceds in 2015 and finalized according to the latest version of the content guidelines as of Jan. 26, 2016.

A four-pronged approach as shown in the graphic below was used to gather both qualitative and quantitative data through primary and secondary research.



Stakeholder Meetings

KEDB formed a CEDES Update Steering Committee of 46 leaders from government, businesses and the community in November 2015. Two Steering Committee meetings were held – one on Monday, Nov. 16, 2015 to commence the CEDES update and the second on Thursday, Feb. 11, 2016 to discuss finalizing the report.

The previous CEDES update from 2010 utilized an approach to economic development that focused on priority projects of six target industry clusters, which were identified because of their existing and potential impact on the economy and quality of life in the County. The industry cluster approach was continued in the CEDES update for 2016-2020, and the same six target industry clusters were identified by KEDB and the Steering Committee:

1. Food & Agriculture
2. Sustainable Technologies & Practices
3. Science & Technology
4. Health & Wellness
5. Sports & Recreation
6. Arts & Culture

KEDB formed an Industry Cluster Committee for each of the six target industry clusters to represent and provide input from diverse perspectives and different types and sizes of businesses and organizations – from sole-proprietor small businesses to some of Kaua'i's largest employers, and from independent nonprofit volunteer-run organizations to government agencies, offices and departments. Nearly 100 leaders from all aspects of Kaua'i's six target industry clusters, the main economic engine of tourism and government were invited to the Industry Cluster Committee meetings. The Industry Cluster Committees convened three times and discussions were conducted with the County Office of Economic Development thus:

1. Initial Industry Cluster meetings were held from Jan. 6-12, 2016.
2. Additional discussions with County Office of Economic Development staff from Jan. 28-29, 2016.
3. The second round of Industry Cluster meetings was held from Feb. 5-9, 2016.
4. The final round of Industry Cluster meetings was held from Feb. 23-25, 2016.

Online Survey

In addition to the Steering Committee and Industry Cluster meetings, an online survey was created and disseminated to gather responses from government, business and community leaders on Kaua'i. This was to provide another way for stakeholders to share their insights, ideas and opinions, particularly those who were not able to attend the meetings.

The survey was comprised of six sections – one for each target industry cluster – and asked various questions related to economic development in the County. The questions were a mix of open-ended and close-ended (i.e., multiple-choice) questions.

In the span of 25 days (Jan. 15 through Feb. 8, 2016), 66 respondents took the survey. Those 66 respondents were able to choose as many of the six industry cluster sections as they wished, as many leaders on Kaua'i are involved in initiatives or organizations that span multiple industry clusters. Many respondents answered questions in more than one industry cluster section, resulting in a total of 143 industry cluster section responses.

Survey findings were gathered as a qualitative measure of business leaders' perceptions and outlook on economic development for Kaua'i, and do not represent a statistically valid or quantitative measure of the community's perceptions on the economic development of Kaua'i as a whole.

For a full copy of the survey questions and the collected responses, see the Kaua'i CEDS Update 2016-2020 Appendix.

Jobs and Earnings Data

Jobs and earnings data from the North American Industry Classification System (NAICS) was provided by the State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT). DBEDT also provided its draft report on Hawaii's Cluster Economic Performance as of November 2015.

The Kaua'i CEDS update for 2016-2020 used both the NAICS data and the report on Hawaii's Cluster Economic Performance to analyze Kaua'i's economy overall and the six target industry clusters in particular.

The report on Hawaii's Cluster Economic Performance analyzed jobs and earnings data from 2001-2014 that was collected through the Quarterly Census of Employment and Wages (QCEW). The Kaua'i CEDS update for 2016-2020 uses these years as a point of comparison to remain consistent with the report and the related data.

In addition, the NAICS data was classified and sorted into the six target industry clusters for the Kaua'i CEDS update to provide a baseline for tracking and comparison over the next five years. It is important to note that the industry cluster classifications for the Kaua'i CEDS are different from the industry clusters used in the report on Hawaii's Cluster Economic Performance, though the report helped guide classification decisions for the NAICS data.

Not all businesses on Kaua'i are classified through NAICS due to collection standards, business size and margin of error. For a more detailed explanation of the limitations and methodologies that went into the Kaua'i CEDS update for 2016-2020, see the Appendix.

Secondary Research

Secondary research helped to construct a thorough representation of the state of Kaua'i's economy and the strategic planning and assessment initiatives that have been completed or are underway in the various industry clusters. Outside sources included both State and County plans and reports as well as reports pertaining specifically to the industry clusters on Kaua'i. Many of the findings from secondary research was used to enhance the analysis of findings from industry cluster meetings, the online survey and jobs and earnings data.

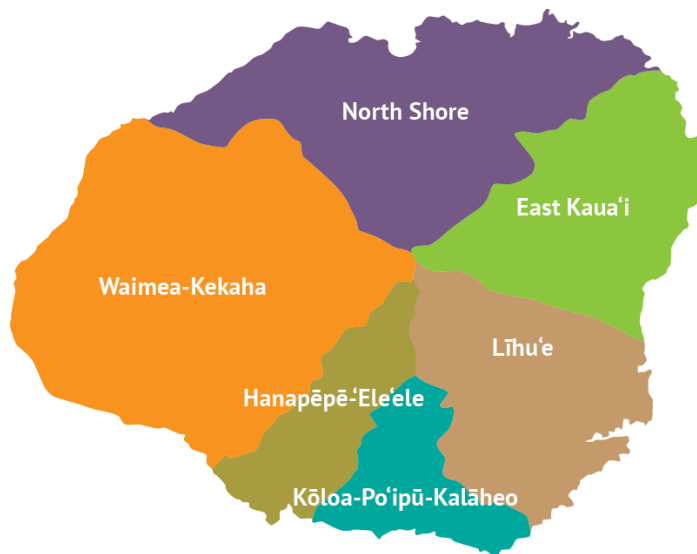
Sources are cited individually and collectively throughout this report. A complete list of References is included at the end of the report.

Economic Highlights About Kaua'i³

The County of Kaua'i includes the islands of Kaua'i and Ni'ihau in the State of Hawai'i. While much of the statistical data in this CEDS document encompasses the entire County, the economic development goals, objectives and action items are primarily specific to the island of Kaua'i, as the island of Ni'ihau is privately owned and access to the island is limited.

The island of Kaua'i is Hawai'i's fourth largest island and the oldest and northernmost of the major populated islands in the Hawaiian Islands archipelago. It is known as "The Garden Isle" because of its lush greenery. The center of the island is largely mountainous and uninhabited, and the populated areas and roadways are generally located on the coast and in the valleys. Kaua'i is a place of small towns and agricultural expanses, one-lane bridges and two-lane highways, scenic beaches and jagged sea cliffs.

The [Kaua'i County General Plan Update Issues and Opportunities](#) paper from September 2015 notes that Kaua'i residents value independence and self-sufficiency, and that this can be traced back to the history of Kaua'i and Ni'ihau as the last Hawaiian Islands to be conquered and join King Kamehameha I's kingdom. The same paper also notes that Kaua'i's residents are highly resilient, and that past hurricanes 'Iwa and 'Iniki "loom large in the collective consciousness of the island, and there is an acute awareness that island residents need to continue to band together to protect what is most important and plan for future changes, whether environmental, social, or economic."⁴



The Kaua'i County General Plan Update designates six planning districts as shown in this map. Each district has its own distinct character, and economic development must account for the unique aspects of each community. The most developed and populous districts, and the ones forecast to have the most growth in population by 2020, are Līhu'e, the government and commercial center and the district that is home to the island's airport is located; East Kaua'i; and Kōloa-Po'ipū-Kalāheo.⁵

Kaua'i County encompasses 620.0 square miles (9.65% of the state). According to State Land Use Districts, 54.8% of the

island of Kaua'i is designated as Conservation District, 40.7% is designated as Agricultural District, 4.2% is designated as Urban District and 0.4% is designated as Rural District.⁶

³ Data in this section is taken from the State of Hawai'i Data Book 2014 unless otherwise cited.

⁴ Kaua'i County General Plan Update Issues and Opportunities, September 2015.

⁵ Kaua'i General Plan Update: Socioeconomic Analysis and Forecasts, February 2014.

⁶ Kaua'i General Plan Update Technical Study Land Use Buildout Analysis, May 2015.

Brief Facts About Kaua'i County⁷

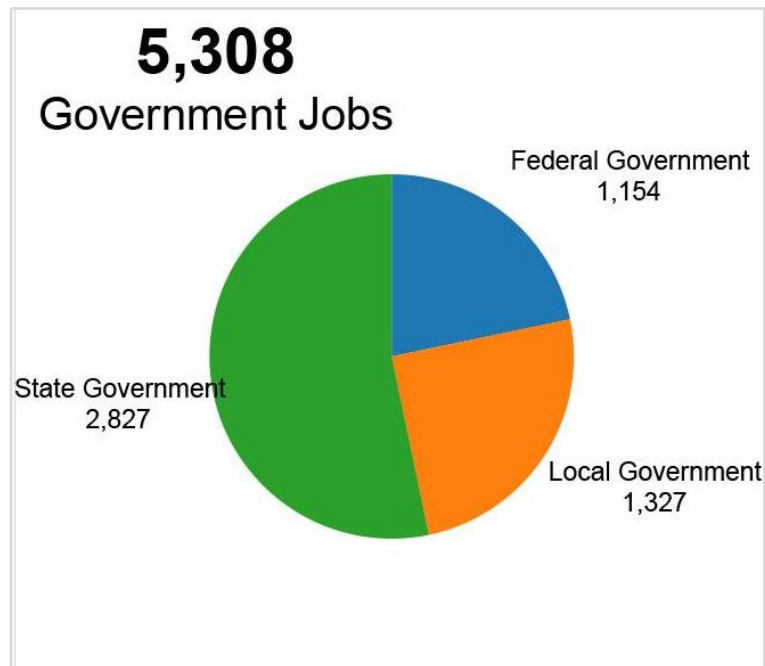
Population Composition

- Population, 2014 estimate: **70,475**
(4.96% of the state)
- Persons per square mile, 2010: **108.2**
(lower than the state average of 211.8)
- Households, 2010: **23,240**
(5.10% of the state)
- Ages, 2014
 - Under 18 years: **22.3%**
 - 18-64 years: **60.3%**
 - 65 years and over: **17.4%** (higher than state total 16.1%)
- Dependency ratio, 2014: **66** dependent people to every 100 working-age people
(higher than statewide total of 61)
- Education attainment:
 - High school graduate or higher, persons age 25+, 2009-2013: **90.1%**
(approx. equal to the state average of 90.4%)
 - Bachelor's degree or higher, persons age 25+, 2009-2013: **25.1%**
(lower than the state average of 30.1%)

Jobs & Income

- Median household income, 2013: **\$55,844**
(17.63% lower than the state average of \$67,798)
- Persons in poverty, 2013: **11.8%**
(higher than state level of 11.2%)
- Per capita income, 2009-2013, in inflation-adjusted dollars: **\$26,658**
(average of the five-year period; 9.03% lower than the state average \$29,305)
- Average annual wage, 2013:
 - Including government: **\$39,059** (lower than state total \$43,828)
 - Excluding government: **\$36,476** (lower than state total \$41,466)
- Total personal income, 2013: **\$2,728,398,000**
(lowest among the counties and 4.30% of the state total)
- Total employment, 2014: **43,815**
 - Wage and salary employment, 2014: **31,599**
 - Proprietors employment, 2014: **12,216**
 - Number of nonfarm proprietors: **11,730**

- Number of farm proprietors: **486**
 - Civilian job projections by sector and county:
 - Total civilian jobs 2015: **43,720**
 - Private: **38,710**
 - Government: **5,010**
 - Wage and salary: **30,760**
 - Self-employed: **12,960**
 - Total civilian jobs 2020: **46,520** (6.40% increase)
 - Private: **41,310** (6.72% increase)
 - Government: **5,210** (4.00% increase)
 - Wage and salary: **31,940** (3.84% increase)
 - Self-employed: **14,580** (12.5% increase)
(higher than 10.64% increase projected state total 2015-2020)
 - Public Sector Jobs, 2014:⁸ **5,308** jobs
 - 53% State Government (**1,154** jobs)
 - 25% Local Government (**1,327** jobs)
 - 22% Federal Government (**2,827** jobs)



⁷ Data in this callout box is from the State of Hawai'i Data Book 2014, State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT) unless otherwise cited.

⁸ North American Industry Classification System (NAICS) 2014 data provided by the State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT).

High Cost of Living Requires Higher Wages

Kaua'i workers struggle with lower wages as compared with the state as a whole. The high cost of living on Kaua'i exacerbates the economic impact of this, and in fact, Kaua'i residents must earn more annual income than residents of any other county to be self-sufficient. According to the 2013 estimates detailed in the Self-Sufficiency Income Standard report from the State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT) Research & Economic Analysis Division, Kaua'i has the highest self-sufficiency requirements among all five family types when compared to other counties and statewide averages. The report found that the County of Kaua'i's self-sufficiency family budgets were impacted by relatively higher costs in most categories, especially housing and transportation. The following table outlines annual self-sufficiency family budgets for selected family types as of 2013 which shows a range of 11.3% to 31.7% higher as compared to the state.

County	Family Type (2013)				
	One Adult	Two Adult Family	One Adult + One Preschooler	One Adult + One Preschooler + One Schoolage	Two Adult + One Preschooler + One Schoolage
Kaua'i	\$42,026	\$53,544	\$61,912	\$74,550	\$83,602
State	\$31,901	\$41,183	\$55,031	\$67,006	\$73,799
% Higher than State	31.7%	30.0%	12.5%	11.3%	13.3%

Further details in the report reveal that a single adult with no children needs to earn an hourly wage of \$19.90 to be economically self-sufficient. That was **174.5%** above the state minimum wage level and **217.7%** above the federal poverty threshold for Hawai'i. Likewise, a two- adult family with one preschooler and one schoolage child needed to earn a combined hourly wage of \$39.58 (or \$19.79 each on average) to be able to be economically self- sufficient. That was **173.0%** above the state minimum wage level and **208.6%** above the federal poverty threshold for Hawai'i.

Kaua'i's Economy is Driven by Small Business

Small businesses make up the fabric of Kaua'i's economy. According to the State of Hawai'i Data Book 2014, compared with statewide percentages, more Kaua'i workers are employed at businesses with fewer than 250 employees and significantly fewer Kaua'i workers are employed at businesses with 250 or more employees. Based on the sample of businesses captured in the report, more than half of businesses on Kaua'i have four or fewer employees and more than 70% of all workers are employed by businesses with fewer than 100 employees.

Size of Firm	Reporting Units	Employment
0 to 4	1,275 (57.35%) <i>Higher than state total of 56.53%</i>	2,114 employment (8.32%) <i>Higher than state total 6.52%</i>
5 to 9	403 (18.13%)	2,672 employment (10.52%) <i>Higher than state total 8.73%</i>
10 to 19	276 (12.42%)	3,692 employment (14.53%) <i>Higher than state total 11.73%</i>
20 to 49	173 (7.78%)	5,331 employment (20.98%) <i>Higher than state total 18.05%</i>
50 to 99	64 (2.88%)	4,283 employment (16.86%) <i>Higher than state total 15.32%</i>
100 to 249	25 (1.12%)	3,931 employment (15.57%) <i>Higher than state total 14.58%</i>
250 or more	7 (0.31%)	3,382 employment (13.31%) <i>Lower than state total 25.07%</i>
<i>As of December 2013</i>		

While these facts provide a snapshot in time, perhaps the more telling statistics are the projections for the next 10-30 years. Further examination of trends and projections reveals the magnitude of opportunities and challenges facing Kaua'i in the near-term and long-term future.

Tourism, the Largest Economic Engine

Tourism is the primary economic engine for Kaua'i and has been steadily recovering since the recession that began in 2008. According to the [Hawai'i Tourism Authority – 2014 Annual Visitor Research Report](#), the tourism industry contributed to a 1.4 percent growth in visitor expenditures to \$1.4 billion in 2014. Additional facts from the Tourism Strategic Plan Update are as follows, from data captured by the Hawai'i Tourism Authority in 2014:

- Kaua'i visitors in 2014 spent more on lodging (\$72) but slightly less on transportation (\$19). Spending on food and beverages (\$34), entertainment and recreation (\$19) and shopping (\$14) was unchanged from 2013.
- More than half (52.9%) of these visitors stayed on Kaua'i exclusively.
- The average daily census rose 1.1 percent from to 23,589 visitors per day.
- The U.S. West (50.9%) continued to have the largest share of visitors to Kaua'i, followed by U.S. East (30.7%), Canada (7%), Europe (2.9%), Oceania (2.8%), Japan (2.1%) and Other Asia (1%).
- Among the top four visitor markets, Canadian arrivals to Kaua'i increased 12.3 percent but Japanese arrivals declined 19 percent from 2013. Arrivals from U.S. East rose slightly (+0.8%) and while the number of U.S. West visitors to Kaua'i were similar to last year.
- There were more visitors from Other Asia (+6.9%), Europe (+4.3%) and Latin America (+2.1%) to Kaua'i but fewer visitors from Oceania (-1.5%) than in 2013.
- Repeat visitors comprised 69.9 percent of Kaua'i visitors in 2014.
- A higher percent of visitors who went to Kaua'i in 2014 were independent travelers (77.1%) compared to 2013 (75.8%).
- Half (50.5%) of those who visited Kaua'i stayed in hotels while in the state. Some stayed in condominium properties (22.6%), timeshare properties (19.4%), and rental homes (12.6%).
- Usage of rental homes (+12%) by Kaua'i visitors were higher compared to 2013 but stays in condominiums (-1.8%) and timeshare properties (-0.8%) declined.
- Most of the visitors were in the state for vacation (84.8%), 6.6 percent visited friends or relatives, 6.5 percent honeymooned, and 3.9 percent came for meetings, conventions, and incentives

The Tourism Strategic Plan Update discusses the need for infrastructure improvements, particularly to handle peak visitor counts from mid-June to August and during the winter holidays. It also discusses the need to live up to the promise of “relaxation and rejuvenation” and offer an authentic Hawaiian cultural experience. Finally, it emphasizes the need to consider the impacts of social media, and to continue to address crime and visitor safety.

The 10 strategies listed in the Tourism Strategic Plan Update as absolutely essential to complete by 2018 are (in brief):

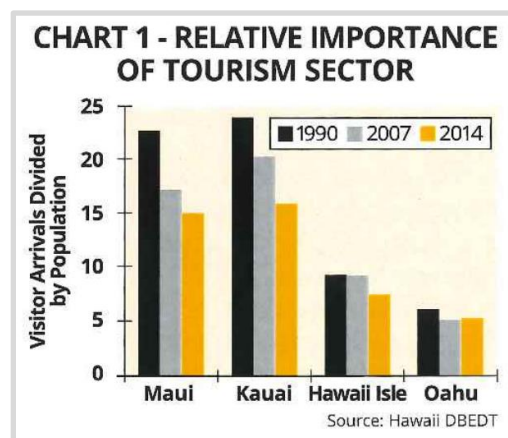
1. Support traffic management systems to address and reduce traffic congestion and improve pedestrian safety.
2. Support career preparation programs to attract new employees, especially local residents, to the visitor industry to ensure an available, well-qualified workforce.

3. Advocate for lifting the cap on existing Transient Accommodation Tax (TAT) funds distributed to counties, thus increasing the allocation to Kaua'i for services and infrastructure that support the island community.
4. Advocate for significant progress and/or completion of essential infrastructure improvements.
5. Encourage two-way communications among residents, Native Hawaiians and the visitor industry to increase understanding of the visitor industry and local Kaua'i culture and their collective value to the island's economy.
6. Increase awareness of the Hawaiian culture among residents of all ages and the visitor industry, including employees and employers.
7. Support adequate funding and staffing for capital improvements, including maintenance and enforcement for public parks, trails and recreation areas.
8. Support the development of regulations and the administrative structure to appropriately identify, monitor and enforce homestays (Bed & Breakfasts) and individual Vacation Units (homes and condos) and report the annual number of visitors staying in these accommodations.
9. Encourage the visitor industry, airlines and the growing cruise line industry to buy and promote Kaua'i products and support businesses on Kaua'i.
10. Support the development and promotion of community-driven programs that reinforce the unique sense of place of communities, such as those with historical and/or cultural significance.

While tourism is projected to be strong over the next several years, there is widespread recognition that Kaua'i must focus on diversifying its economy and growing other industries to increase economic resiliency and provide further opportunities for its residents. This analysis is summarized in the First Hawaiian Bank Economic Forecast Kauai Edition 2015-2016 thus:

Following the statewide pattern, Kaua'i's economy is benefiting from strong visitor numbers that will set records in 2015. Construction is gaining momentum and will add to economic vitality in 2016. Confidence is reflected in airline seat commitments and, more firmly, by investments in resort, commercial, and residential real estate. Diversifying the economic base should continue to be a priority for Kaua'i.

More than any other island, Kaua'i's economic health depends on tourism. Even some diversified agriculture businesses such as Kauai Coffee and Koloa Rum owe their success to tourism sales. Chart 1 illustrates tourism's economic importance in a simple way: annual visitor arrivals divided by resident population. As seen here, Kauai's ratio has been declining, as is the case for all the state's counties. Yet, Kauai continues to have the highest ratio, three times that of Oahu and twice that of Hawaii Island.



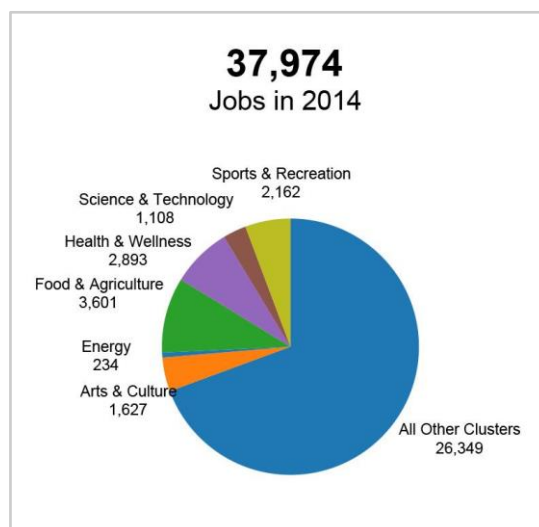
Diversifying Kaua'i's Economy

The Kaua'i CEDS Update for 2016-2020 maintains the focus of the previous CEDS on diversifying Kaua'i's economy by boosting other industry clusters beyond the primary economic engine of tourism.

The six target industry clusters – Food & Agriculture, Sustainable Technologies & Practices, Science & Technology, Health & Wellness, Sports & Recreation and Arts & Culture – were identified in the previous CEDS in 2010 because of a variety of factors: their size in terms of number of jobs and/or earnings, the amount of current industry activity observed, and/or the estimated potential for growth. These same industry clusters were determined to still be relevant for 2016-2020. Analysis of the industry clusters was conducted using jobs and earnings data from the North American Industry Classification System (NAICS) that was provided by the State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT). The NAICS data was classified and sorted into the six target industry clusters for the Kaua'i CEDS update to provide a baseline for tracking and comparison over the next five years.

The chart at right shows that the six target industry clusters together comprised approximately 30%⁹ of the private sector jobs on Kaua'i in 2014, a total nearly equal to the tourism industry and significantly larger than all other clusters in the County.

In addition to analyzing NAICS data, the Kaua'i CEDS update also examined the findings in DBEDT's draft report on Hawaii's Cluster Economic Performance as of November 2015. The report categorizes NAICS classifications into 33 traded clusters that sell products and services across regions, 16 local clusters that provide goods and services primarily to a local market and 1 resource-based cluster that is centralized where needed natural resources are found. The industry clusters were then placed on a performance matrix to assess the relative competitiveness of Hawai'i as compared to the nation.



It is important to note that the industry cluster classifications for the Kaua'i CEDS are different from the industry clusters used in the report on Hawaii's Cluster Economic Performance, though the report helped guide classification decisions for the NAICS data. Despite the differences in industry cluster definitions, the overall performance map in Hawaii's Cluster Economic Performance report reveals important trends about cluster growth on Kaua'i between 2001 and 2014. Many DBEDT industry clusters that relate to and/or overlap with the six target industry clusters for this CEDS update fall in the right side of the matrices, indicating strong current performance and future growth potential.

⁹ Jobs data by NAICS classification provided by State of Hawai'i Department of Business, Economic Development & Tourism and categorized for the purposes of this report.

Kaua'i County Traded Cluster Jobs:

- Number of jobs in the traded clusters increased by 13.2% between 2001 and 2014
- Earnings averaged \$45,179 in 2014 (lower than statewide \$49,617)

<p>Transitioning Group: 5.3% of traded cluster jobs (Growing slower than national counterparts)</p> <ul style="list-style-type: none"> • <i>Financial Services</i> 	<p>Base-Growth Jobs: 67% of traded cluster jobs (Higher proportion of jobs in Hawai'i as compared to national (key economic driver))</p> <ul style="list-style-type: none"> • <i>Jewelry and Precious Metals</i> • <i>Hospitality and Tourism</i> • <i>Transportation and Logistics</i> • <i>Agricultural Products</i>
<p>Declining Group: 9.0% of traded cluster jobs (Lost jobs over period of study)</p> <ul style="list-style-type: none"> • <i>Publishing and Printing</i> • <i>Processed Food</i> • <i>Fishing and Fishing Products</i> • <i>Entertainment</i> • <i>Other Traded Clusters</i> 	<p>Emerging Group: 18.1% of traded cluster jobs (High performance, but not as concentrated in the Kaua'i economy (potential in the future))</p> <ul style="list-style-type: none"> • <i>Sporting, Recreational and Children's Goods</i> • <i>Education and Knowledge Creation</i> • <i>Oil and Gas Products and Services</i> • <i>Information Technology</i> • <i>Distribution Services</i>

Kaua'i County Local Cluster Jobs:

- Number of jobs in the traded clusters increased by 19.9% between 2001 and 2014
- Earnings averaged \$35,143 in 2014 (lower than statewide \$43,363)

<p>Transitioning Group: 23.7% of local cluster jobs Growing slower than national counterparts</p> <ul style="list-style-type: none"> • <i>Local Logistical Services</i> • <i>Local Health Services</i> • <i>Local Retail Clothing and Accessories</i> • <i>Local Food and Beverage Processing and Distribution</i> 	<p>Base-Growth Jobs: 51.1% of local cluster jobs Higher proportion of jobs in Hawai'i as compared to national (key economic driver)</p> <ul style="list-style-type: none"> • <i>Local Personal Services (non-medical)</i> • <i>Local Hospitality Establishments</i> • <i>Local Real Estate, Construction and Development</i> • <i>Local Entertainment and Media</i>
<p>Declining Group: 5.0% of local cluster jobs Lost jobs over period of study</p> <ul style="list-style-type: none"> • <i>Local Education and Training</i> • <i>Local Household Goods and Services</i> • <i>Local Motor Vehicle Products and Services</i> • <i>Local Industrial Products and Services</i> 	<p>Emerging Group: 20.1% of local cluster jobs High performance, but not as concentrated in the Kaua'i economy (potential in the future)</p> <ul style="list-style-type: none"> • <i>Local Financial Services</i> • <i>Local Utilities</i> • <i>Local Community and Civic Organizations</i> • <i>Local Commercial Services</i>

SWOT Analysis

The following table summarizes the current strengths, weaknesses, opportunities and threats regarding economic development on Kaua'i.

Strengths	Weaknesses
<p>Robust visitor industry</p> <p>Abundant natural resources for conservation and agriculture</p> <p>Pacific Missile Range Facility, one of the foremost aerospace test sites in the U.S.</p> <p>Political leadership</p> <p>Premier filmmaking destination</p> <p>Vibrant arts</p> <p>Model achievements in renewable energy, education</p> <p>Close-knit, resilient community</p> <p>Desirable place to live with a unique, diverse 'melting pot' cultural history</p> <p>Kaua'i leaders are striving for greater synergy</p>	<p>High cost of living and doing business</p> <p>Increasing lack of affordable housing</p> <p>Aging and/or inadequate infrastructure</p> <p>Need for more workforce development, especially skilled workforce such as engineers</p> <p>Need to identify and cultivate the next generation of industry leadership</p> <p>Need for greater collaboration, compromise and consensus</p> <p>Need for greater recruitment and retention of educators and education administrators, who often move after a couple of years on the island because of the high cost of living</p> <p>"Not in my backyard" mentality</p>
Opportunities	Threats
<p>Statewide economic growth</p> <p>Multiple strategic planning initiatives (GP, TSP, AMP, CHNA, etc.) are bringing the community together and assessing opportunities</p> <p>Statewide goal 100% RPS by 2045</p> <p>Nationwide transformation in health care, transportation, education</p> <p>Growing consumer interest in sustainability, wellness</p> <p>Age of Information and Innovation</p> <p>State and Federal focus on STEM jobs, entrepreneurship, infrastructure</p> <p>Increased partnerships within industry clusters and between the public and private sectors</p>	<p>Global competition for talent and products</p> <p>Climate change</p> <p>Natural disasters</p> <p>The spread of invasive species and diseases</p> <p>Fast-growing population that is projected to exceed current infrastructure</p> <p>Low unemployment, which makes it more challenging for employers seeking qualified workers</p> <p>Changing attitudes that are different from local culture and hinder collaboration</p> <p>Through globalization, the 'ripple effect' of any socioeconomic shift or event is both accelerated and magnified</p>

Strengths

- **Robust visitor industry**, as reported in the Kaua'i Tourism Strategic Plan Update: 2016-2018 and as evidenced by statistics from HTA. See Tourism section in Summary Background.
- **Abundant natural resources for conservation and agriculture.** Kaua'i County has the highest percentage (54.8%) of Conservation District according to State Land Use Districts.¹⁰ It also has enough suitable agricultural lands to meet its needs, according to the [Kaua'i County General Plan Update Issues and Opportunities](#) paper from September 2015. That paper states that, based on a current population of approximately 70,000 people, about 21,158 acres of land in food production would be required to attain food self-sufficiency, and that 53,547 acres of Kaua'i's lands meet all the criteria of Act 183 (SLH 2008; HRS §205-41) Important Agricultural Lands.
- **Pacific Missile Range Facility Barking Sands (PMRF)**, one of the foremost aerospace test sites in the U.S., located on the west side of Kaua'i. PMRF maximizes Hawai'i's unique position in the center of the Pacific Ocean for the benefit of aerospace and space launch testing. The base is responsible for around 900 civilian jobs and 75 active duty members. The 900 civilian jobs comprise \$89.72 million and the 75 active duty members comprise approximately \$7.5 million of the facility's \$118 million operating budget in FY 2016.
- **Local political leadership**, which is supportive of economic development through innovation and entrepreneurship and is committed to the sustainability, self-sufficiency and health and wellness of the community.
- **Success as a premier film, TV and photo shoot destination** for the past 80 years. Most recently, in 2015, Kaua'i garnered attention and publicity as the setting of blockbusters like *Jurassic World*, TV shows like *The Biggest Loser*, and photo spreads in *Sports Illustrated's* Swimsuit Edition.
- **Vibrant arts scene**, with events, galleries and shops all over the island. The [Kaua'i Arts & Culture Feasibility Study Final Report](#) from September 2015 found "robust pockets of arts and culture" and reported that "visual arts and crafts such as painting, drawing, ceramics, woodworking and jewelry-making; performing arts including music, dance and theater; literary arts and publishing; media arts in photography, film and graphic design; and arts and traditions from Hawaiian culture, Japanese culture, Filipino culture and more can all be found."
- **Model achievements and momentum in renewable energy** through the initiatives of the Kaua'i Island Utility Cooperative (KIUC), the County and private firms. KIUC increased renewable generation by 27% in 2014¹¹ and reported 64.8 MW (36.6%) power generation from renewable energy in 2015, with a projection of 116.2 MW (70.6%)

¹⁰ Kaua'i General Plan Update Technical Study Land Use Buildout Analysis, May 2015.

¹¹ State of Hawai'i Energy Resources Coordinator's Annual Report 2015.

renewable energy by 2025.¹² As of 2015, there were 17 renewable energy projects (8 hydroelectric, 7 solar, 1 biomass, and 1 biofuel) on Kaua'i with estimated capacity of over 48 MW.¹³ In January 2016, KIUC reported hitting 90% renewable energy on four separate occasions.¹⁴

- **Achievements and momentum in education**, particularly regarding College and Career Readiness Indicators as measured by the Hawai'i P-20 Council. There were double-digit gains from 2012-2014 in the percentage of graduates from all three high schools on Kaua'i who enrolled in college-level mathematics and college-level English in the University of Hawai'i system.¹⁵
- **Close-knit, resilient community**, where government, business and community leaders alike report a special small-town culture and close connections between colleagues, friends and family members.
- **Desirable place to live with a unique, diverse 'melting pot' cultural history**. Kaua'i's steadily growing population over the past 15 years is due both to natural increase and migration to the island¹⁶, which contribute to the racial and ethnic diversity of the community. In 2010, nearly 1 in 4 residents reported being of two or more races. Of those who reported being of one race, 44% were White, 42% were Asian, and 12% were Native Hawaiian and other Pacific Islander.¹⁷
- **Kaua'i leaders are striving for greater synergy**. In the Steering Committee meetings and the Industry Cluster Committee Meetings for the CEDS update, all participants expressed a desire and a willingness to increase collaboration, forge stronger partnerships and ensure more regular communication between organizations to foster progress toward shared goals.

¹² Kaua'i Island Utility Cooperative 2014 Annual Report.

¹³ State of Hawaii Energy Resources Coordinator's Annual Report 2015.

¹⁴ News release, "Kaua'i Island Utility Cooperative hits 90% Renewable Milestone," Feb. 3, 2016.

¹⁵ 2014 College and Career Readiness Indicators (CCRI) Data, Hawai'i P-20 Partnerships for Education.

¹⁶ Kaua'i County General Plan Update Issues and Opportunities, September 2015.

¹⁷ State of Hawai'i Data Book 2014.

Weaknesses

- **High cost of living and doing business.** For information on the high cost of living, see the section on the Self-Sufficiency Income Standard in the Summary Background. Regarding the business environment, in 2015, CNBC rated Hawai'i as "America's Bottom State for Business" for the second time in three years because of the need for infrastructure repairs, high traffic congestion, heavy union presence, modest success of state worker training programs, high utility bills, high office rent, high taxes and complex tax code, and lack of business incentives.¹⁸
- **Increasing lack of affordable housing.** According to Steering Committee members, the need for more affordable housing is currently being discussed as part of the Kaua'i County General Plan Update. The State of Hawai'i Data Book 2014 reports that Kaua'i's accepted value per housing unit in 2014 was \$546,498 for a one-family home, 31% higher than the state average of \$417,721.
- **Aging and/or inadequate infrastructure.** The Kaua'i General Plan Issues and Opportunities paper from September 2015 reports that 14 of 20 water systems or sub-systems are at capacity or near capacity, 9 of 13 water systems have an existing storage deficiency, and 1 of 4 municipal wastewater systems is at full capacity and the other 3 are at half capacity. The same report states that "traffic congestion is one of the community's most frequently expressed concerns."
- **Need for more workforce development, especially skilled workforce such as engineers.** This was a universally expressed need from the Steering Committee members and the members of the six Industry Cluster Committees.
- **Need to identify and cultivate the next generation of industry leadership.** This was also a need that was expressed by both the Steering Committee and every Industry Cluster Committee. Committee members shared that the same individuals are part of multiple strategic planning initiatives, that a small core group of organizations are usually responsible for implementation, and that there is a need for additional participation by others and the formation of core task forces for initiatives in order to see further economic development. See section on Characteristics of a Core Task Force.
- **Need for greater collaboration, compromise and consensus.** Members of every Industry Cluster Committee spoke to the challenges of finding community compromise and consensus around economic development initiatives. These challenges have become heightened in recent years as groups of residents with diverse perspectives have become increasingly vocal and organized. There is a need for government, businesses and organizations to develop plans for community engagement and community building along with plans for economic development.
- **Need for greater recruitment and retention of educators and education administrators,** who often move after a couple of years on the island because of the

¹⁸ CNBC America's Top States for Business, "Worst state for business: America's paradise lost," June 24, 2015.

high cost of living. Educator turnover contributes to the challenges of strengthening the educational continuum and workforce development pipeline.

- **“Not in my backyard” mentality** expressed by some members of the community. While there is a shared desire in the community for greater opportunity and more solutions to the high cost of living on Kaua‘i, there is also often concern or opposition to proposed economic development initiatives. The community must choose what type and how much economic development to pursue while still preserving Kaua‘i’s rural character.

Opportunities

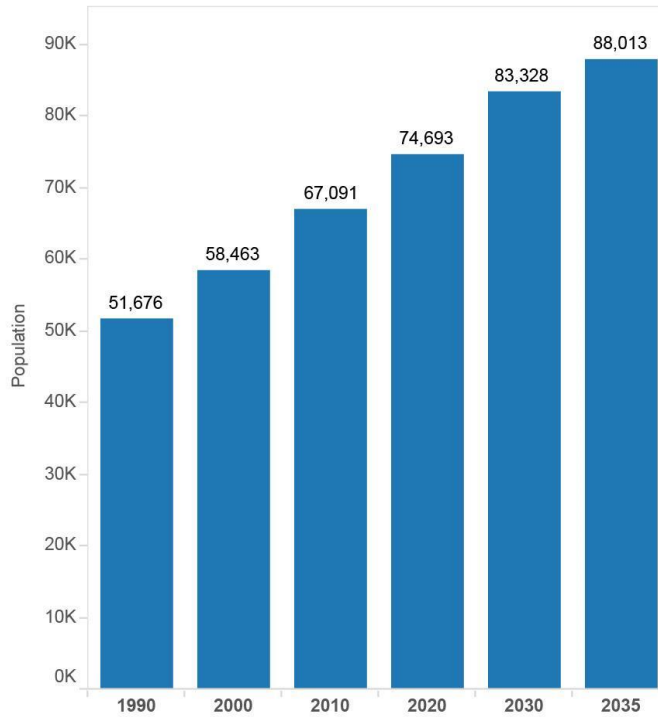
- **Statewide economic growth.** The State of Hawai'i Department of Business, Economic Development and Tourism (DBEDT) reported in February 2016 that Hawai'i Gross Domestic Product (GDP) is forecast to grow 2.3% in 2016 and 2.4% in 2017. DBEDT Director Luis Salaveria released a statement saying that "Hawai'i ended 2015 with historical high levels for labor force, employment and job count, [...] and the economic fundamentals remain positive."¹⁹
- **Multiple strategic planning initiatives are bringing the community together and assessing opportunities.** As previously mentioned, the County General Plan Update, Tourism Strategic Plan Update, Agriculture Master Plan, Community Health Needs Assessment, and other planning initiatives are currently underway and indicate a high amount of attention and discussion regarding the future of Kaua'i.
- **Statewide goal of 100% Renewable Portfolio Standard by 2045.** In 2015, Hawai'i became the first state to sign into a law a bill mandating 100% of energy for power generation from renewable sources by 2045. The state's commitment to renewable energy indicates opportunity for Kaua'i to further pursue its renewable energy goals.
- **Nationwide transformation in health care, transportation and education.** The Affordable Care Act and the national conversion to electronic medical records, the rise of ride sharing services, a growing focus on science, technology, engineering and math (STEM) in education, and a movement to make higher education more affordable and accessible are just some of the trends sweeping the country. While these changes are highly disruptive, they also present new opportunities for businesses and organizations.
- **Growing interest in sustainability and wellness.** Consumers are interested in supporting local businesses and farms, eating locally grown and organic produce, and pursuing wellness through activities like biking, hiking, yoga and water sports.
- **Age of Information and Innovation.** The rise of the Internet and social media has been one of the most disruptive occurrences of the 21st century, but has also fostered an increase in technology companies and enabled further globalization. Companies are able to be based anywhere in the world, with employees in disparate locations. Social media can be used to share information and further build community.
- **State and Federal focus on STEM jobs, entrepreneurship and infrastructure,** meaning potential funding in these areas of greatest need and/or opportunity for Kaua'i.
- **Increased partnerships within industry clusters and between the public and private sectors.** Anecdotally, there appears to be a growing acceptance of the idea that the public sector and private sector must work together to accomplish major initiatives efficiently and effectively. Public-private partnerships may be viable for many of the Actions identified in the Goals, Objectives & Actions section.

¹⁹ State of Hawai'i Department of Business, Economic Development and Tourism 1st Quarter 2016 Quarterly Statistical & Economic Report (QSER) and news release.

Threats

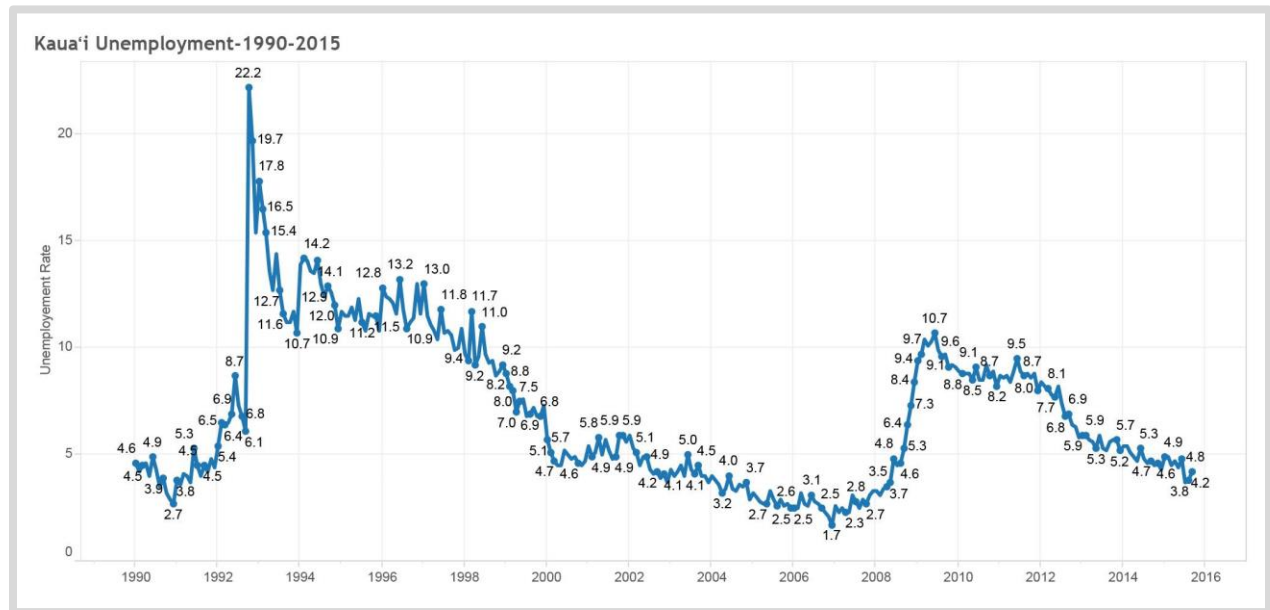
- **Global competition for talent and products.** College and career opportunities on the mainland U.S. or in other countries attract talent away from Kauaʻi and contribute to “brain drain.” The globalization of business and the rise of e-commerce is a double-edged sword, opening up Kauaʻi products to competition with products from around the world. The primary economic engine of tourism is not immune to the phenomenon of growing global competition, as other “sand and surf” destinations ramp up their marketing efforts. The marketplace is glutted with choices for both the job seeker and the consumer.
- **Natural disasters.** The [Kauaʻi Climate Change and Coastal Hazards Assessment](#) from June 2014 identifies that Kauaʻi is susceptible to a variety of natural hazards such as coastal storms, hurricanes, high wave events, flooding, coastal erosion, tsunamis, drought, wildfire, landslides and vog. Kauaʻi was hit by two hurricanes in recent memory – ‘Iwa and ‘Iniki – which devastated the island. The members of the Steering Committee and the Industry Cluster Committees identified a need for further natural disaster planning and preparedness.
- **Climate change.** The [Kauaʻi County General Plan Update Issues and Opportunities](#) paper from September 2015, which cites the [Kauaʻi Climate Change and Coastal Hazards Assessment](#) from June 2014 also states that existing hazards will be exacerbated by climate change and sea-level rise. The sea level is projected to rise 3 feet by 2100, and this “has the potential to adversely impact coastal communities, critical infrastructure, agricultural productivity, recreation and access to natural and human-made recreational facilities, cultural resources, natural habitats, tourism and other economic sectors. [...] Twenty percent of Kauaʻi’s residents live near the shoreline. Low-lying roads, wastewater systems, energy facilities, stormwater systems, and docking facilities in harbors will be at risk of impaired function due to the collective hazards of climate change and sea-level rise.” The projected impacts of climate change also add further urgency to the need to increase food self-sufficiency – at the Hawaiʻi Energy Policy Forum Legislative Briefing on Jan. 22, 2016, speakers shared that food prices could double by 2030 due to decreases in crop yields because of climate change.
- **The spread of invasive species and infectious diseases.** The transportation of people and goods to the islands from out of state and between the islands presents the risk of spreading species or diseases. Mosquito-transmitted diseases are of particular concern at the present, as the Big Island of Hawaiʻi is currently dealing with an outbreak of dengue fever, and Central and South America are grappling with an outbreak of Zika virus.
- **Fast-growing population that is projected to exceed current infrastructure.** Kauaʻi’s population has been growing steadily for the past 15 years and is already straining the island’s roads. According to the [Socioeconomic Analysis and Forecasts](#) study prepared in February 2014 for the Kauaʻi County General Plan update, Kauaʻi’s population is projected to increase from 67,091 in 2013 to 88,013 in 2035 – a total growth of 31.2% or about 1.10% per year.

Kaua'i Population Projections



Source: SMS Research Kaua'i General Plan Update: Socioeconomic Analysis and Forecasts (February 2014)

- Low unemployment, which makes it more challenging for employers seeking qualified workers.** Kaua'i's unemployment rate has dropped from a high of 10.7% during the recession to 4.2% as of late 2015.



- **Changing attitudes that are different from local culture and hinder collaboration.** As more new residents arrive on Kaua'i from diverse places around the world, they bring new ideas and attitudes that can be utilized for the benefit of the Kaua'i community and that can also be at odds with the views of longtime residents. Through the rise of the Internet and social media, there are also changing attitudes among the younger generations of residents that are sometimes at odds with the views of older generations. These differences must be reconciled and greater mutual understanding and cooperation must be fostered in order for economic development initiatives to move forward.
- **Through globalization, the 'ripple effect' of any socioeconomic shift or event is both accelerated and magnified.** While Kaua'i is an island in the middle of the Pacific, it is more connected than ever with the rest of the world through the Internet and air and sea travel. Any major events on the global stage have a greater effect on Kaua'i today than in the past because of greater interconnectivity.

CEDS Update Survey Highlights

The themes of the SWOT analysis for Kaua'i were echoed and reinforced in the responses to the CEDS update survey of government, business and community leaders across the six target industry clusters. The commonalities that emerged among the 66 survey respondents show common perceptions and sentiments regarding the current state and future potential of economic development on Kaua'i.

- High cost of living and/or doing business was cited as a top barrier to economic development on Kaua'i in 4 out of 6 industry clusters (Arts & Culture, Food & Agriculture, Health & Wellness, Science & Technology).
- Respondents felt mixed or disagreed that there is adequate leadership in all 6 industry clusters (Arts & Culture, Food & Agriculture, Health & Wellness, Sustainable Technologies & Practices, Science & Technology, Sports & Recreation).
- Agriculture or agriculture-related industries were cited as an opportunity for growth on Kaua'i in 3 out of 6 clusters (Food & Agriculture, Sustainable Technologies & Practices, Science & Technology).
- Respondents felt mixed or disagreed that there are enough qualified workers in 5 out of 6 clusters (Arts & Culture, Food & Agriculture, Health & Wellness, Sustainable Technologies & Practices, Science & Technology).
- Lack of facilities and/or infrastructure were cited as a barrier to economic development in 5 out of 6 clusters (Arts & Culture, Health & Wellness, Sustainable Technologies & Practices, Science & Technology, Sports & Recreation).
- Approximately 35% of respondents stated that their organization is likely or extremely likely to hire more employees in the next 12 months.

Nearly 75% of respondents stated that it is unlikely or extremely unlikely that their organization will expand to a new location Kaua'i in the next 12 months.

Strategic Direction & Action Plan

The following section articulates the strategic direction, goals, objectives and action plan for economic development on Kaua'i for 2016-2020.

The input from the Steering Committee, industry cluster meeting participants and survey respondents indicated a high amount of integration, overlap and synergy among the six target industry clusters (Food & Agriculture, Sustainable Technologies & Practices, Health & Wellness, Science & Technology, Sports & Recreation, and Arts & Culture).

Thus, the vision, goals, objectives and action plan below have been consolidated to represent the overall picture on Kaua'i and reflect the integration of the six industry clusters.

For ease of use, the second half of this report also contains a section-by-section breakdown of data and action items by industry cluster.

Food & Agriculture	59
Sustainable Technologies & Practices	81
Science & Technology	104
Health & Wellness	123
Sports & Recreation	143
Arts & Culture	160

Vision Statement

The proposed vision for Kaua'i 2035 in *Kaua'i Kākou: Kaua'i County General Plan: Updating the Vision for Kaua'i, Version 3.0, July 2015* is as follows. Definitions for Hawaiian words and phrases are provided in brackets, using the glossary provided in *Kaua'i Kākou: Kaua'i County General Plan: Issues and Opportunities, Final, September 2015* and definitions from *Nā Puke Wehewehe 'Ōlelo Hawai'i* at wehewehe.org.

In 2035, Kaua'i will be...

1. A "Garden Island" of unique natural beauty, rooted in principles of *aloha* [affection, compassion for others] and *mālama 'āina* [to care for the land, stewardship of the land], and remarkable in its thriving ecosystems;
2. A place where conservation and restoration of land and water resources provides the foundation of sustainable policies for land use, energy, infrastructure, society, and economy;
3. A resilient community that shares *kuleana* [right, privilege, concern, responsibility] in planning for the future, preparing for environmental changes, and providing for the needs of people from *keiki* [child/children] to *kūpuna* [elders];
4. A place where view planes and open space are preserved through compact, walkable communities separated by scenic and functional open spaces;
5. A place with vibrant community life, safe facilities for walking and biking, places to gather and socialize, and venues for arts and culture.
6. A place where housing for all ages and income levels is integrated into the fabric of each community, and where people can live close to work and recreational opportunities.
7. A society that honors its Native Hawaiian heritage, values historic places and is shaped by diverse languages and cultural traditions;
8. An island of unique communities that are united in a common vision and in care for their neighbors and *'ohana* [family];
9. A social system that embraces sustainable practices for farming, hunting, and fishing and that encourages production of locally grown food for its populace;
10. A place that protects residents' access and customary use of shoreline areas, trails, and places for religious and cultural observances, fishing, gathering, hunting and recreation; and
11. A welcoming place with visitor facilities and experiences that create a positive experience without creating effects at the expense of others;
12. An island where businesses, cottage industries, and entrepreneurs thrive, and where youth have broad access to education, enrichment, and economic opportunity.

Guiding Principles of Economic Development on Kauaʻi

Kauaʻi is a unique place in its rural character, cultural traditions and storied history. The stakeholders who shared their insights and input in the CEDS update for 2016-2020 agreed that there must be balance, foresight and sound judgement in pursuing economic development for the benefit of all.

The following principles are intended to guide strategies and decisions regarding economic development on Kauaʻi, particularly if and when any goals, objectives or actions appear to be in conflict with one another.

1. Pursue **sustainable** economic development, not economic growth at any cost.
2. Be **comprehensive** in evaluating the resources needed (facilities, capital, talent, technology) and the impact on the community.
3. Be **collaborative** in determining the best course of action to create synergies and compromise.

Characteristics of a Core Task Force

The implementation of the actions and initiatives documented in this CEDS update for 2016-2020 will rely on the formation of core task forces to champion and organize the community's efforts.

At the Steering Committee meeting on Feb. 11, 2016, the following list of possible characteristics of a core task force was drafted to describe the qualities and resources that must be present to move an initiative forward. It is unlikely and undesired that any one organization would be able to provide all qualities and resources for an initiative, and so the concept of the core task force was suggested as a way for organizations to work together to complement and supplement one another.

Motivation	1. Motivated to be part of the core task force by the potential benefits for their own organization or business.
Network	2. Strong network with members of industry cluster. 3. Serves in key roles in industry organizations. 4. Strong network with key legislators, policymakers and other spheres of influence in the industry cluster.
Capacity	5. Human resources (administrative expertise, subject expertise). 6. Financial resources (access to capital and/or fundraising expertise). 7. Facility/technology resources. 8. Strategic communications capacity and expertise.
Vision	9. Ability to clearly define specific, measurable objectives and the pathway toward goals. 10. Strategic skills/expertise. 11. Innovative thinking and ability to inspire stakeholders and secure buy-in around ideas/projects.
Experience	12. Proven track record in developing and delivering projects. 13. Demonstrated ability to convene stakeholders, facilitate meetings, gather consensus. 14. Demonstrated longevity/continuity through succession planning. 15. Demonstrated ability to partner with County of Kaua'i Office of Economic Development (OED), Kaua'i Economic Development Board (KEDB) and other economic development entities.

Goals, Objectives & Actions

This section provides an integrated overview of the economic development Goals, Objectives and Actions for Kaua'i. The six target industry clusters share significant overlap in the Actions identified for growth. The tables on the following pages indicate connections between Actions and industries through use of color-coded industry cluster abbreviations.

The Actions for each industry cluster can also be found within each industry cluster section (see Table of Contents).

Industry cluster abbreviations:

A&C	Arts & Culture
F&A	Food & Agriculture
H&W	Health & Wellness
S&T	Science & Technology
S&R	Sports & Recreation
ST&P	Sustainable Technologies & Practices

Kaua'i Economic Development Goals 2016-2020

- 1. Build, attract and retain a 21st century workforce.***
- 2. Encourage innovation and the development of small, mid-size and large businesses and organizations.***
- 3. Increase adaptability and resilience, particularly regarding natural disasters and climate change.***
- 4. Increase collaboration.***
- 5. Ensure sustainable development.***
- 6. Achieve greater food self-sufficiency.***
- 7. Develop plans and continue to build capacity for economic development in each of the six target industry clusters.***
- 8. Enhance the community's ability to thrive.***

Overview of Goals and Objectives

The achievement of the following Goals and Objectives will require the support of all government, business and community leaders and key stakeholders who belong to, influence or are connected with the six target industry clusters. However, for the purposes of the CEDS, the checkmarks in the table below indicate only the target industry cluster(s) who will be **most critical** to help champion the Actions under each Objective. For more details on the Actions under each Objective, please refer to the page numbers indicated in the table.

G = Goal O = Objective

	A & C	F & A	H & W	S & T	S & R	ST & P
G1: Build, attract and retain a 21st century workforce.						
O1: Increase college and career readiness among students in grades K-20.	✓	✓	✓	✓	✓	✓
O2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'	✓	✓	✓	✓	✓	✓
O3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.	✓	✓	✓	✓	✓	✓
G2: Encourage innovation and small business development.						
O1: Cultivate entrepreneurs and new small businesses / organizations.	✓	✓	✓	✓	✓	✓
O2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.	✓	✓	✓	✓	✓	✓
O3: Increase innovation initiatives and testbed projects on Kaua'i.				✓		✓
G3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.						
O1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.	✓	✓	✓	✓	✓	✓
O2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.	✓	✓	✓	✓	✓	✓

G4: Increase collaboration.	A & C	F & A	H & W	S & T	S & R	ST & P
O1: Increase collaboration both within and across industries.	✓	✓	✓	✓	✓	✓
O2: Increase communication, engagement and collaboration between industry cluster businesses / organizations and their key stakeholders such as public officials and community members with diverse viewpoints.	✓	✓	✓	✓	✓	✓
G5: Ensure sustainable development.						
O1: Meet the State's goal of 100% Renewable Portfolio Standard by 2045 for the electricity sector.						✓
O2: Meet the State's goal of 30% Energy Efficiency Portfolio Standard by reducing electricity demands by 2030.						✓
O3: Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.		✓	✓		✓	✓
O4: Achieve 70% diversion of Kaua'i's solid waste stream by 2023 per County Council Resolution 2011-73 and in alignment with the Aloha+ Challenge Targets for Sustainability.						✓
O5: Preserve/protect/manage utilization of Kaua'i natural resources.	✓	✓	✓	✓	✓	✓
G6: Achieve greater food self-sufficiency.						
O1: Increase food crop production and processing.		✓				
O2: Increase distribution and consumption of locally grown food.		✓				
G7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters.						
O1: Assess economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed.	✓	✓			✓	
O2: Continue to build capacity for economic development in each of the six target industry clusters, as needed.	✓				✓	
G8: Enhance the community's ability to thrive.						
O1: Support the health and wellness of the community.			✓		✓	
O2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.	✓	✓	✓	✓	✓	✓
O3: Increase the quality and affordability of life on Kaua'i.	✓	✓	✓	✓	✓	✓

Summary List of the 49 Highest Priority Actions

The following table lists only the Highest Priority Actions. Each action has been labeled with a unique identifying code that locates it within the master list of Goals (G), Objectives (O) and Actions (A). For more details on these Highest Priority Actions, please refer to the page numbers indicated in the table.

	A & C	F & A	H & W	S & T	S & R	ST & P
G1.O1.A1: Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations.	✓	✓	✓	✓	✓	✓
G1.O1.A2: Increase vocational training opportunities for careers that do not require college degrees.	✓	✓	✓	✓	✓	✓
G1.O1.A3: Strengthen the continuum of science, technology, engineering and math (STEM) education K-20.		✓	✓	✓		✓
G1.O1.A4: Develop and open the Kaua'i Creative Technology Center.	✓			✓		
G1.O1.A5: Expand health care training, certification and degree programs on the island, particularly for primary care, mental health (psychiatrists), substance abuse prevention and treatment, and elder care.			✓			
G1.O2.A3: Increase high-tech workforce development, training and apprenticeships, particularly in areas of growth such as energy, geriatric research, and cybersecurity.			✓	✓		✓
G1.O2.A4: Increase aerospace workforce development.				✓		
G1.O3.A1: Establish and / or expand top talent recruitment and 'bring Kaua'i home' initiatives.	✓	✓	✓	✓	✓	✓
G2.O1.A1: Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs.	✓	✓	✓	✓	✓	✓
G2.O1.A2: Increase farmer recruitment and training in business.		✓				
G2.O1.A3: Support farm incubation initiatives such as Kilauea Agricultural Park.		✓				✓
G2.O1.A5: Increase collaboration with and funding through state and federal entrepreneurship and /or mentorship programs.	✓	✓	✓	✓	✓	✓
G2.O2.A1: Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices.	✓	✓	✓	✓	✓	✓

	A & C	F & A	H & W	S & T	S & R	ST & P
G2.O3.A1: Increase aerospace testing at the Pacific Missile Range Facility (PMRF).				✓		
G2.O3.A2: Secure more science, technology and energy testbed projects that will take place on Kaua'i.				✓		✓
G3.O1.A1: Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community.	✓	✓	✓	✓	✓	✓
G3.O1.A2: Identify and cultivate the next generation of leaders in each industry.	✓	✓	✓	✓	✓	✓
G3.O2.A1: Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster.	✓	✓	✓	✓	✓	✓
G4.O1.A1: Form core task forces to champion CEDS Actions and other initiatives.	✓	✓	✓	✓	✓	✓
G4.O1.A3: Increase communication and collaboration with the visitor industry.	✓	✓	✓	✓	✓	✓
G4.O1.A6: Form an arts and culture industry cluster working group.	✓					
G4.O2.A1: Build capacity for industry cluster businesses & organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise & find synergies.	✓	✓	✓	✓	✓	✓
G5.O1.A1: Seek diverse, complementary, cost-effective and efficient resources in energy production with an emphasis on locally developed resources and facilities.						✓
G5.O2.A1: Design, renovate and/or upgrade public and private facilities with clean energy and energy efficiency as priorities.						✓
G5.O3.A1: Implement a transit program that includes increasing operating revenue, increasing external funding, increasing County transit appropriations, and using savings and increased funding to ramp up transit services, per the 2035 target of nearly 4% of daily trips of 18,000 weekday riders.						✓
G5.O3.A2: Implement a bicycle program that includes regular investment in bicycle infrastructure, a well-connected bicycle network, integration with the County roads program and managing safe vehicular traffic speeds.			✓		✓	✓
G5.O3.A3: Implement a pedestrian program that encourages more pedestrian trips through planning and infrastructure improvements to address deterrents to walking such as safety, connectivity and attractiveness.			✓		✓	✓

	A & C	F & A	H & W	S & T	S & R	ST & P
G5.O3.A4: Implement a County roads program that includes limiting road widening, accommodating all modes of transportation, protecting scenic road corridors, supporting freight transport, reducing excessive speeding, improving the safety of streets for all users and preventing future traffic growth.						✓
G5.O3.A5: Implement an agriculture transportation program that includes reducing the cost of transporting and processing locally grown farm products, protecting against disruption of on-island transportation networks during emergencies, improving access for residents and visitors to healthy foods and ensuring agriculture workers have affordable and reliable access to their jobs.		✓				✓
G5.O3.A6: Implement a land use program that is guided by the three principal requirements for sustainable development: compactness, completeness and connectedness.						✓
G5.O3.A7: Investigate electric vehicle (EV) policy and roadmap implementation.						✓
G5.O4.A1: Build zero waste infrastructure.						✓
G5.O4.A2: Develop a Materials Recovery Facility.						✓
G5.O4.A3: Develop a state-of-the-art composting facility that will produce high-quality saleable soil conditioner or compost.		✓				✓
G5.O4.A4: Develop a center for hard-to-recycle materials (CHARM).						✓
G5.O4.A6: Pursue additional waste reduction / avoidance, recycling and waste recovery initiatives.						✓
G6.O1.A1: Develop a Food Production & Education Center.		✓				
G6.O1.A3: Provide training and education on compliance with the Food Safety Modernization Act.		✓				
G7.O1.A1: Create an economic development plan for the Food & Agriculture industry cluster.		✓				
G7.O1.A2: Assess and catalogue all sports and recreation facilities and events as well as visitor accommodations and rates.					✓	
G7.O1.A5: Expand and / or build upon existing sports events such as the Kaua'i Marathon.					✓	
G7.O2.A4: Define the role of and establish an arts commission and arts commissioner at the County level.	✓					

	A & C	F & A	H & W	S & T	S & R	ST & P
G8.O1.A2: Increase access to health care prevention and treatment programs and services, e.g., chronic diseases (diabetes, high blood pressure and high cholesterol), substance abuse, mental health and elder care (including Alzheimer's disease / dementia).			✓			
G8.O1.A2: Develop Life's Choices Kaua'i adolescent substance abuse treatment and healing facility.			✓			
G8.O1.A3: Increase access to and community interest in health and wellness programs, including worksite wellness.			✓		✓	
G8.O1.A5: Increase elder care facilities, including those that serve patients with dementia / Alzheimer's disease.			✓			
G8.O2.A1: Increase access to reliable, high-speed broadband Internet.	✓	✓	✓	✓	✓	✓
G8.O3.A1: Increase availability of affordable housing.	✓	✓	✓	✓	✓	✓
G8.O3.A2: Continue to improve public education on the island.	✓	✓	✓	✓	✓	✓

Glossary of Abbreviations

The following are the names of various organizations that have been abbreviated in the Goals, Objectives and Actions Tables.

COK-KWIB	County of Kaua`i Workforce Investment Board
COK-OED	County of Kaua`i Office of Economic Development
COK-WIOA	County of Kaua`i Workforce Investment Opportunity Act
DBEDT	Department of Business, Economic Development and Tourism
EDA	United States Economic Development Administration
HIDOA	Hawai`i Department of Agriculture
HIDOE	Hawai`i State Department of Education
HIDOH	Hawai`i Department of Health
HI-FUU	Hawai`i Farmers Union United
HISBDC	Hawai`i Small Business Development Center - Kaua`i Center
HTDC	High Technology Development Corporation
Kaua`i JA	Kaua`i Junior Achievement
KCC	Kaua`i Community College
KCFB	Kaua`i County Farm Bureau
KEDB	Kaua`i Economic Development Board
KIUC	Kaua`i Island Utility Cooperative
KVB	Kaua`i Visitors Bureau
KVMH	Kaua`i Veterans Memorial Hospital
PMRF	Pacific Missile Range Facility
UH CTAHR	University of Hawai`i College of Tropical and Human Resources

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.

Metrics may include, but are not limited to:

- Effort measures such as type and rigor of STEM classes or programs offered at schools, teacher and student participation in college and career readiness programs, and partnerships formed between schools and businesses.
- Outcome measures such as those tracked by the Hawai'i State Assessment of reading/math/science proficiency for grades K-12 and Hawai'i P-20 Partnerships for Education College and Career Readiness Indicator Reports (CCRI).

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-17: Form core task force, establish model 2018-19: Recruit initial partners; launch	HIDOE; COK-WIOA; COK-KWIB; KCC; KEDB; Kauai JA; Keiki to Careers	\$25K-\$50K for pilot program \$20K/student for a paid 3-mo internship	HIDOE KCC Private Sector	No
2. Increase vocational training opportunities for careers that do not require college degrees. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form a core task force; next steps TBD	HIDOE; COK-WIOA; COK-KWIB; KCC; KEDB; Kauai JA; Keiki to Careers	TBD	HIDOE KCC Private Sector	No
3. Strengthen the continuum of science, technology, engineering and math (STEM) education K-20. F&A, H&W, S&T, ST&P	1st Priority	2016-20: Continue to increase collaboration and synergy; offer early college STEM courses in the 3 public health high schools (starting 2017-18)	HIDOE KCC	TBD	HIDOE KCC Private Sector	No
4. Develop and open the Kaua'i Creative Technology Center. A&C, S&T	1st Priority	Fundraising, environment study, construction, community engagement toward opening in late 2018	KEDB; COK-OED; HSBDC; Kaua'i Partners for business Incubation; Creative/Tech Industry	\$20.5 million	State of HI COK EDA KEDB Private Businesses	Yes
5. Expand health care training, certification and degree programs on the island, particularly for primary care, mental health (psychiatrists), substance abuse prevention and treatment, and elder care. H&W	1st Priority	See steps in Kaua'i CHIP, which include establishing consortia, developing strategic / financial plans, monitoring / reporting access / supply / demand, getting participation in	KCC Wilcox Hospital WorkWise Hawaii	TBD	TBD	No

		Wilcox programs, introducing legislation by 2017				
6. Increase arts education in DOE schools / community. A&C	2nd Priority	Form core task force, next steps TBD	KCC	TBD	TBD	No

Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'

Metrics may include, but are not limited to:

- Effort measures such as efforts of business and organization recruitment programs, Hawai'i State Dept. of Education Career and Technical Education, and initiatives under the Workforce Investment Act.
- Outcome measures such as applications from qualified residents, hiring of residents and retention of residents at local firms.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	2016-20: Form core task force, coordinate / sequence with job creation, conduct and promote / advertise job fairs annually, other next steps TBD	HIDOE KCC	TBD for logistics and promotion of job fairs	TBD	No
2. Increase ability of workforce training programs to respond to both hard and soft infrastructure needs in transportation and energy. S&T, ST&P	2nd Priority	2016-20: Increase programs; ongoing evaluation and coordination	HIDOE KCC KWIB	TBD	TBD	No
3. Increase high-tech workforce development, training and apprenticeships, particularly in areas of growth such as energy, geriatric research, and cybersecurity. H&W, S&T, ST&P	1st Priority	2016-2020: Form core task force, establish model, recruit partners, launch program(s) – including creating a pre-engineering track at KCC (2016-17)	HTDC KCC PMRF Industry	Summer college internships \$5K-10K per student	State, Federal	No
4. Increase aerospace workforce	1st Priority	2016-2020: Assess needs, design	PMRF DBEDT	Summer college	Federal agencies including	No

development, incl building on the existing program at Kaua'i Community College. S&T		program	KEDB Industry	internships \$5K-10K per student	NASA	
<p>Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.</p> <p>Metrics may include, but are not limited to:</p> <ul style="list-style-type: none"> • <u>Effort</u> measures such as efforts of business and organization recruitment programs, Hawai'i State Dept. of Education Career and Technical Education, initiatives under the Workforce Investment Act, and acculturation programs for new hires from outside Kaua'i. • <u>Outcome</u> measures such as number and diversity of applications from qualified candidates, new hires and retention of talent. 						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-2020: Form core task force, coordinate / sequence with job creation, develop and launch program	KEDB Businesses	TBD	TBD	No

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.

Metrics may include, but are not limited to:

- Effort measures such as programs like the Hawai'i Small Business Development Center or participation in incubator/accelerator/startup types of programs.
- Outcome measures such as business registrations, number of self-employed and number of proprietors on Kaua'i.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, recruit and utilize industry mentors, other next steps TBD	KEDB HISBDC JA	TBD	TBD	No
2. Increase farmer recruitment and training in business. F&A	1st Priority	Continue GoFarm program at KCC and partner with Kilauea Ag Park; other next steps TBD	KCC HISBDC UH CTAHR KCFB HI- FUU	TBD	TBD	No
3. Support farm incubation initiatives such as Kilauea Agricultural Park. F&A, ST&P	1st Priority	Continue GoFarm Program at KCC and partner with Kilauea Ag Park; other, next steps TBD	KCC HISBDC UH CTAHR KCFB HI- FUU	TBD	TBD	Yes
4. Grow the entrepreneur / startup / maker community. A&C, S&T	2nd Priority	Form core task force, next steps TBD	TBD	TBD	TBD	No
5. Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, next steps TBD	KCC HISBDC North Shore Venture Gang and Hanalei Rotary (potential partners)	TBD	TBD	No

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.

Metrics may include, but are not limited to:

- Effort measures such as capacity-building workshops.
- Outcome measures such as increased market share, increased profits, or diversification of nonprofit funding sources.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KCC HISBDC	TBD	TBD	No
2. Hold an island-wide arts and culture conference to build capacity. A&C	2nd Priority	TBD	Industry working group and arts commissioner	TBD	TBD	No

Objective #3: Increase innovation initiatives and testbed projects on Kaua'i.

Metrics may include, but are not limited to:

- Effort measures such as the submission of bids for testbed projects.
- Outcome measures such as securing commitments and funding for projects.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Increase aerospace testing at the Pacific Missile Range Facility (PMRF). S&T	1st Priority	Possibly increase availability / capacity of the base; other next steps 2016-20 TBD	PMRF	TBD	TBD	No
2. Secure more science, technology and energy testbed projects that will take place on Kaua'i. S&T, ST&P	1st Priority	TBD	Federal / State / County government Industry businesses	TBD	TBD	No

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Metrics may include, but are not limited to:

- Effort measures such as natural disaster and climate change preparedness strategic planning, establishment and maintenance of infrastructure and databases, and community engagement efforts.
- Outcome measures such as economic diversification or safe development that accounts for natural disasters and climate change.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD; adapt / build upon SBDC Hawaii Disaster Guide (Disaster Recovery Guide for Business)	American Red Cross HISBDC	TBD	TBD	No
2. Identify and cultivate the next generation of leaders in each industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB Businesses & organizations	TBD	TBD	No

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Metrics may include, but are not limited to:

- Effort measures such as public-private collaboration and communication and establishment of communication networks and information protocols.
- Outcome measures such as the mobilization of business emergency or recovery operations when needed.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	COK KIUC PMRF Civil Defense	TBD	TBD	No

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.

Metrics may include, but are not limited to:

- Effort measures such as the convening of leaders and influencers.
- Outcome measures such as the achievement of key initiative milestones and goals.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Form core task forces to champion CEDS Actions and other initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
2. Foster greater inter-industry collaboration. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	KEDB	TBD	TBD	No
3. Increase communication and collaboration with the visitor industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
4. Increase collaboration among small to mid-size farms to achieve greater economies of scale. F&A	2nd Priority	TBD	TBD	TBD	TBD	No
5. Increase collaboration with the film and television industry. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
6. Form an arts and culture industry cluster working group. A&C	1st Priority	TBD	TBD	TBD	TBD	No
7. Hold an island-wide arts and culture festival. A&C	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #4: Increase collaboration.

Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.

Metrics may include, but are not limited to:

- Effort measures such as the quantity and type of communication and outreach activities.
- Outcome measures such as the achievement of key initiative milestones and goals.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	TBD	TBD	TBD	No
2. Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Businesses & organizations	TBD	TBD	No
3. Increase statewide, national and international partnerships and collaborations. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Businesses & organizations	TBD	TBD	No

Goal #5: Ensure sustainable development.

Objective #1: Meet the State’s goal of 100% Renewable Portfolio Standard by 2045 for the electricity sector.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Seek diverse, complementary, cost-effective and efficient resources in energy production with an emphasis on locally developed resources and facilities. ST&P	1st Priority	TBD	TBD	TBD	TBD	No

Objective #2: Meet the State’s goal of 30% Energy Efficiency Portfolio Standard by reducing electricity demands by 2030.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Design, renovate and/or upgrade public and private facilities with clean energy and energy efficiency as priorities. ST&P	1st Priority	TBD	TBD	TBD	TBD	No

Objective #3: Implement the Kaua’i Multimodal Land Transportation Plan (MLTP) by 2035.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Implement a transit program that includes increasing operating revenue, increasing external funding, increasing County transit appropriations, and using savings and increased funding to ramp up transit services, per the 2035 target of nearly 4% of daily trips or 18,000 weekday riders. ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	COK	TBD	TBD	No

<p>2. Implement a bicycle program that includes regular investment in bicycle infrastructure, a well-connected bicycle network, integration with the County roads program and managing safe vehicular traffic speeds. H&W, S&R, ST&P</p>	<p>1st Priority</p>	<p>2016: Address remaining immediate priorities 2016-20: Address mid-range priorities</p>	<p>COK</p>	<p>TBD</p>	<p>TBD</p>	<p>No</p>
<p>3. Implement a pedestrian program that encourages more pedestrian trips through planning and infrastructure improvements to address deterrents to walking such as safety, connectivity and attractiveness. H&W, S&R, ST&P</p>	<p>1st Priority</p>	<p>2016: Address remaining immediate priorities 2016-20: Address mid-range priorities</p>	<p>COK</p>	<p>TBD</p>	<p>TBD</p>	<p>No</p>
<p>4. Implement a County roads program that includes limiting road widening, accommodating all modes of transportation, protecting scenic road corridors, supporting freight transport, reducing excessive speeding, improving the safety of streets for all users and preventing future traffic growth. ST&P</p>	<p>1st Priority</p>	<p>2016: Address remaining immediate priorities 2016-20: Address mid-range priorities</p>	<p>COK</p>	<p>TBD</p>	<p>TBD</p>	<p>No</p>
<p>5. Implement an agriculture transportation program that includes reducing the cost of transporting and processing locally grown farm products, protecting against disruption of on-island transportation networks during emergencies, improving access for residents and visitors to healthy foods and ensuring agriculture workers have affordable and reliable access to their jobs. F&A, ST&P</p>	<p>1st Priority</p>	<p>2016: Address remaining immediate priorities 2016-20: Address mid-range priorities</p>	<p>County</p>	<p>TBD</p>	<p>TBD</p>	<p>Yes</p>
<p>6. Implement a land use program that is guided by the three principal requirements for sustainable development: compactness,</p>	<p>1st Priority</p>	<p>2016: Address remaining immediate priorities</p>	<p>County</p>	<p>TBD</p>	<p>TBD</p>	<p>No</p>

completeness and connectedness. ST&P		2016-20: Address mid-range priorities				
7. Investigate electric vehicle (EV) policy and roadmap implementation. ST&P	1st Priority	TBD	TBD	TBD	TBD	No
8. Develop a transportation sharing program. ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
9. Investigate and implement alternative fuel fleet vehicles. ST&P	2nd Priority	TBD	TBD	TBD	TBD	No

Objective #4: Achieve 70% diversion of Kaua'i's solid waste stream by 2023 per County Council Resolution 2011-73 and in alignment with the Aloha+ Challenge Targets for Sustainability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Build zero waste infrastructure. ST&P	1st Priority	TBD	COK	TBD	TBD	Yes
2. Develop Materials Recovery Facility (MRF). ST&P	1st Priority	2016-18: construct	COK	TBD	County General Fund	Yes
3. Develop a state-of-the-art Composting Facility that will produce high-quality saleable soil conditioner or compost. F&A, ST&P	1st Priority	TBD	COK	TBD	TBD	Yes
4. Develop a center for hard-to-recycle materials (CHARM). ST&P	1st Priority	TBD	COK	TBD	TBD	Yes
5. Adopt ordinances to give incentives for reduce/reuse/recycle solid waste and disincentives for disposing of solid waste. ST&P	2nd Priority	TBD	COK	TBD	TBD	No

6. Pursue additional waste reduction / avoidance, recycling and waste recovery initiatives. ST&P	1st Priority	TBD	TOK	TBD	TBD	TBD
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Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.

Metrics may include, but are not limited to:

- Effort measures such as implementation of conservation, control and protection programs.
- Outcome measures such as preservation or restoration of native species & the control and eradication of invasive species.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Develop and implement more invasive species and pest prevention and control initiatives. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
2. Develop and implement more native species protection and restoration initiatives. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
3. Support conservation and natural resource management efforts, including watershed management. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
4. Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
5. Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #6: Achieve greater food self-sufficiency.

Objective #1: Increase food crop production and processing.

Metrics may include, but are not limited to:

- Effort measures such as utilization of agricultural lands.
- Outcome measures such as crop yields.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Develop a Food Production & Education Center. F&A	1st Priority	KEDB	KEDB KCC	TBD	TBD	Yes?
2. Increase responsible, sustainable utilization of agricultural lands. F&A	2nd Priority	TBD	TBD	TBD	TBD	No
3. Increase food processing capacity and facilities. F&A	2nd Priority	TBD	KCC	TBD	TBD	Yes
4. Provide training and education on compliance with the Food Safety Modernization Act (FSMA). F&A	1st Priority	TBD	KCC KCFB UH CTAHR	TBD	TBD	No

Objective #2: Increase distribution and consumption of locally grown food.

Metrics may include, but are not limited to:

- Effort measures such as collaboration and marketing.
- Outcome measures such as sales of local produce.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Increase awareness/consumption of locally grown and processed food & agriculture products, incl. more promotion of the Kaua'i Grown and Kaua'i Made programs. F&A	2nd Priority	TBD	COK	TBD	TBD	No
2. Establish a system to sell more futures. F&A	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters.

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Create an economic development plan for the Food & Agriculture industry cluster. F&A	1st Priority	2016-17: Assess industry, develop plan?	KEDB		COK HIDOA	No
2. Assess and catalogue all sports and recreation facilities and events as well as visitor accommodations and rates. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
3. Investigate the economics of sports and recreation on Kaua'i. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
4. Create a sports and recreation marketing plan and promotional materials. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
5. Expand and/or build upon existing sports events such as the Kaua'i Marathon. S&R	1st Priority	TBD	TBD	TBD	TBD	No
6. Create a business plan for a multipurpose sports and recreation facility. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
7. Create and maintain an online inventory of arts and culture facilities, events and artists and cultural practitioners. A&C	2nd Priority	TBD	County arts commissioner or arts nonprofit	\$40,000 to create the inventory; cost for updates TBD	TBD	No

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters.

Objective #2: Continue to build capacity for economic development in each of the six target industry clusters, as needed.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Secure more sponsorships (cash / in-kind) for sports and recreation events. S&R	2nd Priority	TBD	Event organizers	TBD	TBD	No
2. Revamp sports and recreation events and facilities to comply with industry regulations and sanction requirements. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
3. Maintain & renovate existing facilities as needed. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
4. Define the role of and establish an arts commission and arts commissioner at the County level. A&C	1st Priority	2016-20: Develop job descr. & budget; propose to County Council	COK	TBD; should include salary and program budget	TBD	No
5. Learn from and involve the “living treasures” (arts and culture experts, leaders and elders) in every community. A&C	2nd Priority	TBD	TBD	TBD	TBD	No
6. Support the organized development and continuation of community Art Nights. A&C	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #8: Enhance the community's ability to thrive.

Objective #1: Support the health and wellness of the community.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Increase access to health care prevention and treatment programs and services, e.g., chronic diseases (diabetes, high blood pressure and high cholesterol), substance abuse, mental health and elder care (including Alzheimer's disease / dementia). H&W	1st Priority	TBD	Wilcox Hospital, KVMH Kaiser HIDOH	TBD	Substance Abuse and Mental Health Services Admin. (SAMHSA)	No
2. Develop the Life's Choices Kaua'i adolescent substance abuse treatment and healing facility. H&W	1st Priority	TBD	COK Life's Choices Kaua'i	TBD	Substance Abuse and Mental Health Services Admin. (SAMHSA)	No
3. Increase access to and community interest in health and wellness programs, including worksite wellness. H&W, S&R	1st Priority	TBD	GetFit Kaua'i	TBD	TBD	No
4. Increase elder care facilities, including those that serve patients with dementia / Alzheimer's disease. H&W	1st Priority	TBD	Garden Isle Healthcare	TBD	TBD	Possibly
5. Increase access to integrated, culturally relevant health and wellness facilities and / or programs. H&W	2nd Priority	TBD	Ho'ola Lahui	TBD	TBD	No

Goal #8: Enhance the community's ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Increase access to reliable high-speed broadband Internet. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-20: Assess access and capacity; identify next steps and implement	DBEDT County	TBD	U.S. DOA	No
2. Expand telemedicine and health care information technology (IT) utilization. H&W	2nd Priority	TBD	TBD	TBD	TBD	No

Objective #3: Increase the quality and affordability of life on Kaua'i.

Metrics may include, but are not limited to:

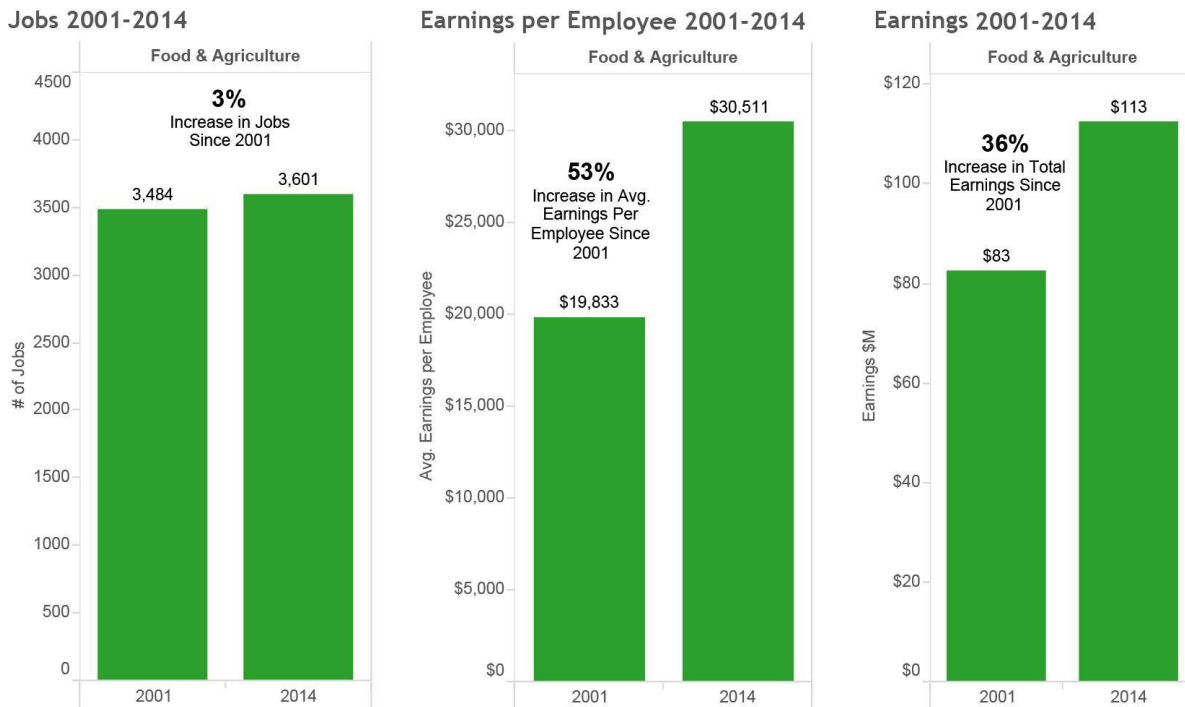
- Effort measures through programs and policies.
- Outcome measures such as changes in the Self-Sufficiency Income Standard as measured by the State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT).

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
1. Increase availability of affordable housing. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016: Completion of County General Plan 2017-2020: Possible policy changes and construction of affordable housing	County Major landowners Developers	TBD	Private sector	No
2. Continue to improve public education on the island. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD in line with HIDEOE's initiatives	HIDEOE	TBD	HIDEOE Federal grants Private sector	No

Food & Agriculture

Jobs & Earnings

In 2014, there were a total of 3,601 jobs within the Food & Agriculture (F&A) cluster. While total jobs within the cluster have stayed relatively flat with a 3% increase since 2001, earnings have increased by 53% to \$30,511 average annual earnings per employee. Total employee earnings for the cluster have increased by 36% since 2001 to approximately \$113 million.



The F&A cluster includes 50 subcategories of NAICS codes. The following table provides detail for each of the identified NAICS subcategories and the corresponding number of jobs, average earnings per employee and total employee earnings for the cluster. Crop production (943 jobs) drives the largest number of jobs followed closely by grocery stores (876 jobs), which are an important part of the supply chain. Those two categories comprise approximately 50% of all jobs and employee earnings within the F&A cluster.

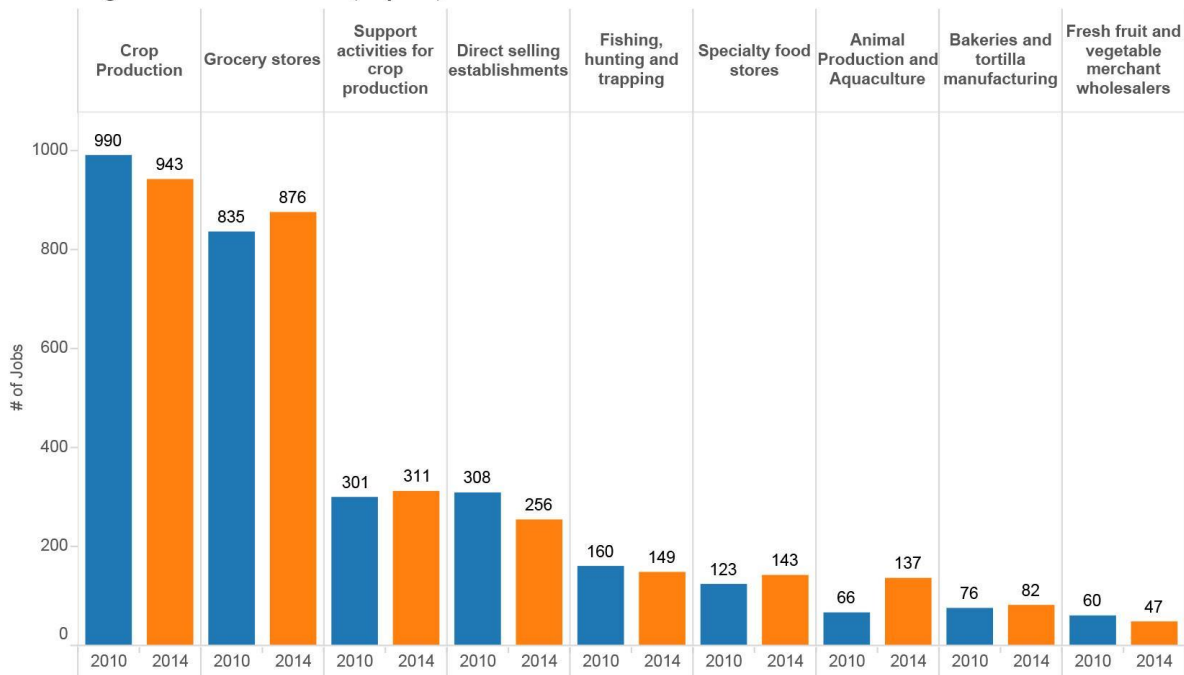
All jobs related to restaurant and food services (NAICS 722), which totaled 4,155 jobs in 2014, are not included in this cluster as they are best reflected as part of the hospitality industry. This conclusion was reached based on consultation and discussion with leaders from within the cluster.

NAICS Code Description	NAICS Code #	# of Jobs (2014)	Earnings per Employee (2014)	Total Employee Earnings \$M (2014)
Crop Production	111	943	\$35,964	\$33.9
Grocery stores	4451	876	\$30,894	\$27.1
Support activities for crop production	1151	311	\$29,489	\$9.2
Direct selling establishments	4543	256	\$13,702	\$3.5
Fishing, hunting and trapping	114	149	\$7,440	\$1.1
Specialty food stores	4452	143	\$26,769	\$3.8
Animal Production and Aquaculture	112	137	\$23,571	\$3.2
Bakeries and tortilla manufacturing	3118	82	\$28,215	\$2.3
Beer, wine, and distilled alcoholic beverage merchant wholesalers	4248	68	\$65,640	\$4.5
Florists	4531	57	\$17,741	\$1.0
General line grocery merchant wholesalers	42441	55	\$50,951	\$2.8
Confectionery merchant wholesalers	42445	49	\$42,764	\$2.1
Fresh fruit and vegetable merchant wholesalers	42448	47	\$33,853	\$1.6
Dairy product manufacturing	3115	41	\$55,450	\$2.3
Perishable prepared food manufacturing	311991	34	\$26,426	\$0.9
Fish and seafood merchant wholesalers	42446	30	\$31,181	\$0.9
Other grocery and related products merchant wholesalers	42449	28	\$49,024	\$1.4
Lawn and garden equipment and supplies stores	4442	27	\$41,855	\$1.1
Tobacco stores	453991	25	\$9,086	\$0.2
Dairy product (except dried or canned) merchant wholesalers	42443	24	\$58,362	\$1.4
Farm supplies merchant wholesalers	42491	24	\$55,529	\$1.3
Distilleries	31214	23	\$51,269	\$1.2
Beer, wine, and liquor stores	4453	20	\$63,375	\$1.2
Ice manufacturing	312113	20	\$26,136	\$0.5
Sugar and confectionery product manufacturing	3113	17	\$25,443	\$0.4
Packaged frozen food merchant wholesalers	42442	15	\$26,901	\$0.4
Forestry and logging	113	12	\$21,721	\$0.3
Fruit and vegetable preserving and specialty food manufacturing	3114	12	\$52,594	\$0.6
Animal slaughtering and processing	3116	8	\$55,450	\$0.4
Seafood product preparation and packaging	3117	8	\$23,454	\$0.2
Support activities for animal production	1152	8	\$16,391	\$0.1
Support activities for forestry	1153	8	\$31,035	\$0.2

All other miscellaneous food manufacturing	311999	6	\$26,426	\$0.2
Coffee and tea manufacturing	31192	6	\$26,837	\$0.2
Breweries	31212	5	\$38,388	\$0.2
Farm product raw material merchant wholesalers	4245	5	\$48,661	\$0.2
Flower, nursery stock, & florists' supplies merchant wholesalers	42493	5	\$20,000	\$0.1
Vending machine operators	4542	5	\$13,702	\$0.1
Animal food manufacturing	3111	2	\$35,949	\$0.1
Farm and garden machinery and equipment merchant wholesalers	42382	2	\$51,075	\$0.1
Seasoning and dressing manufacturing	31194	2	\$43,683	\$0.1
Snack food manufacturing	31191	2	\$26,837	\$0.1
Soft drink manufacturing	312111	2	\$27,905	\$0.1
Wineries	31213	2	\$38,388	\$0.1
Flavoring syrup and concentrate manufacturing	31193	0	\$0	\$0.0
Grain and oilseed milling	3112	0	\$0	\$0.0
Meat and meat product merchant wholesalers	42447	0	\$0	\$0.0
Poultry and poultry product merchant wholesalers	42444	0	\$0	\$0.0
Tobacco and tobacco product merchant wholesalers	42494	0	\$0	\$0.0
Tobacco Manufacturing	3122	0	\$0	\$0.0

Between 2010 and 2014, Kaua'i added approximately 151 jobs within the F&A cluster. The top 10 categories based on total jobs are summarized in the chart below. The largest increase of 71 jobs came from the animal production and aquaculture sector, followed by 41 more jobs from the grocery category.

Food & Ag: Jobs-2010 to 2014 (Top 10)



It is important to note that NAICS data and the categorization for the purposes of this report will have a margin of error in accurately reflecting all jobs on Kaua'i within the cluster. Efforts were taken to incorporate the nuances and considerations within the cluster, however some relevant jobs and their corresponding wages may not be reflected within this data analysis.

Survey Highlights

Between Jan. 15 and Feb. 8, 2016, 34 respondents from the community provided answers to online survey questions regarding the state of the F&A industry cluster. Below are highlights from the responses.

- 68% agreed or strongly agreed that exports are needed to sustain F&A businesses on Kaua'i
- Less than 10% agreed that there is strong leadership in the F&A industry cluster.
- 77% agreed or strongly agreed that seed companies will continue to be major players in this cluster for the next five years.
 - When asked what changes made the greatest positive impact in the industry cluster, examples of what respondents said included:
 - *"The growth of the seed corn industry."*
 - *"Growth of seed companies and coffee company. Increase of anti-pesticide Disregard of the right to farm"*
 - *"The seed companies have been very instrumental in providing Ag jobs and promoting Ag events on Kauai. Also our Kaua'i legislative team has been very supportive of pro agriculture vision for Kaua'i."*
- 77% agreed or strongly agreed that demand for Kaua'i products is growing. Nobody disagreed.

- When asked what changes made the greatest positive impact in the industry cluster, examples of what respondents said included:
 - *“Kauai Grown (products), the growth of farmers markets and consumer interest in local food KCC agriculture programs.”*
 - *“The demand for local food and produce in local markets.”*
 - *“Expansion of support for local-grown ag products. Interest at restaurants and markets in local beef and lamb. Farmers markets.”*
- Nearly 25% agreed or strongly agreed that there are enough qualified workers on Kaua’i for F&A.
- When asked what the biggest opportunity for growth in this cluster, examples of what respondents said included:
 - *“The amount of available land that has the ‘potential’ to be turned into productive farmland. Unfortunately, the political will to foster the changes needed is sorely lacking.”*
 - *“Niche markets; organic produce; nutraceuticals; value added products that tie into tourism.”*
 - *“One centralized hub, or group, that can be a place where farmers from across the island feel comfortable sharing opportunities, information, resources and ideas.”*

For a full copy of the survey questions and the collected responses, see the Kaua’i CEDS Update 2016-2020 Appendix.

Additional Data

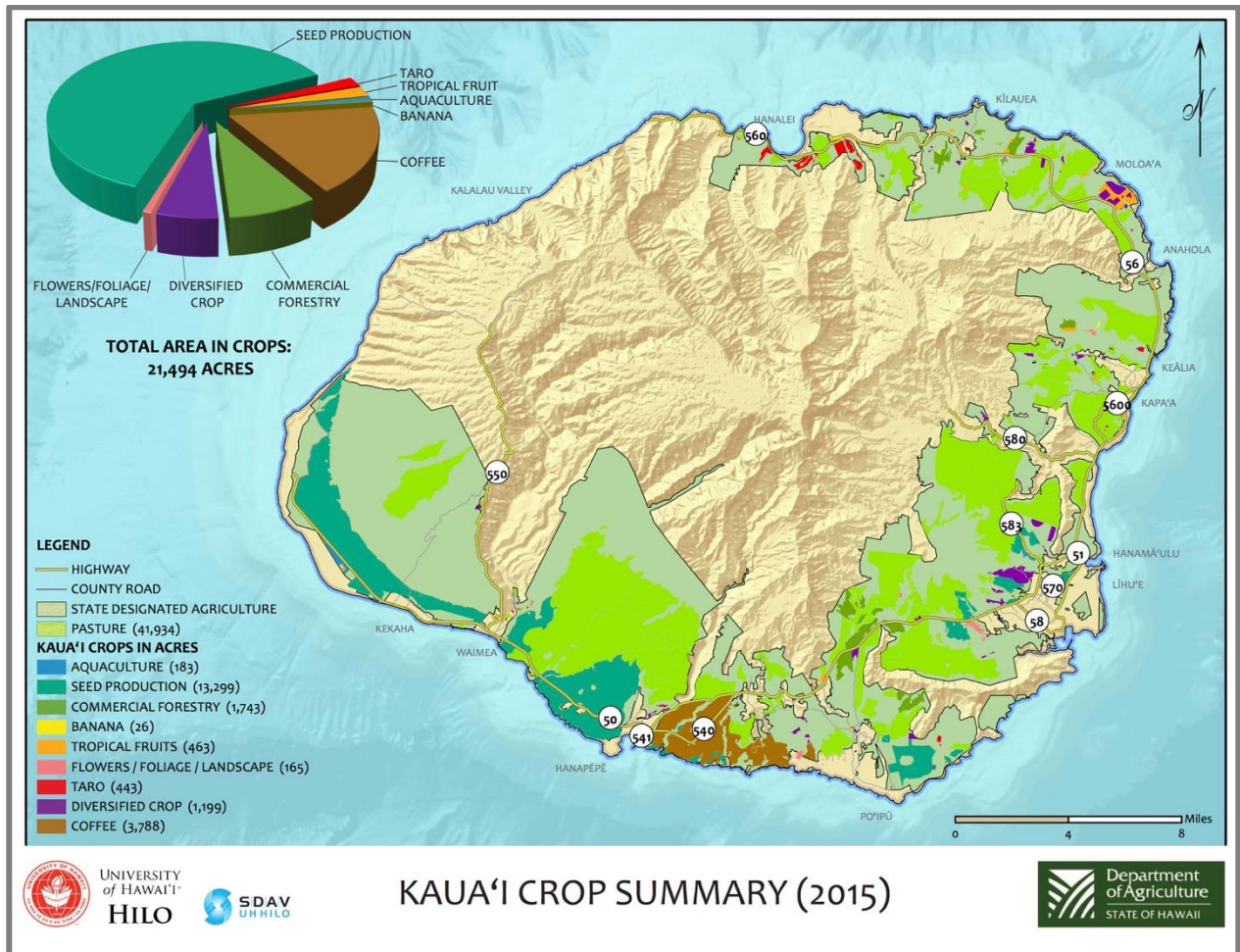
The implementation of the Goals, Objectives & Actions in the Kaua’i CEDS update for 2016-2020 should also draw upon other data, studies, plans and reports regarding the Food & Agriculture industry cluster.

For instance, the State of Hawai’i Data Book 2014 notes that in 2012, there were 591 farms in the County of Kaua’i totaling 144,127 acres. The average size of those farms was 244 acres, which was the largest of all the counties. Farms broken down by size were as follows:

- 1 to 9 acres: 348 farms (58.88%)
- 10 to 49 acres: 156 farms (26.40%)
- 50 to 179 acres: 42 farms (7.11%)
- 180 to 499 acres: 20 farms (3.38%)
- 500 to 999 acres: 7 farms (1.18%)
- 1,000 or more acres: 18 farms (3.05%)

The State of Hawai’i Data Book 2014 also notes that in 2012, the market value of agricultural products sold was \$64,514,000, of which \$55,696,000 was from crops, including nursery and greenhouse crops, and \$8,817,000 was from livestock, poultry and their products.

Most recently, the [Statewide Agricultural Land Use Baseline 2015](#) was released, showing where and what Hawai'i farms and ranches. The report includes this visualization of Kaua'i farms and ranches:



Goals, Objectives & Actions – Food & Agriculture

The following Goals, Objectives & Actions have been excerpted from the integrated Goals, Objectives & Actions section in the first half of the report and represent **only** those items labeled as pertaining to the Food & Agriculture industry cluster.

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.

Action:

- A1) Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations
- A2) Increase vocational training opportunities for careers that do not require college degrees.
- A3) Strengthen the continuum of science, technology, engineering and math (STEM) education K-20.
- A4) Provide Business and Technical Assistance by developing more industry specific business and technical assistance certification programs
- A5) Provide education and training to local producers to meet WOTUS and other required regulations and certifications
- A6) Create inventory of Ag training programs

Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'

Action:

- A1) Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College.
- A2) Recruit and mentor students to enter the agricultural industry

Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.

Action:

- A1) Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives.

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses / organizations.

Action:

- A1) Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs.
- A2) Increase farmer recruitment and training in business.
- A3) Support farm incubation initiatives such as Kilauea Agricultural Park.
- A5) Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs.

Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.

Action:

- A1) Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices.
- A2) Provide office space to KCFB to centralize staffing, programs, and activities

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action:

- A1) Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community.
- A2) Identify and cultivate the next generation of leaders in each industry.

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action:

- A1) Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster.

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.

Action:

- A1) Form core task forces to champion CEDS Actions and other initiatives.
- A2) Foster greater inter-industry collaboration.
- A3) Increase communication and collaboration with the visitor industry.
- A4) Increase collaboration among small to mid-size farms to achieve greater economies of scale.

Objective #2: Increase communication, engagement and collaboration between industry cluster businesses / organizations and their key stakeholders such as public officials and community members with diverse viewpoints.

Action:

- A1) Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies.
- A2) Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i.
- A3) Increase statewide, national and international partnerships and collaborations.
- A4) Hold food events to promote Kaua'i Agriculture
- A5) Coordinate marketing and distribution

Goal #5: Ensure sustainable development.

Objective #3: *Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.*

Action:

- A5) Implement an agriculture transportation program that includes reducing the cost of transporting and processing locally grown farm products, protecting against disruption of on-island transportation networks during emergencies, improving access for residents and visitors to healthy foods and ensuring agriculture workers have affordable and reliable access to their jobs.

Objective #4: Achieve 70% diversion of Kaua'i's solid waste stream by 2023 per County Council Resolution 2011-73 and in alignment with the Aloha+ Challenge Targets for Sustainability.

Action:

A3) Develop a state-of-the-art Composting Facility that will produce high-quality saleable soil conditioner or compost.

Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.

Action:

A1) Develop and implement more invasive species and pest prevention and control initiatives.

A2) Develop and implement more native species protection and restoration initiatives.

A3) Support conservation and natural resource management efforts, including watershed management.

A4) Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment.

A5) Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community.

A6) Develop facility and programs to screen and prevent invasive species, entering/leaving Kaua'i

A7) State to reorganize focus on Disease/Invasive species

A8) Connect farmers with available land potentially via ADC and private landowners

A9) Manage water rights vis-à-vis issuing of licenses to ensure agricultural development

Goal #6: Achieve greater food self-sufficiency.

Objective #1: Increase food crop production and processing.

Action:

A1) Develop a Food Production & Education Center.

A2) Increase responsible, sustainable utilization of agricultural lands.

A3) Increase food processing capacity and facilities.

A4) Provide training and education on compliance with the Food Safety Modernization Act (FSMA).

A5) Create facility and programs to consolidate process, handle and distribute produce to promote import replacement

Objective #2: Increase distribution and consumption of locally grown food.

Action:

A1) Increase awareness and consumption of locally grown and processed food and agriculture products, including more promotion of the Kaua'i Grown and Kaua'i Made programs.

A2) Establish a system to sell more futures.

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters.

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed.

Action:

A1) Create an economic development plan for the Food & Agriculture industry cluster.

A2) New product research and development

A3) CTAHR- Increase staffing, facilities and programs capacity to expand research and extension capabilities

- A4) Food technology to turn 'ulu into new product for our diet (taro also)
- A5) Promote production of local feedstock for renewable energy businesses
- A6) Develop an Kaua'i County Agricultural Economic Development Plan

Goal #8: Enhance the community's ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.

Action:

- A1) Increase access to reliable high-speed broadband Internet.

Objective #3: Increase the quality and affordability of life on Kaua'i.

Action:

- A1) Increase availability of affordable housing.
- A2) Continue to improve public education on the island.

Food & Agriculture

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O1.A1: Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-17: Form core task force, establish model 2018-19: Recruit initial partners; launch	HIDOE; County WIOA; County KWIB; KCC; KEDB; Keiki to Careers; Junior Achievement; Businesses	\$25,000 to \$50,000 for pilot program \$20,000 per student for a paid 3-month internship	HIDOE KCC Private sector	No
G1.O1.A2: Increase vocational training opportunities for careers that do not require college degrees. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form a core task force; next steps TBD	State Dept. of Ed; County WIOA; KWIB; WorkWise Kaua'i; KCC; KEDB; Businesses	TBD	Private sector HIDOE	No
G1.O1.A3: Strengthen the continuum of science, technology, engineering and math (STEM) education K-20. F&A, H&W, S&T, ST&P	1st Priority	2016-20: Continue to increase collaboration & synergy; offer early college STEM courses in the 3 public health high schools (starting in 2017-18)	HIDOE KCC	TBD	HIDOE KCC Private sector	No
G1.O1.A4: Provide Business and Technical Assistance by developing more industry specific business and technical assistance certification programs F&A						

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O1.A5: Provide education and training to local producers to meet WOTUS and other required regulations and certifications F&A						
G1.O1.A6: Create inventory of Ag training programs F&A						
Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O2.A1: Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	2016-20: Form core task force, coordinate / sequence with job creation, conduct and promote / advertise job fairs annually, other next steps TBD	State Dept.of Education, KCC, Industry	TBD for logistics and promotion of job fairs	TBD	No
G1.O2.A2: Recruit and mentor students to enter the agricultural industry F&A						
Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O3.A1: Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-2020: Form core task force, coordinate / sequence with job creation, develop and launch program	KEDB Businesses	TBD	TBD	No

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O1.A1: Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, recruit and utilize industry mentors, other next steps TBD	KEDB; HISBDC – Kaua’i;; Junior Achievement (partner for youth programs)	TBD	TBD	No
G2.O1.A2: Increase farmer recruitment and training in business. F&A	1st Priority	Continue GoFarm program at KCC and partner with Kilauea Ag Park; other next steps TBD	KCC; HISBDC – Kaua’i; UH CTAHR; KCFB; Farmers Union United	TBD	TBD	No
G2.O1.A3: Support farm incubation initiatives such as Kilauea Agricultural Park. F&A, ST&P	1st Priority	Continue GoFarm Program at KCC and partner with Kilauea Ag Park; other, next steps TBD	KCC; HISBDC – Kaua’i; UH CTAHR; KCFB; Farmers Union United	TBD	TBD	Yes
G2.O1.A5: Increase collaboration with & funding through state & federal entrepreneurship/mentorship programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, next steps TBD	KCC HI SBDC Kaua’i North Shore Venture Gang and Hanalei Rotary (potential partners)	TBD	TBD	No
Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O2.A1: Provide & increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KCC HISBDC – Kaua’i	TBD	TBD	No

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O2.A2: Provide office space to KCFB to centralize staffing, programs, and activities F&A						

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O1.A1: Develop natural disaster & climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries – incl. tourism & the 6 target industry clusters, and engage the community. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD; adapt / build upon SBDC Hawaii Disaster Guide (Disaster Recovery Guide for Business)	American Red Cross HISBDC – Kaua'i	TBD	TBD	No
G3.O1.A2: Identify and cultivate the next generation of leaders in each industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB as facilitator Industry businesses and organizations	TBD	TBD	No

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O2.A1: Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	County, KIUC, PMRF, Civil Defense	TBD	TBD	No

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O1.A1: Form core task forces to champion CEDS Actions and other initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A2: Foster greater inter-industry collaboration. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A3: Increase communication and collaboration with the visitor industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A4: Increase collaboration among small to mid-size farms to achieve greater economies of scale. F&A	2nd Priority	TBD	TBD	TBD	TBD	No
Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O2.A1: Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise & find synergies. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	TBD	TBD	TBD	No

G4.O2.A2: Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No
G4.O2.A3: Increase statewide, national and international partnerships and collaborations. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No
G4.O2.A4: Hold food events to promote Kaua'i Agriculture F&A						
G4.O2.A5: Coordinate marketing and distribution F&A						

Goal #5: Ensure sustainable development.

Objective #3: Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O3.A5: Implement an agriculture transportation program that includes reducing the cost of transporting and processing locally grown farm products, protecting against disruption of on-island transportation networks during emergencies, improving access for residents and visitors to healthy foods and ensuring agriculture workers have affordable and reliable access to their jobs. F&A, ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	Yes

Objective #4: Achieve 70% diversion of Kaua'i's solid waste stream by 2023 per County Council Resolution 2011-73 and in alignment with the Aloha+ Challenge Targets for Sustainability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O4.A3: Develop a state-of-the-art Composting Facility that will produce high-quality saleable soil conditioner or compost. F&A, ST&P	1st Priority	TBD	County	TBD	TBD	Yes

Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O5.A1: Develop and implement more invasive species and pest prevention and control initiatives. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A2: Develop and implement more native species protection and restoration initiatives. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A3: Support conservation and natural resource management efforts, including watershed management. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A4: Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O5.A5: Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A6: Develop facility and programs to screen and prevent invasive species, entering/leaving Kaua'i F&A						
G5.O5.A7: State to reorganize focus on Disease/Invasive species F&A						
G5.O5.A8: Connect Farmers with available land via ADC and private landowners F&A						
G5.O5.A9: Manage water rights vis-à-vis issuing of licenses to ensure agricultural development F&A						

Goal #6: Achieve greater food self-sufficiency.

Objective #1: Increase food crop production and processing.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G6.O1.A1: Develop a Food Production & Education Center. F&A	1st Priority	KEDB to fill in?	KEDB KCC	?	?	Yes?

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G6.O1.A2: Increase responsible, sustainable utilization of agricultural lands. F&A	2nd Priority	TBD	TBD	TBD	TBD	No
G6.O1.A3: Increase food processing capacity and facilities. F&A	2nd Priority	TBD	KCC	TBD	TBD	Yes
G6.O1.A4: Provide training and education on compliance with the Food Safety Modernization Act (FSMA). F&A	1st Priority	TBD	KCC KCFB UH CTAHR	TBD	TBD	No
G6.O1.A5: Create facility and programs to consolidate process, handle and distribute produce to promote import replacement F&A						
Objective #2: Increase distribution and consumption of locally grown food.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G6.O2.A1: Increase awareness and consumption of locally grown and processed food and agriculture products, including more promotion of the Kaua'i Grown and Kaua'i Made programs. F&A	2nd Priority	TBD	County	TBD	TBD	No
G6.O2.A2: Establish a system to sell more futures. F&A	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters.

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G7.O1.A1: Create an economic development plan for the Food & Agriculture industry cluster. F&A	1st Priority	2016-17: Assess industry, develop plan?	KEDEB?	?	County?	No
G7.O1.A2: New product research and development F&A						
G7.O1.A3: CTAHR- Increase staffing, facilities and programs capacity to expand research and extension capabilities F&A						
G7.O1.A4: Food technology to turn 'ulu into new product for our diet (taro also) F&A						
G7.O1.A5: Promote production of local feedstock for renewable energy businesses F&A						
G7.O1.A6: Develop an Kaua'i County Agricultural Economic Development Plan F&A						

Goal #8: Enhance the community's ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O2.A1: Increase access to reliable high-speed broadband Internet. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-20: Assess access and capacity; identify next steps and implement	State Dept. of Business, Economic Development & Tourism (DBEDT) County	TBD	U.S. Dept. of Agriculture	No
Objective #3: Increase the quality and affordability of life on Kaua'i.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O3.A1: Increase availability of affordable housing. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016: Completion of County General Plan 2017-2020: Possible policy changes and construction of affordable housing	County Major landowners Developers	TBD	Private sector	No
G8.O3.A2: Continue to improve public education on the island. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD in line with HIDOE's initiatives	HIDOE	TBD	HIDOE Federal grants Private sector	No

Food & Agriculture – Metrics

- Increase in land that is in active crop production and pasture
- Progress in core task force formation and implementation
- Development of 2016-2026 Agricultural Economic Development Plan

Core Task Force Suggested Members:

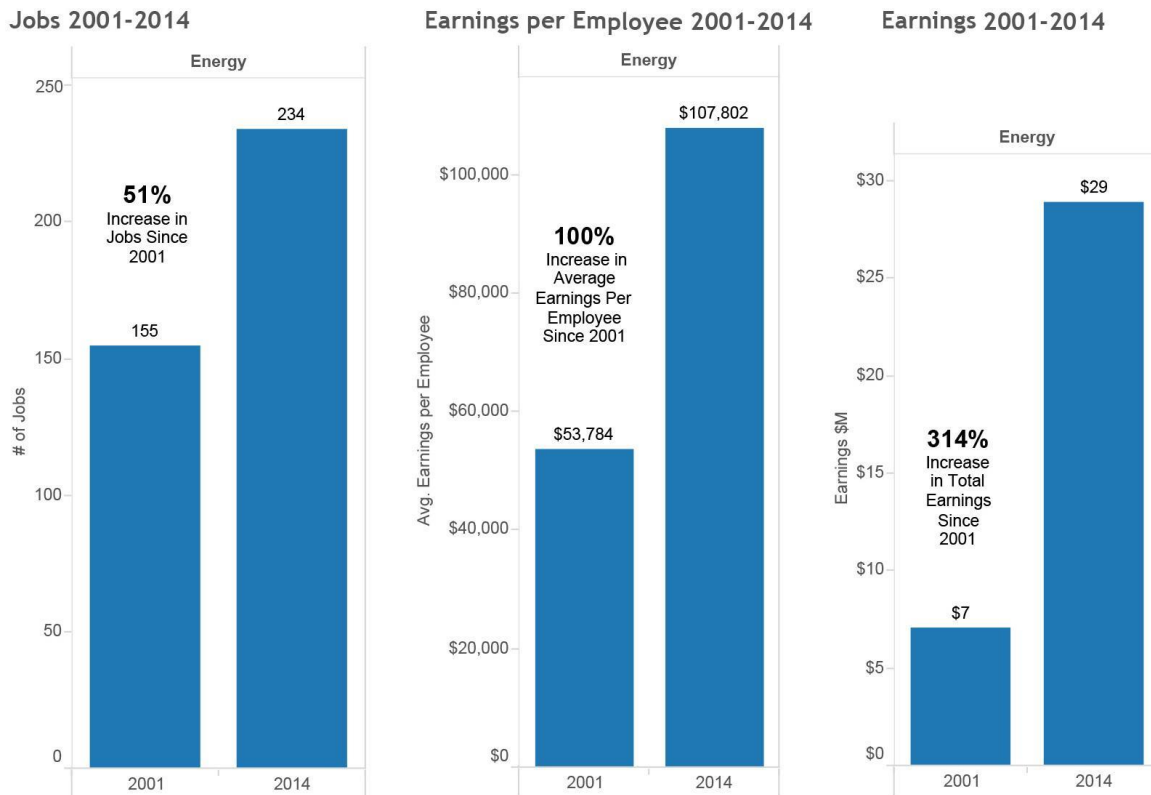
The following is an alphabetical list of organizations identified by the focus group as potential participants and collaborators in this industry cluster's activities. However, the organizations outlined in red have been identified by the focus group as those that should play a key role in the Core Task Force to be formed for this cluster, based on the Core Task Force Characteristics outlined on page 33:

- Agribusiness Development Corporation
- **Alexander & Baldwin Properties**
- **County of Kaua'i Office of Economic Development**
- Friends & Family of Agriculture
- Hawai'i Crop Improvement Association
- Hawai'i Department of Business, Economic Development and Tourism (DBEDT)
- Hawai'i Department of Education
- Hawai'i Farm Service Agency
- Hawai'i Farmers Union United
- Hawai'i Small Business Development Center – Kaua'i Center
- Hawai'i Floriculture and Nursery Association
- Hawai'i Tropical Flower & Foliage Association – Kaua'i Chapter
- **Kaua'i Community College**
- **Kaua'i County Farm Bureau**
- **Kaua'i Economic Development Board**
- Kaua'i Taro Growers Association
- State of Hawai'i Department of Agriculture
- **UH College of Tropical Agriculture and Human Resources**
- US Department of Agriculture – Rural Development

Sustainable Technologies & Practices

Jobs & Earnings

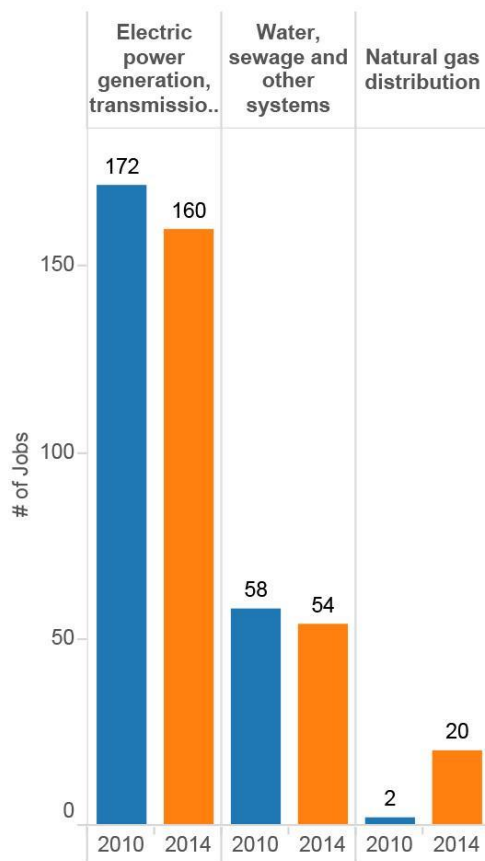
Jobs and earnings in the Sustainable Technologies & Practices (ST&P) cluster have increased significantly since 2001. Based on NAICS data identifiable for this cluster, available jobs have increased by 51% between 2001 and 2014 to at least 234 jobs with earnings per employee doubling to an approximate \$107,802 per year. The overall cluster reports \$29 million in employee earnings according to three key NAICS categories.



The following table provides detail for the three identified NAICS subcategories and the corresponding number of jobs, average earnings per employee and total earnings for the ST&P cluster. The electric power generation, transmission and distribution category is largest, which includes jobs associated with solar, wind, biomass other forms of electric power generation.

NAICS Code Description	NAICS Code #	# of Jobs (2014)	Earnings per Employee (2014)	Total Employee Earnings \$M (2014)
Electric power generation, transmission and distribution	2211	160	\$144,817	\$23.1
Water, sewage and other systems	2213	54	\$64,993	\$3.5
Natural gas distribution	2212	20	\$113,596	\$2.3

Sustainable Technologies & Practices: Jobs-2010 to 2014



Growth slowed slightly in the 4 year period between 2010 and 2014 with a slight reduction in jobs related to electric power generation and an increase in jobs related to natural gas distribution. (See chart: Jobs 2010-2014)

It is important to note that NAICS data and the categorization for the purposes of this report will have a margin of error in accurately reflecting all jobs on Kaua'i within the cluster. Efforts were taken to incorporate the nuances and considerations within the cluster, however some relevant jobs and their corresponding wages may not be reflected within this data analysis.

In addition to the three identified NAICS categories, some solar companies and contractors are categorized under a separate industry titled to Plumbing, Heating and Air Conditioning (NAICS 23822). As of 2014, there are an additional 162 jobs in that category, which directly support this cluster. Average earnings in this category are approximately \$50,129 per employee with total earnings at just over \$8 million.

For the purposes of NAICS data, businesses are categorized by their primary operation, which may not be captured under the main ST&P categories. This means that other related contractors that support this cluster could be captured under separate NAICS codes that aren't reflected in this

analysis, specifically those related to the construction industry. In general, NAICS sorts businesses based solely on their primary operation, so some establishments may be classified elsewhere if most of their revenue originates from different operations.

Given the dynamics of this evolving sector, it's important to look at jobs data from multiple perspectives. According to the Hawai'i Energy Policy Forum from the College of Social Sciences at the University of Hawai'i at Mānoa's September 2015 report, *Updating the Baseline: Hawaii's Clean Energy Jobs*, Kaua'i has a projected 190 jobs in clean energy and energy efficiency as of 2015.

It should also be noted that in 2015, according to Industry Cluster Committee members, private companies created approximately 39 new jobs related to biomass that may not be reflected in the above figures. At least 33 biomass jobs are included within NAICS 2211 above as of 2014, which could potentially have doubled this sector with the recent increases in new jobs created in 2015.

Survey Highlights

Between Jan. 15 and Feb. 8, 2016, 26 respondents from the community provided answers to online survey questions regarding the state of the ST&P industry cluster. Below are highlights from the responses.

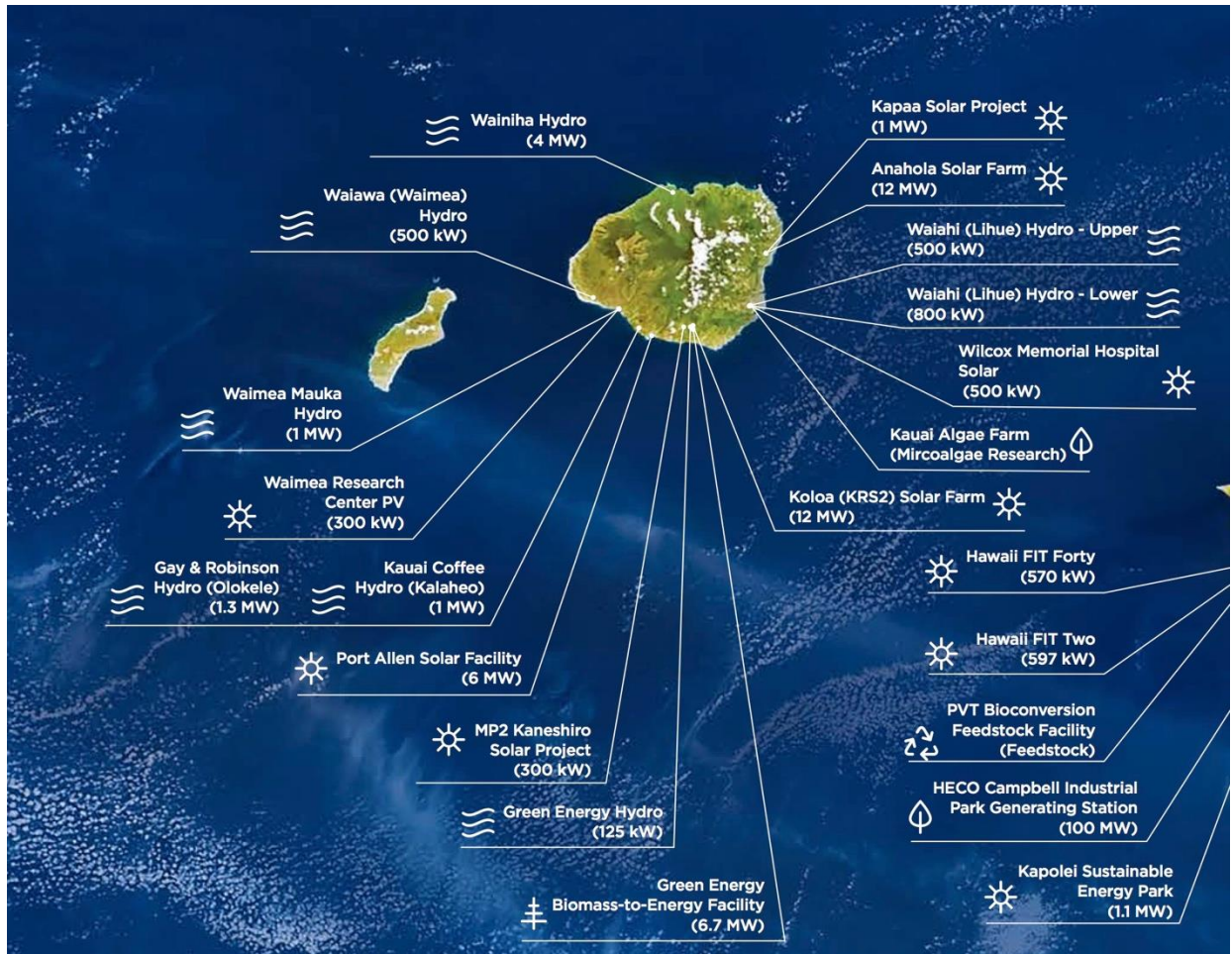
- 73% agreed or strongly agreed that more R&D projects on Kaua'i are critical to increasing jobs, wages and funding in cluster.
- Only 19% agreed that the public will support projects in this cluster if it means higher utility bills.
- 69% agreed or strongly agreed that organizations see Kaua'i as a testbed for this cluster.
- Only 12% disagreed that government policies support the development of this cluster.
- 85% agreed or strongly agreed that there is potential to create many more jobs in this cluster.
- 65% disagreed or strongly disagreed that there are enough qualified workers in this cluster.
 - When asked what would be the most important skills in the next 5 years, respondents said:
 - *"A workforce that is adaptive and willing to continue learning. That's not so much a specific skill as a practice. It requires some level of culture change in the workforce that we need to cultivate. Integrated IT skills in all trades are needed also."*
 - *"A workforce that is adaptive and willing to continue learning. That's not so much a specific skill as a practice. It requires some level of culture change in the workforce that we need to cultivate. Integrated IT skills in all trades are needed also."*
 - *"Students graduating from high school with a firm grounding in science and math, as well an understanding of how to use a computer."*
- When asked what changes made the greatest positive impact to the cluster, respondents said:
 - *"Dropping prices on PV panels, more options for PV financing, tax credits, aggressive marketing have all contributed to strong upswing in PV installations on Kauai."*
 - *"National/international recognition of KIUC's management of high penetration of renewable on its system can be a driver but has not necessarily have had an impact in creating new jobs or increasing wages."*
 - *"Renewable energy tax credits and KIUC support of Renewable projects."*

For a full copy of the survey questions and the collected responses, see the Kaua'i CEDS Update 2016-2020 Appendix.

Additional Data

The implementation of the Goals, Objectives & Actions in the Kaua'i CEDS update for 2016-2020 should also draw upon other data, studies, plans and reports regarding the Sustainable Technologies & Practices industry cluster.

For example, the [State of Hawaii Energy Resources Coordinator's Annual Report 2015](#) includes a map of renewable energy projects on Kaua'i as shown:



Goals, Objectives & Actions – Sustainable Technologies & Practices

The following Goals, Objectives & Actions have been excerpted from the integrated Goals, Objectives & Actions section in the first half of the report and represent ***only*** those items labeled as pertaining to the Sustainable Technologies & Practices industry cluster.

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.

Action:

- A1) Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations.
- A2) Increase vocational training opportunities for careers that do not require college degrees.
- A3) Strengthen the continuum of science, technology, engineering and math (STEM) education K-20.

Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'

Action:

- A1) Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College.
- A2) Increase ability of workforce training programs to respond to both hard and soft infrastructure needs in transportation and energy.
- A3) Increase high-tech workforce development, training and apprenticeships, particularly in areas of growth such as energy, geriatric research, and cybersecurity.
- A4) Develop training and education for workforce to maintain/repair new and evolving energy technology/equipment

Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.

Action:

- A1) Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives.

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses / organizations.

Action:

- A1) Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs.
- A3) Support farm incubation initiatives such as Kilauea Agricultural Park.
- A5) Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs.

Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.

Action:

- A1) Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices.

Objective #3: Increase innovation initiatives and testbed projects on Kaua'i.

Action:

- A2) Secure more science, technology and energy testbed projects that will take place on Kaua'i.

- A3) Increase aerospace testing at PMRF
- A4) Secure more science, technology and energy testbed projects that will take place of Kaua'i
- A5) Identify opportunities and facilitate innovative and creative collaborations and partnerships to implement solutions and ideas
- A6) Create innovation-based working group that addresses workforce development, efficiency innovation, and business development opportunities
- A7) Create innovative approach to promote energy efficiency
- A8) Leverage energy usage data to drive innovative energy efficiency solutions

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action:

- A1) Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community.
- A2) Identify and cultivate the next generation of leaders in each industry.

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action:

- A1) Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster.

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.

Action:

- A1) Form core task forces to champion CEDS Actions and other initiatives.
- A2) Foster greater inter-industry collaboration.
- A3) Increase communication and collaboration with the visitor industry.

Objective #2: Increase communication, engagement and collaboration between industry cluster businesses / organizations and their key stakeholders such as public officials and community members with diverse viewpoints.

Action:

- A1) Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies.
- A2) Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i.
- A3) Increase statewide, national and international partnerships and collaborations.

Goal #5: Ensure sustainable development.

Objective #1: Increase collaboration both within and across industries.

Action:

- A1) Seek diverse, complementary, cost-effective and efficient resources in energy production with an emphasis on locally developed resources and facilities.
- A2) Position Kaua'i as a leader in an energy storage laboratory, innovation and application
- A3) Meet state goal of 100% renewables by 2045

Objective #2: Increase communication, engagement and collaboration between industry cluster businesses / organizations and their key stakeholders such as public officials and community members with diverse viewpoints.

Action:

- A1) Design, renovate and/or upgrade public and private facilities with clean energy and energy efficiency as priorities.
- A2) Meet state goal of 30% energy efficiency portfolio standard by reducing electricity demand by 2030

Objective #3: Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.

Action:

- A1) Implement a transit program that includes increasing operating revenue, increasing external funding, increasing County transit appropriations, and using savings and increased funding to ramp up transit services, per the 2035 target of nearly 4% of daily trips or 18,000 weekday riders.
- A2) Implement a bicycle program that includes regular investment in bicycle infrastructure, a well-connected bicycle network, integration with the County roads program and managing safe vehicular traffic speeds.
- A3) Implement a pedestrian program that encourages more pedestrian trips through planning and infrastructure improvements to address deterrents to walking such as safety, connectivity and attractiveness.
- A4) Implement a County roads program that includes limiting road widening, accommodating all modes of transportation, protecting scenic road corridors, supporting freight transport, reducing excessive speeding, improving the safety of streets for all users and preventing future traffic growth.
- A5) Implement an agriculture transportation program that includes reducing the cost of transporting and processing locally grown farm products, protecting against disruption of on-island transportation networks during emergencies, improving access for residents and visitors to healthy foods and ensuring agriculture workers have affordable and reliable access to their jobs.
- A6) Implement a land use program that is guided by the three principal requirements for sustainable development: compactness, completeness and connectedness.
- A7) Investigate electric vehicle (EV) policy and roadmap implementation.
- A8) Develop a transportation sharing program.
- A9) Investigate and implement alternative fuel fleet vehicles.
- A10) Pursue portfolio approach to transportation solutions
- A11) Emphasize mode-shift in ground transportation to promote greater transportation options
- A12) Explore behavior modification that affects timing/load/use on roads
- A13) Promote adoption of EV's through inexpensive and widely dispersed system of chargers
- A14) Leverage tourism market to promote innovative, low-carbon rental cars

Objective #4: Achieve 70% diversion of Kaua'i's solid waste stream by 2023 per County Council Resolution 2011-73 and in alignment with the Aloha+ Challenge Targets for Sustainability.

Action:

- A1) Build zero waste infrastructure.
- A2) Develop a Materials Recovery Facility (MRF).
- A3) Develop a state-of-the-art Composting Facility that will produce high-quality saleable soil conditioner or compost.
- A4) Develop a center for hard-to-recycle materials (CHARM).
- A5) Adopt ordinances that give incentives for reducing, reusing and/or recycling solid waste and disincentives for disposing of solid waste.
- A6) Pursue additional waste reduction / avoidance, recycling and waste recovery initiatives.
- A7) Explore hydrogen as transportation fuel option

- A8) Bring biofuels to Kaua'i market
- A9) Reduce solid waste stream prior to disposal by 70% by 2030 per Aloha + Challenge
- A10) Reduce food waste by onsite and offsite management to maximize output value

Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.

Action:

- A1) Develop and implement more invasive species and pest prevention and control initiatives.
- A2) Develop and implement more native species protection and restoration initiatives.
- A3) Support conservation and natural resource management efforts, including watershed management.
- A4) Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment.
- A5) Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community.

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed.

Action:

- A1) Benchmark, evaluate, and adapt beneficial best practices from other regions to Kauai to enable sustainable growth

Goal #8: Enhance the community's ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.

Action:

- A1) Increase access to reliable high-speed broadband Internet.
- A2) Early education to key stakeholders to garner buy-in and advocate in community activism

Objective #3: Increase the quality and affordability of life on Kaua'i.

Action:

- A1) Increase availability of affordable housing.
- A2) Continue to improve public education on the island.

Sustainable Technologies & Practices

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O1.A1: Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-17: Form core task force, establish model 2018-19: Recruit initial partners; launch	HIDOE; County WIOA; County KWIB; KCC; KEDB; Keiki to Careers; Junior Achievement; Businesses	\$25,000 to \$50,000 for pilot program \$20,000 per student for a paid 3-month internship	HIDOE KCC Private sector	No
G1.O1.A2: Increase vocational training opportunities for careers that do not require college degrees. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form a core task force; next steps TBD	HIDOE; County WIOA; County KWIB; WorkWise Kaua'i; KCC; KEDB; Businesses	TBD	Private sector HIDOE	No
G1.O1.A3: Strengthen the continuum of science, technology, engineering and math (STEM) education K-20. F&A, H&W, S&T, ST&P	1st Priority	2016-20: Continue to increase collaboration and synergy; offer early college STEM courses in the 3 public health high schools (starting in 2017-18)	HIDOE KCC	TBD	HIDOE KCC Private sector	No
Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O2.A1: Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	2016-20: Form core task force, coordinate / sequence with job creation, conduct and promote / advertise job fairs annually, other next steps TBD	State Dept.of Education, KCC, Industry	TBD for logistics and promotion of job fairs	TBD	No

G1.O2.A2: Increase ability of workforce training programs to respond to both hard and soft infrastructure needs in transportation and energy. S&T, ST&P	2nd Priority	2016-20: Increase programs; ongoing evaluation and coordination	HIDOE, KCC, County KWIB	TBD	TBD	No
G1.O2.A3: Increase high-tech workforce development, training and apprenticeships, particularly in areas of growth such as energy, geriatric research, and cybersecurity. H&W, S&T, ST&P	1st Priority	2016-2020: Form core task force, establish model, recruit partners, launch program(s) – including creating a pre-engineering track at KCC (2016-17)	High Tech Development Corp., KCC, Pacific Missile Range Facility, Industry	Summer college internships \$5,000 - \$10,000 per student	State, Federal	No
G1.O2.A4: Develop training and education for workforce to maintain/repair new and evolving energy technology/equipment ST&P						
Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O3.A1: Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-2020: Form core task force, coordinate / sequence with job creation, develop and launch program	KEDB Businesses	TBD	TBD	No

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O1.A1: Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, recruit and utilize industry mentors, other next steps TBD	KEDB HISBDC – Kaua'i (partner for business incubation) Junior Achievement (partner for youth programs)	TBD	TBD	No
G2.O1.A3: Support farm incubation initiatives such as Kilauea Agricultural Park. F&A, ST&P	1st Priority	Continue GoFarm Program at KCC and partner with Kilauea Ag Park; other, next steps TBD	KCC; HISBDC – Kaua'i; UH CTAHR; KCFB; Farmers Union United	TBD	TBD	Yes
G2.O1.A5: Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, next steps TBD	KCC HI SBDC Kaua'i North Shore Venture Gang and Hanalei Rotary (potential partners)	TBD	TBD	No
Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.						
G2.O2.A1: Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KCC HISBDC – Kaua'i	TBD	TBD	No

Objective #3: Increase innovation initiatives and testbed projects on Kauaʻi.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O3.A1: Secure more science, technology and energy testbed projects that will take place on Kauaʻi. S&T, ST&P	1st Priority	TBD	Federal / State / County government Industry businesses	TBD	TBD	No
G2.O3.A3: Increase aerospace testing at PMRF ST&P						
G2.O3.A4: Secure more science, technology and energy testbed projects that will take place of Kauaʻi ST&P						
G2.O3.A5: Identify opportunities and facilitate innovative and creative collaborations and partnerships to implement solutions and ideas ST&P						
G2.O3.A6: Create innovation-based working group that addresses workforce development, efficiency innovation, and business development opportunities ST&P						
G2.O3.A7: Create innovative approach to promote energy efficiency ST&P						
G2.O3.A8: Leverage energy usage data						

to drive innovative energy efficiency solutions ST&P						
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Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O1.A1: Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD; adapt / build upon SBDC Hawaii Disaster Guide (Disaster Recovery Guide for Business)	American Red Cross HISBDC – Kaua'i	TBD	TBD	No
G3.O1.A2: Identify and cultivate the next generation of leaders in each industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB as facilitator Industry businesses and organizations	TBD	TBD	No

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O2.A1: Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	County, KIUC, PMRF, Civil Defense	TBD	TBD	No

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O1.A1: Form core task forces to champion CEDS Actions and other initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A2: Foster greater inter-industry collaboration. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A3: Increase communication and collaboration with the visitor industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O2.A1: Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	TBD	TBD	TBD	No
G4.O2.A2: Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No

G4.O2.A3: Increase statewide, national and international partnerships and collaborations. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No
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Goal #5: Ensure sustainable development.

Objective #1: Meet the State’s goal of 100% Renewable Portfolio Standard by 2045 for the electricity sector.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O1.A1: Seek diverse, complementary, cost-effective and efficient resources in energy production with an emphasis on locally developed resources and facilities. ST&P	1st Priority	TBD	TBD	TBD	TBD	No
G5.O1.A2: Position Kaua’i as a leader in an energy storage laboratory, innovation and application ST&P						
G5.O1.A3: Meet state goal of 100% renewables by 2045 ST&P						

Objective #2: Meet the State’s goal of 30% Energy Efficiency Portfolio Standard by reducing electricity demands by 2030.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O2.A1: Design, renovate and/or upgrade public and private facilities with clean energy and energy efficiency as priorities. ST&P	1st Priority	TBD	TBD	TBD	TBD	No

G5.O2.A2: Meet state goal of 30% energy efficiency portfolio standard by reducing electricity demand by 2030 ST&P						
Objective #3: Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O3.A1: Implement a transit program that includes increasing operating revenue, increasing external funding, increasing County transit appropriations, and using savings and increased funding to ramp up transit services, per the 2035 target of nearly 4% of daily trips or 18,000 weekday riders. ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	No
G5.O3.A2: Implement a bicycle program that includes regular investment in bicycle infrastructure, a well-connected bicycle network, integration with the County roads program and managing safe vehicular traffic speeds. H&W, S&R, ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	No
G5.O3.A3: Implement a pedestrian program that encourages more pedestrian trips through planning and infrastructure improvements to address deterrents to walking such as safety, connectivity and attractiveness. H&W, S&R, ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	No
G5.O3.A4: Implement a County roads program that includes limiting road widening, accommodating all modes of transportation,	1st Priority	2016: Address remaining immediate priorities	County	TBD	TBD	No

protecting scenic road corridors, supporting freight transport, reducing excessive speeding, improving the safety of streets for all users and preventing future traffic growth. ST&P		2016-20: Address mid-range priorities				
G5.O3.A5: Implement an agriculture transportation program that includes reducing the cost of transporting and processing locally grown farm products, protecting against disruption of on-island transportation networks during emergencies, improving access for residents and visitors to healthy foods and ensuring agriculture workers have affordable and reliable access to their jobs. F&A, ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	Yes
G5.O3.A6: Implement a land use program that is guided by the three principal requirements for sustainable development: compactness, completeness and connectedness. ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	No
G5.O3.A7: Investigate electric vehicle (EV) policy and roadmap implementation. ST&P	1st Priority	TBD	TBD	TBD	TBD	No
G5.O3.A8: Develop a transportation sharing program. ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O3.A9: Investigate and implement alternative fuel fleet vehicles. ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O3.A10: Pursue portfolio approach to						

transportation solutions ST&P						
G5.O3.A11: Emphasize mode-shift in ground transportation to promote greater transportation options ST&P						
G5.O3.A12: Explore behavior modification that affects timing/load/use on roads ST&P						
G5.O3.A13: Promote adoption of EV's through inexpensive and widely dispersed system of chargers ST&P						
G5.O3.A1: Leverage tourism market to promote innovative, low-carbon rental cars ST&P						

Objective #4: Achieve 70% diversion of Kaua'i's solid waste stream by 2023 per County Council Resolution 2011-73 and in alignment with the Aloha+ Challenge Targets for Sustainability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O4.A1: Build zero waste infrastructure. ST&P	1st Priority	TBD	County	TBD	TBD	Yes
G5.O4.A2: Develop a Materials Recovery Facility (MRF). ST&P	1st Priority	2016-18: construct	County	TBD	County General Fund	Yes
G5.O4.A3: Develop a state-of-the-art	1st	TBD	County	TBD	TBD	Yes

Composting Facility that will produce high-quality saleable soil conditioner or compost. F&A, ST&P	Priority					
G5.O4.A4: Develop a center for hard-to-recycle materials (CHARM). ST&P	1st Priority	TBD	County	TBD	TBD	Yes
G5.O4.A5: Adopt ordinances that give incentives for reducing, reusing and/or recycling solid waste and disincentives for disposing of solid waste. ST&P	2nd Priority	TBD	County	TBD	TBD	No
G5.O4.A6: Pursue additional waste reduction / avoidance, recycling and waste recovery initiatives. ST&P	1st Priority	TBD	TBD	TBD	TBD	TBD
G5.O4.A7: Explore hydrogen as transportation fuel option ST&P						
G5.O4.A8: Bring biofuels to Kaua'i market ST&P						
G5.O4.A9: Reduce solid waste stream prior to disposal by 70% by 2030 per Aloha + Challenge ST&P						
G5.O4.A10: Reduce food waste by onsite and offsite management to maximize output value ST&P						

Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O5.A1: Develop and implement more invasive species and pest prevention and control initiatives. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A2: Develop and implement more native species protection and restoration initiatives. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A3: Support conservation and natural resource management efforts, including watershed management.. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A4: Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A5: Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O2.A1: Benchmark, evaluate, and adapt beneficial best practices from other regions to Kauai to enable sustainable growth ST&P						

Goal #8: Enhance the community's ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O2.A1: Increase access to reliable high-speed broadband Internet. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-20: Assess access and capacity; identify next steps and implement	DBEDT County	TBD	U.S. Dept. of Agriculture	No
G8.O2.A2: Early education to key stakeholders to garner buy-in and advocate in community activism ST&P						

Objective #3: Increase the quality and affordability of life on Kaua'i.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O3.A1: Increase availability of affordable housing. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016: Completion of County General Plan 2017-2020: Possible policy changes and construction of affordable housing	County Major landowners Developers	TBD	Private sector	No
G8.O3.A2: Continue to improve public education on the island. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD in line with HIDOE's initiatives	HIDOE	TBD	HIDOE Federal grants Private sector	No

Sustainable Technologies & Practices Metrics:

- Number of jobs created
- Increase in industry cluster earnings and / or earnings per NAICS code description
- Increase in average annual wages and / or earnings per employee
- Increase in traded clusters, i.e., goods and services being exported out of the County
- Increase in workforce readiness as indicated by high school and college graduation rates and other academic indicators

Core Task Force Suggested Members:

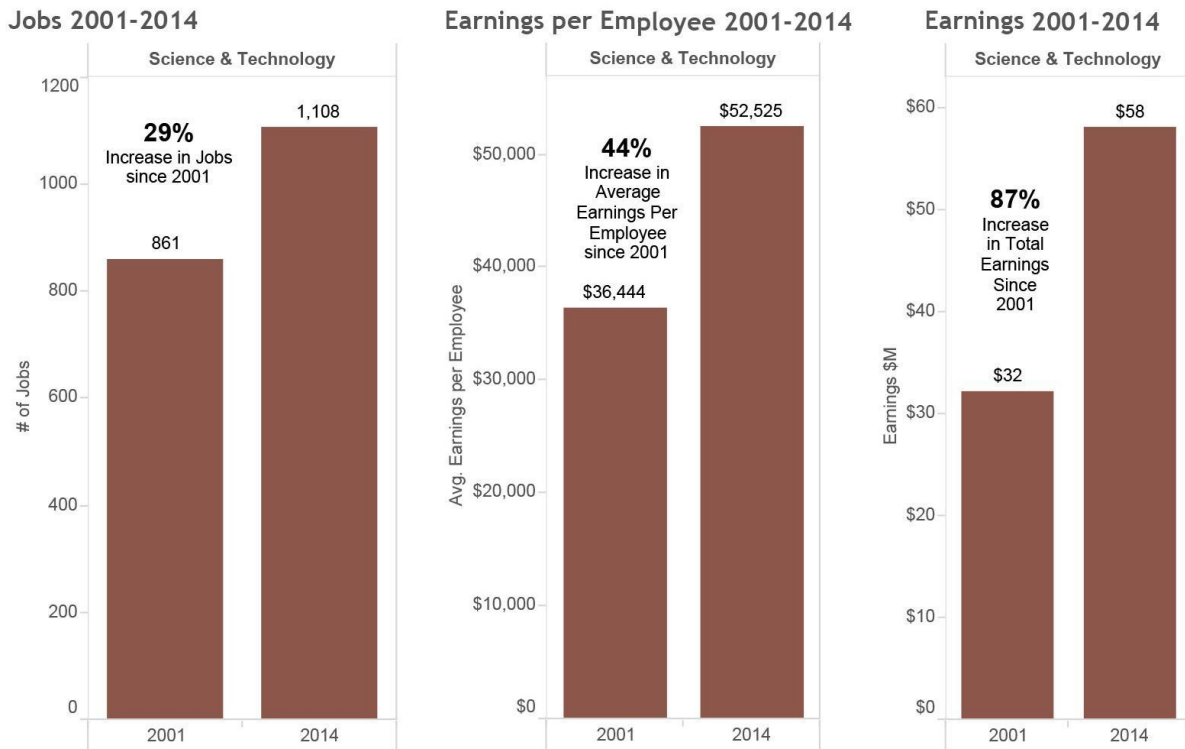
The following is an alphabetical list of organizations identified by the focus group as potential participants and collaborators in this industry cluster's activities. However, the organizations outlined in red have been identified by the focus group as those that should play a key role in the Core Task Force to be formed for this cluster, based on the Core Task Force Characteristics outlined on page 33:

- Apollo Kaua`i
- **County of Kaua`i Office of Economic Development**
- Energy Accelerators (PICHTR, HTDC, et.al)
- Energy Entrepreneurs & Business Owners
- Hawai`i Department of Business, Economic Development and Tourism - Energy office
- Hawai`i Department of Transportation
- Hawai`i Tourism Authority
- **Kaua`i Community College**
- **Kaua`i Economic Development Board**
- **Kaua`i Island Utility Cooperative**
- Kaua`i Visitors Bureau
- Large Landowners
- Local Business Association Reps
- Local Schools
- Malama Kaua`i
- **Pacific Missile Range Facility**
- State DOFAW & Fed F&W
- USDA
- USDOE- HI Office

Science & Technology

Jobs & Earnings

From 2001 to 2014, the Science & Technology (S&T) cluster added 247 more jobs and increased by 29% to a total of 1,108 jobs. Likewise, average earnings within the cluster increased by 44% to approximately \$52,525 annually per employee, which is a significant increase from the 2001 average of \$36,444. Total earnings for the cluster are approximately \$58 million as of 2014, which is an increase of approximately 87% since 2001.



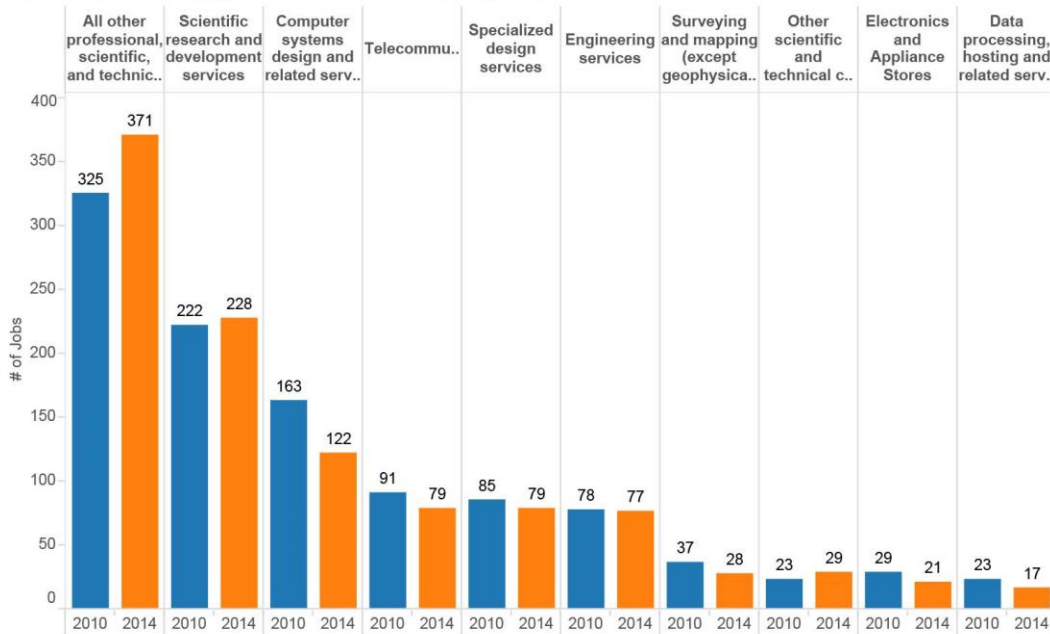
The following table provides detail for the 18 identified NAICS subcategories and the corresponding number of jobs, average earnings per employee and total earnings for the S&T cluster. The largest category of jobs within the S&T cluster are comprised of establishments primarily engaged in professional, scientific or technical services that aren't included in the other 17 categories referenced. This includes jobs related to appraisal services, marine surveyor services, and pipeline or powerline inspection services, among others.

The scientific research and development services sector also represents a significant number of jobs (228 or 20% of the industry). Average earnings within that sector are comparatively high at \$91,458 annually per employee. This also represents the largest portion of total employee earnings for the cluster at \$21M in 2014. The highest level of average earnings falls within the telecommunications field at \$109,772 annually per employee.

NAICS Code Description	NAICS Code #	# of Jobs (2014)	Earnings per Employee (2014)	Total Employee Earnings \$M (2014)
All other professional, scientific, and technical services	54199	371	\$9,201	\$3.4
Scientific research and development services	5417	228	\$91,458	\$20.8
Computer systems design and related services	5415	122	\$68,907	\$8.4
Specialized design services	5414	79	\$33,115	\$2.6
Telecommunications	517	79	\$109,772	\$8.7
Engineering services	54133	77	\$59,174	\$4.5
Other scientific and technical consulting services	54169	29	\$85,197	\$2.5
Surveying and mapping (except geophysical) services	54137	28	\$62,860	\$1.7
Electronics and Appliance Stores	44314	21	\$47,515	\$1.0
Data processing, hosting and related services	518	17	\$69,191	\$1.2
Other information services	519	17	\$95,689	\$1.7
Chemical manufacturing	325	13	\$23,786	\$0.3
Computer and electronic product manufacturing	334	12	\$45,467	\$0.5
Consumer electronics and appliances rental	53221	5	\$30,307	\$0.2
Medical equipment and supplies manufacturing	3391	5	\$51,000	\$0.3
Software publishers	5112	5	\$62,816	\$0.3
Electrical equipment, appliance, and component manufacturing	335	0	\$0	\$0.0
Household appliances, electric housewares, and consumer electronics merchant wholesalers	42362	0	\$0	\$0.0

Since the 2010 CEDS report, growth has slowed in this cluster according to NAICS data with the largest increase coming from the “all other professional, scientific, and technical services” category and slight decreases in other categories. The largest decline in jobs in this period came from computer system design and related services, with the industry losing 41 jobs since 2010.

Science & Technology: Jobs-2010 to 2014 (Top 10)



It is important to note that NAICS data and the categorization for the purposes of this report will have a margin of error in accurately reflecting all jobs on Kaua'i within the cluster. Efforts were taken to incorporate the nuances and considerations within the cluster, however some relevant jobs and their corresponding wages may not be reflected within this data analysis.

As a key provider of jobs and wages in this industry cluster, the Pacific Missile Range Facility (PMRF) accounts for 975 jobs on Kaua'i. This data was provided by PMRF, as these jobs fall outside the limitations of the available NAICS data used for the rest of this report. According to the PMRF, 900 of those jobs are held by civilians whose salaries totaled \$89.72 million in FY 2016. The total combined base and range operating budget for the facility was \$118 million, with civilian salaries accounting for 76% of the budget. Active duty military members of the facility account for an estimated \$7.5 million of the operational budget.

Survey Highlights

Between Jan. 15 and Feb. 8, 2016, 24 respondents from the community provided answers to online survey questions regarding the state of the S&T industry cluster. Below are highlights from the responses.

- Only 17% agreed that there are many internship and development opportunities for students. 58.4% of respondents disagreed or strongly disagreed.
- When asked what change made the greatest positive impact on the industry cluster, respondents said:
 - *“Development of a pre-engineering program at KCC and also an associates in Natural Science, coupled with more emphasis on transfer and internships.”*

- *“Faculty at KCC who write proposals have increased funding for projects. While not creating new jobs, internships at the college have increased, which ultimately supports the community”*
- *“The fact that the majority of people rely on science and tech in their everyday lives, especially tech. Science is on the rise as we look for ways to remediate our soils, regrow our forests, restore watersheds, mitigate hazards impacts. We need satellite ed centers. Waimea and Kapaa.”*
- Only 21% agreed that technology resources are developed enough to meet demand.
- 71% disagreed or strongly disagreed that facilities are modern enough to serve businesses on Kaua‘i.
- Talented workforce moving off island is the top barrier (54%) to creating new jobs, increasing wages and funds.
- When asked what the most important skills needed in this industry cluster in the next 5 years, respondents said:
 - *“Adequate training in construction, repair and maintenance of Kauai’s sustainable energy infrastructure, computer programing and lobbying or public relations.”*
 - *“Natural resources management engineering for climate change urban planning for climate change.”*
 - *“Computer engineering & programming”*

For a full copy of the survey questions and the collected responses, see the Kaua‘i CEDS Update 2016-2020 Appendix.

Additional Data

The implementation of the Goals, Objectives & Actions in the Kaua‘i CEDS update for 2016-2020 should also drawn upon other data, studies, plans and reports regarding the Science & Technology industry cluster.

For example, the High Technology Development Corporation (HTDC) and the Hawai‘i Strategic Development Corporation (HSDC) have both released reports regarding the state of the tech industry or “Startup Paradise.” A new report, [The Evolution of the HI Growth Initiative](#), was recently released by HSDC about the success of the HI Growth Initiative in multiplying local, public monies for tech 12 times through private investments.

Goals, Objectives & Actions – Science & Technology

The following Goals, Objectives & Actions have been excerpted from the integrated Goals, Objectives & Actions section in the first half of the report and represent ***only*** those items labeled as pertaining to the Science & Technology industry cluster.

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.

Action:

- A1) Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations.
- A2) Increase vocational training opportunities for careers that do not require college degrees.
- A3) Strengthen the continuum of science, technology, engineering and math (STEM) education K-20.
- A4) Develop and open the Kaua'i Creative Technology Center.
- A5) Support Aloha 'Ike, STEM, and other programs
- A6) Support robotic programs
- A7) Develop incentives/incentivize Science Fair programs for local schools
- A8) Support DOE "Design Thinking" program

Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'

Action:

- A1) Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College.
- A2) Increase ability of workforce training programs to respond to both hard and soft infrastructure needs in transportation and energy.
- A3) Increase high-tech workforce development, training and apprenticeships, particularly in areas of growth such as energy, geriatric research, and cybersecurity.
- A4) Increase aerospace workforce development, including building on the existing program at Kaua'i Community College.
- A5) Develop training and learning opportunities at KCC
- A6) Expand and fund KCC Internship program
- A7) Create career development/counseling program to supplement DOE counseling program
- A8) Develop bridge programs or "bootcamps" in which graduates and others may enter workforce and advance

Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.

Action:

A1) Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives.

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.

Action:

A1) G2.O1.A1: Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs.

A4) G2.O1.A4: Grow the entrepreneur / startup / maker community.

A5) G2.O1.A5: Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs.

A6) G2.O1.A6: Identify business development and technical assistance to support Science & Technology entrepreneurs

A7) G2.O1.A7: Create competitive, prize based program that includes money, counseling, and other mentorship and fee payments (Business Plan Competition)

Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.

Action:

A1) Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices.

A2) Bridge develop test center that enables residents to take tests needed for credentials required for jobs

Objective #3: Increase innovation initiatives and testbed projects on Kaua'i.

Action:

A1) Increase aerospace testing at the Pacific Missile Range Facility (PMRF).

A2) Secure more science, technology and energy testbed projects that will take place on Kaua'i.

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action:

A1) Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community.

- A2) Identify and cultivate the next generation of leaders in each industry.
- A3) Create a “Science & Tech Community” (e.g. Singapore)
- A4) “Train the Trainers”

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action:

- A1) Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster.

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.

Action:

- A1) Form core task forces to champion CEDS Actions and other initiatives.
- A2) Foster greater inter-industry collaboration.
- A3) Increase communication and collaboration with the visitor industry.

Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.

Action:

- A1) Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies.
- A2) Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua‘i.
- A3) Increase statewide, national and international partnerships and collaborations.
- A4) Progress in bringing together stakeholders and completing projects/programs identified in this cluster

Goal #5: Ensure sustainable development.

Objective #5: Preserve, protect and manage utilization of Kaua‘i’s natural resources.

Action:

- A1) Develop and implement more invasive species and pest prevention and control initiatives.
- A2) Develop and implement more native species protection and restoration initiatives.
- A3) Support conservation and natural resource management efforts, including watershed management.
- A4) Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment.
- A5) Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community.

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed

Action:

- A1) Study what S&T businesses we lose to out-of-state and “why” to determine next steps to develop S&T industry cluster
- A2) Identify types of technology jobs can be done on Kaua’i
- A3) Identify available technology jobs currently on Kaua’i (an inventory)
- A4) Identify opportunities using high-tech backbone in infrastructure
- A5) Monitor developments in Health & Wellness industry vis-à-vis information/data management and billing

Objective #2: Continue to build capacity for economic development in each of the six target industry clusters, as needed

Action:

- A1) G7.O2.A1: Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies
- A2) G7.O2.A2: Increase statewide national and international partnerships and collaborations

Goal #8: Enhance the community’s ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua’i and the world.

Action:

- A1) Increase access to reliable high-speed broadband Internet.

Objective #3: Increase the quality and affordability of life on Kaua’i.

Action:

- A1) G8.O3.A1: Increase availability of affordable housing.
- A2) G8.O3.A2: Continue to improve public education on the island

Science & Technology

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O1.A1: Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-17: Form core task force, establish model 2018-19: Recruit initial partners; launch	HIDOE; County WIOA; County KWIB; KCC; KEDB; Keiki to Careers; Junior Achievement; Businesses	\$25,000 to \$50,000 for pilot program \$20,000 per student for a paid 3-month internship	HIDOE KCC Private sector	No
G1.O1.A2: Increase vocational training opportunities for careers that do not require college degrees. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form a core task force; next steps TBD	HIDOE; County WIOA; County KWIB; WorkWise Kaua'i; KCC; KEDB; Businesses	TBD	Private sector HIDOE	No
G1.O1.A3: Strengthen the continuum of science, technology, engineering and math (STEM) education K-20. F&A, H&W, S&T, ST&P	1st Priority	2016-20: Continue to increase collaboration & synergy; offer early college STEM courses in the 3 public health high schools (starting in 2017-18)	HIDOE KCC	TBD	HIDOE KCC Private sector	No
G1.O1.A4: Develop and open the Kaua'i Creative Technology Center. A&C, S&T	1st Priority	Fundraising, environment study, construction, community engagement toward opening in late 2018	KEDB County OED HISBDC – Kaua'i Creative / tech industry	\$20.5 million	EDA, State, private foundations & individuals	Yes
G1.O1.A5: Support Aloha 'Ike, STEM, and other programs S&T						
G1.O1.A6: Support robotic programs S&T						

G1.O1.A7: Develop incentives/incentivize Science Fair programs for local schools S&T						
G1.O1.A8: Support DOE “Design Thinking” program S&T						
Objective #2: Increase hiring and retention of Kaua‘i residents among target industry cluster companies and organizations to reduce or prevent ‘brain drain.’						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O2.A1: Establish and/or expand workforce recruitment programs at local high schools and at Kaua‘i Community College. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	2016-20: Form core task force, coordinate / sequence with job creation, conduct and promote / advertise job fairs annually, other next steps TBD	HI DOE, KCC, Industry	TBD for logistics and promotion of job fairs	TBD	No
G1.O2.A2: Increase ability of workforce training programs to respond to both hard and soft infrastructure needs in transportation and energy. S&T, ST&P	2nd Priority	2016-20: Increase programs; ongoing evaluation and coordination	HIDOE, KCC, County KWIB	TBD	TBD	No
G1.O2.A3: Increase high-tech workforce development, training and apprenticeships, particularly in areas of growth such as energy, geriatric research, and cybersecurity. H&W, S&T, ST&P	1st Priority	2016-2020: Form core task force, establish model, recruit partners, launch program(s) – including creating a pre-engineering track at KCC (2016-17)	HTDC, KCC, PMRF, Industry	Summer college internships \$5,000 - \$10,000 per student	State, Federal	No
G1.O2.A4: Increase aerospace workforce development, incl., building on the existing program at Kaua‘i Community College. S&T	1st Priority	2016-2020: Assess needs, design program	PMRF, DBEDT, KEDB, Industry	Summer college internships \$5K-10K per student	Federal agencies including NASA	No
G1.O2.A5: Develop training and learning opportunities at KCC						

S&T						
G1.O2.A6: Expand and fund KCC Internship program S&T						
G1.O2.A7: Create career development/counseling program to supplement DOE counseling program S&T						
G1.O2.A8: Develop bridge programs or “bootcamps” in which graduates and others may enter workforce and advance S&T						
Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua‘i residents home.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O3.A1: Establish and/or expand top talent recruitment and ‘bring Kaua‘i home’ initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-2020: Form core task force, coordinate / sequence with job creation, develop and launch program	KEDB Businesses	TBD	TBD	No

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O1.A1: Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, recruit and utilize industry mentors, other next steps TBD	KEDB; HISBDC – Kaua’i; Junior Achievement (partner for youth programs)	TBD	TBD	No
G2.O1.A4: Grow the entrepreneur / startup / maker community. A&C, S&T	2nd Priority	Form core task force, next steps TBD	TBD	TBD	TBD	No
G2.O1.A5: Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, next steps TBD	KCC HI SBDC Kauai North Shore Venture Gang and Hanalei Rotary (potential partners)	TBD	TBD	No
G2.O1.A6: Identify business development and technical assistance to support Science & Technology entrepreneurs S&T						
G2.O1.A7: Create competitive, prize based program that includes money, counseling, and other mentorship and fee payments (Business Plan Competition) S&T						
Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.						
Action	Priority	Steps Required and Time	Key Implementers	Estimated	Funding	EDA

		Frame		Costs	Sources	Eligible?
G2.O2.A1: Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KCC HISBDC – Kaua'i	TBD	TBD	No
G2.O2.A2: Bridge develop test center that enables residents to take tests needed for credentials required for jobs S&T						
Objective #3: Increase innovation initiatives and testbed projects on Kaua'i.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O3.A1: Increase aerospace testing at the Pacific Missile Range Facility (PMRF). S&T	1st Priority	Possibly increase availability / capacity of the base; other next steps 2016-20 TBD	PMRF	TBD	TBD	No
G2.O3.A2: Secure more science, technology and energy testbed projects that will take place on Kaua'i. S&T, ST&P	1st Priority	TBD	Federal / State / County government Industry businesses	TBD	TBD	No

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O1.A1: Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD; adapt / build upon SBDC Hawaii Disaster Guide (Disaster Recovery Guide for Business)	American Red Cross HISBDC – Kaua'i	TBD	TBD	No
G3.O1.A2: Identify and cultivate the next generation of leaders in each industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB as facilitator Industry businesses and organizations	TBD	TBD	No
G3.O1.A3: Create a "Science & Tech Community" (e.g. Singapore) S&T						
G3.O1.A4: "Train the Trainers" S&T						
Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O2.A1: Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	County, KIUC, PMRF, Civil Defense	TBD	TBD	No

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O1.A1: Form core task forces to champion CEDS Actions and other initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A2: Foster greater inter-industry collaboration. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A3: Increase communication and collaboration with the visitor industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O2.A1: Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	TBD	TBD	TBD	No
G4.O2.A2: Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No

G4.O2.A3: Increase statewide, national and international partnerships and collaborations. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No
G4.O2.A4: Progress in bringing together stakeholders and completing projects/programs identified in this cluster S&T						

Goal #5: Ensure sustainable development.

Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O5.A1: Develop and implement more invasive species and pest prevention and control initiatives. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A2: Develop and implement more native species protection and restoration initiatives. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A3: Support conservation and natural resource management efforts, including watershed management.. F&A, S&T, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A4: Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A5: Investigate the Small Town	2nd	TBD	TBD	TBD	TBD	No

America Main Street Program as a means of revitalizing the Rice Street Business Community. A&C, F&A, H&W, S&T, S&R, ST&P	Priority					
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Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G7.O1.A1: Study what S&T businesses we lose to out-of-state and “why” to determine next steps to develop S&T industry cluster S&T		TBD	TBD	TBD	TBD	No
G7.O1.A2: Identify types of technology jobs can be done on Kaua’i S&T		TBD	TBD	TBD	TBD	No
G7.O1.A3: Identify available technology jobs currently on Kaua’i (an inventory) S&T		TBD	TBD	TBD	TBD	No
G7.O1.A4: Identify opportunities using high-tech backbone in infrastructure S&T		TBD	TBD	TBD	TBD	No
G7.O1.A5: Monitor developments in Health & Wellness industry vis-à-vis information/data management and billing S&T		TBD	TBD	TBD	TBD	No

Objective #2: Continue to build capacity for economic development in each of the six target industry clusters, as needed						
G7.O2.A1: Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies S&T						
G7.O2.A2: Increase statewide national and international partnerships and collaborations S&T						

Goal #8: Enhance the community's ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O2.A1: Increase access to reliable high-speed broadband Internet. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-20: Assess access and capacity; identify next steps and implement	DBEDT County	TBD	U.S. Dept. of Agriculture	No

Objective #3: Increase the quality and affordability of life on Kaua'i.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O3.A1: Increase availability of affordable housing. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016: Complete County Gen Plan 2017-2020: Possible policy changes & construct affordable housing	County Major landowners Developers	TBD	Private sector	No
G8.O3.A2: Continue to improve public education on the island. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD in line with HIDEOE's initiatives	HIDEOE	TBD	HIDEOE Federal grants Private sector	No

Science & Technology Metrics:

- Number of jobs created
- Increase in industry cluster earnings and / or earnings per NAICS code description
- Increase in average annual wages and / or earnings per employee
- Increase in traded clusters, i.e., goods and services being exported out of the County
- Increase in workforce readiness as indicated by high school and college graduation rates and other academic indicators

Core Task Force Suggested Members:

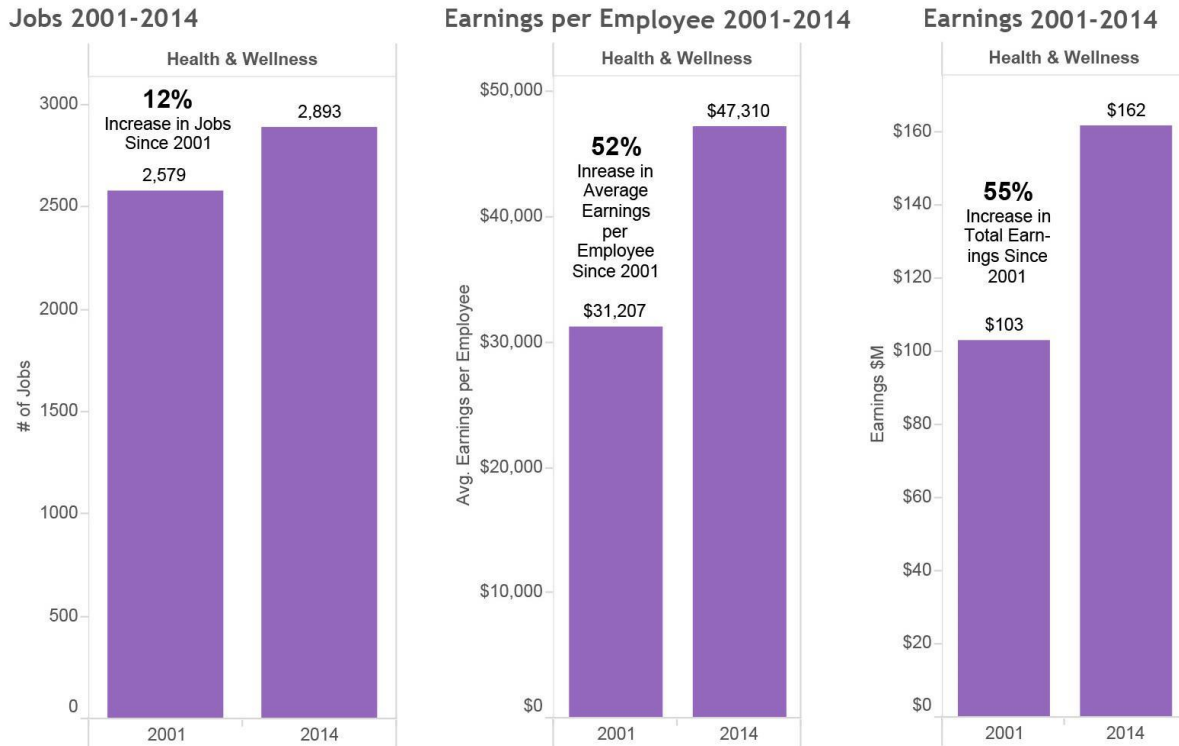
The following is an alphabetical list of organizations identified by the focus group as potential participants and collaborators in this industry cluster's activities. However, the organizations outlined in red have been identified by the focus group as those that should play a key role in the Core Task Force to be formed for this cluster, based on the Core Task Force Characteristics outlined on page 33:

- **County of Kaua`i Office of Economic Development and Kaua`i Workforce Investment Opportunity Act staff**
- Hawai`i Department of Education
- Hawai`i Workwise & Hawai`i Department of Labor and Industrial Relations
- **General Dynamics – Mission Systems**
- High Technology Development Corporation
- **Kaua`i Economic Development Board**
- **Kaua`i Community College/ UH**
- Kaua`i Veteran's Memorial Hospital
- **Pacific Missile Range Facility**
- Wilcox Medical Center

Health & Wellness

Jobs & Earnings

The number of jobs in the Health & Wellness cluster (H&W) increased by 12% since 2001 for a total of 2,893 in 2014. In the same period, the cluster saw a 52% increase in average earnings per employee which increased to \$47,310. Total employee earnings increased by 55% from \$103 million in 2001 to \$162 million in 2014.



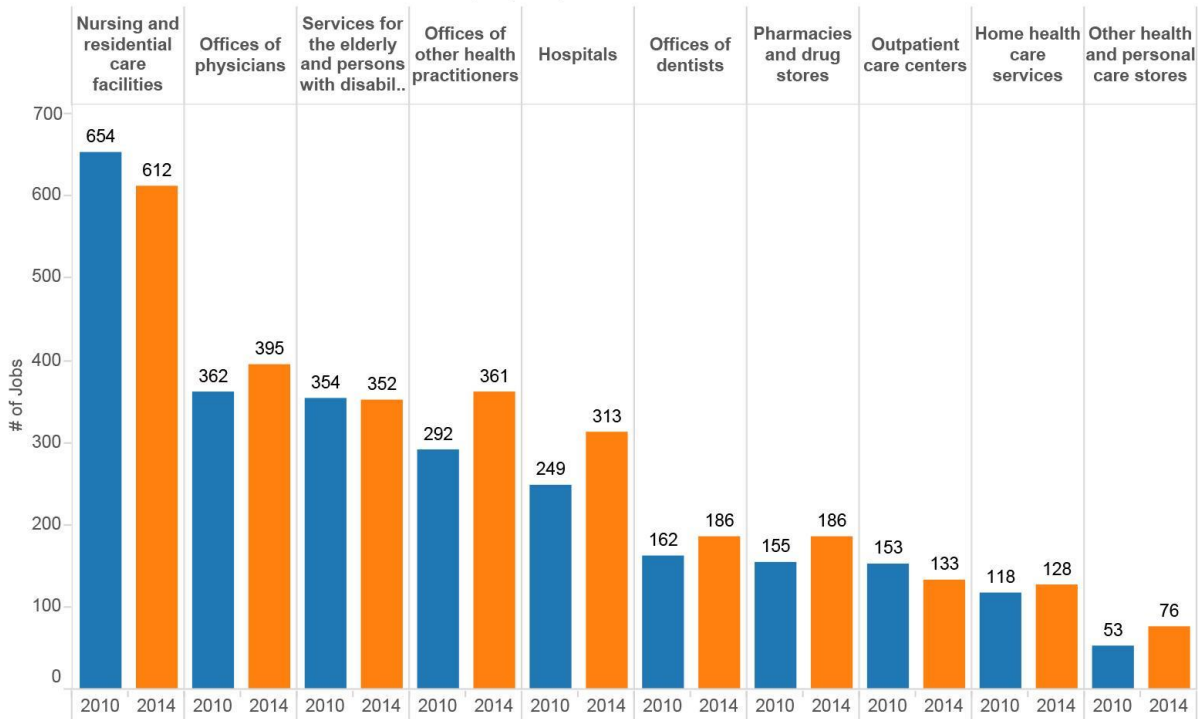
The following table provides detail for the 16 identified NAICS subcategories and the corresponding number of jobs, average earnings per employee and total earnings for the H&W cluster. The top employee earnings fall within the categories of offices of physicians (NAICS 6211, \$47.1 million in total employee earnings), nursing and residential care facilities (NAICS 623, \$33.3 million in total employee earnings) and hospitals (NAICS 622, \$21.7 million in total employee earnings) for a total of \$102.1 million or 63% of all H&W employee earnings.

Also of note is the inclusion of mental health professionals within the following two NAICS codes: offices of mental health practitioners (NAICS 621330) includes 49 jobs within the overall grouping of offices of other health practitioners (NAICS 6213) and outpatient mental health and substance abuse centers (NAICS 621420) that includes 33 jobs within the broader category of outpatient care centers (NAICS 6214).

NAICS Code Description	NAICS Code #	# of Jobs (2014)	Earnings per Employee (2014)	Total Employee Earnings \$M (2014)
Nursing and residential care facilities	623	612	\$54,450	\$33.3
Offices of physicians	6211	395	\$119,087	\$47.1
Offices of other health practitioners	6213	361	\$36,470	\$13.2
Services for the elderly and persons with disabilities	62412	352	\$19,275	\$6.8
Hospitals	622	313	\$69,324	\$21.7
Offices of dentists	6212	186	\$64,632	\$12.0
Pharmacies and drug stores	44611	186	\$43,159	\$8.0
Outpatient care centers	6214	133	\$62,137	\$8.3
Home health care services	6216	128	\$31,374	\$4.0
Other health and personal care stores	44619	76	\$18,628	\$1.4
Medical and diagnostic laboratories	6215	50	\$55,905	\$2.8
Cosmetics, beauty supplies, and perfume stores	44612	34	\$24,937	\$0.8
Optical goods stores	44613	24	\$16,888	\$0.4
Death care services	8122	20	\$52,897	\$1.0
Home health equipment rental	532291	13	\$50,969	\$0.7
Other ambulatory health care services	6219	10	\$36,829	\$0.4

Between 2010 and 2014, the H&W cluster added 210 additional jobs. The following table illustrates the growth and decreases amongst the top 10 categories with the largest number of total jobs. The largest growth increases are among offices of other healthcare practitioners (69 new jobs) and hospitals (64 jobs).

Health & Wellness: Jobs-2010 to 2014 (Top 10)



It is important to note that NAICS data and the categorization for the purposes of this report will have a margin of error in accurately reflecting all jobs on Kaua'i within the cluster. Efforts were taken to incorporate the nuances and considerations within the cluster, however some relevant jobs and their corresponding wages may not be reflected within this data analysis.

For example, direct life, health and medical insurance carriers are not reflected in the above groupings based on their level of categorization. This category contributes significantly to the H&W cluster with 216 jobs and more than \$18 million in total employee earnings. Additionally, other individual and family services (NAICS 624190) which among others includes suicide crisis centers, family welfare services, and alcoholism and drug addiction self-help organizations with 92 jobs and \$2.6 million in total employee earnings in 2014 on Kaua'i.

Lastly, Hawaii state-owned hospitals are not included in the jobs and wage data above. In 2014, there were 483 jobs held by workers in government hospitals, earning an average of \$100,731 per employee. Jobs in that category on Kaua'i have increased by 160 since 2001, with average earnings per employee nearly doubling from \$50,386.

Survey Highlights

Between Jan. 15 and Feb. 8, 2016, 25 respondents from the community provided answers to online survey questions regarding the state of the H&W industry cluster. Below are highlights from the responses.

- 72% agreed or strongly agreed that more specialized healthcare is a priority strategy to create jobs and increase wages and funds in H&W.

- Only 16% agreed that H&W organizations are equipped to adapt to the changing marketplace.
- When asked what is the biggest opportunity for growth in this industry cluster, respondents said:
 - *“Worksite wellness programs, health and fitness options for all ages and demographic groups, broad range of services for growing elderly segment.”*
 - *“Aging population, wellness and prevention.”*
 - *“We really need to create an on-island substance abuse treatment facility.”*
 - *“Long-Term Care/geriatric services, behavioral health”*
- 64% disagreed or strongly disagreed that there are adequate senior care services.
- 50% cited declining reimbursements and high healthcare costs as key barriers to growth in the H&W cluster.

For a full copy of the survey questions and the collected responses, see the Kaua’i CEDS Update 2016-2020 Appendix.

Kaua’i Vision 2024 & A Note About Additional Data

The following vision is taken from the Kaua’i Community Health Improvement Plan (CHIP) from June 2014, the action plan developed by the Kaua’i Community Health Improvement Initiative (CHII). The CHIP as well as the Kaua’i Community Health Needs Assessment (CHNA) contain extensive data on the Health & Wellness industry cluster and should be utilized and aligned with in the implementation of the CEDS.

In 2024, nearly 80,000 residents, young and old, are enjoying the benefits of a healthy life in the County of Kaua’i. According to the County Health Rankings and Roadmaps, Kaua’i ranks highest in the State of Hawai’i with the most favorable physical environment, social and economic indicators, clinical care, health behaviors, and health outcomes. Keiki (children) are blessed to be born, raised, and educated on the island. Parents, nā kūpuna (elders), and the community lay a solid foundation for the keiki to perpetuate family values, and to have the life skills to build strong families for the future. Nā kūpuna live full and active lives, knowing they are healthy, contributing to family and community, and growing old with dignity and self-determination. All of the County’s residents honor and practice the culture of being respectful, treating everyone equally, caring for one another, sharing, taking care of the ‘āina (land), being good stewards of the island’s resources, and being accountable to future generations. These characteristics make Kaua’i a special place to be born, learn, play, work, and grow old.

Goals, Objectives and Actions – Health & Wellness

The following Goals, Objectives & Actions have been excerpted from the integrated Goals, Objectives & Actions section in the first half of the report and represent ***only*** those items labeled as pertaining to the Health & Wellness industry cluster.

Goal #1: Build, attract and retain a 21st century workforce

Objective #1: Increase college and career readiness among students in grades K-20

Action:

- A1) Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations
- A2) Increase vocational training opportunities for careers that do not require college degrees.
- A3) Strengthen the continuum of science, technology, engineering and math (STEM) education K-20.
- A5) Expand health care training, certification and degree programs on the island, particularly for primary care, mental health (psychiatrists), substance abuse prevention and treatment, and elder care.
- A6) Create a regular Career Development Roadshow to educate teachers and students on various options
- A7) Develop outreach/education and training resources for individuals interested in the Health & Wellness field
- A8) Build awareness of stipends, scholarships, internships, and other resources for students in Health & Wellness field
- A9) Create mentorship opportunities in Health & Wellness career areas
- A10) Coding/Tech Education at local community college
- A11) Identify existing and upcoming workforce training needs and facilitate connecting workforce job opportunities in the Health & Wellness sector
- A12) Identify workforce development funding resources to develop needed training programs
- A13) Develop and identify training and technical assistance resources for Health & Wellness organizations (backbone support)
- A14) Use opportunities in telehealth to identify IT and medical workforce development trades to meet specialty care needs

Objective #2: Increase hiring and retention of Kaua‘i residents among target industry cluster companies and organizations to reduce or prevent ‘brain drain.’

Actions:

- A1) Establish and/or expand workforce recruitment programs at local high schools and at Kaua‘i Community College.
- A3) Increase high-tech workforce development, training and apprenticeships, particularly in areas of growth such as energy, geriatric research, and cybersecurity.

Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.

Actions:

- A1) Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives.
- A2) Explore the "Mobile Medicine" and "Pop-up Clinics" concepts
- A3) Explore the "Traveling Physicians" programs to expand availability of additional healthcare providers for unmet needs

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.

Actions:

- A1) Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs.
- A5) Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs.

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Actions:

- A1) Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community.
- A2) Identify and cultivate the next generation of leaders in each industry.

Goal #4: Increase collaboration

Objective #1- Increase collaboration both within and across industries

Actions:

- A1) Form core task forces to champion CEDS Actions and other initiatives.
- A2) Foster greater inter-industry collaboration.
- A3) Increase communication and collaboration with the visitor industry.
- A4) Increase collaboration among health and wellness providers
- A5) Explore and implement Kaua'i relevant programs in the "Transform Hawaii Government" statewide initiative
- A6) Align recommended activities from KMHCC with CEDS updated plan
- A7) Take annual inventory/status updates via CEDS

Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.

Actions:

- A1) Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies.
- A2) Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i.
- A3) Increase statewide, national and international partnerships and collaborations.

Goal #5: Ensure sustainable development.

Objective #3: Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.

Actions:

- A2) Implement a bicycle program that includes regular investment in bicycle infrastructure, a well-connected bicycle network, integration with the County roads program and managing safe vehicular traffic speeds.
- A3) Implement a pedestrian program that encourages more pedestrian trips through planning and infrastructure improvements to address deterrents to walking such as safety, connectivity and attractiveness.

Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources

Actions:

- A4) Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment.
- A5) Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community.

Goal #8: Enhance the community's ability to thrive

Objective #1- Support the health and wellness of the community

Actions:

- A1) Increase access to health care prevention and treatment programs and services, e.g., chronic diseases (diabetes, high blood pressure and high cholesterol), substance abuse, mental health and elder care (including Alzheimer's disease / dementia).
- A2) Develop the Life's Choices Kaua'i adolescent substance abuse treatment and healing facility.
- A3) Increase access to and community interest in health and wellness programs, including worksite wellness.

- A4) Increase elder care facilities, including those that serve patients with dementia / Alzheimer's disease.
- A5) Increase access to integrated, culturally relevant health and wellness facilities and / or programs.
- A6) Conduct inventory of existing resources for eldercare, mental health, and other high-risk populations to identify gaps in availability of services
- A7) Create an inventory (GIS mapped) of senior services available online/electronically and updated regularly
- A8) Develop coalition of caregivers for senior population (for safety-net services)
- A9) Create affordable care services
- A10) Expand accessibility of affordable assisted living facilities and services island-wide
- A11) Support the "Kaua`i Mental Health Care Consortium" plan
- A12) Expand mental and drug abuse services
- A13) Build residential drug and alcohol treatment facilities
- A14) Develop prevention and wellness services address obesity, eating disorders, and diabetes

Goals, Objectives & Actions – Health & Wellness

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O1.A1: Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-17: Form core task force, establish model 2018-19: Recruit initial partners; launch	HIDOE; County WIOA; County KWIB; KCC; KEDB; Keiki to Careers; Junior Achievement; Businesses	\$25,000 to \$50,000 for pilot program \$20,000 per student for a paid 3-month internship	HIDOE KCC Private sector	No
G1.O1.A2: Increase vocational training opportunities for careers that do not require college degrees. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form a core task force; next steps TBD	HIDOE; County WIOA; County KWIB; WorkWise Kaua'i; KCC; KEDB; Businesses	TBD	Private sector HIDOE	No
G1.O1.A3: Strengthen the continuum of science, technology, engineering and math (STEM) education K-20. F&A, H&W, S&T, ST&P	1st Priority	2016-20: Continue to increase collaboration and synergy; offer early college STEM courses in the 3 public health high schools	HIDOE KCC	TBD	HIDOE KCC Private sector	No
G1.O1.A5: Expand health care training, certification and degree programs on the island, particularly for primary care, mental health (psychiatrists), substance abuse prevention and treatment, and elder care. H&W	1st Priority	See steps in Kaua'i CHIP, which include establishing consortia, developing strategic / financial plans, monitoring	KCC Wilcox Hospital WorkWise Kaua'i	TBD	TBD	No

G1.O1.A6: Create a regular Career Development Roadshow to educate teachers and students on various options H&W						
G1.O1.A7: Develop outreach/education and training resources for individuals interested in the Health & Wellness field H&W						
G1.O1.A8: Build awareness of stipends, scholarships, internships, and other resources for students in Health & Wellness field H&W						
G1.O1.A9: Create mentorship opportunities in Health & Wellness career areas H&W						
G1.O1.A10: Coding/Tech Education at local community college H&W						
G1.O1.A11: Identify existing and upcoming workforce training needs and facilitate connecting workforce job opportunities in the Health & Wellness sector H&W						
G1.O1.A12: Identify workforce development funding resources to develop needed training programs H&W						

G1.O1.A13: Develop and identify training and technical assistance resources for Health & Wellness organizations (backbone support) H&W						
G1.O1.A14: Use opportunities in telehealth to identify IT & medical workforce development trades to meet specialty care needs H&W						
Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O2.A1: Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	2016-20: Form core task force, coordinate / sequence with job creation, conduct and promote / advertise job fairs annually, other next steps TBD	State Dept.of Education, KCC, Industry	TBD for logistics and promotion of job fairs	TBD	No
G1.O2.A3: Increase high-tech workforce development, training and apprenticeships, particularly in areas of growth such as energy, geriatric research, and cybersecurity. H&W, S&T, ST&P	1st Priority	2016-2020: Form core task force, establish model, recruit partners, launch program(s) – including creating a pre-engineering track at KCC (2016-17)	HTDC., KCC, PMRF, Industry	Summer college internships \$5,000 - \$10,000 per student	State, Federal	No
Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O3.A1: Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-2020: Form core task force, coordinate / sequence with job creation, develop and launch program	KEDB Businesses	TBD	TBD	No

G1.O3.A2: Explore the “Mobile Medicine” and “Pop-up Clinics” concepts H&W						
G1.O3.A3: Explore the “Traveling Physicians” programs to expand availability of additional healthcare providers for unmet needs H&W						

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O1.A1: Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, recruit and utilize industry mentors, other next steps TBD	KEDB HISBDC – Kaua’i (partner for business incubation) Junior Achievement (partner for youth programs)	TBD	TBD	No
G2.O1.A5: Increase collaboration w/and funding through state & federal entrepreneurship/ mentorship programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, next steps TBD	KCC HI SBDC Kauai North Shore Venture Gang and Hanalei Rotary (potential partners)	TBD	TBD	No

Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other	1st Priority	TBD	KCC HISBDC – Kaua’i	TBD	TBD	No

business practices. A&C, F&A, H&W, S&T, S&R, ST&P						
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Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O1.A1: Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD; adapt / build upon SBDC Hawaii Disaster Guide (Disaster Recovery Guide for Business)	American Red Cross HISBDC – Kaua'i	TBD	TBD	No
G3.O1.A2: Identify and cultivate the next generation of leaders in each industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB as facilitator Industry businesses and organizations	TBD	TBD	No

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O2.A1: Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	County, KIUC, PMRF, Civil Defense	TBD	TBD	No

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O1.A1: Form core task forces to champion CEDS Actions and other initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A2: Foster greater inter-industry collaboration. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A3: Increase communication and collaboration with the visitor industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A4: Increase collaboration among health and wellness providers H&W						
G4.O1.A4: Explore and implement Kaua'i relevant programs in the "Transform Hawaii Government" statewide initiative H&W						
G4.O1.A5: Align recommended activities from KMHCC with CEDS updated plan H&W						
G4.O1.A6: Take annual inventory/status updates via CEDS H&W						

Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O2.A1: Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	TBD	TBD	TBD	No
G4.O2.A2: Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No
G4.O2.A3: Increase statewide, national and international partnerships and collaborations. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No

Goal #5: Ensure sustainable development.

Objective #3: Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O3.A2: Implement a bicycle program to incl. regular investment in bicycle infrastructure, a well-connected network, integration with the County roads program and managing safe vehicular traffic speeds. H&W, S&R, ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	No

G5.O3.A3: Implement a pedestrian program that encourages more pedestrian trips through planning and infrastructure improvements to address deterrents to walking such as safety, connectivity and attractiveness. H&W, S&R, ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	No
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Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O5.A4: Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O5.A5: Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #8: Enhance the community's ability to thrive.

Objective #1: Support the health and wellness of the community.

Action	Priority	*Steps Required and Time Frame	*Key Implementers	*Estimated Costs	*Funding Sources	EDA Eligible?
G8.O1.A1: Increase access to health care prevention and treatment programs and services, e.g., chronic diseases (diabetes, high blood pressure and high cholesterol),	1st Priority	TBD	Wilcox Hospital, KVMH, Kaiser, HIDOH	TBD	Substance Abuse and Mental Health Services Admin.	No

substance abuse, mental health and elder care (including Alzheimer's disease / dementia). H&W					(SAMHSA)	
G8.O1.A2: Develop the Life's Choices Kaua'i adolescent substance abuse treatment and healing facility. H&W	1st Priority	TBD	County, Life's Choices Kaua'i	TBD	Substance Abuse and Mental Health Services Admin. (SAMHSA)	No
G8.O1.A3: Increase access to and community interest in health and wellness programs, including worksite wellness. H&W, S&R	1st Priority	TBD	GetFit Kaua'i	TBD	TBD	No
G8.O1.A4: Increase elder care facilities, including those that serve patients with dementia / Alzheimer's disease. H&W	1st Priority	TBD	Garden Isle Healthcare	TBD	TBD	Possibly
G8.O1.A5: Increase access to integrated, culturally relevant health and wellness facilities and / or programs. H&W	2nd Priority	TBD	Ho'ola Lahui	TBD	TBD	No
G8.O1.A6: Conduct inventory of existing resources for eldercare, mental health, and other high-risk populations to identify gaps in availability of services H&W						
G8.O1.A7: Create an inventory (GIS mapped) of senior services available online/electronically and updated regularly H&W						

G8.O1.A8: Develop coalition of caregivers for senior population (for safety-net services) H&W						
G8.O1.A9: Create affordable care services H&						
G8.O1.A10: Expand accessibility of affordable assisted living facilities and services island-wide H&W						
G8.O1.A11: Support the “Kaua`i Mental Health Care Consortium” plan H&W						
G8.O1.A12: Expand mental and drug abuse services H&W						
G8.O1.A13: Build residential drug and alcohol treatment facilities H&W						
G8.O1.A14: Develop prevention and wellness services address obesity, eating disorders, and diabetes H&W						
Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua`i and the world.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O2.A1: Increase access to reliable high-speed broadband Internet. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-20: Assess access and capacity; identify next steps and implement	DBEDT County	TBD	U.S. Dept. of Agriculture	No

G8.O2.A2: Expand telemedicine and health care information technology (IT) utilization. H&W	2nd Priority	TBD	TBD	TBD	TBD	No
Objective #3: Increase the quality and affordability of life on Kaua'i.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O3.A1: Increase availability of affordable housing. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016: Completion of County General Plan 2017-2020: Possible policy changes and construction of affordable housing	County Major landowners Developers	TBD	Private sector	No
G8.O3.A2: Continue to improve public education on the island. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD in line with HIDOE's initiatives	HIDOE	TBD	HIDOE; Federal grants Private sector	No

Health & Wellness Metrics:

- Increase in enrollment at KCC, especially in Health and Wellness classes
 - Degree & Non-degree courses
- Number of Health & Wellness programs identified
- Percentage of High School graduates who advance to Health & Wellness careers
- Number of KCC graduates who stay and return to Kaua'i
- Percentage of Kama'aina Health and Wellness workers
- Completion of substance abuse/drug treatment center cases
- Increase of psychiatrists by 50%

Core Task Force Suggested Members:

The following is an alphabetical list of organizations identified by the focus group as potential participants and collaborators in this industry cluster's activities. However, the organizations outlined in red have been identified by the focus group as those that should play a key role in the Core Task Force to be formed for this cluster, based on the Core Task Force Characteristics outlined on page 33:

- Area Health Education Center (AHEC, Fran Becker)
- Alzheimer's Association
- **County of Kaua'i – Office of Economic Development**
- Get Fit Kaua'i
- Health Clubs/Crossfits
- **Ho'ola Lahui Hawaii**
- **Hawaii Department of Health**
- Hawai'i Medical Service Association
- Integrated Healthcare Providers
- Kaiser Permanente Lihue Clinic
- Kaua'i Community College
- **Kaua'i Economic Development Board**
- Kaua'i Veteran's Medical Hospital
- Keiki to Career
- Leadership Kaua'i
- Mahelona Hospital
- Office of Hawaiian Affairs
- `Ohana Healthcare Management
- Puakea Regency
- Veteran's Affairs
- **Wilcox Medical Center**
- **US Department of Education**

Sports & Recreation

Jobs & Earnings

The Sports & Recreation (S&R) cluster has grown by 19% in total jobs since 2001. The cluster includes at least 2,162 jobs with total earnings for the cluster increasing significantly to approximately \$69 million in 2014. Average annual earnings per employee are modest and increased by 14% to \$22,279 in 2014.



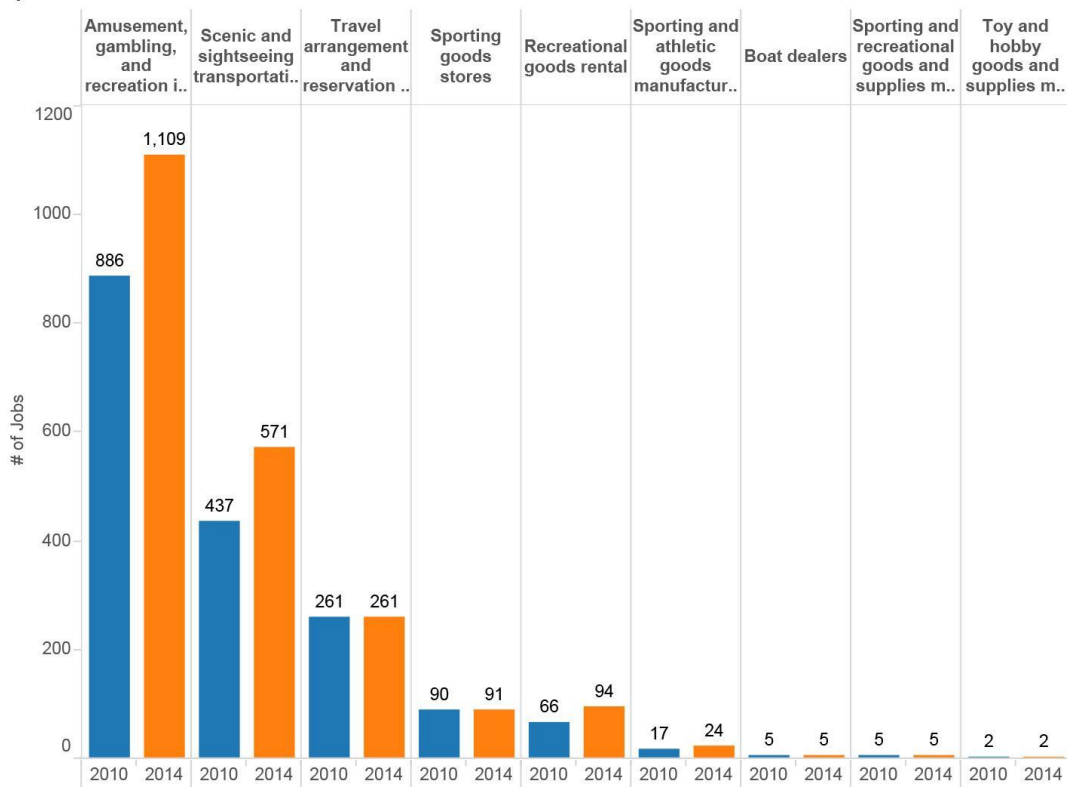
The following table provides detail for the 12 identified NAICS subcategories and the corresponding number of jobs, average earnings per employee and total employee earnings for the cluster. More than 50% of the total jobs in S&R are part of the amusement, gambling and recreation industries category (NAICS 713) which includes golf courses and country clubs, fitness and recreational sports centers, bowling centers and all other amusement and recreation industries. The highest earnings per employee are for the sporting and athletic goods manufacturing (NAICS 33992) at \$45,149 annually.

NAICS Code Description	NAICS Code #	# of Jobs (2014)	Earnings per Employee (2014)	Total Employee Earnings \$M (2014)
Amusement, gambling, and recreation industries	713	1,109	\$28,830	\$32.0
Scenic and sightseeing transportation	487	571	\$40,462	\$23.1
Travel arrangement and reservation services	5615	261	\$31,198	\$8.1
Recreational goods rental	532292	94	\$27,918	\$2.6

Sporting goods stores	45111	91	\$23,755	\$2.2
Sporting and athletic goods manufacturing	33992	24	\$45,149	\$1.1
Boat dealers	441222	5	\$40,386	\$0.2
Sporting and recreational goods and supplies merchant wholesalers	42391	5	\$14,825	\$0.1
Toy and hobby goods and supplies merchant wholesalers	42392	2	\$14,825	\$0.0
Charter bus industry	4855	0	\$0	\$0.0
Coastal and great lakes passenger transportation	483114	0	\$0	\$0.0
Deep sea passenger transportation	483112	0	\$0	\$0.0

The table below illustrates the recent growth within the S&R cluster subcategories from 2010 to 2014. Amusement and recreation industries (NAICS 713) grew by 223 since 2010 to 1,109 jobs in 2014. Scenic and sightseeing transportation (NAICS 487) grew by 134 jobs in the same period. All other categories were relatively flat in terms of number of jobs.

Sports & Recreation: Jobs-2010 to 2014



It is important to note that NAICS data and the categorization for the purposes of this report will have a margin of error in accurately reflecting all jobs on Kaua'i within the cluster. Efforts were taken to incorporate the nuances and considerations within the cluster; however, some relevant jobs and their corresponding wages may not be reflected within this data analysis.

For example, one additional job category not reflected in the above based on its level of specificity includes sports and recreation instruction (NAICS 611620) which is comprised of all sports instruction (baseball, basketball, football and golf) as well as gymnastics, riding, martial arts and swimming instruction. In 2014, this category included 48 jobs and \$300,000 in earnings. There is also some overlap in this specific industry with hula instruction being included in sports and recreation instruction instead of the Arts & Culture industry sector.

Survey Highlights

Between Jan. 15 and Feb. 8, 2016, 20 respondents from the community provided answers to online survey questions regarding the state of the S&R industry cluster. Below are highlights from the responses.

- 70% agreed or strongly agreed that events and facilities are well attended.
- 65% disagreed or strongly disagreed that there are enough sporting facilities on Kaua'i to meet demand.
- 70% disagreed or strongly disagreed that there is strong leadership in cluster.
- Only 15% agreed that harbors on Kaua'i are modern and well maintained.
- When asked what the changes have made the greatest positive impact on the cluster, respondents said:
 - *"The rise of "adventure" or outdoor recreation for visitors have increased the number of businesses and jobs. For example, ATV Tour companies, Kayak rentals, bicycle rentals, ZIP lines etc. These types of activities have only recently been introduced to the visitor market."*
 - *"There is an excellent program for senior citizens in Kauai's neighborhood centers. But not much for younger, working mothers or other middle aged folks.-- unless they want to paddle. But that is very competitive and not always welcome to all comers."*
 - *"The Kauai Marathon is well marketed and has good attendance. There has been little to no focus on marketing Sports & Recreation, with the exception those events that fall under CPEP's Festivals & Events."*
 - *"Private/membership golf courses and golf tournaments Statewide local youth sports competitions, Kauai Marathon."*
- 65% agreed that there are enough qualified workers in this cluster.
- 74% of respondents cited a lack of government funds for parks and recreational facilities as a barrier.
 - *"Bike trails for safe exercising would be great for locals and tourists, but road improvements should happen first."*
 - *"Creating a welcoming atmosphere for participants in high profile international sporting events, coupled with better facilities. This would include basic things like public restrooms of the quality one finds in places like New Zealand."*
 - *"The coastal bike path has huge potential."*

For a full copy of the survey questions and the collected responses, see the Kaua'i CEDS Update 2016-2020 Appendix.

Goals, Objectives, and Actions – Sports & Recreation

Goal #1: Build, attract and retain a 21st century workforce

Objective #1 Build, attract and retain a 21st century workforce

Action:

- A1) Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations.
- A2) Increase vocational training opportunities for careers that do not require college degrees.
- A3) Develop education and training for players and officials for Sports & Recreation activities
- A4) Address water safety issues by monitoring and educating the community regarding appropriate behavior vis-à-vis hiking and other accessibility

Objective #2- Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain'

Action:

- A1) Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College.
- A2) Explore business development opportunities in the Sports & Recreation industry
- A3) Explore business development opportunities, leveraging sports & recreation events and activities
- A4) Assess upcoming trends and opportunities
- A5) Leverage sister-city relations to enhance existing and develop new activities and events
- A6) Cluster events together vis-à-vis timing and location

Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.

Action:

- A1) Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives.

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.

Action:

- A1) Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs.
- A5) Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs.

Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.

Action:

A1) Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices.

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action:

A1) Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community.

A2) Identify and cultivate the next generation of leaders in each industry.

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action:

A1) Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster.

Goal #4: Increase collaboration

Objective #2- Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints

Action:

A1) Form core task forces to champion CEDS Actions and other initiatives.

A2) Foster greater inter-industry collaboration.

A3) Increase communication and collaboration with the visitor industry.

A5) Increase collaboration with the film and television industry.

Goal #5: Ensure sustainable development.

Objective #3: Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.

Action:

A2) Implement a bicycle program that includes regular investment in bicycle infrastructure, a well-connected bicycle network, integration with the County roads program and managing safe vehicular traffic speeds.

A3) Implement a pedestrian program that encourages more pedestrian trips through planning and infrastructure improvements to address deterrents to walking such as safety, connectivity and attractiveness.

Objective #5: Preserve, protect and manage utilization of Kaua‘i’s natural resources.

Action:

A4) Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment.

A5) Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community.

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters

Objective #1- Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed

Actions:

A2) Assess and catalogue all sports and recreation facilities and events as well as visitor accommodations and rates.

A3) Investigate the economics of sports and recreation on Kaua‘i.

A4) Create a sports and recreation marketing plan and promotional materials.

A5) Expand and/or build upon existing sports events such as the Kaua‘i Marathon.

A6) Create a business plan for a multipurpose sports and recreation facility.

Goals, Objectives & Actions – Sports & Recreation

The following Goals, Objectives & Actions have been excerpted from the integrated Goals, Objectives & Actions section in the first half of the report and represent only those items labeled as pertaining to the Sports & Recreation industry cluster.

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O1.A1: Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-17: Form core task force, establish model 2018-19: Recruit initial partners; launch	HIDOE; County WIOA; County KWIB; KCC; KEDB; Keiki to Careers; Junior Achievement; Businesses	\$25,000 to \$50,000 for pilot program \$20,000 per student for a paid 3-month internship	HIDOE KCC Private sector	No
G1.O1.A2: Increase vocational training opportunities for careers that do not require college degrees. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form a core task force; next steps TBD	HIDOE; County WIOA; County KWIB; WorkWise Kaua'i; KCC; KEDB; Businesses	TBD	Private sector HIDOE	No
G1.O1.A3: Develop education and training for players and officials for Sports & Recreation activities S&R						
G1.O1.A4: Address water safety issues by monitoring and educating the community regarding appropriate behavior vis-à-vis hiking and other accessibility S&R						

Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O2.A1: Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	2016-20: Form core task force, coordinate / sequence with job creation, conduct and promote / advertise job fairs annually, other next steps TBD	State Dept.of Education, KCC, Industry	TBD for logistics and promotion of job fairs	TBD	No
G1.O2.A2: Explore business development opportunities in the Sports & Recreation industry S&R						
G1.O2.A3: Explore business development opportunities, leveraging sports & recreation events and activities S&R						
G1.O2.A4: Assess upcoming trends and opportunities S&R						
G1.O2.A5: Leverage sister-city relations to enhance existing and develop new activities and events S&R						
G1.O2.A6: Cluster events together vis-à-vis timing and location S&R						

Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O3.A1: Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-2020: Form core task force, coordinate / sequence with job creation, develop and launch program	KEDB Businesses	TBD	TBD	No

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O1.A1: Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, recruit and utilize industry mentors, other next steps TBD	KEDB HISBDC – Kaua'i (partner for business incubation) Junior Achievement (partner for youth programs)	TBD	TBD	No
G2.O1.A5: Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, next steps TBD	KCC Kaua'i Small Business Development Center (SBDC) North Shore Venture Gang and Hanalei Rotary (potential partners)	TBD	TBD	No

Objective #2: Build capacity among existing businesses and nonprofit organizations to grow their enterprises and increase their sustainability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O2.A1: Provide and increase participation in capacity-building workshops on business planning, grant writing, marketing and other business practices. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KCC HISBDC – Kaua'i	TBD	TBD	No

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O1.A1: Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD; adapt / build upon SBDC Hawaii Disaster Guide (Disaster Recovery Guide for Business)	American Red Cross HISBDC – Kaua'i	TBD	TBD	No
G3.O1.A2: Identify and cultivate the next generation of leaders in each industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB as facilitator Industry businesses and organizations	TBD	TBD	No

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O2.A1: Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	County, KIUC, PMRF, Civil Defense	TBD	TBD	No

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O1.A1: Form core task forces to champion CEDS Actions and other initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A2: Foster greater inter-industry collaboration. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A3: Increase communication and collaboration with the visitor industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A5: Increase collaboration with the film and television industry. S&R	2nd Priority	TBD	TBD	TBD	TBD	No

Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O2.A1: Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	TBD	TBD	TBD	No
G4.O2.A2: Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No
G4.O2.A3: Increase statewide, national and international partnerships and collaborations. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No
G4.O2.A4: Clarify hotel rates to indicate affordable rates offered for special sports & recreation related events S&R						

Goal #5: Ensure sustainable development.

Objective #3: Implement the Kaua'i Multimodal Land Transportation Plan (MLTP) by 2035.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O3.A2: Implement a bicycle program that includes regular investment in bicycle infrastructure, a well-connected bicycle network, integration with the County roads program and managing safe vehicular traffic speeds. H&W, S&R, ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	No
G5.O3.A3: Implement a pedestrian program that encourages more pedestrian trips through planning and infrastructure improvements to address deterrents to walking such as safety, connectivity and attractiveness. H&W, S&R, ST&P	1st Priority	2016: Address remaining immediate priorities 2016-20: Address mid-range priorities	County	TBD	TBD	No
Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O5.A4: Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A5: Investigate the Small Town America Main Street Program as a means of revitalizing Rice Street Business Community. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters.

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G7.O1.A2: Assess and catalogue all sports and recreation facilities and events as well as visitor accommodations and rates. S&R	1st Priority	TBD	TBD	TBD	TBD	No
G7.O1.A3: Investigate the economics of sports and recreation on Kaua'i. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
G7.O1.A4: Create a sports and recreation marketing plan and promotional materials. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
G7.O1.A5: Expand and/or build upon existing sports events such as the Kaua'i Marathon. S&R	1st Priority	TBD	TBD	TBD	TBD	No
G7.O1.A6: Create a business plan for a multipurpose sports and recreation facility. S&R						
G7.O1.A7: Feasibility study on multi-use regional parks S&R						
G7.O1.A8: Identify appropriate location for multi-use sports arena						

S&R						
G7.O1.A9: Prioritize feasibility of regional athletic facilities/community centers S&R						
G7.O1.A10: Encourage and support more state funding for state and county parks/facilities S&R						
Objective #2: Continue to build capacity for economic development in each of the six target industry clusters, as needed.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G7.O2.A1: Secure more sponsorships (cash / in-kind) for sports and recreation events. S&R	2nd Priority	TBD	Event organizers	TBD	TBD	No
G7.O2.A2: Revamp sports and recreation events and facilities to comply with industry regulations and sanction requirements. S&R	2nd Priority	TBD	TBD	TBD	TBD	No
G7.O2.A3: Maintain and renovate existing facilities as needed. S&R	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #8: Enhance the community's ability to thrive.

Objective #1: Support the health and wellness of the community.						
Action	Priority	*Steps Required and Time Frame	*Key Implementers	*Estimated Costs	*Funding Sources	EDA Eligible?
G8.O1.A3: Increase access to and community interest in health and wellness programs, including worksite wellness. H&W, S&R	1st Priority	TBD	GetFit Kaua'i	TBD	TBD	No
Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O2.A1: Increase access to reliable high-speed broadband Internet. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-20: Assess access and capacity; identify next steps and implement	State Dept. of Business, Economic Development & Tourism (DBEDT) County	TBD	U.S. Dept. of Agriculture	No
Objective #3: Increase the quality and affordability of life on Kaua'i.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O3.A1: Increase availability of affordable housing. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016: Completion of County General Plan 2017-2020: Possible policy changes and construction of affordable housing	County Major landowners Developers	TBD	Private sector	No
G8.O3.A2: Continue to improve public education on the island. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD in line with HIDEOE's initiatives	HIDEOE	TBD	HIDEOE Federal grants Private sector	No

Sports & Recreation – Metrics:

- Number of jobs created
- Increase in industry cluster earnings and / or earnings per NAICS code description
- Increase in average annual wages and / or earnings per employee
- Increase in traded clusters, i.e., goods and services being exported out of the County
- Increase in workforce readiness as indicated by high school and college graduation rates and other academic indicators

Core Task Force Suggested Members:

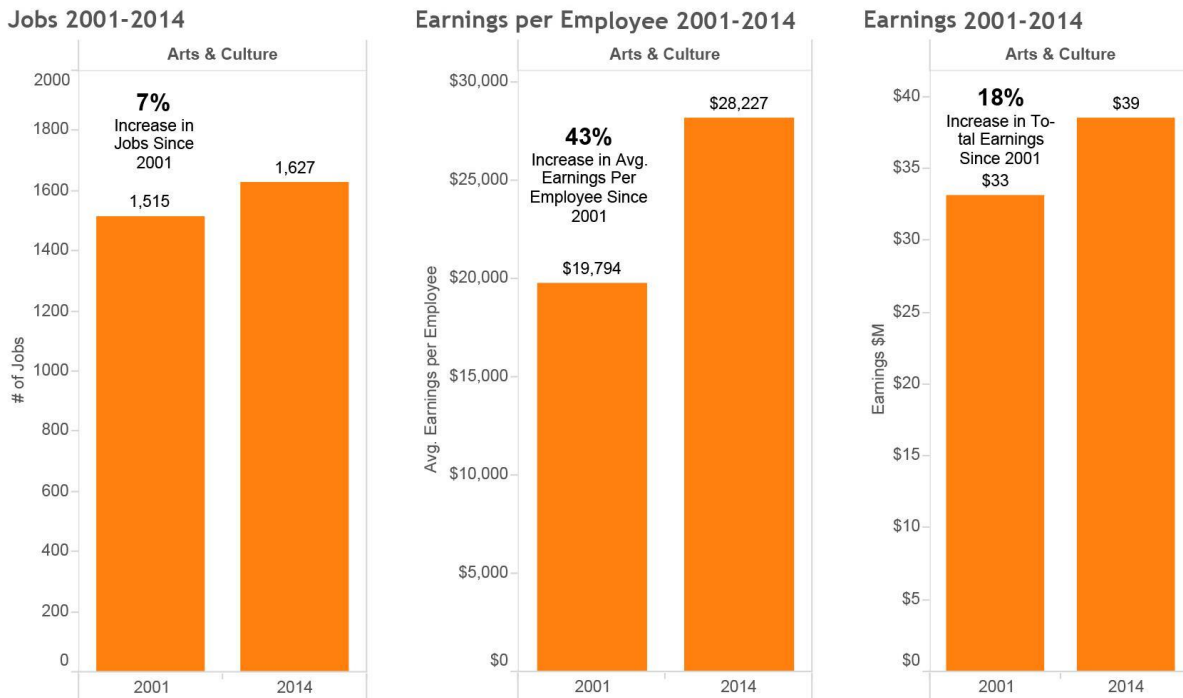
The following is an alphabetical list of organizations identified by the focus group as potential participants and collaborators in this industry cluster's activities. However, the organizations outlined in red have been identified by the focus group as those that should play a key role in the Core Task Force to be formed for this cluster, based on the Core Task Force Characteristics outlined on page 33:

- County of Kaua`i – Office of Economic Development (OED)
- County of Kaua`i – Department of Parks & Recreation
- Kaua`i Economic Development Board
- Kaua`i Visitor's Bureau

Arts & Culture

Jobs & Earnings

The Arts & Culture (A&C) cluster has grown 7% since 2001 to account for 1,627 jobs in 2014. The industry cluster has seen an 18% growth in total employee earnings with approximately \$39 million in 2014. While wages grew significantly by 43%, earnings overall are relatively low as compared to other clusters with employees earning \$28,227 on average annually.



The following table provides detail for the 18 identified NAICS subcategories and the corresponding number of jobs, average earnings per employee and total employee earnings for the A&C cluster. In 2014, the largest number of jobs remains within the category comprised of performing arts, spectator sports and related industries (681 jobs or 41% of the industry). That category is amongst the lowest earners per employee at only \$10,189 per year among jobs included by NAICS.

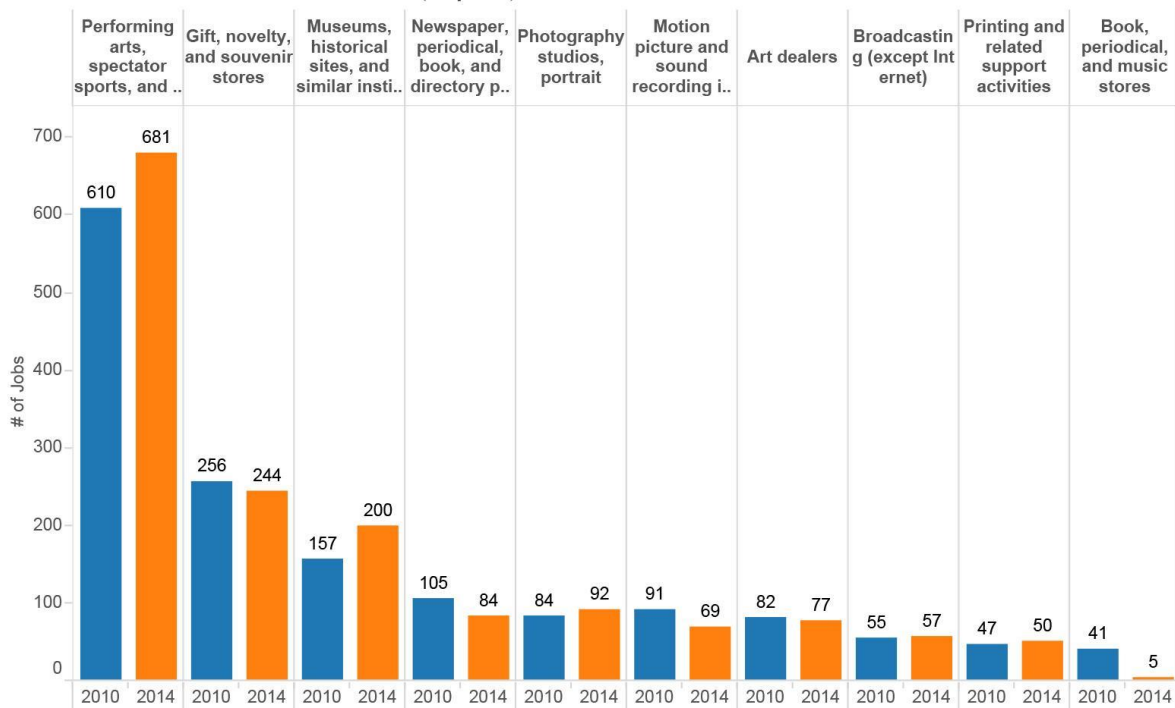
The largest contributor to total earnings for the A&C cluster are museums, historical sites and similar institutions at \$8.4 million in total employee earnings and 200 jobs. Earnings for that cluster are among the highest in the cluster at approx \$41,849 per employee annually.

NAICS Code Description	NAICS Code #	# of Jobs (2014)	Earnings per Employee (2014)	Total Employee Earnings \$M (2014)
Performing arts, spectator sports, and related industries	711	681	\$10,189	\$6.9
Gift, novelty, and souvenir stores	45322	244	\$22,763	\$5.6
Museums, historical sites, and similar institutions	712	200	\$41,849	\$8.4
Photography studios, portrait	541921	92	\$13,682	\$1.3
Newspaper, periodical, book, and directory publishers	5111	84	\$43,021	\$3.6
Art dealers	45392	77	\$33,681	\$2.6
Motion picture and sound recording industries	512	69	\$31,542	\$2.2
Broadcasting (except Internet)	515	57	\$90,243	\$5.1
Printing and related support activities	323	50	\$26,480	\$1.3
Commercial photography	541922	22	\$23,258	\$0.5
Sewing, needlework, and piece goods stores	45113	18	\$9,571	\$0.2
Photofinishing	81292	11	\$47,547	\$0.5
Book, periodical, and music stores	4512	5	\$29,194	\$0.1
Hobby, toy, and game stores	45112	5	\$19,839	\$0.1
Musical instrument and supplies stores	45114	5	\$19,556	\$0.1
Video tape and disc rental	53223	5	\$12,000	\$0.1
Book, periodical, and newspaper merchant wholesalers	42492	2	\$33,670	\$0.1
Paper manufacturing	322	0	\$0	\$0.0

Also of note is the motion picture and sound recording industries category (NAICS 512) which included at least \$2.2 million in employee earnings on Kaua'i in 2014 includes jobs within the video production, distribution and post production categories.

Between 2010 and 2014, total jobs in the A&C cluster increased by 31 from 1,596 to 1,627. The top 10 categories based on total jobs are summarized in the table below. The highest growth of 71 jobs came from within the performing arts, spectator sports and related industries followed by museums, historical sites and similar institutions. Slight increases and decreases are reflected in other categories with the largest decrease in book, periodical and music stores.

Arts & Culture: Jobs-2010 to 2014 (Top 10)



It is important to note that NAICS data and the categorization for the purposes of this report will have a margin of error in accurately reflecting all jobs on Kaua'i within the cluster. Efforts were taken incorporate the nuances and considerations within the cluster, however some relevant jobs and their corresponding wages may not be reflected within this data analysis.

The subcategories of fine arts schools (NAICS 611610) is not reflected in the above total. It is comprised of dance, music and performing arts schools, which would include many of the hula halaus throughout the island, among other types of entities. In 2014, fine arts schools included 40 jobs and approximately \$540,000 in total employee earnings. Total wages in this subcategory decreased from \$20,332 to \$13,402 per employee on average. Dance companies with paid dancers are also included under the performing arts categories, which is reflected in the totals presented above and could include halaus as well, depending on their classification.

Survey Highlights

Between Jan. 15 and Feb. 8, 2016, 14 respondents from the community provided answers to online survey questions regarding the state of the A&C industry cluster. Below are highlights from the responses.

- 86% agreed or strongly agreed that Arts & Culture organizations need programs to help develop revenue streams, be more self-sustaining and reduce dependence on funding.
- When asked what was the biggest opportunity for growth in this cluster, respondents said:

- *“Fashion, jewelry, furniture/fabricated products such as material (for clothing, upholstery, etc). We need to make available more industrially zoned lands for rent/incubators.”*
- *“I see a market for EXCELLENCE in any of the arts. Many times arts on Kauai are of moderate quality and they do not foster the kind of interest and appreciation seen by a higher caliber of arts.”*
- *“Marketing and international studies”*
- 86% agreed or strongly agreed that more leadership and collaboration is needed. Nobody disagreed.
 - *“The quality of artists living on Kauai can be reinforced if more high quality artists/performers are brought here to perform and share their gifts with upcoming artists in all areas. This will also bring in more revenue when the quality of performances is enhanced by experts.”*
 - *“Collaboration between successful artist/related businesses and the willingness of champions to share their tools for success. Also KUGA, Kauai Art Factory, Fashion month.”*
- 71% agreed or strongly agreed that creative technology media is among the greatest areas of opportunity to increase jobs, earnings and funding in the cluster.
- 86% agreed or strongly agreed that there should be more collaboration with the visitor industry.
- When asked what the most important skills are that’s needed in this cluster, respondents said:
 - *“Entrepreneurial mindset and spirit, business training, confidence that art and culture can provide right livelihood, ability of artists, community and government to work cooperatively and strategically.”*
 - *“Creativity and opportunities, mentors, leadership, outlets”*
 - *“Basic work skills Management skills Specific field skills – videography”*

For a full copy of the survey questions and the collected responses, see the Kaua’i CEDS Update 2016-2020 Appendix.

Additional Data

The implementation of the Goals, Objectives & Actions in the Kaua’i CEDS update for 2016-2020 should also drawn upon other data, studies, plans and reports regarding the Arts & Culture industry cluster.

For instance, the KEDB (KEDB) and the County of Kaua’i Office of Economic Development (OED) conducted a feasibility study for an arts and culture center in 2015. The [Kaua’i Arts & Culture Feasibility Study Final Report](#) identified 256 arts and culture organizations throughout Kaua’i and defined the industry cluster’s needs in terms of facilities, programs, marketing, funding and leadership.

Other resources include the State of Hawai’i Department of Business, Economic Development & Tourism’s [Hawaii’s Creative Industries Update Report 2015](#) and other reports released by the Creative Industries Division. It should also be noted that Kaua’i Planning & Action Alliance conducted a facility visioning and collaboration building project in 2012, and developed the following vision for the Arts & Culture industry cluster for 2023, updated from the 2010 CEDS vision for the industry cluster for 2020:

KPAA Report Vision for 2023

The CEDS report contains a very eloquent culture and arts vision. It was originally intended that this project would create a vision related to the development of a culture and arts center, but given the lack of support for that effort at this time, the group stated its vision for the year 2023. What follows is the third draft of that vision.

The culture and the arts sector on Kaua'i is vibrant and robust with a wide range of talented artists, artisans and cultural practitioners. We have become a collaborative community of visual arts, fine arts and performing arts and cultural organizations and individuals.

We receive enthusiastic support from residents as well as visitors, who plan their travel around our well-coordinated, active calendar of events and activities. There is community-wide recognition and appreciation that these arts and cultural events also provide opportunities for education, youth enrichment and enhancing artistic creativity.

We have taken advantage of training and technical assistance to increase our organizational capacity. As a result, we have strong leadership, our programs are well-funded, and our practitioners and organizations are thriving and prosperous, offering creative career and volunteer opportunities. Culture and arts organizations are vital partners in maintaining a high quality of life and strong economy for the island.

We have ensured that there are facilities located around the island which serve the culture and arts needs of our varied geographic regions and local communities. These facilities include performance and rehearsal space, galleries, classroom and meeting space, and studios. We have access on an as-needed basis to shared offices, with staff, equipment and conference rooms.

Our culture and arts community is committed to sustaining the solid, financially-viable foundation we have created. We are now ready and excited to work together toward establishing an affordable multi-purpose space designed for cultural and arts events and activities that would accommodate up to 300 people.

In addition, Councilmember JoAnn Yukimura provided the following verbiage for consideration as part of an Arts and Culture industry cluster vision in the CEDS update for 2016-2020:

Flourishing Arts and Culture. *We celebrate life and express our deepest yearnings through a richness of song, dance, poetry, visual arts, music, and drama—and through the perpetuation and sharing of the various cultures that have taken root on Kaua'i. Kaua'i's artists have found ways to leverage their craft into money-generating businesses that give them both right livelihoods and contribute to the economic sustenance of Kaua'i.*

Goals, Objectives, and Actions - Arts & Culture

Goal #1: Build, attract and retain a 21st century workforce

Objective #1- Increase college and career readiness among students in grades K-20

Action:

- A1) Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations.
- A2) Increase vocational training opportunities for careers that do not require college degrees.
- A4) Develop and open the Kaua'i Creative Technology Center.
- A6) Increase arts education in DOE schools / community.
- A7) Support programs that teach our youth Hawaiian language, art, and culture.

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations

Objective #1- Cultivate entrepreneurs and new small businesses/organizations

Action:

- A1) Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs.
- A4) Grow the entrepreneur / startup / maker community.
- A5) Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs.
- A6) Create "Maker Spaces"

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action:

- A1) Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community.
- A2) Identify and cultivate the next generation of leaders in each industry.

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action:

- A1) Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster.

Goal #4: Increase collaboration

Objective #1- Increase collaboration both within and across industries

Action:

- A1) Form core task forces to champion CEDS Actions and other initiatives.
- A2) Foster greater inter-industry collaboration.
- A3) Increase communication and collaboration with the visitor industry.
- A6) Form an arts and culture industry cluster working group.
- A7) Hold an island-wide arts and culture festival.
- A8) Improve communications between businesses and Arts & Culture organizations
- A9) Hold an island-wide arts and culture festival
- A10) Form an Arts & Culture industry working group

Goal #5: Ensure sustainable development.

Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.

Action:

- A4) Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment.
- A5) Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community.

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters

Objective #1- Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed

Action:

- A6) Create and maintain an online inventory of arts and culture facilities, events and artists and cultural practitioners
- A7) Conduct a feasibility study for the Kaua'i Center for Culture & Arts
- A8) Conduct a feasibility study for permanent fair ground around the island

Objective #2- Continue to build capacity for economic development in each of the six target industry clusters, as needed

Action:

- A4) Define the role of and establish an arts commission and arts commissioner at the County level.
- A5) Learn from and involve the "living treasures" (arts and culture experts, leaders and elders) in every community.
- A6) Support the organized development and continuation of community Art Nights.
- A7) Construct Kaua'i Center for Culture & Arts
- A8) Create affordable space for halau, exhibitors, and practitioners

- A9) Create exhibit space alternatives
- A10) Acquire, rehab, adapt existing historic facilities for new commercial purposes
- A11) Develop interpretive trails and walking tours

Goal #8: Enhance the community's ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.

Action:

- A1) Increase access to reliable high-speed broadband Internet.

Objective #3: Increase the quality and affordability of life on Kaua'i.

Actions:

- A1) Increase availability of affordable housing.
- A2) Continue to improve public education on the island.

Goals, Objectives & Actions – Arts & Culture

The following Goals, Objectives & Actions have been excerpted from the integrated Goals, Objectives & Actions section in the first half of the report and represent only those items labeled as pertaining to the Arts & Culture industry cluster.

Goal #1: Build, attract and retain a 21st century workforce.

Objective #1: Increase college and career readiness among students in grades K-20.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O1.A1: Strengthen student interest in careers through increased experiential learning, internships, externships and partnerships among schools, higher education institutions and industry companies or organizations. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-17: Form core task force, establish model 2018-19: Recruit initial partners; launch	HIDOE; County WIOA; County KWIB; KCC; KEDB; Keiki to Careers; Junior Achievement; Businesses	\$25,000 to \$50,000 for pilot program \$20,000 per student for a paid 3-month internship	HIDOE KCC Private sector	No
G1.O1.A2: Increase vocational training opportunities for careers that do not require college degrees. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form a core task force; next steps TBD	HIDOE; County WIOA; County KWIB; WorkWise Kaua'i; KCC; KEDB; Businesses	TBD	Private sector HIDOE	No
G1.O1.A4: Develop and open the Kaua'i Creative Technology Center. A&C, S&T	1st Priority	Fundraising, environment study, construction, community engagement toward opening in late 2018	KEDB; County OED; HISBDC – Kaua'i (partner for business incubation) Creative / tech industry	\$20.5 million	EDA, State, private foundations & individuals	Yes
G1.O1.A6: Increase arts education in DOE schools / community. A&C	2nd Priority	Form core task force, next steps TBD	KCC	TBD	TBD	No
G1.O1.A7: Support programs that teach our youth Hawaiian language, art, and culture. A&C						

Objective #2: Increase hiring and retention of Kaua'i residents among target industry cluster companies and organizations to reduce or prevent 'brain drain.'

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O2.A1: Establish and/or expand workforce recruitment programs at local high schools and at Kaua'i Community College. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	2016-20: Form core task force, coordinate/sequence with job creation, conduct and promote/advertise job fairs annually, other next steps TBD	State Dept.of Education, KCC, Industry	TBD for logistics and promotion of job fairs	TBD	No

Objective #3: Increase recruitment and acculturation of top talent from all over the world, including bringing former Kaua'i residents home.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G1.O3.A1: Establish and/or expand top talent recruitment and 'bring Kaua'i home' initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-2020: Form core task force, coordinate / sequence with job creation, develop and launch program	KEDB Businesses	TBD	TBD	No

Goal #2: Encourage innovation and the development of small, mid-size and large businesses and organizations.

Objective #1: Cultivate entrepreneurs and new small businesses/organizations.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G2.O1.A1: Support entrepreneurs in all CEDS target industry clusters with more business training, incubator and accelerator programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, recruit and utilize industry mentors, other next steps TBD	KEDB; HISBDC – Kaua'i (partner for business incubation); Junior Achievement (partner for youth programs)	TBD	TBD	No
G2.O1.A4: Grow the entrepreneur / startup / maker community.	2nd Priority	Form core task force, next steps TBD	TBD	TBD	TBD	No

A&C, S&T						
G2.O1.A5: Increase collaboration with and funding through state and federal entrepreneurship and / or mentorship programs. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	Form core task force, next steps TBD	KCC HI SBDC Kaua'i North Shore Venture Gang and Hanalei Rotary (potential partners)	TBD	TBD	No
G2.O1.A6: Create "Maker Spaces" A&C,						

Goal #3: Increase adaptability and resilience, particularly regarding natural disasters and climate change.

Objective #1: Ramp up steady-state resilience initiatives to bolster Kaua'i's long-term economic durability.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O1.A1: Develop natural disaster and climate change mitigation, adaptation, preparedness and recovery plans for Kaua'i's major industries, including tourism and the six target industry clusters, and engage the community. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD; adapt / build upon SBDC Hawaii Disaster Guide (Disaster Recovery Guide for Business)	American Red Cross HISBDC – Kaua'i	TBD	TBD	No
G3.O1.A2: Identify and cultivate the next generation of leaders in each industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB as facilitator Industry businesses and organizations	TBD	TBD	No

Objective #2: Ramp up responsive resilience initiatives to enable more rapid recovery after an incident.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G3.O2.A1: Establish a system for swift communication, coordination and mobilization of public and private sectors in the event of a natural disaster. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	County, KIUC, PMRF, Civil Defense	TBD	TBD	No

Goal #4: Increase collaboration.

Objective #1: Increase collaboration both within and across industries.

Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O1.A1: Form core task forces to champion CEDS Actions and other initiatives. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A2: Foster greater inter-industry collaboration. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A3: Increase communication and collaboration with the visitor industry. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	KEDB	TBD	TBD	No
G4.O1.A6: Form an arts and culture industry cluster working group. A&C	1st Priority	TBD	TBD	TBD	TBD	No
G4.O1.A7: Hold an island-wide arts and culture festival. A&C	2nd Priority	TBD	TBD	TBD	TBD	No

G4.O1.A8: Improve communications between businesses and Arts & Culture organizations A&C						
G4.O1.A9: Hold an island-wide arts and culture festival A&C						
G4.O1.A10: Form an Arts & Culture industry working group A&C						
Objective #2: Increase communication, engagement and collaboration between industry cluster businesses/organizations and their key stakeholders such as public officials and community members with diverse viewpoints.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G4.O2.A1: Build capacity for industry cluster businesses and organizations to perform strategic communications, community building and/or advocacy to move initiatives forward, reach compromise and find synergies. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD	TBD	TBD	TBD	No
G4.O2.A2: Increase engagement with public officials at the local, state and federal levels to advance initiatives and policies that will benefit Kaua'i. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No
G4.O2.A3: Increase statewide, national and international partnerships and collaborations. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	Industry businesses and organizations	TBD	TBD	No

Goal #5: Ensure sustainable development.

Objective #5: Preserve, protect and manage utilization of Kaua'i's natural resources.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G5.O5.A4: Support Complete Streets initiative and other initiatives to increase livability and resilience in the built environment. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No
G5.O5.A5: Investigate the Small Town America Main Street Program as a means of revitalizing the Rice Street Business Community. A&C, F&A, H&W, S&T, S&R, ST&P	2nd Priority	TBD	TBD	TBD	TBD	No

Goal #7: Develop plans and continue to build capacity for economic development in each of the six target industry clusters.

Objective #1: Assess the economic potential and/or develop plans for economic development in each of the six target industry clusters, as needed.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G7.O1.A6: Create and maintain an online inventory of arts and culture facilities, events and artists and cultural practitioners. A&C	2nd Priority	TBD	County arts commissioner or arts nonprofit	\$40,000 to create the inventory; cost for updates TBD	TBD	No
G7.O1.A7: Conduct a feasibility study for the Kaua'i Center for Culture & Arts A&C						

G7.O1.A8: Conduct a feasibility study for permanent fair ground around the island A&C,						
Objective #2: Continue to build capacity for economic development in each of the six target industry clusters, as needed.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G7.O2.A4: Define the role of and establish an arts commission and arts commissioner at the County level. A&C	1st Priority	2016-20: Develop job descr. & budget; propose to County Council	County	TBD; should include salary and program budget	TBD	No
G7.O2.A5: Learn from and involve the “living treasures” (arts and culture experts, leaders and elders) in every community. A&C	2nd Priority	TBD	TBD	TBD	TBD	No
G7.O2.A6: Support the organized development and continuation of community Art Nights. A&C	2nd Priority	TBD	TBD	TBD	TBD	No
G7.O2.A7: Construct Kaua`i Center for Culture & Arts A&C						
G7.O2.A8: Create affordable space for halau, exhibitors, and practitioners A&C						
G7.O2.A9: Create exhibit space alternatives A&C						
G7.O2.A10: Acquire, rehab, adapt existing historic facilities for new commercial purposes A&C						

G7.02.A11: Develop interpretive trails and walking tours A&C						
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Goal #8: Enhance the community's ability to thrive.

Objective #2: Increase the availability and utilization of technology to facilitate greater learning, collaboration, communication and connectivity on island and between Kaua'i and the world.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O2.A1: Increase access to reliable high-speed broadband Internet. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016-20: Assess access and capacity; identify next steps and implement	State Dept. of Business, Economic Development & Tourism (DBEDT) County	TBD	U.S. Dept. of Agriculture	No
Objective #3: Increase the quality and affordability of life on Kaua'i.						
Action	Priority	Steps Required and Time Frame	Key Implementers	Estimated Costs	Funding Sources	EDA Eligible?
G8.O3.A1: Increase availability of affordable housing. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	2016: Completion of County General Plan 2017-2020: Possible policy changes and construction of affordable housing	County Major landowners Developers	TBD	Private sector	No
G8.O3.A2: Continue to improve public education on the island. A&C, F&A, H&W, S&T, S&R, ST&P	1st Priority	TBD in line with HIDOE's initiatives	HIDOE	TBD	HIDOE Federal grants Private sector	No

Arts & Culture Metrics:

- Number of jobs created
- Increase in industry cluster earnings and/or earnings per employee
- Increase in average annual wages and/or earnings per employee
- Increase in traded clusters, i.e., goods and services being exported out of the County
- Increase in workforce readiness as indicated by high school and college graduation rates and other academic indicators

Core Task Force Suggested Members:

The following is an alphabetical list of organizations identified by the focus group as potential participants and collaborators in this industry cluster's activities. However, the organizations outlined in red have been identified by the focus group as those that should play a key role in the Core Task Force to be formed for this cluster, based on the Core Task Force Characteristics outlined on page 33:

- County of Kaua`i – Office of Economic Development
- Garden Island Arts Council
- Kaua`i Economic Development Board
- Kaua`i Visitors Bureau

Evaluation Framework

Evaluation of the progress toward and achievement of the Goals, Objectives and Actions can be tracked by metrics such as those mentioned in the integrated Goals, Objectives and Actions section table.

Broadly speaking, progress regarding the CEDS can be measured by metrics such as:

- Number of jobs created
- Increase in industry cluster earnings and / or earnings per NAICS code description
- Increase in average annual wages and / or earnings per employee
- Increase in traded clusters, i.e., goods and services being exported out of the County
- Increase in workforce readiness as indicated by high school and college graduation rates and other academic indicators

In addition, the numerous stakeholders and organizations who were involved in the Kaua'i CEDS update for 2016-2020 can utilize and define other metrics as relevant.

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COUNTY OF MAUI COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY (CEDDS)

September 2016



This report was prepared by MEDB and funded by the County of Maui 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)

Table of Contents

I. Executive Summary	5
2. Maui County CEDS Process: Methodology	9
3. Maui County CEDS Vision Statement	11
4. Maui County Economic Background	13
Transportation	14
Utilities	16
Environment and Resources	18
Infrastructure	19
Population	21
Economic History	27
Overview to 2000	27
2000 to the Present	29
Future Outlook	31
Labor Force Trends and Sector Composition	32
Unemployment	35
Income Data	36
Maui’s Housing Market	38
5. SWOT: Summary	41
Strengths	41
Weaknesses	43
Opportunities	45
Threats	47

6. Strategic Direction and Action Plan: Priority Goals and Strategies	49
Agriculture	50
Construction	54
Creative Industries	59
Energy	64
Health and Wellness	68
Science, Technology and Innovation	73
Sport and Recreation	78
Visitor Industry	81
Hāna	86
Lānaʻi	89
Molokaʻi	93
Evaluation and Performance Measures.....	97
Appendix 1: Survey of Residents Attending the 2015 Maui Fair	99
Appendix 2: Focus Group Participants	105
Appendix 3: Vision Statements for Hāna and Molokaʻi	109
Appendix 4: Supporting Economic Data Analysis for Maui County	111
Appendix 5: Current Resiliency Plans in Maui County and Beyond.....	129

EXECUTIVE SUMMARY

- 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 Hawaiʻi CEDS document that combines and integrates findings for each island.

Maui County CEDS Process: Methodology

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 Vencel, 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

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.

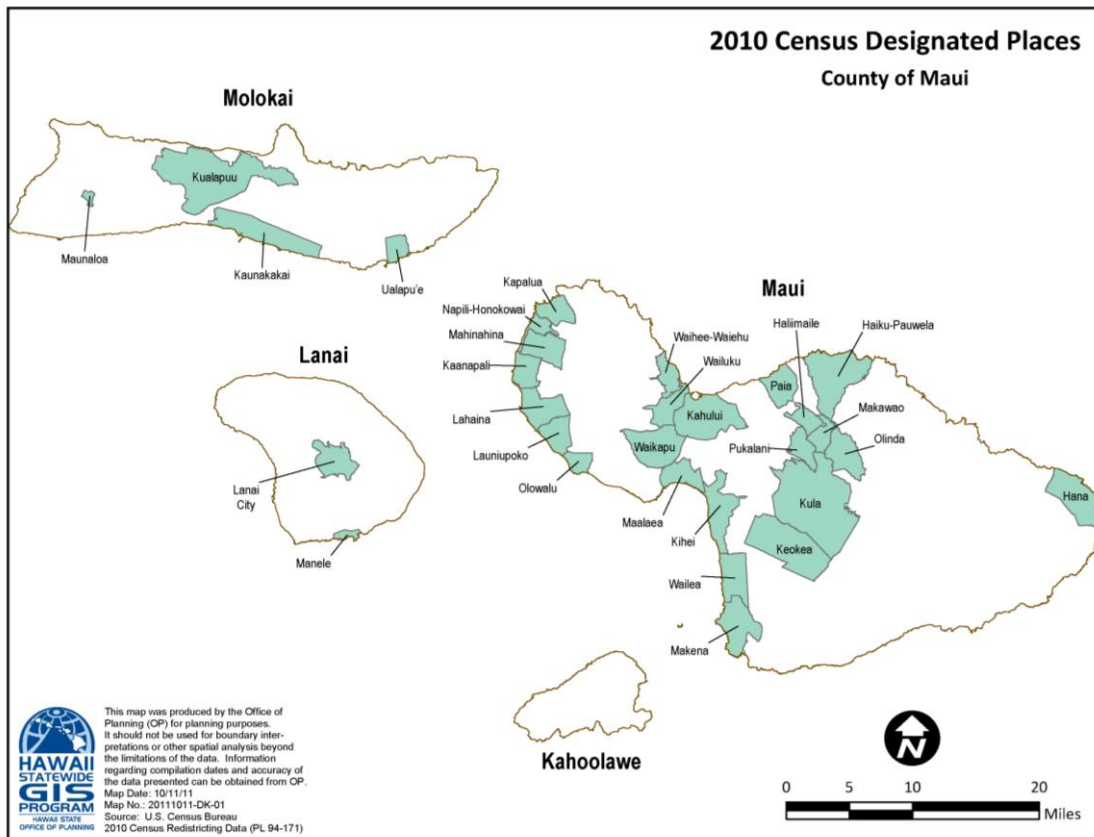
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MAUI COUNTY: ECONOMIC BACKGROUND

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 products¹, 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.

¹ 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.² 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

² 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 2013³. 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 water⁴. 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

³ DBEDT Strategic Industries data

⁴ 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 urban⁵. 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 HUBZone⁶ 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,

⁵ Maui County Data Book, 2015

⁶ 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 year⁷ 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 2015⁸, 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 year⁹.

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 households¹⁰. 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'i¹¹. 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

⁷ DBEDT data for 2015.

⁸ Maui News, November 21, 2015.

⁹ Maui County Data Book, 2015.

¹⁰ US Census Bureau.

¹¹ 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 schools¹².

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

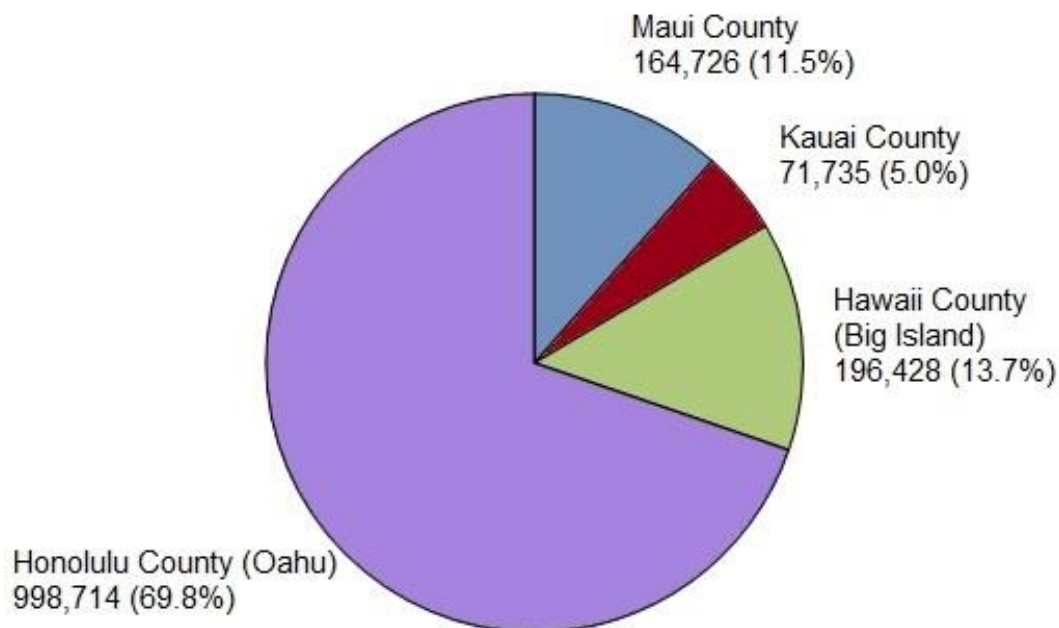
¹² Maui County Data Book, 2015

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)¹³.

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



Total Population: 1,431,603

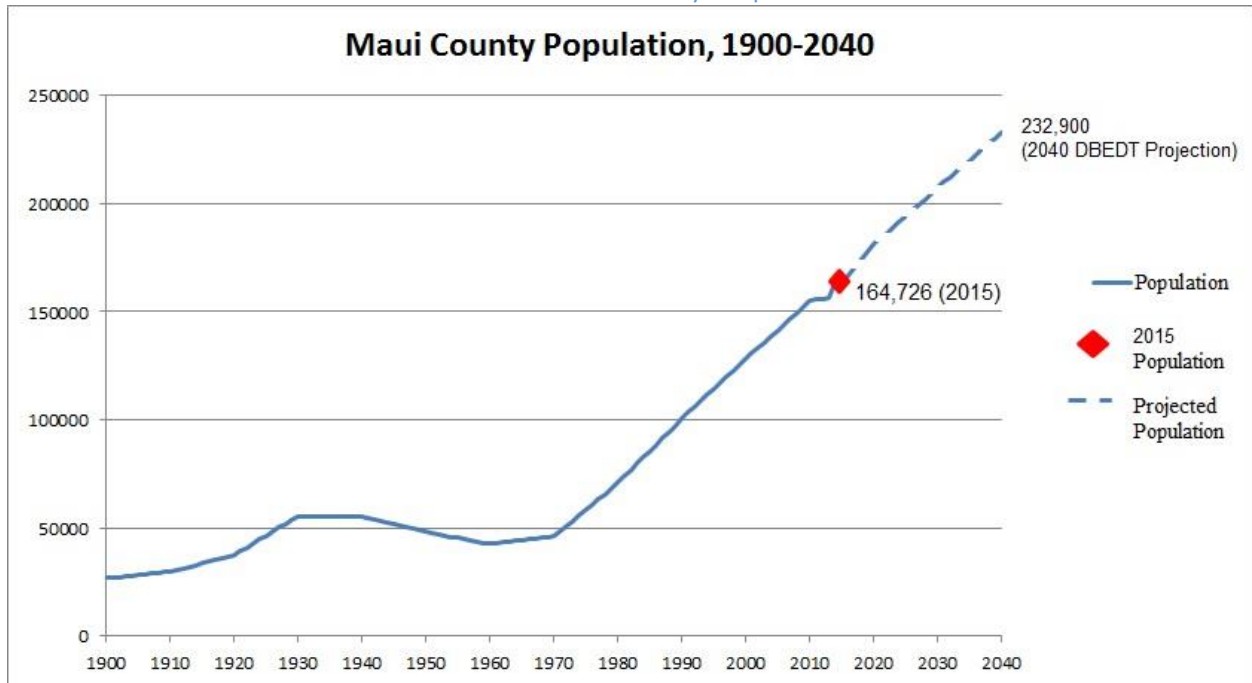
Source: DBEDT

Since Hawai'i became the 50th 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).

¹³ 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
1900	26,743	11.3
1910	29,762	25.6
1920	37,385	25.6
1930	55,541	48.6
1940	55,534	0.0
1950	48,179	-13.2
1960	42,576	-11.6
1970	45,984	8.0
1980	70,847	54.1
1990	100,504	41.9
2000	128,241	27.6
2010	155,068	20.9
2015	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.¹⁴

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

Year	1990	2000	2010
Maui (island)	91,491	117,044	144,588
Moloka'i	6,587	7,404	7,345
Lāna'i	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
1990-1995	1.5%	3.0%	1.0%	2.0%	2.9%
1995-2000	0.2%	1.8%	-0.1%	0.5%	1.2%
2000-2005	0.9%	1.5%	0.6%	1.0%	2.0%
2005-2010	1.0%	1.2%	0.9%	1.3%	1.2%
2010-2015	1.2%	2.8%	1.0%	1.4%	1.2%
1990-2015	1.2%	2.6%	0.8%	1.6%	2.5%

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

¹⁴ 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>						
White	33.9%	34.4%	35.9%	24.3%	24.7%	25.7%
Asian	31.1%	28.8%	28.7%	41.6%	38.6%	39.1%
Filipino	17.0%	17.6%	n/a	14.1%	14.5%	n/a
Japanese	10.1%	7.4%	n/a	16.7%	13.6%	n/a
Chinese	0.9%	0.7%	n/a	4.7%	4.0%	n/a
Korean	0.6%	0.6%	n/a	1.9%	1.8%	n/a
Vietnamese	0.3%	0.3%	n/a	0.6%	0.7%	n/a
Other Asian	2.2%	2.2%	n/a	3.6%	3.9%	n/a
Native Hawaiian & Pacific Islander	10.7%	10.4%	10.7%	9.4%	10.0%	10.2%
Nat. Hawaiian	8.9%	7.4%	n/a	6.6%	5.9%	n/a
Tongan	0.7%	n/a	n/a	n/a	n/a	n/a
Micronesian	0.6%	n/a	n/a	n/a	n/a	n/a
Samoaan	0.2%	0.3%	n/a	1.3%	1.3%	n/a
Other	0.3%	2.7%	n/a	1.4%	2.7%	n/a
African American	0.4%	0.6%	0.9%	1.8%	1.6%	1.7%
American Indian or Alaska Native	0.4%	0.4%	0.6%	0.3%	0.3%	0.4%
Some Other Race	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%
Hispanic or Latino (of any race)	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.

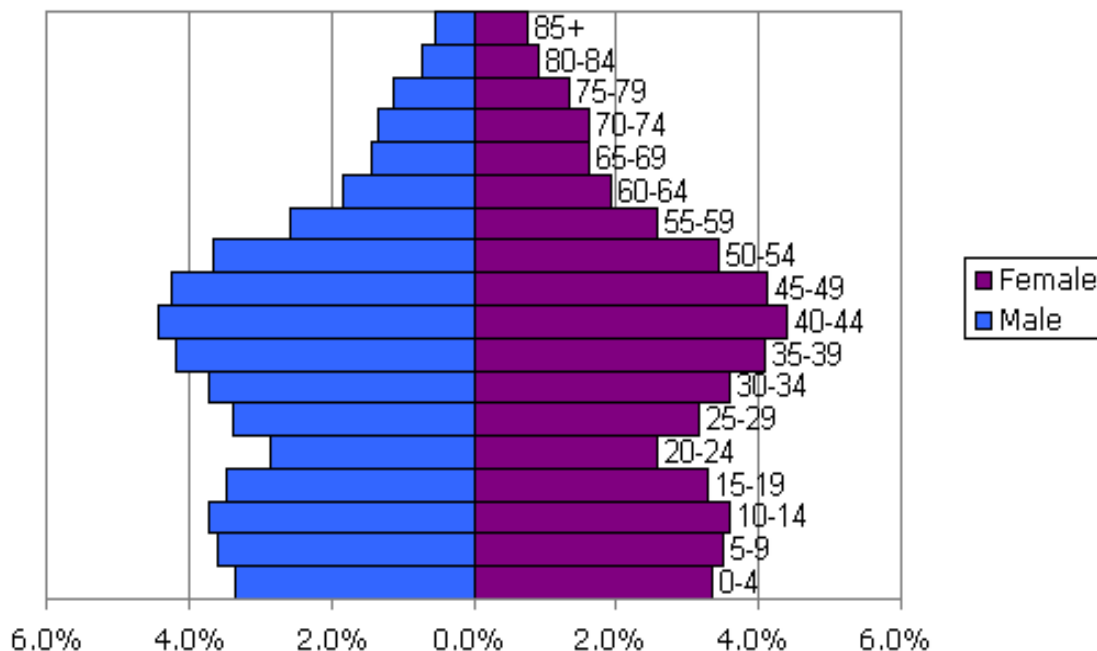
Each island in Maui County has a very different racial and ethnic composition. 2010 Census data showed that Maui island has a plurality of Caucasians (36%); Moloka'i has a plurality of those reporting themselves as two or more races (41%) and Native Hawaiians and Pacific Islanders

(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 2000¹⁵, 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



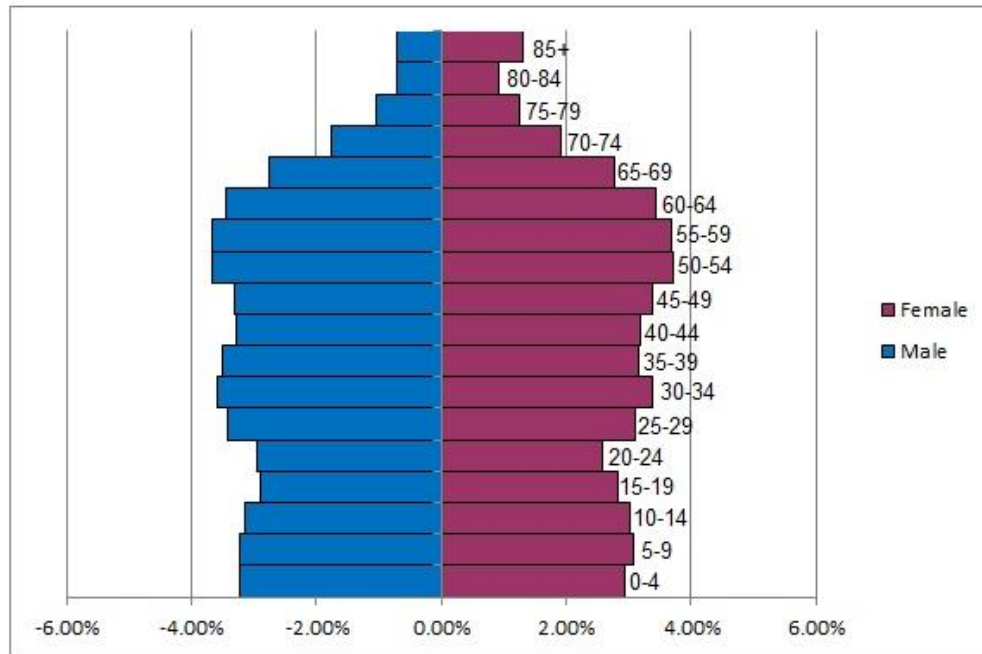
Source: 2000 Census, U.S. Census Bureau

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.

¹⁵ 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 54,446¹⁶. 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* population¹⁷ 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.

¹⁶ DBEDT, [2014 Annual Visitor Research Report](#).

¹⁷ 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

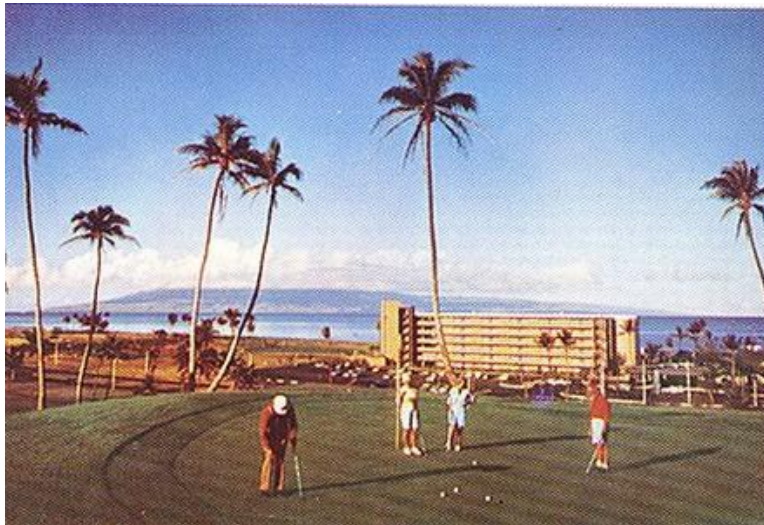
By the time Hawai'i became the 50th State in 1959, the resident population of Maui County stood at 42,576, a decline of almost 13,000 (or 23%) compared to 1940. The state was to be transformed by a landmark event that took place during the year of Statehood – the first Boeing 707 jet landed in Honolulu, 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 21st 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 21st 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 1st 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 Data¹⁸, Maui County, 2000-2016

Year (June)	Total Labor Force	Number Employed	Number Unemployed	Unemployment Rate (%)
2000	70,950	67,800	3,150	4.5%
2001	73,250	70,000	3,250	4.5%
2002	71,550	68,350	3,200	4.5%
2003	71,650	68,350	3,300	4.6%
2004	73,600	70,850	2,750	3.7%
2005	75,700	73,400	2,300	3.0%
2006	77,600	75,150	2,450	3.2%
2007	79,550	77,200	2,350	2.9%
2008	79,950	76,100	3,850	4.8%
2009	77,050	69,600	7,450	9.7%
2010	79,850	72,650	7,150	9.0%
2011	81,600	74,700	6,900	8.4%
2012	79,900	74,150	5,700	7.1%
2013	80,150	75,750	4,400	5.5%
2014	83,200	79,000	4,200	5.1%
2015	84,200	80,500	3,750	4.4%
2016¹⁹	85,950	83,050	2,900	3.4%

Source: State of Hawai’i DLIR

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

¹⁹ 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 employees²⁰. 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.

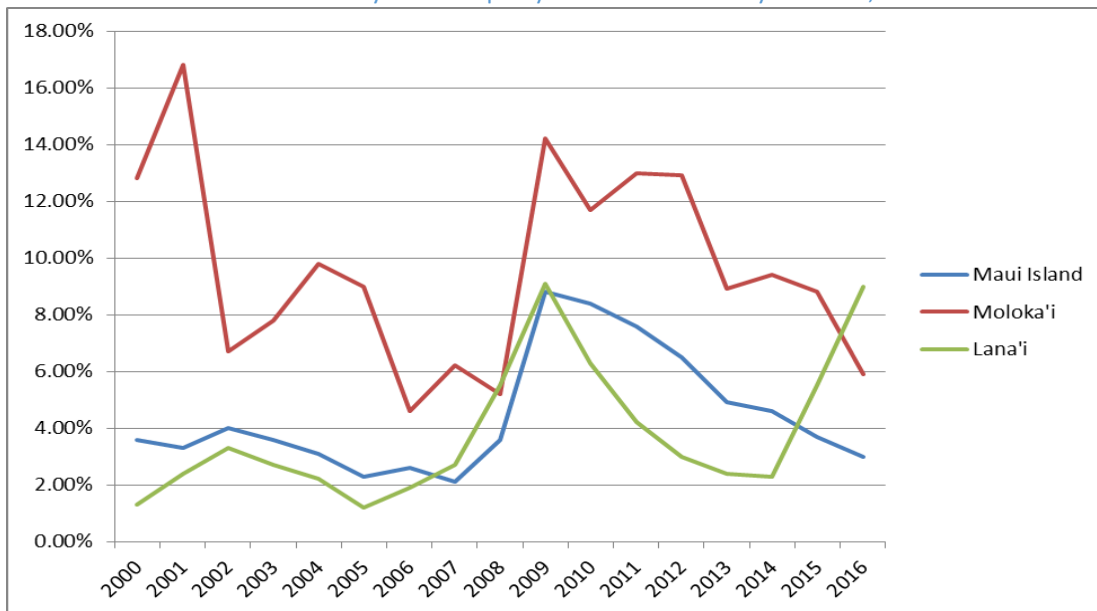
Data relating to each economic cluster identified for Maui County is presented in Section 6 below.

²⁰ 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 Rate²¹ by Island, 2000-2016



Source: DLIR

²¹ 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)²², Maui County, 2014

Industry	Employers/Units	Av. Employment	Av. Ann. Wage
Total	5,166	72,543	
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 ²³	79	590	\$51,229
Real Estate & Housing ²⁴	326	1,933	\$43,743
Healthcare & Social Assistance ²⁵	442	5,145	\$43,738
Natural Resources ²⁶	67	1,502	\$42,663
Average Annual Wage			\$40,469
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) ²⁷	528	2,747	\$31,018
Retail Trade	761	9,333	\$29,538
Admin & Waste ²⁸	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

²² North American Industry Classification System

²³ Publishing, Film, Broadcasting, Telecommunications, Data Processing, and other information services

²⁴ Includes rentals

²⁵ Covered by Hawaii Employment Security law and unemployment compensation

²⁶ Includes agriculture and mining

²⁷ Repair and maintenance, personal and laundry services, private services, membership organizations

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

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

Maui's Housing Market

The existing lack of affordable housing²⁹ 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 newsletter³⁰ 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 County³¹. 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

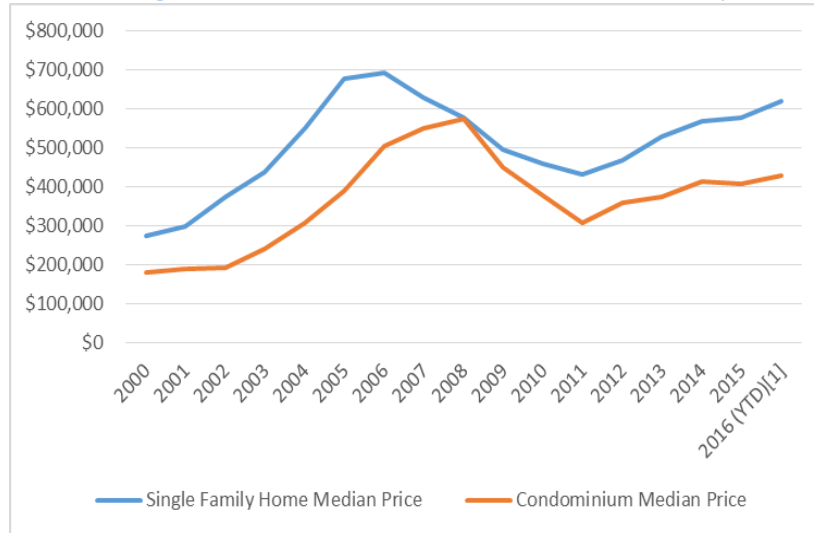
²⁹ According to the US Census Bureau, housing is defined as affordable when housing costs are 30% or less of household income.

³⁰ HUD User, PD&R Edge newsletter, 2015.

³¹ 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.”³² 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.

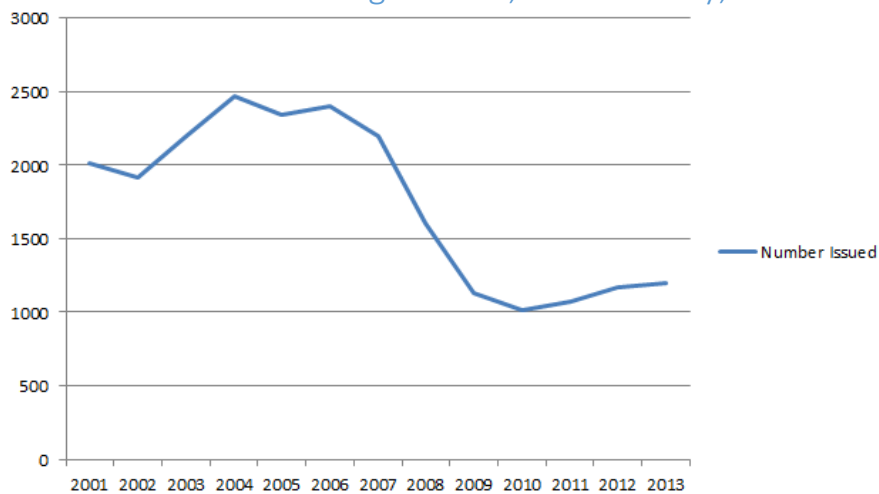
Chart 3: Housing Sales and Median Price, Maui County, 2000-2016



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

³² The Maui News, Sunday July 17, 2016.

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MAUI COUNTY CEDS: SWOT ANALYSIS

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

Category:	Most Important Factors Cited:
Economic (18)	Limited job opportunities, low wage jobs, failing agriculture, food & oil dependence, burdensome regulation, business costs
Community and Education (13)	Drug addiction, homelessness, education, entrenched systems, distrust of government, divisive community, extremist positions
Cost of Living (12)	Cost of living, expensive
Infrastructure (12)	Roads, inadequate housing, transportation, electricity, reliance on state investment, lack of alternative air and sea ports
Medical (7)	Inadequate expertise, services/health care, facilities
Growth (4)	Anti-growth, anti-tech, anti-business growth, fragile consensus on what growth means
Other (4)	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:
Economic (45)	Fossil fuel supply & cost, food & resource dependence, loss of sugar, shipping, global economy, external shocks, isolation
Community Issues (14)	Uneducated public/activists, anti-science, failing USA emphasis on STEM ed., homelessness, resistant to change, vocal minority
Tourism (14)	Travel disruption, losing tourism cachet, terrorism
Environmental (14)	Natural disasters, invasive species, agricultural pests, global climate change, environmental change
Other (13)	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

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-based³³ 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 resilience³⁴ 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

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

³⁴ 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 imported³⁵, 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
Job Count	1,950	1,800	2,050	1,500	1,700	1,650	1,750

Year	2007	2008	2009	2010	2011	2012
Job Count	1,750	1,700	1,700	1,450	1,600	1,600

Source: DLIR

Numbers employed in the agriculture sector between 2000 and 2012³⁶ 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%³⁷. In 1960, 17% of the population of Maui lived on plantations³⁸ and 33% of the employed labor force worked in agriculture statewide.³⁹ 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

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

³⁶ DLIR data on agricultural employment was not published after 2012

³⁷ 1960 Census of the Population

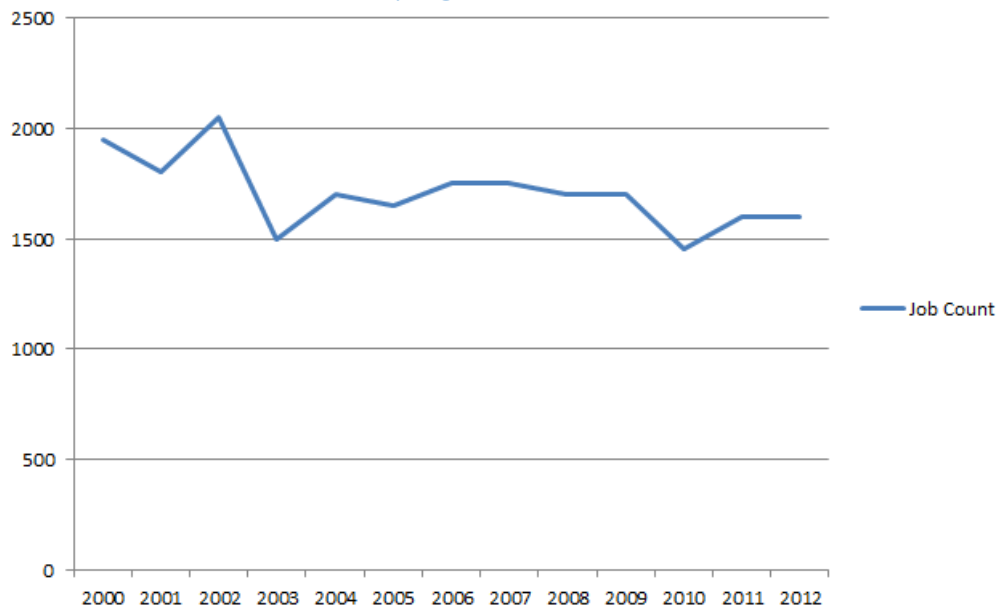
³⁸ General Plan 2030, Maui Island Plan. County of Maui Department of Long-Range Planning. No residents have lived on plantations in recent decades.

³⁹ 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)				
Crops (including greenhouse and nursery)	116,084	116,645	132,058	181,480
Livestock, Poultry and their products	12,301	7,866	7,268	6,620
Total	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 employees⁴⁰. 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.

⁴⁰ 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 report⁴¹ 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
Job Count	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
Job Count	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.

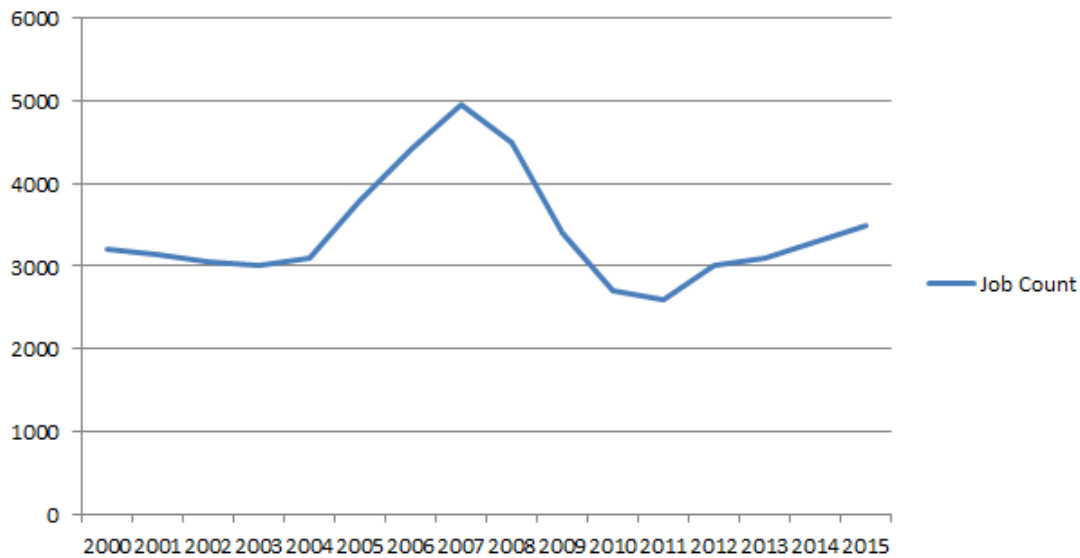
A jobs forecast published in the fall of 2015 by DLIR⁴² predicted continued growth in construction, especially in skilled trades. Infrastructure construction continues on Maui with airport improvements -- notably, the airport access road and rental car facility and the development of the Kahului Business 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 analysis⁴³ 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.

⁴¹ Construction and Hawaii’s Economy, DBEDT, 2014.

⁴² Hawaii Labor Market Dynamics, DLIR, 2015.

⁴³ 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 Bureau⁴⁴.

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) ⁴⁵	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

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

⁴⁵ Through May 2016

and the demand for housing⁴⁶. 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

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

Source: DBEDT

⁴⁶ 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 bring⁴⁷. 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	2,073	2.6%

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

⁴⁷ [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>
1. Art, Design, Entertainment		
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
2. Personal Care and Service Occupations		
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 2015⁴⁸, which combined NAICS⁴⁹ data with estimates provided by Economic Modeling Specialists, Inc. (EMSI) that include proprietors and

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

⁴⁹ 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
TOTAL CREATIVE INDUSTRY	Transtn.	5,695	6,173	0.8%	\$31,250

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 2007⁵⁰ 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

⁵⁰ 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 News⁵¹ 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.

⁵¹ 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.⁵²

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 2016⁵³. A DBEDT report⁵⁴ 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

⁵² MECO website.

⁵³ Number provided by MECO by personal communication.

⁵⁴ 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
Firm Generation (TOTAL)	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
Independent Power Producers (TOTAL)	4	
HC&S	4	Bagasse, Coal, Hydro
Variable Generation (TOTAL)	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) ⁵⁵	Power Sold (1,000kWh)	Average Annual Use (kWh) ⁵⁶	
				Residential	Other
2000	57,601	272.6	1,105,463	7,816	87,836
2005	63,901	254.9	1,252,113	8,376	85,550
2010	67,739	284.2	1,191,559	7,501	79,969
2013	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.

⁵⁵ Generating and Firm Purchased.

⁵⁶ 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 Plan⁵⁷ 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%)⁵⁸. 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

⁵⁷ Maui County General Plan 2030, Maui Island Plan

⁵⁸ 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.)⁵⁹ 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 2018⁶⁰.

⁵⁹ Data from MMMC’s Partnership Proposal Packet, Maui Region, MMMC website

⁶⁰ 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>
1. Healthcare Practitioners and Technical Occupations		
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
2. Healthcare Support Occupations		
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 ⁶¹	50	\$70,770
Medical and Health Service Managers	140	\$63,160
Fitness Trainers and Aerobics Instructors ⁶²	n/a	\$55,990
Child, Family, and School Social Workers ⁶³	180	\$58,340
Medical Secretaries ⁶⁴	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.

⁶¹ First two listings Included in Management occupations

⁶² Included in Personal Care and Service occupational grouping

⁶³ This and following occupations included in Community and Social Service occupational grouping

⁶⁴ 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 HubZone⁶⁵ 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 work⁶⁶. The job count data are also presented in Chart 7, below. In terms of State

⁶⁵ The Small Business Administration HUBZone designation (Historically Underutilized Business Zone)

⁶⁶ 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

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

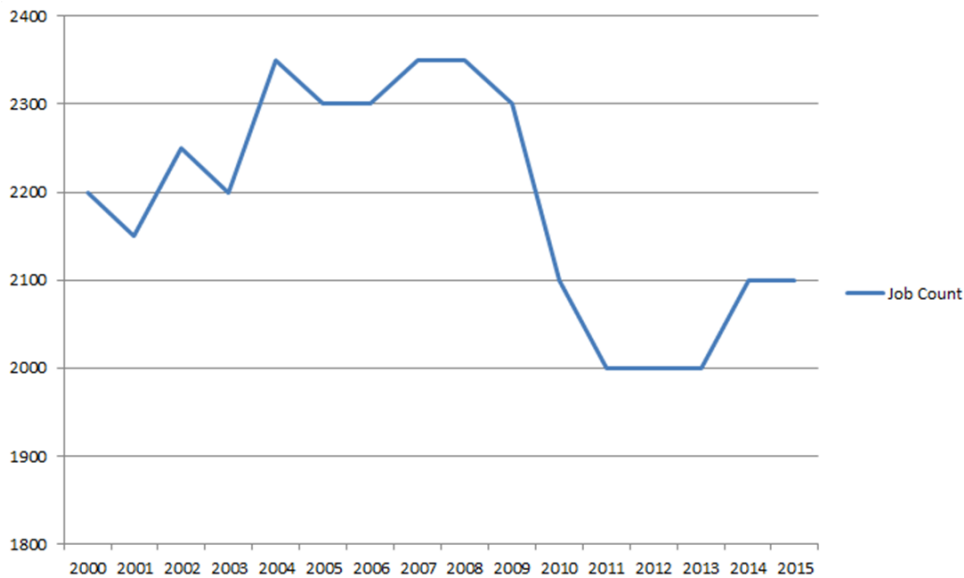
Table 23: Professional, Scientific & Technical Services Job Count, Maui County, 2000-2015

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>
Coaches and Scouts	200	\$48,640
Recreation Workers	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 article⁶⁷ 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

⁶⁷ <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 downturn⁶⁸.

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>)

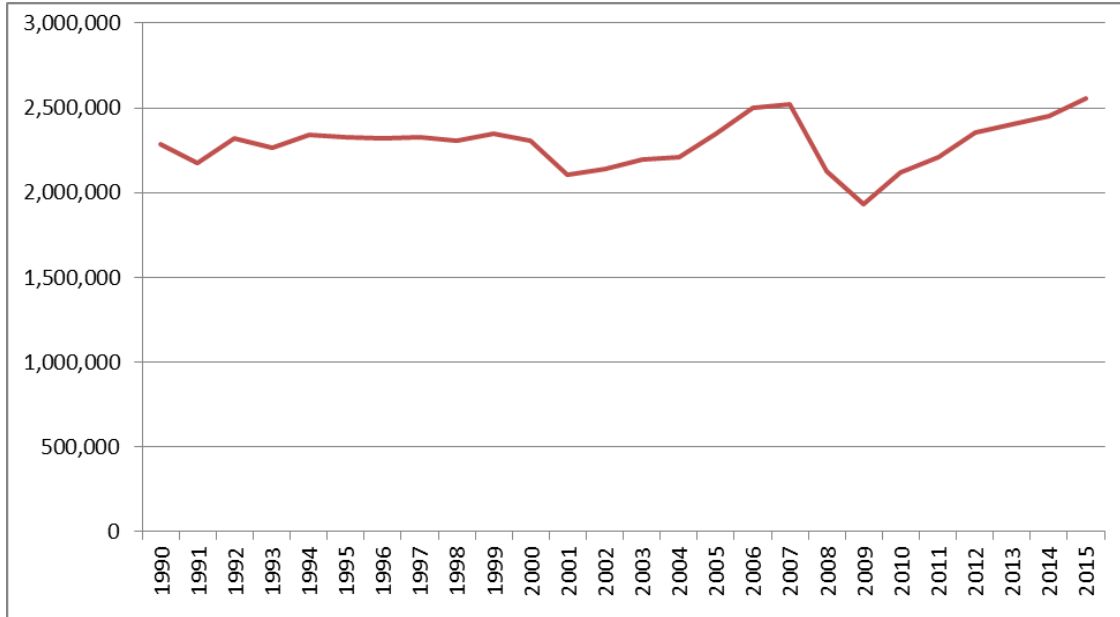
Visitor numbers for Maui County have steadily increased since the downturn, finally returning to the peak levels recorded in 2007 of more than 2.5 million (see Figure 15, Appendix 4). With hotel occupancy rates exceeding 70% there is some room for further increase in visitor numbers as Figures 16 and 17 in Appendix 4 suggest. A recent HTA report⁶⁹ for 2015 noted an increase of 15% in overall number of lodging units (rooms) over the previous year, due mostly

⁶⁸ Maui News, 8/22/09.

⁶⁹ 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
Average Annual Wage (Maui County)		\$40,469
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.

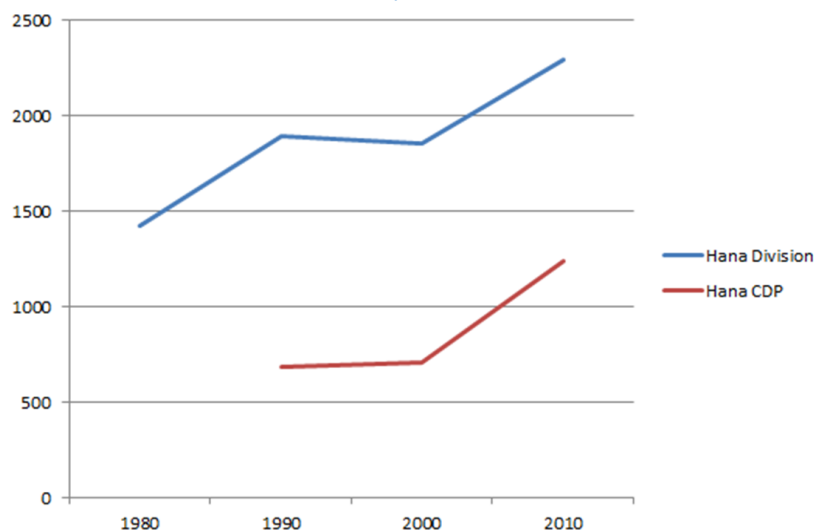
Table 29: Hana Population (Hana Division and CDP), 1980-2010

Year	Hana Division	Hana CDP ⁷⁰	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

⁷⁰ 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.

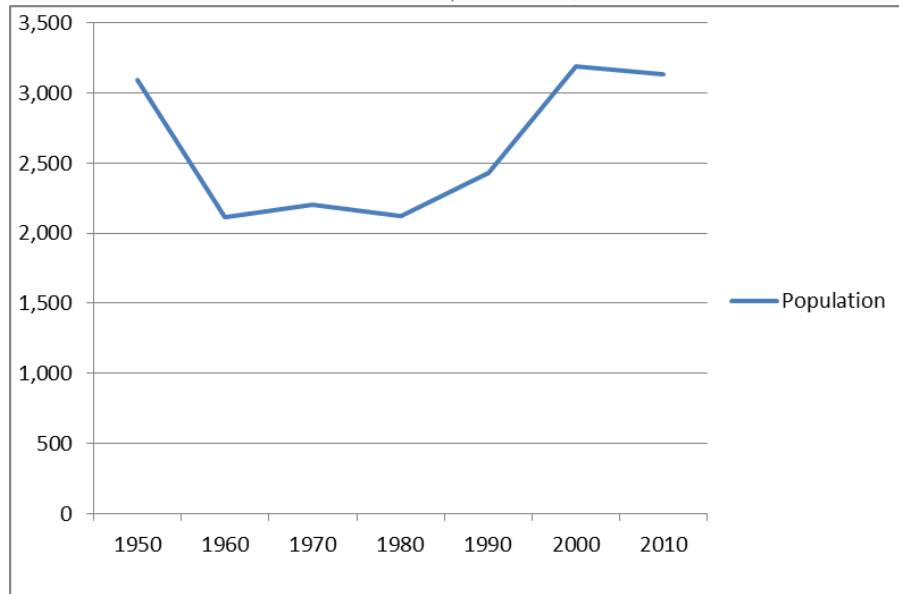
Table 31: Lāna‘i Population, 1950-2010

Year	Population	% Change
1950	3,091	
1960	2,115	-35%
1970	2,204	+4%
1980	2,119	-4%
1990	2,426	+15%
2000	3,193	+32%
2010	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%
Total	100%	100%

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
Job Count	1800	1800	1750	1700	1650	1650	1750	1750

Year	2008	2009	2010	2011	2012	2013	2014	2015
Job Count	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
Private:	1,200
Leisure and Hospitality	700
Trade, Transport, Utilities	100
Financial Activities	100
Professional/Business Services	200
Other	100
Government	200
Total	1,400

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
Accommodation, Food Services	574
Management (companies, business)	118
Arts, Entertainment, Recreation	55
Retail and Wholesale Trade	47
Real Estate, Rental/Leasing	47
Healthcare and Social Assistance	27
Construction	20
Administration, Waste Management	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%
Total Primary Jobs	1,454	100%

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
TOTAL Non-Agriculture	1,800	1,750	1,600	1,500	1,600	1,600	1,700
Private Sector	1,200	1,750	1,600	1,500	1,600	1,600	1,700
Goods Producing	*	*	*	*	*	*	100
Natural Resources, Construction	**	**	*	*	*	*	*
Manufacturing	**	**	**	**	**	**	**
Service Providing							
Retail Trade	200	200	200	200	200	200	200
Transportation & Utilities	*	*	*	*	*	*	*
Education & Health Services	400	350	300	300	300	400	300
Leisure & Hospitality	350	200	200	200	200	200	200
Financial Activities	*	*	*	*	*	*	*
Other Services	100	100	100	100	100	100	*
Government	600	600	500	500	500	500	500
Federal	*	*	*	*	*	*	**
State	400	400	400	300	300	300	300
State Education (DOE & UH)	200	200	200	200	200	200	200
Local (County of Maui)	200	200	200	200	200	100	100
Agriculture	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

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 93rd 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?

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.

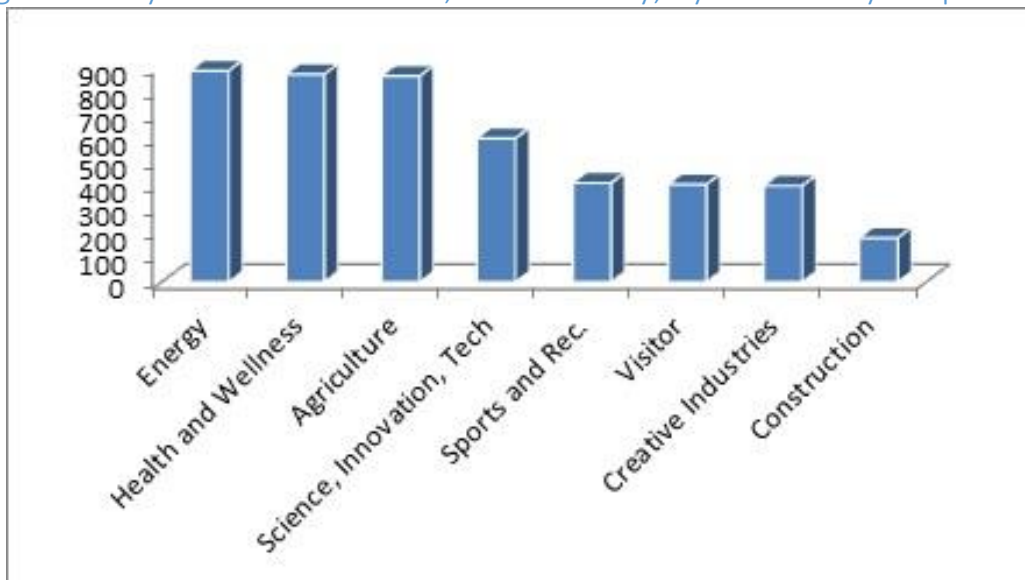
Of the total who provided information on years lived on Maui (1,242), a majority (54%) had lived here for 24 years or less; this number includes those born on Maui aged under 25. A further 33% had lived here for between 25 and 49 years, and 13% for at least 50 years.

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

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

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

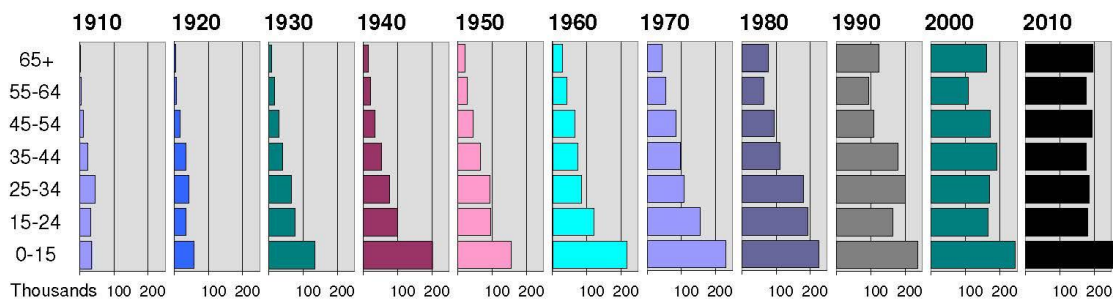
Consultant economist Paul Brewbaker (TZ Economics) briefed the Maui County CEDS Strategy Committee in October 2015 on strategic issues affecting the Maui County economy. Excerpts from his presentation are included in this appendix.



Figure 1: Population Age Group profiles, Hawaii, 1910-2010



Hawaii population by age cohort

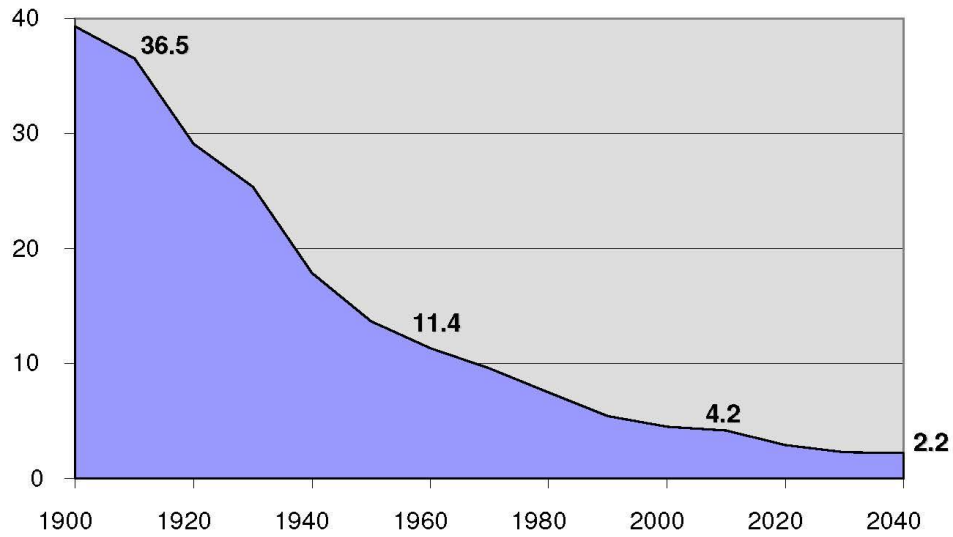


Slide copyright 2015 TZ Economics

Sources: Hawaii DBEDT, U.S. Bureau of the Census (decennial enumerations compiled by TZ Economics)

64

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

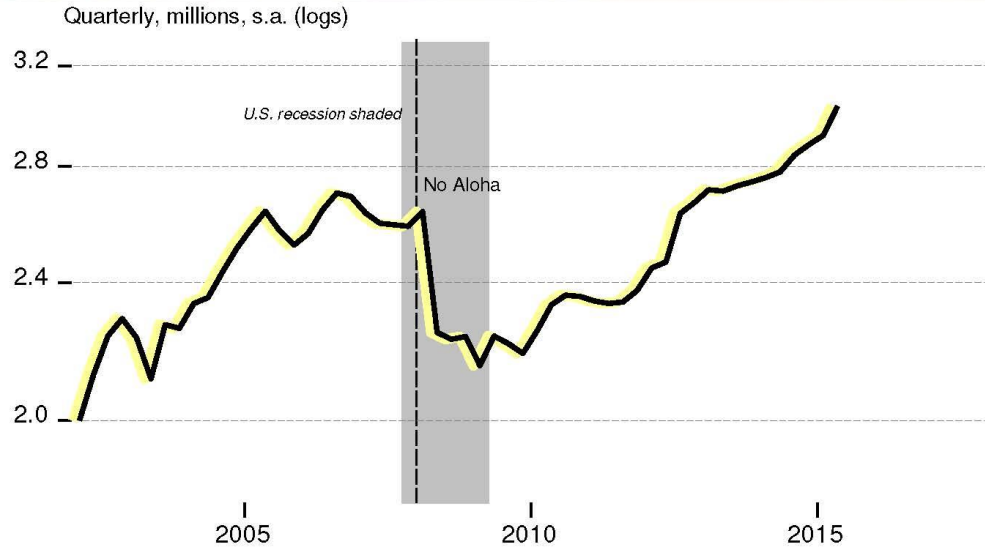


Slide copyright 2015 TIZ 

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

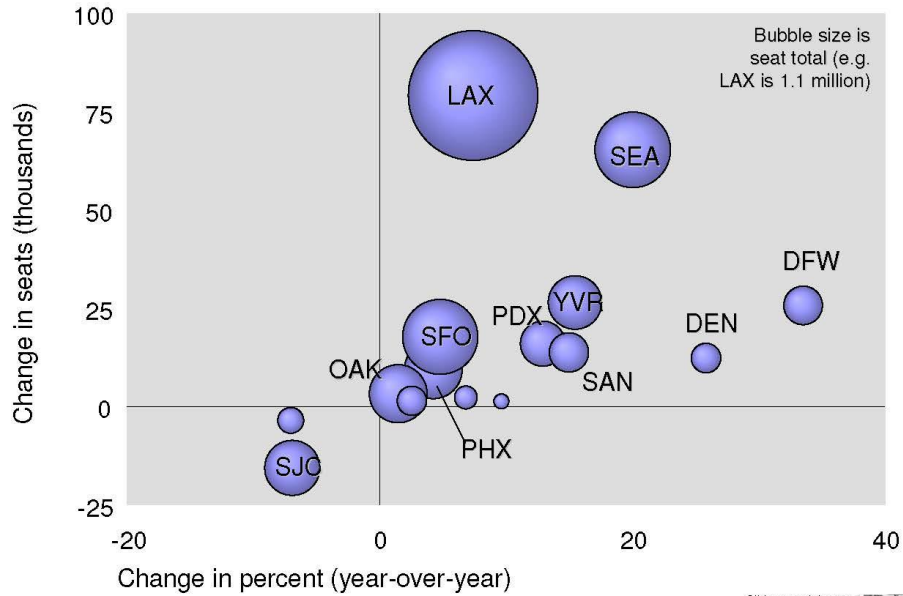


Slide copyright 2015 TZE

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



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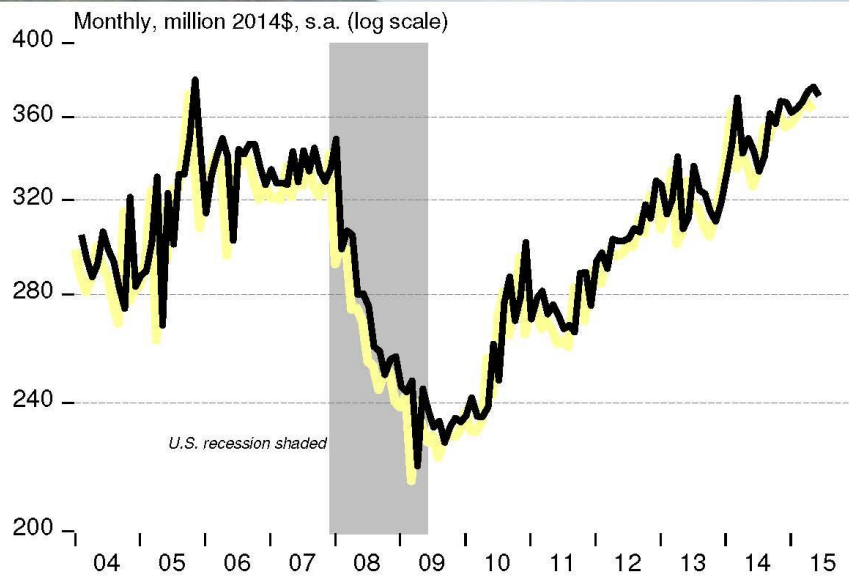
Sources: Annual data from Hawaii Tourism Authority, proportionate increase for year 2014: 8.2%

11

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

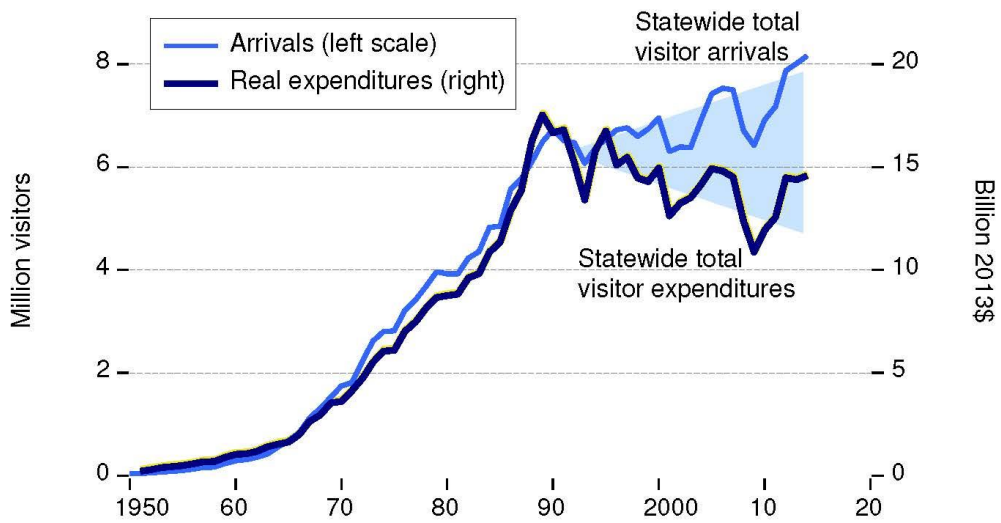


Slide copyright 2015 TZE

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

9

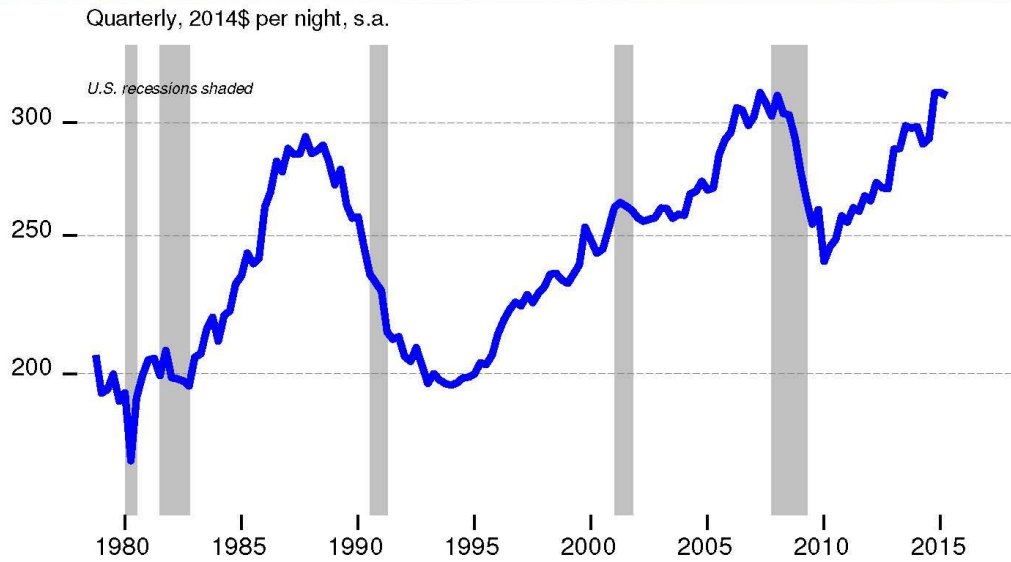
Figure 6: Visitor Expenditures and Arrivals, Hawaii, 1950-2013



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

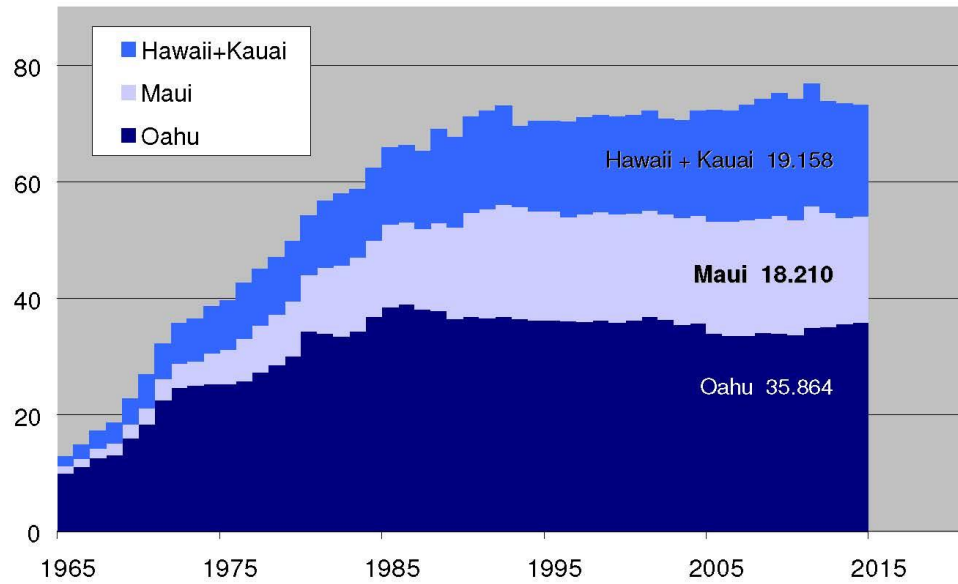


Slide copyright 2015 TZ

Source: Pannell Kerr Forster, Hospitality Advisors LLC, BLS; deflation, seasonal adjustment by TZE

14

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



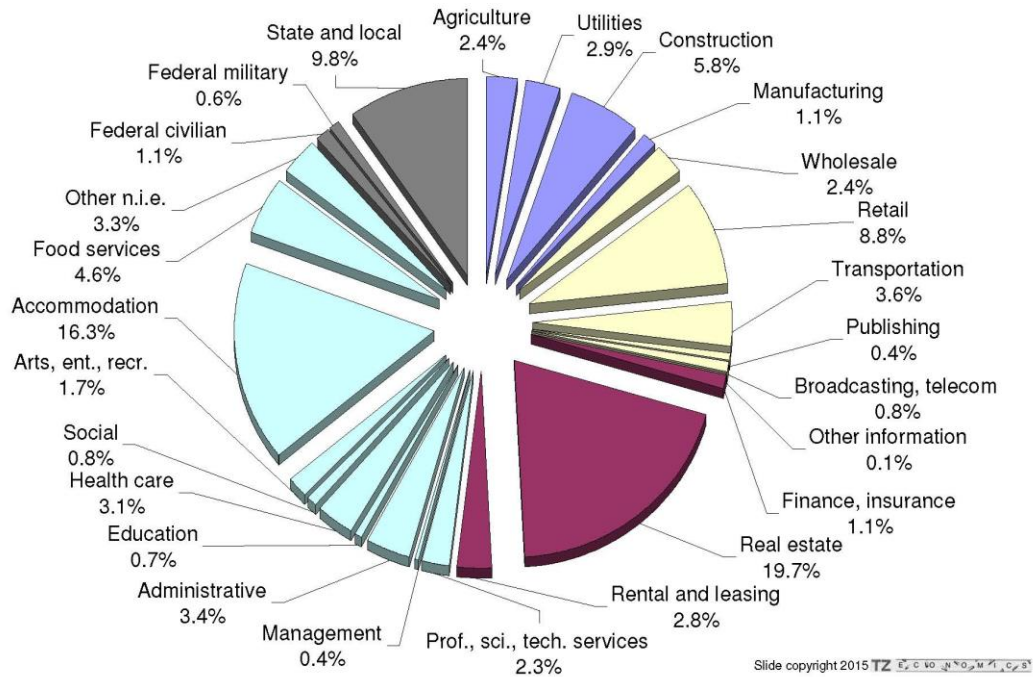
Slide copyright 2015 TZ

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.

30

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

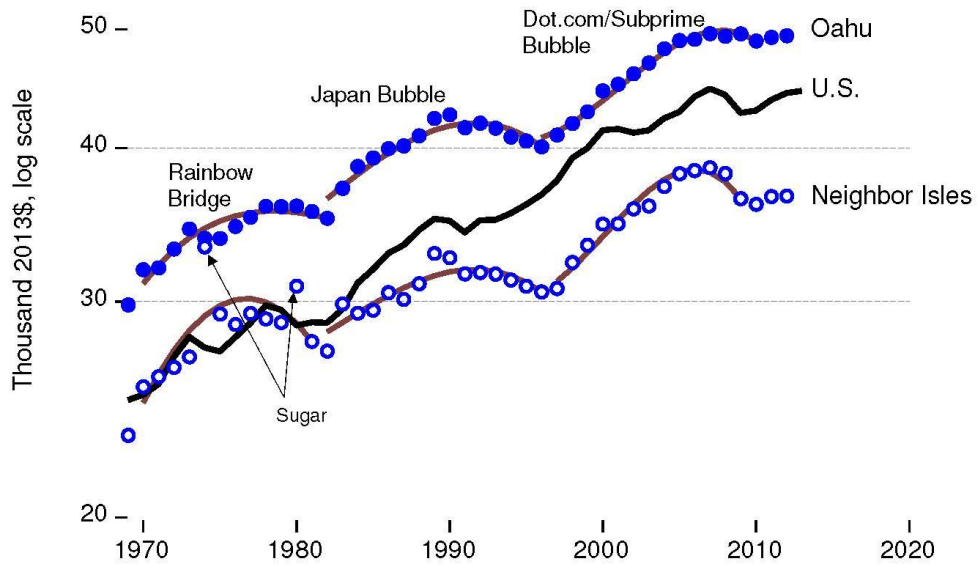
Maui value-added (GDP) by industry 2013



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

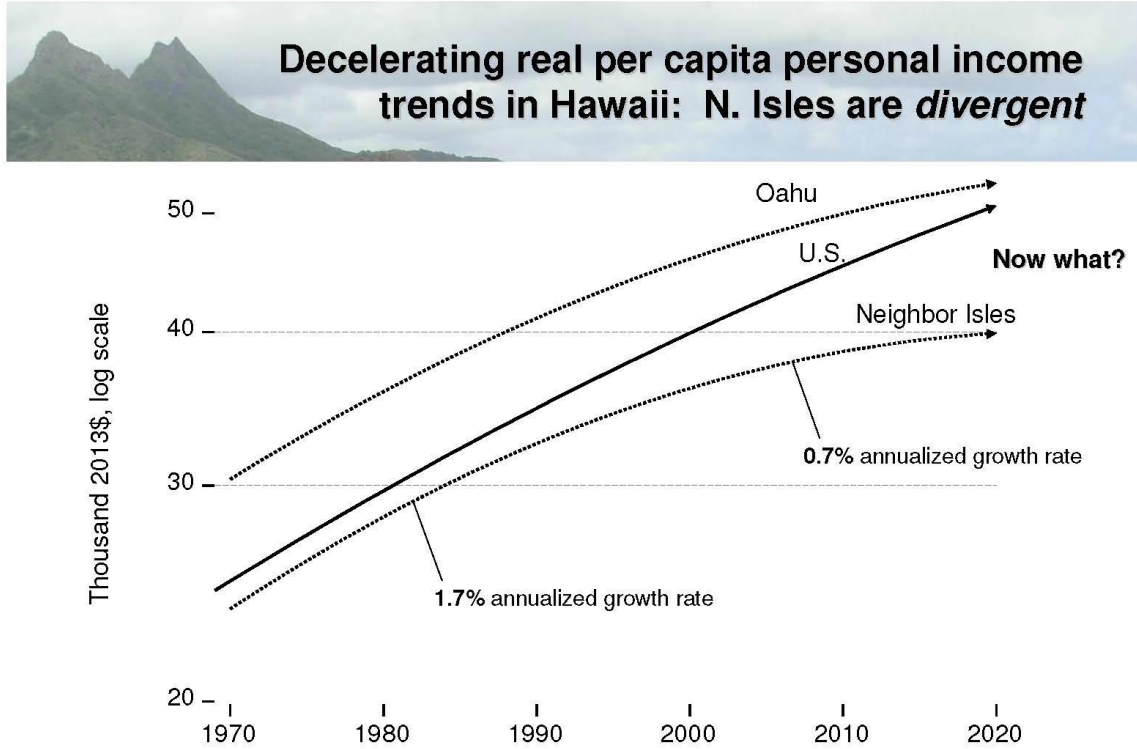


Slide copyright 2015 TZE

Sources: BEA (<http://bea.gov/regional/index.htm>), BLS (<http://data.bls.gov/cgi-bin/survey/most?rs>); 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

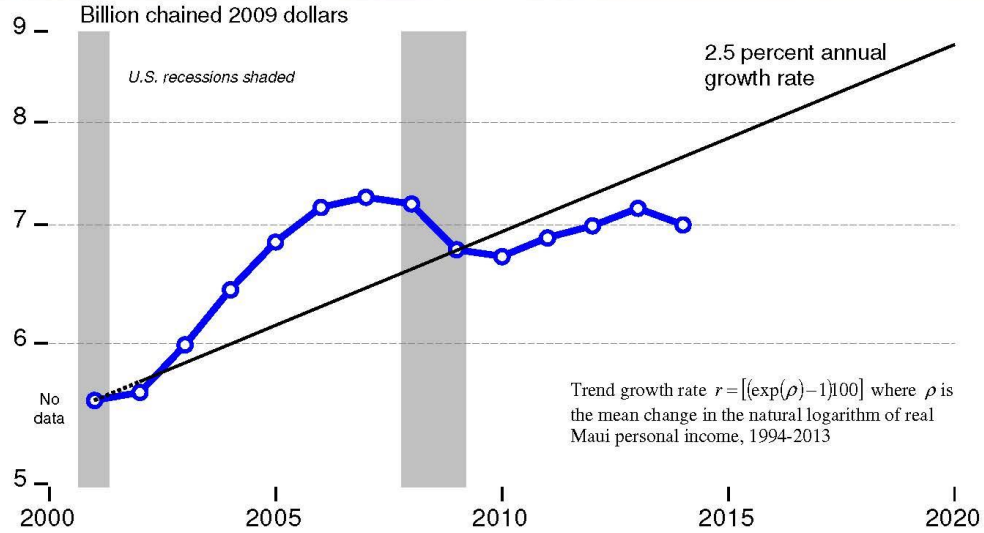
Figure 11: Per Capita Income Growth, Neighbor Islands, Ohau and U.S., 1970-2015



Slide copyright 2015 TZE
 Sources: BEA (<http://bea.gov/regional/index.htm>), BLS (<http://data.bls.gov/cgi-bin/survey/most?r3>); 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. 28

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

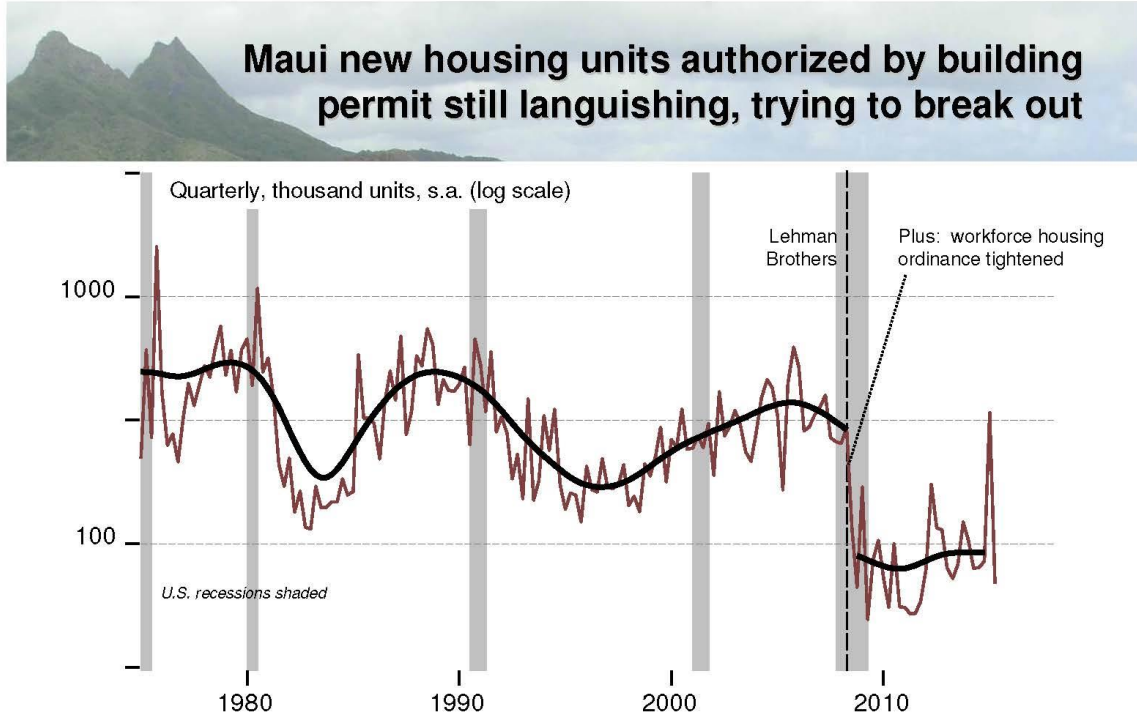
Maui County real GDP 2001-2014 and projection on real personal income trend growth 1994-2013*



Slide copyright 2015 TZ

Sources: BEA Real GDP by MSA (September 23, 2015) (http://bea.gov/newsreleases/regional/gdp_metro/gdp_metro_newsrelease.htm), 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

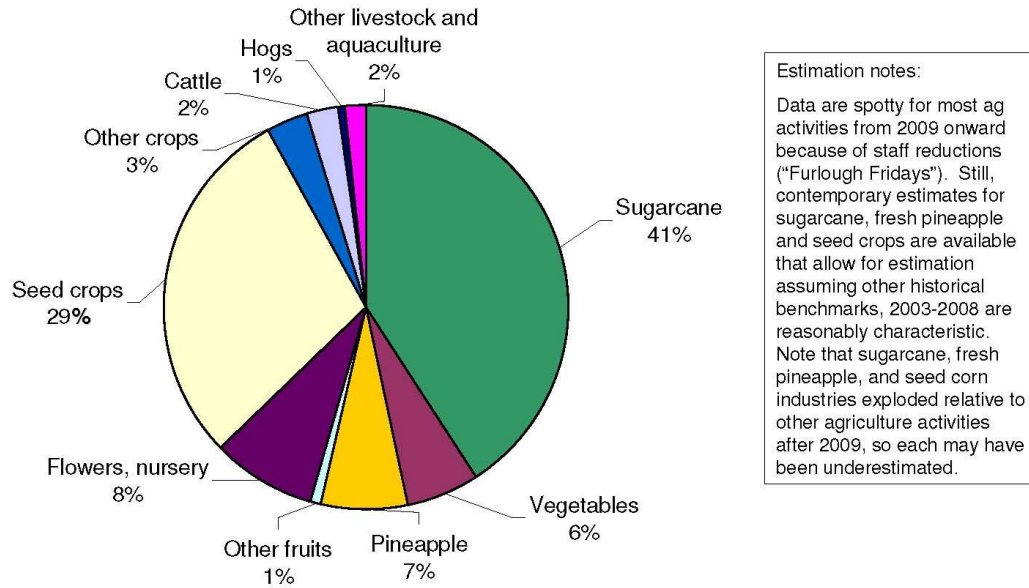
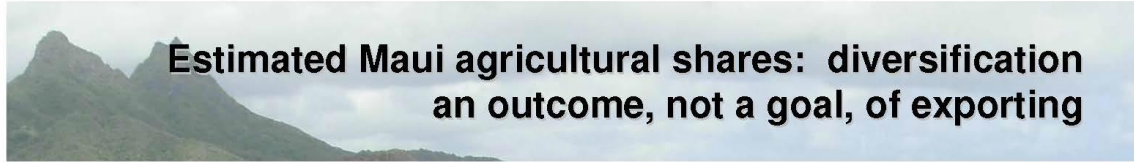


Slide copyright 2015 TZ

Sources: County building department, Hawaii DBEDT, Census Bureau; seasonal adjustment, trend extractions by TZE

36

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



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/)

Figure 15: Visitor Arrivals by Island, 1990-2016

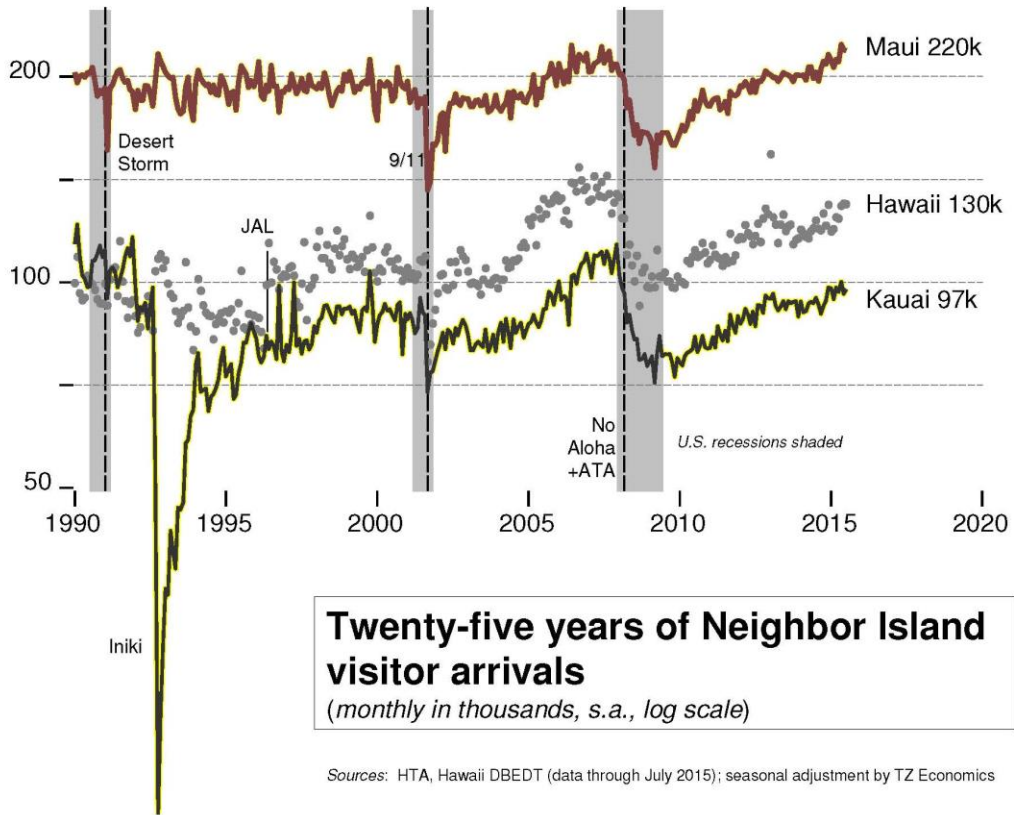
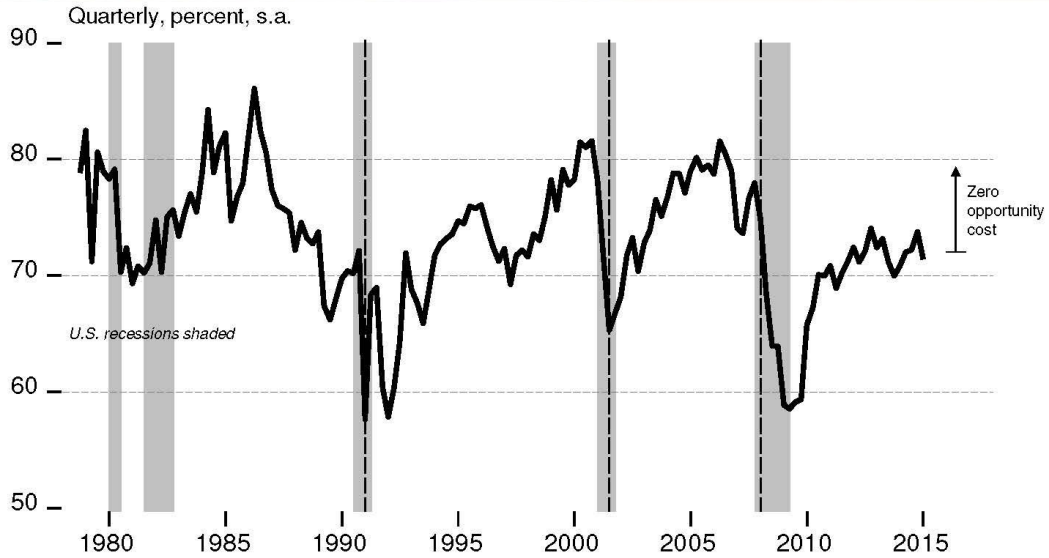


Figure 16: Hotel Occupancy Rates, Maui County, 1980-2015

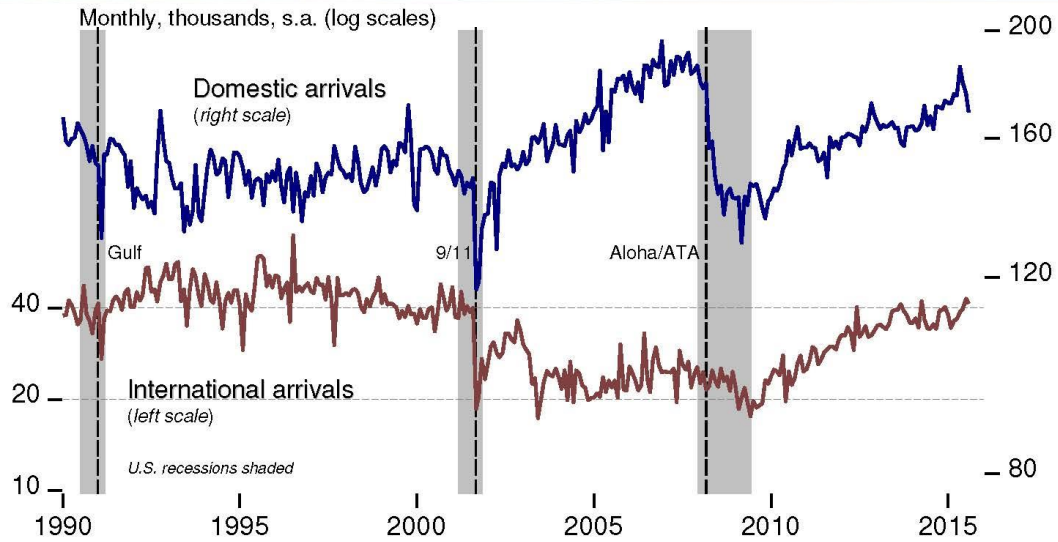


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Source: Pannell Kerr Forster, Hospitality Advisors LLC, BLS; seasonal adjustment by TZE

13

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



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

15

Appendix 5: Current Resiliency Plans in Maui County and Beyond

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 21st 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.

2015 – 2020
Hawai`i County
Comprehensive Economic Development Strategy
(CEDS)



Hawai`i Island
The Big Island of Opportunity

This document was prepared by the Hawai`i Island Economic Development Board (HIEDB) in collaboration with the Economic Development Alliance of Hawai`i (EDAHA) with funding from the Economic Development Administration, U.S. Department of Commerce through the Hawai`i State Office of Planning, Department of Business, Economic Development and Tourism; the Department of Research and Development, County of Hawai`i; and the Pacific Resource Partnership.



State of Hawai`i
Office of Planning



Economic Development
Alliance of Hawai`i

Table of Contents

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Purpose and Background

The Hawai`i Island Economic Development Board (HIEDB) is privileged to prepare and update the Comprehensive Economic Development Strategy (CEDS) which is intended to serve as the blueprint for generating economic growth, diversification, job creation, and resiliency for Hawai`i County.

Support and funding for this effort was provided by the County of Hawai`i through its Department of Research and Development (R&D); the State of Hawai`i Department of Business, Economic Development and Tourism (DBEDT) Office of Planning (OP) and Economic Development Alliance of Hawai`i (EDAH); the U.S. Economic Development Administration; and Pacific Resource Partnership (PRP).

This economic roadmap is developed with input from a diverse and large group of Hawai`i Island residents representing the public, private, and non-profit sectors, following the guidelines released in February 2015 by the U.S. Economic Development Administration. Upon acceptance and approval by the United States Economic Development Administration (USEDA), the CEDS positions Hawai`i County to be eligible for federal funding, and as a roadmap for Hawai`i County's economic future through defined goals, objectives, and actionable strategies. Consistency and coordination with other plans such as, including and not limited to, the Hawai`i County General Plan and respective Community Development Plans (CDPs) are also an important part of this strategic effort.

The first Hawai`i County CEDS was published in 2005. It was updated in 2010 on the heels of what many economists refer to as "The Great Recession" which resulted from the explosion of a multi-trillion-dollar housing bubble and officially lasted from December 2007 to June 2009. As the State of Hawai`i began to climb out of the recession, it was determined that tax revenues in Hawai`i "fell by almost 9.5 percent while the national economy fell by 4 percent and Hawai`i by about 1 percent."² In addition to reduced tax revenues, the global recession was also highlighted by high petroleum prices which directly impacted Hawai`i's visitor industry.

¹ For the purposes of this report, the terms "Hawai`i County," "County of Hawai`i," "island," and "community" are often used interchangeably to refer to the Island of Hawai`i which comprises the County of Hawai`i and is the specific jurisdiction and geographic area being referred to in this report.

² Boyd, Lawrence W., Ph.D. "Hawai`i's Economy, State Budget and the Great Recession Past, Present, and the Future." *Hawai`i.edu*. University of Hawai`i, West Oahu, 8 Jan. 2011. Web. 15 Jan. 2015. http://www.hawaii.edu/uhowo/clear/home/pdf/Boyd-Hleconomy_1-8-11.pdf

Process

The Hawai`i County CEDS is developed based on four distinct and integrated project phases:

1. The economic and demographic conditions of Hawai`i County were inventoried and considered to establish an understanding and baseline from which to start development of the CEDS.
2. Formation and engagement of a Hawai`i Island CEDS Committee to contribute to the knowledge base developed in phase one (above); validate the analysis and findings; and provide guidance to the process and implementation of the CEDS. HIEDB made every effort to reflect the island's diversity in forming the committee.

From October 2015 through September 2016, the CEDS Committee met four times to assist with the development of the CEDS.

Such engagement was instrumental in identifying a broad range of economic development strategies, assessing economic clusters and identifying emerging industries, innovation, quality of life, sense of place, human capital, and expanding diversification and resiliency.

3. Identification of the island's Strengths, Weaknesses, Opportunities, and Threats with SWOT sessions conducted with the CEDS Committee in two meetings in October 2015 and with a broader group of stakeholders through seven focus group meetings conducted between February and July 2016. Information was also developed through one-to-one meetings and telephone interviews with stakeholders.
4. Action, Implementation and Measurement: The preparation of the Hawai`i County CEDS update was done in conjunction with the update of the Hawai`i State CEDS. HIEDB will follow up with key stakeholders to facilitate coordination and implementation to assist Hawai`i Island with meeting economic goals, benchmarks, as well as, leverage and maximize resources, opportunities, and outcomes.

Additionally, resources will be sought to ensure that a mid-term review of the CEDS is undertaken in the last quarter of 2017 to consider accomplishments, identify necessary adjustments and/or additional resources, analyze economic and demographic conditions in comparison with 2015 – 2016 conditions, and package the information for evaluation against stated goals and strategies, assist with continuing implementation, and identify key points for consideration when the CEDS is updated in 2020.

Vision

During the initial October 2015 meetings of the County of Hawai`i Comprehensive Economic Development Strategy (CEDS) Committee, a SWOT analysis exercise was undertaken that helped to generate the vision statement for the Hawai`i County CEDS.

VISION

Hawai`i Island is a model island community that is prosperous and healthy, engenders a business-friendly climate adopting and executing resilient economic development strategies to attract investments that provide quality jobs, economic diversity, and smart infrastructure that protect our unique and critical resources.

To achieve this vision which was revisited over subsequent months, the Hawai`i Island Economic Development Board and County of Hawai`i Comprehensive Economic Development Strategy (CEDS) Committee mindfully seeks to encourage economic development that embodies stewardship of our human, natural, and cultural resources; preserves Hawai`i Island's traditional heritage and sense of place; and provides opportunities for our residents to choose to live on Hawai`i Island.

In recognition that Hawai`i's isolation supports an economy based on "local" industry clusters and human capital, strategies focused on ten key sectors:

1. Agriculture and Aquaculture
2. Astronomy, Aerospace, and Aviation
3. Business Development, Small Businesses and Entrepreneurship
4. Construction, Land and Resource Use, Planning and Development, Built Infrastructure, Environmental Services
5. Education, Workforce Development, Data, Information
6. Energy (Stationary and Mobile Applications), Utilities and Shipping/Transportation
7. Health, Well-Being, Recreation
8. Military, Defense, First and Disaster Response
9. Technology and Innovation
10. Visitor/Hospitality Industry

Acknowledgements and Mahalo

County of Hawai`i Comprehensive Economic Development Strategy (CEDS) Committee

We wish to thank the members of the Hawai`i Island CEDS Committee respectively and collectively for their guidance and commitment to this process. In addition to CEDS Committee meetings, they also participated in economic sector focus group sessions.

Christian Andersen	Pacific International Space Center for Exploration Systems
Virginia Aragon-Barnes	Thirty Meter Telescope Corporation
Lauren Balog	Edwin DeLuz Trucking, Inc.
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Gregory Chun, PhD *	University of Hawai`i and Oceanside 1250
Ellen Cunningham	County of Hawai`i Department of Research and Development
John DeFries *	County of Hawai`i Department of Research and Development
David DeLuz, Jr.	DSDE, Inc.
Krishna Dhir, PhD	University of Hawai`i at Hilo College of Business & Economics
Stephanie Donoho	Kohala Coast Resort Association
Elizabeth Dykstra	County of Hawai`i Department of Research and Development
K. Marty Fletcher	Hawai`i Community College, Palamanui
Farah Marie Gomes	North Hawai`i Education Research Center
Donald Goo	Don Goo Designs, Inc.
Nahual Guilloz	Parker Ranch
Richard Ha	Hamakua Springs Farm and Hawai`i Island Energy Cooperative
Roger Harris	Hunt Development, Palamanui
Kehau Harrison	Queen Lili`uokalani Trust
Wayne Higaki	North Hawai`i Community Hospital
David Honma	First Hawai`ian Bank
Jacqui Hoover	Hawai`i Island Economic Development Board and Hawai`i Leeward Planning Conference
Kirstin Kahaloa	Kona Kohala Chamber of Commerce
Michael Kaleikini	Puna Geothermal Venture/ORMAT
D. Noelani Kalipi	The Kohala Institute
Chris Kanazawa	U.S. Department of Agriculture Rural Development
Christina Kemmer	Christina Kemmer Consulting
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Lt Col Christopher Marquez	U.S. Army Hawai`i Garrison Pohakuloa Training Area
Tim O`Connell	U.S. Department of Agriculture Rural Development
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Lt Col Jacob Peterson	U.S. Army Hawai`i Garrison Pohakuloa Training Area
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Sandra Taosaka	Hawai`i State Department of Education
Carol Van Camp	Japanese Chamber of Commerce & Industry
Bill Walter	W.H. Shipman, Ltd.
Ross Wilson	Current Events
Cathy Wiltse *	Hawai`i Small Business Development Center

* Indicates individuals who also serve on the Hawai`i State CEDS Committee.

As stated in the section on process above, the preparation of the Hawai`i County CEDS update was done in conjunction with the update of the Hawai`i State CEDS. HIEDB will follow up with key stakeholders to facilitate coordination and implementation to assist Hawai`i Island with meeting economic goals, benchmarks, as well as, leverage and maximize resources, opportunities, and outcomes.

All of the participants in this process have affirmed their commitment to working to implement the CEDS including and not limited to, introducing and adopting the goals, objectives and strategies at their respective companies and community organizations, as well as, participating in the mid-term evaluation to be undertaken in the last quarter of 2017 and helping to determine course corrections and future direction for Hawai`i Island economic development strategy.

Moreover, the group is committed to support Hawai`i's 2030 statewide sustainability goals and the *"Aloha+ Challenge*, a statewide commitment to sustainability, with the leadership of the Governor, four county Mayors, ... and other public-private partners across the state. The *Aloha+ Challenge: He Nohona 'Ae'olia, A Culture of Sustainability* builds on Hawai`i's history of systems thinking, Hawai`ian culture and values, and successful track record on sustainability to outline six ambitious goals to be achieved by 2030 in clean energy transformation, local food production, natural resource management, solid waste reduction, smart sustainable communities (including climate resilience and liveability), and green workforce and education." ³

³ Hawai`i Green Growth. The Aloha + Challenge. 2016. <https://hawaiigreengrowth.org/priorities>. Accessed 17 September 2016.

County of Hawai`i Comprehensive Economic Development Strategy (CEDS) Focus Groups

We also wish to acknowledge and express appreciation to the individuals who participated in one or more economic/industry sector focus group and/or individual meetings, for their insights and guidance.

Susan Akiyama	Hawai`i County Office of Housing and Community Development
Laura Aquino	Current Events
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Jerry Chang	University of Hawai`i at Hilo
Roberta Chu	Bank of Hawai`i
Mark Chun	University of Hawai`i Institute for Astronomy
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Arthur Cunningham	University of Hawai`i at Hilo
Tiffany DeEtte-Shafto	Tiffany's Art Agency
Zenhya DeLatte	Divine Web Marketing Agency
Jose Dizon	Paniolo Power
Christine Dochin	Pacific Waste, Inc.
Lorrie Farrell	Hawai`i Farmers and Ranchers
Gregory Fleming	Pohakuloa Training Area
Rick Gaffney	Pacific Boats and Yachts
Carol Galper, MD	Hawai`i Island Family Medicine Residency
Jennifer Hamilton	Hawai`i Island Economic Development Board
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Jay Ignacio	Hawai`i Electric Light Co.
Kawehi Inaba	Kupa`a Business Partners
Steve Jefferson	WM Keck Observatory
Guy Kaniho	BioEnergy Hawai`i
Rob Kelso	Pacific International Space Center for Exploration Systems
Jasmine Kiernan	West Hawai`i Community Health Center
Kai`u Kimura	`Imiloa Astronomy Center
Kimo Lee	W.H. Shipman, Ltd.
Susan Maddox	Friends of the Future
Richard Matsuda	WM Keck Observatory
James McCully	McCully Works and Makalei Golf Course
Keith Okamoto	County of Hawai`i Department of Water Supply
Stephanie Nagata	Office of Mauna Kea Management

Rob Pacheco
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Lisa Rantz
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Apryl Sasaki
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Rachel Solemsaas, PhD
Doug Simons
James Takamine
Ron Terry
Don Thomas, PhD
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Kevin Waltjen
Eric Weinert
Drake Weinert
John White
Cheri Wood, MD
Elisa Yadao
Jessica Yamamoto
En Young

Hawai'i Forest & Trail
Techy³ Studio Productions
Hilo Medical Center Foundation
Hawai'i Leeward Planning Conference
Veterinary Associates
Pacific International Space Center for Exploration Systems
Pacific Waste, Inc.
Hawai'i Community College
Hawai'i Community College
Canada France Hawai'i Telescope
CU Hawai'i Federal Credit Union
Geometrician Associates, LLC
University of Hawai'i
The Queen's Health Systems
Hawai'i Electric Light Co.
Calvo Growers
CGNF Hawai'i
Pacific Resource Partnership
Cheri Wood, MD
HMSA
Hawai'i Community College
Hawai'i Island Food Basket



Focus Group Meeting

Hawai`i County

Hawai`i Island which makes up the County of Hawai`i boasts a land mass of 4,028 square miles that is larger than the combined total square miles (~2,400) of the other eight major islands that comprise the State of Hawai`i.⁴ Nicknamed the “Big Island”, the island’s sheer size is one source of some of the economic challenges faced by the county. Once the home to thousands of acres dedicated to the cultivation of sugar cane and multiple sugar processing mills spread across the island, the last sugar plantation on the island, Ka`u Agribusiness closed in 1996. In the intervening years, the island’s landscape and use of land continue to be transformed.

When the last update to the Hawai`i County Comprehensive Economic Development Strategy (CEDS) was done in 2010, the county, its residents and businesses, were in the process of recovery from the deepest and widest global recession experienced since World War II. Simultaneous to being confronted by economic shockwaves, Hawai`i County was also facing environmental and societal challenges.

The largest employers on Hawai`i Island are in the medical, hospitality, and government (County, State, Federal combined) sectors.⁵

In the years between 2009 and 2015, fuel costs for both transportation and electricity rose then declined dramatically; visitor arrivals also declined sharply before rising again; construction dropped to unprecedented levels before starting to rise; unemployment rates increased along with the number of residents living at or below the poverty level; homelessness visibly increased; multiple natural disasters including storms and lava created havoc; and infrastructure and other projects were halted due to lack of funding and/or lack of public support (including regulatory in some cases).

In 2016 Hawai`i County is faced with rebuilding and strengthening its economy and infrastructure in a manner that fosters resiliency and *sustainability*.⁶ In doing so, it is important to recognize the current state of the economy for the county and its residents.

⁴ Honolulu, Hawai`i: Office of Planning, Hawai`i State Department of Business, Economic Development and Tourism. State of Hawai`i Data Book (2014 edition).

⁵ State of Hawai`i: Data.Hawai`i.Gov. “Top 50 Employers in Hawai`i County.” 2014. <https://data.hawaii.gov/Employment/Top-50-Employers-in-Hawaii-County/ucmb-vy6y/data>. Last Accessed 09 August 2016.

⁶ The definition of sustainability used in this document, is adopted from the United Nations World Commission on Environment and Development (Brundtland Commission). Consistent with traditional values, it states that “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” United Nations Department of Economic and Social Affairs (DESA); published 16 December 1999; <http://www.un.org/documents/ga/res/42/ares42-187.htm>. Accessed 21 January 2016.

Despite the resultant challenges of the 2009 recession, Hawai'i County in partnership with its residents, businesses, and State and Federal affiliates, continued to work diligently to produce positive outcomes including and not limited to, an update of the CEDS for Hawai'i County in 2010; showcased Hawai'i Island and its diverse and large assets inventory at the 2011 Asia Pacific Economic Cooperation (APEC) summit; recovery from damage resulting from a tsunami generated by the Fukushima (Japan) earthquake and the construction and opening of Na Kaulana O Ulu Wini transitional and affordable housing in 2011. These efforts continued into 2012 with the completion and opening of the Ane Keohokālole Highway; and 2013 when the 10.3-mile segment through Keamuku on the west side of the Daniel K. Inouye Highway (aka the Saddle Road) and connection to Mamalahoa Highway (Highway 90) was completed and opened to lessen the time needed to cross between East and West Hawai'i.

Collaborative integration of public and private sector resources to strategize and implement successful recovery and response programs for residents, businesses and others affected by Tropical Storm Iselle and lava flow towards populated areas of Puna in 2014, reiterated the county's commitment to resiliency. This was further demonstrated by preparation for unprecedented storm activity and recovery from multiple floods island wide (2014-15). Meanwhile, construction of phase one of the Hawai'i Community College at Palamanui campus which opened its doors to students and faculty in August 2015 showcased the community's unwavering desire for access to higher education throughout the county.

Produced by Opportunity Nation in partnership with Measure of America, the Opportunity Index measures 16 indicators and scores all 50 states plus the District of Columbia on a scale of 0-100 each year. Additionally, more than 2,600 counties are graded A - F, giving policymakers and leaders a useful tool to identify areas for improvement and to gauge progress over time". At the end of 2015 the index ranked the State of Hawai'i 13th and graded Hawai'i County a "C".⁷

2015 statistics for Hawai'i County estimate the island's population at 194,428⁸ and an economy supporting approximately 63,500 jobs.⁹ While continuing to make gains, at the close of 2015, Hawai'i County's unemployment rate of 3.7% represented the highest unemployment rate of the four counties in the state and second only to Molokai (6.4%) when compared to individual islands.¹⁰ Although not ideal, this is a marked improvement over the unemployment rate of 9.9% with 8,300 people unemployed for Hawai'i County at the end of December 2010.¹¹

⁷ Opportunity Nation in partnership with Measure of America; <http://opportunityindex.org/#9.00/19.7037/-155.2346/Hawaii/Hawaii>. Accessed 19 January 2016

⁸ U.S. Census Bureau Population Estimates Program, State of Hawai'i Department of Business, Economic Development & Tourism. 2016. <http://census.hawaii.gov/home/population-estimate/>. Accessed 29 July 2016.

⁹ Hilo, Hawai'i: County of Hawai'i, Department of Research and Development 2016. Hawai'i County Data Book 2015. Table 1.1.1 Hawai'i County Statistics. Total Job Count (p. 3), selected year 2014.

¹⁰ Hawai'i Department of Labor and Industrial Relations. 25 January 2016. <http://labor.hawaii.gov/wp-content/uploads/2016/01/20160125Dec-UI-Rate-PR.pdf>. Accessed 26 January 2016.

¹¹ State of Hawai'i. 2014. <https://data.hawaii.gov/Employment/UNEMPLOYMENT-RATE-HAWAII-County-Annual-Not-Seasona/hwpi-m9nj>. Accessed 25 January 2016.

Population projections for Hawai`i County show a fairly balanced distribution across the ages ranging from 0 to 74 years in 2015 and 2020.¹²

The national trend of growing income and wealth inequality that began in the 1970's when "economic growth slowed and the income gap widened"¹³ is reflected in Hawai`i County where there are limited opportunities for individuals to build a livelihood capable of sustaining themselves and their families.

Per capita income for Hawai`i County is the lowest of the four counties in the state of Hawai`i estimated at \$34,870.00 at the close of 2014.¹⁴ This information was also discussed in a report by USA Today identifying the poorest counties in each state that named Hawai`i County as such, with an average median household income of \$51,250 between 2009 to 2013 in comparison to the state median household income of \$67,402 for the same period. The report noted that Hawai`i County is "...not especially poor when compared to the rest of the nation. However, this figure may be somewhat misleading because of the state's remarkably high cost of living."¹⁵

The USA Today report also cited the poverty rate for Hawai`i County from 2009-2013 as 18.3%¹⁵ which is again comparable to and supported by U.S. Census Bureau statistics which cites 18.1% of Hawai`i County residents to be living in poverty.¹⁶

While lower per capita and household income and poverty are often linked to lack of education, the USA Today report noted a high percentage (91%) of Hawai`i County residents as having at least a high school diploma over the subject five years from 2009-2013 as compared to the national average (86%).¹⁵ This figure is confirmed by the U.S. Census Bureau which cites that the percentage of individuals aged 25 years and older residing in Hawai`i County to have a high school diploma between 2010-2014 as 91%. The bureau also reports that for the same period of time, 25.9% of Hawai`i County residents hold a Bachelor's degree or higher.¹⁷

¹² Hilo, Hawai`i: County of Hawai`i, Department of Research and Development 2016. Hawai`i County Data Book 2015. Table 1.3.14 Total Resident Population Projections by 5-Year Age Group, Hawai`i County 2010 -2040 (p.23).

¹³ Center on Budget and Policy Priorities. 2015. <http://www.cbpp.org/research/poverty-and-inequality/a-guide-to-statistics-on-historical-trends-in-income-inequality>. Accessed 12 February 2016.

¹⁴ Hilo, Hawai`i: County of Hawai`i, Department of Research and Development 2016. Hawai`i County Data Book 2015. Table 1.4.1 Personal Income, Total and Per Capita By County (p. 25), selected year 2014.

¹⁵ Frohlich, Thomas C. 24/7 Wall St, USA TODAY. The poorest county in each state. January 10, 2015. <http://www.usatoday.com/story/money/personalfinance/2015/01/10/247-wa;;-st-poorest-county-each-state/21388095>. Accessed 12 February 2016.

¹⁶ United States Census Bureau. Quick Facts Hawai`i County, Hawai`i. Income and Poverty: Persons in poverty, percent. <http://www.census.gov/quickfacts/table/IPE120214/15001>. Accessed 12 February 2016.

¹⁷ United States Census Bureau. Quick Facts Hawai`i County, Hawai`i. Education. <http://www.census.gov/quickfacts/table/IPE120214/15001>. Accessed 12 February 2016

“The years from the end of World War II into the 1970s were ones of substantial economic growth and broadly shared prosperity.”¹⁸ As with the rest of the nation, much of Hawai`i County’s infrastructure was built one-half century (or more) ago largely in support of plantation towns and processing facilities that are non-existent today. This infrastructure is now aging, vulnerable, obsolete, and contributing to current shortfalls. This is articulated by Erwan Michel-Kerjan, Managing Director of Wharton’s Risk Management and Decision Processes Center who speaking on the nation’s infrastructure woes, warns that “We’re losing our competitive power. The big picture is that we invested massively 50 years ago and more or less haven’t done anything of comparable magnitude since.”¹⁹

Economic growth and shared prosperity is largely dependent on sufficient potable water and sewer capacity which is limited both naturally and by inadequate infrastructure in many areas of Hawai`i County. Similarly, reliable and reasonably priced energy is necessary and Hawai`i County’s infrastructure for generation, transmission and distribution of electricity must undergo significant updating which despite major investments by the regulated utility have not kept pace with changing technologies and societal demands for energy produced from non-carbon based fuel sources.

The 21st century finds us “... living in a new economy – powered by technology, fueled by information, and driven by knowledge.”²⁰ Like other jurisdictions and communities, Hawai`i County is “... grappling with long-term unemployment, ... changes in health care employment and delivery, climate change issues...”²¹ and we must make the necessary adjustments and investments in education, innovation industries, small businesses, and infrastructure.

For additional information and statistics for Hawai`i County, the reader is referred to the [Hawai`i County Data Book 2015](#) which is available on-line at <http://hisbdc.org/BusinessResearchLibrary/HawaiiCountyDataBook2015.aspx>.

¹⁸ Center on Budget and Policy Priorities. 2015. <http://www.cbpp.org/research/poverty-and-inequality/a-guide-to-statistics-on-historical-trends-in-income-inequality>. Accessed 12 February 2016.

¹⁹ Wharton School of the University of Pennsylvania. Knowledge at Wharton. Public Policy: [America’s Aging Infrastructure: What to Fix, and Who Will Pay?](#) November 10, 2010. <http://knowledge.wharton.upenn.edu/article/americas-aging-infrastructure-what-to-fix-and-who-will-pay/>. Accessed 23 March 2016.

²⁰ U.S. Department of Labor. [Futurework – Trends and Challenges for Work in the 21st Century](#). <https://www.dol.gov/dol/aboutdol/history/herman/reports/futurework/execsum.htm>. Accessed 23 March 2016.

²¹ International Economic Development Council. [Five Year Strategic Plan 2015-2020 Updated October 2014](#). www.iedconline.org/clientuploads/Downloads/IEDC_Strategic_Plan.pdf. Accessed 23 March 2016.

Strengths, Weaknesses, Opportunities, and Threats (SWOT)

An analysis of strengths, weaknesses, opportunities and threats (SWOT) serves as a keystone to developing strategies to accomplish this with strengths identifying economic elements such as the unique and diversified assets inventory that the County should take advantage of and build into the long-term economic strategy; weaknesses identifying deficiencies that exist; opportunities indicating intersections where strengths can be maximized and weaknesses mitigated; and threats representing issues and potential negative impacts on the County’s economy if not recognized and integrated into the larger economic planning process and outcomes.

The Hawai`i County CEDS Committee participated in SWOT assessments to help identify what stakeholders believe to be important in each of the four areas. The results provided help in articulating a vision statement and to guide the process, identify priorities, goals, objectives and strategies for economic development.

Note that SWOT analyses were also conducted with the focus groups and are included in the respective industry sector sections.

Hawai`i County CEDS Committee SWOT

Strengths	Weaknesses
<ul style="list-style-type: none"> • Collaboration (Public Private Partnerships) • Diverse cultures and ethnicities • Hawai`i Island Assets Inventory <ul style="list-style-type: none"> ○ Agriculture and Aquaculture ○ Diverse Energy Portfolio ○ Education (UHH, HCC, Palamanui) ○ Health, Well-Being, Recreation ○ Land ○ Natural Energy Laboratory/HOST Park ○ Natural Resources <ul style="list-style-type: none"> ▪ Active Volcano ▪ Multiple Climate Zones ▪ Ocean and Marine Resources ▪ Water ○ People and Values ○ Pohakuloa Training Area ○ Transportation <ul style="list-style-type: none"> ▪ Airports, Deep Draft Harbors ○ World Class Astronomy • Quality of Life • Tourism 	<ul style="list-style-type: none"> • Affordability <ul style="list-style-type: none"> ○ Cost of Living and Doing Business • Capital • Economic Diversity, Stability, Disparity • Government Regulation • Infrastructure (Aging, Non-Existent) • Int’l Certification at Kona Airport jeopardized • Island’s Economic Story NOT told in manner that resonates (e.g. Astronomy sector is not understood/appreciated) • Island’s Economic Successes NOT appreciated (astronomy, Pohakuloa Training Area, tourism) • Lack of Leadership • Medical Care Professionals (recruitment/retention) • Regulatory Processes (inconsistent, contradictory, lack of clarity & transparency) • Risk Aversion • Rural Transportation • Story Telling <ul style="list-style-type: none"> ○ Need to articulate messages with both clarity and transparency • Well-Paying Jobs (Insufficient availability) • Workforce (Preparation, Readiness, Relevance, and Retention)

Opportunities	Threats
<ul style="list-style-type: none"> • Agriculture <ul style="list-style-type: none"> ○ Land, Support, Innovation, STEM and Expansion) • Alignment between education, workforce development, jobs, and industry • Astronomy Services Industry • Broadband and other Infrastructure • Destination Marketing and Strategies • Education, Workforce Development, and Lifelong Learning • Emerging Industries • Energy <ul style="list-style-type: none"> ○ Electricity and Transportation • Entrepreneurship (Support, Develop strong business culture) • Health and Well-Being (market “Lifestyle”) • Mentor next generation of leaders (Millennials) • Regulatory and Process Reform • Renewable, clean energy • Socio-economic Innovation • Space Tourism • SustainAbility (spelling error deliberate) • Technology, Innovation • Universal Values 	<ul style="list-style-type: none"> • Apathy • “Brain Drain” • Changing Demographics and Values • Culture (specific to Host Culture and Sovereignty Issues) • Divisiveness • Environmental <ul style="list-style-type: none"> ○ Climate Change, Invasive Species, Natural Disasters, VOG • Fear including fear of change <ul style="list-style-type: none"> ○ Mistrust of government and business • Geographic size of island • Ideology • Income Inequality, Technology Divide, Poverty • Lack of Leadership • Loss of TMT, PTA and other economic engines <ul style="list-style-type: none"> ○ Resultant loss of investors and opportunities • Loss of hotel room inventory (reference conversion of hotel rooms to high end residential) • Low Housing Inventory (all levels) • Ideology • Regulatory Climate

Note:

In the process of conducting the SWOT, the committee discussed concerns related to culture (in this case, the host culture, i.e. indigenous Hawai`ian) and multiple interpretations, perceptions, expectations, and legal framework. This includes and is not limited to, differences of position amongst native Hawai`ians and others with respect to the subject of sovereignty. The committee also noted that the sovereignty question is interjected into all areas of governance, planning and development which can serve as a strength, weakness, opportunity, and/or threat depending on one’s perspective which is very personal and individualized. Noting further that multiple cultures and ethnicities comprise the population of Hawai`i County, the committee expresses its respect, admiration and appreciation for the host culture, while simultaneously recognizing that the CEDS serves as the economic blueprint for the whole of Hawai`i County and its residents.

County of Hawai`i 2015 Update Comprehensive Economic Development Strategy (CEDS)

Industry Clusters

The Hawai`i County CEDS is based on a cluster-based strategy intended to identify the means to drive economic resilience and growth through 2020 and establish a foundation for driving resilience and growth into the future beyond then.

“Industry clusters are groups of similar and related firms in a defined geographic area that share common markets, technologies, worker skill needs...” and whose “Firms and workers (are able) to draw competitive advantage from their proximity to competitors, to a skilled work force, to specialized suppliers and a shared base of sophisticated knowledge about their industry.”²²

The Hawai`i County CEDS Committee identified ten (10) industry clusters deemed critical to resilience and laying the groundwork necessary to diversify and strengthen our economy.

It is important to note that these are “local clusters” consisting “... of industries that serve the local market” versus “traded clusters” which “... serve markets beyond the region in which they are located.”²³

The respective clusters are presented alphabetically for convenience and ease of reading. The sequence of presentation is not intended to and does not indicate priority or importance.

²² Oregon Business Council. Oregon Business Plan. 2015. Industry Clusters. <http://www.oregonbusinessplan.org/industry-cluster/industry-clusters-faq/>. Accessed 03 April 2016.

²³ Harvard Business School. Institute for Strategy and Competitiveness 2014. U.S. Cluster Mapping Project. <http://www.clustermapping.us/>. Accessed 03 April 2016.

Overarching Themes, Objectives and Strategies

In the process of conducting appreciative inquiry to prioritize the many components that must be considered in laying out an economic development strategy for Hawai'i Island, several consistent desired outcomes emerged. These themes-in-common which reflect the overall desired outcomes for the CEDS, are also important in planning and implementation of strategies to achieve results for the respective sectors.

Business, Industry and Entrepreneurship

Continue efforts to establish the regulatory environment, engender more responsive government, other ecosystems and efforts to make it easier to do business in a responsible and environmentally-friendly and resilient manner.

Collaboration, Communications, Leveraging and Increasing Resources

Facilitate existing and create new ecosystems for sectors to strengthen, connect and collaborate; increase capacity; establish and maintain excellent communications; leverage existing resources in a responsible manner; and attract new investments and resources.

Education

To understand and respond to the needs of both current and future employers, establish a community-business-academic coalition to regularly assess such needs through surveys, workshops, etc. Support K-12, postsecondary, vocational training and other learning opportunities that are key to Hawai'i County's economic development. Identify, facilitate, recruit, support programs that work towards ensuring both short and long-term initiatives built around key STEM (science, technology, engineering and mathematics) skills.

Infrastructure

Critical to all sectors and overall economic development, job creation, and prosperity, is the replacement, maintenance, and modernization of aging infrastructure and development of new infrastructure including and not limited to broadband and emerging communications/connectivity technologies.

Quality of Life

While a highly subjective measure of happiness based on personal preferences, many of the factors that contribute to one's respective and a community's overall sense of well-being, such as including and not limited to, financial security, job satisfaction, education opportunities, quality health care, and safety, are considered in building a CEDS.

Resilience

The Hawai`i County CEDS builds its strategies of resilience based on the Economic Development Administration definition of resilience in the context of economic development as "... the ability to recover quickly from a shock, the ability to withstand a shock, and the ability to avoid the shock altogether"²⁴

Sustainability

Meeting "...the needs of the present without compromising the ability of future generations to meet their own needs."⁵ and ensuring that our community has "... the capacity to endure."²³

Workforce Pipeline

To retain and grow the job base in Hawai`i County, all sectors are committed to supporting opportunities such as the Workforce Opportunity Investment Act (WOIA), underserved communities, growing and enriching our talent pool.

²³ SustainAbility 2010. <http://www.sustainability.com/sustainability/>. Accessed 17 September 2016.

²⁴ Washington, D.C. U.S. Department of Commerce, Economic Development Administration. [CEDS Content Guidelines Resilience](https://www.eda.gov/ceds/content/economic-resilience.htm) <https://www.eda.gov/ceds/content/economic-resilience.htm>. Accessed 17 September 2016.

AGRICULTURE and AQUACULTURE

Once home to thousands of acres dedicated to the cultivation of sugar cane and multiple sugar processing mills spread across the island, the last sugar plantation on the island, Ka`u Agribusiness, closed in 1996.

In the intervening years, the island's landscape and use of land continue to be transformed and agriculture on Hawai`i Island remains a vital part of the island's economy. The Statewide Agricultural Land Use Baseline Report 2015²⁵ which "... is intended as a tool to promote a shared understanding of where and what Hawai`i currently farms and ranches, and how Hawai`i's agriculture has re-emerged following the loss of nearly 300,000 acres of plantation agriculture over the last 35 years" and is a powerful tool in learning the current state of crop production in Hawai`i.

The U.S. Department of Agriculture (USDA) Census of Agriculture²⁶ which is taken every five years and last issued in February 2014 reflects the average age of farmers on Hawai`i Island has increased from 58.5 in 2007 to 60.5 in 2012. The same census reports a loss of 508 farmers between 2007 (7,521) and 2012 (7,013). Both statistics mirror national trends.

While coffee, macadamia nuts, and papayas remain the dominant crops, farmers have embraced diversification with new crops running the gamut from floral and ornamentals to cacao, exotic fruits, and tea. One Hawai`i Island tea grower's product is sold in excess of \$42.00 per ounce²⁷ (approximately \$670 per pound) serving as just one example of the success resulting from the trend towards diversified, niche crops. The advent of medical marijuana dispensaries creates "... a new commercial industry for Hawai`i: a different crop for farmers..."²⁸ that while just emerging offers much to consider in strategizing the future of agriculture in Hawai`i.

²⁵ Melrose, Jeffrey et al. State of Hawai`i, Department of Agriculture. Statewide Agricultural Baseline Project. 2016. <http://hdoa.hawaii.gov/salub/>. Accessed 24 August 2016.

²⁶ U.S. Department of Agriculture, National Agricultural Statistics Service. 2012 Census of Agriculture. AC-12-A-PR. February 2014. Table 1 Selected Operation and Principal Operator Characteristics: 2012 and 2007 (Hawai`i). P.4.

²⁷ Associated Press. McConnaughey, Janet. "Pricey tea a growing niche crop in US, even Canada." MSN Money. March 13, 2016. <http://www.msn.com/en-us/money/markets/pricey-tea-a-growing-niche-crop-in-us-even-canada/ar-AAglFU4>. Accessed 04 March 2016.

²⁸ Hill, Tiffany. "What Happens If Hawai`i Legalizes Marijuana?". Hawai`i Business. July 2014. <http://www.hawaiibusiness.com/what-happens-if-hawaii-legalizes-marijuana/>. Accessed 24 August 2016.

Environmental challenges including invasive species such as the destructive coffee borer beetle can have devastating impacts on revenue crops while diseases such as Rapid `Ōhi`a Death (ROD) which has infected at least 34,000 acres²⁹ of `Ōhi`a threaten the island's watershed and existence of native forests. Climate change is also a factor and in April 2016, Hawai`i County was designated by the United States Department of Agriculture as a natural disaster area due to damages and losses resultant from drought conditions. The declaration qualified farmers and ranchers for low interest emergency loans through the USDA Farm Service Agency (FSA).³⁰

Ranching and livestock production are also important components of Hawai`i's agriculture story. Challenges include costs of feed and processing as well as, insufficient infrastructure (including slaughter facilities).

Although reduced by 7% over 2013 sales, 2014 sales of Hawai`i's floriculture and nursery products statewide were estimated at \$67.2 million by the USDA.³¹

The impact of aquaculture on Hawai`i's economy must not be overlooked. In 2014, aquaculture sales totaled \$78.2 million. While the report does not provide many details, it does note that algae contributed approximately \$33.1 million (42.3%) of the aquaculture sales.³² Simultaneously, commercial algae producer Cyanotech Inc. based at the Natural Energy Laboratory of Hawai`i facilities at Keahole Point reported net sales of \$34 million in 2014.³¹ Numerous other aquaculture operations on Hawai`i Island must also be factored into the multi-pronged impacts on long-term economic development for the county.

²⁹ State of Hawai`i, Department of Land and Natural Resources, Division of Forestry and Wildlife. [Aerial Survey of Big Island Forests Shows Rapid Ohia Death Spread](http://dlnr.hawaii.gov/dofaw/featured/aerial-survey-of-big-island-forests-shows-rapid-ohia-death-spread/). Posted January 29, 2016. <http://dlnr.hawaii.gov/dofaw/featured/aerial-survey-of-big-island-forests-shows-rapid-ohia-death-spread/>. Accessed 03 March 2016.

³⁰ United States Department of Agriculture Farm Service Agency. "USDA Designates Hawai`i County in Hawai`i as a Primary Natural Disaster Area". April 13, 2016. https://www.fsa.usda.gov/news-room/emergency-designations/2016/ed_20160413_rel_0035. Accessed 16 April 2016.

³¹ United States Department of Agriculture. Hawai`i Floriculture and Nursery Products Annual Summary. August 12, 2015. "Floriculture and Nursery Products Decrease 7 Percent." https://www.nass.usda.gov/.../Flowers_and_Nursery_Products/flower.pdf. Accessed 06 July 2016.

³² United States Department of Agriculture. Hawai`i Aquaculture Annual Release. November 2, 2015. "2014 Aquaculture Sales Reach Record High \$78.2 Million." https://www.nass.usda.gov/Statistics_by_State/Hawaii/index.php. Accessed 05 November 2015.

³³ [Aquaculture Magazine](http://www.aquaculturemag.com). December 15, 2015. "Businesses Played Role in Record High Aquaculture Sales." <http://www.aquaculturemag.com/daily-news/2015/12/15/businesses-played-role-in-record-high-aquaculture-sales>. Accessed 06 January 2016.

Agriculture and Aquaculture: Strengths, Weaknesses, Opportunities, and Threats

STRENGTHS	BACKGROUND/GENERAL COMMENTS made during AG SWOT exercise
<ul style="list-style-type: none"> ● Geography <ul style="list-style-type: none"> ○ Micro Climates ○ Multiple Climate Zones ○ Potential for Open Markets ● Availability of Land (80+% in Agriculture) ● University of Hawai`i <ul style="list-style-type: none"> ○ Land Grant College ● USDA ● PBARC ● NELHA/HOST Park ● Water Resources (East side) ● Sea Water Resources ● Resurgence of Small Scale Farm Industries ● Public Consciousness towards Self-Reliance <ul style="list-style-type: none"> ○ Represents a shift ○ Public Support on Island <ul style="list-style-type: none"> ▪ Poll results show Agriculture as #1 concern ● Feed Mill ● Diversity in Types of Agriculture ● Established Export Businesses <ul style="list-style-type: none"> ○ Floral, Papaya, Boutique Fruit ● Research, STEM (Science, Technology, Engineering, Mathematics), Crop Technology ● Mobile Slaughterhouse ● Crops = Commodities that DRIVE economics ● Commodity Crops <ul style="list-style-type: none"> ○ Floral, Aquaculture, Cattle, Papaya, Banana, Coffee, Mac Nuts, Sweet Potato, Ginger ● State Government Support/Programs ● Family-based Agricultural Activities <ul style="list-style-type: none"> ○ Ethnic Diversity, Dedication ○ Labor Angle ○ Shared Values ● Ancillary Industries <ul style="list-style-type: none"> ○ Community Based ● Feed types 	<ul style="list-style-type: none"> ● Economic Philosophy about food is flawed ● Hawai`i importing 80-90% of food (including processed food) <ul style="list-style-type: none"> ○ Agriculture is market driven so to suggest that all food produced in Hawai`i must stay in Hawai`i is naïve and not economically sustainable (many crops earn more through export) ○ Sustainability requires Investment ○ Hawai`i consumes more papaya than elsewhere in world ○ 85% of cattle exported ● Market manipulation is not sustainable ● False perceptions of value/worth of Hawai`i beef and meat in general ● Marketing and large-scale purchasing decisions are made outside Hawai`i ● Question: With capital, can the market be changed? ● Agriculture is an occupation of hope – current lack of hope ● Farming and Ranching are livelihoods NOT hobbies therefore, farmers and ranchers must be able to earn a living to support themselves and their families ● People like the “romance and nostalgia” of farming/ranching but are not willing to be farmers/ranchers or encourage their children to do so.

WEAKNESSES

- **Farmers & Ranchers – average age 60+**
 - 95% Family Farms (note Hawai`i situation consistent with rest of nation)
 - Workers not available
 - Low pay – long hours
- **Agricultural Theft Significant**
 - Close knit community (positive for most part but also a negative) – fear of retribution
 - Law Enforcement not able to mitigate, control
- **High Costs (All Inputs Expensive)**
 - Housing
 - Transportation
 - Cannot compete against commodities therefore, niche markets/limited scope
 - Limited Access (e.g. FedEx withdrawal)
 - Fertilizers/Herbicides
 - Fuel
 - Energy volatility (costs of oil)
 - Accessible/less complicated sources of funding – need easier access by farmers.
 - Food Safety Regulations and Certifications including access and Insurance Requirements
- **Laws, Regulations, Policies**
 - Support in Theory but not Realistically
 - Public policies on agriculture often flawed, obsolete regulations
 - Labor laws
- **Political – Structure – Philosophy - Ideology**
 - Organic / Non-GMO
 - Need to be FOR versus Against
 - Divisiveness in Industry largely externally driven
- **Community Development (encroachment)**
- **UH (system) officially land grant**
 - UH Manoa exclusively receives land grant \$\$
 - Misuse of funds
 - Extension Services
- **Declining support from State of Hawai`i**
 - Funding reduced
 - Programs and UH faculty positions lost
 - Enrollment based model outdated

- **Economies of Scale (difficult to achieve)**
 - Consistency (Lack Thereof) re: Supply and Quantity
 - Limited Local Market
 - Tight Distribution System
 - Slim margins
 - Public including policy makers unschooled about where our food comes from
 - Gardens versus Farms
 - Many reject what agriculture IS
 - Production Agriculture is NOT a bad thing
 - Public misperceptions including as related to Open Space and link to tourism
 - “Buy Local” program well-intended but if the profit margin is =/< 5% then not affordable
 - Lack of Data
 - Need Facts NOT Anecdotes
 - e.g. Korean Farming techniques
- **Economic Development**
 - Currencies besides \$\$\$
 - Quality of Life
 - Access to Knowledge (How and Cost of Growing crops/Ranching)
 - General Education
- **Culture MUST Change (i.e. Societal not ethnicity)**
 - Both agricultural and broader community
 - Fear of Science, Change, Modernization
 - Perceptions
 - Bias towards agricultural vocation (i.e. viewed as a bad vocation)
 - Agriculture should be valued as a profession
- **Leadership (Elected Officials, Policy Makers)**
 - Failure to project/advocate for agriculture
 - Failure to recognize economic and job potential
 - Anti-Science Bias (especially concerning when policies are made based on this bias rather than fact, proven data, peer-reviewed science)
 - Prior failures, obsolete technologies rehashed
 - Lack of vision/strategy
- **Need to reframe and tell agriculture story better**

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • People NEED to eat therefore captive market • Identify, Implement new ag/farming/ranching techniques and technologies • Natural Farming – soil richer • Research Opportunities <ul style="list-style-type: none"> ○ Multiple cropping seasons • New potential sources of funding <ul style="list-style-type: none"> ○ e.g. Success in aquaculture industry • Articulate Vision and Strategy <ul style="list-style-type: none"> ○ Develop and tell the story of agriculture ○ Place in front of public repeatedly to build understanding ○ Share how residents can support agriculture • Build critical mass of elected officials and others who understand agriculture • Diverse Renewable Energy Portfolio <ul style="list-style-type: none"> ○ Advocate and assist with developing regulations that represent current conditions, support agriculture and provide clarity ○ Increase access to renewable energy ○ Potential new funding sources • Government has the capacity to help agriculture • Government has the power to convene and get major public and private sector stakeholders to the table. • Mentoring, Internship • Innovation <ul style="list-style-type: none"> ○ Unmanned Aerial Vehicles (UAVs) ○ Robotics • Education <ul style="list-style-type: none"> ○ Science, Technology, Engineering and Mathematics (STEM) 	<ul style="list-style-type: none"> • Farmers/Ranchers almost extinct • Ideology – Misperceptions – Falsehoods <ul style="list-style-type: none"> ○ Citizens Against Virtually Everything (CAVE) ○ Anecdote and Emotion versus Data and Science ○ Farmers/Ranchers demonized • Lack of Leadership • Mistrust • Increasing regulations and costs of regulations <ul style="list-style-type: none"> ○ Costs are already high – government should not be contributing to exacerbating costs of agriculture ○ Save ourselves through over regulating <ul style="list-style-type: none"> • Bad public policy (hinders economic and other growth) • Misrepresentation of scientific data • Workers’ Compensation (Zephyr, HEMIC) • Invasive Species • Climate Change • Globalization

AGRICULTURE and AQUACULTURE

Goals, Objectives, and Strategies

Goal:

Build a sustainable agricultural industry that can provide a living that is satisfying and financially rewarding for island farmers, cattlemen, aqua-culturists, and agriculture sector workers, and contribute to food self-sufficiency and mitigating imports.

Objectives:

1. Provide a highly skilled workforce to fill positions at all levels in 21st century agriculture and aquaculture.
2. Support and promote Agricultural, Aquaculture, Environmental, Natural Resources, and related sciences to middle and secondary school students in Hawai'i County.
3. Increase student interest via "hands-on" learning opportunities, internships, mentoring, and inclusion in meetings, conferences and other forums.
4. Ensure that necessary infrastructure, including and not limited to, broadband, tele-communications, transportation, water, waste collection and treatment, and electricity are in place and/or support efforts to secure such infrastructure.
5. Support and promote a culture of "Buy and Invest Locally" while simultaneously recognizing that not all locally produced agriculture will be distributed or sold locally, as some products generate higher revenue by exporting to markets outside the County (and/or State).
6. Recognize the critical role of and support the College of Tropical Agriculture and Human Resources (CTAHR), Pacific Basin Agricultural Research Center (PBARC), U.S. Department of Agriculture, Hawai'i Ocean Science and Technology (HOST) Park at the Natural Energy Laboratory of Hawai'i Authority (NELHA), and others developing and transferring new technologies, mitigating problems, and strengthening the agriculture and aquaculture industry sector.
7. Support sustained production of food, fiber and fuel. Specific to food crops, support the Aloha+ Challenge goals of doubling local food production and ensuring 20-30% of food consumed is locally grown.
8. Increase, support and promote adaptive capacity to better absorb and recover from economic, environmental, and other shocks and stresses.
9. Identify, develop and support the next generation of sector leaders.
10. Address agricultural theft and vandalism.

Strategies:

- Conduct a new cluster analysis and facilitate the networking of firms and professionals working within cluster industries through the participation in or formation of industry cluster organizations. (e.g. Consider renaming cluster to include Food, then facilitate new collaborations).
- Conduct an inventory of jobs (types, number, required skillsets) and establish a central clearinghouse including job postings, training programs, internships, scholarships, etc.
- Develop and implement a coordinated plan to accelerate technical assistance, programs and resources to farmers, rancher, and workers. Strengthen the continuum for support.
- Showcase career opportunities through partnerships with Pre-20 schools, industry organizations and businesses.
- Support and facilitate existing, and increase training programs such as “Veteran to Farmer/Rancher” and identify opportunities and support farm apprenticeships on public lands.
- Develop and support orientation and transition activities with students graduating and entering the agriculture workforce.
- Support aquaculture incubation such as at NELHA and UH Hilo facilities.
- Support initiatives such as mobile livestock processing facilities.
- Identify existing and create new financial programs that give farmers and ranchers access to capital and the tools to grow.
- Identify emerging and existing policies, rules, regulations, and certifications; and provide relevant outreach and education to ensure understanding, impacts, and compliance (e.g. Waters of the United States, WOTUS; food security; prohibited transport, etc.).
- Identify and address regulations, rules, and policies that require updating as technology and processes change. Work with policy makers and legislators to effect changes.
- Create an enabling environment and support research and development that provides tools for resilience in agriculture.
- Develop, provide training and access to preparedness and mitigation plans.
- Develop and implement expedited access to and coordination of, resources during and following occurrences requiring response and mobilization across public and private sectors.
- Identify and provide access to different sources of capital from both public and private sector.
- Identify and support increased collaboration opportunities for small to mid-size operators for achievement of greater economies of scale. Support existing and increase education and training in business development.
- Identify and implement programs of advocacy and education for industry owners/operators/workers, consumers, and policy makers.
- Identify necessary infrastructure, including and not limited to, broadband, tele-communications, transportation, water, waste collection and treatment, and electricity are in place and/or support efforts to secure such infrastructure and/or required upgrades.
- Work with law enforcement and legislators to address ag theft and vandalism.
- Increase public awareness of the issue and short- and long-term impacts of ag theft/vandalism.

ASTRONOMY, AEROSPACE and AVIATION

As reported by the University of Hawai'i Economic Research Organization (UHRO), the Astronomy sector in Hawai'i produced an economic impact of \$167.86 million and 1,394 jobs statewide in 2012. Of this, the largest impact, \$91.48 million came from the Hawai'i Island based industry.³⁴

On May 23, 1960, Hawai'i Island was devastated by a tsunami caused by an earthquake off the coast of Chile. Seeking to stimulate and help the local economy recover, community and business leaders including the Hawai'i Island Chamber of Commerce, reached out to U.S. and Japan universities to suggest Mauna Kea as a site for an observatory. In 1964, then Hawai'i Governor John Burns committed \$25,000 in state funds to build a dirt road to the summit of the mountain that stands 13,802 feet, to allow requisite due diligence in consideration of the idea. This led to funding from NASA, establishment of the Mauna Kea Science Reserve, and the first telescope built atop Mauna Kea on Hawai'i Island in 1968.³⁵ Subsequently, twelve more telescopes were built in the reserve and today, Mauna Kea is widely recognized for its contributions to astronomy.

In 2013, the State of Hawai'i Board of Land and Natural Resources (BLNR) issued a Conservation District Use Permit (CDUP) to allow construction of the Thirty Meter Telescope (TMT) on a plateau within the science reserve and below the summit on Mauna Kea. Protests ensued by some residents of Hawai'i Island and others; the Hawai'i Supreme Court revoked the permit citing a process flaw by the State of Hawai'i; and the case was eventually remanded back to the BLNR for a re-do on the application process. In Fall 2016, the contested case hearing is expected to take place and will determine if TMT will stay in Hawai'i. Concurrently, TMT officials are studying alternate sites for the telescope in the event the project cannot be built in Hawai'i in timely fashion.³⁶

Since the 1960's Hawai'i Island has also been considered a potential site for establishment of an aerospace industry. The State's Department of Business, Economic Development and Tourism (DBEDT) includes the Office of Aerospace Development (OAD) amongst its divisions, and recognizes aerospace as an important emerging industry for Hawai'i.

³⁴ Burnett, Kimberly et al. Honolulu, Hawai'i. UHRO, The Economic Research Organization at the University of Hawai'i. [The Economic Impact of Astronomy in Hawai'i](http://www.uhero.hawaii.edu/product/view/472). December 18, 2014. <http://www.uhero.hawaii.edu/product/view/472>. Last accessed 01 May 2016.

³⁵ Terrell, Jessica. Honolulu Civil Beat. "Mauna Kea Telescopes: The Business of Astronomy is Not an Easy One." April 20, 2015. <http://www.civilbeat.org/2015/04/mauna-kea-telescopes-the-business-of-astronomy-is-not-an-easy-one/>. Accessed 01 May 2016.

³⁶ Thirty Meter Telescope. [History](http://www.tmt.org/about-tmt/history). <http://www.tmt.org/about-tmt/history>. Last accessed 01 May 2016.

ASTRONOMY, AEROSPACE and AVIATION

In a report for the Aerospace Industries Association on the economic impact of aerospace and defense issued in April 2016 by HIS Economics,³⁷ measurements for Hawai`i specifically were reflected as follows:

Employment # of Workers	Output Million US \$	Value Added Million US \$	Labor Income Million US \$
Economic Impact by State and Metric Total Economic Impact of A&D Industry (Average 2013-2015)			
2,100	408	207	156
Indirect Economic Impact of A&D Industry (Average 2013-2015)			
440	71	38	24
Direct Economic Impact of A&D Industry (Average 2013-2015)			
560	181	79	83
Induced Economic Impact of A&D Industry (Average 2013-2015)			
1,100	156	89	49

While the numbers do not represent aerospace as a private sector industry exclusively, the importance and contribution of what is still an “emerging” industry for Hawai`i is reflected.

As a comparison, an economic impact study of New Mexico’s Commercial Spaceport estimated a potential of approximately \$460 million of additional economic activity and creation of 3,460 new jobs in 2015.³⁸ Although such a study has not been done to consider the potential economic impact of aerospace on Hawai`i, there is sufficient information to compel and support rationale that a viable aerospace industry will create jobs and spur economic activity worth tens of millions of dollars.

³⁷ HIS Economics. O’Neil, Brendan et al. “Aerospace and Defense Economic Impact Analysis: A report for the Aerospace Industries Association. April 2016. http://www.aia-aerospace.org/assets/AD_Industry_Economic_Impact_Analysis_Final.pdf

³⁸ Futron Corporation. “New Mexico Commercial Spaceport Economic Impact Study for State of New Mexico Economic Development Department.” <http://www.rymdturism.se/images/pdf/Futron-New-Mexico-Commercial-Spaceport-Economic-Impact-Study-Dec-2005.pdf>

Mauna Loa on Hawai`i Island is host to a simulated space travel to Mars habitat financed by the National Aeronautical and Space Administration (NASA) in partnership with the University of Hawai`i and the Hawai`i Space Exploration Analog and Simulation (HI-SEAS).³⁹ The Pacific International Space Center for Exploration Systems (PISCES)⁴⁰ another University of Hawai`i affiliate is based in Hilo, the county seat for the island.

Hawai`i Island boasts two airports that can accommodate major air traffic, the Kona International Airport at Keahole Point in Kailua-Kona and Hilo Airport. In considering potential sites for a 21st century spaceport in Hawai`i, after looking across the state, consultants to the OAD identified Kona and Hilo airports as the top and runner-up sites.

As the most isolated population center on earth being furthest from any landmass (approximately 2,500 miles from the U.S. west coast⁴¹ Hawai`i is largely dependent on air transportation for people and goods. In January 2015, the U.S. Department of Transportation Federal Aviation Administration reported that the economic impact to the state of Hawai`i by civil aviation for the calendar year 2012 was \$21,989,305,847 and included 187,000+ jobs. While civil aviation contributed 5.4% to Gross Domestic Product (GDP) nationally, the value of contribution to Hawai`i's state GDP is highest in the nation at 17.9%.⁴²

In 2015, the Hawai`i State legislature approved seed funding to establish an international flight training center and advanced aviation degree program at the University of Hawai`i at Hilo.

³⁹ University of Hawai`i: Hawai`i Space Exploration Analog and Simulation. "Long Duration mars analog simulations operated by the University of Hawai`i". <http://hi-seas.org>. Accessed 01 May 2016.

⁴⁰ Pacific International Space Center for Exploration Systems. <http://pisc.es.uhh.hawaii.edu/index.php?id=7> Accessed 01 May 2016.

⁴¹ The Huffington Post. "Science: Hawai`i Space Photos Prove Earth's Most Isolated Landmass is also its Prettiest." January 31, 2014. http://www.huffingtonpost.com/2014/01/31/Hawaii-space-photos_n_4706183.html. Accessed 01 May 2016.

⁴² Washington, D.C. U.S. Department of Transportation Federal Aviation Administration. The Economic Impact of Civil Aviation on the U.S. Economy: Economic Impact of Civil Aviation by State. January 2015. www.faa.gov/air_traffic/publications/media/2015-economic-impact-report.pdf.

ASTRONOMY, AEROSPACE and AVIATION

Strengths, Weaknesses, Opportunities, and Threats

(Note that this Focus Group also considered Aspirations and Results which are also shown below)

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Location <ul style="list-style-type: none"> • Lowest Inclination • No Land Overflight • Best Northern Hemisphere Site • Altitude, Low Light Pollution, Low Turbulence • Land – Space and Availability • International Funds and Collaboration Available • International Exposure • Human Capital <ul style="list-style-type: none"> • Young, Talented Workforce (including, students from grade to high school upcoming) – skilled IT, technicians, robotics, manufacturing • Education: UH Hilo, Hawai`i Community College Including West Hawai`i Campus (Palamanui) • New programs including aviation/aeronautics being developed at UHH and HCC • Two major airports <ul style="list-style-type: none"> • State efforts to establish spaceport in Kona • Diverse Population • Common values • History of Space/Aerospace <ul style="list-style-type: none"> • Astronauts headed to moon trained on Hawai`i Island in 1970’s • Ellison Onizuka’s legacy 	<ul style="list-style-type: none"> • Location (i.e. Isolation) <ul style="list-style-type: none"> • Transportation/Shipping • Other High Costs • Ranked lowest State as place to do business <ul style="list-style-type: none"> • More support needed for start-ups and local businesses • Costs related to Electricity, Energy in General, Fuel • Built and Physical Infrastructure Lacking • Obstructionists (Opposition to Tech and Innovation) <ul style="list-style-type: none"> • Fear of Science, Change • Anti-Science Bias • Rehash old failures, obsolete technologies • Lack of Political Will and Leadership <ul style="list-style-type: none"> • Compounded by political weakness, low population, low voter turnout, apathy • Lack of Vision • Lack of Strategy • Lack of Clarity and Consistency <ul style="list-style-type: none"> • Related to lack of strategy but also refers to permits, processes, and expectations • Declining public sector funding

OPPORTUNITIES

- **Astronomy Services Industry**
- **Space Enterprises (Payload) and Tourism**
- **Low Satellite Launch**
- **Underutilized Infrastructure (Ports/Airports)**
- **Laser Communications**
- **Diverse Renewable Energy Portfolio**
- **Human Resources Potential**
- **Collaboration (Narrative/Telling Story)**
- **Pohakuloa Training Area Lease Renewal**
- **Mauna Kea Lease Renewal**
- **STEM Education and funding**
- **Engineering Program at UH Hilo (tie to robotics and innovation curriculum)**
- **Dynamic Astronomy Industry (note 4 of the 5 busiest telescopes on planet based on Mauna Kea)**
- **Ancillary Industries**
- **Private Sector Leadership / Collaboration / Resources**
- **Drone/UAV Technology**
- **Recapture Hawai`i Island's legacy – Space, Aerospace**

THREATS

- **Lack of Vision, Commitment, Direction from Elected Officials, Policy Makers, General Public**
- **Momentum of Anti-Science/Fear-Mongers**
 - Driving agenda of fear, emotion, anecdote
 - Misinformation (by error or deliberate)
 - Social media
- **Inadequate supply of highly-skilled, technically-trained workforce**
- **Lack of vision and consensus re: Sovereignty Issue**
 - Perceived Racism
- **Current status of TMT**
 - Project failure leads to dire economic and other long-term negative consequences
- **Lack of Leadership concurrent with Lack of Meaningful Political Opposition** (need more dialogue and true 2-party system)
- **Lack of Timeliness on Land Use and other Decisions**
- **Lack of Clarity in Hawai`i State both laws and processes**
- **Changing Demographics / Loss of Common Values**
- **TIME-What happens, what's at stake as time passes?**
- **Brain Drain** (Beyond young people, professionals who find environment oppressive, non-supportive)
- **Hawai`i is ranked 50th of 50 as place to do business**
- **Loss of another project will exacerbate difficulty to secure investors**

<p style="text-align: center;">ASPIRATIONS (Over What Time Period?)</p>	<p style="text-align: center;">RESULTS (STRATEGIES)</p>
<ul style="list-style-type: none"> • High Tech / Living Wage Jobs • Continued & Expanded (More People) Prosperity <ul style="list-style-type: none"> • Profitable Transitions • Live, Work, Play Community plus Investments in the Future (time element) • Diversified Economy including Innovation / Technology (beyond Ag/Tourism/Construction) • Community Pride / Valued Sense of Place • Hawai`ian Traditionalists co-exist in modern world (look equally to future as well as past) • Values (identify, protect and perpetuate shared values) • Science as part of the Narrative • ALOHA as part of the Narrative & Behavior • Education that is enriching, relevant, resilient • Vibrant astronomy sector well past 2033 accompanied by vibrant aerospace industry (For context – Master Lease for Mauna Kea expires in 2033) • Internships for High School / College Students • Inventory of Diversified, Adequate Living Wage Jobs (exclude un and “under” employment) • UH Hilo independent / autonomous from UH System (ability for curriculum, programs, to be introduced without interference from system) • NO Brain Drain (quality of life, opportunities, compensation allow people to “choose” to live/stay on Hawai`i Island) 	<ul style="list-style-type: none"> • Dynamic, Consistent Public Outreach/Awareness (share information about astronomy, aerospace, innovation, technology sectors and what is being done – stop preaching to ourselves) <ul style="list-style-type: none"> • Community Associations, Schools, Chambers of Commerce, Civic Groups, etc. • Mitigate State/Oahu – centricity (i.e. Work with Hawai`i Island legislative delegation to work together, find common thread, show leadership and commitment • Resist tendency to look backwards negatively (e.g. South Point/Ka`u Spaceport controversy – recognize new day, new technology, new proposal, etc. move forward with 21st century story) Consider positives – Moon Landing Training and Ellison Onizuka • Identify and Implement Opportunities for Education and Economics <ul style="list-style-type: none"> • Mitigate poverty, disenfranchised, unskilled • Comprehensive / Systemic Perspective and Understanding of Economic Development <ul style="list-style-type: none"> • Two Distinct Sets of Economic Sectors <ol style="list-style-type: none"> 1. Stability – Consists of Basic Services, Utilities, Food, Health 2. Prosperity – Multi generations, grow prosperity on island – identify and mitigate barriers. Consider multiple smaller, high tech growth sectors (e.g. robotics; software; testing; UAV; knowledge based – information transfer) • Develop an economic narrative that includes streams of income; ancillary industries; multipliers (e.g. Aerospace considered 2:4 multiplier factor) • Enterprise and Other Zones <ul style="list-style-type: none"> • Inventory existing; add and/or update qualifying sectors as applicable • Communications <ul style="list-style-type: none"> • Develop a central clearing house • Community Support and Resiliency <ul style="list-style-type: none"> • Provide resource and other information • Grassroots efforts and coalitions • Entrepreneurs (Develop and support)

ASTRONOMY, AEROSPACE and AVIATION

Goals, Objectives and Strategies

Goal:

Advance Hawai`i Island's position as a place for world-class astronomy, interplanetary exploration research, aerospace and aviation.

Objectives:

1. Conduct a new cluster analysis and facilitate the networking of firms and professionals working within cluster industries through the participation in or formation of industry cluster organizations.
2. Create an environment and community that accepts 21st century technologies and businesses.
3. Recognize, market, educate Hawai`i's strengths; recruit new businesses and create jobs.
4. Identify and recruit new enterprise, technology, and innovation
5. Identify and support points of common impact and encourage respectful co-existence of science and culture.
6. Increase collaboration. Develop and implement community outreach, education and engagement.
7. Ensure available skilled workforce and increase recruitment and hiring of Hawai`i residents.
8. Support the legacy of cultural exploration such as wayfinding and the Hokule`a and Kona born astronaut Ellison Onizuka.

Strategies:

- Encourage and Increase dialogue, engagement, collaboration, outreach and education between stakeholders.
- Develop and implement outreach to enhance understanding of economic, education and other benefits.
- Collaborate and maximize opportunities through including and not limited to, `Imiloa Astronomy Center.
- Support flight training center and aviation program at UH Hilo.
- Support efforts to secure a FAA certified spaceport/horizontal launch site.
- Support training, research, development and deployment of unmanned aerial vehicle (UAV) technology and equipment. Support other industry sector programs that provide training and development of a workforce pipeline.
- Support and promote K-20 Science, Technology, Engineering and Mathematics (STEM) curriculum (both formal and extracurricular).
- Increase student interest through experiential learning, internships, mentoring, and inclusion in meetings, conferences, other forums.
- Support and promote scholarships, grants, other funding sources for students.
- Showcase education and career opportunities through partnerships with schools, organizations, businesses. Develop and conduct work fairs and other opportunities for employment outreach.
- Develop and maintain database of jobs, skillsets, internships, other opportunities.
- Support and promote business training.
- Identify sources of and seek capital necessary to execute on strategies and achieve outcomes.

- **BUSINESS DEVELOPMENT, SMALL BUSINESSES and ENTREPRENEURSHIP**

The 2015 State of Hawai`i Data Book reflected a total of 3,962 business establishments with 59,063 employees in 2014 for Hawai`i County.⁴³

The same report notes that the top industries for employment throughout the state in 2012 were accommodation and food services, retail trade; health care and social assistance; administrative and support and waste management and remediation services; construction; transportation and warehousing; and professional, scientific, and technical services. This listing plus agriculture reflects the employment composition of Hawai`i County.

Forbes' 2015 ranking of the best and worst states to do business listed Hawai`i as 43rd (up from 45th in 2014). Some of the characteristics that contributed to Hawai`i's low ranking included business costs, regulatory environment, economic climate and growth prospects.⁴⁴

In the cluster mapping done by the Harvard Business School and funded by the U.S. Economic Development Administration (EDA), Hawai`i County ranked in the first (highest) quintile in private, non-agricultural employment with a 1.84% growth rate between 1998-2014. However, in the area of cluster strength based on the percent of traded employment in strong clusters for the same period, the county ranked in the fifth (lowest) quintile with a ranking of 83 at 54.19% and growth rate of -1.16%.⁴⁵ While somewhat skewed as Hawai`i County does not have a number of the national traded clusters, the information articulates the importance of creating opportunities for business development and entrepreneurship.

⁴³ State of Hawai`i Department of Business, Economic Development and Tourism. Research & Economic Analysis. 2016. 2015 State of Hawai`i Data Book. Section 15 "Banking, Insurance and Business Enterprise." <http://dbedt.hawaii.gov/economic/databook/db2015>. Accessed 18 July 2016.

⁴⁴ Forbes Media LLC. 2015 Ranking Best States for Business. 2016. <http://www.forbes.com/places/hi/>. Accessed 18 July 2016.

⁴⁵ Harvard Business School, Institute for Strategy and Competitiveness. U.S. Cluster Mapping Project. http://www.clustermapping.us/region/county/hawaii_county_hi/cluster-portfolio. Accessed 18 July 2016.

Strengths, Weaknesses, Opportunities, and Threats

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Tourism • Agriculture / Farming • Ocean / Clean Coastline • NELHA • Entrepreneurs • Climate Diversity • Business Resources • Large areas of land undeveloped • Workshops and Business Planning • County Government • Astronomy • Human Resources • Quality of Life • University of Hawai`i 	<ul style="list-style-type: none"> • Unskilled labor • Lifestyle Diversions • Education • Workforce Development • Insufficient # of jobs • Low value (paying) jobs • Oahu Centric Governance • High cost of electricity • High cost of living • Insufficient Housing Inventory • Homelessness • Natural Environment • Health Care • Logistics • Regulatory Issues (Complex and Lacking Clarity) • Natural Hazards

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • NELHA Resources • Blue Technology • Palamanui (UH HCC West Hawai`i campus) • Astronomy • Ocean Recreation • Art Community • Agriculture • Loss of Museums (Onizuka Space Center; Greenwell Garden) • Intellectual Transfer • Technology/Innovation • Entrepreneurs • Aerospace • Local contractors and service providers for PTA 	<ul style="list-style-type: none"> • Anti-business mindset • Not in My Back Yard (NIMBY) mindset • Ideology • Climate Change • Visitor Industry • Insufficient Infrastructure • Lack of Broadband • Loss of PTA • Loss of TMT • Government (Regulations, Overreaching) • Predatory Recruitment • Insufficient Housing Inventory • Homelessness • Health Care • Logistics • Regulatory Issues (Complex and Lacking Clarity) • Natural Hazards • Globalization

ASPIRATIONS

- **Update 2011 Hawai`i Island Assets Inventory**
- **Resiliency from economic, environmental, disaster, societal shocks**
- **User/Business Friendly Environment**
- **Attract Business and Create Living Wage and High Value Jobs**
- **Sustainability**
- **Marine Science**
- **Legislature “gets it right”**
- **Coordinate incentives between private/public in sourcing**
- **Retain Pohakuloa Training Area**
- **Retain Thirty Meter Telescope**
- **Clarity and relevance in rules, regulations, processes**

Goals, Objectives and Strategies

Goal:

Foster and support existing businesses; attract and support new businesses and entrepreneurial initiatives.

Objectives:

1. Identify all types of small business needs and opportunities
2. Ensure that regulations, policies and programs offer a competitive advantage for business retention, creation, expansion and operations.
3. Increase small business access to capital.
4. Establish a “Buy and Invest Local” culture.
5. Increase Hawai`i based businesses providing goods and services to Department of Defense (Pohakuloa Training Area)
6. Increase broadband and access to technology.
7. Provide a highly skilled workforce to fill positions at all levels in 21st century jobs.
8. Build and facilitate collaborative networks between government, industry and academia to support business and increase economic vitality and diversity.
9. Facilitate collaboration between on island institutions of higher learning, entrepreneurial and innovation facilities, local technology firms and research and development.

Strategies:

- Work with County and State to streamline permit processes and “One Stop” initiatives.
- Develop and implement a coordinated plan to expedite technical assistance, resources, programs, and other support to emerging businesses.
- Continue, expand, and support programs that offer training to businesses and entrepreneurs such as for example, including and not limited to County of Hawai`i Business Center and Small Business Development Center.
- Encourage UH Hilo, UH HCC and UH HCC Palamanui and other on island institutions of higher education; and secondary schools (public, private, charter) to include entrepreneurship curriculum and resources.
- Review regulations and policies, and collaborate with policy makers and others to streamline, amend, repeal as applicable.
- Support creation of new funds, accelerator programs, and traditional sources such as for example and not limited to, Small Business Association (SBA) loans.
- Build a Hawai`i Island brand and support businesses marketing products and services.
- Ensure that necessary infrastructure, including and not limited to, broadband, tele-communications, transportation, water, waste collection and treatment, and electricity are in place and/or support efforts to secure such infrastructure.
- Support and increase inventory of co-working spaces and incubator sites.
- Expand partnerships between high schools, university and community colleges, civic organizations, Chambers of Commerce, economic development organizations, government and industry.
- Facilitate business-to-business partnerships.
- Develop and implement mentoring programs.

CONSTRUCTION, LAND AND RESOURCE USE, PLANNING AND DEVELOPMENT, BUILT INFRASTRUCTURE, and ENVIRONMENTAL SERVICES

The construction industry is identified as "... the fourth largest private industry in Hawai'i as measured by the share of the State's gross domestic product (GDP), following tourism, real estate, and health care."⁴⁶

Construction in Hawai'i County is starting to rebound after the devastating impact of the housing crash of the Great Recession with the highest number of building permits issued (4,811) in 2014 since 2008 when 4,324 permits were issued.⁴⁷

Like the rest of the state and nation, Hawai'i County is facing many challenges in replacing, maintaining, and modernizing aging infrastructure to comport with 21st century needs and quality of life. Simultaneously, while requiring more infrastructure, residents value open space and Hawai'i Island's rural aesthetic creating conflicting expectations and outcomes.

The Hawai'i County General Plan currently undergoing review in preparation for its first update since 2005, "... is the blueprint that guides the long-term development of Hawai'i Island. It considers the needs of the entire island, and provides a sound growth strategy that directs future opportunities related to land use, zoning amendments and capital expenditures. The General Plan strives to position Hawai'i Island for economic progress while preserving the environment and strengthening community foundations."⁴⁸ In the years between 2005 and the current review, island residents worked to develop, adopt and implement regional Community Development Plans (CDPs) which have on several occasions been questioned as to compliance with the General Plan.

Important questions and concerns regarding land use following the end of sugar in Hawai'i County are being raised. Beyond land use and related regulations, stakeholders must consider for example and not limited, water use and related regulations, and infrastructure constructed and financed by, then maintained and updated by the sugar industry.

21st century rules and regulations are also creating projects and jobs as the county and other stakeholders take action to adopt and comply with new environmental standards.

⁴⁶ State of Hawai'i Department of Business, Economic Development and Tourism. Research & Economic Division. Construction and Hawai'i's Economy, an Analysis of the Past and Forecast of the Future. February 20, 2014. http://www.files.hawaii.gov/dbedt/economic/data_reports/construction_industry/pdf Accessed 18 July 2016.

⁴⁷ Hilo, Hawai'i: County of Hawai'i, Department of Research and Development 2016. Hawai'i County Data Book 2015. Table 8.1.1 Number and Value of Building Permits Hawai'i County. Selected Years 2014 and 2008. (p.145).

⁴⁸ Hilo, Hawai'i: County of Hawai'i, Planning Department. 2016. The County of Hawai'i General Plan. <http://www.cohplanningdept.com/general-plan/>. Accessed 19 July 2016.

**CONSTRUCTION, LAND AND RESOURCE USE, PLANNING AND DEVELOPMENT,
BUILT INFRASTRUCTURE, and ENVIRONMENTAL SERVICES**

Strengths, Weaknesses, Opportunities and Threats

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Biota • “Big Island” Geography • Aerospace/Astronomy • Clean State • Private Ali`I Trust Lands • Location including gateway to Asia/Pacific region • Logistics • Agriculture / Farming • Climate (Diverse, multiple climate zones) • Design Opportunities • Planning and Building Diversity • Crops (Farm to Table) • Healthy Living • Quality of Life • Economic Development • Large areas of land undeveloped • University of Hawai`i • Trade programs at HCC 	<ul style="list-style-type: none"> • Lack of Political/Cultural Leadership • Lack of long-term vision • Ideology • Political Monopoly • One-Party System • Entry Barriers • Not in My Backyard or On My Island mindset • Government Failure • Draconian, Irrelevant, Contradictory Regulations • Geographic Isolation • Poor Infrastructure • Lack of Affordable Housing • Resort driven economy • Low Income Per Capita • High Cost of Living • Natural Hazards • Lack of Education Opportunities • High cost of electricity

<p style="text-align: center;">OPPORTUNITIES</p>	<p style="text-align: center;">THREATS</p>
<ul style="list-style-type: none"> • Location as a link between Asia and America • Potential Air Freight Hub • Internet Capacity • Quality of Life • Access to low-cost electricity • IUCN and other international conferences • Big Island as a model in renewables, clean energy • Natural Resources • Intellectual Assets • Conservation Management • Landowner incentives • Open space • Agri-tourism • Technology including advanced high computing • Unmanned aerial vehicles (DRONES) 	<p style="text-align: center;">(note that group determined the weaknesses identified also are the threats that cause concern)</p> <ul style="list-style-type: none"> • Lack of Political/Cultural Leadership • Lack of long-term vision • Ideology • Political Monopoly • One-Party System • Entry Barriers • Not in My Backyard or On My Island mindset • Government Failure • Draconian, Irrelevant, Contradictory Regulations • Geographic Isolation • Poor Infrastructure • Lack of Affordable Housing • Resort driven economy • Low Income Per Capita • High Cost of Living • Natural Hazards • Lack of Education Opportunities • High cost of electricity

<p style="text-align: center;">ASPIRATIONS</p>
<ul style="list-style-type: none"> • Clarity in laws/regulations/processes • Incentivize people to utilize local resources • Produce our own time/energy • Self-sufficiency including and not limited to energy and food • Energy research and development • Innovation in agriculture • Pohakuloa Training Area Lease extended • Thirty Meter Telescope constructed • Clarity and relevance in rules, regulations, processes • Diversified economy – reduce dependence on tourism – introduce 21st century virtual/technology economic drivers that create jobs

**CONSTRUCTION, LAND AND RESOURCE USE, PLANNING AND DEVELOPMENT,
BUILT INFRASTRUCTURE, and ENVIRONMENTAL SERVICES**

Goals, Objectives and Strategies

Goal:

Expand private and public sector capacity and infrastructure.

Objectives:

1. Ensure housing inventory for all market levels.
2. Ensure affordable and transitional housing.
3. Ensure adequate infrastructure including broadband, telecommunications, transportation, potable water, waste collection, waste treatment, electricity needed to support 21st century technologies, business and prosperity.
4. Raise awareness of residents and economic development stakeholders in Hawai`i County that land use planning and economic development can co-exist. In order to have quality economic development, it is vital to have effective land use planning.
5. Identify, recruit, support and coordinate development that has a net positive impact on Hawai`i County and its residents.
6. Develop and implement outreach and education for resilience including and not limited to, natural disasters, cybersecurity, economy and its multiple sectors.
7. Identify built infrastructure/environment for modernization.
8. Assure that land use planning is not completed in a vacuum, and recognize that land use policies result in real world impacts, particularly at the financial level.
9. Ensure alignment between strategic plans including and not limited to, Hawai`i County General Plan and Community Development Plans. Identify and mitigate points of contention (i.e. where alignment is not possible for example due to contradictory guidelines or requirements).

Strategies:

- Identify funding sources and opportunities to build, repair and maintain affordable, workforce and transitional housing.
- Assure that land use regulations contain some elements of flexibility. The flexibility must be consistent with the overall community development objectives stated in the County's General Plan and related such as Community Development Plans (CDPs), and should allow for variations that help accomplish those objectives.
- Promote long-term visions, goals, and plans for sustainable community development.
- Support initiatives and integrate other management plans related to infrastructure construction, installation, upgrading, repairs and maintenance.
- Promote strategic investments for infrastructure that facilitates and supports Hawai`i County's social, cultural and economic development needs.
- Maintain and improve transportation infrastructure consistent with smart growth principles.
- Develop, improve and expand industrial sites, acreage, parks, and buildings consistent with smart growth principles

**CONSTRUCTION, LAND AND RESOURCE USE, PLANNING AND DEVELOPMENT,
BUILT INFRASTRUCTURE, and ENVIRONMENTAL SERVICES**

Strategies cont'd

- Support identified infrastructure projects including and not limited to extension of Daniel K. Inouye Highway from Mamalahoa to Queen Kaahumanu Highway
- Support research and development of natural resources including the multi-year NSF funded UH led `Ike Wai project studying the Keauhou Aquifer system.
- Support expansion of renewable, clean energy consistent with smart growth principles and the state's goal of 100% clean energy by 2045. Specifically support Aloha+ Challenge targets of securing 70% clean energy with 40% from renewables and 30% through efficiency
- Support maintenance and improvements of utility infrastructure
- Support modernization of airports, harbors (including Honokohau and other Small Boat harbors), and shipping/processing facilities.
- Build collaborative networks to engage stakeholders in respectful discussion in support of managed growth and development

EDUCATION, WORKFORCE DEVELOPMENT, DATA and INFORMATION

Education at all levels is a fundamental requirement to achieve sustainable and resilient economic development, which requires that there be “... substantial investment in human capital. Education enriches people’s understanding of themselves and the world. It improves the quality of their lives and leads to broad social benefit to individuals and society. Education raises people’s productivity and creativity and promotes entrepreneurship and technological advances.”⁴⁹

Hawai`i Island residents are provided with educational opportunities at a multitude of public, charter and private pre-12 schools, as well as, post-secondary education. The public schools under the State of Hawai`i Department of Education represent nine (09) complexes across the island with an enrollment of approximately 26,500 students in 2015.⁵⁰

The University of Hawai`i at Hilo offers numerous four-year degrees, Master’s and PhD programs. The University of Hawai`i, Hawai`i Community College (HCC) offers associate degree, certification, and non-credit programs in many areas including and not limited to trades, business, culinary studies, health and hotel operations. In 2015, the UH HCC at Palamanui was opened and welcomed its first students and faculty. The campus located in Kailua-Kona in close proximity to the Kona International Airport and Natural Energy Laboratory of Hawai`i at Keahole Point, offers a wide array of associate degrees and certificate programs ranging from Accounting and Agriculture to Hawai`ian Studies and Hospitality to Health and Natural Resource Management.⁵¹

The Hawai`i County Workforce Development Board (HCWDB) focuses its efforts “... to promote the development of a highly competent and productive workforce by coordinating the efforts of educational institutions, labor, business, economic development organizations, government agencies and the entire community in order to sustain a strong economy and lifestyle.”⁵² Comprised of representatives of the aforementioned community subsets, the HCWDB is implementing the Workforce Innovation and Opportunity Act (WIOA) signed into law by President Obama in 2014.

⁴⁹ Ozurk, Ilhan. Federal Reserve Bank of St. Louis: Research Division. IDEAS. The role of education in economic development. <https://ideas.repec.org/p/prs/mprapa/9023.html>. Accessed 13 July 2016.

⁵⁰ Hilo, Hawai`i: County of Hawai`i, Department of Research and Development 2016. Hawai`i County Data Book 2015. Section 2. Education. Tables 2.3 Public Schools Enrollment by Grades Hawai`i District and 2.6. Community Profiles in Public Schools Hawai`i County 2014-2015. Accessed 29 July 2016.

⁵¹ University of Hawai`i, Hawai`i Community College Palamanui. <https://www.hawcc.hawaii.edu/>. Accessed 29 July 2016.

⁵² County of Hawai`i. Office of Housing and Community Development. <http://www.hawaiiicounty.gov/office-of-housing/>. Accessed 29 July 2016.

Strengths, Weaknesses, Opportunities, and Threats

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Complementary, Comprehensive Higher Education including new Palamanui campus • Scholarship Opportunities • Proven Track Record of Collaboration • Primary, Secondary, and Advanced Education <ul style="list-style-type: none"> ○ Department of Education ○ University of Hawai`i, Hilo ○ UH Hawai`i Community College ○ Kamehameha Schools ○ Charter and Private Schools • Established relationships and pipelines between education institutions, organizations, businesses, and government. <ul style="list-style-type: none"> ○ Workforce Development Board • Affordability (tuition compared to other states) • Millennials • Culture and Aloha • Innate values of our community and children • Early learning opportunities and support • Committed educators • Renewable energy • Commitment to early learning • Global Virtual Studios 	<ul style="list-style-type: none"> • High Cost of Living • Demographics • Mobility Limitations (for both education and work) <ul style="list-style-type: none"> ○ Insufficient Public Transportation ○ Rural Status ○ Access to education (distance) • Achievement Gap (therefore not mobilizing workforce) • Insufficient technology infrastructure • Skillsets to navigate technology • Skillsets to apply/interview/secure job • Lack of outreach to provide necessary skillsets • Cultural capital • Logistics • Non-English Speaking • Relevance, Nimbleness • Need closer collaboration between business and higher education (especially for job placement) • Need a more integrated system for integrating school to work • Ranked lowest State as place to do business • Lack of self-promotion and resultant misperceptions regarding education (availability and quality) • Inadequate funding • Preparedness for skilled workforce and global economy • Low performance and low expectations

OPPORTUNITIES

- Technology
- Distance Education
- Dual enrollment (college classes/credits while in high school)
- Out-of-Box Thinking and initiatives
- Cultural/Family Outreach
- Community based poverty/financial literacy outreach
- Millennials
- Non-English Speaking
- Disruption
- Trade Schools/Certification/Licensing (e.g. Cosmetology requests frequent in West HI)
- Relevance
- Pathways
- Unions (Internships, Apprenticeships)
- Emerging Industries and applicable education, workforce skills training
- Create Integration
- Assets Mapping
- Entrepreneurship
- STEAM (Science, Technology, Engineering, Arts and Mathematics)
- Information/Data Repository and Analysis
 - Create new industry and jobs
 - Geothermal, other renewable to produce necessary cooling
- Infrastructure Upgrades
 - New skillsets and career paths
- Creative Arts (GVS example)

THREATS

- Affordability / Cost of Living
(%age of resources needed for living expenses – food, shelter, clothing may exclude education)
- Location (Distance between jobs and housing)
- Remoteness
- Cultural
- Changing Demographics
- “Brain Drain”
- Poverty, Lack of Financial Literacy
- Poverty Barriers and Mindset (Instant gratification)
- Un- and Under- employment
- Transportation
- Predatory Hiring (Employment) Practices
- Millennials
- Technology Divide
- Lack and cost of infrastructure
- Employee Unions
- “Anti” mindset/ideology
- Critical mass of people who are “Disenfranchised”
- Apathy
- Education by “Google” and “Wikipedia”

EDUCATION, WORKFORCE DEVELOPMENT, DATA and INFORMATION

Goals, Objectives and Strategies

Goal:

Assure a quality, technically skilled, labor force that is prepared to meet the needs of current and future employers through improvement of area educational attainment and collaboration with Workforce Development Board.

Objectives:

1. Support schools and educators.
2. Support families to improve academic achievement.
3. Encourage increase of high school graduation.
4. Encourage increase of graduates seeking higher education.
5. Encourage increased interest and opportunities in STEM (Science, Technology, Engineering, and Mathematics).
6. Promote and provide information on “Dual” Education Opportunities.
7. Realign the existing relationship between business and industry with education and workforce development/training.
8. Maintain and enhance effective existing programs, and create new programs that address dynamic education and training needs.
9. Increase opportunities (job creation) for students studying elsewhere to return home.

Strategies:

- Connect teachers to resources (identify, create).
- Connect students to resources (scholarships, extra-curricular activities, mentoring, tutoring, etc.).
- Develop and facilitate stronger family-school-community relationships (address barriers such as language, poverty, technology-gap, transportation, housing).
- Develop and maintain stronger culture of education as a priority.
- Support efforts to significantly improve math and reading levels of all students at all grade levels.
- Support and encourage partnerships between UHH, UH HCC and high schools.
- Support vocational training in high schools.
- Support and encourage programs such as robotics, Journey through the Universe, etc.
- Encourage GED and continuing education (lifelong learning) efforts for the island’s adult population.
- Identify skillsets and provide early training opportunities.
- Beyond job training, teach “soft” skills.
- Work with current and future employers to increase training, recruitment, hiring, retention opportunities for residents.
- Support Department of Education and UH strategic plans.
- Support Early Learning programs including efforts to secure necessary funding.

ENERGY, UTILITIES and SHIPPING/TRANSPORTATION

As the most fossil fuel dependent state in the nation, the State of Hawai`i has adopted an ambitious goal to achieve 100% renewable/clean energy for production of electricity by 2045. Hawai`i Island has a diverse portfolio of renewable energy sources and currently produces 50% of its electricity from these sources including and not limited to, geothermal, so is well positioned to meet the 100% objective.

In order to achieve its 2045 goal, Hawai`i Island policy makers and residents alike must recognize the need for storage and significant (i.e. extremely costly) infrastructure upgrades and modifications.

Maintaining a high quality of life and ensuring economic resilience for Hawai`i Island residents depends in large part on utility resilience, transportation for residents and tourists on island as well as, air and sea travel; and reliable shipping departing from and arriving to the island. There are two airports capable of handling major commercial air traffic and two deep draft harbors on island.

An estimated 26,000 tons of cargo and mail pass through Kona and Hilo airports. Confirming that water transport continues to be the primary means by which goods reach the island, 2 million plus tons of cargo pass through Hilo Harbor and approximately 1.75 million tons through Kawaihae Harbor.⁵³

Electricity costs remain high in comparison to Oahu and continental U.S. with Hawai`i County residents paying approximately forty-two cents per kilowatt hour (kWh) in 2014. The utility is faced with the costly challenge of modernizing its infrastructure much of which is over fifty years old.

It is estimated by some that as many as one of every ten individuals in Hawai`i is employed in the transportation industry with almost 60% of all freight transported on the islands done via trucking.⁵⁴ The reliance on trucking is emphasized when one also considers the heavy use trucks for trash pick-up, construction, and haulage.

⁵³ Hilo, Hawai`i: County of Hawai`i, Department of Research and Development 2016. Hawai`i County Data Book 2015. Table 6.2.17 Freight Traffic for Hilo and Kawaihae Harbors. (p. 129) Table 7.1.2 Electric Utilities Hawai`i County (p.135).

⁵⁴ Hawai`i Truck Tax Information. Trucking Drives the Economy. 2015. <http://www.hawaiitrucktax.info/truckinginfo.html>. Accessed 02 August 2016.

ENERGY, UTILITIES and SHIPPING/TRANSPORTATION

STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

<p style="text-align: center;">STRENGTHS</p> <ul style="list-style-type: none"> • Assets based leveraging • Community Resources • Geographic Isolation • Isolated Grid • Visitor Industry • Social Media • Logistics • Renewable Energy Portfolio • Reliable electricity grid 	<p style="text-align: center;">WEAKNESSES</p> <ul style="list-style-type: none"> • Geographic Isolation • Cost to Import (Oil and other products) • Insufficient trained workforce • Social Media • Economics re: Finance Grid Modernization • Vulnerability to natural disasters • LNG • Lack of Trust in Government • Expectations • Instant Gratification • Resistance to Change • Lack of Leadership • Relevance, Nimbleness
<p style="text-align: center;">OPPORTUNITIES</p> <ul style="list-style-type: none"> • Change in Mindset • Diversified Portfolio • Geography • More advantageous to do business on Hawai'i Island • Out-of-Box Thinking and initiatives • Innovation • Create new industry and jobs • Infrastructure Upgrades 	<p style="text-align: center;">THREATS</p> <ul style="list-style-type: none"> • Anti-business sentiment • Mistrust of business and government • NIMBY • Fear • Risk Averse • Uncertainty Avoidance • Entitlement • Ideology and Laziness (to research for correct info) • Social media • Lack and cost of infrastructure • Utility demonized - Ideology
<p style="text-align: center;">ASPIRATIONS</p> <ul style="list-style-type: none"> • Accelerate renewable energy resources • Lower rates • Synergy with Parker Ranch/Paniolo Power • Incentivized Agriculture • Sustainable energy independence • Reliability • Work with Government • Leadership 	

ENERGY, UTILITIES and SHIPPING/TRANSPORTATION

Goals, Objectives and Strategies

Goal:

Provide all Residents with Access to Energy that is Affordable and Reliable for both Stationary (electricity) and Mobile (transportation) Applications.

Objectives:

1. Ensure systems for power source/grid resiliency
2. Secure business models, opportunities for funding to modernize grid and support infrastructure
3. Ensure regulations, ordinances, laws, policies and plans support renewable energy resource development.
4. Ensure grid modernization allows penetration of multiple sources of firm and non-firm renewable sources.
5. Support utility and County Program initiatives for meeting 100% renewable by 2045.
6. Reduce costs of energy for island residents.
7. Ensure research and development of multiple technologies, including development of energy alternatives for transportation.
8. Provide skilled workforce.

Strategies:

- Work with regulated utilities and independent power producers to create a back-up system for our power source to ensure resiliency.
- Identify business models and/or opportunities for funding to upgrade Hawai'i Island's aged electrical grid and support infrastructure.
- Work with regulated utilities to develop and implement public seminars, workshops, and professional development classes to teach about the strong connection between economic development and energy costs; pros and cons of renewable energy resources; and other information to create better understanding and acceptance of changes in the energy arena.
- Review and consider implementation of programs such as the *property-assessed clean energy* (PACE) model, an innovative mechanism for financing energy efficiency and renewable energy improvements on private property. PACE programs allow local governments, state governments, or other inter-jurisdictional authorities, when authorized by state law, to fund the up-front cost of energy improvements on commercial and residential properties, which are paid back over time by the property owners.
- Work with regulated utilities, independent power producers, County and State entities to develop comprehensive knowledge base for outreach and education.
- Facilitate collaboration and dialogue between all stakeholders.
- Support education and workforce development strategies previously detailed in this document.

HEALTH AND MEDICAL CARE, WELL-BEING, RECREATION

All focus groups refer to “Quality of Life” as one of Hawai`i County’s strengths and link access to health and medical care as being of paramount importance to maintaining quality of life. Social and economic determinants such as unemployment, lower income per capita (poverty), income disparity, and access to basic needs also contribute to one’s quality of life.

There is much concern that a majority of the island’s population is elderly, taxing health care resources that currently exist, driving the need for more health care, and rapidly outpacing the county’s ability to meet these needs. In fact, statistics reflect a modest 2.2% increase in the population aged 60 to 85+ between 2015 and 2025.⁵⁵

Hawai`i ranks 8th among states in physicians in patient care per capita.⁵⁴ Hawai`i has more physicians per capita with 3.2 active physicians per 1,000 resident population versus 2.8 national average.⁵⁶ Similar to the continental U.S. however, approximately 80% of Hawai`i’s physicians are concentrated in the urban (i.e. Oahu) setting for a 3.6 physician per 1,000 resident population versus 2.1 physician to resident ration in rural (i.e. neighbor islands) locales. Additionally, while the neighbor islands including Hawai`i County have more family practice and general medicine physicians than Oahu, there is a shortage of specialists requiring interisland transport for specialized care.⁵⁶

Similarly, while Hawai`i has more dentists per capita than the national average, 88% are located on Oahu and the resultant shortage in Hawai`i County (as well as, Maui and Kauai) has led to being designated as a “Dental Health Professional Shortage Area” by the federal Health Resource and Service Administration (HRSA).⁵⁷ Despite a large number of registered nurses, it is estimated that only 81% are actually employed in nursing which results in a shortage that has Hawai`i ranked 41st among the 50 states with 75 employed nurses per 10,000 residents compared to the national average of 82:10,000.⁵⁶

In general, according to federal guidelines, health resources are inadequate in Hawai`i County.

There are parks and recreation opportunities throughout the island bolstered by regular programs initiated and/or facilitated by the County of Hawai`i which also promotes and collaborates with others such as HMSA and the Blue Zones Project.

⁵⁵ Hilo, Hawai`i: County of Hawai`i, Department of Research and Development 2016. [Hawai`i County Data Book 2015](#). General Statistics Table 1.3.Total Resident, Population Projections by 5-year Age Group, Hawai`i County 2010 - 2040. (p. 23).

⁵⁶ American Medical Association. Physician Characteristics and Distribution in the U.S. 2009. Note that State Ranking includes the District of Columbia (i.e. ranking total of 51).

⁵⁷ American Dental Association, Dental Data 2007. Hawai`i Department of Commerce and Consumer Affairs, Professional and Vocational Licensing Records. http://healthtrends.org/resources_overview.aspx. Accessed 20 April 2016.

HEALTH AND MEDICAL CARE, WELL-BEING, RECREATION

Strengths, Weaknesses, Opportunities, and Threats

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none">• Affiliation with Queen’s Medical Center• Affiliation with other private medical centers• Residency Training on Island• Bay Clinic, West Hawai`i Community Health Center, Hamakua Health Center• QUEST/Medicaid• Physical Environment• Native Hawai`ian loan repayment program (WHCC)• Online Library provided to HHCS by Queen’s• Collaboration and Resource Leveraging• Technology Integration• Telemedicine/Dentistry/Psychology• Quality of Life• Outdoor recreation• Safety net hospitals	<ul style="list-style-type: none">• Diversity• HPSA• Other career paths (circle re: Medical Care)• Pathways to allied health including education and training• Mental/Behavioral Health• Retention of doctors, other health care professionals• Government Structure• GMA System• Shortages• Physical Facilities and Infrastructure• Affordable Care Act• Regulations• No enabling legislation

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Diversity • Homegrown professionals • Collaboration with business community • HCC Palamanui – balance education between West/East Hawai`i • Tell our Story • Regional Health • Affordable Care Act • University Hospital • Inculturation • Recruitment • Pilot programs/new models (analogy Peace Corps) • WHHC Advanced Trauma Pilot Program • Educational Collaborations • State Tax Incentives • Technology Integration including Telemedicine • Integrate/Blended/Naturopathic Medicine (note that HMSA includes Naturopaths) • Enabling Legislation 	<ul style="list-style-type: none"> • Not a health profession shortage area (HPSA) island wide (program currently being reevaluated) • Senior Tsunami (insufficient resources to provide care and dignity) • Reimbursements: HMSA, Medicaid • Workers’ Compensation (Pay) Affordability • Mental Health – Shortage of programs, services, structure, treatment centers • Model changing – fewer physicians going into private practice • Geography – Transportation - Isolation (Patients)

ASPIRATIONS
<ul style="list-style-type: none"> • HPSA (including 10% bonus re: Medicare) • Regional Health Improvement Program (Bonus Programs) • People interested in rural, underserved communities • Pilot / Model for medical programs / new models • Change conversation – Reframe story – Change Direction • State Tax Incentives • Facilitative Legislature / Policy Makers • University Hospital • New Model (including Waianae Comprehensive Health Center) • More employers integrate health/well-being onsite for employees • More collaboration

HEALTH AND MEDICAL CARE, WELL-BEING, RECREATION

Goals, Objectives and Strategies

Goal:

Provide all residents with access to affordable, quality health care and health education.

Objectives:

1. Prioritize the health, well-being and quality of life of Hawai`i Island residents as essential to economic prosperity.
2. Support projects that improve the health of Hawai`i Island residents.
3. Recognize and address needs in physical and mental health.
4. Recognize employers' concerns about the cost of health insurance and health care mandates.
5. Recognize and promote day-care and early learning as "safety net" especially for at risk children.
6. Prioritize substance abuse and its negative impact on economic development, prosperity, and quality of life for all residents.
7. Have health and well-being integrated by more employers in the workplace.

Strategies:

- First and foremost, support the work being done by the health care industry and stakeholders including County and State, to mitigate concerns.
- Assist with efforts to secure necessary funding and resources to maximize effectiveness of existing and emerging health programs.
- Assist with development and implementation of early health intervention and education.
- Collaborate with others such as the Department of Defense who recently provided free medical, dental, and vision care to Hawai`i residents through its Operation Tropic Care.
- While limited with respect to addressing cost of health care and related issues, stakeholders can convene and facilitate discussions and fact-finding with the County, State and human service agencies.
- Support efforts to reduce/prevent substance abuse in Hawai`i County.
- Support efforts and programs that bring health care into the workplace and the positive impact on economic development, job retention, and quality of life.

MILITARY, DEFENSE, FIRST and DISASTER RESPONSE - RESILIENCY

In 2014 the County of Hawai`i was hit with multiple natural hazards. In August, Tropical Storm Iselle made landfall with strong winds and heavy rains that caused flooding, downed trees, damaged homes, destroyed crops, infrastructure and power outages that lasted weeks in some neighborhoods in East Hawai`i.

A few months later in October, lava from Kilauea Volcano began crawling towards Pahoia and threatening to cut residents off from access to Hilo without traveling around the island. Residents and businesses suffered losses that resulted in some moving to other areas of the island or relocating off the island and several businesses shuttered their doors (most temporarily but in some cases, permanently). Adding to the economic turmoil was the need for order to be restored and National Guard troops stationed in the district to prevent looting and illegal entrepreneurial activities where individuals offered guided tours into the danger zone of the encroaching lava.

Recognizing that overgrown albizia trees downed during the storm were largely responsible for damages to homes and infrastructure as well as, cutting off access for residents and emergency responders, the County, State and private sector have collaborated on numerous efforts aimed at removing the invasive species as a preventive measure for future inclement weather events.

Continuing drought and extremely dry conditions impacting crops and livestock production also increased the threat of wildfires and in some cases, multiple fires burning simultaneously, severely stretching County, State, and Federal including military response resources.

The Pohakuloa Training Area (PTA) is the largest military installation in the state of Hawai`i covering more than 130,000 acres⁵⁸ and provides training including live-fire for multiple defense services. With only two (02) active duty personnel stationed at PTA, the remaining 300+ jobs are filled by civilian residents of the island who work in a wide array of jobs and a direct economic impact in Hawai`i County in excess of \$74 million per annum. Additionally, the Department of Defense is currently scheduling infrastructure modernization and other construction projects in excess of \$250 million over the next three years. PTA's lease of state lands is scheduled to expire in 2029 and as the only live-fire training facility in Hawai`i, there is concern that significant military personnel and resources will be relocated outside of Hawai`i.

⁵⁸ Directorate of Public Work, Environmental Division United States Army Garrison – Hawai`i. [Descriptions of Army Training Actions and Locations in Hawai`i. In Support of U.S. Army Programmatic Agreements for Routine Military Training and Related Actions on O`ahu and Hawai`i Islands.](#) May 2016.

MILITARY, DEFENSE, FIRST and DISASTER RESPONSE - RESILIENCY

In addition to training troops, PTA employs fifty plus individuals on its Natural and Cultural Resources staff which is dedicated to preserving and protecting endangered and threatened plants and safeguarding cultural resources at PTA. There are several species that are found only on PTA grounds. PTA’s vision includes “Setting the standard for environmental compliance as well as natural and cultural resource stewardship”⁵⁵ embodying the U.S. Army Installation Management Command (IMCOM) motto to “Sustain, Support and Defend.”⁵⁹

Strengths, Weaknesses, Opportunities and Threats

<p style="text-align: center;">STRENGTHS</p> <ul style="list-style-type: none"> • Collaboration between County, State and Federal (including military), and private sector (Red Cross, et al) resources • Highly skilled, committed workforce • County and community support • Community Engagement • Emergency Risk Management and Mitigation 	<p style="text-align: center;">WEAKNESSES</p> <ul style="list-style-type: none"> • Geographic characteristics (distance, remote access challenges) • Vulnerability to natural disasters • Mitigation and resources to affected residents • Residents and visitors unaware of collaborative role played by PTA first responders (i.e. accident, other emergency scenario within the Saddle of the island responded to by PTA fire/rescue personnel). • Ideology
<p style="text-align: center;">OPPORTUNITIES</p> <ul style="list-style-type: none"> • Disaster Relief Mitigation Grants • Innovation • Create jobs • Infrastructure Modernization • Social Media • Story-telling 	<p style="text-align: center;">THREATS</p> <ul style="list-style-type: none"> • Damaged buildings, structures, destroyed crops • Direct economic losses including wages, tax revenues, reduction of visitors • Direct loss of lives, injuries • Indirect impact on lives and economy – loss of leisure time due to longer commute, additional expense due to longer commute and/or family care. • Geography – size and isolation • Other losses – unable to calculate direct economic impact such as forest and wildlife • Ideology, Misinformation • Loss of PTA lease • Anti-military sentiment • Social Media

⁵⁹ United States Department of Defense, U.S. Army Garrison - Hawai'i. <https://www.garrison.hawaii.army.mil/default.htm>
<https://www.garrison.hawaii.army.mil/pta/> Accessed 29 August 2016.

MILITARY, DEFENSE, FIRST and DISASTER RESPONSE - RESILIENCY

Goals, Objectives and Strategies

Goal:

Ensure mechanisms are in place to support rapid response and resilient recovery from disaster whether manmade or natural; provide environment supportive of military presence and exclude Base Realignment and Closure (BRAC) of Pohakuloa Training Area.

Objectives:

1. Prioritize natural and man-made disasters as critical impact on economic prosperity.
2. Inventory vulnerabilities and assets.
 - a. Anticipate ALL potential hazards (e.g. drought, floods, hurricane and other inclement weather, tsunami, earthquake, wind, wildfire; loss of power, bridges, roads, other infrastructure; crop loss, food supplies, potable water).
3. Align hazard mitigation plans with land use and other plans, and regulations.
4. Anticipate and reduce future risks (i.e. do not simply return to pre-disaster conditions).
8. Support projects that reduce/mitigate risks and improve resiliency.
9. Recognize economic impact, value of and retain Pohakuloa Training Area.

Strategies:

- Promote and support programs mitigating risks.
- Promote and support programs focused on community preparedness.
- Collaborate with public and private sector stakeholders to develop, disseminate mitigation plans.
- Work with County Research and Development, University of Hawai'i, and others to update Hawai'i Island assets inventory and develop vulnerabilities inventory.
- Assist with identifying and securing resources and funds to support resilience.
- Support, develop and implement existing/new community outreach and education including and not limited to, resilience and preparedness.
- Develop and implement community outreach and education to support Department of Defense personnel and disseminate information on importance of PTA (military-defense-troop preparedness; environmental and cultural stewards; economic).
- Support PTA lease renewal efforts.

TECHNOLOGY and INNOVATION

Recognized as an important component of economic development and resilience for Hawai`i County that is a part of all clusters, discussion and SWOT for this cluster was integrated into the other clusters and not assigned to a specific focus group.

As noted in the discussions and SWOT analyses for the previous clusters, there is much concern about infrastructure being in place to support technology and innovation including entrepreneurship, attracting new business and creating new jobs.

More importantly technology and innovation are recognized as critical pieces to ensuring resiliency, sustainability, and quality of life for Hawai`i County residents, visitors, and businesses.

Thomas J. Klemas and Steve Chan of the Sensemaking Fellowship, Swansea University Network Science Research Center in Swansea, Wales addressed the subject in their research and resultant paper titled Technology Roadmap for Hawai`i Resiliency – Resiliency and Sustainability through Advanced Analytics.⁶⁰

The authors identify three threats that Hawai`i faces with short and long-term economic impact.

1. Impending economic downturn compounded by dependence on a tourism-heavy economy
2. Weather and environment
3. Emerging cyber-threat

⁶⁰ Presented at Data Analytics 2015: The Fourth International Conference on Data Analytics
Klemas, Thomas J. and Chan, Steve. Technology Roadmap for Hawai`i Resiliency – Resiliency and Sustainability through Advanced Analytics. Copyright IARIA 2015. ISBN: 978-1-61208-423-7.
Cyber Futures Center, an initiative of the Sensemaking – U.S. Pacific Command Fellowship; IBM Center for Resiliency and Sustainability; Dr. Steve Chan Center for Sensemaking, one of the centers of the Asia-Pacific Institute for Resilience and Sustainability (AIRS) jointly anchored at Swansea University's Network Science Research Center and Hawai`i Pacific University.

Strategies for successfully implementing a technology roadmap for resilience including some as outlined in the aforementioned study include:

1. Modernizing tsunami warning buoys and preventing hackers from disrupting, shutting down the buoys.
2. Optimize switching points between renewable and fossil-fuel based electricity production.
3. Recognize and begin mitigation on longer-term global climate change threats to sea level elevation and changes to soil and water (including ocean) chemistry.
4. Upgrade aging infrastructure and expand installation/construction of modern infrastructure including broadband and increasing bandwidth.
5. Foster new technology-based economic engines to support favorable competition in global marketplace.
6. Advance and utilize unmanned aerial vehicles and modeling software.
7. Introduce high performing computing systems to host software algorithms to accept real-time data streams, analyze data received, and provide advanced decision-making tools to help respond to threats.
8. Support manufacturing and creative industries including entrepreneurship and prototyping; including to seek and implement opportunities in support of such entrepreneurial efforts; and support of the proposed Hilo Multipurpose Facility.

Note that the "... resurgence of manufacturing (is seen as a way to help) communities cultivate an environment for businesses to create well-paying manufacturing jobs..."⁶¹ In 2014, manufacturing represented 13,500 jobs statewide, \$1.3 billion and 1.8% of the state's Gross Domestic Product (GDP)⁶² and Hawai'i County provided 1,182 jobs in the sector in 2015.⁶³ As the demand for innovation and technology commercialization continues to grow concurrent with new technologies, the opportunities for manufacturing and creation of related jobs in Hawai'i County also expands.

⁶¹ U.S. Department of Commerce. Fact Sheet: The Investing in Manufacturing Communities Partnership. <https://www.commerce.gov/news/fact-sheets/2013/04/fact-sheet-investing-communities-manufacturing.com>. Accessed 29 August 2016.

⁶² Economic Policy Institute. Scott, Robert E. The Manufacturing Footprint and the Importance of U.S. Manufacturing Jobs. January 22, 2015. <http://www.epi.org/publication/the-manufacturing-footprint-and-the-importance-of-u-s-manufacturing-jobs/>. Accessed 29 August 2016

⁶³ Hilo, Hawai'i: County of Hawai'i, Department of Research and Development 2016. Hawai'i County Data Book 2015. Table 11.1.1 Domestic Trade, Manufacturing Hawai'i County and State of Hawai'i. p 213.

These strategies will require support, funding, and long-term vision that will be disruptive. Hawai`i County and its residents and stakeholders can assist with these efforts by integrating these as priorities in response to the island's inventory of vulnerabilities and desired assets for its long-term assets inventory. These early assessments will lead to identifying opportunities to implement some of the above listed strategies to increase Hawai`i County resilience while simultaneously introducing new economic engines, modernizing infrastructure, and creating jobs in multiple fields.

In addition to maintaining close collaboration with educational institutions, Hawai`i County including and not limited to Department of Research and Development; Department of Planning; and Workforce Development Board; and others including private sector stakeholders, HIEDB and CEDS participants are committed to work with the County to convene a working group of broad representation to consider these opportunities, develop and execute an action plan.

VISITOR/HOSPITALITY INDUSTRY

This sector is understood to be the leading economic driver for Hawai'i State and County. While strategic plans for this sector are comprehensively developed, reviewed and implemented by the County of Hawai'i; State of Hawai'i Department of Business, Economic Development and Tourism; Hawai'i Island Visitors Bureau; Hawai'i Tourism Authority; Hawai'i Hotel and Lodging Association; and others, in addition to strategies related to education, preparation and retention of a highly skilled workforce, disaster response, and resilience that are aligned with overarching objectives and strategies, specific strategies and projects for implementation are identified.

- 1 Banyan Drive Redevelopment Project
- 2 Support and work with legislators and other policy makers to develop rules, regulations, enforcement and inclusion of all types of visitor accommodations in the discussion (VRBOs, Air BnB, etc.). In doing so, recognize that these need to be incorporated from a tax base, but also a safety and security base (ADA compliance, accommodations meet building code requirements, outreach to private off-island owners who rent to visitors but do not receive visitor messaging through BIVB/Civil Defense during disasters, etc.).
- 3 Various Trail Plans including and not limited to Hilo Bayfront Trails Plan, Alakai Trail Plan
- 4 Federal Plans impacting marine and ecotourism programs (e.g. NOAA manta and dolphin rules)
- 5 Kona International Airport Terminal Modernization Plan Phase 1.
- 6 Upgrades to the current Federal Inspection Facility (FIS) to secure Customs and Border Patrol approval to utilize for international flights.
- 7 Permanent FIS facilities for Kona International Airport to meet Customs and Border Patrol Requirements.
- 8 Improvements at Hilo Pier for Cruise passenger arrival including and not limited to, separation of cargo and passengers, and reopening the "Aloha Room".
- 9 Further buildout of current affordable workforce housing such as Kamakoa Nui in Waikoloa Village
- 10 Additional public transportation connectivity between the west side of Hawai'i Island, resorts, and other locations, visitor destinations on island by expanding County Hele On bus service and shared ride opportunities such as Uber, Lyft while simultaneously working on policies, regulations, safety, and necessary infrastructure.
- 11 Encourage heritage and education tourism by highlighting Hawai'i Island's cultural, natural and historical resources.
- 12 Support the Native American Tourism and Improving Visitor Experience (NATIVE) Act.

EVALUATION FRAMEWORK

Ultimately, the Hawai`i County CEDS is useful only to the extent that it translates to positive developmental impacts in the region. The following performance metrics are included as a means for measuring the successful implementation of the CEDS and assessing economic impact. These performance metrics are driven by several traditional economic rubrics as well as, the aforementioned clusters and themes.

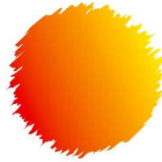
- Gross domestic product
- Number in labor force, number employed, unemployed
- Percent unemployed
- Number of jobs (total, newly created, retained)
- Increase in the number of jobs added paying an hourly rate of \$20.00 or higher
- Average per capita income
- Increase in the share of households earning an annual income in excess of \$35,000
- High school graduation rates
- College graduation rates
- Increase in the number of vocational certificates awarded by local post-secondary institutions
- Increase in the number of new companies established
- Number of new farms and other agri/aqua-culture businesses established
- Increase in food crops grown locally
- Percentage of food consumption that is locally grown/produced
- Increase in the number of expanded businesses
- Number of new jobs created by establishment of new and expansion of existing businesses
- Increase in the value of exports from Hawai`i County
- Increase in broadband and other technology infrastructure
- Value of private sector/venture capital investment in Hawai`i County

While much of the information needed to populate the performance measures is available through the Research and Economic Analysis Division (READ) of the State of Hawai`i Department of Business, Economic Development, and Tourism (DBEDT), and the Department of Research & Development (R&D) of the County of Hawai`i, there may be some new studies required.

OAHU COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

2016-2020 Strategic Plan

Prepared by:



**OAHU ECONOMIC
DEVELOPMENT BOARD**



October 31, 2016

Oahu Comprehensive Economic Development Strategy

This report was prepared under an award from the U.S. Department of Ecommerce, Economic Development Administration. Award No. 07-69-07143.

This publication was prepared by the Oahu Economic Development Board. The Oahu CEDS serves as an Appendix to the State of Hawaii 2016-2020 CEDS. The statements conclusions, and recommendations are those of the author(s) and do not reflect the views of the Economic Development Administration.

Table of Contents

- Introduction – 3
- Executive Summary – 4
- CEDS Process and Methodology – 5
- Economic Background Information – 7
- SWOT Analysis – 9
- Oahu Vision – 18
- Strategic Direction and Action Plan – 18
 - Hospitality and Tourism – 19
 - Health Care – 21
 - Research, Innovation, Technology, and Creative Industries – 23
 - National Security – 25
 - Agriculture – 26
 - Construction/Infrastructure – 28
 - Energy - 30
- Evaluation Framework – 32
- Economic Resilience – 32

Introduction

The Oahu Comprehensive Economic Development Strategy (CEDS) provides a blueprint for economic development throughout the state. It is a strategy-driven plan for regional economic development issued through the U.S Economic Development Administration (EDA). The CEDS is designed as a tool to further the mission of the EDA through bringing local leaders together to plan and discuss what their respective regions will look like in five years. It is the result of a regionally-owned planning process designed to build capacity and guide the economic prosperity and resiliency of an area. A CEDS must be updated every five years in order to qualify for U.S. Economic Development Administration grant assistance programs in Public Works and Economic Adjustment Assistance.

The Oahu CEDS serves as a collaborative process engaging numerous stakeholders to responsibly steward our island's resources and manage economic growth to ensure stable long-term economic vitality for all residents of Hawaii. It provides a platform for individuals, government, educational institutions, non-profits, and private organizations to engage meaningful dialogue about what activities would best serve the region.

The CEDS process will deploy Cluster Based Strategies designed to identify actionable initiatives at the local (county) level that drive the economic resilience and managed economic growth for the 5-year period from 2016 to 2020. This report will be updated every two years with a brand new plan completed every five years. It will be important that the spirit of the process of engagement with the CEDS be carried on beyond the completion of the report. This will ultimately lead to long-term economic stability achieved through diversification, for all Oahu's residents.

Executive Summary

The Oahu CEDS focuses on 7 clusters identified by the Oahu Steering Committee.

1. Hospitality and Tourism
2. Health Care
3. Research, Innovation, Technology and Creative Industries
4. National Security
5. Agriculture
6. Construction/Infrastructure
7. Energy

Six of the seven clusters are identical to the statewide cluster list. The additional cluster that the Oahu Steering Committee chose to call out is construction. An important aspect of construction includes maintaining and upgrading Oahu's aging infrastructure. This cluster plays a significant role on Oahu due to the shortage and affordability of housing options and the current Honolulu Rail project from West Oahu to Ala Moana Shopping Center that will significantly alter the way Oahu's residents live, work, and play.

The similarities in State and County focus, reveals Oahu's role in the state economy. The island of Oahu houses Hawaii's capitol, Honolulu, and serves as the gathering place for state agencies and policymakers to make decisions that affect all of Hawaii's residents. Oahu also houses Hawaii's only international airport and its largest population base and tax revenues.

The overarching goal of the Hawaii CEDS is to increase quality of life for its residents. In addition to the cluster focus, meetings were convened with State and City and County of Honolulu agencies to begin to analyze the needs and leverage the resources of State, City, and private stakeholders. Through cross matching the input from State and City agencies with the Oahu Steering committee, we encountered several themes that resonated across agencies, industries and clusters to increase the quality of life for our residents:

- Increase the capacity of local education, research, development, and training institutions to serve local business needs through the 7 local clusters identified through the SWOT analysis
- Align the business needs of the 7 identified local clusters with the expertise of the local education, research, development, and training institutions
- Present opportunities to educate and innovate to inspire silo busting
- Streamline business permitting and regulation processes
- Support and develop projects and policies that align with reducing cost of living and increasing personal wealth measures of the State evaluation framework
- Create the conditions and recognize the opportunities to grow off of the 7 identified targeted clusters

CEDS Process: Methodology

The State of Hawaii Comprehensive Economic Development Strategies (CEDs) is a collaborative process engaging numerous stakeholders to responsibly steward our islands' resources and manage economic growth to ensure stable long-term economic vitality for all residents of Hawaii. Oahu's CEDs is meant to be a part of the State strategy. A separate SWOT Analysis and Strategic Direction and Action Plan were written specifically for Oahu with the intention of feeding into measurements of the State Plan's Evaluation Framework.

The CEDs process deploys Cluster Based Strategies designed to identify actionable initiatives at the local (county) level that drive the economic resilience and managed economic growth of Hawaii for the 5-year period from 2016 to 2020. This will ultimately lead to long-term economic stability through diversification for all Hawaii's residents. The CEDs document will be a living document that affords the opportunity for a continuous, measurable approach to improving the quality of life for Hawaii's residents.

The Oahu Steering Committee was formed to convene stakeholders and take a collaborative approach in building the CEDs report for the City and County of Honolulu.

The Oahu Steering Committee met a total of five times. The meeting dates and contributors are as follows:

November 20, 2015 – Form Oahu Strategy Committee and orient the committee to the CEDs process and complete the Strengths and Weaknesses section of the SWOT analysis

January 13, 2016 – Complete the opportunities and threats sections of the SWOT analysis and work on a vision statement

February 10, 2016 – Pull themes from the SWOT analysis and begin work on the strategic direction and action plan

July 6, 2016 – Discuss the first 3 local clusters in a breakout session: Hospitality and Tourism, Health Care, and Education, Research, and Technology

August 5, 2016 – Discuss the final 4 local clusters in a breakout session: Defense, Agriculture, Construction/Infrastructure, and Energy

Oahu Comprehensive Economic Development Strategy

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Economic Background Information

Oahu is classified under city government as the City and County of Honolulu; one of four counties in the State of Hawaii.

Below are statistical measures taken from the latest US Census to further orient the reader to the City and County of Honolulu:¹

Category	City and County of Honolulu	State of Hawaii	United States
Population			
Population Estimate (2015)	998,714	1,431,603	321,418,820
Population Growth (2010 – 2015)	4.8%	5.2%	4.1%
Age and Sex			
Persons Under 5 years (2015)	6.6%	6.5%	6.2%
Persons under 18 years (2015)	21.5%	21.7%	22.9%
Persons 65 years and over (2015)	16.2%	16.5%	14.9%
Housing			
Owner-occupied housing unit rate (2010 – 2014)	54.9%	57.1%	64.4%
Median value of owner-occupied housing units (2010 – 2014)	\$564,400	\$504,500	\$175,700
Median gross rent (2010 – 2014)	\$1,528	\$1,417	\$920

¹ http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml#

Oahu Comprehensive Economic Development Strategy

Households (2010 – 2014)	310,141	450,299	116,211,092
Persons per household (2010 – 2014)	3.03	3.00	2.63
Education			
High school graduate or higher, percent of persons 25 years+ (2010 – 2014)	90.7%	90.7%	86.3%
Bachelor’s degree or higher, percent of persons age 25+ years (2010 – 2014)	32.5%	30.5%	29.3%
Economy			
In civilian labor force, total, percentage of population age 16 years+ (2010 – 2014)	61.2%	61.9%	63.5%
Transportation			
Mean travel time to work (minutes), workers age 16 years+ (2010 – 2014)	27.6	26.4	25.7
Income and Poverty			
Median household income (in 2014 dollars)	\$73,581	\$68,201	\$53,482
Geography			
Population per square mile (2010)	1,586.7	211.8	87.4
Land area in square miles (2010)	600.74	6,422.63	3,531,905.43

SWOT Analysis

The Oahu SWOT analysis was completed in two segments; Strengths and Weaknesses then Opportunities and Threats. In order to better align with the strategic view of the Department of Business, Economic Development, and Tourism (DBEDT), the Strengths and Weaknesses were broken down into 3 sections: capital, infrastructure, and people.

Oahu Strategy Committee members were asked:

1. What are Oahu's strengths and weaknesses in raising and accessing capital?
2. What are Oahu's strengths and weaknesses in providing infrastructure to conduct business?
3. What are Oahu's strengths and weaknesses in its workforce?

This supported the Committee in identifying specific positive and negative foundations within the Oahu community to reinforce, build upon, and leverage or to address, innovate, and/or identify boundaries for economic growth.

The Opportunities and Threats were discussed from a broader viewpoint to pull themes and clusters to drive the Strategic Direction and Action Plan section of the document. This feedback regarding broad sectors of the economy aligns with our cluster based approach.

Strengths

In raising and accessing capital?

	Federal grants and loan programs
	Military investment
	Bond funding
	State land as leverage for financing
	KSBE
	Tax foreign investments/development
	Real estate as collateral
	Ultra wealthy homeowners
	Angel/seed rounds
	Outward looking foundations
	Business Hui
	Successful in competitive grant funding
	Housing tax credits to stimulate private investment
	Access to federal funds for education
	USDA-RU loans

Strengths

In providing infrastructure to conduct business?

	Strategic location
	Ethical culture in Hawaii
	Renewable Energy
	Commitment to broadband
	Pacific Command
	Climate
	Talent
	Established industry networks
	Access to health care
	Geographically linear
	Active business community
	Dedicated revenue for government infrastructure
	Univ. of Hawaii and research community
	Strategic position to the 7th Fleet
	Leverage resources and expertise of national companies doing business in Hawaii

Strengths

In its workforce?

	Collaboration
	Relationships
	Love of Hawaii and family
	Well educated workforce
	Aloha
	Loyalty
	Strong work ethic
	Appreciation for this place
	Multicultural
	Values based
	High IQ
	University of Hawaii resources
	Commitment to betterment of communities
	Established apprenticeship programs
	Experienced personnel

Weaknesses

In raising and accessing capital?

	Too many regulations
	Lack of knowledge of various forms of capital, esp venture capital
	Failure to spend federal dollars
	Isolation
	Lack of belief in our own
	Lack of scale/deal flow
	Negative past investments
	Lack of commercialization funding that is not venture capital
	Challenges in assessing risk on new ventures
	Infighting
	Outdated policies and procurement system
	Politics
	Lack of skin in the game
	Poor management
	No SBIC

Weaknesses

In providing infrastructure to conduct business?

	Lack of consensus on what is needed
	Cost of housing sending your workers to mainland
	Lack of alignment on Hawaii's future
	Not enough collaboration
	Insufficient government funding
	Lack of affordable broadband capacity
	No strategy
	Limited resources
	Land ownership
	Self interest
	Lack of adequate coordination in priorities between state and city
	Mindset of "Build it and they will come"
	Limited \$\$ resources
	Awareness of need or community buy in
	Single issue politics govern

Weaknesses

In its workforce?

	Salaries are not as competitive
	Low wages
	Cost of living
	Aging workforce
	Affordable housing
	Lack of housing
	Growing transient workforce with no desire to build roots
	Lack of compensation to meet residents' needs
	Entitlement perspective of upcoming workforce
	Island fever
	Resiliency
	Export workers with high skills
	Inadequate trained employees
	Focus on future job types
	Public education

Opportunities

	Collaboration and Partnerships
	Renewable Energy
	Travel & Tech join forces
	Broadband
	Mauna Kea and Haleakala
	Creative people
	Sectors related to broadband
	Transpacific Partnership
	Made in Hawaii Brand
	Import Substitution
	Create more cross industry collaboration
	Reduced shipping costs
	Wellness industry
	Digitally delivered services

Threats

	Cost of living
	A disjointed legislature, administration
	Climate change
	Lack of broadband capacity
	NIMBY
	Workforce housing
	Excessive government regulations
	Lack of leadership at high levels
	High cost of living
	Not developing our workforce to be relevant
	Fed budget cuts
	Housing
	North Korea nuclear capability
	Loss of our caring capacity as a community
	Shipping issues

Oahu Vision Statement

Oahu, the 11th largest City in the United States is a thriving economic Hub with aloha in the Pacific for our residents, neighbor islands, country, visitors, and Pacific Ocean stakeholders.

Strategic Direction and Action Plan

This section covers the 7 clusters that the Oahu CEDS focuses on, driven by the input of the Oahu Strategy Committee.

1. Hospitality and Tourism
2. Health Care
3. Research, Innovation, Technology and Creative Industries
4. National Security
5. Agriculture
6. Construction/Infrastructure
7. Energy

The opportunities and threats of the SWOT analysis were dissected and discussed within the committee, and the clusters listed below are what emerged from those conversations. It is the Strategy Committee's goal to show improved trends in quality of life measurements through the goals, objectives, and action plans of this document. It is the Strategy Committee's purpose to ensure that this is a living document that serves as a template that must be continuously updated through a coordinated stakeholders approach. This approach makes certain that the CEDS will serve as a continuous platform for Oahu's economic roadmap forward for the next 5 years.

Oahu Targeted Clusters

Hospitality and Tourism

Goal

Provide a renewed Oahu experience through diversification into new markets such as business and convention travel and infrastructure improvements in high visitor use areas.

Summary

The traded and local cluster activity in Hospitality and Tourism cluster in Honolulu County includes 35 industries. In 2015, the combined clusters reported a total of 81,785 jobs, 40% above the national average.

The average earning per job in this cluster is \$31,409 which is higher than the national average of \$22,293. From 2015 to 2020, jobs are forecast to grow at a rate of 5.7%, slower than the national job growth forecast of 8.7%.

This cluster has approximately 3,185 pay rolled business location in Honolulu with a job multiplier 1.82.

Objectives and Action Plan

Objective

Expand beyond Oahu and Hawaii's recognized branding as a premier leisure travel destination by revealing Hawaii as the premiere destination to host meetings and conventions which produce the greatest objective outcomes and transformative solutions for our meetings and conventions visitors.

Action

- Inventory the innovative efforts and solutions of Hawaii tied to the cluster mapping opportunities which reveal the strength of social and cultural sensitivity to foster a healthy social economic ecosystem poised for new opportunity
- Support the Hawaii Tourism Authority in their initiatives to transform the meetings and conventions market by producing a marketing video that reveals the advantages and significant value for the MCI (meetings, conventions, and incentives) market
- Expand business relationships between Hawaii and other countries.
- Develop an ongoing system of engagement with education, research, and development, training and tourism stakeholders to develop solutions for current emerging and internal problems with the visitor industry

Objective

Focus on infrastructure improvements in tourism-heavy districts

Action

- Ala Wai Watershed Mitigation plan
- Waikiki beach restoration project
- Oahu Rail Project (Rapid Transit)
- Broadband cable expansion
- Honolulu International Airport improvements

Oahu Comprehensive Economic Development Strategy

Objective

Improve and expand upon current data collection

Action

- Improving data collection method for incoming visitors from the layout of the form to the collection and input into the State's data system
Measuring worldwide sentiment about tourist experiences on Oahu

Objective

Expand the destination reach of our visitors from Oahu to other islands

Action

- Assist other counties in building capacity to service international flights
- Integrate destination interests and assets of the neighbor islands in the Oahu destination portfolio

Health Care

Goal

Improve access and affordability to high quality health care for all residents of Oahu through the integration of technology to reach rural and underserved areas and focus on addressing cost issues that limit care and the integration of wellness that reduces the cost of care.

Summary of Cluster

The Local Health Services cluster in Honolulu County spans 36 industries. In 2015, this cluster reported 52,620 jobs which is 13% below the national average. The average earning per job in cluster is \$70,472 which is higher than the national average of \$61,858. From 2015 to 2020, jobs are forecast to grow at a rate of 11.8%, slower than the 12.29% job growth forecast for the nation.

This cluster has approximately 2,437 pay rolled business location in Honolulu County with a job multiplier 2.05.

Objectives and Action Plan

Objective

Focus on preventative care to transform the personal responsibilities of our own health and lower health care costs

Action

- Ensure public policy aligns with a focus on preventative care
- Develop programs for elderly care health monitoring, integrating health wireless activity trackers with home visitation
- Work with the state and county planners to support their planning efforts to develop live, work communities, to reduce Oahu's cost of living and to make communities more elderly friendly
- Support the formation of live, work communities to reduce Oahu's cost of living and to make communities more elderly-friendly

Objective

Invest in telemedicine to improve access and complement existing health care services

Action

- Identify location and type of telemedicine services and align them with community needs
- Expand telemedicine hubs
- Provide telemedicine infrastructure support

Objective

Maintain an adequate number of health care practitioners

Action

- Investigate the challenges and opportunities of practicing health care on Oahu
- Create incentives to attract health care practitioners
- Work with the University of Hawaii medical school to develop pathways, curriculum, and internships for high schools

Oahu Comprehensive Economic Development Strategy

Objective

Promote technological innovation and entrepreneurship pathways in health care

Action

- Align the needs of the Health Care industry with the expertise of the education, research, and development institutions
- Develop a system of engagement of the health care and education, research, development, training and tourism stakeholders to solve problems faced in the tourism industry

Research, Innovation, Technology and Creative Industries

Goal

Science solves local community issues and needs on Oahu through research, innovation and decision support that result in a stronger community, marries national and global needs, creates entrepreneurship opportunities, and equally appreciates science for the pure exploration and growth of Oahu's knowledge and human capital.

Summary

The Education and Knowledge Creation cluster in Honolulu County includes 16 industries. In 2015, this cluster reported 24,129 jobs which is 13% above the national average. The average earning per job in cluster is \$48,718 which is significantly lower than the national average of \$64,514. From 2015 to 2020, jobs are forecast to grow at a rate of 4.6%, slower than the national job growth forecast of 6.9%.

This cluster has approximately 498 pay rolled business locations in Honolulu with a job multiplier 1.47.

Objectives and Action Plan

Objective

Provide the research and development community with policy, physical, and human resources to solve community problems including education and workforce training.

Action

- Support the Hawaii State initiative to upgrade and expand the broadband capabilities
- Convene the public and private school STEM leaders to integrate their curriculums in the Broadband Initiative
- Convene public and private HR managers to identify the technical skill needs for IT workers.

Objective

Engage businesses with the research and development community to identify business needs

Action

- Create an inventory of local research, development, and training organizations
- Design a system of engagement between the business community and research, development, and training organizations to foster business community solutions

Objective

Equip workforce pipeline (education) with ability to create solutions to societal problems

Action

- Provide workforce training pipelines through the Community Colleges

Objective

Develop and grow the technology industry to provide quality high paying jobs

Oahu Comprehensive Economic Development Strategy

Action

- Continue to develop and manage a network of incubation services and facilities to help technology businesses to grow
- Expand business development services for the technology sector e.g. FastTrack Entrepreneurship training and Manufacturing Extension program

Objective

Build the capacity of the creative sector by increasing access to business mentors, attracting investment, increasing export/distribution and building a continuum of education to workforce expertise.

Action

- Continue workforce development programs to prepare students for creative industry jobs of the future
- Continue to provide mentoring services and access to market specific decision-makers, investors and distribution outlets
- Continue to provide accelerator programs for creative industry startup projects
- Maintain and develop supportive buildings and infrastructure for the creative industry cluster

National Security

Goal

Increased capacity and service to all branches of the US military and expanded research in the Defense industry.

Summary

The Water Transportation cluster on Oahu includes 9 industries. In 2015, this cluster reported 3,249 jobs, 260% above the national average for these industries. The average wages earned per job is \$105,581 which is significantly higher than the national average of \$81,039. From 2015 to 2020, jobs are forecasted to decline at a rate of -7.2%, exceeding the national rate of -0.9%.

This cluster has approximately 59 pay rolled businesses on Oahu with a job multiplier of 4.6.

The Aerospace Vehicles and Defense Cluster on Oahu includes one industry, the Search Detection, Navigation, Guidance, Aeronautical and Nautical System and Instrument Manufacturing Industry. In 2015, this industry reported having 212 jobs, 72% below the national average. The average earnings per job is \$85,284 which is significantly lower than the national average of \$128,905. From 2015 to 2020, jobs are forecast to grow at a rate of 17.9% exceeding the national rate of -7.8%.

This cluster has 4 pay rolled business locations on Oahu with a job multiplier of 1.96.

Objectives and Action Plans

Objective

Equip local contractors with the qualifications to service the military

Action

- Educate local contractors on what the criteria is for working with the military
- Support the evolution of Procurement Technical Association Center to mentor local businesses
- Produce a systems map of all Oahu business sectors and the role the military and national defense
- Develop the Defense Innovation Lab of the Pacific with HTDC, SBIR, and DOD

Objective

Continue to produce workforce pathways to work with the military

Action

- Provide training opportunities for local workers to work at military organizations and facilities
- Establish a quarterly meeting with all agencies in Defense to address their evolving civilian needs with workforce development organizations, community colleges, and universities

Oahu Comprehensive Economic Development Strategy

Agriculture

Goal

A planned and coordinated approach to agriculture from seed to post production coupled with a continual search for a balanced, healthy ecosystem of Oahu's agriculture and food economy, which includes import and export, technological advancements, state and county planning and policy, and education and research.

Summary

Agriculture on Oahu consists of four industry clusters including Agricultural Inputs, Food Processing, Livestock Processing and Fishing and Fish products. These 4 clusters employ a total of 7,886 jobs that paid a weighted average earning (weighted by the number of jobs per cluster contributing to the total jobs in all four clusters) of \$40,383.88.

This cluster 260 pay rolled businesses on Oahu with a jobs multiplier of 2.82.

Objectives and Action Plans

Objective

Lower cost of doing business for local farmers to be able to sell to the local community

Action

- Innovate the expansion of food safety inspection operations on Oahu
- Establish more Ag Parks on Oahu
- Develop and support technological enhancements to infrastructure
- Support policies that allow farmers to produce goods at lower cost
- Develop an App for farmers to inventory critical resources needed for and in Agriculture with the intention of sharing
- Support fertilizer inputs development in Hawaii
- Repair and maintain state agriculture irrigation systems
- Expand and improve branding and labeling programs to identify local foods.
- Support consumer education programs to help consumers know local farms and farmers
- Encourage efficient distribution systems to move food to market including food incubators and food hubs

Objective

Create innovative pathways for farmers to sell to local clients

Action

- Support farm to school programs
- Community Supported Agriculture-CSA 2.0 working on public and private partnerships

Objective

Grow the next generation of farmers and agriculture entrepreneurs

Action

- Create and strengthen agricultural and entrepreneurial pathways in schools and in organizations serving youth

Oahu Comprehensive Economic Development Strategy

- Expand outreach and technical and business assistance
- Convene a millennial conference on the future of Oahu's Agriculture Industry
- Create greater awareness of the agricultural career field
- Develop partnerships between the agricultural industry and academia and use these partnerships to recruit and prepare students
- Develop a coordinated pathway of agricultural training at elementary, secondary and post-secondary school levels

Objective

Engage agriculture stakeholders with research and development community to identify agricultural business needs

Action

- Identify champions in the agriculture industry
- Create an inventory of local research, development, and training organizations
- Design a system of engagement between the agriculture community and research, development, and training organizations

Construction/Infrastructure

Goal

The plans and procedures ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.

Summary

Oahu's Construction Products and Services Cluster contains 10 industries. These industries reported 2,255 jobs in 2015, 5% below the national average. Average earnings per job were \$103,712 annually, which is above the national average of \$78,039. From 2015-2020, jobs are forecast to grow at a rate of 40.3%, which is faster than the national rate of 9.0%.

This cluster has 98 pay rolled businesses on Oahu with a job multiplier of 2.3.

The Local Real Estate, Construction, and Services cluster consists of 52 industries. In 2015, this cluster reported 60,626 jobs which is 2% above the national average. The average earnings for the cluster is \$63,975 which is higher than the national average of \$44,893. From 2015 to 2020, jobs are forecast to increase at a rate of 12.7%, exceeding the national job growth rate of 6%.

This cluster has approximately 3,145 pay rolled businesses on Oahu with a job multiplier of 2.61

Objectives and Action Plans

Objective

Evaluate the Policy incentives and permitting regulations for developers to produce affordable housing

Action Plan

- Convene the millennial and younger generation to discuss their concept of housing
- Engineer housing development options specific to geographic areas of Oahu
- Apply the Policy incentives and permitting regulations to the evolving models for evaluation

Objective

The construction industry completes projects that increase the quality of life for residents by reducing the total cost of living

Action Plan

- Complete the Honolulu Rail project from West Oahu to Ala Moana to decrease the amount of time and money spent on Oahu ground travel for the West side residents
- Optimize transit-oriented development around rail stations and explore opportunities to support emerging growth industries in these locations
- Establish smart and practical building techniques identifying essential tools and resource needs for the modern home and communities in health, communication, entertainment, and safety as part of home construction development including resiliency and disaster preparation

Oahu Comprehensive Economic Development Strategy

Objective

Align needs of city government jobs specific to construction and engineering to institutions with training capacity

Action

- Blue-print reading and permit processing training at HCC for entry level City/DPP building permit staff
- Establish internships and apprenticeship programs between Community Colleges, Defense Industry, and the City DPP

Objective

Engage businesses within research and development community to identify business needs based on quality of life affected by Construction/Infrastructure

Action

- Create an inventory of local research, development, and training organizations
- Design a system of engagement between the business community and research, development, and training organizations to assess needs and wants

Oahu Comprehensive Economic Development Strategy

Energy

Goal

Diversification of renewable energy resources and improved efficiency to maintain an adequate, dependable, and economical supply of energy for Oahu residents in line with Hawaii's 100% renewable energy goal by 2045.

Summary

Oahu's Renewable Electric Power Generation Cluster consists of 3 industries including Solar Electric Power Generation, Biomass Electric Power Generation and Other Electric Power Generation. In 2015, the industries reported 126 jobs which is 450% above the national average. The average earnings per job is \$81,658 which is lower than the national average of \$112,140. From 2015-2020, jobs are forecast to grow at a rate of 25.4% faster the national rate of 11.1%.

This cluster has 6 pay rolled businesses on Oahu with a job multiplier of 2.14.

Objectives and Action Plans

Objective

Build community support and momentum for the State's 100% renewable energy goal by 2045

Action

- Educate the public's relationship to energy and Hawaii's 2045 renewable energy goal
- Develop a Hawaii Fossil Fuel transformation dependency map based on the Hawaii Green Growth Dashboard for energy.

Objective

Provide affordable opportunities for residents to use renewable forms of energy offered by local utility companies

Action

- Upgrade to a smart grid infrastructure
- Develop a smart production network for clean energy and
- Support and encourage energy storage development and innovation
- Evaluate the Net metering policies to assess those on Oahu who are not able to participate and develop new strategies for those consumers
- Transform the Green Energy Market Securitization Program (GEMS) to continue to target the underserved energy consumer who isn't incentivized or financial restricted to personally invest in clean energy or energy efficiency mechanisms

Objective

Expand energy efficiency programs and practices

Action

- Create new incentives to inspire energy efficiency programs for communities similar to the initiatives to inspire healthy communities based on Blue Zones
- Develop a carbon footprint product code App for Hawaii

Oahu Comprehensive Economic Development Strategy

Objective

Balance a portfolio of renewable energy options

Action

- Align policies and processes to enable adoption of more renewable energy resources
- Support research and development in Hawaii's Energy Excelsior

Objective

All renewable energy sources are not available on each island. It will be important to build partnerships with each county that fosters statewide beneficial results

Action

- Foster the participation of all the Economic Development Boards on the HCEI steering committee with resources to encourage their active participation
- Educate the residents of Hawaii on the interdependency of an island state in sharing, developing, and preserving of our resources
- Support the counties in developing equitable community impacts for energy production

Evaluation Framework

The Strategic Direction and Action Plan section outcomes are designed to directly influence the Evaluation Framework measurements listed in Appendix 1 of the State of Hawaii CEDS.

Economic Resilience

Oahu will continue to work with stakeholders within the State of Hawaii economic resiliency plan to strengthen Hawaii's ability to prevent, withstand, and recover from economic shocks and natural disasters. A few excerpts from the State Plan (not including 100 Resilient Cities) with initiatives based on Oahu include:

100 Resilient Cities

In May 2016, Honolulu was selected to join the Rockefeller Foundation's 100 Resilient Cities network. 100 Resilient Cities helps cities around the world become more resilient to social, economic, and environmental challenges. Honolulu was selected for their innovative leadership and commitment to investing in building resilience. The identified resilience challenges for Honolulu are aging infrastructure, economic shifts, natural disasters (tsunami) and storms (hurricanes, typhoons, cyclones, and rainfall flooding) and effects of sea level rise and coastal erosion, infrastructure failure, and intractable homelessness. Joining the international 100 Resilient Cities network further emphasizes Hawaii's role as an island leader and model for locally appropriate implementation of the global 2030 Sustainable Development Goals.

National Disaster Preparedness Training Center

The National Disaster Preparedness Training Center (NDPTC) at the University of Hawaii Department of Urban and Regional Planning is headquartered in the central business district of City and County of Honolulu, with divisions located at the NOAA Inouye Regional Center on Ford Island. Expanded to include the University of Hawaii in 2007, the NDPTC is a member of the National Domestic Preparedness Consortium (NDPC) that addresses all forms of hazards.

The NDPTC is authorized to develop and deliver training and educational programs related to homeland security and disaster management, with a specific focus on natural hazards, coastal communities, and the special needs and opportunities of islands and territories. The NDPTC actively engages internally with FEMA and the University of Hawai'i, as well as with external partners across the region to integrate the delivery of its trainings, products, and services.

Waikiki Pre-Disaster Recovery Planning Project

The Waikiki Pre-Disaster Recovery Planning Project is sponsored through a partnership between the Waikiki Business Improvement District Association (WBIDA) and the National

Oahu Comprehensive Economic Development Strategy

Disaster Preparedness Training Center (NDPTC) at the University of Hawaii at Manoa. The Project includes researching Waikiki's disaster risk, identifying best recovery practices, and collaborating with community stakeholders from different sectors. A culmination of these efforts will result in a recovery plan that aims to create a safer, stronger, more equitable, and sustainable Waikiki.

The Plan is currently in second draft with a target completion date of September 30, 2016. The final plan will be submitted in October 2016. For more information on the planning process, please visit <https://sites.google.com/site/waikikirecoveryplanning/>