SOCIO-ECONOMIC FORECAST REPORT 2014

//This is a working file. The model could still change. ALL numbers and figures must be taken as DRAFT. Final version will be produced by LRD, so formatting is minimal. //

EXECUTIVE SUMMARY

Purpose

Maui County has conducted this revision of the 2006 Maui County Socio-Economic forecast to aid in the ongoing update of the General Plan and Community Plans. The purpose of this report is to forecast residential, visitor and employment growth, as well as housing demand, for the Community Plan areas of Lāna`i, Moloka`i, West Maui, Kihei-Makena, Wailuku-Kahului, Makawao-Pukalani-Kula, Pā`ia-Ha`ikū, and Hāna that comprise the populated islands of Maui County.

This version of the Maui County Socio-Economic Model updates earlier versions published in the mid-1990s, in 2002, and in 2006. It replaces old projections for 2000 through 2010 with historical data. It relies on new projections published by the State of Hawaii. Linkages and calculations in the model have been re-analyzed in light of historical data. Also, the Maui County Planning Department has developed land use databases that can be closely linked to the Socio-Economic Model. This version draws on findings from updates of the land use analysis.[1]

The Maui Island Plan was passed in December 2012. It includes a Directed Growth Strategy that sets both Urban and Rural growth boundaries. The Plan affects this report, because the distribution of anticipated urban growth in the Community Plan areas of Maui island reflects the Plan's allocation of space for future development, as well as existing permits.

Projections are based on trends, experience with historical change in the County and elsewhere in Hawai`i which seems applicable to Maui County, and expectations about action by Maui County's people, firms and government.

A forecast is a planning tool. It identifies a future for a community to consider. Stakeholders may use the forecast to assess trends and possible scenarios. The projected future is neither automatically desirable nor inevitable. It represents a likely future, unless new policies or unanticipated major events intervene. Hence, it is a useful starting point for planning discussions.

A forecast helps to highlight some issues as priorities for the community in current discussions. Over time, it can point to trends that may or may not be desired by the community. Also, over

[1] The Socio-Economic Model was first developed by Community Resources, Inc. for the Maui County Planning Department. In recent years, consultants with SMS Research and Marketing Services, Inc. and with Belt Collins Hawaii LLC have worked on updates. The Land Use Model was developed by PlanPacific. It is being updated through a collaborative effort of Belt Collins Hawaii and the Maui County Planning Department. The current project team is led by John Summers of the Long Range Planning Division, and staffed by Mark King, also of that Division.

time, the forecast's failure or success in predicting change can help to focus attention on challenges and opportunities that were not evident earlier.

A long-term forecast identifies long-term trends and omits short-term variation. As a result, there will be many surprises along the way, even if a forecast turns out to be highly accurate. Some variation, such as cyclic economic patterns, can be expected but not forecast with precision. Other variation may be due to specific events that were not anticipated (e.g., the 2011 tsunami in Japan). Their timing, the force of their impacts, and the duration of those impacts are unknown. A long-term forecast is a tool to keep community attention focused on long-term trends, not to predict them all.

Key Sources and Assumptions

This forecast is based on projections developed by the State of Hawai`i Department of Business, Economic Development and Tourism (DBEDT). The forecast allocates expected County-wide change to local areas. The DBEDT long-term projection model draws on historical data over the last twenty years plus projections from DBEDT and national sources. The DBEDT model (and consequently, the Maui County allocation model) is economically driven: industries that attract capital are taken as crucial to economic growth, which in turn leads to new jobs and increased population. DBEDT updates the long-term projections regularly.

In recent years, DBEDT published projections through 2035, a revision of the 2035 forecast as the recession reached its height, and a 2040 series. For this forecast, Maui County relies on the 2040 projections. For this forecast, 2010 is treated as "historical" – all data points for this year are tied to the most accurate information available, while later data points follow above all from the DBEDT projections. The model relies on the 2010 Census and the five-year American Community Survey for 2010 data, along with information gathered by the state and county on jobs, housing, and other topics.

An important challenge for the forecast is to anticipate both the amount and the location of demand for new housing. This forecast relies less on historical trends than in the past, more on information about available sites for new housing. The County's inventories of existing land uses, developable lands, and proposed developments are far more robust than in the past. Also, the General Plan and Maui Island Plan have advanced efforts to direct growth to specific locations – planned growth areas -- so as to support community life and orderly infrastructure development. Finally, analysis of Real Property data to estimate demand for housing by non-residents has been refined.

Major Findings of the New Forecast

Findings for the County

Demographic

Some demographic trends embedded in earlier projections continue in the current projections. Notably:

- The population of residents and visitors in the County on any given day (de facto population) is projected to increase from 168,351 in 2000 to 270,285 in 2035, a gain of more than 60%. See Figure 1.

- The County's resident population is expected to grow at nearly an identical rate as de facto population, with the resident population of the County of Maui reaching 211,175 by 2035.

- The population is aging. (The Maui County median age increased from 33.5 to 36.8 years between 1990 and 2000. It reached 39.6 in 2010. Persons 65 years of age or older constituted 11.3 percent of the population in 1990, and 12.8 percent by 2010. These trends are expected to accelerate. The share of the population 65 years of age or older is forecast as reaching 23.0 percent in 2035.)

- Households are becoming smaller over time. (The County average declined from 2.99 persons per household in 1990 to 2.91 as of 2000 and to 2.87 in 2010.)[2] It is <u>not</u> clear how these trends – aging and smaller households -- will interact in the coming years: will elders increasingly age in place in multi-generational households, or tend to live apart? Will those who live apart increasingly live in facilities for the elderly or independently in their own homes?

Table 1 provides key indicators of socio-economic conditions for the County and the three populated islands.[3] Table 2 shows the same information for the six Community Plan (CP) areas of Maui Island.

The County forecast draws on DBEDT projections through 2040, but the County's planning horizon is 2035. The County expects to update the model and conduct new planning processes in the years ahead, so it is useful to view the projections as covering a near-term future (through about 2020) and a long-term one. The long-term projections could change significantly in later planning processes due to changes in both the world and the policy context.

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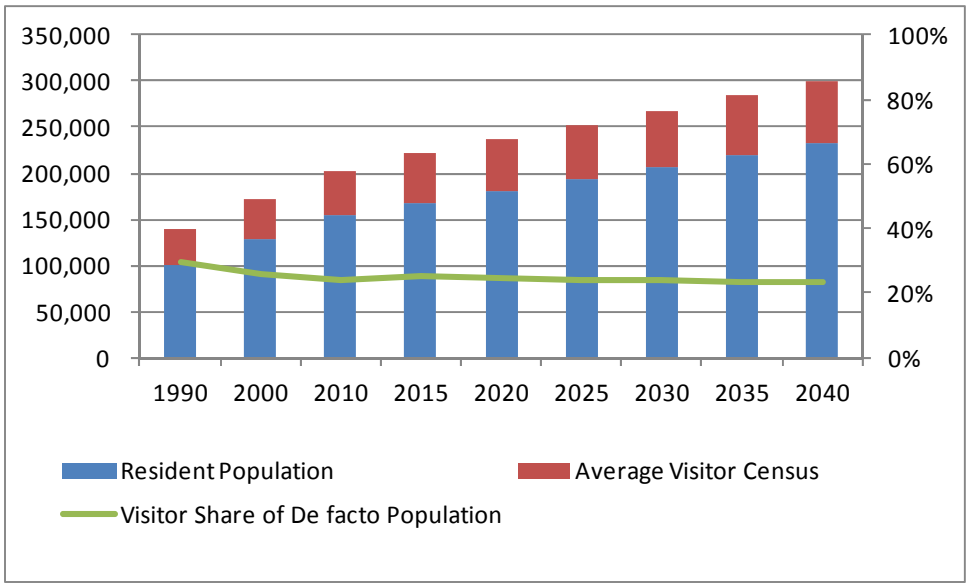
[2] Household population is estimated here in "persons per household," including persons in group quarters, rather than "household size," counting only persons in households.

[3] Kalawao County – the Kalaupapa peninsula – is excluded from counts for Moloka'i and for the County.

FIGURE 1: RESIDENT AND VISITOR POPULATIONS, MAUI COUNTY, 1990 TO 2040



SOURCES: U.S. Census and Hawai'i Department of Business, Economic Development and Tourism. Projected De facto population calculated for this report.

Economic

- Maui weathered the economic shocks of the last decade fairly well. Slow economic growth is anticipated. Wage and salary jobs are expected to increase by about 0.9% annually, while self-employment is expected to grow by 2.6% per year from 2010 to 2040;

- Per capita income will increase very little (in constant dollars);

- Visitor counts will increase by about 1.15% annually over the long term;

- With high occupancy rates, construction of new units is expected to resume after 2020, and the supply of visitor units will likely grow at 0.9% or more annually from 2020 to 2040; and

- The rates of increase in resident population, housing, and total employment are higher than the rate of growth for visitors. This means the Maui economy has diversified and is less driven by tourism than in the past.

The recession has reduced job growth since 2006, but does not appear to have changed most of the overall trends for Maui County. The dependency ratio – the share of the population not of working age, in relation to the working age population – decreased from 1990 to 2010. It is expected to increase sharply in the coming years, as the baby boomers age.

By 2035, most of the population on Molokaʻi and Lānaʻi will be under 20 years old or 65 years old and older. On Maui Island, a ratio of 0.92 dependents for every person of working age is projected by 2035. This is still much higher than the 1990 and 2010 ratios (0.65, then 0.60, respectively).

TABLE 1: MAJOR SOCIO-ECONOMIC INDICATORS, 1990 TO 204O, MAUI COUNTY AND ISLANDS

	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
MAUI COUNTY									
Resident Population	100,374	128,241	154,834	168,007	181,017	194,197	207,307	220,209	232,863
Households	33,207	43,622	54,018	59,267	64,726	70,385	76,160	82,001	87,895
Wage + Salary Jobs	50,850	62,400	64,450	73,250	77,130	80,670	84,150	87,440	89,820
Unemployment	2.9%	4.2%	8.2%	7.5%	6.7%	5.9%	5.1%	5.1%	5.1%
Visitor Spending ($ mil.)	NA	$3,226.8	$2,998.5	$3,635.1	$3,856.3	$4,040.8	$4,234.7	$4,434.6	$4,646.1
Total Visitor Units	18,035	18,270	20,068	20,208	20,070	21,040	22,020	23,060	24,070
LĀNAʻI									
Resident Population	2,426	3,193	3,135	3,295	3,463	3,640	3,825	4,020	4,226
Households	847	1,161	1,158	1,234	1,314	1,400	1,492	1,589	1,693
Wage + Salary Jobs	1,344	1,630	1,260	1,392	1,587	1,701	1,815	1,935	2,055
Unemployment	4.2%	3.5%	6.5%	5.9%	5.3%	4.6%	4.0%	4.0%	4.0%
Visitor Spending ($ mil.)	NA	$116.3	$70.1	$85.5	$90.7	$95.1	$99.6	$104.3	$109.3
Total Visitor Units	113	368	352	352	352	352	352	352	352
MOLOKAʻI									
Resident Population	6,587	7,404	7,255	7,625	8,014	8,423	8,852	9,304	9,779
Households	2,088	2,420	2,513	2,644	2,817	3,001	3,197	3,406	3,629
Wage + Salary Jobs	1,667	2,130	1,950	2,358	2,456	2,558	2,659	2,765	2,868
Unemployment	10.3%	14.0%	12.8%	11.6%	10.4%	9.2%	8.0%	8.0%	8.0%
Visitor Spending ($ mil.)	NA	$34.1	$24.4	$29.8	$31.6	$33.1	$34.7	$36.4	$38.1
Total Visitor Units	559	429	392	392	392	392	392	392	392
MAUI ISLAND									
Resident Population	91,361	117,644	144,444	157,087	169,540	182,135	194,630	206,884	218,859
Households	30,272	40,041	50,347	55,389	60,595	65,983	71,471	77,006	82,573
Wage + Salary Jobs	47,840	58,640	61,240	69,500	73,088	76,411	79,676	82,740	84,897
Unemployment	2.4%	3.8%	8.1%	7.3%	6.6%	5.8%	5.0%	5.0%	5.0%
Visitor Spending ($ mil.)	NA	$3,076.4	$2,904.0	$3,519.8	$3,734.0	$3,912.6	$4,100.4	$4,293.9	$4,498.7
Total Visitor Units	17,363	17,473	19,324	19,464	19,326	20,296	21,276	22,316	23,326

TABLE 2: MAJOR SOCIO-ECONOMIC INDICATORS, MAUI ISLAND CP AREAS

	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
MAUI ISLAND CP AREAS							
West Maui							
Resident Population	22,156	24,373	27,762	32,318	36,110	39,911	43,604
Households	7,779	8,665	9,962	11,728	13,263	14,810	16,364
Wage + Salary Jobs	16,235	17,677	18,716	19,416	20,156	20,812	21,268
Total Visitor Units	10,909	10,996	11,271	11,547	11,933	12,520	13,090
Kihei-Makena							
Resident Population	27,244	29,599	34,757	39,975	46,370	52,044	57,912
Households	11,114	11,801	13,502	15,159	17,180	19,216	21,263
Wage + Salary Jobs	12,605	15,840	17,050	18,423	19,658	20,874	21,725
Total Visitor Units	7,813	7,876	8,073	8,271	8,547	8,967	9,376
Wailuku-Kahului							
Resident Population	54,433	60,336	62,102	64,188	65,734	67,986	69,870
Households	16,336	19,017	20,495	22,221	23,891	25,575	27,266
Wage + Salary Jobs	26,165	29,368	30,538	31,626	32,761	33,805	34,540
Total Visitor Units	414	555	566	576	591	613	635
Makawao-Pukalani-Kula							
Resident Population	25,198	26,551	28,438	28,949	29,482	29,852	30,218
Households	9,356	9,851	10,511	10,680	10,865	11,051	11,239
Wage + Salary Jobs	3,868	4,052	4,150	4,245	4,338	4,424	4,490
Total Visitor Units	32	32	33	34	35	37	38
Pā'ia-Haikū							
Resident Population	13,122	13,820	13,949	14,045	14,139	14,153	14,167
Households	4,937	5,180	5,192	5,202	5,215	5,227	5,240
Wage + Salary Jobs	1,687	1,802	1,840	1,877	1,910	1,942	1,968
Total Visitor Units	30	30	31	32	33	34	36
Hāna							
Resident Population	2,291	2,408	2,531	2,660	2,795	2,938	3,088
Households	825	875	932	993	1,058	1,127	1,201
Wage + Salary Jobs	1,687	1,802	1,840	1,877	1,910	1,942	1,968
Total Visitor Units	127	128	131	134	139	146	152

Housing

From 2000 to 2008, Maui County experienced strong housing demand, fueled by the resilient local economy, low mortgage interest rates, and mainland interest in Maui real estate as an investment alternative. The participation of off-island investors in Maui Island's real estate market had a profound impact on housing demand. As illustrated in Table 3, 28.3% of homes built between 2000 and 2010 were owned by people residing outside Maui County in 2010.

Table 3 also shows the share of new homes held by non-residents to vary greatly by Community Plan area. [4]

TABLE 3: 2010 OWNERSHIP, HOMES IN MAUI COUNTY BUILT FROM 2000 TO 2010

House Location	Owner's Address -- Maui Cty	Rest of HI	Rest of US	Overseas	Total	Non-resident share
MAUI COUNTY	6,059	389	1,788	212	8,448	28.3%
Lānaʻi	37	38	43	1	119	68.9%
Molokaʻi	201	20	47	21	289	30.4%
Maui Island	5,821	331	1,698	190	8,040	27.6%
Lahaina	908	69	765	37	1,779	49.0%
Kihei-Mākena	1,388	64	584	120	2,156	35.6%
Wailuku-Kahului	2,069	158	135	9	2,371	12.7%
Makawao-Pukalani-Kula	804	28	73	9	914	12.0%
Paʻia-Haʻikū	596	10	115	13	734	18.8%
Hāna	56	2	26	2	86	34.9%

During the recent recession and its aftermath, mortgage delinquencies increased sharply in Maui, Hawai'i and Kaua'i counties, reaching over ten percent of outstanding mortgages and home equity loans, while the rate on O'ahu reached only five percent.[5] It appears that lending is much more vulnerable than before; reduced availability of capital for real estate financing may be a result that lasts for many more years.

Island and Community Plan Area Findings

In projecting social and economic change in the Community Plan areas of Maui County, the forecast allocates future households to the local level based on consideration of planned development projects and available lands. The allocation also takes into account the distribution of planed growth areas according to the *Maui Island Plan*. Residents of the Maui

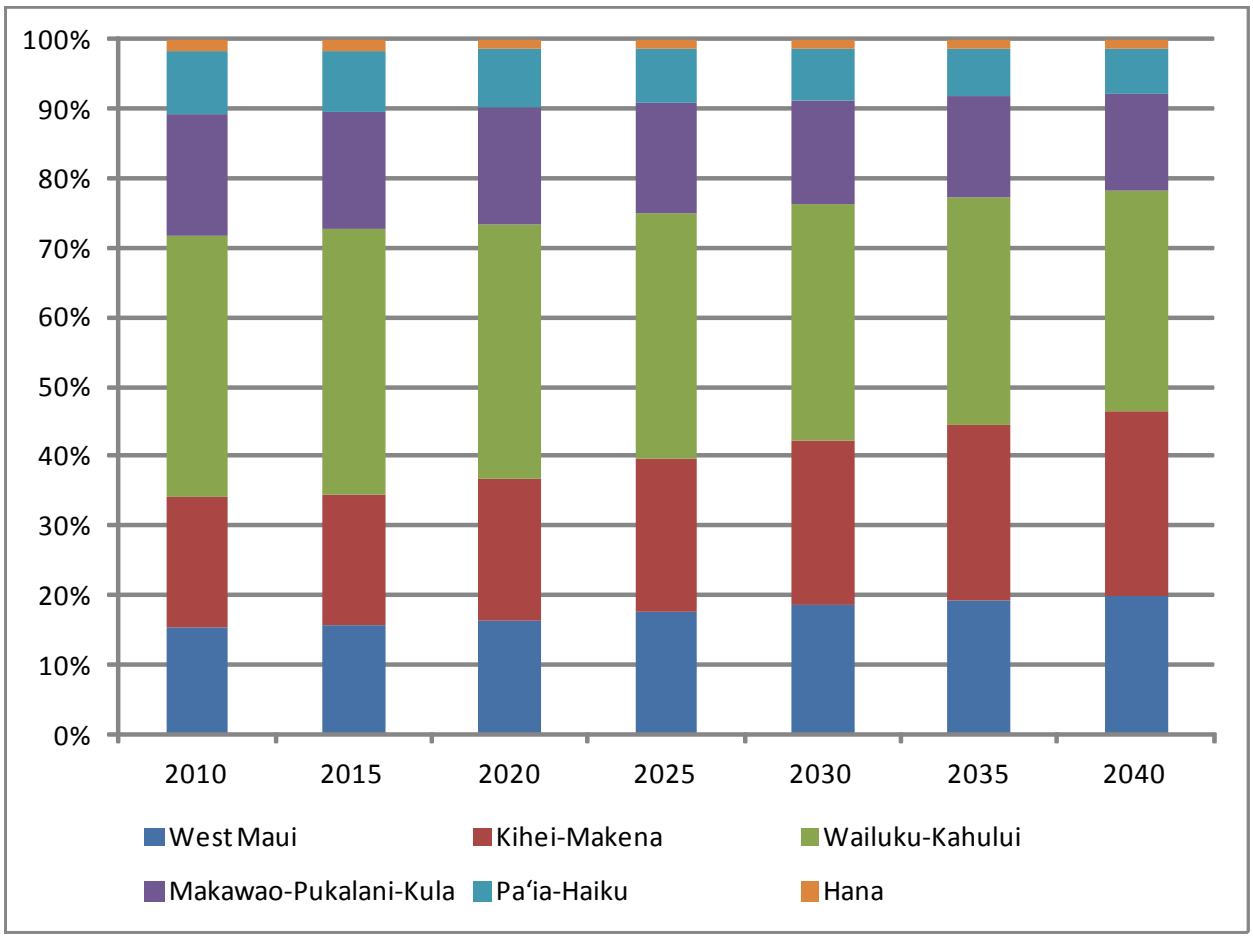
[4] Data are from the Real Property Branch, Maui County Department of Finance. In the version of the model published in 2006, sales were emphasized rather than current ownership. The revision is intended to focus attention on the share of the housing stock under non-resident control, since sales activity in resorts may be much more volatile than in established residential areas.

[5] Data from Federal Reserve Bank of New York, compiled by TZ Economics in 2012.(Paul H. Brewbaker, "October 26, 2012." Slides from presentation to Realtors Association of Maui in July 2012. Posted at http://www.ramaui.com/UserFiles/File/Other_PDF/brewbaker_ram_071312.pdf.

Island Community Plan areas (except Hāna) can move from one area to another for housing or work without great difficulty. Local populations have grown sharply when development was possible in one region and then stabilized when development was limited by County policy.

Figure 2 shows projections for the allocation of resident population among Maui County's Community Plan areas. Wailuku-Kahului is expected to remain the most populous CP area, but both Kihei-Makena and West Maui will have increasing shares of the island population (25.1% and 19.3% respectively, as of 2035).

FIGURE 2: POPULATION DISTRIBUTION ON MAUI ISLAND, 1990 TO 2040



In outlying areas, community efforts and economic demand may help to reverse some recent problems, but cannot reverse the challenges posed by transportation and isolation. We also recognize that relatively isolated areas – Lāna`i, Moloka`i, Hāna – depend much more on the success of one major landowner or firm than do others, so economic downturns can cause far greater problems in these areas than elsewhere. However, the consequences of such dependence vary from place to place. After employment contracted on Lāna'i, residents moved

away, and the unemployment rate is now very low. On Molokaʻi, employment has stagnated and unemployment has risen in recent years.[6]

**Lāna`i.** The forecast developed in the 1990s anticipated rapid growth, as Lāna`i converted from a pineapple economy to one based on tourism. The transition was accomplished, but hotel occupancies and vacation home sales did not reach forecast levels. Job counts were static from 1998, and then declined as of 2009. With new investment on the island by Pūlama Lānaʻi, employment has returned to pre-recession levels (approximately 1,600 workers).[7]

Unemployment spiked in 2009, but has since declined to a rate lower than any other island.

Lāna`i's population and jobs are projected as growing at modest rates, but more slowly than for the County as a whole. No construction of visitor units is anticipated, in light of occupancy levels in Lana`i hotels. (However, second home construction is forecast throughout the period.)

**Moloka`i.** During the 1990s, Moloka`i saw some growth in service, finance, trade and agricultural jobs, but a decline in hotel jobs. Over the period, the age structure changed, with younger people forming a smaller share of the population. Since 2000, some resort-related investment occurred on the West end of Moloka`i, but it has not prospered. Molokaʻi has fewer visitor units now than in 1980.

The number of people in wage and salary jobs on Molokaʻi has changed little since 2000. The unemployment rate has returned to a high level (over 15% by mid-2012).

Moloka`i saw population growth for decades, despite high unemployment and relatively few jobs, until the recent recession. With a slowly improving economy, Moloka`i should see new jobs, supporting increased population and the return of some of those who have moved off-island. Unemployment is projected as declining over time as the local economy becomes more similar to that of other Maui County islands.

This forecast assumes that Moloka`i's people remain resilient in supporting themselves and their families despite low wage and salary employment.

West Maui. Since 1990, West Maui District has seen both population and job growth. Looking to the future, these trends are projected to continue through 2035. Local development potentials to watch include time-share projects, large master-planned communities, and Hawaiian Homelands communities. The first is of interest as affecting the distribution of jobs:

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[6] As of July 2014, Lānaʻi's unemployment rate was 2.7% and Molokaʻi's rate was 12.1% (Department of Labor and Industrial Relations (DLIR) posted at https://www.hiwi.org/admin/gsipub/htmlarea/uploads/LFR_LAUS_Urate_current.pdf, and read on September 9, 2014).

[7] DLIR, https://www.hiwi.org/gsipub/index.asp?docid=421, read on September 9, 2014.

time-shares have higher occupancies than hotels, but may employ fewer workers actually at the lodging site. Their impact on jobs is felt throughout the general area, as time-share visitors spend their money in the local economy.

Kihei-Makena. This area has combined a growing visitor economy, new jobs associated with both visitors and the technology sector, and expanding residential areas. It has had the smallest average household size. The forecast extends all these trends. Based in part on recent development proposals, the forecast shows stronger growth in residential units than in visitor units.

Wailuku-Kahului. This area remains the economic and population center of the island. In the 1990s this area saw significant increases in trade, transportation, communications and utilities, and government jobs. With a new hotel opened and hotel renovations proposed for Kahului, the area could see new visitor activity. Kahului Harbor is already the port through which most cruise ship visitors reach Maui. The Wailuku-Kahului area is expected to grow faster than other parts of Maui Island as former sugar lands are developed with residential subdivisions and with industrial parks. It is expected to continue as home to over a third of Maui's households. See Figure 2.

Makawao-Pukalani-Kula. Upcountry Maui saw significant increases in population in the 1980s, but much less growth afterwards. New development was curtailed due to problems of water supply. Job growth occurred at a much faster rate, but the forecast calls for economic growth to continue at a slower pace. With only one wage and salary job Upcountry for every 2.5 households, the bulk of the area's residents commute outside the area for work. This will continue to be the case. Even by 2035, the forecast shows 2.4 households per local wage and salary job. (However, self-employment is projected to increase throughout the County. The ratio of total civilian employment to households in Upcountry Maui would reach 1.5, lower than the projected County ratio of 1.7.)

Pā`ia-Ha`ikū. Since windsurfing became popular in the 1980s, this region has taken on importance as the home of this sport in Hawai'i. In the 1990s, upland areas saw development of homes on large agricultural lots, with the area population increasing by 52% over the decade. In light of limited availability of land for new residential areas, the forecast calls for much slower growth in housing and population.

Hāna. In recent years, Hāna has seen job losses and a decrease of children and young adults. The projected future, based on slow growth, is possible with a renewal of the visitor economy supported by local agriculture. Hāna could also experience new population due to an in-migration of retirees and others who may not actively seek local employment.

CONTENTS

EXECUTIVE SUMMARY i
Purpose i
Key Sources and Assumptions ii
Major Findings of the New Forecast iii

ACRONYMS, ABBREVIATIONS AND TECHNICAL TERMS xiv

1. DEVELOPMENT OF THE FORECAST 1
1.1 Purpose of the Forecast: Support the Maui County General Plan Update Process 1
1.2 Scope of Work 2
1.3 Data Sources 3

2. DESCRIPTION OF THE MODEL 6
2.1 Organization 6
2.2 Characteristics 6
2.3 Logic of the Model 9
2.4 Issues for Continuing Review 19

3. ALTERNATIVE PROJECTIONS 22
3.1 Approach 22
3.2 Differences between the 1994 Forecast and Actual Trends 23
3.3 The Baseline, Low and High Alternatives 27

4. BASELINE RESULTS 31

REFERENCES 80

TABLES

TABLE 1: MAJOR SOCIO-ECONOMIC INDICATORS, 1990 TO 204O, MAUI COUNTY AND ISLANDS v
TABLE 2: MAJOR SOCIO-ECONOMIC INDICATORS, MAUI ISLAND CP AREAS vi
TABLE 3: 2010 OWNERSHIP, HOMES IN MAUI COUNTY BUILT FROM 2000 TO 2010 vii
TABLE 4: TOURISM INPUTS FROM DBEDT 7
TABLE 5: MAUI COUNTY SOCIO-ECONOMIC INPUTS FROM DBEDT 8
TABLE 6: RELATION OF OUTPUTS TO INPUTS AND ASSUMPTIONS 15
TABLE 7: 1990 AND 2010 INDICATOR DATA, AND 1994 FORECAST FOR 2010 25
TABLE 8: VARIANCE, ACTUAL VS. PROJECTED CHANGE, 1990-2010 26
TABLE 9: VARIANCE AS A SHARE OF PROJECTED CHANGE, AND AS DIFFERENCE PER FIVE-YEAR INCREMENT, 1990-2010 27
TABLE 10: FORECAST CHANGE AND POTENTIAL VARIANCE, 2010 TO 2035 28
TABLE 11: BASELINE, HIGH AND LOW PROJECTIONS, COUNTY AND ISLANDS 29

COUNTY

TABLE C-1: RESIDENT POPULATION BY AGE/SEX COHORT 32
TABLE C-2: DE FACTO POPULATION 33
TABLE C-3: NUMBER OF HOUSEHOLDS BY HUD INCOME CATEGORIES 33
TABLE C-4: MEDIAN HOUSEHOLD INCOME 33
TABLE C-5: HOUSING DEMAND 34
TABLE C-6: CIVILIAN JOBS BY INDUSTRY 35
TABLE C-7: UNEMPLOYMENT 35
TABLE C-8: LABOR DEMAND 36
TABLE C-9: AVERAGE VISITOR CENSUS (AVC) 36
TABLE C-10: VISITOR ARRIVALS 36
TABLE C-11: VISITOR EXPENDITURES 37
TABLE C-12: VISITOR UNITS 37

ISLANDS

TABLE I-1: RESIDENT POPULATION 38
TABLE I-2: LĀNAʻI RESIDENT POPULATION BY AGE/SEX COHORT 39
TABLE I-3: MOLOKAʻI RESIDENT POPULATION BY AGE/SEX COHORT 40
TABLE I-4: MAUI ISLAND RESIDENT POPULATION BY AGE/SEX COHORT 41
TABLE I-5: DE FACTO POPULATION 42
TABLE I-6: HOUSEHOLDS 42
TABLE I-7: LĀNAʻI HOUSEHOLDS BY INCOME CATEGORIES 43
TABLE I-8: MOLOKAʻI HOUSEHOLDS BY INCOME CATEGORIES 44
TABLE I-9: MAUI ISLAND HOUSEHOLDS BY INCOME CATEGORIES 45
TABLE I-10: MEDIAN HOUSEHOLD INCOME 46
TABLE I-11: HOUSING DEMAND 47
TABLE I-12: LĀNAʻI JOBS BY INDUSTRY 48
TABLE I-13: MOLOKAʻI JOBS BY INDUSTRY 49

TABLE I-14: MAUI ISLAND JOBS BY INDUSTRY 50
TABLE I-15: UNEMPLOYMENT 50
TABLE I-16: LABOR DEMAND 51
TABLE I-17: AVERAGE VISITOR CENSUS 51
TABLE I-18: VISITOR ARRIVALS 52
TABLE I-19: VISITOR EXPENDITURES 52
TABLE I-20: TOTAL VISITOR UNITS 53
TABLE I-21: OCCUPIED VISITOR UNITS 54

REGIONS OF MAUI ISLAND

TABLE R-1: POPULATION BY REGION 55
TABLE R-2: WEST MAUI POPULATION BY AGE/SEX COHORT 56
TABLE R-3: KIHEI-MĀKENA POPULATION BY AGE/SEX COHORT 57
TABLE R-4: WAILUKU-KAHULUI POPULATION BY AGE/SEX COHORT 58
TABLE R-5: UPCOUNTRY POPULATION BY AGE/SEX COHORT 59
TABLE R-6: PAʻIA-HAʻIKŪ POPULATION BY AGE/SEX COHORT 60
TABLE R-7: HĀNA POPULATION BY AGE/SEX COHORT 61
TABLE R-8: HOUSEHOLDS BY REGION 62
TABLE R-9: HOUSEHOLDS BY INCOME BY MAUI ISLAND REGION 63
TABLE R-10: MEDIAN HOUSEHOLD INCOME 65
TABLE R-11: HOUSING DEMAND BY REGION 66
TABLE R-12: TOTAL CIVILIAN JOBS BY REGION 68
TABLE R-13: TOTAL CIVILIAN JOBS, BY INDUSTRY, WEST MAUI 70
TABLE R-14: TOTAL CIVILIAN JOBS, BY INDUSTRY, KIHEI-MĀKENA 71
TABLE R-15: TOTAL CIVILIAN JOBS, BY INDUSTRY, WAILUKU-KAHULUI 72
TABLE R-16: TOTAL CIVILIAN JOBS, BY INDUSTRY, UPCOUNTRY 73
TABLE R-17: TOTAL CIVILIAN JOBS, BY INDUSTRY, PAʻIA-HAʻIKŪ 74
TABLE R-18: TOTAL CIVILIAN JOBS, BY INDUSTRY, HĀNA 75
TABLE R-19: AVERAGE VISITOR CENSUS 76
TABLE R-20: VISITOR ARRIVALS 77
TABLE R-21: TOTAL VISITOR UNITS 78
TABLE R-22: OCCUPIED VISITOR UNITS 79

FIGURES

FIGURE 1: RESIDENT AND VISITOR POPULATIONS, MAUI COUNTY, 1990 TO 2040 .. iv
FIGURE 2: POPULATION DISTRIBUTION ON MAUI ISLAND, 1990 TO 2040 viii
FIGURE 3: COMMUNITY PLAN REGIONS OF MAUI COUNTY 1
FIGURE 4: GENERAL RELATIONSHIP AMONG LEVELS OF MODEL 9
FIGURE 5: PERSONS PER HOUSEHOLD, MAUI COUNTY, 1980 TO 2040 12

ACRONYMS, ABBREVIATIONS AND TECHNICAL TERMS

American Community Survey (ACS)	Survey conducted by the U.S. Census Bureau annually. Data are reported for Counties on an annual basis, for smaller areas by combining data from three or five years of sampling. The five-year samples combined are about the same size as the sample for the "long form" data in 2000, but are gathered over a five-year period and cannot be identified with a single year.
AVC	Average visitor census
Census	The U.S. Census Bureau is responsible for several distinct counts and estimates of the population and economy. The decennial Census (last conducted in 2010) attempts to reach and count the entire population, unlike more limited surveys that count a sample of the population and that estimate the total population by weighting the results. Some decennial Census information has been gathered only from a sample of respondents. In 2000, the SF3 "long form" data on income, occupations, commuting and housing, as distinct from the SF1 "short form" data on populations, was gathered from about one in every six households. More recently, such information was dropped from the decennial survey and gathered through the ACS.
Constant vs. current dollars	Dollar values change with inflation. In this report, dollar values are given in 2010 dollars even for past and future years. These are "constant" dollars, not the values "current" at the historical or future time in question.
CP	Community Plan area
DBEDT	Department of Business, Economic Development and Tourism, State of Hawai'i
De facto Population	Population "in fact" in a place at a given time. This count combines residents and visitors who are on site, and excludes residents traveling elsewhere.
DLIR	Department of Labor and Industrial Relations, State of Hawai'i
Family	Persons related by kinship or marriage. Projections in this report deal with housing units and households, not families; households may or may not include families.
Group quarters	Group quarters are places where people live or stay in a group living arrangement, which are owned or managed by an entity or organization providing housing and/or services for the residents. This is not a typical household-type living arrangement. These services may include custodial or medical care as well as other types of assistance, and residency is commonly restricted to those receiving these services. People living in group quarters are usually not related to each other.

	Group quarters include such places as college residence halls, residential treatment centers, skilled-nursing facilities, group homes, military barracks, correctional facilities, and workers' dormitories. (Source: US Census) The Census indicates that inmates in correctional facilities are counted as at the facility. It is not clear whether Hawai'i inmates in US Mainland facilities are consistently counted as on the Mainland or as at the Hawai'i facility from which they were sent to the Mainland.
Household	A household is the person or persons living in an occupied housing unit. A housing unit is classified as occupied if it is the usual place of residence of the individual or group of individuals living in it on Census Day, or if the occupants are only temporarily absent, such as away on vacation, in the hospital for a short stay, or on a business trip, and will be returning. The occupants may be an individual, a single family, two or more families living together, or any other group of related or unrelated individuals who share living arrangements. Occupied rooms or suites of rooms in hotels, motels, and similar places are classified as housing units only when occupied by permanent residents; that is, occupied by individuals who consider the hotel their usual place of residence or who have no usual place of residence elsewhere. However, when rooms in hotels and motels are used to provide shelter for people experiencing homelessness, they are not housing units. Rooms used in this way are considered group quarters. (Source: US Census)
Household income	Annual income of all members of a household. Presented either as the median household income for an area or in terms of income levels that are shares (50%, 80%, 100%, etc.) of the county median. Maui County Department of Housing and Human Concerns reports separate median estimates for small areas. In this report, all local estimates are discussed in relation to the County median income.
Household size vs. persons per household	Average household size is the number of persons in households divided by the number of households. The population in question excludes persons in group quarters. For projections, and hence for this report, the future growth of populations in group quarters is uncertain, and no projections of that growth are offered. "Persons per household" counts the total population, divided by the number of households.
HTA	Hawai'i Tourism Authority
LRD	Long Range Division, Department of Planning, County of Maui
Visitor unit (VU)	Housing unit held for temporary lease to non-residents. Hotel rooms, bed-and-breakfast rooms, condominium units or single-family homes held for

	rental to visitors are visitor units. Note that a second home used occasionally by non-residents counts as a vacant housing unit, not a visitor unit. The most extensive account of visitor units is the *Visitor Plant Inventory* updated annually and published by the Hawai'i Tourism Authority.

US Census definitions are from U.S. Census Bureau, *2010 Census Summary File 1, 2010 Census of Population and Housing, Technical Documentation,* Appendix B. Publication SF1/10-4 (RV). Washington DC, 2012. Posted at http://www.census.gov/prod/cen2010/doc/sf1.pdf.

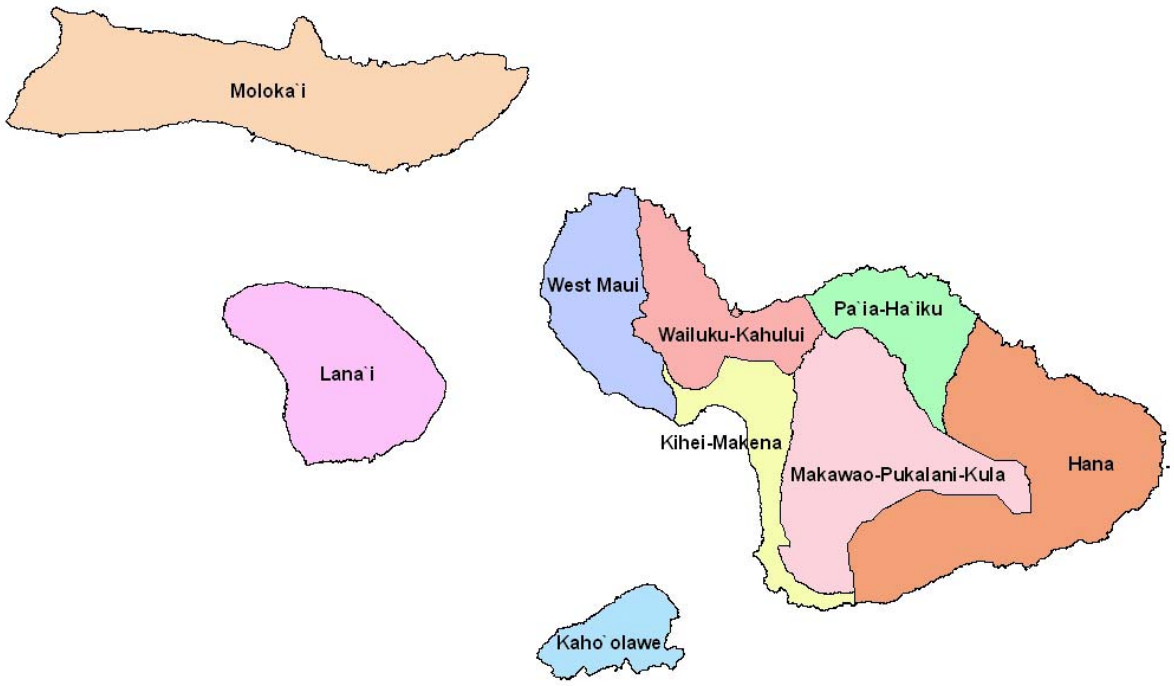
1. DEVELOPMENT OF THE FORECAST

1.1 Purpose of the Forecast: Support the Maui County General Plan Update Process

The Maui County socio-economic forecast model was developed in the 1990s in support of the General Plan update process. It was revised in the years after the 2000 Census, and a report on the model was published in 2006. That report has used by the Planning Department and decision-makers in developing the Countywide Policy Plan and the Maui Island Plan. Since that time, the model has been revised, incorporating new data and refining the approach taken to key issues such as housing demand.

The Countywide Policy Plan was adopted in 2011. The Maui Island Plan was passed as Ordinance 4004 in December 2012. The 2030 General Plan update process continues with the Lāna'i and Moloka'i Island Plans, and the Community Plans for areas on Maui Island. The nine Community Plan Regions consist of three islands – Kaho`olawe, Lāna`i and Moloka`i, and six regions on Maui Island. The Community Plan regions are shown in Figure 3. The island of Kaho`olawe has no permanent inhabitants. It is not considered further in this report.

FIGURE 3: COMMUNITY PLAN REGIONS OF MAUI COUNTY



The current iteration of the model and this report are meant to support stakeholders in their deliberations, in the General Plan process and other community decision-making.

The forecast brings together what we can reasonably expect to occur over the next decades. It is not meant to direct change but to show what change is likely to occur, and where, given current trends and policies. As discussed in more detail below, it is an allocation of a general forecast to specific islands and areas. It is intended to reflect how local conditions and trends may interact with broader changes. It recognizes land use policies in place, but is not meant to allow or disallow any particular project or initiative.

1.2 Scope of Work

The State develops forecasts of future population, jobs and visitors. The State's forecasts cover the State as a whole and the four counties. As Maui County planners and community leaders face the future, local-level forecasts are required. The local-level forecasts allocate the residents, jobs and visitors projected by the State Department of Business, Economic Development and Tourism (DBEDT) to Community Plan areas.

When the 2006 version of the model wad developed, the project team made several enhancements, notably:

Land Use-Based Forecast: For the 2006 baseline forecast, information about available land and planned projects was compiled by the Long Range Planning Division, and projections of the distribution of new households and properties developed for offshore buyers were derived from that database. The current forecast goes further in integrating demographic with land use information, since it distributes anticipated growth on the basis of permitted development (including infill and projects with entitlements) and the Planned Growth Areas in the Maui Island Plan.

High and Low Ranges: Maui County has consistently sought to have baseline, low and high forecasts to help community stakeholders consider a range of possible futures while working on the General Plan update. In 2006, the high and low forecasts were developed as sets of indicators based on historic "boom" and "bust" periods. They delineated the range of potential demographic and economic changes which have historically occurred in the County, and hence the range of variation in forecast values that can be reasonably anticipated. In the current report, high and low estimates are generated for key indicators on a different basis, by analyzing the gap between past projections and historic trends from 1990 to 2010. The high and low estimates show future scenarios, assuming that current projections include inaccuracies on the same scale as in the past.[8]

Housing Demand: Housing demand is a complex analytic construct. It estimates (a) the total number of households that Maui County residents will have at a given time, plus (b) a vacancy factor sufficient to provide for choice for families looking for housing and (c) an

[8] The accuracy of projections by DBEDT and the County has probably improved over time – but future events and trends could still make reasonable projections miss the mark. The procedure used here simply recognizes the uncertainty involved in long-term forecasts.

estimate of the share of the housing market that will go to meet demand from non-residents. The second and third elements are needed to project a housing market in which the cost of housing is fairly stable. If there are no vacant units, or if local residents and off-shore buyers compete for a small number of units, the result would be a sharp escalation of housing prices. Non-resident demand has been estimated in the model on the basis of historical data on the ownership of housing units (from data gathered in 2011 on ownership of units built from 2000 through 2010). Future demand is estimated as constant in outlying areas, and as a share of resident household growth in other areas.

Additional changes in the model have included updates of historically-based trend analysis to include 2010 data (e.g., change in the number of persons per household), updating income data to use 2009 dollars for estimates, and the removal of complications that no longer seem warranted (such as a distinction between federal and local estimates of income).

1.3 Data Sources

Any forecast depends on prior research and models to provide a strong historical basis and to narrow the range of estimation of anticipated trends. The present forecast benefits from both historical data and extensive experience in Hawai`i with socioeconomic models.

DBEDT Contributions: The Department of Business, Economic Development and Tourism's Research and Economic Analysis Division prepares both long-term and short-term forecasts of population, jobs and visitor inputs. These take into account both federal projections and local indicators. The long-term projections run some 25 years into the future, and include projections for the state and counties. The 2030 Series Projections, issued in 2004, were used in the 2006 Maui forecast. The current forecast derives from the 2040 series, issued in 2012.

The DBEDT long-term model draws on detailed historical data to estimate continuing trends. When the model is revised, changes are made by adding new historical data, and hence extending the time series from which trends are projected. Additional changes may or may not be made, if DBEDT economists find it appropriate to refine some of the relationships in the model. It can be considered a trend extrapolation approach to predicting the future.

The DBEDT long-term model links visitor inputs, jobs, income, and population, so the three projections differ systematically, not just in estimates of visitor counts. DBEDT inputs for the model are crucial for policy purposes. Because this forecast derives from the DBEDT forecast, it serves to help policy-makers understand Maui within the overall context of the State's economic structure, and to make policy choices that respond to that context. In the past, Neighbor Island representatives have viewed the DBEDT model as giving undue emphasis to concerns and activities on Oahu. Since 2004, DBEDT has incorporated an Inter-County Input-Output Model in its work. This

component deals with the specific cash flows among firms and persons in each County, and better reflects socioeconomic forces in effect in Maui County.

US Census Data: The forecast draws on US Census data from 1990, 2000 and 2010. From the 2000 Census, the SF1 data, drawing on the short form sent to all households, and SF 3 data, from the long form sent to about 15% of households, are available. SF1 data are considered more accurate wherever they are available. By 2010, the decennial census only includes SF1 data. The detailed information from a sample of households now comes from the American Community Survey (ACS), a sample survey conducted annually. When data from several years' sampling are combined, the Census Bureau can report results for small areas such as Census Tracts. For this report, data from the 2005 to 2009 samples were used.

ACS data are increasingly useful for understanding income and employment distribution. While it might be preferable to combine 2010 Census data with ACS estimates for years around 2010 – say 2008 through 2012 – that information did not become available until the end of 2013. An advantage of the new system is that one-, three- and five-year data sets can be reported every year, so changes can be tracked annually, not just every ten years.

Census data cover:

- Total population;
- Population distribution by age and sex;
- Information on incomes and occupations, by place of residence (now in the American Community Survey, not the decennial census); and
- Occupied and vacant housing units.

Census estimates of total housing inventory include some units held for vacation use. It must be used carefully, in combination with other data, to estimate the housing stock actually available to residents. (The Census housing data are especially important because DBEDT does not provide forecasts of housing supply or household size.)

Several other sources were used for historical data and for additional data used to estimate trends, notably:

- Hawai`i State Department of Labor and Industrial Relations data: The Department identifies wage and salary jobs by industry at the county and island levels. Their information on payrolls is also a source for checking on estimates of local income sources. (Portal: http://hawaii.gov/labor/rs/.)

- Information on visitor units comes from the *Visitor Plant Inventory* compiled annually for the Hawai'i Tourism Authority (DBEDT, 2011).

- To take into account offshore demand for housing, sales and construction data derived from Real Property Tax Branch files have been analyzed. The annual parcel and building data set for 2010, released in 2011, was used.

- Decisions about the location of new housing, visitor units and commercial sites follow from the availability of land. The Department of Planning has kept detailed records of current land use permits and of applications. New housing has been allocated to sites where land has the appropriate permits or where urban expansion would involve limited infrastructure costs. Maui Island's urban and rural growth areas, where new development should be allowed, emerged from proposals by analysts in the Department of Planning, after consideration by the General Plan Advisory Committee, input from many different members of the community, further deliberations by the Council's General Plan Committee, and the judgment of the County Council in Ordinance 4004, passed in December 2012.

  This report includes slightly different estimates of regional populations and counts of households on Maui Island from those in the *Maui Island Plan.* In part the difference has to do with judgments made at different points about the likely timing and rate of development of new units by type (in residential subdivisions vs. on agricultural lots) and hence by region. In part the difference follows from differences in the analytic steps taken to produce outputs for the *Plan* and for this model. The regional allocation of population in this report should be viewed simply as paralleling the forecast population numbers in the *Plan;* the differences in population and housing are too small to be significant.

2. DESCRIPTION OF THE MODEL

2.1 Organization

The model consists of a series of spreadsheets. These identify starting points (historical data, official projections, and assumptions used to develop trend analyses) and calculations. The calculations link estimates of the various outputs (population, employment, housing, visitor numbers and units) for the County, each island, and the Community Plan areas on Maui Island, and between these levels. (See Section 3.3 for discussion of the links between particular variables.) The calculations lead to the outputs included as tables in this report.

2.2 Characteristics

The project development team has sought to make the model consistent and relatively simple. Some of its general characteristics deserve note.

Long-Term Forecast

The model developed for the Maui County Socio-Economic Forecast was not designed to predict short-term economic cycles. Instead, it provides estimates of long-term trends.

The model estimates future numbers of residents, visitors, jobs, and housing at five-year intervals. It incorporates expected changes over time in the rate of increase of these factors. Short-term changes, such as the sudden loss of visitors after the September 11 tragedy in 2001, are reflected in the model only as starting conditions from which longer-term trends proceed. For example, the average visitor census for Maui County is expected to grow by 2.1% annually to 2015, then by about 1% annually in later years. In effect, the forecast treats the recent recession as reducing visitor numbers, but sees visitor numbers as rebounding, then continuing at a more modest rate.

Many socioeconomic phenomena go through boom and bust cycles. Typically, new home production booms in a growing economy with favorable interest rates, then declines sharply as affordability declines. Eventually, the cycle begins again: demand grows, prices decline, buying increases, and both production and sales take off again. To predict such cycles with some precision, an analyst would need to determine the starting point of a boom, the point at which the curve changes direction, and the amplitude of the curve. Instead, the model provides midline estimates, with the aim of approximating change over time, if not necessarily the precise results for a given year.

As a long-term projection, the model estimates the impact over time of long-range demographic and economic trends on Maui and its Community Plan Regions. Actual conditions

will diverge, from year to year, from the long-term trend. Even the best long-term model possible would likely not be accurate on a yearly basis.

Historical data and projections are separated in the model, with all projections, for 2015 and later, flowing from the DBEDT model. As a result, some near-term projections may be obviously inaccurate. For example, DBEDT expects only a two-unit change in visitor accommodations in Maui County from 2010 to 2020. In the meantime, the 138-room Kahului Airport Courtyard by Marriott hotel has opened. The forecast results have been minimally changed to recognize this fact.

Key inputs from DBEDT are shown in Tables 4 and 5

TABLE 4: TOURISM INPUTS FROM DBEDT

	2000	2010	2015	2020	2025	2030	2035	2040
Visitor Arrivals (1,000)								
State Total	6,983	6,917	7,750	8,090	8,440	8,810	9,200	9,600
Domestic	4,447	4,957	5,460	5,580	5,740	5,900	6,070	6,240
International	2,502	1,960	2,290	2,510	2,700	2,910	3,130	3,360
Maui County	2,305	2,123	2,410	2,540	2,660	2,780	2,910	3,050
Average Daily Visitor Census (1,000)								
State	169	178	199	206	215	224	233	242
Domestic (AVC)	123	136	150	153	158	162	167	171
International (AVC)	45	42	48	53	57	62	66	71
Maui County	44	47	53	55	58	61	64	67
State Share of AVC								
Domestic	73.2%	76.7%	75.7%	74.3%	73.4%	72.5%	71.6%	70.7%
International	26.8%	23.3%	24.3%	25.7%	26.6%	27.5%	28.4%	29.3%
Average Length of Stay	8.84	9.39	9.36	9.32	9.30	9.28	9.25	9.20
Occupied Visitor Units								
State	54,018	52,357	58,626	60,782	63,437	66,011	68,710	71,308
Maui County	14,671	13,666	15,342	16,093	16,895	17,682	18,517	19,328

TABLE 5: MAUI COUNTY SOCIO-ECONOMIC INPUTS FROM DBEDT

	2000	2010	2015	2020	2025	2030	2035	2040
Resident Population (thousands)	128.1	155.2	168.0	181.0	194.2	207.3	220.2	232.9
Per capita income (2010 constant $s)		$35,726	$37,458	$39,030	$40,478	$41,813	$42,976	$43,955
Total Civilian Jobs (thousands	80.3	94.4	102.5	110.9	119.2	127.7	136.4	145.3
Self Employed Workers	17.8	25.2	29.3	33.8	38.5	43.6	48.9	54.6
Wage and Salary Employment	62.5	69.2	73.2	77.1	80.7	84.2	87.5	90.7
Agriculture	2.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Manufacturing	1.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Construction and Mining	3.0	2.8	3.0	3.1	3.2	3.3	3.4	3.4
Transportation and Utilities	2.9	3.0	3.2	3.3	3.4	3.5	3.6	3.6
Eating and Drinking Places	7.2	7.7	8.3	8.8	9.3	9.8	10.2	10.7
Trade	9.7	10.4	10.7	11.0	11.2	11.3	11.4	11.5
Finance, Insurance and Real Estate	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Hotels	11.2	10.4	10.9	11.3	11.5	11.8	12.1	12.3
Services (except Hotels)	13.9	18.4	20.3	22.2	24.0	25.9	27.7	29.5
State and Local Government	7.4	8.8	10.3	10.8	11.3	11.9	12.4	12.9
Federal Government	0.6	1.0	1.1	1.2	1.2	1.3	1.3	1.4

Allocation Model

The Maui County socioeconomic forecast allocates the population, jobs, and visitor variables provided in the State's long-term forecast to particular Community Plan regions. In developing and updating the County forecast, we were not so much predicting future growth in particular areas as assessing where the expected County growth would be realized. Our task in model building is to locate change, not to estimate its full extent.

DBEDT has characterized its long-term forecasts as "neither targets nor goals" but "DBEDT's best estimates for the likely path of important population and economic variables based on currently available information" (DBEDT, 1997: 1). (The 1997 report cited here includes detailed discussion of the logic and inputs used in constructing the long-term forecast. Later reports extend and update the forecast, without substantive change to the model.)

The State's demographic and economic forecasts are used throughout Hawaii for planning. The State Legislature has directed the counties to use them as the basis for county-level plans.

Coordinated with Land Availability

The current version of the model estimates island-level population growth on the basis of historical trends. For the CP areas of Maui island, the distribution of population and housing increases is tied to information on the availability of land on which new housing development is permitted or (in Planned Growth Areas) likely to be permitted in the coming years. In this way, the forecast combines information about population and housing growth with the specific policies and objectives formulated in the Maui Island Plan. New jobs are expected to be distributed according to land availability and –since existing permits may not cover all job creation on the island – in proportion to current job distribution. (See notes to Table R-12 for a description of the procedures for allocating new jobs to regions.)

2.3 Logic of the Model

The model is organized into three levels:

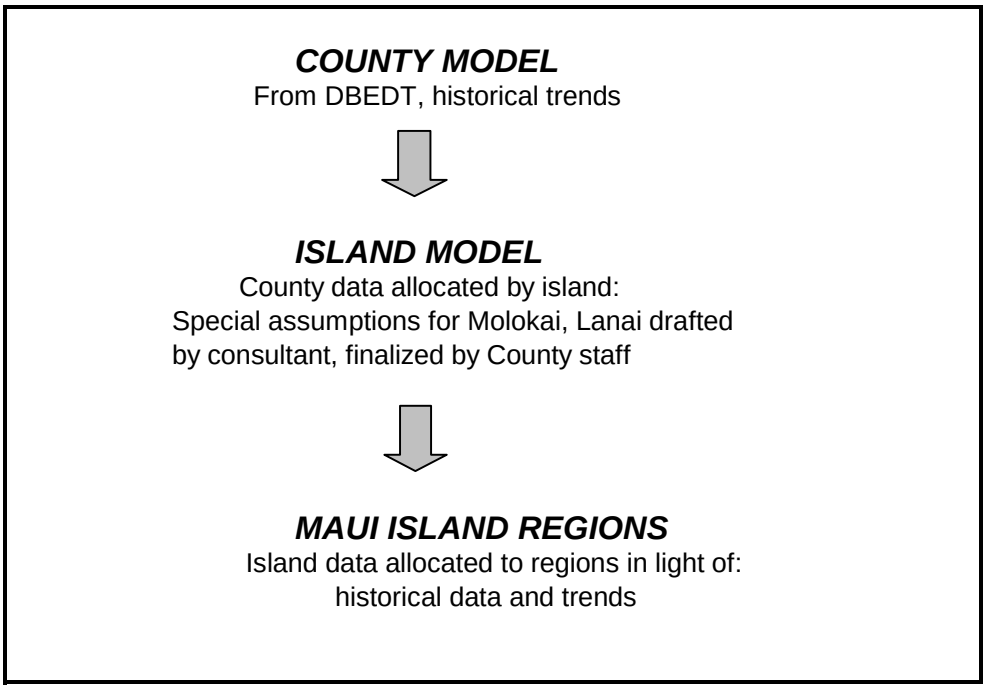
- *County level*: This incorporates the DBEDT inputs and additional variables estimated for the County.

- *Island level:* Because Moloka`i and Lāna`i are, as separate islands, distinct economies with their own characteristics, they need special attention. It has proven useful to allocate County figures by estimating specific data for Moloka`i and Lāna`i, and then assigning the remainder to Maui Island. (Maui Island has about 92% of the county population. County trends mirror Maui Island trends – so extra care is needed to separate out Moloka`i and Lāna`i, in order to recognize their particular characteristics.)

- *Maui Island Community Plan Region level*: On this level, the Maui Island figures are allocated among the six Community Plan regions.

Figure 4 sketches the way that allocation proceeds from the County to the island and regional levels.

FIGURE 4: GENERAL RELATIONSHIP AMONG LEVELS OF MODEL



Components: Inputs, Assumptions, Outputs

Components of the model include:

Inputs: These are values determined in other studies or models, and then used in the forecast model. Historical data and the DBEDT forecast data for Maui County are the major inputs of the model. Information about available land and potential new development has also been analyzed to assess likely regional trends.

Assumptions: These are values or formulae determined by the model-maker. Typically, these are used in combination with input values to project future characteristics of the County or a Community Plan Region.

Outputs: These are the values shown for future years in the tables later in this report. When dealing with the model itself, a distinction exists between "intermediate" outputs and "final" outputs. The former are the results of calculations (involving inputs and assumptions) but they are then used with further assumptions to generate "final" outputs.

Types of Assumptions: "Trend," "Level" and "Market" Assumptions

In developing assumptions, the project team looked at historical data series and proposed assumptions of three general types:

Trend Assumptions: Where we saw a strong trend in historical data, it was continued in the projection.

Level Assumptions: A trend assumption would be unhelpful when annual data over the last 10 to 20 years show a good deal of variation Again, in some cases, the most recent information was clearly influenced by the recession – but there is still no firm basis to decide whether this was an interruption or whether a "new normal" had been reached. In such cases, the team treated current or recent data as the basis for assumptions about the future (e.g., taking the average of 2005 and 2010 data as the basis for forecasting).

Market Assumptions: Some of the variables under study are products of changing markets, and may be strongly affected by economic cycles. Housing demand, unemployment, and labor demand are all examples. However, even though these may vary greatly, they tend toward equilibrium points in particular markets. In an active housing market organized by buyers and sellers (rather than a planned economy), some housing must be vacant for units to be available for sale or rent. If too many are available, prices are depressed. If too few, prices inflate (until new housing production helps to rectify matters). At a vacancy rate of about 5%, housing prices are likely to be stable or rise slowly.

A 5% vacancy rate was used to estimate resident housing demand in a stable market. The policy-maker can use the results to estimate future demand, or to consider whether likely future supply will meet or exceed projected demand. (This could be termed a "policy" Assumption, since Maui County is concerned to encourage an efficient housing market that offers a variety of housing opportunities to residents. However, it is not Maui County policy to maintain a particular vacancy rate from year to year. The County has a general aim, to see that residents have access to good housing, rather than a commitment to a particular vacancy level.)

A distinction between market assumptions and market data should be made. Market assumptions as defined here are simplifying assumptions used to deal with the difference between ever-changing markets and a long-term forecast. Market data, i.e., information about what people have done, what resources are available for future development, and how people might use those resources to create new housing, visitor units and jobs, are inputs that feed into all trend analyses. Market information for this version of the report was collected from 2010 through mid-2013. Market information for the *Maui Island Plan* was finalized as of late 2012. The residential land analysis in the *Maui Island Plan*, along with updated information on recent construction, was used as a basis for this report.

In regions with small populations, a few changes may affect demand for homes and visitor units greatly. It should be noted here that the model does not take into account the Pūlama Lāna'i proposals for new development that have been considered recently on Lāna'i; no inference is made here about their acceptance by the community, the County Council, or the market.

Definition of Outputs

In the tables of this report, information about demographics is presented first, followed by housing data, employment data, and visitor data. This order is repeated for each level (County, Island, Maui Island Community Plan Regions). As described later, the order is for the reader's convenience: economic inputs usually determine demographic totals.

The outputs projected in the model are:

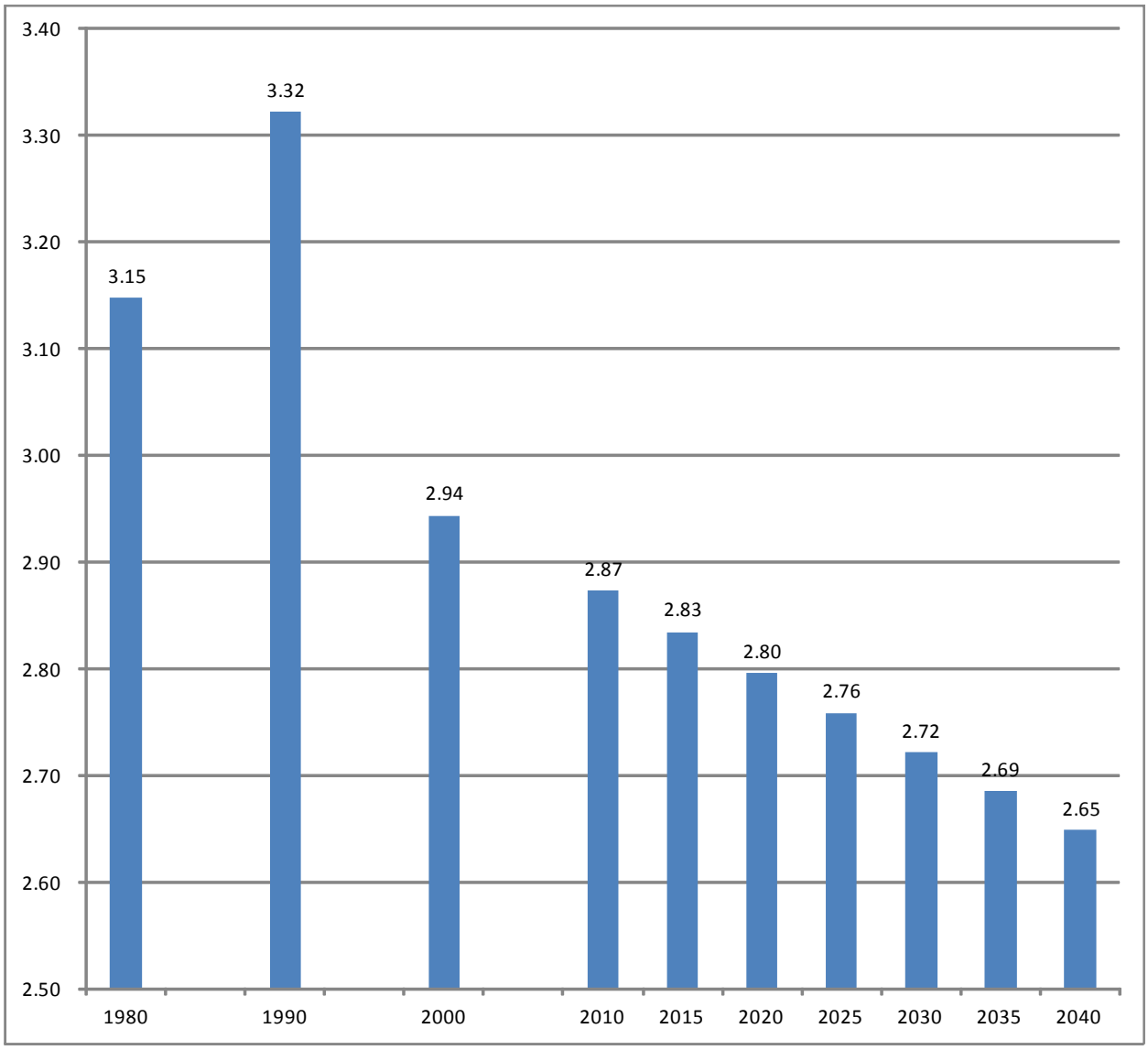
Resident Population: The number of full-time residents of Maui County and its Community Plan Regions. Total population and the distribution of population by age and sex are estimated.

De Facto Population: This is the total population on the ground in an area, estimated as an average for any day of the year. It consists of the resident population, minus the number normally absent, plus the average visitor census. On Maui Island, both residents and visitors move among the Community Plan Regions in complex ways every day. De Facto population is not estimated for these regions.

Household Size: Average resident population per household is estimated using trends for the State, County and islands. Regional household projections reflect Planning Department information on available land for new residential development, entitlements, and proposals.

In Maui County, the State of Hawaii, and the United States as a whole, household sizes have been declining since 1950. Figure 5 shows the trend. [9]

FIGURE 5: PERSONS PER HOUSEHOLD, MAUI COUNTY, 1980 TO 2040



NOTE: The figure shows total County resident population divided by households, so the population includes residents either in households or in group quarters. The forecast is derived from the projected rate of change in State populations and households, rather than the County historical data, so it treats the 1990 result as an outlier.

[9] See the introductory list of Abbreviations, Acronyms and Definitions for further discussion of household size and households.

"Average household size" usually refers to the population that actually lives in households, excluding those who live in group quarters (such as dormitories, prisons, long-term care facilities and some farm worker housing). Prediction of the extent to which Maui County and residents of the various Community Plan areas will rely on group quarters vs. households with an aging population is beyond the scope of the model, so the model deals only with total population and households.[10]

Resident Households: A household is defined by the US Census as a separate living area occupied by a person or persons. One house or building may contain multiple housing units. Residents are full-time residents of Maui County; part-year residents are treated here as visitors.

Income: Household income is the total income, from wages, investment, benefits, and other sources, of all members of a household for the year preceding an enumeration. Household income is grouped with reference to the HUD median income for the County. The HUD median is used by government agencies to assess demand for programs such as Section 8 housing, so it is a key criterion for policy makers. (Median income is the midpoint in the range of household incomes. Mean household income is the average income per household, combining income data from the whole range of households surveyed.)

Housing Demand: Number of occupied and vacant housing units needed for residents to be able to participate in the housing market. Recognizing that Maui's housing market includes both residents and off-shore buyers, SMS has redefined this to include both. Housing demand is now being modeled as combining (a) prior resident demand; (b) new resident demand due to growth in the number of resident households; (c) a vacancy factor, needed for a smoothly functioning housing market; and (d) offshore demand, modeled as a share of resident demand for additional housing. Offshore demand is quantified as a ratio of non-resident to resident sales by region in 2004, applied to the demand for new resident housing units.

Employment: Employment refers to the number of persons working. If a person has two jobs, that person is counted as one employed person. This figure is not identical with job counts or with estimates of the number of full-time jobs. Employment is classified by industry. Since changes in Hawaii's economy are often dependent on visitor spending, it is worth noting that "the visitor industry" is distributed across major industry categories: notably, in hotel services (service) and eating and drinking (trade).

Self-employment is now estimated by DBEDT to approximate the number of self-employed tax filings. The result is a much larger number than had been estimated by DLIR in the past, since it may include occasional and part-time activities, not just sole proprietors.

[10] See Section 2.4 for more discussion of this and other definitional problems.

Unemployment: Unemployed persons are out of work but seeking employment. Projected unemployment has been set using the assumption that market behavior and public policy will tend to reduce regional unemployment over time.

Labor Demand: For projection purposes, this is defined as total employment plus unemployment.

Visitor Arrivals: This is defined as the annual total of visitors from outside Hawaii intending to visit in Maui County. At the island level, visitor arrivals are estimated by DBEDT (through 2000), and projected on the basis of DBEDT estimates. At the regional level, visitor arrivals are allocated in proportion to visitor units.

Average Visitor Census: This is meant to be the average number of visitors in the County, island or region on an average day. This figure is estimated in the model on the basis of historical Hawaii Visitors Bureau and DBEDT estimates

Visitor Expenditures: DBEDT estimates visitor spending, including transportation and lodging costs that may be paid in advance of a trip. (Travel to and from Hawaii, however, is not included in this estimate.) Visitor spending is allocated to islands and regions based on visitor units, i.e., where visitors stay, not all sites in which visitors may spend money.

Visitor Units (Total and Occupied): These are places to stay overnight or longer intended for visitor use: hotel rooms, vacation rentals, and other units reserved for non-resident use. Counts of visitor units have been kept for many years (by the Hawai‘i Visitors and Convention Bureau, DBEDT, and the Hawai‘i Tourism Authority). A continuing effort has led to increased coverage of condominiums and homes rented by individual owners. There remains some doubt as to whether the count is comprehensive, i.e., if most or all transient vacation rentals are counted.

DBEDT provides estimates of County-level occupancy, taking 82.5% as, in effect, full occupancy: at this point, DBEDT assumes that more units will be built to meet demand.

Linkages within the Model

Table 6 provides a summary account, for each major output, of the way it is derived.

TABLE 6: RELATION OF OUTPUTS TO INPUTS AND ASSUMPTIONS

COUNTY

OVERALL APPROACH, COUNTY: Use DBEDT 2040 forecast for population, jobs, AVC, income. Futher inputs: historical trends and ratios in historical data.

Tables	***Output***	***Inputs and Assumptions***
C-1	Resident Population	DBEDT input
C-1	Population by Age and Sex	DBEDT input
C-2	De facto Population	Resident Population - 2010 share in transit + AVC
C-3	Persons per Household	Historical trends (State and County)
C-3	Resident Households	Res. Population / Persons per Household
C-3	Households by Income	Historical distribution (2005, 2005 to 2009)
C-4	Median Household Income	DBEDT forecast for County
C-5	Housing Demand, Vacancy	Occupied Households + 5% vacancy + Estimated Non-resident demand
C-6	Jobs by Industry	DBEDT Input
C-7	Unemployment	Assumed to stabilize (see island level)
C-8	Labor Demand	Wage and salary jobs * workers/job ratio + Market unemploment (rate)
C-9	Average Visitor Census	DBEDT input
C-10	Visitor Arrivals	AVC * 365 * Historical Length of stay for Domestic, International
C-11	Visitor Expenditures	DBEDT input
C-12	Total Visitor Units	DBEDT input
C-12	Occupied Visitor Units	DBEDT input

ISLANDS

OVERALL APPROACH, ISLANDS: Develop assumptions about the pace of change on Lāna‘i and Moloka‘i, taking into account historical trends. Then treat Maui Island as residual (i.e., County minus the other two islands).

Tables	***Output***	***Inputs and Assumptions***
I-1	Resident Population	Jobs * Dependency ratio (trend from 2010)
I-1 to 4	Population by Age and Sex	Population * 2010 Ratio, Island / County Population Distribution
I-5	De facto Populaiton	Resident Population - 2010 share in transit + AVC
I-6	Persons per Household	Historical trends
I-6	Resident Households	Resident Population / Persons per Household
I-6 to 9	Households by Income	Historical distribution (2005, 2005 to 2009)
I-10	Median Household Income	From ACS, ratio of local to County median held constant
I-11	Housing Demand / Vacancy	Resident households + 5% vacancy rate + offshore sales. Offshore sales estimated from historical sales patterns.
I-12 to 14	Jobs by Industry	AVC --> change in Visitor Industry; constant ratio Visitor/other Industries.
I-15	Unemployment	Toward stabilization by 2030 (4% on L āna‘i. 8% on Moloka‘i, 5% on Maui).
I-16	Labor Demand	Wage and salary jobs * workers/job ratio + Market unemploment (rate)
I-17	Average Visitor Census	From Occupied Vis Units and AVC/VU ratio
I-18	Visitor Arrivals	AVC *365/ Historic Length of stay
I-19	Visitor Expenditures	DBEDT input, historical data
I-20	Total Visitor Units	Allocate DBEDT est. by occupancy, plans (new units when occupancy high)
I-21	Occupied Visitor Units	Allocate DBEDT est. by historic trends

TABLE 6, Continued

REGIONS

OVERALL APPROACH, CP AREAS (REGIONS): Allocate change on Maui Island in line with 2010 data and potential residential, commercial, industrial and resort development.

Tables	***Output***	***Inputs and Assumptions***
R-1	Resident Population	From regional household allocation: population of 2010 households plus incremental population in new households
R-2 to 7	Population by Age, Sex	Population * **2010** ratio, region/county population distribution
R-8	Households by Region	New units allocated in proportion to available land permitted and planned for residential use
R-9	Households by Income	Estimated from average of 2005 (ACS, Housing Policy study) and 2005 to 2009 ACS data for 2010; for projections
R-10	Median Household Income	From ACS, ratio of local to County median held constant
R-11	Housing Demand	Resident households + 5% vacancy rate + offshore sales. Offshore sales estimated from historical sales patterns.
R-12 to 18	Jobs by Industry	New jobs allocated in proportion to growth of households, visitor units, newly built space, commercial and industrial space.
R-19	Average Visitor Census	Allocated by occupied visitor units
R-20	Visitor Arrivals	Allocated by occupied visitor units
R-21	Total Visitor Units	Allocated by permitted space for expansion
R-22	Occupied Visitor Units	Island occupancy rate applied to all regions

De facto Population and Visitor Expenditures are not calculated for the Regional Level

County: At the County level, the relations among outputs are largely given by DBEDT. The Maui model goes on to project:

- Average number of persons per household (affecting number of households);
- Income medians and distributions (based on recent ACS data and surveys for housing agencies), and assuming that increases in income over time affect different income groups equally);
- Housing vacancy rate (affecting housing demand): and
- Unemployment and labor demand (from market assumptions defined at the island level; affecting labor demand);

Islands: At the island level, consultants suggested accounts of major variables for Lāna`i and Moloka`i in the earlier versions, and assigned the remaining population, jobs, visitor units, and the like to Maui Island. County Planning Department staff reviewed these accounts and accepted them as useful for forecasting purposes. The accounts were based on available plans

and analysis of the islands' tourism economies. For the current model iteration, long-term slow growth assumptions were used and less weight was given to developers' plans.

Lāna'i has two major hotels and a few smaller accommodations. Resort residential areas have been permitted at both Mānele and Ko'ele. The model assumes that occupied visitor unit numbers would increase at the same rate as the County average visitor census. As a result, occupancy will rise, but will not reach the level at which new visitor unit construction is expected. (Occupancy rates are not public information for Lāna'i, so this calculation rests on an estimate of historical occupancy.) Increases in jobs followed, maintaining the ratios of visitor units to visitor jobs and visitor jobs to other jobs found in 2000.

Lāna'i has historically seen very low unemployment. Lāna'i unemployment was adjusted to 4% as of 2030 (a market assumption). This level is based on historical levels in resort economies and on recent trends on Lāna'i.

Some agricultural job growth is expected as residents develop lots in the Hawaiian Homelands agricultural area or on farmland owned by the leading landowner. Agricultural jobs on Lāna`i are estimated as existing by 2010, and are increased in proportion to visitor industry jobs (on the expectation that many of these will supplement income from visitor industry jobs).

Household sizes are assumed to decline over time at the same rate as for the County as a whole.

Moloka`i's visitor inventory has decreased in the last few years, after many years with low occupancy rates. Still, occupancies remain low, and new construction cannot be justified on the basis of recent occupancy figures.

The forecast shows Moloka`i visitor unit occupancy rising over time, in proportion to overall growth in County average visitor count. The County visitor plant is modeled as increasing when and if occupancies reach 82.5%; a slightly lower threshold was used for the smaller islands, but occupancy levels did not cross that threshold by 2035. During periods in which the number of units does not rise, some new units may actually be built; presumably other units would be retired from service during that time.[11]

Next, agriculture suffered during the 1990s as truck farming has developed on Oahu, taking away Moloka`i's major market for melons and vegetables. However, new developments in seed corn farming, aquaculture, and forestry have made some agricultural job growth possible.

[11] DBEDT's assumption that unit counts increase when occupancy hits 82.5% can be understood in terms of the economics of resort development, but is problematic for small areas and for small properties. Owners of vacation condos may find their cash flow to be satisfactory at lower occupancy rates and consider investing in additional units well before occupancy reaches 82.5%.

Ever since the pineapple plantations on Moloka`i closed in the 1970s, the population has made do with few sources of regular employment. Subsistence practices help to sustain many households. In the forecast, we have assumed that (a) Moloka`i would still have high dependency ratios – i.e., many people supported by few income-earning jobs – and a high ratio of support jobs to "basic" jobs that attract capital from off-island. However, unemployment is expected to decrease over time, reaching a stabilization point by 2030. That point (8%) is higher than for the other islands. The result is an economy which still depends on non-monetary household resources but has less endemic unemployment.

Maui Island Regions: On Maui Island, regional historical data can be gathered from the Census and a few additional surveys. General trends in population growth by CP area have been complex. On the one hand, Wailuku-Kahului has been the center of population and commerce. Residential growth in Kihe-Makena has also been consistent. In other areas, residential growth may be high in one decade then low in the next (notably because of the limited availability of water meters for new Upcountry development).

To allocate future growth in population and households, the model drew on information on planned housing projects (based on Planning Department files supplemented by news stories, and calls to developers) and Improved Residential and Agricultural properties that might legally be sites for new homes. For all projects and property types, Planning Department staff assessed the share of units likely to be occupied by residents vs. visitors. Housing demand was allocated in proportion to the distribution of potential inventory. (Hāna was, like Lāna`i and Moloka`i, treated as having stable but slow growth rates for population and visitor housing demand, based on both historical trends and the isolation of the region.)

Household sizes were expected to decline in line with the overall County and island trend. The expectation was that new households in all regions would be similarly shaped by housing costs, so the number of persons per household in the different CP areas would approach the island average over time.

The following were not calculated at the regional level:

- De facto population (since many residents and visitors move among island regions in the course of a day);

- Visitor Expenditures (since we have no historical basis for estimating this at a regional level) and

- Unemployment and labor demand (since the island, rather than the region, is the key labor market area).

2.4 Issues for Continuing Review

Several topics and changes have been considered in the course of updating the model. These are noted here to document the limitations of the model.

Group Quarters

These are not included in the model, although they are important in community life.

The Census reports people as living either in households or group quarters. Group quarters include hospitals, college dormitories, nursing homes, shelters, prisons and jails. In 2010, Maui County's population included 2,775 persons in group quarters, 1.8% of the population. The population in group quarters has been increasing. As the population ages and many more residents become frail elders, it could increase sharply, even if the share of Maui's elderly population which relies on nursing homes remains the same.[12] On the other hand, improved services supporting "aging in place" – seniors living in their own homes – and limited public funds could reduce dependence on nursing homes and other group quarters for the elderly.

Along with demand for group quarters, the location of future group quarters within the County is uncertain. These could be concentrated in the urban core or dispersed throughout the County. Planning for these facilities is a policy issue, and beyond the scope of the socio-economic model.

Persons per Household vs. Household Size

"Average Household Size" normally refers to the number of persons who live in households divided by the number of households. In the model, "Persons per Household" refers to the total population, not just the population living in households. The model does not separate household and group quarters populations, because it cannot project whether Maui will increasingly rely on one or another type of housing. As a result, the model cannot estimate household size apart from group quarters. All discussions of persons and households deal here with persons per household, combining household and group quarters populations.

DBEDT does not provide housing projections for the state and counties. The supply of housing depends on a mix of demographic, economic, and political factors. The Maui model must forecast housing in order to assess demand for urban lands.

In Hawai'i, and throughout the United States, household sizes and the number of persons per household have been decreasing regularly since the 1950s. The projections of future persons per household for Maui County and its subdivisions start from historical data for the County

[12] If the population in nursing homes increased at the same rate as the population aged 75 or more, this group in Maui County would increase from 679 in 2010 to 1,604 in 2035.

and State. The model uses the average rate of change in power trends from the State data, and applies that rate to the future for all areas, starting from the 2010 rate for each area.[13]

Non-Resident Housing Demand

Maui's real estate market attracts both local and non-resident buyers. Many off-island buyers seek resort units for their own use and/or as investments – but Realtors and others on Maui know well that off-island buyers may compete for homes outside resorts. Also, many residents invest in units in resort areas: resident ownership does not indicate resident occupancy of a unit.

In the last version of the model, non-resident housing demand was modeled on the basis of recent (2004) sales of properties with dwellings. For this version, the process was revised to rely on a larger data set:

- Based on tax records. properties with dwellings built from 2003 to 2012, excluding Time Share and Hotel and Resort units, owned by parties from outside Hawai'i were counted as "non-resident housing units" as of 2013. This is a proxy value, an estimate rather than a census, of actual non-resident use.

- The share of units built from 2003 to 2012 in each area and owned by non-residents was taken as the basis for estimating future demand from outside Hawai'i for housing in that area. In other words, information concerning ownership and sales over ten years provide a basis for estimating a future ratio of resident to non-resident demand.

- The divide between resident and non-resident ownership is a summary indicator of complex processes. Some non-resident units will become resident units. For example, buyers may retire to Maui. Others may find they no longer want their units, and then resell them – sometimes to residents. Non-residents may be more likely to resell units than residents. Some units may be owned by non-residents yet rented to residents. Readers should realize that the estimates of resident and non-resident demand in this report provide only an approximation of the information that planners seek, i.e., the inventory of housing available for residents.

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[13] Several sorts of equation can be used to identify the central trend in a set of data and to project into the future. The most obvious, a "linear" trend, is a straight line. In the "power" trend used here, each point on the trend line has a "y" axis value (persons per household) computed as a set power of "x" (year) plus a constant. The best fit trend of each type is calculated by computer program. The adequacy of fit is estimated by the R^2 value. A perfect fit would have a value of 1.0. The power trend used here has a value of 0.9496, while a linear trend would have a value of 0.9175. The power trend also captures the fact that the rate of change in persons per household has been decreasing. A linear trend projects much smaller households in future than the power trend.

State data on persons per household were used to benefit from use of a larger data set (over longer period and with more households in each cell).

In the outlying areas (Lānaʻi, Molokaʻi, and Hāna), the real property data on sales and ownership was used differently. The number of non-resident units was treated as the outcome of a history of sales, and used to estimate new sales for each five-year period. That sales figure was held constant throughout the forecast period.

Change in the Number of Visitor Units

DBEDT projects growth in visitor units on the basis of occupancy: when hotels are full, more hotel units will be built. This approach was followed in the current iteration of the model, with the tipping point for new construction lowered a bit for Molokaʻi and Lanai. However, it misses two points that have become obvious since 2010.

Decisions to make or convert units for visitor use are taken by owners of condos and houses as well as large landowners and developers. They may be willing to invest in visitor units when occupancies are well below the DBEDT threshold (82%). Also, hotel owners may also use metrics for investment based on a local or niche market (e.g., for an airport hotel at Kahului) rather than Countywide occupancy.

The count of visitor units may be affected by reporting requirements. As of late 2010, Maui County had condo associations report the use of units on their properties, with the result that the number of visitor units increased by 6.5 percent on Maui Island and by 21.2 percent on Molokaʻi.

Self-Employed Jobs

DBEDT projects employment by industry for two types of civilian employment: wage and salary jobs and self-employed jobs. Since 1990, the counts of self-employed jobs have risen quickly. In effect, self employment is any activity for which a person should file Self-Employment tax forms, not just full-time work without an employer. Many people can hold both wage and salary jobs and self-employed jobs (e.g., managing a rental unit owned by a family).

Wage and salary jobs are counted by the Department of Labor and Industrial Relations and by the U.S. Census. Self-employment is not similarly counted. As a result, there is no independent basis for allocating the DBEDT estimate of current and future self-employment to the islands and regions of the model. Historical self-employment has been allocated in proportion to each region's share of wage and salary jobs, and the DBEDT projected rate of increase in self-employment has been used for all areas.

3. ALTERNATIVE PROJECTIONS

3.1 Approach

The socio-economic forecast includes a baseline forecast along with at least one alternative forecast of population and economic change (mandated in Maui County Code Chapter 2 80B, which sets requirements for the General Plan process). The baseline forecast derives from the State's long-range projections for the County. Alternative forecasts can be developed in several ways, including:

1. **In terms of a specific planning issue:** What if no further permits to urbanize land are issued? For the mid-1990s version of the General Plan, this question was of concern, so "constrained" and "unconstrained" projections were made. The "unconstrained" forecast took State projections and historical trends affecting visitor and resident population growth. The "constrained" version assumed that no additional land would be permitted for resort development. In this case, visitor unit development was limited in some areas (West Maui) and met in others. Population and job growth in Maui Island CP areas was affected as a result.

2. **In terms of general economic trends:** What if population and economic change proceeds much faster or much slower than expected? Basically, this approach was used for the 2006 forecast. To find a reasonable version of "much faster" and "much slower," the alternative series cued on variability in population and employment trends, and extended short-term trends over the forecast period. Readers should note that the high and low estimates shown in the 2006 report provided alternative figures, they were not alternative models, i.e., the linkages among variables in the model were ignored in order to identify credible, if extreme, high and low estimates.

3. **In terms of the (in)accuracy likely in this sort of forecast**: How wrong can this sort of forecast be? What is the range in which the forecast can vary from actual change? This is a question about the accuracy of the State's forecast for Maui County, rather than about demographic and economic trends. This can be answered empirically, by comparing past projections for Maui County, its islands and Community Plan areas with actual change. This report compares the 1994 forecast for the period from 1990 to 2010 with actual change over that time. The 1994 forecast depended on a DBEDT forecast for the County, detailed Census and other data, and specific assumptions for Lāna'i and Moloka'i based on the County's knowledge and developers' representations at the time.

The last approach has the virtue of recognizing our uncertainty about the future, based on a track record of less than perfect forecasting. The State, the Maui County Department of Planning, and its consultants would all suggest that the models used for the forecasts are increasingly accurate. They incorporate changes that follow from lessons learned in the past.

But they are not certain. The ability to model past events is of little help if future changes proceed from different causes or policies. Just as generals tend to fight earlier wars, forecasts anticipate past trends.

The approach suggested here does not avoid inaccuracy. Instead, it highlights where local projections have been, and could again be, unreliable.

The approach taken here is to:

- Select key indicators of social and economic trends;
- Compare the anticipated change for those indicators, between 1990 and 2010, in the 1994 forecast to actual change over the same period;
- Identify the variance of the forecast change from actual change as a share of the forecast change; and
- Apply that rate of change to the current baseline forecast. The actual variance may be positive for one variable (i.e., the forecast was lower than the actual change) and negative for another variable (i.e., the forecast was higher than the actual trend). To produce a high alternative, the positive rate of variance for each indicator is used; to produce a low alternative, the negative rate of variance for each indicator is used.

3.2 Differences between the 1994 Forecast and Actual Trends

In 1994, the forecast built on the State's M-K projections, issued in 1988, and the 1990 Census. Separate assumptions were developed for Lānaʻi and Molokaʻi, authorized by the Planning Department but derived in part from plans developed by Castle & Cooke Resorts and Molokai Ranch. Maui island projections for visitor industry development took into account both plans for project districts and the status of development permits on other lands. Since that time:

- Maui County's economy has diversified more than anticipated;
- The visitor economy has grown, but the number of visitor industry jobs has not grown as fast as visitor spending;
- On Lānaʻi, resort residential development has not proceeded at the anticipated pace;
- With a new owner, the major Lānaʻi landowning corporation is developing new plans;
- On Molokaʻi, resort investment brought more attractions and visitor units, but these have now closed, leaving the island with fewer visitor units than in 1990; and

- Hawai‘i has been affected by global and national trends, notably the recession of 2008 and subsequent years.

Tables 7, 8 and 9 shows that the forecast varied from actual trends in complex ways. The first table shows the 1990 starting point for the forecast and actual trends, the 2010 actual data and the earlier forecast for 2010. Table 6 focuses on change between 1990 and 2010, as it actually happened for the selected indicators and as projected. In Table 7 that difference is translated into a share of the change anticipated in the forecast, and into an average five-year incremental variance. The first part of Table 9 is crucial for present purposes. It shows how far a twenty-year Maui County and islands projection varied from actual trends, expressed as a share of the projected change, it provides measures of potential variance that can be applied to the alternative forecast.

TABLE 7: 1990 AND 2010 INDICATOR DATA, AND 1994 FORECAST FOR 2010

	Maui County	Maui Island	Lānaʻi	Molokaʻi
1990 Census Data				
Resident Population	100,374	91,361	2,426	6,587
Wage and Salary Jobs	50,900	47,840	1,344	1,667
Visitor Units (Total)	18,035	17,363	113	559
Average Visitor Census	39,500	38,150	68	616
Population subgroups				
age 0-19	29,492	26,278	717	2,497
age 20-64	60,868	56,236	1,263	3,369
age 65 and up	11,349	10,052	446	851
AVC / Resident Population	39.4%	41.8%	2.8%	9.4%
2010 Census Data				
Resident Population	155,214	144,444	3,135	7,345
Wage and Salary Jobs	65,950	61,240	1,260	1,950
Visitor Units (Total)	20,068	19,325	352	392
Average Visitor Census	47,379	46,023	673	682
Population subgroups				
age 0-19	39,233	36,159	856	2,148
age 20-64	96,129	90,137	1,805	4,001
age 65 and up	19,852	18,148	474	1,196
AVC / Resident Population	30.5%	31.9%	21.5%	9.3%
1994 Forecast for 2010				
Resident Population	145,872	133,459	5,148	7,264
Wage and Salary Jobs	72,232	67,343	2,606	2,283
Visitor Units (Total)	37,714	35,927	1,128	659
Average Visitor Census	76,800	71,520	1,210	1,070
Population subgroups				
age 0-19	38,689	35,041	1,341	2,309
age 20-64	89,211	82,241	2,975	3,992
age 65 and up	17,972	16,177	832	963
AVC / Resident Population	52.6%	53.6%	23.5%	14.7%

NOTE: County AVC was not calculated in the 1990s as the sum of island AVCs. Other totals may not sum to 100% due to rounding.

TABLE 8: VARIANCE, ACTUAL VS. PROJECTED CHANGE, 1990-2010

	Maui County	Maui Island	Lānaʻi	Molokaʻi
ACTUAL CHANGE: Historical, 1990-2010				
Resident Population	54,840	53,083	709	758
Wage and Salary Jobs	15,050	13,401	(84)	283
Visitor Units (Total)	2,033	1,962	239	(167)
Average Visitor Census	7,879	7,873	605	66
Population subgroups				
age 0-19	9,741	9,881	139	(349)
age 20-64	35,261	33,901	542	632
age 65 and up	8,503	8,096	28	345
AVC / Resident Population	-8.8%	-9.9%	18.7%	-0.1%
PROJECTED CHANGE: 1990 TO 1994 Forecast for 2010				
Resident Population	45,498	42,098	2,722	677
Wage and Salary Jobs	21,332	19,504	1,263	616
Visitor Units (Total)	19,679	18,564	1,015	100
Average Visitor Census	37,300	33,370	1,142	454
Population subgroups				
age 0-19	9,197	8,763	624	(188)
age 20-64	28,343	26,005	1,712	623
age 65 and up	6,623	6,125	386	112
AVC / Resident Population	13.3%	11.8%	20.7%	5.4%
VARIANCE, PROJECTED - HISTORICAL CHANGE				
Resident Population	(9,342)	(10,985)	2,013	(81)
Wage and Salary Jobs (1)	6,282	6,103	1,346	333
Visitor Units (Total)	17,646	16,602	776	267
Average Visitor Census	29,421	25,497	537	388
Population subgroups				
age 0-19	(544)	(1,118)	485	161
age 20-64	(6,918)	(7,896)	1,170	(9)
age 65 and up	(1,880)	(1,971)	358	(233)
AVC / Resident Population	22.1%	21.7%	2.0%	5.4%

TABLE 9: VARIANCE AS A SHARE OF PROJECTED CHANGE, AND AS DIFFERENCE PER FIVE-YEAR INCREMENT, 1990-2010

	Maui County	Maui Island	Lānaʻi	Molokaʻi
VARIANCE as % of Projected Change				
Resident Population	-20.5%	-26.1%	74.0%	-12.0%
Wage and Salary Jobs	29.4%	31.3%	106.6%	54.1%
Visitor Units (Total)	89.7%	89.4%	76.5%	267.0%
Average Visitor Census	78.9%	76.4%	47.0%	85.5%
Population subgroups				
age 0-19	-5.9%	-12.8%	77.7%	-85.5%
age 20-64	-24.4%	-30.4%	68.3%	-1.4%
age 65 and up	-28.4%	-32.2%	92.7%	-207.7%
AVC / Resident Population	166.4%	183.6%	9.8%	101.3%
AVERAGE VARIANCE PER 5-YEAR PERIOD VALUES, 1990 TO 2010				
Resident Population	(2,336)	(2,746)	503	(20)
Wage and Salary Jobs (1)	1,571	1,526	337	83
Visitor Units (Total)	4,412	4,151	194	67
Average Visitor Census	7,355	6,374	134	97

The percentages in Table 9refer to the share of projected change. It was not the total population of Maui County that was 20.5 percent less than the actual 2010 population. Rather, it was the increment projected between 1990 and 2010, as compared to actual change over that time.

3.3 The Baseline, Low and High Alternatives

The next table shows currently projected change from 2010 to 2035 in the DBEDT and Maui County baseline forecast. The lower part of Table 10 indicates the potential variance that might be anticipated for each indicator. In some cases the variance is significant, but the forecast change is small. For example, the ratio of visitors to residents changes very little in the current forecast for the County and each island. Again, the current forecast no longer calls for new visitor units on Lānaʻi and Molokaʻi before 2035. With no change anticipated, variance is no longer meaningful.

On the other hand, trends in the Molokaʻi and Lānaʻi can be significant in relation to populations and subgroups. Variance in the size of the senior population could have important implications for health and social services, and for overall quality of life on these islands.

TABLE 10: FORECAST CHANGE AND POTENTIAL VARIANCE, 2010 TO 2035

	Maui County	Maui Island	Lānaʻi	Molokaʻi
FORECAST CHANGE, 2010 TO 2035				
Resident Population	64,995	62,440	885	1,959
Wage and Salary Jobs	21,490	21,500	675	815
Visitor Units (Total)	2,992	2,991	-	-
Average Visitor Census	16,391	15,910	239	242
Change in Population subgroups				
age 0-19	17,018	16,364	219	505
age 20-64	17,283	17,353	57	60
age 65 and up	30,694	28,723	610	1,395
AVC / Resident Population	-1.6%	-1.9%	1.2%	0.6%
POTENTIAL VARIANCE (+ OR - FOR HIGH AND LOW ALTERNATIVES)				
Resident Population	20.5%	26.1%	74.0%	12.0%
Wage and Salary Jobs	29.4%	31.3%	106.6%	54.1%
Visitor Units (Total)	89.7%	89.4%	76.5%	267.0%
Average Visitor Census	78.9%	76.4%	47.0%	85.5%
Change in % of Population (1)				
age 0-19	5.9%	12.8%	77.7%	85.5%
age 20-64	24.4%	30.4%	68.3%	1.4%
age 65 and up	28.4%	32.2%	92.7%	207.7%
AVC / Resident Population (1)	166.4%	183.6%	9.8%	101.3%

NOTE: (1) These variance estimates are provided for readers' consideration, but are not used for the next table.

Table 11 generates high and low alternative projections by applying the variance estimates for population, jobs, visitor units and average visitor census. Variance estimates are not used for the population shares and visitor/resident ratio , so each alternative scenario is internally consistent. Also, the current projection calls for less growth in population and jobs than the earlier one did, so the variance for all indicators is calculated on a smaller baseline change.

The range in population estimates varies for the County from a low of 206,864 residents in 2035 to a high of 233,554. For visitors, the range in estimates is nearly as wide as for residents. (With the Average Visitor Census ranging from a low of 50,841 to a high of 76,699 in 2035, the range is 25,858.)

TABLE 11: BASELINE, HIGH AND LOW PROJECTIONS, COUNTY AND ISLANDS

	Maui County	Maui Island	Lānaʻi	Molokaʻi
BASELINE 2035 PROJECTIONS				
Resident Population	220,209	206,884	4,020	9,304
Wage and Salary Jobs	87,440	82,740	1,935	2,765
Visitor Units (Total)	23,060	22,316	352	392
Average Visitor Census	63,770	61,934	912	924
Population				
age 0-19	56,251	52,523	1,075	2,653
age 20-64	113,412	107,490	1,862	4,061
age 65 and up	50,546	46,871	1,084	2,590
AVC / Resident Population	29.0%	29.9%	22.7%	9.9%
HIGH ALTERNATIVE (2010 ACTUAL PLUS FORECAST CHANGE x VARIANCE UPWARDS)				
Resident Population	233,554	223,178	4,675	9,538
Wage and Salary Jobs	93,769	89,468	2,655	3,206
Visitor Units (Total)	25,743	24,991	352	392
Average Visitor Census	76,699	74,090	1,024	1,131
Population (with 2035 forecast age distribution)				
age 0-19	59,660	56,660	1,250	2,720
age 20-64	120,285	115,955	2,165	4,163
age 65 and up	53,609	50,563	1,260	2,656
AVC / Resident Population	32.8%	33.2%	21.9%	11.9%
LOW ALTERNATIVE (2010 ACTUAL PLUS FORECAST CHANGE x VARIANCE DOWNWARD)				
Resident Population	206,864	190,591	3,366	9,070
Wage and Salary Jobs	81,111	76,012	1,215	2,324
Visitor Units (Total)	20,377	19,641	352	392
Average Visitor Census	50,841	49,777	800	717
Population (with 2035 forecast age distribution)				
age 0-19	52,842	48,387	900	2,586
age 20-64	106,539	99,024	1,559	3,958
age 65 and up	47,483	43,180	907	2,525
AVC / Resident Population	24.6%	26.1%	23.8%	7.9%

NOTE: For both the high and low alternative, the AVC/Resident Population ratio is not extrapolated independently using a measure of variance. The size of the three age cohorts is calculated using the distribution of population anticipated for the baseline forecast.

Discussion

The 1994 projection anticipated continuing growth in visitor counts, visitor units and jobs, and treated population as following on job growth. The actual twenty-year trend from 1990 to 2010 involved greater population growth for Maui Island and fewer visitors than expected. Both Maui and Molokaʻi saw a much larger increase in the senior population than expected. The significant economic and population growth projected on Lānaʻi did not occur, so the variance shown for that island is positive for the indicators shown in Table 7 (i.e., the projection was much higher than the actual trend).

The review of the earlier forecast offers two distinct kinds of guidance. One is purely quantitative, as shown in Tables 5 to 9. These tables provide a good-faith estimate of the range of likely outcomes, given this sort of projection. The second sort of guidance has to do with lessons learned about trends in Maui County and each island. Some of those trends have already been incorporated in the baseline forecast. Specific lessons that can be drawn include:

- For the County and Maui Island, the resident population and visitor industry growth are much less closely linked than once thought. Lānaʻi has been the exception in this regard, the island where population figures and job counts have been closely correlated. When jobs declined, so did population. Elsewhere, jobs were stable or declining, but population grew slowly.

- Visitor growth is now expected to be much slower than was expected in 1994. Maui has, on the whole, prospered despite the reduced rate of increase. The economic impact of slow growth in visitor numbers has been large on Lānaʻi and Molokaʻi.

- Now that changes in visitor numbers, visitor jobs, and demographics have been incorporated into the State and County projections, forecasts point to a slow-growth future. Planning and budgets are likely to focus on the public services needed to sustain an aging population, rather than the investments needed to provide new jobs for young adults.

4. BASELINE RESULTS

The model output consists of a series of tables for the County, for the islands of Maui County, and for Community Plan Areas of Maui Island. County, island and regional results are presented in turn, with each series moving from population estimates to employment and to visitor industry estimates.

TABLE C-1: RESIDENT POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total Population	100,374	128,094	155,214	168,007	181,017	194,197	207,307	220,209	232,863
Males by Age									
0 - 4	4,148	4,297	5,161	5,696	6,109	6,539	6,982	7,477	7,970
5 - 9	3,964	4,565	5,065	5,334	5,887	6,300	6,731	7,174	7,668
10 - 14	3,688	4,793	4,932	5,223	5,506	6,059	6,472	6,903	7,346
15 - 19	3,523	4,491	4,942	5,194	5,462	5,745	6,298	6,711	7,142
20 - 24	3,280	3,757	4,231	5,396	5,651	5,920	6,204	6,756	7,169
25 - 29	4,362	4,300	5,089	4,703	5,827	6,083	6,352	6,637	7,188
30 - 34	4,925	4,771	5,285	5,390	4,994	6,113	6,370	6,640	6,925
35 - 39	5,305	5,370	5,286	5,580	5,614	5,223	6,339	6,596	6,867
40 - 44	4,303	5,747	5,596	5,451	5,740	5,778	5,394	6,503	6,762
45 - 49	3,029	5,531	5,913	5,768	5,592	5,886	5,929	5,553	6,653
50 - 54	2,110	4,776	6,268	5,967	5,862	5,700	5,996	6,043	5,679
55 - 59	1,792	3,358	5,834	6,233	5,968	5,882	5,732	6,031	6,085
60 - 64	1,987	2,405	5,034	5,748	6,153	5,920	5,851	5,717	6,018
65 - 69	1,969	1,871	3,361	4,850	5,518	5,921	5,720	5,672	5,557
70 - 74	1,465	1,744	2,062	3,133	4,510	5,143	5,537	5,371	5,347
75 - 79	1,062	1,480	1,473	1,866	2,832	4,081	4,671	5,051	4,924
80 - 84	652	938	1,079	1,200	1,519	2,324	3,370	3,885	4,237
85 +	392	698	976	1,119	1,252	1,558	2,301	3,455	4,463
Total	51,956	64,892	77,587	83,853	89,995	96,177	102,248	108,175	114,001
Females by Age									
0 - 4	4,023	4,252	4,859	5,624	6,047	6,471	6,909	7,394	7,888
5 - 9	3,828	4,450	4,821	5,048	5,827	6,250	6,674	7,112	7,598
10 - 14	3,392	4,587	4,884	4,954	5,210	5,989	6,412	6,836	7,274
15 - 19	2,926	4,180	4,473	5,118	5,186	5,442	6,222	6,644	7,068
20 - 24	3,020	3,340	4,087	5,084	5,711	5,781	6,037	6,816	7,239
25 - 29	4,147	4,042	5,091	4,706	5,664	6,291	6,361	6,618	7,396
30 - 34	4,789	4,626	5,046	5,413	5,027	5,984	6,611	6,682	6,939
35 - 39	4,794	5,262	5,005	5,348	5,661	5,277	6,233	6,860	6,932
40 - 44	3,747	5,671	5,422	5,224	5,569	5,884	5,502	6,457	7,083
45 - 49	2,880	5,334	5,984	5,628	5,394	5,742	6,057	5,681	6,632
50 - 54	2,151	4,517	6,097	6,032	5,726	5,500	5,849	6,165	5,794
55 - 59	2,037	3,341	5,812	6,161	6,130	5,838	5,620	5,970	6,287
60 - 64	2,210	2,483	4,814	5,833	6,189	6,172	5,895	5,688	6,040
65 - 69	2,083	2,090	3,468	4,791	5,763	6,122	6,119	5,860	5,666
70 - 74	1,531	2,099	2,343	3,346	4,613	5,551	5,909	5,921	5,689
75 - 79	1,049	1,756	1,767	2,196	3,129	4,318	5,209	5,565	5,598
80 - 84	575	1,189	1,592	1,550	1,939	2,779	3,852	4,671	5,020
85 +	571	967	1,682	2,096	2,235	2,629	3,587	5,093	6,718
Total	49,753	64,186	77,247	84,153	91,021	98,020	105,059	112,034	118,862

SOURCES: 1990 Population by Age/Sex Cohorts from U.S. Census Bureau, 1990 Census of Population and Housing. 2000 Population by Age/Sex Cohorts from U.S. Census Bureau, 2000 Census of Population and Housing. 2010 Population from U.S. Census Bureau, 2010 Census; for 2015 onward, Projected Population by Age/Sex Cohorts: DBEDT 2040 Series

TABLE C-2: DE FACTO POPULATION

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
De Facto Population	134,395	168,351	194,925	211,465	225,890	240,805	255,600	270,285	284,650

NOTES: County population and Average Visitor Census from DBEDT; forecast share of residents on-island based on 2010 share.

TABLE C-3: NUMBER OF HOUSEHOLDS BY HUD INCOME CATEGORIES

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total Population	100,374	128,094	155,214	168,007	181,017	194,197	207,307	220,209	232,863
Households	33,145	43,507	54,018	59,267	64,726	70,385	76,160	82,001	87,895
Number of Households Earning No More Than:									
50% of HUD Median	7,623	10,911	11,398	12,505	13,657	14,851	16,070	17,303	18,546
80% of HUD Median	12,429	16,454	20,574	22,574	24,653	26,808	29,008	31,233	33,477
100% of HUD Median	16,573	21,754	27,073	29,704	32,440	35,276	38,171	41,098	44,052
120% of HUD Median	20,218	23,979	31,488	34,547	37,730	41,028	44,395	47,800	51,235
140% of HUD Median	23,202	25,407	36,039	39,541	43,183	46,958	50,811	54,708	58,640
Cumulative Increase in Households Earning No More Than:									
50% of HUD Median				1,107	2,259	3,453	4,672	5,905	7,148
80% of HUD Median				1,999	4,078	6,234	8,433	10,658	12,903
100% of HUD Median				2,630	5,367	8,203	11,097	14,025	16,978
120% of HUD Median				3,059	6,242	9,540	12,907	16,312	19,747
140% of HUD Median				3,502	7,144	10,919	14,772	18,669	22,601
in All Households				5,249	10,708	16,366	22,142	27,983	33,876

NOTES: Households = Population/Household size; Households by Category = Households * % in Income Category

TABLE C-4: MEDIAN HOUSEHOLD INCOME

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Median Income	$65,843	$65,930	$61,663	$63,243	$64,724	$66,120	$67,425	$68,620	$69,704

NOTES: All figures are constant 2010 dollars. Historic data are from the Census, inflated to 2010 values in line with change in the Consumer Price Index. 2010 data are from American Community Survey for 2008-2012, adjusted back to 2010 constant dollars. Projected medians are based on 2010 data, increased by growth rate for personal income in Maui County provided by DBEDT in the 2040 Long-Term Forecast.

TABLE C-5: HOUSING DEMAND

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Resident Housing Demand	34,889	45,797	56,861	62,386	68,133	74,089	80,168	86,317	92,521
New Resident Demand (over 5 years)			6,509	5,525	5,747	5,957	6,079	6,149	6,203
Non-Resident Units 2010			2,000						
New Non-Resident Housing Demand (over 5 years)				1,454	1,317	1,529	1,538	1,550	1,557
Total Demand			58,861	65,840	72,904	80,389	88,006	95,705	103,466
Cumulative Increase in Housing Demand over 2010				6,979	14,043	21,528	29,145	36,844	44,604

NOTES: Housing Demand = Households/(1-Vacancy Rate)+New Households*Non-Resident Demand Rate (for Molokaʻi and Lānaʻi). Non-resident demand for Lānaʻi and Molokaʻi based on historical (2000-2010) average rates. For Maui Island, non-resident demand is estimated as a share of resident demand, based on analysis of ownership of housing built from 2003 to 2012 in each CP area. (See regional table for more detail.)

TABLE C-6: CIVILIAN JOBS BY INDUSTRY

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Civilian jobs	55,000	80,245	89,650	102,540	110,880	119,150	127,710	136,360	144,430
Wage & salary jobs	50,900	62,400	64,450	73,250	77,130	80,670	84,150	87,440	89,820
Agriculture	2,600	1,950	1,750	1,910	1,910	1,910	1,900	1,890	1,880
Manufacturing	1,950	1,750	1,000	1,030	1,030	1,030	1,040	1,030	1,030
Construction	3,150	2,650	2,800	2,980	3,110	3,210	3,290	3,370	3,440
Trans.,com.,util.	3,000	4,500	3,250	3,190	3,310	3,390	3,480	3,550	3,550
Trade	4,900	9,750	10,200	10,720	10,970	11,160	11,310	11,410	11,410
Eating & drinking	8,750	6,950	7,400	8,290	8,830	9,310	9,780	10,230	10,230
Banking, finance	3,350	3,000	2,400	2,530	2,540	2,530	2,510	2,490	2,460
Services	17,350	24,000	25,950	31,180	33,450	35,570	37,700	39,770	41,570
Hotels	9,200	11,450	9,900	10,910	11,280	11,530	11,790	12,060	12,060
Other services	8,150	12,550	16,050	20,270	22,170	24,040	25,910	27,710	29,510
Government	5,850	7,850	9,700	11,420	11,980	12,560	13,140	13,700	14,250
State/local	5,350	7,250	8,750	10,302	10,807	11,330	11,853	12,358	12,854
Federal	450	600	950	1,118	1,173	1,230	1,287	1,342	1,396
Self-employed jobs	4,100	17,845	25,200	29,290	33,750	38,480	43,560	48,920	54,610

NOTES: Wage and Salary Jobs through 2010 from DLIR. All Self-Employed Jobs and future W&S Jobs = DBEDT Forecast Civilian Jobs = Wage & Salary Jobs + Self-employed jobs

TABLE C-7: UNEMPLOYMENT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Unemployment Rate	2.9%	4.2%	8.2%	7.5%	6.7%	5.9%	5.1%	5.1%	5.1%
Unemployed Persons	1,618	3,035	6,346	6,478	6,044	5,526	4,949	5,142	5,282

NOTES: Projections based on estimated future civilian labor force approximating DLIR, not DBEDT, estimates of self-employed population. Unemployment rate assumed to reduce to 5% by 2030.

TABLE C-8: LABOR DEMAND

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Wage and Salary Labor Demand	52,936	64,896	67,028	76,180	80,215	83,897	87,516	90,938	93,413
As share of Civilian Labor Force	94%	90%	90%	90%	90%	90%	90%	90%	90%

NOTES: Labor demand is estimated as total wage and salary employment plus assumed market level of unemployment (4% of Civilian Labor Force). CLF also includes self-employment.

TABLE C-9: AVERAGE VISITOR CENSUS (AVC)

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Maui County AVC	39,500	43,854	47,379	52,840	55,430	58,190	60,920	63,770	66,580
Domestic	36,250	37,136	41,041	45,468	47,273	49,329	51,329	53,457	55,528
International	3,250	6,718	6,337	7,372	8,157	8,861	9,591	10,313	11,052
Maui County Share of State AVC	25.6%	26.0%	26.6%	26.6%	26.9%	27.1%	27.2%	27.3%	27.5%
of State Domestic AVC	32.1%	30.1%	30.1%	30.2%	30.9%	31.2%	31.6%	32.0%	32.4%
International AVC	7.8%	14.9%	15.3%	15.2%	15.4%	15.5%	15.6%	15.6%	15.6%

NOTE: Maui County AVC from DBEDT projections. Maui County Share of Domestic and International AVC based on Maui County Share of total State AVC.

TABLE C-10: VISITOR ARRIVALS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Visitor Arrivals									
Domestic	1,995,160	1,834,630	1,729,641	1,952,854	2,032,772	2,110,512	2,185,230	2,270,482	2,362,794
International	394,810	470,035	392,994	457,146	507,228	549,488	594,770	639,518	687,206
Total	2,389,970	2,304,666	2,122,635	2,410,000	2,540,000	2,660,000	2,780,000	2,910,000	3,050,000
Maui County Average Length of Stay	6.0	6.8	8.1	8.0	8.0	8.0	8.0	8.0	8.0

NOTES:
Domestic Visitor Arrivals = (Domestic AVC * 365 days)/ Domestic Length of Stay
International Visitor Arrivals = (International AVC * 365 days) / International Length of Stay

TABLE C-11: VISITOR EXPENDITURES

Forecast Variables	Historical 1990	Historical 2000	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040
Visitor Days (millions)		16.1	17.3	19.3	20.3	21.2	22.2	23.3	24.4
Average Visitor Spending per day			$170	$185	$187	$187	$187	$187	$187
Visitor Spending (millions of constant year 2010 $s)		$2,671.9	$2,942.4	$3,567.6	$3,784.5	$3,965.2	$4,154.3	$4,352.2	$4,559.3

NOTES: Dollar values are in constant 2010 dollars, not current dollars. Per Person Per Day Spending: from surveys for DBEDT and HTA.

TABLE C-12: VISITOR UNITS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Maui County Total Visitor Units	18,035	18,270	20,068	20,070	20,070	21,040	22,020	23,060	24,070
Maui County Occupancy Rate	69.1%	81.0%	68.1%	76.4%	80.2%	80.3%	80.3%	80.3%	80.3%
Maui County Occupied Visitor Units	12,461	14,799	13,666	15,342	16,093	16,895	17,682	18,517	19,328

NOTES: Maui County Occupied visitor units (OVU) and Occupancy rate from DBEDT. Total visitor units: Occupied Visitor Units / Occupancy Rate. Note that this approach does not reflect actual new hotel construction between 2010 and 2020.

TABLE I-1: RESIDENT POPULATION

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Population									
Lānaʻi	2,426	3,193	3,135	3,295	3,463	3,640	3,825	4,020	4,226
Molokaʻi	6,587	7,404	7,255	7,625	8,014	8,423	8,852	9,304	9,779
Maui Island	91,361	117,644	144,444	157,087	169,540	182,135	194,630	206,884	218,859
Maui County	100,374	128,241	154,834	168,007	181,017	194,197	207,307	220,209	232,863
Ratio of Population/Wage and Salary Jobs									
Lānaʻi	169%	153%	241%	237%	233%	229%	225%	225%	225%
Molokaʻi	309%	271%	392%	375%	359%	342%	325%	325%	325%
Maui Island	178%	156%	230%	162%	162%	162%	161%	161%	161%
Cumulative Population Growth (over 2010)									
Lānaʻi				160	328	505	690	885	1,091
Molokaʻi				370	759	1,168	1,597	2,049	2,524
Maui Island				12,643	25,096	37,691	50,186	62,440	74,415
Maui County				13,173	26,183	39,363	52,473	65,375	78,029
Annual Average Rate of Growth									
Lānaʻi		2.8%	0.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Molokaʻi		1.2%	0.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Maui Island		2.6%	2.2%	1.7%	1.5%	1.4%	1.3%	1.2%	1.1%
Maui County		2.5%	2.0%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%

NOTES: Lānaʻi and Molokaʻi population forecast calculated for future by assuming slow growth rates. Projected Maui Island population calculated by subtracting projected Lānaʻi and Molokaʻi population from projected Maui County population. Historical population counts from DBEDT and Census reports.

TABLE I-2: LĀNA'I RESIDENT POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2005	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total	2,426	3,193	3,131	3,135	3,295	3,463	3,640	3,825	4,020	4,226
Males by Age										
<=4	94	117	NA	118	126	131	135	141	149	158
5-9	89	129	NA	103	105	112	116	121	127	135
10-14	90	130	NA	130	133	136	145	151	159	168
15-19	99	105	NA	103	104	106	108	116	122	129
20-24	62	103	NA	79	97	99	100	102	110	116
25 - 29	100	113	NA	98	87	105	106	108	112	120
30 - 34	89	113	NA	129	127	114	135	138	142	147
35 - 39	88	128	NA	105	107	104	94	111	114	118
40 - 44	56	112	NA	98	92	94	92	84	99	103
45 - 49	67	118	NA	108	102	95	97	96	89	105
50 - 54	61	63	NA	117	107	102	96	99	99	92
55 - 59	41	75	NA	120	124	115	110	104	108	109
60 - 64	66	69	NA	80	88	91	85	82	79	83
65 - 69	75	42	NA	66	92	101	105	99	97	95
70 - 74	65	56	NA	49	72	100	111	116	111	110
75 - 79	60	58	NA	33	40	59	83	93	99	96
80 - 84	37	38	NA	32	34	42	62	88	101	109
>84	17	40	NA	32	35	38	46	67	99	127
Total Males	1,256	1,609	NA	1,600	1,673	1,746	1,827	1,918	2,017	2,121
Females by Age										
<=4	87	103	NA	117	131	136	141	147	155	165
5-9	86	141	NA	96	97	108	113	118	124	131
10-14	96	122	NA	98	96	98	109	114	120	127
15-19	76	101	NA	91	100	99	100	112	118	125
20-24	59	88	NA	58	70	76	74	76	84	89
25 - 29	79	95	NA	111	99	115	124	123	126	140
30 - 34	80	104	NA	100	104	93	107	116	116	119
35 - 39	66	124	NA	83	86	88	79	91	99	100
40 - 44	61	110	NA	93	86	89	91	84	97	105
45 - 49	71	92	NA	101	92	85	88	90	84	97
50 - 54	72	91	NA	119	114	104	97	101	105	98
55 - 59	73	87	NA	101	103	100	92	86	91	95
60 - 64	72	94	NA	105	123	126	122	114	108	114
65 - 69	75	54	NA	78	104	121	125	122	115	111
70 - 74	48	62	NA	59	81	109	127	132	130	124
75 - 79	39	48	NA	47	56	78	104	123	129	129
80 - 84	20	40	NA	49	46	56	77	105	126	134
>84	10	28	NA	29	35	36	41	55	77	101
Total Females	1,170	1,584	NA	1,535	1,622	1,717	1,812	1,907	2,004	2,105

TABLE I-3: MOLOKA'I RESIDENT POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2005	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total	6,587	7,404	7,252	7,255	7,625	8,014	8,423	8,852	9,304	9,779
Males by Age										
<=4	359	272	NA	295	310	320	334	350	371	395
5-9	349	294	NA	248	249	265	275	289	305	325
10-14	352	381	NA	268	271	275	294	308	326	346
15-19	253	317	NA	259	260	263	269	289	306	324
20-24	157	186	NA	183	223	224	229	235	254	269
25 - 29	198	188	NA	224	197	235	239	245	254	274
30 - 34	229	184	NA	173	168	150	179	183	189	196
35 - 39	239	217	NA	171	172	167	151	180	185	192
40 - 44	212	260	NA	197	183	185	182	167	199	206
45 - 49	182	245	NA	215	200	187	191	189	175	210
50 - 54	130	223	NA	265	241	227	215	222	222	208
55 - 59	112	189	NA	247	252	232	222	213	222	223
60 - 64	154	155	NA	268	292	301	281	273	265	278
65 - 69	167	134	NA	199	274	300	313	297	292	285
70 - 74	106	137	NA	128	185	257	285	301	290	288
75 - 79	104	117	NA	87	105	153	215	242	259	252
80 - 84	67	59	NA	80	85	103	154	219	250	272
>84	39	60	NA	54	59	64	77	112	166	214
Total Males	3,409	3,618	NA	3,561	3,726	3,908	4,105	4,315	4,531	4,757
Females by Age										
<=4	326	265	NA	265	293	303	315	330	350	373
5-9	352	333	NA	298	298	331	345	362	382	407
10-14	279	392	NA	261	252	255	286	301	318	337
15-19	227	337	NA	228	249	243	248	278	294	312
20-24	166	169	NA	205	243	263	259	266	297	315
25 - 29	218	166	NA	191	168	195	211	209	216	240
30 - 34	233	200	NA	174	178	159	184	200	200	207
35 - 39	252	255	NA	169	172	175	159	185	201	203
40 - 44	215	245	NA	197	181	186	191	175	204	223
45 - 49	196	253	NA	237	213	196	203	210	196	228
50 - 54	163	258	NA	253	239	218	204	213	222	208
55 - 59	157	211	NA	294	297	285	264	249	262	276
60 - 64	156	184	NA	289	334	341	331	310	297	314
65 - 69	138	172	NA	233	307	355	367	361	342	330
70 - 74	94	130	NA	147	200	266	311	325	323	309
75 - 79	57	112	NA	92	109	149	201	238	252	253
80 - 84	35	59	NA	94	87	105	147	199	240	257
>84	44	45	NA	67	80	82	93	125	176	232
Total Females	3,308	3,786	NA	3,694	3,820	4,025	4,224	4,412	4,597	4,790

TABLE I-4: MAUI ISLAND RESIDENT POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2005	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total	92,566	118,481	129,667	144,444	157,087	169,540	182,135	194,630	206,884	218,859
Males by Age										
<=4	3,695	3,908	NA	4,748	5,260	5,658	6,070	6,491	6,956	7,417
5-9	3,526	4,142	NA	4,714	4,981	5,511	5,909	6,321	6,741	7,208
10-14	3,246	4,282	NA	4,534	4,820	5,096	5,620	6,013	6,418	6,832
15-19	3,171	4,069	NA	4,580	4,830	5,093	5,368	5,892	6,283	6,688
20-24	3,061	3,468	NA	3,969	5,077	5,328	5,591	5,866	6,391	6,784
25 - 29	4,064	3,999	NA	4,767	4,418	5,486	5,738	5,999	6,271	6,794
30 - 34	4,607	4,474	NA	4,983	5,095	4,730	5,799	6,050	6,310	6,582
35 - 39	4,978	5,025	NA	5,010	5,301	5,343	4,978	6,047	6,296	6,556
40 - 44	4,035	5,375	NA	5,301	5,176	5,461	5,505	5,144	6,204	6,453
45 - 49	2,780	5,168	NA	5,590	5,467	5,310	5,597	5,644	5,289	6,338
50 - 54	1,919	4,490	NA	5,886	5,619	5,533	5,388	5,674	5,723	5,379
55 - 59	1,639	3,094	NA	5,467	5,858	5,622	5,550	5,415	5,701	5,753
60 - 64	1,767	2,181	NA	4,686	5,368	5,761	5,554	5,496	5,373	5,658
65 - 69	1,727	1,695	NA	3,096	4,484	5,116	5,503	5,323	5,283	5,178
70 - 74	1,294	1,551	NA	1,885	2,876	4,153	4,748	5,119	4,970	4,950
75 - 79	898	1,305	NA	1,353	1,720	2,619	3,783	4,337	4,693	4,576
80 - 84	548	841	NA	967	1,081	1,373	2,108	3,062	3,534	3,856
>84	336	598	NA	890	1,025	1,150	1,435	2,122	3,190	4,122
Total	47,291	59,665	NA	72,426	78,455	84,342	90,244	96,015	101,627	107,124
Females by Age										
<=4	3,610	3,884	NA	4,477	5,201	5,608	6,015	6,431	6,888	7,351
5-9	3,390	3,976	NA	4,427	4,653	5,388	5,793	6,195	6,606	7,059
10-14	3,017	4,073	NA	4,525	4,606	4,856	5,595	5,998	6,399	6,810
15-19	2,623	3,742	NA	4,154	4,768	4,845	5,094	5,831	6,232	6,632
20-24	2,795	3,083	NA	3,824	4,771	5,372	5,448	5,695	6,434	6,835
25 - 29	3,850	3,781	NA	4,789	4,438	5,353	5,956	6,029	6,276	7,016
30 - 34	4,476	4,322	NA	4,772	5,132	4,775	5,693	6,296	6,367	6,612
35 - 39	4,476	4,883	NA	4,753	5,091	5,398	5,039	5,957	6,559	6,629
40 - 44	3,471	5,316	NA	5,132	4,956	5,294	5,601	5,243	6,156	6,755
45 - 49	2,613	4,989	NA	5,646	5,324	5,113	5,451	5,756	5,401	6,308
50 - 54	1,916	4,168	NA	5,725	5,680	5,404	5,199	5,535	5,837	5,487
55 - 59	1,807	3,043	NA	5,417	5,761	5,746	5,483	5,284	5,617	5,917
60 - 64	1,982	2,205	NA	4,420	5,376	5,721	5,719	5,471	5,283	5,611
65 - 69	1,870	1,864	NA	3,157	4,380	5,287	5,630	5,636	5,403	5,225
70 - 74	1,389	1,907	NA	2,137	3,065	4,239	5,113	5,452	5,468	5,256
75 - 79	953	1,596	NA	1,628	2,031	2,902	4,013	4,849	5,184	5,217
80 - 84	520	1,090	NA	1,449	1,416	1,778	2,555	3,548	4,306	4,629
>84	517	894	NA	1,586	1,982	2,117	2,494	3,407	4,840	6,386
Total	45,275	58,816	NA	72,018	78,632	85,198	91,890	98,615	105,258	111,735

TABLE I-5: DE FACTO POPULATION

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
De Facto Population									
Lānaʻi	2,629	4,243	4,119	4,329	4,550	4,782	5,026	5,282	5,551
Molokaʻi	7,528	8,131	7,877	8,279	8,701	9,145	9,612	10,102	10,617
Maui Island	124,238	155,977	182,929	198,857	212,639	226,878	240,963	254,901	268,481

NOTES: De facto population = average visitor census plus on-island share of residents. Lānaʻi & Molokaʻi de facto population calculated by multiplying ratio of de facto population to resident population. Maui Island de facto population calculated by subtracting Lānaʻi & Molokaʻi de facto population from County de facto population. Ratio of resident population to resident share of de facto population in 2010 held constant through the forecast.

TABLE I-6: HOUSEHOLDS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Households									
Lānaʻi	847	1,161	1,158	1,234	1,314	1,400	1,492	1,589	1,693
Molokaʻi	2,088	2,420	2,513	2,644	2,817	3,001	3,197	3,406	3,629
Maui Island	30,272	40,041	50,347	55,389	60,595	65,983	71,471	77,006	82,573
Maui County	33,207	43,622	54,018	59,267	64,726	70,385	76,160	82,001	87,895
Cumulative Growth in Households (since 2000)									
Lānaʻi			-3	73	153	239	331	428	532
Molokaʻi			93	224	397	581	777	986	1,209
Maui Island			10,306	15,348	20,554	25,942	31,430	36,965	42,532
Maui County			10,396	15,645	21,104	26,763	32,538	38,379	44,273

NOTES: Lānaʻi Households = Lānaʻi Total Population /Lānaʻi Household Size. Molokaʻi Households = Molokaʻi Total Population/ Molokaʻi Household Size. Maui Island Households = Maui County Households - Lānaʻi Households - Molokaʻi Households.

TABLE I-7: LĀNA‘I HOUSEHOLDS BY INCOME CATEGORIES

Forecast Variables	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Lāna‘i								
Total Households	1,161	1,158	1,234	1,314	1,400	1,492	1,589	1,693
Household Size	2.75	2.71	2.67	2.63	2.60	2.56	2.53	2.50
Number of Households Who Earn No More Than								
50% of Median	229	280	298	318	339	361	384	410
80% of Median	418	489	521	555	591	629	671	714
100% of Median	531	569	606	646	688	733	780	831
120% of Median	657	656	699	744	793	845	900	959
140% of Median	760	784	835	889	947	1,009	1,075	1,145
Percent of Households Who Earn No More Than								
50% of Median	20%	24%	24%	24%	24%	24%	24%	24%
80% of Median	36%	42%	42%	42%	42%	42%	42%	42%
100% of Median	46%	49%	49%	49%	49%	49%	49%	49%
120% of Median	57%	57%	57%	57%	57%	57%	57%	57%
140% of Median	66%	68%	68%	68%	68%	68%	68%	68%
Cumulative Increase in Households Earning No More Than								
50% of Median		51	69	89	110	132	155	180
80% of Median		71	103	137	173	212	253	297
100% of Median		38	75	114	157	202	249	300
120% of Median		-1	42	88	136	188	243	302
140% of Median		23	74	129	187	249	315	385
in All Households		-3	73	153	239	331	428	532

NOTES: Lāna‘i Households by Income = Percent in Income Category x Lāna‘i Households. Distributions after 2010 based on average of 2005 and 2010 data. Household size = total population / households, not just household population.

TABLE I-8: MOLOKA‘I HOUSEHOLDS BY INCOME CATEGORIES

Forecast Variables	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Moloka‘i								

Total Households	2,420	2,513	2,644	2,817	3,001	3,197	3,406	3,629
Household Size	3.06	2.92	2.88	2.84	2.81	2.77	2.73	2.69
Number of Households Who Earn No More Than								
50% of Median	860	975	898	957	1,019	1,086	1,157	1,232
80% of Median	1,262	1,587	1,527	1,627	1,733	1,846	1,967	2,096
100% of Median	1,397	1,907	1,803	1,920	2,046	2,179	2,322	2,473
120% of Median	1,482	2,074	2,060	2,194	2,338	2,490	2,653	2,826
140% of Median	1,558	2,309	2,211	2,355	2,509	2,673	2,847	3,033
Percent of Households Who Earn No More Than								
50% of Median	36%	39%	34%	34%	34%	34%	34%	34%
80% of Median	52%	63%	58%	58%	58%	58%	58%	58%
100% of Median	58%	76%	68%	68%	68%	68%	68%	68%
120% of Median	61%	83%	78%	78%	78%	78%	78%	78%
140% of Median	64%	92%	84%	84%	84%	84%	84%	84%
Cumulative Increase in Households Earning No More Than								
50% of Median		115	38	97	159	226	297	372
80% of Median		325	266	365	472	585	706	834
100% of Median		511	406	524	649	783	925	1,077
120% of Median		592	578	713	856	1,009	1,171	1,345
140% of Median		751	653	797	951	1,115	1,289	1,475
in All Households		93	224	397	581	777	986	1,209

NOTES: Moloka‘i Households by Income = Percent in Income Category x Moloka‘i Households. Distributions after 2010 based on average of 2005 and 2010 data. Household size = total population / households, not just household population.

TABLE I-9: MAUI ISLAND HOUSEHOLDS BY INCOME CATEGORIES

Forecast Variables	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Maui Island								
Total Households	40,041	50,347	55,389	60,595	65,983	71,471	77,006	82,573
Household Size	2.94	2.87	2.84	2.80	2.76	2.72	2.69	2.65
Number of Households Who Earn No More Than								
50% of Median	9,822	9,836	10,972	12,015	13,093	14,190	15,295	16,404
80% of Median	14,775	18,877	20,940	22,924	24,977	27,065	29,169	31,282
100% of Median	19,826	23,967	26,603	29,118	31,721	34,369	37,039	39,721
120% of Median	21,841	29,004	32,059	35,086	38,219	41,407	44,621	47,851
140% of Median	23,089	32,772	36,304	39,729	43,274	46,883	50,521	54,177
Percent of Households Who Earn No More Than								
50% of Median	25%	20%	20%	20%	20%	20%	20%	20%
80% of Median	37%	37%	38%	38%	38%	38%	38%	38%
100% of Median	50%	48%	48%	48%	48%	48%	48%	48%
120% of Median	55%	58%	58%	58%	58%	58%	58%	58%
140% of Median	58%	65%	66%	66%	66%	66%	66%	66%
Cumulative Increase in Households Earning No More Than								
50% of Median		13	1,150	2,192	3,271	4,368	5,473	6,582
80% of Median		4,102	6,166	8,149	10,202	12,290	14,394	16,507
100% of Median		4,141	6,778	9,293	11,895	14,543	17,213	19,895
120% of Median		7,163	10,218	13,245	16,377	19,566	22,780	26,009
140% of Median		9,683	13,215	16,640	20,185	23,794	27,432	31,088
in All Households		10,306	15,348	20,554	25,942	31,430	36,965	42,532

NOTES:

Maui Island Households by Income = Maui County Households by Income - Lanai - Molokai

Household size = total population / households, not just household population.

Maui County Median Household Income in current dollars, not the constant dollars used in the forecast

	1990	**2000**	**2010**
50% of Median	$18,850	$38,000	$30,831
80% of Median	$30,160	$60,800	$49,330
100% of Median	$37,700	$76,000	$61,663
120% of Median	$45,240	$91,200	$73,995
140% of Median	$52,780	$106,400	$86,328

TABLE I-10: MEDIAN HOUSEHOLD INCOME

Forecast Variables	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
County Median	$65,930	$61,663	$63,243	$64,724	$66,120	$67,425	$68,620	$69,704
Median Household Income								
Lānaʻi	$52,744	$66,559	$68,266	$69,863	$71,370	$72,780	$74,069	$75,240
Molokaʻi	$32,965	$39,396	$40,406	$41,352	$42,244	$43,078	$43,841	$44,534
Maui Island	$67,212	$63,204	$64,824	$66,342	$67,773	$69,111	$70,335	$71,447

NOTES:
Future change in median income based on growth rate of personal income provided by DBEDT for Maui County. Projections are constant year 2010 dollars, not future current dollars. Historical 1990 and 2000 medians converted to 2010 dollars in line with changes in CPI. Local area medians for 2010 onwards estimated from ACS data for 2008-2012 (for relative size of local medians). Since medians were not available for Molokaʻi and Maui Islands, these medians, and ones for some of the CP areas, were imputed for 2010 based on the midpoint of income distributions.

TABLE I-11: HOUSING DEMAND

Forecast Variables	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Resident Housing Demand								
Lānaʻi	1,222	1,219	1,299	1,383	1,474	1,570	1,673	1,782
Molokaʻi	2,547	2,645	2,784	2,965	3,159	3,365	3,585	3,820
Maui Island	42,027	52,997	58,304	63,784	69,456	75,233	81,059	86,919
Total	45,797	56,861	62,386	68,133	74,089	80,168	86,317	92,521
New Resident Demand (over 5 years)								
Lānaʻi		21	80	85	90	96	103	109
Molokaʻi		150	138	182	194	206	220	234
Maui Island		6,339	5,307	5,480	5,672	5,776	5,827	5,860
Total		6,509	5,525	5,747	5,957	6,079	6,149	6,203
Non-Resident Units, 2010								
Lānaʻi		44						
Molokaʻi		68						
Maui Island		1,888						
Total		2,000						
New Non-Resident Demand (over 5 years)								
Lānaʻi			40	40	40	40	40	40
Molokaʻi			45	45	45	45	45	45
Maui Island			1,470	1,453	1,572	1,638	1,651	1,659
Total			1,555	1,538	1,657	1,723	1,736	1,744
Total Demand								
Lānaʻi		1,263	1,383	1,507	1,638	1,774	1,917	2,066
Molokaʻi		2,713	2,897	3,123	3,362	3,613	3,878	4,158
Maui Island		54,885	61,662	68,596	75,840	83,255	90,732	98,251
Total		58,861	65,942	73,226	80,840	88,642	96,527	104,475
Cumulative Increase in Total Housing Demand over 2010								
Lānaʻi			120	244	375	511	654	803
Molokaʻi			183	410	649	900	1,165	1,444
Maui Island			6,777	13,710	20,955	28,369	35,847	43,366
Total			7,080	14,365	21,979	29,781	37,666	45,613

NOTES: Resident Housing Demand = Households/(1-Vacancy Rate). Vacancy Rate held at assumed market level (5%). Non-Resident, 2010 = from analysis of 2010 Real Property data. For Lana'i and Moloka'i, non-resident sales rate based on historical average sale rate (2000-2010). For Maui Island, non-resident sales rate based on ratio of resident to non-resident ownership, homes built from 2003 to 2012. Non-Resident demand is calculated as a

function of new resident households, not new housing demand. Because Non-Resident Demand is estimated from 2003-2012 data, no estimate is shown for 1990 and 2000.

TABLE I-12: LĀNA'I JOBS BY INDUSTRY

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Lāna'i									
Civilian jobs	1,433	2,088	1,906	2,143	2,452	2,688	2,932	3,189	3,455
Wage & salary jobs	1,344	1,630	1,260	1,392	1,587	1,701	1,815	1,935	2,055
Agriculture	416	0	0	5	10	15	20	25	30
Manufacturing	80	15	10	20	21	22	23	24	25
Construction	243	50	10	50	92	100	109	118	127
Trans.,com.,util.	35	50	10	11	11	12	13	13	14
Trade	61	120	50	81	85	90	94	98	103
Eating & drinking	108	30	50	55	57	60	63	66	69
Banking, finance	25	100	100	100	196	215	233	252	272
Services	233	1,050	820	810	838	887	936	988	1,039
Hotels	173	850	600	630	661	694	726	760	794
Other services	60	200	220	180	177	194	210	227	245
Government	143	215	210	260	275	300	325	351	377
State/local	139	200	200	250	265	290	315	341	367
Federal	4	15	10	10	10	10	10	10	10
Self-employed jobs	89	458	646	751	865	987	1,117	1,254	1,400

TABLE I-13: MOLOKA'I JOBS BY INDUSTRY

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Moloka'i									

Civilian jobs	1,985	2,731	2,798	3,344	3,592	3,853	4,125	4,411	4,706
Wage & salary jobs	1,667	2,130	1,950	2,358	2,456	2,558	2,659	2,765	2,868
Agriculture	62	100	300	310	320	330	340	350	360
Manufacturing	0	15	10	20	21	22	23	24	25
Construction	39	50	50	90	94	98	101	105	109
Trans.,com.,util.	121	100	100	107	112	118	123	129	135
Trade	237	300	210	250	262	275	288	301	315
Eating & drinking	29	50	150	160	168	177	185	193	202
Banking, finance	60	250	100	180	187	195	203	211	219
Services	605	700	380	522	545	568	591	616	640
Hotels	271	150	50	104	109	115	120	126	131
Other services	334	550	330	418	435	453	471	490	508
Government	514	565	650	720	747	776	805	835	864
State/local	479	550	600	670	697	726	755	785	814
Federal	35	15	50	50	50	50	50	50	50
Self-employed jobs	318	601	848	986	1,136	1,295	1,466	1,646	1,838

TABLE I-14: MAUI ISLAND JOBS BY INDUSTRY

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Maui Island									
Civilian jobs	51,533	75,427	84,946	97,053	104,836	112,609	120,653	128,759	136,269
Wage & salary jobs	47,840	58,640	61,240	69,500	73,088	76,411	79,676	82,740	84,897
Agriculture	2,122	1,850	1,450	1,595	1,580	1,565	1,540	1,515	1,490
Manufacturing	1,870	1,720	980	990	988	986	994	982	980
Construction	2,868	2,550	2,740	2,840	2,924	3,012	3,080	3,147	3,204
Trans.,com.,util.	2,844	4,350	3,140	3,072	3,186	3,260	3,344	3,408	3,402
Trade	4,602	9,330	9,940	10,389	10,623	10,795	10,928	11,010	10,993
Eating & drinking	8,614	6,870	7,200	8,075	8,604	9,073	9,532	9,971	9,959
Banking, finance	3,265	2,650	2,200	2,250	2,156	2,120	2,074	2,027	1,970
Services	16,512	22,250	24,750	29,848	32,067	34,115	36,173	38,166	39,892
Hotels	8,756	10,450	9,250	10,176	10,510	10,722	10,944	11,174	11,135
Other services	7,756	11,800	15,500	19,672	21,557	23,393	25,229	26,992	28,756
Government	5,143	7,070	8,840	10,440	10,957	11,484	12,010	12,514	13,008
State/local	4,732	6,500	7,950	9,382	9,844	10,313	10,783	11,232	11,673
Federal	411	570	890	1,058	1,113	1,170	1,227	1,282	1,336
Self-employed jobs	3,693	16,787	23,706	27,553	31,749	36,198	40,977	46,019	51,372

TABLE I-15: UNEMPLOYMENT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Lānaʻi	4.2%	3.5%	6.5%	5.9%	5.3%	4.6%	4.0%	4.0%	4.0%
Molokaʻi	10.3%	14.0%	12.8%	11.6%	10.4%	9.2%	8.0%	8.0%	8.0%
Maui Island	2.4%	3.8%	8.1%	7.3%	6.6%	5.8%	5.0%	5.0%	5.0%

NOTES: Projections based on estimated future civilian labor force. Rates converge, as a matter of policy, on "full employment" levels (estimated separately for each island on the basis of historical data).

TABLE I-16: LABOR DEMAND

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Lānaʻi	1,397	1,695	1,310	1,447	1,650	1,769	1,887	2,012	2,137
Molokaʻi	1,734	2,215	2,028	2,453	2,554	2,661	2,766	2,876	2,983
Maui Island	49,753	60,986	63,690	72,280	76,011	79,467	82,863	86,049	88,293

NOTES: Labor demand is estimated as total wage and salary employment plus assumed minimal market level of unemployment (4% of wage and salary employment).

TABLE I-17: AVERAGE VISITOR CENSUS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Average Visitor Census (AVC)									
Lānaʻi	68	1,131	673	756	793	832	871	912	952
Molokaʻi	616	905	682	766	803	843	883	924	965
Maui Island	38,150	41,818	46,023	51,319	53,834	56,515	59,166	61,934	64,663
TOTAL	38,834	43,854	47,379	52,840	55,430	58,190	60,920	63,770	66,580
Percent of Total									
Lānaʻi	0.2%	2.6%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Molokaʻi	1.6%	2.1%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Maui Island	98.2%	95.4%	97.1%	97.1%	97.1%	97.1%	97.1%	97.1%	97.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

NOTES: 1990 Average Visitor Census for Maui Island from HVB records; Lanai and Molokai estimated based on CRI studies of party size and occupied units. As a result, total County AVC is less than HVB's 1990 estimate of 39,500. Year 2000 and 2010 AVC based on DBEDT/HTA Visitor Report. Lanai & Molokai Average Visitor Census = Lanai & Molokai Average Visitors per Occupied Unit x Lanai & Molokai Occupied Visitor Units; Maui Island Average Visitor Census = County Average Visitor Census - Lanai AVC-Molokai AVC. 2010 and later AVC based on DBEDT projections for County, and historical ratios among islands.

TABLE I-18: VISITOR ARRIVALS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Visitor Arrivals									
Lānaʻi	45,930	87,661	67,500	75,774	79,702	83,447	87,334	91,459	95,726
Molokaʻi	103,630	64,558	51,126	57,393	60,368	63,205	66,149	69,273	72,505
Maui Island	2,345,060	2,246,254	2,004,010	2,276,833	2,399,930	2,513,348	2,626,517	2,749,268	2,881,769
Maui County	2,389,970	2,304,666	2,122,635	2,410,000	2,540,000	2,660,000	2,780,000	2,910,000	3,050,000
Percent of County Visitors Visiting Island									
Lānaʻi	1.9%	3.8%	3.2%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
Molokaʻi	4.3%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Maui Island	98.1%	97.5%	94.4%	94.5%	94.5%	94.5%	94.5%	94.5%	94.5%

NOTES: Visitor Arrivals = (Average Visitor Census x 365)/(Length of Stay).
Historical percentages sum to more than 100%; for projections, Maui Island changed to residual.

TABLE I-19: VISITOR EXPENDITURES

Forecast Variables	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Visitor-Days (million)								
Lanai	0.4	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Molokai	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.4
Maui Island	15.3	16.8	18.7	19.7	20.6	21.6	22.6	23.7
Average Visitor Spending per day (2010 $s)								
Lānaʻi	$281	$285	$310	$313	$313	$313	$313	$314
Molokaʻi	$103	$98	$107	$108	$108	$108	$108	$108
Maui Island	$201	$173	$188	$190	$190	$190	$190	$190
Visitor Spending (mil. 2000 $s)								
Lānaʻi	$116.3	$70.1	$85.5	$90.7	$95.1	$99.6	$104.3	$109.3
Molokaʻi	$34.1	$24.4	$29.8	$31.6	$33.1	$34.7	$36.4	$38.1
Maui Island	$3,076.4	$2,904.0	$3,519.8	$3,734.0	$3,912.6	$4,100.4	$4,293.9	$4,498.7

NOTES: Estimated from DBEDT visitor spending data taking into account both DBEDT County estimates and recent Neighbor Island series data from Maui and Molokaʻi. Real per person per day spending is held constant as of 2010.

TABLE I-20: TOTAL VISITOR UNITS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total Visitor Units									
Lānaʻi	113	368	352	352	352	352	352	352	352
Molokaʻi	559	429	392	392	392	392	392	392	392
Maui Island	17,363	17,473	19,324	19,464	19,326	20,296	21,276	22,316	23,326
TOTAL	18,035	18,270	20,068	20,208	20,070	21,040	22,020	23,060	24,070
Percent of Total									
Lānaʻi	0.6%	2.0%	1.8%	1.7%	1.8%	1.7%	1.6%	1.5%	1.5%
Molokaʻi	3.1%	2.3%	2.0%	1.9%	2.0%	1.9%	1.8%	1.7%	1.6%
Maui Island	96.3%	95.6%	96.3%	96.3%	96.3%	96.5%	96.6%	96.8%	96.9%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Occupancy Rate									
Lānaʻi	30.0%	50.0%	49.8%	55.9%	58.6%	61.5%	64.4%	67.4%	70.4%
Molokaʻi	47.9%	42.0%	43.8%	49.1%	51.5%	54.1%	56.6%	59.3%	61.9%
Maui Island	70.0%	80.1%	68.9%	76.8%	81.2%	81.1%	81.0%	80.9%	80.8%
Cumulative Increment									
Lānaʻi				0	0	0	0	0	0
Molokaʻi				0	0	0	0	0	0
Maui Island				140	2	972	1,952	2,992	4,002
TOTAL				140	2	972	1,952	2,992	4,002
Annual Average Rate of Increase									
Lānaʻi		12.5%	-0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Molokaʻi		-2.6%	-2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maui Island		0.1%	-1.6%	0.1%	-0.1%	1.0%	0.9%	1.0%	0.9%
TOTAL		0.1%	-1.6%	0.1%	-0.1%	0.9%	0.9%	0.9%	0.9%

NOTES: Maui Island total = Maui County - Lanai – Molokai. Projected Units: Increasing after 2010 when island occupancy exceeds 82.5% for Maui Island (per assumption from DBEDT); 80% for other islands. Note that this approach does not reflect actual new hotel construction after 2010.

TABLE I-21: OCCUPIED VISITOR UNITS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Occupied Visitor Units									
Lānaʻi	34	184	175	197	206	217	227	237	248
Molokaʻi	268	180	172	193	202	212	222	232	243
Maui Island	12,159	13,989	13,320	14,952	15,684	16,466	17,233	18,047	18,838
TOTAL	12,461	14,353	13,666	15,342	16,093	16,895	17,682	18,517	19,328
Percent of Total									
Lānaʻi	0.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Molokaʻi	2.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Maui Island	97.6%	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cumulative Increment									
Lānaʻi			-9	13	22	33	43	53	64
Molokaʻi			-9	12	22	32	42	52	62
Maui Island			-669	963	1,695	2,477	3,244	4,058	4,849
TOTAL			-687	988	1,740	2,542	3,329	4,164	4,975
Annual Average Rate of Growth									
Lānaʻi		18.4%	-1.0%	2.3%	1.0%	1.0%	0.9%	0.9%	0.9%
Molokaʻi		-3.9%	-2.0%	2.3%	1.0%	1.0%	0.9%	0.9%	0.9%
Maui Island		1.4%	-1.6%	2.3%	1.0%	1.0%	0.9%	0.9%	0.9%
TOTAL		1.4%	-1.6%	2.3%	1.0%	1.0%	0.9%	0.9%	0.9%

NOTES: 1990, 2000 Occupied Visitor Units estimated from Panell Kerr Forster rates and CRI records. 2000 Rate for Lānaʻi estimated by SMS. Lānaʻi & Molokaʻi Occupied Visitor Units = Lānaʻi & Molokaʻi Total Units x Lānaʻi & Molokaʻi Occupancy Rates. Maui Island Occupied Visitor Units = County Occupied Visitor Units - Lānaʻi OVU - Molokaʻi OVU.

TABLE R-1: POPULATION BY REGION

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Population by Region									
West Maui	14,574	17,967	22,156	24,373	27,762	32,318	36,110	39,911	43,604
Kihei-Mākena	15,374	22,870	27,244	29,599	34,757	39,975	46,370	52,044	57,912
Wailuku-Kahului	32,807	41,503	54,433	60,336	62,102	64,188	65,734	67,986	69,870
Makawao-Pukalani-Kula	18,923	21,571	25,198	26,551	28,438	28,949	29,482	29,852	30,218
Paʻia-Haʻikū	7,788	11,866	13,122	13,820	13,949	14,045	14,139	14,153	14,167
Hāna	1,895	1,867	2,291	2,408	2,531	2,660	2,795	2,938	3,088
Total	91,361	117,644	144,444	157,087	169,540	182,135	194,630	206,884	218,859
Average Annual Rate of Increase, Population									
West Maui		2.1%	2.1%	1.9%	2.6%	3.1%	2.2%	2.0%	1.8%
Kihei-Mākena		4.1%	1.8%	1.7%	3.3%	2.8%	3.0%	2.3%	2.2%
Wailuku-Kahului		2.4%	2.7%	2.1%	0.6%	0.7%	0.5%	0.7%	0.5%
Makawao-Pukalani-Kula		1.3%	1.6%	1.1%	1.4%	0.4%	0.4%	0.2%	0.2%
Paʻia-Haʻikū		4.3%	1.0%	1.0%	0.2%	0.1%	0.1%	0.0%	0.0%
Hāna		-0.1%	2.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Total		2.6%	2.1%	1.7%	1.5%	1.4%	1.3%	1.2%	1.1%
Average Household Size by Region									
West Maui	2.99	2.98	2.85	2.81	2.79	2.76	2.72	2.69	2.66
Kihei-Mākena	2.59	2.55	2.45	2.51	2.57	2.64	2.70	2.71	2.72
Wailuku-Kahului	3.24	3.17	3.33	3.17	3.03	2.89	2.75	2.66	2.56
Makawao-Pukalani-Kula	3.06	2.81	2.69	2.70	2.71	2.71	2.71	2.70	2.69
Paʻia-Haʻikū	3.01	2.90	2.66	2.67	2.69	2.70	2.71	2.71	2.70
Hāna	3.22	3.13	2.78	2.75	2.71	2.68	2.64	2.61	2.57
Maui Island	3.02	2.90	2.87	2.84	2.80	2.76	2.72	2.69	2.65

NOTES: Regional household distribution follows from distribution of potential new housing supply for residents, based on planned/committed and planned growth area units, to 2030. After 2030, household distribution is estimated by extending the 2010 to 2030 trend. Resort units without on-site workforce housing commitments are treated as not available for residents. Hāna was treated differently, by assuming a constant population growth rate (1%). For all other regions, persons/household ratios change from historical (2010) figures on the assumption that regional differences in persons per household will diminish, with variance from the mean diminishing by 25% in each five-year period. (In other words, if a region's persons per household ratio is 104% of the ratio for the island (excluding Hāna) in year x, then it will be 103% of that figure in year x+5. For the next period, the regional and island (excluding Hāna) persons per household ratios are compared, and the variance again is reduced by 25%.)
SOURCES: 1990 Population by Region: U.S. Census Bureau, 1990 CENSUS OF POPULATION AND HOUSING. 2000 Population by Region: U.S. Census Bureau, 2000 CENSUS OF POPULATION AND HOUSING; 2010 Population by Region: U.S. Census Bureau, 2010 Redistricting Data as allocated by Maui County Planning Department

TABLE R-2: WEST MAUI POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
West Maui									
Total Population	14,574	17,967	22,156	24,373	27,762	32,318	36,110	39,911	43,604
Males by Age									
<=4	532	601	735	831	945	1,103	1,235	1,380	1,522
5 - 9	488	538	690	743	870	1,015	1,137	1,264	1,399
10 - 14	378	541	628	675	755	905	1,014	1,128	1,243
15 - 19	553	514	604	648	723	829	952	1,059	1,167
20 - 24	649	567	618	796	885	1,011	1,110	1,262	1,386
25 - 29	833	838	813	764	1,005	1,144	1,252	1,365	1,530
30 - 34	873	851	816	838	824	1,099	1,201	1,306	1,410
35 - 39	801	921	854	919	981	995	1,265	1,374	1,481
40 - 44	641	823	948	936	1,046	1,148	1,123	1,412	1,520
45 - 49	435	758	806	806	829	951	1,004	982	1,217
50 - 54	261	623	959	934	973	1,032	1,138	1,197	1,164
55 - 59	256	504	795	867	881	946	967	1,061	1,109
60 - 64	297	339	766	888	1,009	1,059	1,097	1,118	1,219
65 - 69	281	246	477	701	847	990	1,003	1,038	1,052
70 - 74	189	248	288	446	682	847	956	968	998
75 - 79	148	208	187	238	384	603	724	817	824
80 - 84	75	111	153	168	225	376	571	687	775
>84	39	72	141	162	192	261	404	633	847
Total Males	7,729	9,303	11,278	12,360	14,056	16,315	18,153	20,049	21,863
Females by Age									
<=4	508	628	692	804	865	990	1,186	1,321	1,455
5 - 9	420	528	642	690	845	989	1,106	1,230	1,360
10 - 14	333	530	656	678	757	949	1,065	1,184	1,304
15 - 19	388	466	576	669	720	824	987	1,100	1,211
20 - 24	518	503	618	777	926	1,022	1,119	1,318	1,449
25 - 29	770	720	855	805	1,029	1,246	1,320	1,433	1,658
30 - 34	794	732	804	871	858	1,113	1,289	1,360	1,462
35 - 39	657	789	756	824	925	940	1,164	1,337	1,399
40 - 44	475	768	745	727	822	947	928	1,136	1,290
45 - 49	380	681	866	836	851	987	1,092	1,068	1,291
50 - 54	288	580	871	883	889	931	1,038	1,141	1,110
55 - 59	285	449	779	843	890	924	932	1,033	1,127
60 - 64	323	350	657	808	910	989	990	997	1,096
65 - 69	273	234	509	718	916	1,061	1,111	1,111	1,112
70 - 74	178	261	321	467	682	895	999	1,045	1,039
75 - 79	149	214	190	241	364	548	693	773	805
80 - 84	63	127	182	174	231	360	524	662	737
>84	43	104	159	199	225	289	413	612	836
Total Females	6,845	8,664	10,878	12,013	13,706	16,003	17,957	19,862	21,741

TABLE R-3: KIHEI-MĀKENA POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Kihei-Mākena									
Total Population	15,374	22,870	27,244	29,599	34,757	39,975	46,370	52,044	57,912
Males by Age									
<=4	511	710	782	870	1,020	1,178	1,378	1,569	1,767
5 - 9	513	788	775	822	991	1,144	1,339	1,518	1,714
10 - 14	464	718	765	810	933	1,108	1,296	1,471	1,653
15 - 19	386	634	759	801	921	1,045	1,255	1,423	1,599
20 - 24	500	615	714	907	1,038	1,173	1,347	1,560	1,748
25 - 29	791	801	985	911	1,234	1,389	1,590	1,767	2,021
30 - 34	890	1,002	1,046	1,057	1,070	1,414	1,614	1,789	1,971
35 - 39	1,002	1,094	962	1,019	1,120	1,124	1,495	1,655	1,819
40 - 44	774	1,171	996	967	1,113	1,209	1,237	1,586	1,741
45 - 49	506	1,047	1,112	1,095	1,160	1,317	1,453	1,448	1,832
50 - 54	357	935	1,234	1,183	1,271	1,332	1,536	1,647	1,634
55 - 59	287	665	1,121	1,205	1,261	1,340	1,431	1,601	1,707
60 - 64	319	458	1,002	1,145	1,340	1,390	1,505	1,565	1,739
65 - 69	278	340	698	1,011	1,258	1,456	1,541	1,625	1,682
70 - 74	191	243	386	588	925	1,138	1,342	1,385	1,456
75 - 79	109	231	270	340	564	876	1,099	1,264	1,301
80 - 84	43	103	123	132	183	302	479	588	677
>84	25	65	122	139	169	227	368	587	802
Total Males	7,946	11,620	13,851	15,000	17,570	20,162	23,306	26,048	28,863
Females by Age									
<=4	526	709	741	864	1,015	1,172	1,371	1,561	1,758
5 - 9	498	753	718	760	959	1,109	1,298	1,471	1,660
10 - 14	459	674	679	692	795	986	1,157	1,311	1,474
15 - 19	345	646	741	848	940	1,063	1,332	1,513	1,700
20 - 24	483	575	681	843	1,035	1,130	1,293	1,553	1,742
25 - 29	701	772	1,012	939	1,236	1,480	1,640	1,815	2,142
30 - 34	802	943	944	1,006	1,021	1,312	1,588	1,707	1,872
35 - 39	826	1,044	897	963	1,114	1,120	1,449	1,697	1,810
40 - 44	659	1,086	998	959	1,117	1,273	1,304	1,628	1,886
45 - 49	488	1,008	1,052	1,001	1,049	1,204	1,392	1,388	1,712
50 - 54	359	891	1,138	1,136	1,179	1,221	1,423	1,595	1,583
55 - 59	291	633	1,124	1,197	1,302	1,338	1,411	1,594	1,773
60 - 64	294	436	992	1,201	1,393	1,498	1,568	1,609	1,805
65 - 69	300	351	613	851	1,119	1,282	1,404	1,430	1,460
70 - 74	203	271	412	589	887	1,151	1,343	1,431	1,452
75 - 79	102	254	239	298	464	691	913	1,038	1,102
80 - 84	52	119	188	177	242	373	567	732	830
>84	31	85	225	277	322	409	611	923	1,286
Total Females	7,419	11,250	13,393	14,599	17,187	19,813	23,064	25,997	29,049

TABLE R-4: WAILUKU-KAHULUI POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Wailuku Kahului									
Total Population	32,807	41,503	54,433	60,336	62,102	64,188	65,734	67,986	69,870
Males by Age									
<=4	1,232	1,449	2,029	2,291	2,333	2,389	2,429	2,519	2,602
5 - 9	1,296	1,584	1,985	2,137	2,239	2,292	2,332	2,407	2,493
10 - 14	1,221	1,573	1,926	2,070	2,071	2,180	2,218	2,291	2,362
15 - 19	1,130	1,564	1,949	2,090	2,087	2,100	2,192	2,262	2,332
20 - 24	1,073	1,292	1,587	2,046	2,034	2,038	2,035	2,146	2,206
25 - 29	1,323	1,340	1,786	1,678	1,974	1,971	1,961	1,984	2,082
30 - 34	1,379	1,494	1,838	1,885	1,658	1,942	1,927	1,946	1,966
35 - 39	1,466	1,650	1,947	2,094	2,000	1,780	2,057	2,073	2,091
40 - 44	1,097	1,619	2,029	2,001	2,001	1,927	1,713	2,000	2,015
45 - 49	844	1,527	2,139	2,138	1,968	1,982	1,901	1,725	2,002
50 - 54	707	1,281	2,043	1,989	1,855	1,725	1,729	1,687	1,536
55 - 59	617	948	1,799	1,962	1,784	1,682	1,561	1,590	1,555
60 - 64	736	728	1,422	1,649	1,676	1,543	1,452	1,374	1,402
65 - 69	777	640	1,002	1,474	1,592	1,634	1,503	1,444	1,370
70 - 74	597	680	698	1,080	1,476	1,610	1,651	1,551	1,496
75 - 79	419	568	588	751	1,082	1,491	1,626	1,702	1,608
80 - 84	282	392	459	503	604	884	1,221	1,363	1,440
>84	193	298	454	521	554	659	927	1,348	1,687
Total Males	16,389	20,627	27,682	30,357	30,986	31,829	32,437	33,413	34,245
Females by Age									
<=4	1,210	1,438	1,727	2,044	2,086	2,136	2,172	2,251	2,326
5 - 9	1,251	1,457	1,654	1,776	1,946	1,997	2,031	2,096	2,169
10 - 14	1,106	1,496	1,679	1,736	1,733	1,906	1,944	2,007	2,069
15 - 19	1,040	1,420	1,607	1,868	1,797	1,804	1,965	2,032	2,094
20 - 24	1,014	1,160	1,510	1,897	2,023	1,959	1,949	2,131	2,192
25 - 29	1,221	1,290	1,713	1,614	1,844	1,959	1,887	1,901	2,059
30 - 34	1,320	1,423	1,653	1,789	1,578	1,796	1,890	1,850	1,861
35 - 39	1,318	1,569	1,572	1,713	1,722	1,536	1,728	1,841	1,803
40 - 44	1,042	1,591	1,615	1,575	1,594	1,611	1,435	1,631	1,733
45 - 49	906	1,479	1,736	1,677	1,526	1,554	1,561	1,418	1,604
50 - 54	753	1,238	1,754	1,776	1,601	1,471	1,490	1,521	1,385
55 - 59	735	1,037	1,900	2,055	1,941	1,768	1,621	1,668	1,702
60 - 64	909	863	1,772	2,178	2,194	2,093	1,905	1,780	1,831
65 - 69	865	789	1,379	1,943	2,219	2,256	2,147	1,991	1,865
70 - 74	652	878	1,036	1,504	1,968	2,266	2,297	2,230	2,075
75 - 79	457	746	792	1,003	1,356	1,790	2,057	2,128	2,074
80 - 84	301	542	794	759	902	1,236	1,632	1,917	1,996
>84	327	460	858	1,072	1,085	1,220	1,586	2,181	2,787
Total Females	16,427	20,876	26,751	29,979	31,117	32,359	33,297	34,573	35,625

TABLE R-5: UPCOUNTRY POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Upcountry									
Total Population	18,923	21,571	25,198	26,551	28,438	28,949	29,482	29,852	30,218
Males by Age									
<=4	814	681	796	838	898	914	931	942	954
5 - 9	845	795	929	979	1,048	1,067	1,087	1,100	1,114
10 - 14	788	890	1,040	1,095	1,173	1,194	1,216	1,232	1,247
15 - 19	686	826	965	1,017	1,089	1,109	1,129	1,143	1,157
20 - 24	485	439	513	540	579	589	600	608	615
25 - 29	652	558	652	687	736	749	763	772	782
30 - 34	866	634	741	780	836	851	867	877	888
35 - 39	1,082	787	919	969	1,038	1,056	1,076	1,089	1,102
40 - 44	950	1,037	1,211	1,276	1,367	1,392	1,417	1,435	1,453
45 - 49	602	1,076	1,257	1,324	1,419	1,444	1,471	1,489	1,507
50 - 54	390	954	1,114	1,174	1,258	1,280	1,304	1,320	1,336
55 - 59	317	594	694	731	783	797	812	822	832
60 - 64	275	407	475	501	537	546	556	563	570
65 - 69	253	311	363	383	410	417	425	430	436
70 - 74	232	241	282	297	318	323	329	334	338
75 - 79	141	178	208	219	235	239	243	246	249
80 - 84	92	155	181	191	204	208	212	215	217
>84	69	90	105	111	119	121	123	125	126
Total Males	9,539	10,653	12,444	13,112	14,044	14,296	14,560	14,742	14,924
Females by Age									
<=4	791	652	762	803	860	875	891	902	913
5 - 9	856	753	880	927	993	1,011	1,029	1,042	1,055
10 - 14	725	847	989	1,043	1,117	1,137	1,158	1,172	1,187
15 - 19	570	771	901	949	1,016	1,035	1,054	1,067	1,080
20 - 24	458	446	521	549	588	599	610	617	625
25 - 29	687	554	647	682	730	743	757	767	776
30 - 34	997	698	815	859	920	937	954	966	978
35 - 39	1,088	899	1,050	1,107	1,185	1,206	1,229	1,244	1,259
40 - 44	825	1,142	1,334	1,406	1,506	1,533	1,561	1,580	1,600
45 - 49	561	1,175	1,373	1,446	1,549	1,577	1,606	1,626	1,646
50 - 54	329	863	1,008	1,062	1,138	1,158	1,179	1,194	1,209
55 - 59	321	573	669	705	755	769	783	793	803
60 - 64	310	331	387	407	436	444	452	458	464
65 - 69	289	321	375	395	423	431	439	444	450
70 - 74	257	309	361	380	407	415	422	428	433
75 - 79	144	232	271	286	306	311	317	321	325
80 - 84	85	188	220	231	248	252	257	260	263
>84	91	164	192	202	216	220	224	227	230
Total Females	9,384	10,918	12,754	13,438	14,394	14,652	14,922	15,109	15,295

TABLE R-6: PA'IA-HA'IKŪ POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Pa'ia-Ha'ikū									
Total Population	7,788	11,866	13,122	13,820	13,949	14,045	14,139	14,153	14,167
Males by Age									
<=4	334	420	471	514	522	528	534	539	543
5 - 9	344	429	445	463	483	489	495	497	502
10 - 14	326	428	414	431	430	447	452	455	457
15 - 19	287	430	443	459	457	455	472	474	477
20 - 24	217	390	415	517	513	508	504	517	519
25 - 29	300	444	494	449	526	519	513	505	517
30 - 34	394	431	453	450	394	456	450	442	436
35 - 39	470	516	476	495	471	415	477	467	460
40 - 44	422	610	560	534	532	507	448	509	500
45 - 49	233	591	589	569	522	520	496	438	496
50 - 54	157	520	637	600	558	513	511	485	431
55 - 59	104	280	455	480	435	405	374	371	354
60 - 64	109	167	329	369	373	340	318	293	291
65 - 69	105	114	192	273	294	298	273	255	236
70 - 74	77	108	120	179	244	263	268	245	231
75 - 79	66	81	76	94	135	185	200	204	188
80 - 84	40	53	59	63	75	109	149	162	167
>84	30	55	73	81	86	101	142	201	245
Total Males	4,015	6,067	6,701	7,021	7,050	7,059	7,078	7,060	7,052
Females by Age									
<=4	315	400	427	489	497	503	509	513	517
5 - 9	337	420	424	440	481	488	493	495	500
10 - 14	289	435	434	434	432	469	476	478	481
15 - 19	225	378	380	427	410	407	440	443	446
20 - 24	224	327	378	460	489	468	463	492	494
25 - 29	305	397	468	427	486	511	489	479	507
30 - 34	394	440	454	476	418	470	492	469	460
35 - 39	431	505	450	474	475	419	468	486	464
40 - 44	358	620	559	528	532	532	471	521	540
45 - 49	205	505	527	492	446	449	449	397	438
50 - 54	122	430	541	530	476	433	436	433	385
55 - 59	129	267	435	455	428	386	352	352	350
60 - 64	121	162	296	351	353	333	301	274	275
65 - 69	111	133	207	282	320	322	305	275	251
70 - 74	84	135	142	199	259	295	297	281	255
75 - 79	65	107	101	124	167	217	248	250	238
80 - 84	32	81	106	98	115	156	205	235	238
>84	26	57	94	114	115	128	166	221	276
Total Females	3,773	5,799	6,421	6,799	6,899	6,986	7,060	7,093	7,115

TABLE R-7: HĀNA POPULATION BY AGE/SEX COHORT

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Hāna									
Total Population	1,895	1,867	2,291	2,408	2,531	2,660	2,795	2,938	3,088
Males by Age									
<=4	97	57	69	74	78	82	86	92	98
5 - 9	89	56	63	64	69	73	77	82	87
10 - 14	88	90	94	96	99	107	113	120	128
15 - 19	93	72	80	82	84	87	94	100	106
20 - 24	56	61	70	86	88	91	94	102	108
25 - 29	57	54	65	58	70	72	74	77	83
30 - 34	71	52	59	58	52	63	65	67	70
35 - 39	95	39	39	40	39	36	43	45	46
40 - 44	102	54	54	50	52	51	47	57	59
45 - 49	59	97	104	99	94	97	97	91	108
50 - 54	31	82	109	100	97	92	96	96	90
55 - 59	35	63	111	115	107	104	100	105	106
60 - 64	33	39	83	91	96	90	89	86	90
65 - 69	31	23	42	58	65	69	66	65	63
70 - 74	24	29	35	51	72	81	86	83	82
75 - 79	26	22	22	27	40	57	65	70	68
80 - 84	4	11	13	14	17	26	37	42	46
>84	7	4	6	6	7	8	12	18	24
Total Males	998	905	1,116	1,168	1,226	1,285	1,342	1,399	1,461
Females by Age									
<=4	110	77	89	100	105	110	117	124	132
5 - 9	75	81	88	90	102	107	113	120	128
10 - 14	77	92	99	97	100	113	120	127	135
15 - 19	57	77	84	92	92	94	107	114	120
20 - 24	55	51	64	76	84	83	86	97	102
25 - 29	61	42	54	48	56	62	62	64	71
30 - 34	71	59	66	68	61	72	79	79	82
35 - 39	74	52	50	52	54	49	57	63	63
40 - 44	85	72	70	65	68	70	65	76	83
45 - 49	45	89	100	92	86	90	94	88	102
50 - 54	34	81	110	106	98	93	98	103	96
55 - 59	36	43	76	78	76	71	67	71	75
60 - 64	34	43	85	99	103	101	95	92	97
65 - 69	34	26	44	58	69	72	71	68	65
70 - 74	20	32	36	50	67	80	84	84	80
75 - 79	18	20	20	24	34	46	55	59	59
80 - 84	5	10	14	13	16	22	30	37	39
>84	6	15	27	32	33	38	52	73	96
Total Females	897	962	1,175	1,239	1,304	1,375	1,454	1,539	1,627

TABLE R-8: HOUSEHOLDS BY REGION

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total Households (New and Existing)									
West Maui	4,868	6,031	7,779	8,665	9,962	11,728	13,263	14,810	16,364
Kihei-Mākena	5,931	8,946	11,114	11,801	13,502	15,159	17,180	19,216	21,263
Wailuku-Kahului	10,115	12,852	16,336	19,017	20,495	22,221	23,891	25,575	27,266
Makawao-Pukalani-Kula	6,179	7,594	9,356	9,851	10,511	10,680	10,865	11,051	11,239
Paʻia-Haʻikū	2,590	4,022	4,937	5,180	5,192	5,202	5,215	5,227	5,240
Hāna	589	596	825	875	932	993	1,058	1,127	1,201
Total	30,272	40,041	50,347	55,389	60,595	65,983	71,471	77,006	82,573
Cumulative Increase In Households, over 2010									
West Maui				885	2,183	3,949	5,483	7,030	8,585
Kihei-Mākena				687	2,388	4,045	6,065	8,102	10,148
Wailuku-Kahului				2,681	4,159	5,885	7,555	9,239	10,930
Makawao-Pukalani-Kula				495	1,156	1,324	1,509	1,696	1,883
Paʻia-Haʻikū				243	255	265	278	290	304
Hāna				50	107	168	233	302	376
Total				5,041	10,247	15,636	21,124	26,659	32,226
Average Annual Rate of Change, Households									
West Maui		2.2%	2.6%	2.2%	2.8%	3.3%	2.5%	2.2%	2.0%
Kihei-Mākena		4.2%	2.2%	1.2%	2.7%	2.3%	2.5%	2.3%	2.0%
Wailuku-Kahului		2.4%	2.4%	3.1%	1.5%	1.6%	1.5%	1.4%	1.3%
Makawao-Pukalani-Kula		2.1%	2.1%	1.0%	1.3%	0.3%	0.3%	0.3%	0.3%
Paʻia-Haʻikū		4.5%	2.1%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hāna		0.1%	3.3%	1.2%	1.3%	1.3%	1.3%	1.3%	1.3%
Total		2.8%	2.3%	1.9%	1.8%	1.7%	1.6%	1.5%	1.4%

TABLE R-9: HOUSEHOLDS BY INCOME BY MAUI ISLAND REGION

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
West Maui									
Number of Households Earning No More Than									
50% of Median	691	1,236	1,239	1,303	1,469	1,734	1,998	2,277	2,565
80% of Median	1,644	2,261	2,957	2,617	3,127	3,814	4,405	4,999	5,593
100% of Median	2,244	2,861	3,564	3,252	3,848	4,672	5,398	6,135	6,877
120% of Median	2,797	3,363	4,578	3,952	4,769	5,855	6,776	7,695	8,613
140% of Median	3,227	3,753	5,395	4,515	5,520	6,825	7,904	8,970	10,028
County Income									
Kihei-Mākena									
Number of Households Earning No More Than									
50% of Median	959	1,221	1,224	1,272	1,476	1,731	2,064	2,420	2,791
80% of Median	1,967	2,609	3,472	2,886	3,556	4,200	4,981	5,764	6,548
100% of Median	2,736	3,903	4,774	4,206	4,983	5,758	6,710	7,676	8,650
120% of Median	3,431	4,587	6,094	5,044	6,126	7,140	8,362	9,579	10,793
140% of Median	4,019	5,149	7,186	5,740	7,082	8,296	9,741	11,161	12,567
County Income									
Wailuku-Kahului									
Number of Households Earning No More Than									
50% of Median	2,059	3,015	3,019	3,216	3,459	3,757	4,065	4,383	4,707
80% of Median	3,795	4,804	6,191	5,881	6,453	7,118	7,758	8,402	9,046
100% of Median	4,971	6,214	7,614	7,398	8,094	8,913	9,710	10,516	11,327
120% of Median	6,045	7,103	9,524	8,888	9,782	10,818	11,806	12,796	13,787
140% of Median	7,050	7,741	11,015	10,050	11,108	12,321	13,461	14,597	15,731
County Income									
Makawao-Pukalani-Kula									
Number of Households Earning No More Than									
50% of Median	1,119	1,322	1,325	1,359	1,446	1,489	1,532	1,573	1,614
80% of Median	2,177	2,322	3,023	2,521	2,780	2,843	2,912	2,982	3,053
100% of Median	2,829	3,255	3,963	3,474	3,777	3,862	3,953	4,044	4,136
120% of Median	3,438	3,890	5,115	4,220	4,635	4,726	4,830	4,935	5,042
140% of Median	4,063	4,314	5,969	4,741	5,250	5,345	5,457	5,573	5,691
County Income									

(Continued)

TABLE R-9: HOUSEHOLDS BY INCOME BY MAUI ISLAND REGION (Cont.)

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Paʻia-Haʻikū									
Number of Households Earning No More Than									
50% of Median	616	1,122	1,123	1,140	1,149	1,155	1,160	1,165	1,169
80% of Median	1,002	1,646	2,010	1,743	1,747	1,750	1,754	1,759	1,764
100% of Median	1,444	1,945	2,312	2,052	2,060	2,066	2,073	2,080	2,087
120% of Median	1,756	2,138	2,774	2,299	2,302	2,305	2,310	2,317	2,323
140% of Median	2,003	2,292	3,152	2,501	2,499	2,498	2,502	2,508	2,514
County Income									
Hana									
Number of Households Earning No More Than									
50% of Median	197	277	277	281	288	298	309	322	335
80% of Median	363	345	436	365	388	411	436	463	491
100% of Median	431	357	449	379	405	434	465	498	533
120% of Median	475	397	556	430	466	503	542	583	626
140% of Median	512	410	625	452	496	540	586	634	684
County Income									
Maui Island Total									
Number of Households Earning No More Than									
50% of Median	5,641	8,193	8,207	8,571	9,286	10,165	11,129	12,140	13,180
80% of Median	10,948	13,988	18,090	16,013	18,051	20,137	22,248	24,369	26,495
100% of Median	14,655	18,535	22,676	20,761	23,168	25,704	28,309	30,948	33,609
120% of Median	17,942	21,476	28,640	24,833	28,080	31,347	34,626	37,905	41,183
140% of Median	20,874	23,659	33,342	28,000	31,956	35,826	39,651	43,443	47,214
County Income									

TABLE R-10: MEDIAN HOUSEHOLD INCOME

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Median Household Income (in 2010 $s)									
West Maui	$68,524	$57,947	$61,589	$63,167	$64,646	$66,040	$67,344	$68,537	$69,621
Kihei-Mākena	$64,614	$67,106	$58,784	$60,291	$61,702	$63,033	$64,278	$65,417	$66,451
Wailuku-Kahului	$64,226	$57,633	$64,892	$66,555	$68,113	$69,582	$70,956	$72,213	$73,354
Makawao-Pukalani-Kula	$64,658	$66,603	$68,563	$70,320	$71,966	$73,518	$74,970	$76,298	$77,504
Paʻia-Haʻikū	$63,488	$51,317	$60,589	$62,142	$63,596	$64,968	$66,251	$67,425	$68,490
Hāna	$49,192	$51,137	$56,777	$58,233	$59,596	$60,881	$62,084	$63,184	$64,182

NOTES:
Historical household income distribution based on Census, SMS Hawaii Health Study survey (2000) and Housing Policy Study 2006, and American Community Survey. Median income for projection years based on growth rate of per capita income estimated by DBEDT. Relative size of medians for regions assumed not to change after 2010. All dollar values in 2010 constant dollars. The last published version included an erroneous median for Hāna in 2000; this has been corrected from Census 2000 data.

TABLE R-11: HOUSING DEMAND BY REGION

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
New Resident Demand per 5-Year Period									
West Maui			929	932	1,366	1,859	1,615	1,628	1,636
Kihei-Mākena			958	723	1,791	1,744	2,127	2,144	2,154
Wailuku-Kahului			1,190	2,822	1,555	1,818	1,758	1,772	1,781
Makawao-Pukalani-Kula			1,078	521	695	177	195	196	197
Paʻia-Haʻikū			797	256	13	10	14	14	14
Hāna			178	52	60	64	68	73	78
Total			5,131	5,307	5,480	5,672	5,776	5,827	5,860
Total Resident Demand									
West Maui	5,124	6,348	8,189	9,121	10,486	12,345	13,961	15,589	17,226
Kihei-Mākena	6,243	9,417	11,699	12,422	14,213	15,957	18,084	20,227	22,382
Wailuku-Kahului	10,647	13,528	17,196	20,018	21,573	23,391	25,149	26,921	28,701
Makawao-Pukalani-Kula	6,504	7,994	9,848	10,369	11,065	11,242	11,437	11,633	11,830
Paʻia-Haʻikū	2,726	4,234	5,197	5,452	5,465	5,475	5,489	5,503	5,516
Hāna	620	627	869	921	981	1,045	1,114	1,186	1,264
Total	31,865	42,148	52,997	58,304	63,784	69,456	75,233	81,059	86,919
Non-Resident Units (2010)									
West Maui			802						
Kihei-Mākena			704						
Wailuku-Kahului			144						
Makawao-Pukalani-Kula			82						
Paʻia-Haʻikū			128						
Hāna			28						
Total			1,888						
New Non-Resident Demand per 5-Year Period									
West Maui				518	479	652	566	571	574
Kihei-Mākena				511	726	707	862	869	873
Wailuku-Kahului				333	163	191	185	186	187
Makawao-Pukalani-Kula				72	84	21	24	24	24
Paʻia-Haʻikū				36	2	1	2	2	2
Hāna				15	15	15	15	15	15
Total				1,485	1,468	1,587	1,653	1,666	1,674
Total Non-Resident Demand (over 2010)									
West Maui				518	996	1,648	2,214	2,785	3,359
Kihei-Mākena				511	1,237	1,944	2,805	3,674	4,547
Wailuku-Kahului				333	497	688	873	1,059	1,246
Makawao-Pukalani-Kula				72	156	177	201	225	248
Paʻia-Haʻikū				36	38	39	41	42	44
Hāna				15	30	45	60	75	90
Total				1,485	2,954	4,541	6,194	7,860	9,534

Continued

TABLE R-11: HOUSING DEMAND BY REGION (Cont.)

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total Housing Demand									
West Maui	*5,124*	*6,348*	8,991	10,440	12,285	14,795	16,977	19,176	21,387
Kihei-Mākena	*6,243*	*9,417*	12,403	13,637	16,154	18,605	21,593	24,605	27,633
Wailuku-Kahului	*10,647*	*13,528*	17,340	20,496	22,214	24,223	26,165	28,123	30,091
Makawao-Pukalani-Kula	*6,504*	*7,994*	9,930	10,523	11,303	11,501	11,720	11,940	12,161
Paʻia-Haʻikū	*2,726*	*4,234*	5,325	5,616	5,631	5,642	5,658	5,673	5,688
Hāna	*620*	*627*	897	964	1,039	1,118	1,202	1,289	1,382
Total	*31,864*	*42,148*	54,885	61,677	68,626	75,885	83,315	90,807	98,341
Average Annual Rate of Change, Housing Demand									
West Maui			3.5%	3.0%	3.3%	3.8%	2.8%	2.5%	2.2%
Kihei-Mākena			2.8%	1.9%	3.4%	2.9%	3.0%	2.6%	2.3%
Wailuku-Kahului			2.5%	3.4%	1.6%	1.7%	1.6%	1.5%	1.4%
Makawao-Pukalani-Kula			2.2%	1.2%	1.4%	0.3%	0.4%	0.4%	0.4%
Paʻia-Haʻikū			2.3%	1.1%	0.1%	0.0%	0.1%	0.1%	0.1%
Hāna			3.6%	1.5%	1.5%	1.5%	1.4%	1.4%	1.4%
Total			2.7%	2.4%	2.2%	2.0%	1.9%	1.7%	1.6%

NOTES: Resident Housing Demand by Region = Households by Region / (1 - Vacancy Rate). 5% vacancy rate assumed as policy. Non-Resident, 2010 = identified from Real Property data as dwellings built since 2000 and held by out of state residents. Non-Resident demand for each Community Plan region is based on historical ratio of resident to non-resident sales. Non-Resident demand is calculated as a function of new resident households, not new housing demand. Over the long term, some Non-Resident units will convert to Resident units (whether due to resales or relocation of owners). Some 20% of new Non-Resident demand is expected to be converted in this way over time. Because Non-Resident demand is estimated from 2003-2012 data, no estimate is shown for 1990 and 2000.

TABLE R-12: TOTAL CIVILIAN JOBS BY REGION

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Total Civilian Jobs									
West Maui	14,731	21,148	21,979	24,031	25,952	27,830	29,677	31,499	33,192
Kihei-Mākena	8,668	14,037	17,600	21,625	24,258	27,080	30,073	33,145	35,965
Wailuku-Kahului	24,195	33,312	35,813	41,003	43,609	46,334	49,174	52,015	54,658
Makawao-Pukalani-Kula	2,312	3,936	5,788	6,264	6,766	6,989	7,228	7,469	7,699
Paʻia-Haʻikū	1,172	2,191	2,759	3,017	3,076	3,132	3,189	3,245	3,297
Hāna	679	865	1,004	1,111	1,173	1,240	1,310	1,383	1,455
Wage and Salary Jobs									
West Maui	13,676	16,445	16,235	17,677	18,716	19,416	20,156	20,812	21,268
Kihei-Mākena	8,047	10,915	12,605	15,840	17,050	18,423	19,658	20,874	21,725
Wailuku-Kahului	22,462	25,904	26,165	29,368	30,538	31,626	32,761	33,805	34,540
Makawao-Pukalani-Kula	2,146	3,061	3,868	4,052	4,150	4,245	4,338	4,424	4,490
Paʻia-Haʻikū	1,088	1,704	1,687	1,802	1,840	1,877	1,910	1,942	1,968
Hāna	631	672	680	761	791	822	852	881	904
Self-employed Jobs									
West Maui	1,055	4,703	5,745	6,354	7,235	8,415	9,521	10,687	11,924
Kihei-Mākena	621	3,122	4,995	5,786	7,208	8,657	10,416	12,271	14,239
Wailuku-Kahului	1,733	7,408	9,648	11,635	13,071	14,708	16,413	18,211	20,118
Makawao-Pukalani-Kula	166	875	1,921	2,213	2,615	2,744	2,891	3,045	3,209
Paʻia-Haʻikū	84	487	1,073	1,215	1,236	1,256	1,279	1,303	1,330
Hāna	49	192	323	350	382	418	457	502	551

NOTES TO TABLE R-12:

Total Civilian Jobs = Wage and Salary Jobs + Self-employed Jobs. Self-employed Jobs for each region = Wage and Salary Jobs x Maui Island Ratio of Self-employed to Wage and Salary Jobs. 1990, 2000 job locations from Ecoomic Census and research by CRI and SMS. 2005 and later locations for commercial and industrial jobs based on PlanPacific 2004 assignment of jobs to commercial and industrial areas, LRD analysis of future land development, and DBEDT projected totals. By industry:

Agriculture: distribution of all jobs among regions assumed to continue as in 2010.

Manufacturing: Distribution of all jobs by region follows distribution of built industrial space.

Construction: 20% of all construction jobs assumed to be located in industrial areas, in proportion to region's share of built industrial area; remainder on job sites. Distribution of construction job sites based on estimate of total construction , including hotel, housing (estimated from housing demand), commercial and industrial space.

Transportation, communications, utilities:These jobs are typically located in industrial areas. Starting in 2010, half of the new jobs were assumed to be distributed in proportion to built industrial area, half in proportion to new industrial area built in the current period. For 2005, the total number of jobs in this industry declines, so the allocation by region simply followed the 2000 distribution.

Trade includes retail, wholesale, and eating & drinking. Eating and drinking share of total indicated by DBEDT estimates for the county as a whole. Distribution of new jobs assumed to be based on distribution of commercial area (45% according to current distribution of commercial space, 45% according to distribution of new space built in current period).The remaining new Eating & Drinking jobs are distrributed in proportion to new hotel space. The remainder of new trade jobs are distributed 10% in proportion to built industrial area, 45% in proportion to built commercial area, and 45% in proportion to new commercial area.

Banking and Finance: Distribution of new jobs by region follows distribution of built (50%) and new (50%) commercial space.

Hotel: From 2005 onwards, the ratio of hotel jobs per room in each region was assumed to be constant, and the total number of jobs was then adjusted to fit the total derived from DBEDT (i.e., changes in productivity were assumed to occur throughout the Island).

Other services: Distribution of new jobs assumed to follow development of commercial space, with 50% according to distribution of current existing commercial space, and 50% according to distribution of newly built commercial space.

State and local government jobs: new jobs are assumed to be distributed in proportion to new resident households.

Federal jobs are assumed to be distributed in the same regional proportions as in 2010.

TABLE R-13: TOTAL CIVILIAN JOBS, BY INDUSTRY, WEST MAUI

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
West Maui									
Civilian Jobs	8,993	21,148	21,979	24,031	25,952	27,830	29,677	31,499	33,192
Wage and Salary Jobs	8,631	16,445	16,235	17,677	18,716	19,416	20,156	20,812	21,268
Agriculture	411	300	229	252	249	247	243	239	235
Manufacturing	60	114	69	70	70	70	70	70	69
Construction	914	667	621	431	767	811	922	974	1,067
Trans., com., util.	282	564	394	391	396	399	403	406	406
Trade (including Eating and Drinking)	4,404	4,727	4,915	5,114	5,229	5,326	5,415	5,494	5,490
Banking, Finance	1,315	898	824	832	818	812	805	798	789
Services	5,864	8,424	8,138	9,268	9,746	10,147	10,554	10,955	11,205
Hotels	4,619	5,836	5,060	5,548	5,736	5,855	5,981	6,111	6,089
Other Services	1,245	2,588	3,078	3,720	4,009	4,292	4,574	4,845	5,116
Government	426	750	1,043	1,319	1,441	1,603	1,743	1,876	2,007
State/Local	362	672	916	1,168	1,283	1,437	1,568	1,694	1,817
Federal	64	78	127	151	159	167	175	182	190
Self-employed Jobs	1,055	4,703	5,745	6,354	7,235	8,415	9,521	10,687	11,924

TABLE R-14: TOTAL CIVILIAN JOBS, BY INDUSTRY, KIHEI-MĀKENA

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Kihei-Mākena									
Civilian Jobs	8,668	14,037	17,600	21,625	24,258	27,080	30,073	33,145	35,965
Wage and Salary Jobs	8,047	10,915	12,605	15,840	17,050	18,423	19,658	20,874	21,725
Agriculture	118	98	74	82	81	80	79	78	76
Manufacturing	60	40	14	17	16	16	18	15	14
Construction	1,117	752	785	1,197	1,043	1,165	1,132	1,157	1,172
Trans., com., util.	141	349	284	265	297	318	342	361	359
Trade (including Eating and Drinking)	1,520	2,592	2,988	3,521	3,828	4,086	4,325	4,535	4,524
Banking, Finance	751	326	137	157	119	105	86	67	44
Services	4,096	6,203	7,378	9,423	10,323	11,154	11,989	12,798	13,499
Hotels	3,640	4,166	3,959	4,310	4,444	4,530	4,619	4,712	4,697
Other Services	456	2,037	3,419	5,113	5,879	6,624	7,370	8,086	8,802
Government	245	556	944	1,178	1,342	1,499	1,686	1,864	2,038
State/Local	181	428	736	931	1,082	1,227	1,400	1,565	1,727
Federal	64	128	208	247	260	273	286	299	312
Self-employed Jobs	621	3,122	4,995	5,786	7,208	8,657	10,416	12,271	14,239

TABLE R-15: TOTAL CIVILIAN JOBS, BY INDUSTRY, WAILUKU-KAHULUI

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Wailuku-Kahului									
Civilian Jobs	24,195	33,312	35,813	41,003	43,609	46,334	49,174	52,015	54,658
Wage and Salary Jobs	22,462	25,904	26,165	29,368	30,538	31,626	32,761	33,805	34,540
Agriculture	1,410	1,276	974	1,071	1,061	1,051	1,034	1,017	1,000
Manufacturing	1,568	1,486	805	811	810	809	814	806	805
Construction	609	651	1,011	1,079	1,023	940	930	920	871
Trans., com., util.	2,244	3,169	2,273	2,230	2,303	2,351	2,405	2,446	2,442
Trade (including Eating and Drinking)	6,252	7,363	7,535	8,067	8,373	8,630	8,866	9,072	9,061
Banking, Finance	939	1,298	1,115	1,135	1,098	1,083	1,065	1,047	1,024
Services	5,935	6,203	7,403	9,122	9,871	10,598	11,325	12,024	12,717
Hotels	293	295	146	225	233	238	243	248	247
Other Services	5,642	5,908	7,256	8,897	9,638	10,360	11,082	11,776	12,469
Government	3,504	4,458	5,049	5,854	5,999	6,164	6,322	6,473	6,620
State/Local	3,377	4,317	4,821	5,582	5,713	5,864	6,007	6,143	6,277
Federal	127	141	229	272	286	301	315	329	343
Self-employed Jobs	1,733	7,408	9,648	11,635	13,071	14,708	16,413	18,211	20,118

TABLE R-16: TOTAL CIVILIAN JOBS, BY INDUSTRY, UPCOUNTRY

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Upcountry									
Civilian Jobs	2,312	3,936	5,788	6,264	6,766	6,989	7,228	7,469	7,699
Wage and Salary Jobs	2,146	3,061	3,868	4,052	4,150	4,245	4,338	4,424	4,490
Agriculture	118	106	81	89	88	87	86	85	83
Manufacturing	60	68	59	59	59	59	59	59	59
Construction	203	184	238	88	45	47	46	45	41
Trans., com., util.	71	7	6	6	7	8	9	10	10
Trade (including Eating and Drinking)	627	920	1,030	1,067	1,089	1,107	1,124	1,139	1,139
Banking, Finance	47	82	85	86	84	83	81	80	78
Services	294	882	1,266	1,389	1,444	1,498	1,551	1,603	1,654
Hotels	4	27	13	14	15	15	16	16	16
Other Services	290	855	1,253	1,374	1,429	1,482	1,536	1,587	1,638
Government	727	812	1,103	1,268	1,334	1,357	1,381	1,404	1,426
State/Local	663	733	976	1,117	1,175	1,190	1,206	1,221	1,236
Federal	64	78	127	151	159	167	175	182	190
Self-employed Jobs	166	875	1,921	2,213	2,615	2,744	2,891	3,045	3,209

TABLE R-17: TOTAL CIVILIAN JOBS, BY INDUSTRY, PA'IA-HA'IKŪ

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Pa'ia-Ha'ikū									
Civilian Jobs	1,172	2,191	2,759	3,017	3,076	3,132	3,189	3,245	3,297
Wage and Salary Jobs	1,088	1,704	1,687	1,802	1,840	1,877	1,910	1,942	1,968
Agriculture	59	60	46	50	50	49	49	48	47
Manufacturing	181	41	29	29	29	29	29	29	29
Construction	102	200	67	32	35	38	38	39	41
Trans., com., util.	71	261	179	178	179	180	181	181	181
Trade (including Eating and Drinking)	412	533	550	564	573	580	587	593	592
Banking, Finance	47	23	19	20	18	18	18	17	16
Services	124	362	424	472	494	515	536	556	576
Hotels	0	29	31	33	33	34	34	34	34
Other Services	124	333	392	439	460	481	502	521	541
Government	92	225	374	457	463	469	474	480	486
State/Local	60	179	299	368	369	370	371	372	373
Federal	32	46	75	89	94	99	103	108	112
Self-employed Jobs	84	487	1,073	1,215	1,236	1,256	1,279	1,303	1,330

TABLE R-18: TOTAL CIVILIAN JOBS, BY INDUSTRY, HĀNA

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Hāna									
Civilian Jobs	679	865	1,004	1,111	1,173	1,240	1,310	1,383	1,455
Wage and Salary Jobs	631	672	680	761	791	822	852	881	904
Agriculture	59	60	46	50	50	49	49	48	47
Manufacturing	0	0	5	5	5	5	5	5	5
Construction	102	46	18	13	11	12	12	12	11
Trans., com., util.	14	3	3	3	3	3	4	4	4
Trade (including Eating and Drinking)	140	115	121	130	135	139	143	147	147
Banking, Finance	9	23	20	20	20	19	19	19	18
Services	122	177	141	174	189	203	216	230	241
Hotels	81	97	40	45	48	49	50	52	52
Other Services	41	80	101	129	141	154	166	178	189
Government	184	249	327	365	378	391	404	418	431
State/Local	121	171	202	216	221	226	232	238	243
Federal	63	77	125	149	156	164	172	180	188
Self-employed Jobs	49	192	323	350	382	418	457	502	551

TABLE R-19: AVERAGE VISITOR CENSUS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Average Visitor Census (AVC)									
West Maui	20,401	23,703	25,982	28,766	30,181	31,689	33,183	34,746	36,287
Kihei-Mākena	16,079	16,376	18,608	20,604	21,618	22,698	23,768	24,887	25,991
Wailuku-Kahului	1,294	1,119	986	1,453	1,515	1,581	1,643	1,702	1,760
Makawao-Pukalani-Kula	18	102	76	84	89	93	97	102	106
Paʻia-Haʻikū	0	109	71	79	83	87	91	96	100
Hāna	358	409	302	335	351	369	386	405	422
TOTAL	38,150	41,818	46,026	51,321	53,837	56,517	59,169	61,936	64,666
Percent of Total									
West Maui	53.5%	56.7%	56.5%	56.1%	56.1%	56.1%	56.1%	56.1%	56.1%
Kihei-Mākena	42.1%	39.2%	40.4%	40.1%	40.2%	40.2%	40.2%	40.2%	40.2%
Wailuku-Kahului	3.4%	2.7%	2.1%	2.8%	2.8%	2.8%	2.8%	2.7%	2.7%
Makawao-Pukalani-Kula	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Paʻia-Haʻikū	0.0%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Hāna	0.9%	1.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE R-20: VISITOR ARRIVALS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Visitor Arrivals									
West Maui	1,254,039	1,269,712	1,178,048	1,304,296	1,368,464	1,436,835	1,504,585	1,575,432	1,645,307
Kihei-Mākena	988,375	877,244	843,715	934,219	980,178	1,029,147	1,077,670	1,128,411	1,178,455
Wailuku-Kahului	79,551	59,959	44,707	65,872	68,693	71,705	74,505	77,158	79,790
Makawao-Pukalani-Kula	1,080	5,473	3,456	3,826	4,015	4,215	4,414	4,622	4,827
Paʻia-Haʻikū	0	5,838	3,240	3,587	3,764	3,952	4,138	4,333	4,525
Hāna	22,015	21,892	13,715	15,186	15,933	16,729	17,517	18,342	19,156
TOTAL	2,345,060	2,240,117	2,086,881	2,326,985	2,441,045	2,562,583	2,682,829	2,808,297	2,932,060
Percent of Island Visitors Staying Overnight in Region									
West Maui	53.5%	56.7%	56.5%	56.1%	56.1%	56.1%	56.1%	56.1%	56.1%
Kihei-Mākena	42.1%	39.2%	40.4%	40.1%	40.2%	40.2%	40.2%	40.2%	40.2%
Wailuku-Kahului	3.4%	2.7%	2.1%	2.8%	2.8%	2.8%	2.8%	2.7%	2.7%
Makawao-Pukalani-Kula	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Paʻia-Haʻikū	0.0%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Hāna	0.9%	1.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE R-21: TOTAL VISITOR UNITS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
Visitor Units by Region									
West Maui	9,285	9,904	10,909	10,996	11,271	11,547	11,933	12,520	13,090
Kihei-Mākena	7,318	6,843	7,813	7,876	8,073	8,271	8,547	8,967	9,376
Wailuku-Kahului	589	468	414	555	566	576	591	613	635
Makawao-Pukalani-Kula	8	43	32	32	33	34	35	37	38
Paʻia-Haʻikū	0	46	30	30	31	32	33	34	36
Hāna	163	171	127	128	131	134	139	146	152
TOTAL	17,363	17,473	19,325	19,618	20,106	20,594	21,277	22,317	23,327
Cumulative Increment									
West Maui				87	362	638	1,024	1,611	2,181
Kihei-Mākena				63	260	458	734	1,154	1,563
Wailuku-Kahului				141	152	162	177	199	221
Makawao-Pukalani-Kula				0	1	2	3	5	6
Paʻia-Haʻikū				0	1	2	3	4	6
Hāna				1	4	7	12	19	25
TOTAL				293	781	1,269	1,952	2,992	4,002

NOTE: Total visitor units: Occupied Visitor Units / Occupancy Rate. Note that this approach may not reflect actual new hotel construction after 2010. 2000 Visitor Units by region: DBEDT Visitor Plant Inventory: hotel, hostel and time share units only; Distribution in 2010 based on 2010 VPI, for DBEDT projection of 2010 units. For subsequent years, new visitor units allocated according to distribution of hotel and timeshare units in inventory compiled by Maui County Planning Dept Long Range Planning Branch of planned and permitted projects, recognizing that one property has already opened.

TABLE R-22: OCCUPIED VISITOR UNITS

Forecast Variables	Historical 1990	Historical 2000	Historical 2010	Projected 2015	2020	2025	2030	2035	2040
3. Occupied Visitor Units									
West Maui	6,502	7,929	7,519	8,381	8,793	9,233	9,665	10,125	10,571
Kihei-Mākena	5,125	5,478	5,385	6,003	6,298	6,613	6,923	7,252	7,572
Wailuku-Kahului	412	374	285	423	441	461	479	496	513
Makawao-Pukalani-Kula	6	34	22	25	26	27	28	30	31
Paʻia-Haʻikū	0	36	21	23	24	25	27	28	29
Hāna	114	137	88	98	102	107	113	118	123
TOTAL	12,159	13,989	13,320	14,953	15,685	16,467	17,234	18,048	18,839
Percent of Total									
West Maui	53.5%	56.7%	56.5%	56.1%	56.1%	56.1%	56.1%	56.1%	56.1%
Kihei-Mākena	42.1%	39.2%	40.4%	40.1%	40.2%	40.2%	40.2%	40.2%	40.2%
Wailuku-Kahului	3.4%	2.7%	2.1%	2.8%	2.8%	2.8%	2.8%	2.7%	2.7%
Makawao-Pukalani-Kula	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Paʻia-Haʻikū	0.0%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Hāna	0.9%	1.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

NOTE: Occupied Visitor Units = Visitor Units by Region * Maui Island Occupancy Rate

REFERENCES

County of Maui. *Socio-Economic Forecast: The Economic Projections for the Maui County General Plan 2030.* Wailuku, HI, 2006. Posted at http://www.co.maui.hi.us/DocumentCenter/View/10497

Hawai'i State Department of Business, Economic Development and Tourism. *Population and Economic Projections for the State of Hawai'i to 2040.* Honolulu, HI, 2012. Posted at http://dbedt.hawaii.gov/economic/economic-forecast/2040-long-range-forecast/

PlanPacific, Inc. *Land Use Forecast: Island of Maui: Maui County General Plan 2030 Technical Resource Study.* Honolulu, HI, 2006. Posted at http://www.co.maui.hi.us/DocumentCenter/View/10477.

U.S. Census Bureau, *2010 Census Summary File 1, 2010 Census of Population and Housing, Technical Documentation,* Appendix B. Publication SF1/10-4 (RV). Washington DC, 2012. Posted at http://www.census.gov/prod/cen2010/doc/sf1.pdf