

# **LAND USE FORECAST ISLAND OF MOLOKA‘I**

## **Maui County General Plan Technical Resource Study**

*October 2013*

Prepared by  
**Department of Planning, County of Maui**

Prepared for  
**The People of Maui County**



***NOTE – THIS DRAFT IS PREPARED FOR REVIEW BY LRD AND BELT COLLINS  
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ILLUSTRATIONS.***

## SUMMARY OF FINDINGS

The Moloka‘i Land Use Forecast is a technical study intended to support the Moloka‘i Community Plan Update process. The purpose of this report is to identify whether land is available for the amount and types of development that are likely in the coming decades. The report provides a detailed account of the procedures used to estimate the amount of available land for urban uses, and the likely demand for that land between 2010 and 2035.

Moloka‘i includes more than 172,000 acres of land in the Planning Department’s GIS database. The urban land area amounts to about 2,000 acres.<sup>1</sup>

The analysis suggests that lands currently available for development on Moloka‘i are likely to suffice to meet demand for resident and non-resident housing, for commercial and industrial space, and for visitor units through the year 2035. Far more housing could be built in West Moloka‘i than seems likely to be needed to meet non-resident demand. To provide housing for residents, infill, redevelopment, and housing on agricultural lots, can occur.

A land use forecast developed for Lāna‘i recognized that changes in plans by the major landowner could significantly affect demand for land. For Moloka‘i, no single landowner holds the majority of the island acreage. The largest landowner, Molokai Properties Ltd. (known as Molokai Ranch) is not pursuing urban development projects. Other community members have identified farming and forestry initiatives as important. Next, a major source for demand for urban land, population growth, came to a standstill between 2000 and 2010. Future population growth is expected to be slow. These factors combine to suggest that demand for urban uses and lands will be weak in the next years, and could largely be met on vacant or underused urban lands.

Some complications deserve mention at the beginning of this report:

- From 2000 to 2010, Moloka‘i saw a significant decline in wage & salary jobs. Job growth through 2020 is expected to reverse the decline in sectors that affect commercial space. Since demand for commercial space is due to increases over historical demand, that demand is analyzed in relation to 2000 employment, not just 2010 jobs.

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<sup>1</sup> “Urban” is a category in the State Land Use classification system, distinct from Conservation, Agricultural, and Conservation. In this report, attention centers on the potential for development or redevelopment. Commercial, Industrial and Resort development is largely limited to Urban lands. New housing may be built on Agricultural or Rural parcels, within limits set by Maui County’s zoning code. In this report, “urban” (without capitalization) is also used to identify that could be developed or redeveloped for Commercial, Industrial or Resort uses.

Most measures of land area in this report are based on the Tax Map Key (TMK) parcels in the 2010 RPT database export files provided by Maui County’s Department of Budget and Finance filed in the County Document Center (<http://www.co.maui.hi.us/DocumentCenterii.aspx>). Some areas not subject to taxation – public roads and some offshore lands – are not included in the export files, so the total acreage counted is slightly smaller than the total area of the island.

- Adaptive reuse and replacement may be appropriate for many structures now standing, so demand for new space may well be met at sites currently occupied by older buildings, rather than on new sites. This is particularly likely in Maunaloa, where Molokai Ranch properties have been left vacant.
- The study deals with urban land uses. It does not address either the proposed development of a wind farm on Conservation or Agricultural lands or with new agricultural initiatives.

Table S-1 summarizes forecast demand and potential supply of urban spaces. This summary table depends on assumptions in the Socio-Economic (SE) model and in the rest of this report. The SE model has been updated to reflect new Census data and projections. Population and job growth are expected to continue to be slow, compared to the growth seen on Maui Island.<sup>2</sup> Should residential and economic trends change, those assumptions and the findings of this report would need to be reviewed.

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<sup>2</sup> The SE model allocates to islands and Community Plan areas in Maui County the changes in population, visitor units, and jobs anticipated for the County by researchers in the State Department of Business, Economic Development and Tourism (DBEDT). In 2012, DBEDT published revised projections to 2040. The version of the SE model used here draws on recent Census data as well as the latest DBEDT forecast.

**TABLE S-1: SUMMARY OF SPACE FOR URBAN USES: SUPPLY AND DEMAND, TO 2035, MOLOKA‘I**

A. Existing Conditions, 2010			
Development (Excluding government lands)			
Urban land area	1,673	acres	
SFR	2,623	units	
MFR	879	units	
COM	625,188	sq. ft.	
IND	203,277	sq. ft.	
Hotel	392	units	
B. Potential development (i.e., Supply available for new urban development)			
Housing	1,640	units	
COM	544,282	sq. ft.	
IND	907,137	sq. ft.	
Hotel	160	units	
C. Inputs from Socio-Economic Forecast: Change from 2010 to 2035			
Resident Population Growth	2,049	residents	
Additional Housing Demand:			
Resident Housing	940	units	
Non-Resident Housing	225	units	
Additional Jobs (wage & salary)	815	jobs	
D. Demand from 2010 to 2035 indicated by the Socio-Economic Forecast			
SFR and MFR (both for residents and non-residents)	1,165	units	
COM	207,468	sq. ft.	
IND	121,232	sq. ft.	
Hotel	0	units	
E. Supply minus Demand (to 2035)			
Residential	475	units	
COM	449,226	sq. ft.	
IND	776,785	sq. ft.	
Hotel	160	units	

NOTES: Abbreviations: COM = Commercial; IND = Industrial; MFR = Multifamily Residential; SFR = Single Family Residential.

In part A of the table, structures in both Urban and other areas are counted. Part B covers development throughout the island, on the heuristic assumption that 50% of available vacant land suitable for development is built out by 2035. Part D translates the inputs from the SE Forecast into demand for land; such demand could be met on vacant land already “Committed” for development, or on underused sites, or on lands rezoned to meet demand. For COM and IND lands, 2010 land use was treated as less dense than normal, due to recent job cuts, so 2000 job counts were used to identify a normal density (jobs per 1,000 sq. ft. of space under roof) for this land use type. Part E subtracts demand (from Part D) from supply (from Part B). Please note that the analysis deals with units and floor area, not acreage.

## Contents

SUMMARY OF FINDINGS .....	i
1. INTRODUCTION .....	1
1.1 Purpose .....	1
1.2 Organization of This Report.....	1
1.3 Components of the Land Use Forecast .....	2
1.4 Outputs .....	4
1.5 Major Sources .....	5
1.6 Inventorying Land Supply.....	7
1.7 Forecasting Demand.....	9
1.8 Limitations .....	10
2. LAND USE AND DEMAND ON MOLOKA‘I, 2010 TO 2035 .....	12
2.1 Introduction .....	12
2.2 Current Conditions .....	21
2.3 Projections of Demand .....	28
2.4 Supply of Urban Land.....	30
2.5 Adequacy of Supply to Meet Demand through 2035.....	31
3. METHODOLOGY .....	33
3.1 Existing Land Use Database .....	33
3.1.1 Structures .....	33
3.1.2 Primary Land Use .....	34
3.1.3 Adjustments after Completing the RPT Analysis.....	35
3.2 Supply of Land for Future Development .....	35
3.3 Demand Analysis .....	36
3.3.1 Housing Demand Indicators from the Socio-Economic Forecast.....	36
3.3.2 Multipliers Used to Translate Employment to Demand for Space.....	36
4. SOURCES OF UNCERTAINTY .....	39
REFERENCES .....	41

## Tables

TABLE S-1: SUMMARY OF SPACE FOR URBAN USES: SUPPLY AND DEMAND, TO 2035, MOLOKAʻI .....	iii
TABLE 1: STATE LAND USE CLASSIFICATION, MOLOKAʻI LANDS, 2010 .....	13
TABLE 2: CLASS OF MOLOKAʻI LANDS IN TAX RECORDS, 2010.....	13
TABLE 3: DISTRIBUTION OF COMMUNITY PLAN DESIGNATIONS, MOLOKAʻI .....	20
TABLE 4: 2010 DEMOGRAPHICS, ISLANDS OF MAUI COUNTY .....	22
TABLE 5: STRUCTURES AND LAND USES ON MOLOKAʻI, 2010: ALL PARCELS .....	23
TABLE 6: STRUCTURES AND LAND USES ON MOLOKAʻI, 2010: PRIVATE PARCELS .....	24
TABLE 7: STRUCTURES AND LAND USES ON MOLOKAʻI, 2010: DHHL PARCELS...	25
TABLE 8: PROJECTED POPULATION AND EMPLOYMENT, ISLANDS OF MAUI COUNTY, TO 2035.....	29
TABLE 9: PROJECTED DEMAND FOR URBAN SPACE ON MOLOKAʻI.....	29
TABLE 10: POTENTIAL SURPLUS OF SUPPLY OVER DEMAND FOR URBAN USES BY 2035 .....	32
TABLE 11: EMPLOYMENT AND DEMAND FOR COMMERCIAL OR INDUSTRIAL SPACE .....	37
TABLE 12: EMPLOYMENT AND DEMAND FOR SPACE, BY ISLAND .....	38

## Figures

Figure 1: Major Linkages between the Socio-Economic and Land Use Projections .....	3
Figure 2: Island Map: District Boundaries .....	14
Figure 3: Large Landowners .....	15
Figure 4: Community Plan Map: West Molokaʻi.....	17
Figure 5: Community Plan Map: Central Molokaʻi .....	18
Figure 6: Community Plan Map: East Molokaʻi .....	19
Figure 7: Molokaʻi Dwellings, by Decade Built .....	27
Figure 8: Molokaʻi Dwellings, by District, by Decade Built .....	27

## Abbreviations

<b>AVC</b>	Average visitor census, i.e., the estimated average number of non-residents on-island
<b>COM</b>	Commercial land use
<b>CP</b>	Community Plan
<b>DHHL</b>	State of Hawaii Department of Hawaiian Homelands
<b>DPD</b>	Development Projects Database
<b>ELUD</b>	Existing Land Use Database
<b>GIS</b>	Geographic Information System, uniting spatial map data with other quantitative data
<b>GP</b>	Maui County General Plan
<b>HRS</b>	Hawai‘i Revised Statutes
<b>IND</b>	Industrial land use
<b>LRD</b>	Long Range Division, Maui County Department of Planning
<b>MCC</b>	Maui County Code
<b>MFR</b>	MultiFamily housing
<b>PD</b>	Project District
<b>PITT</b>	“Pittsburgh” classification of land use (used in RPT database). PITT codes identify the property classes used for tax assessment.
<b>RPT</b>	Real Property Tax (A division of the Maui County Department of Finance; also the databases maintained by that division and made accessible to the public through the County’s Document Center on the Internet)
<b>SE</b>	Socio-Economic (as in the Maui County Socio-Economic model and forecast report)
<b>SFR</b>	Single family housing.
<b>TMK</b>	Tax Map Key (numerical identifier for RPT parcels). TMK numbers take the form 1-1-1-001:001 (0001) for Division-Zone-Section-Plat: Parcel (Condominium Number). Since this report deals only with Maui County, the Division number – 2 for all Maui County TMKs – is omitted. All Moloka‘i parcels in Maui County are identified as Division 2, Zone 5. Division 2, Zone 6 is Kalawao County, i.e., the Kalaupapa peninsula lands outside the jurisdiction of Maui County.
<b>VPI</b>	Visitor Plant Inventory. Listing of hotels and properties held for use by visitors (including condos, homes rented for vacation use, and units in hostels or bed & breakfast establishments. The inventory does not include vacation homes that are held for the owners’ use, and not rented out. While the inventory could well omit some properties for which the owners have not declared visitor use, the Hawai‘i Tourism Authority and the County of Maui have both devoted much effort to make the inventory comprehensive.

# 1. INTRODUCTION

The Moloka‘i Land Use Forecast is a technical study intended to support the development of the Moloka‘i Community Plan. The Plan is being prepared as part of the Maui County General Plan 2035 process. The Land Use Forecast compares the supply of land available for urban development to the demand for future land uses. The forecast of demand is based on an update of the Maui County Socio-Economic Forecast Report. Both forecasts look to a 2035 planning horizon.

A Maui Island Land Use Forecast was published in 2006 by PlanPacific, Inc. with collaboration by the Long Range Division (LRD) of the County of Maui Department of Planning and the Real Property Division of the Department of Finance. The present report adapts the procedures in the 2006 report to deal with more recent information for the island of Moloka‘i. Work on the Moloka‘i report was conducted by the Long Range Division and Belt Collins Hawaii LLC.

## 1.1 Purpose

The Moloka‘i Land Use Forecast is one of a set of tools developed in the course of updating the General Plan, Island Plans, and Community Plans of Maui County. It is meant to help in revising the current Community Plan.<sup>3</sup>

The Land Use Forecast is conducted to estimate the amount of urban-planned land needed to accommodate the population and economic growth projected for Moloka‘i to the year 2035. The Land Use Forecast is not a goal. It presents “baseline” (2009-2010) information and projections that assume the continuation of historical trends, policies, and existing conditions.

The Land Use Forecast is not County policy. It is a tool that can be used to inform and shape County policy. Through the General Plan (GP) update process, the County may adopt land use policies to realize future conditions unlike those projected in this forecast. For example, the Community Plan may call for different densities for new development and for different distributions of rural and urban areas.

## 1.2 Organization of This Report

The report is organized into four sections:

- This introduction describes the components of the Land Use Forecast and the **general approach** used to prepare it. It also describes the sources of information used and major outputs of the forecast.

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<sup>3</sup> County of Maui. *Moloka‘i Community Plan*. Wailuku, HI, 2001.



- Chapter 2 summarizes information about existing conditions and anticipated demand for various land uses in the coming decades. It contains the **findings** of the study.
- Chapter 3 provides detailed accounts of the **methodology** used in the analysis. It provides more detail about the data and procedures than does Chapter 1. Chapter 3 deals with the Existing Land Use Database, and with projected demand for specific urban land uses (Residential, Resort, Commercial, Industrial).
- Chapter 4 discusses sources of **uncertainty** in this forecast, and the ways in which policy choices may shape future land use. The study is meant to inform policy-makers, not to prescribe decisions or courses of action.

Those readers who want to consider the major research findings can focus on Chapter 2. The remainder of this chapter discusses the general approach of the study, while Chapter 3 offers details on definitions and procedures that shape the analysis. The account in Chapter 3 is needed to compare carefully the classifications used here and those found in other planning and tax documents.

### ***1.3 Components of the Land Use Forecast***

The forecast combines information about existing land uses, about projections of growth in population and jobs that will create demand for new homes, visitor units, and commercial or industrial sites, and about the supply of land available to meet that demand. Information about existing land uses is provided by the County's Real Property database, Geographic Information System (GIS) data compiled by the County Department of Planning, other public data sets and on-the-ground observation by Maui County staff.

#### ***Land Use Demand***

The pressure for urban lands to support different types of activities is termed "Land Use Demand." The Land Use Forecast identifies Land Use Demand following the general logic shown in Figure 1.

**Figure 1: Major Linkages between the Socio-Economic and Land Use Projections**

<i><b>Increases in:</b></i>		<i><b>Create demand for land in the following Land Use Categories --</b></i>			
Population	→	Single Family Residential			
		MultiFamily Residential			
Visitors, Visitor Length of Stay	→	Resort (including hotels, resort condominiums, and time shares)			
Jobs	→	Commercial (for example, office and retail)			
		Industrial (for example, manufacturing and warehousing)			

The projections of growth in population, visitors and jobs come from the Socio-Economic Forecast model developed for the General Plan process. That model in turn incorporates Census data and County-level projections developed and refined by the State Department of Business, Economic Development and Tourism. The 2030 Socio-Economic Forecast was published in 2006. Since that time, revised projections have been developed by the State (in 2012) and more recent Census information has become available. The Socio-Economic Forecast has been revised to draw on these new inputs. An update report showing change through 2040 is planned.

### ***Land Supply***

The forecast assesses the supply of land available to accommodate demand for future land uses. That supply consists of lands planned for urban development. Those lands include areas identified in the Moloka‘i Community Plan for specific urban uses or in Project Districts. Those areas are shown on Community Plan maps.

The supply of land includes land already in use, land on which urban uses are present, but at low density, and vacant parcels. Land supply numbers help to address the question: If no further changes were made to the Community Plans, could anticipated growth be accommodated? What population, visitor population and job count would likely be present on Moloka‘i if the urban-designated lands were fully “built out” or developed? It should be noted that the supply consists of lands with Community Plan designation; these lands may or may not have County zoning for urban uses.

## ***Comparing Supply and Demand***

The next step in the forecast is to compare demand with the supply of land available for development. The comparison indicates whether enough urban-planned lands are available to meet demand over the planning period. If demand exceeds supply, the analysis indicates how much additional land is needed in each of the general land use categories to meet demand.

Some land use studies consider a land supply equal to demand to be too small, and treat a supply of urban land that is 20 to 25 percent greater than demand as appropriate. The intent is to allow for factors that could make it difficult to develop some of the urban-planned land and for market conditions. This market flexibility approach responds to the concern that land prices could increase sharply if little supply is available to meet new demand.

When forecasting land use needs for Maui County, no market flexibility factor is used, for three reasons:

- First, the Maui County Code mandates development of new socio-economic projections and land use plan review every ten years (MCC 2.80B). With a planning horizon of 20 years or more, the planned supply of urban lands will be much larger than the supply needed before plan review. Hence, the planning process need not address the concern of long-term scarcity and pricing pressure.
- The State of Hawai‘i’s long-term socio-economic projections have been refined over decades, and have become fairly reliable. They provide a good basis for forecasting land needs.
- Finally, the forecast is a tool, not a rule. If, after some time, a forecast fails to allow for new demand, policy-makers can decide whether to designate additional land to address that demand.

## ***1.4 Outputs***

The forecast produces outputs expressed in terms of the following general urban land use categories:

- Residential (Single Family and MultiFamily);
- Resort (including hotels, resort condominiums, and time share properties);
- Commercial (including office and retail properties); and
- Industrial.

Agricultural and Conservation lands are also identified. Existing structures on such land are recognized as part of supply, and smaller agricultural parcels that currently have no dwellings are

treated as potential sites for new farm dwellings. (This procedure reflects Maui County Code, and involves no judgment that those parcels have appropriate infrastructure for farming or farm dwellings.)

These are broad categories, used to derive gross acreages. The forecast gives an order-of-magnitude view of land needs. The forecast does not address mixed uses or overlaps between the categories. Overlaps that may be critical to land use policy are discussed in the narrative.

- The land use model refines the account of supply somewhat by identifying:
- Department of Hawaiian Homelands parcels. Department of Hawaiian Homelands parcels are not subject to County zoning laws and are not available on the open market. These will be discussed further in the course of this report.
- Parcels where urban development is practically impossible, apart from zoning (fishponds, other wetlands). These are treated as Conservation land.

The SE forecast provides population and employment figures for five-year increments to 2040 for Molokaʻi. The Department of Planning takes 2035 as the planning horizon for land use analysis. Estimates of new demand in two increments are provided in this report, but these are simply points along a trend line.

On Maui, results for six Community Plan (CP) areas are presented as well as island-level results. Molokaʻi is a single CP area, but Molokaʻi stakeholders are well aware of differences among the various subareas of the area. Some of these differences are discussed in the course of this report.

## **1.5 Major Sources**

The forecast combines information from several sources to describe both existing and projected land use:

### *Existing and Historic*

- **County Real Property Tax (RPT) Database:** This database, maintained by the County Department of Finance, describes Tax Map Key (TMK) parcels, their areas, uses of each parcel, buildings, ownership and valuation. It is maintained and updated continuously, combining information from assessors' observation and official records.<sup>4</sup> As a publically accessible database, it includes information that can be challenged and corrected, if need be, by property owners or County personnel.

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<sup>4</sup> Information about sales and other transactions is posted continuously. Descriptions of parcels and improvements (i.e., structures) are posted annually. The information is available over the Internet for individual parcels (<http://www.mauipropertytax.com/Main/Home.aspx>) or in large-file downloads ("Real Property Tax Extracts" in the folder "Public Data Extracts" at <http://www.co.maui.hi.us/DocumentCenterii.aspx>). The information used for this report was downloaded from the Document Center in July 2010.

- **County GIS Database:** This is the primary map-based source of information concerning Community Plan Designations and County zoning. It is used to prepare the Development Projects Database and the Land Use Forecast. It also brings together information about infrastructure, along with environmental and cultural factors important in decision-making.
- **Existing Land Use Database (ELUD):** This database brings together information about existing development and land use. It is primarily based on parcel, tax class, area and structure data from the RPT database, with corrections based on observations and other data sets (notably, the Affordable Housing inventory maintained by the Hawai'i Housing Finance and Development Corporation [HHFDC] and the Visitor Plant Inventory (VPI) issued by the Hawai'i Tourism Authority). A Maui Island version of the ELUD was developed by PlanPacific, Inc. for Maui County, with a 2004 baseline. The present version takes early 2010 as baseline.

Data from the ELUD have been used to assess the density of land uses and the distribution of commercial and industrial activities among the Maui CP areas. The factors developed in that study can be used to assess existing and potential future development on Moloka'i.

### *Projected*

- **Development Projects Database:** For Maui Island, the Department of Planning has created a Development Projects Database (DPD), a geographically-referenced listing of known future projects. The database includes information from County planning and zoning files, permit applications, and input from landowners about future development proposals. The database is updated continuously, with systematic reviews issued on an annual basis.

For Moloka'i, no development proposals have been received by the Planning Department since 2006 . **MARK – PLEASE CONFIRM or adjust THIS DATE**

Recent planning studies for Moloka'i were reviewed for this report. These identify need for new environmental measures, water infrastructure, and education, but not for commercial or industrial space.<sup>5</sup> The most recent report notes that the Molokai Agricultural Park is fully occupied, suggesting that demand for agricultural land by non-Hawaiians exceeds supply.

For other islands, the Long Range Division (LRD) sorts projects into three categories, according to the current status under County land use plans and regulations:

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<sup>5</sup> *Molokai: Future of a Hawaiian Island*. Kaunakakai, HI 2008. Posted at <http://molokai.org/fileadmin/user/pdf/molokai.pdf>; Sust'AINable Molokai. *Molokai Agricultural Needs Assessment*. Kaunakakai, HI, 2012. Posted at <http://sustainablemolokai.org/agricultural-report/>. Department of Hawaiian Homelands, *Moloka'i Regional Plan*. Honolulu, HI, 2010, posted at <http://dhhl.hawaii.gov/wp-content/uploads/2011/06/Molokai-Regional-Plan.pdf>.

- **Planned/Committed** projects are designated for development in the Community Plans and also have County zoning as appropriate. Department of Hawaiian Homelands (DHHL) projects and projects that have been processed and approved pursuant to Hawai‘i Revised Statutes (HRS) Chapter 201G or 201H are also included in this category because they are exempt from County planning and zoning requirements. Planned/Committed projects may actually be in development, and/or may need further permits.
- **Planned/Designated** projects are designated for development in the Community Plans only. They have not received zoning entitlements.
- **Proposed** projects lack entitlements and Community Plan designation. These are developer proposals.

The Land Use Forecast takes into account only projects that are Planned/Committed or Planned/Designated as part of the land supply. Proposed projects are not included.

On Moloka‘i, a Project District is recognized in Maunaloa in the Community Plan, although no planning concepts for the district have been identified in an ordinance. That district constitutes “Planned/Designated” land.

- **Maui County Socio-Economic (SE) Forecast:** This report is the primary source of demand projections for residential units, visitor units, and jobs. It includes tables from an Excel model kept by the County Department of Planning.<sup>6</sup> The forecast takes the State’s official County-level projections of resident population, visitors and employment, and allocates anticipated growth to the islands and Community Plan regions of Maui County.

The current set of reports updates procedures used in past studies of Maui Island and County. The methodology was largely repeated, but some changes were appropriate to adapt to new data sources, notably the County’s detailed GIS data. Analysis of RPT data was carried out independent of the GIS data, after which specific changes to land classification were made and documented. Those changes captured information not systematically included in RPT data, such as the number of apartments in rental properties, and potential development of project district and DHHL lands.

## ***1.6 Inventorying Land Supply***

A major task of the forecast is to identify the extent of development that could occur, even if no additional permits are granted by County officials. To accomplish this task, the potential for future development of land parcels must be inventoried. “Planned” lands are ones designated on the Maui Community Plan maps for residential, resort, commercial or industrial use. They

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<sup>6</sup> The model was developed in Lotus 1-2-3 by Community Resources, Inc. in the early 1990s. Subsequently it has been transferred to Excel, and reorganized, revised, and updated by SMS Research & Marketing Services, Inc. and then by Belt Collins Hawaii, under the direction of the County Department of Planning. The version cited in this document was last revised in October 2012. It includes 2010 Census and VPI information.

include Project Districts. Also, parcels designated as Rural or Agricultural must be considered. While these are not urban, housing can be developed on them. (See Chapter 3 for further discussion.)

For this task, parcels identified by tax class or CP designation are analyzed for development potential. Conceptually, this involves four analyses: (1) sorting parcels into urban uses and non-urban ones, (2) identifying urban parcels as in particular principal uses, (3) sorting them into developed parcels, less developed parcels, and vacant ones; and (4) excluding wetlands (notably fishponds) that might otherwise be considered available for development. (Practically, it involves many further steps, to make sure that the parcels and uses are correctly classified.)

A typical approach to development potential is to treat the maximum development permitted by zoning law as possible for planned lands, and to consider the difference between actual development and the standard as the potential new development. That approach overstates potential development. First, the development potential of Project Districts is determined by ordinance but further limited by the landowner's sense of what can be marketed, not a maximal development of the Project District acreage. Similarly, Business Country Town and Historic District rules may restrict development. Next, much land is currently developed, but not developed to the maximum extent legally permitted. While some homes may be expanded, and some commercial properties may be enlarged, most will not change greatly in a period of ten or 20 years.

A more useful approach to development potential is to use a standard based in current and anticipated development densities, not the legal maximum. Per-acre development ratios can then be used to estimate development potential for vacant lands. Again, this approach can be used to identify a supply of less-developed land, which could then well be further developed during the forecast period. For the 2006 Maui Island forecast, lands were classified as follows<sup>7</sup>:

- Non-Urban:
  - Conservation (by RPT tax class)
  - Agricultural (by RPT tax class)
    - Large parcels (over five acres): These are viewed as unlikely to be developed without further land use permit applications and infrastructure.
    - Small parcels (up to and including five acres) with dwellings: These are viewed as developed.
    - Small parcels with no dwelling at present: These are treated as potentially developable for Residential use.
- Urban:
  - Residential
    - Single Family: in Residential use, with one or more dwelling units per acre.
    - Single Family – Low: vacant or with less than one dwelling unit per acre.
    - MultiFamily: parcels primarily in MultiFamily use, including both resident and visitor dwellings.

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<sup>7</sup> This account omits some special cases, detailed in the next chapter, in order to provide an overview of the process of identifying “development potential.”

- Commercial and Industrial
  - Commercial: parcels primarily in commercial use (i.e., with commercial buildings), with a ratio of building floor area to land area greater than 0.05.
  - Commercial – Low: parcels in commercial use, with a floor area ratio (FAR) less than 0.05.<sup>8</sup>
  - Industrial: parcels primarily in industrial use (i.e., with industrial buildings) with a FAR greater than 0.05.
  - Industrial – Low: parcels in industrial use, with a FAR less than 0.05.<sup>9</sup>
- Resort
  - Hotel: parcels primarily in hotel use.
- Government: Government parcels are treated as not available for commercial, industrial or resort development, and hence are separated out as a first step in assessing development potential.

This approach is intended to use available information to capture development potential. It involves analytic choices that are described in the course of the report and that may need to be adjusted in dealing with development potential on another island. (One example is the FAR standard used to sort developed from less developed Commercial and Industrial parcels above. This was not found to be useful for Moloka‘i, since parcels with large but unusable structures could be just as ripe for redevelopment as ones with smaller, underused structures. Another is the definition of “vacant” for Residential uses: parcels with old or small housing units may be ripe for development. The 2006 inventory treated parcels with housing valued by RPT at less than \$10,000 as “vacant.” For 2010, a different “vacancy” criterion is being used, i.e., dwelling area of less than 200 square feet.)

For Residential and Resort lands, the key measure of development potential is **housing or visitor units**. For commercial and industrial lands, the measure is total **interior area** – roughly comparable to (but larger than) Gross Leasable Area in commercial real estate terms. These must then be translated into acreage for the land use analysis.

## ***1.7 Forecasting Demand***

The forecast of demand for urban lands follows the SE Forecast projections. In simple terms, that forecast projects population and economic growth, and then translates it into demand for housing units, visitor units, commercial space and industrial space. The Land Use Forecast then identifies the urban lands and units needed to accommodate those projections.

The methodology used to forecast demand reflects both the islands’ distinctive social characteristics and County policy. First, the SE Forecast does not allocate County-level projections to all islands and CP areas in a single step. Lāna‘i and Moloka‘i are distinctive and

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<sup>8</sup> Not used in the present analysis, included in Commercial.

<sup>9</sup> Not used in the present analysis, included in Industrial.



have much smaller populations than Maui Island, so their development trends are likely to follow local conditions and opportunities, not just County-level trends. The demographic features which most distinguished these islands (dependency ratio, age structure, unemployment) were assumed to be changing slowly to converge with the County average. Next, long-term population increase and economic growth were assumed to occur. These trends may well not be realized; they were chosen as representing a future for which the County should plan, and one which reflects economic development efforts being made by communities, landowners and agencies on these islands.

Next, housing demand reflects the actions of participants in the housing market, including both residents and those non-residents who acquire property in Maui County. Resident housing demand can be projected on the basis of likely demographic change. With more residents, more homes will likely be wanted. Also, throughout the United States, a trend to house fewer people under each roof has continued for more than sixty years, while the physical size of homes has grown. The current aging of the population serves to continue the first trend.

Non-resident housing demand can be projected on the basis of RPT data on housing purchases and the addresses to which tax bills are sent. In the SE Forecast, this demand component has been refined in recent years by using residential property sales information in order to capture historical patterns that credibly could continue in the future. For Molokaʻi, non-resident demand has been treated as continuing at a steady rate. Non-resident and resident housing demand are studied together in order to appreciate market forces that can affect the supply of housing, its price, and jobs in the construction industry.

Demand for resort land is based at the County level on projected growth in visitor units, per the State's projections. For Molokaʻi, recent changes are recognized, and no new development beyond historical levels is projected by 2035.

Demand for Commercial and Industrial space is based on projected numbers of jobs in particular industries, as stated in the SE Forecast. Job projections are translated into demand, based on historic ratios of jobs per square foot of interior space.

Again, acreage associated with new commercial and industrial space demand cannot be forecast from the land area under existing structures. This is discussed in detail in Section 2.4

## ***1.8 Limitations***

The Land Use Forecast is designed to calculate need for urban lands. Consequently it does not attempt to project future use of lands designated Rural, Agricultural, or Conservation other than development of residential units on Rural and smaller Agricultural lots. Next, the forecast does not attempt to project need for government facilities or land.

For Lānaʻi, Molokaʻi, and Hāna, the SE forecast projects resident population growth and non-resident housing demand on a straight-line basis, independent of each other and of County-level trends. This approach responds to the size and isolation of these areas. However, small, isolated areas may be greatly affected by local events and initiatives, so any historically based forecast

may be overtaken by events. For example, Lanai Resorts, LLC was acquired by a new owner in 2012, who has new plans for the island. On Molokaʻi, Molokai Ranch has proposed and attempted several development strategies, but has since reduced its activity to ranching and agriculture.

A basic limitation of the study is that assumes that development will follow Community Plan designation and zoning. This has not consistently occurred. Molokaʻi Ranch operated “tentallow” visitor units and activities on lands designated for Agriculture and Conservation until 2008, without changes to the designation of the land. Also, Community Plan designations may reflect plans that have long been abandoned, and may hence be misleading. In this report, “Primary Use” assignments reflect uses and zoning, rather than Community Plan designation.

See Chapter 4 for further discussion of sources of uncertainty that could affect the forecast.

## **2. LAND USE AND DEMAND ON MOLOKA'I, 2010 TO 2035**

### **2.1 Introduction**

Moloka'i emerged geologically as three shield volcanoes. The West Moloka'i volcano is oldest and quite flat. East Moloka'i has a complex history of eruptions and erosion, that has led to high sea cliffs on the northern coast flanking deep valleys with floors well above sea level. The Kalaupāpā peninsula was composed of a late shield volcano, formed after the main volcano had ceased eruptions.<sup>10</sup>

West Moloka'i's low terrain attracts little rainfall. Its one town, Maunaloa, was the headquarters of Moloka'i Ranch. (See Figure 1 for the island sections and locations mentioned herein.) Central Moloka'i slopes from the southern shore up to Ka Lae, overlooking the cliff trail down to Kalaupāpā. It includes most of the arable land on the island. On the east side of the island, the southern coastal strip is narrow. Most of West and Central Moloka'i receive, on average, less than 30 inches of rainfall annually, while the mountains and valleys to the northeast receive up to 200 inches. A five-mile long tunnel, the longest in Hawai'i, carries water from Waikolu valley to Central Moloka'i. With agriculture and urban development in two sections of the island, and the bulk of water resources to the east, water management is a contentious issue.

On the west and southwest coasts are long beaches. Along the entire south coast of Moloka'i, the offshore waters are shallow. Fishponds were developed along the coast, providing a major food resource. Several of these ponds have been recently rehabilitated.

The island's commercial port is at Kaunakakai.<sup>11</sup> Kaunakakai is also the largest town and administrative center.

Fields in West and Central Moloka'i were planted in pineapple for much of the twentieth century, but both the plantations ceased operations by the 1980s. Since then, local agriculture has included ranching, production of melon and vegetable crops for sale in Hawai'i, and production of seed crops for export by agribusiness.

Most of West Moloka'i and part of Central Moloka'i are owned by Molokai Ranch (about 58,400 acres). The State of Hawai'i owns some 48,900 acres. Much of that State land – notably the agricultural land in Ho'olehua -- is held by the Department of Hawaiian Homelands, and may be leased to Native Hawaiians. (See Figure 2.)

Hālawā Valley in east Moloka'i was a major settlement and agricultural area. However, tsunami in 1946 and 1957 ended large-scale cultivation of taro in the valley bottom. Signs on roadways in the valley identify them as closed to the general public. The valleys that open above the north

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<sup>10</sup> Kalaupāpā is not part of Maui County, and will not be discussed in the course of this report.

<sup>11</sup> Until the 1950s, Kolo Wharf was used to ship pineapples. Hale o Lono harbor, further west, was built soon afterwards to ship sand and rock. It is used as a small boat harbor. (See Clark 1980 for further detail.)

shore (Pelekunu, Wailau, Pāpalaua) are not linked by road to the rest of the island. These were depopulated by the 1920s. Both taro lands and near-shore village areas were destroyed by the 1946 tsunami.

The island has an area of about 165,800 acres. As of late 2011, the State Land Use Commission identified Moloka‘i lands as follows:

**TABLE 1: STATE LAND USE CLASSIFICATION, MOLOKA‘I LANDS, 2010**

<i>District</i>	<i>Area</i>
Conservation	55,107 acres
Agricultural	113,192 acres
Rural	1,691 acres
Urban	2,144 acres

SOURCE: County of Maui Department of Planning database

The County’s Real Property TMK records show land-use classifications for Moloka‘i as of 2010:<sup>12</sup>

**TABLE 2: CLASS OF MOLOKA‘I LANDS IN TAX RECORDS, 2010**

<i>Class</i>	<i>Class Name</i>	<i>Area (acres)</i>
1	Improved Residential	729.85
2	Apartment	203.19
3	Commercial	64.44
4	Industrial	346.06
5	Agricultural	112,969.19
6	Conservation	53,924.90
7	Hotel/Resort	206.33
8	Unimproved Residential	577.21
10	Commercialized Residential	3.33

NOTE: The tax records exclude some government lands, e.g., roadways, so the total acreage may be smaller than shown in the preceding table. For 2010 and more recent years, “Commercialized Residential” covers bed-and-breakfast and legal transient rentals outside resort areas.

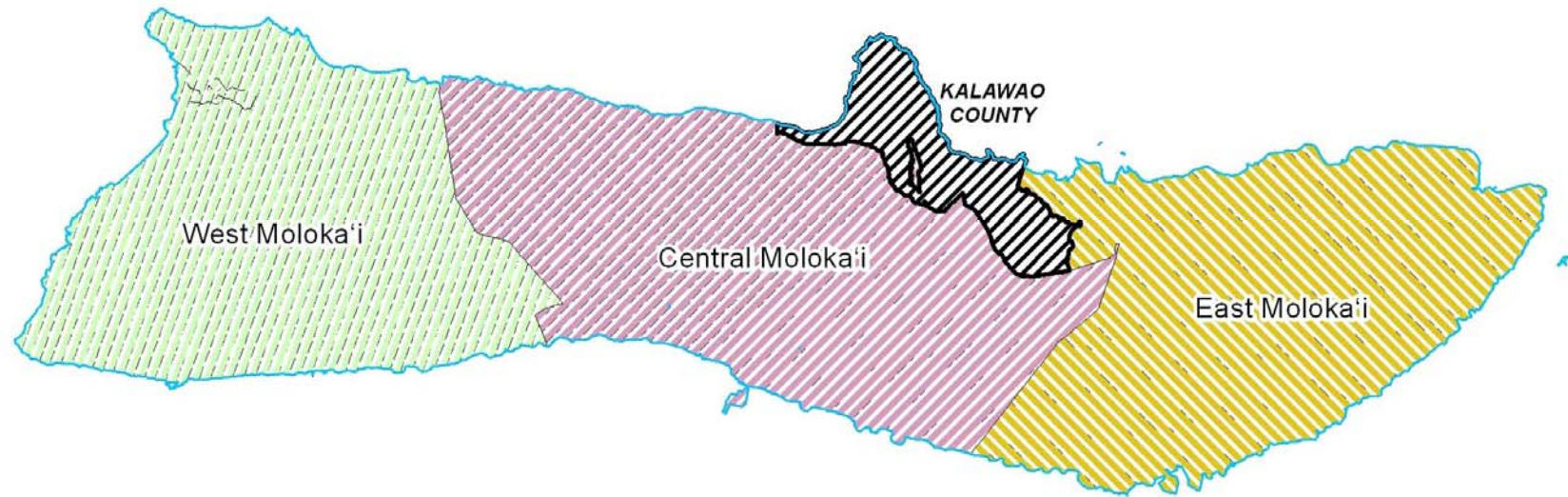
SOURCE: Real Property Tax 2010 download, fullndarclass10.txt, from County of Maui Document Center.

Neither of these classifications addresses the questions of this study, i.e., whether the supply of available lands is adequate to meet future demand. Three steps are needed: (a) analysis of current land use (not just tax status), (b) identification of lands with zoning or other approvals that would allow development, and (c) projection of future demand based on demographic and economic trends.

<sup>12</sup> The Real Property Tax Division now distinguishes land class and PITT (short for Pittsburgh) class. The PITT classification takes into account owners’ declarations that they are owner-occupants, and includes parcels in the Homeowner class, taxed at a lower rate than other residential or resort homes. PITT class, usually defined as identifying the highest and best use of land, should now be understood as a tax class, not a market class,

More recent tax records are available, but 2010 is treated as the baseline year for this report.

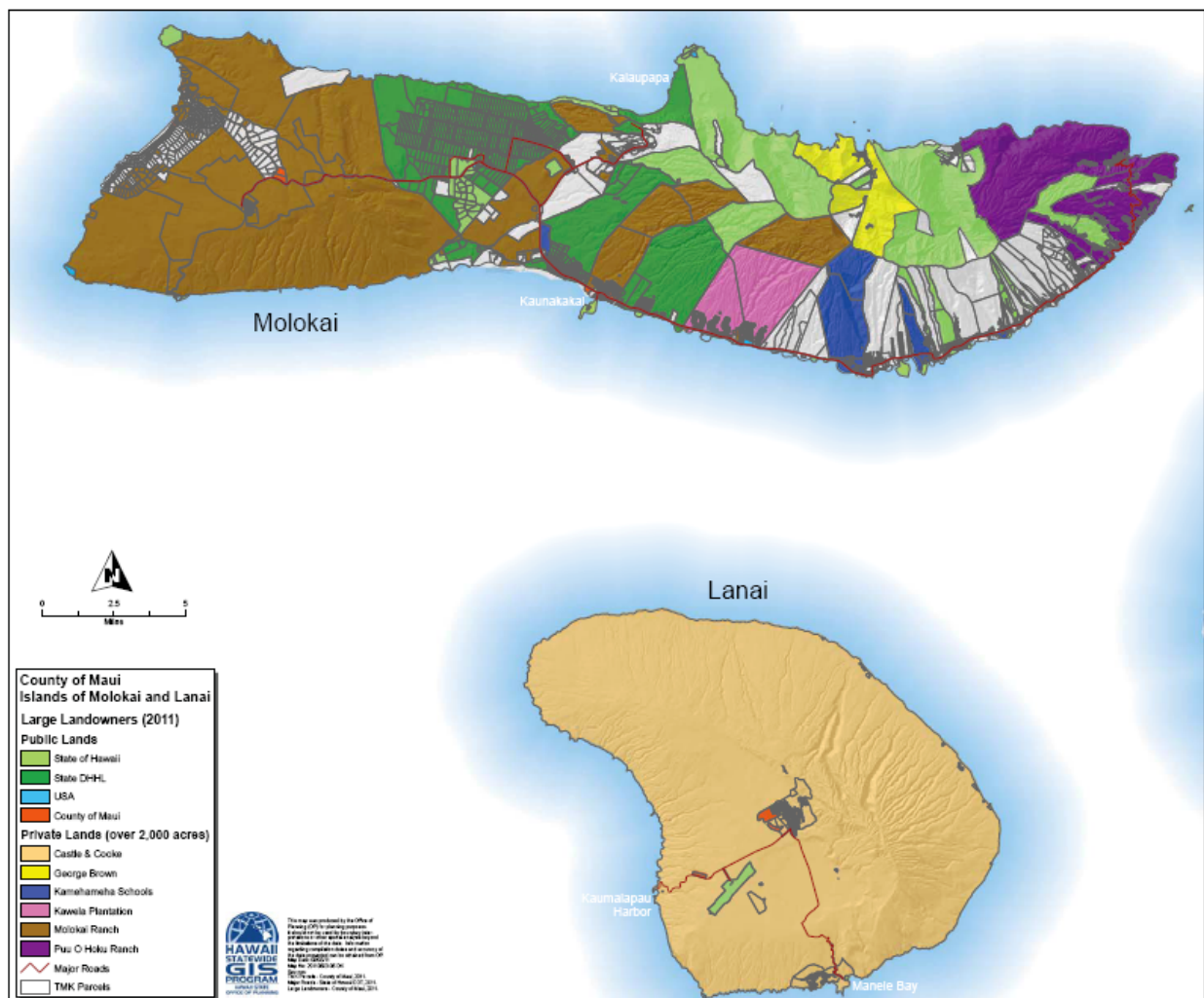
**Figure 1: Island Map: District Boundaries**



For this report, it is helpful to discuss the Maui County area on the island of Molokaʻi as divided into three districts: West Molokaʻi (TMK 2-5-1), Central Molokaʻi ( TMK 2-5-2 to -5), and East Molokai (TMK 2-5-6 to -0). The Kalaupapa peninsula (TMK 2-6) is administratively not part of Maui County, and is not discussed further in this report.

Land ownership varies among the districts, as can be seen in Figure 2. Nearly all of West Molokai is owned by a single party, Molokai Ranch. Central Molokai has large areas owned by the Department of Hawaiian Homelands (DHHL) and by Molokai Ranch, but also includes smaller parcels. A large part of the DHHL land has been subdivided and leased – so tenants, not the Department, make land use decisions. East Molokai is largely owned by small landowners, except in the Halawa area, where Puu o Hoku ranch has extensive property.

**Figure 2: Large Landowners**



SOURCE: Hawaiʻi Office of Planning GIS program, [http://hawaii.gov/dbedt/gis/maps/molokai-lanai\\_large\\_landowners.pdf](http://hawaii.gov/dbedt/gis/maps/molokai-lanai_large_landowners.pdf) .

The *Molokaʻi Community Plan* was passed by the Maui County Council in 2001. Figures 3 through 5 show how land was designated in the Community Plan. They also show areas important for the protection of watersheds and wellheads. Those areas are designated as of concern by the State Department of Health. Their impact on development is limited. (See discussion in Section 2.4.)

The distribution of acreage on Molokaʻi by Community Plan designation is summarized in Table 3. Major features of land use and planning on each map include:

#### *West Molokaʻi*

- Nearly all the district is designated Agricultural;
- The Kalua Koʻi resort area includes a mix of Hotel, Multi-family, Commercial, Single Family and Rural designations, covering a much larger area than has been developed;
- Maunaloa includes a mix of actual or recent uses (Single Family, MultiFamily, Commercial, Hotel). Nearby, land allotted for a Project District and a golf course testify to old requests, not current or anticipated uses.

#### *Central Molokaʻi*

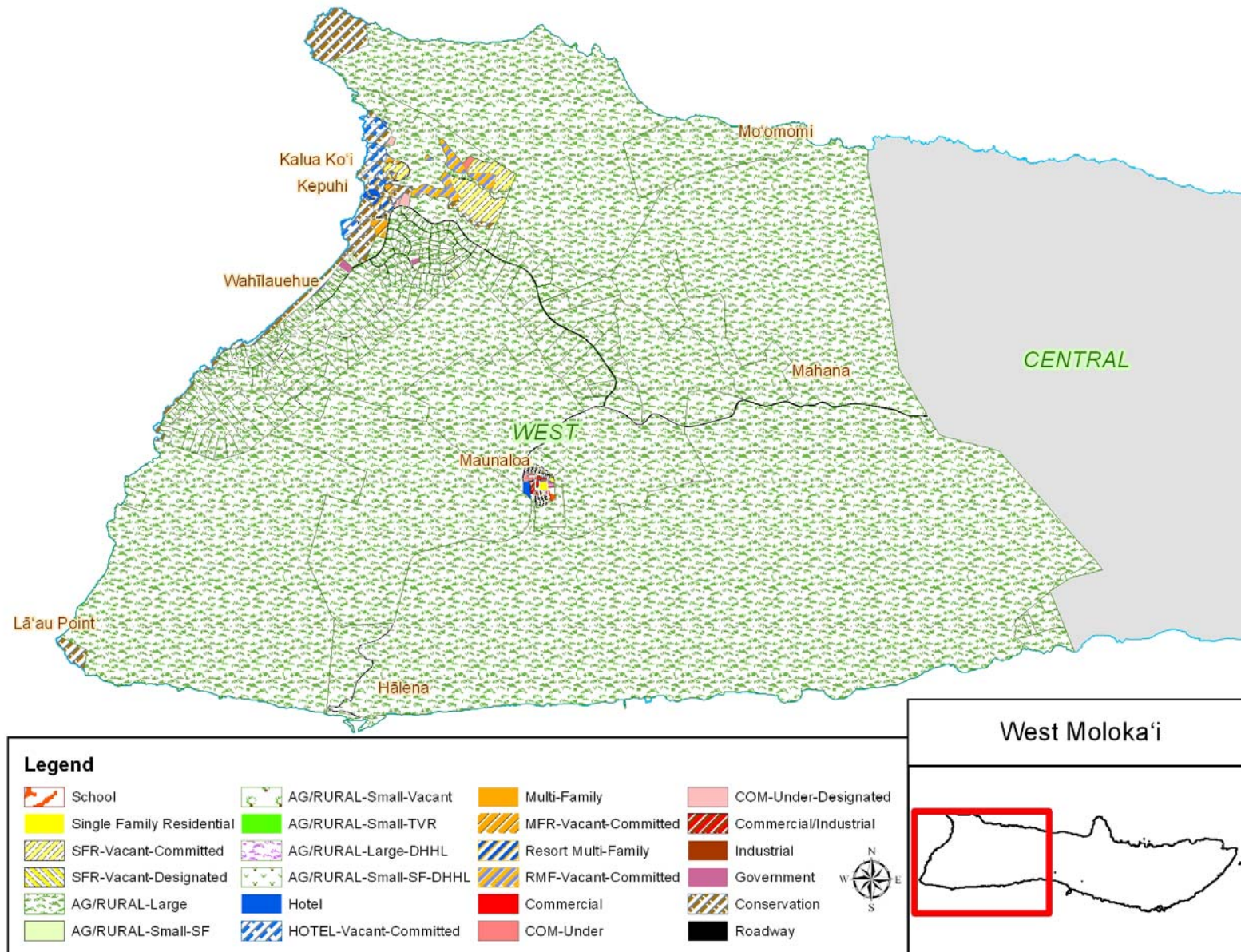
- Again, the majority of the area is in Agriculture, including the leased DHHL lands.
- Commercial lands are concentrated in Kaunakakai, while Industrial acreage is in the Molokaʻi Industrial Park at Palaʻau and near the shore in Kaunakakai;
- Residential areas are a mix of Single Family and Rural; in Kawela, agricultural lots have been subdivided, permitting some housing development on Agriculture lands;

#### *East Molokaʻi*

- The bulk of the land, in the north-facing valleys, is identified as Conservation;
- Rural lots extend along the highway to Waialua, while the slopes above them are in Agriculture; and
- Hālawā, at the eastern end of the road, is designated as a Conservation area.

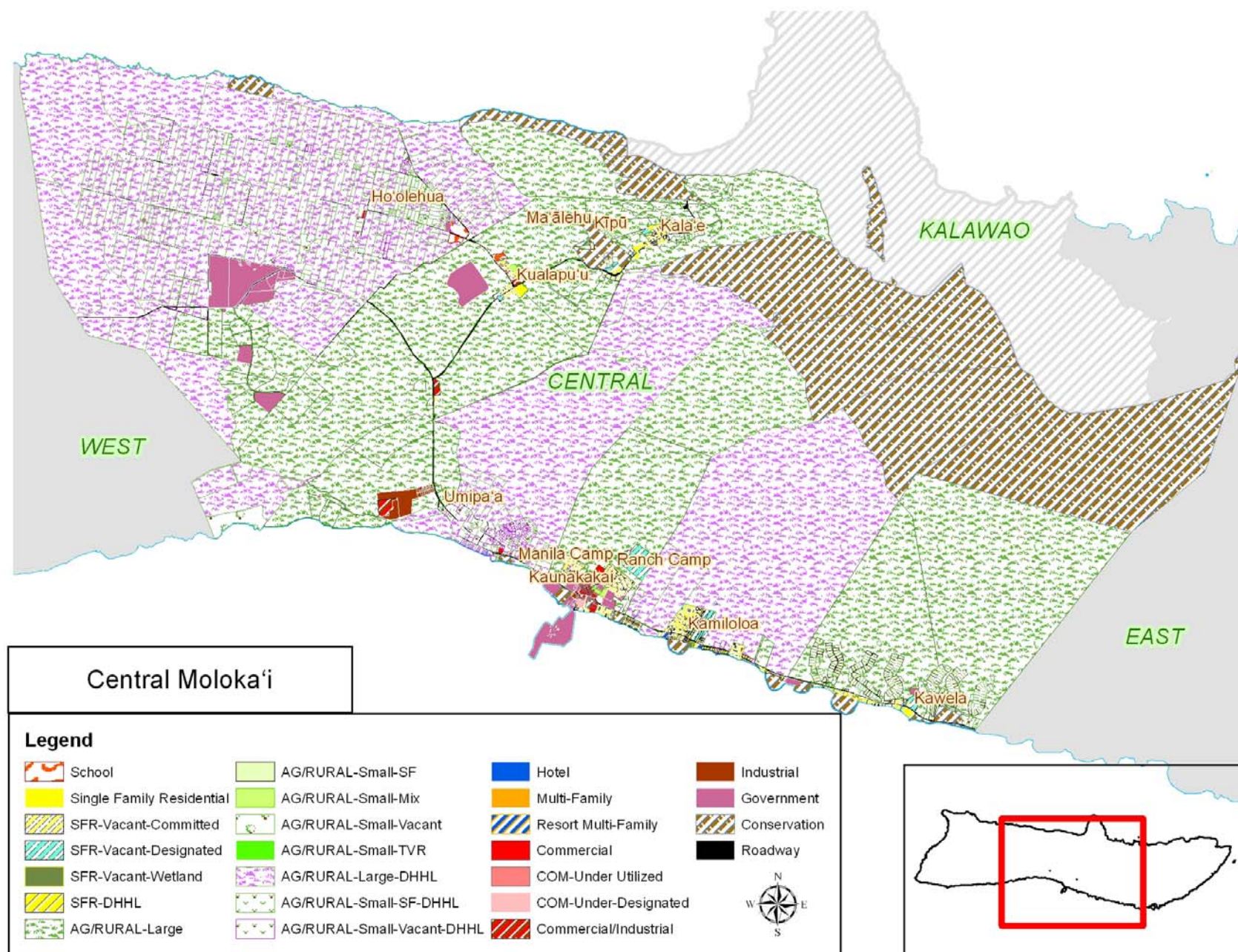


**Figure 3: Community Plan Map: West Moloka'i**



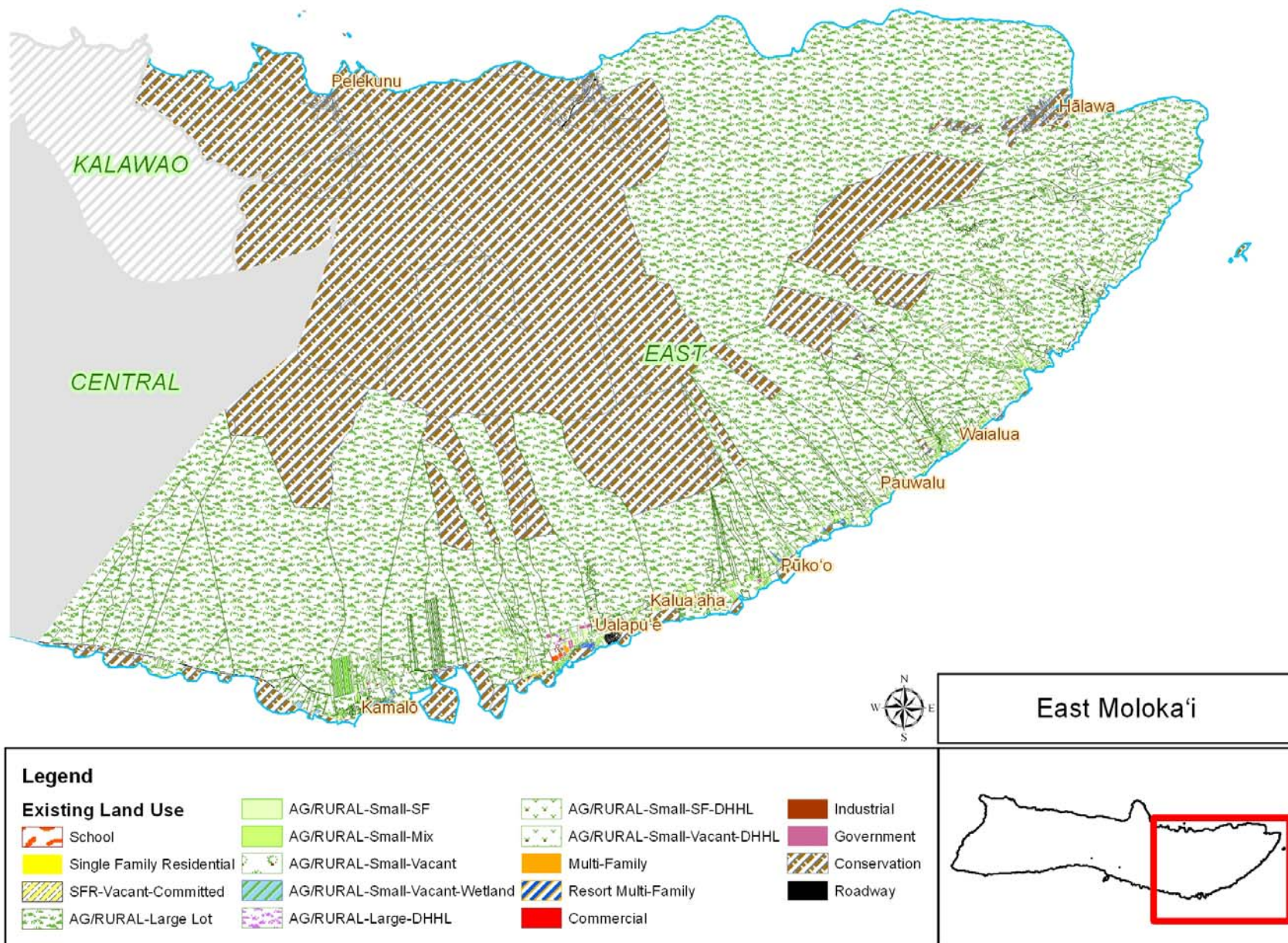


**Figure 4: Community Plan Map: Central Moloka‘i**





**Figure 5: Community Plan Map: East Molokaʻi**



**TABLE 3: DISTRIBUTION OF COMMUNITY PLAN DESIGNATIONS, MOLOKA‘I**

Community Plan Designation		CPlan Code No.	TMK 2-5 Acres	Acres			Share of Acreage		
				West	Central	East	West	Central	East
SF	Single Family Residential	000	813	109	699	5	13%	86%	1%
MF	Multi-Family Residential	100	91	74	11	6	82%	12%	6%
H	Hotel	200	131	131	-		100%	0%	0%
B	Business/Commercial	300	72	35	37		48%	52%	0%
LI	Light Industrial	410	83	13	70		15%	85%	0%
HI	Heavy Industrial	420	176		176		0%	100%	0%
PD	Project District	720	61	61	-	-	100%	0%	0%
URBAN SUBTOTAL			1,427	422	993	11	30%	70%	1%
A	Airport	430	221		156	65	0%	71%	29%
AG	Agriculture	500	112,167	47,792	49,713	14,661	43%	44%	13%
R	Rural	600	1,606	475	416	715	30%	26%	45%
OS	Open Space	820	678	624	53		92%	8%	0%
C	Conservation	830	54,591	859	14,804	38,928	2%	27%	71%
P	Public/Quasi-Public	900	349	67	262	21	19%	75%	6%
PK	Park	920	402	293	101	9	73%	25%	2%
PK (GC)	Park (Golf Course)	924	761	761			100%	0%	0%
Road	Roads	999	20	20	0	-	100%	0%	0%
		No code	472	7	114	351	2%	24%	74%
			172,694	51,322	66,611	54,761	30%	39%	32%

NOTE: Parcels are identified by their Community Plan designation. No distinction between occupied and vacant properties is shown here. All fishponds and similar wetlands have been treated here as Conservation land. “No code” parcels have not been listed in the County database by Community Plan designation. SOURCE: Long Range Division GIS database.

While the three districts have comparable land areas, they differ greatly in Urban land area, with some 422 acres in the West, 993 in Central Molokai, and only 11 acres in East Molokai, as shown in Table 3. In all three districts many homes have been built on lands designated as Agriculture. The agricultural settlement patterns are distinctive: Agricultural lots are part of the Kaluako‘i resort in the west, while much of the developed agricultural land in Central Molokai is in Department of Hawaiian Homelands lots in Hoolehua. In the East, settlement extends along the coastal highway, but urban clusters are few and small. No Commercial or Industrial acreage has been designated in the Community Plan for East Molokai.

## **2.2 Current Conditions**

The 2010 Census counted 7,255 residents of Moloka‘i, living in 2,513 households. Some 1,089 housing units, 30.2 percent of the housing stock, were vacant as of April 1, 2010.

Since the 2000 Census, the total count of housing units grew by 19.8 percent, 596 units, but the occupied housing unit count increased by only 93 units (3.4 percent). The resident population actually decreased by 149 persons.

Local communities vary greatly in population. For Census Designated Places, 2010 populations range from 376 in Maunaloa (West Moloka‘i) to 2,207 in Kualapu‘u and 3,425 in Kaunakakai (both in Central Moloka‘i), and to 425 in Ualapu‘e (East Moloka‘i). The majority of the island’s people live in Central Moloka‘i.

Pineapple cultivation had used much of the agricultural land in the west and central parts of the island for much of the last century. After they closed, ranching has been the major agricultural pursuit in West Moloka‘i, and Central Moloka‘i acreage has been devoted to a range of vegetable crops for Hawa‘i sales and local consumption.

Tourism in West Moloka‘i has foundered. The Kaluako‘i hotel and golf course have closed, leaving only condos and some single homes in the resort area. Molokai Properties Ltd. sought to develop tourism operations on its land and to revitalize Maunaloa as an attractive country town. Currently its operations are restricted to cattle husbandry and utilities that it has not been allowed by government to close down. It has supported plans for renewable energy from a wind farm, but no such plan is currently being advanced on Moloka‘i.

Little or no development is being proposed by others. After discussions with its beneficiaries, the Department of Hawaiian Homelands has indicated that it sought to develop residential lands at Ualapu‘e. Homestead priorities include development of a solar farm on DHHL land and support for residents’ agricultural and forestry projects. The latter could lead to an energy project, if kukui is grown in large amounts and it can be used effectively as a basis for biodiesel fuel.<sup>13</sup>

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<sup>13</sup> The DHHL *Moloka‘i Regional Plan*, published in 2010, expresses interest in, if not clear support for, large scale wind energy development.

In short, Moloka‘i has not seen demographic growth in recent years, and major economic initiatives have not succeeded. No proposals that would call for expanded commercial or industrial activity are currently being reviewed.

**TABLE 4: 2010 DEMOGRAPHICS, ISLANDS OF MAUI COUNTY**

	<b>Maui Island</b>	<b>Lāna‘i</b>	<b>Moloka‘i</b>
<b>2010 Data</b>			
Resident Population	144,444	3,135	7,255
Wage and Salary Jobs	61,240	1,260	1,950
Visitor Units (Total)	19,325	352	392
Average Visitor Census	46,023	673	682
<b>Important Ratios (2010)</b>			
% of Population			
age 0-19	25.0%	27.3%	29.2%
age 20-64	62.4%	57.6%	54.5%
age 65 and up	12.6%	15.1%	16.3%
Unemployment Rate	8.1%	6.5%	12.8%
AVC / Resident Population	31.9%	21.5%	9.4%

SOURCE: SE model (drawing on Census data and Hawai‘i Tourism Authority visitor data).

Moloka‘i has long had the highest unemployment rate of the islands of Maui County; that trend continued in 2010 (as shown in Table 4). The visitor count is about the same as Lāna‘i’s, but visitors constitute a much smaller share of the De facto population on Moloka‘i.<sup>14</sup>

The island’s 2010 land uses are summarized in Tables 5, 6 and 7. These reflect information on current structures, taken from the RPT data sets. (Additional information comes from GIS data, the *Visitor Plant Inventory* and an inventory of affordable MFR units kept by the Hawai‘i Housing Finance Development Corporation.) In the RPT data set, roads are excluded, so the total acreage is smaller than in other counts.

<sup>14</sup> Island visitor counts in the past have been uncertain for Moloka‘i and Lāna‘i due to survey methods and the small size of samples used for estimation. The most recent estimates from the Hawai‘i Tourism Authority show Average Visitor Census numbers for these islands very close to those in Table 4, but the Lāna‘i counts are now slightly larger than the Moloka‘i figures (2011 Annual Visitor Research Report tables posted at <http://hawaii.gov/dbedt/info/visitor-stats/visitor-research/>.)

**TABLE 5: STRUCTURES AND LAND USES ON MOLOKA‘I, 2010: ALL PARCELS**

LAND PARCEL CATEGORIES (Based on Principal Use)	AREA (Acres)	LAND USES					
		Single Family Units	Multi-Fam Residen Units (1)	Multi-Family Other Units (1)	Hotel Floor Area (sf)	Commercial Floor Area (sf)	Industrial Floor Area (sf)
Non-Urban							
Conservation	90,353	59	-	-	-	10,296	12,198
Ag/Rural - Large	65,971	334	-	-	-	128,257	75,875
Ag/Rural - Small - SF	1,132	696	-	-	-	28,926	-
Ag/Rural -Small - Other	1,320	-	-	-	-	37,241	1,796
Residential							
SFR	374	1,479	-	-	-	13,880	-
SFR -Under	82	37	-	-	-	4,142	600
MFR	57	-	325	282	-	1,770	-
MFR/COM	2	-	2	55	-	7,000	-
Commercial and Industrial							
COM	62	-	-	-	-	311,883	-
IND	148	-	-	-	-	7,355	55,804
COM/IND	23	-	-	-	-	25,934	54,104
Resort							
HOTEL	44	18	-	-	107,899	48,504	2,900
Urban, no Dwelling or Commercial structure	881	-	-	-	-	-	-
Affordable Rental (2)			215				
<b>TOTALS:</b>	160,449	2,623	542	337	107,899	625,188	203,277

NOTES: (1) The distinction between "resort" and "residential" units depends on tax classification (classes 7 and 2), and hence cannot be made when that classification is used to identify a Principal Use (Conservation and Agricultural lands).

(2) Unit counts taken from HHFDC inventory. All units counted as if Government (although some are managed or owned by non-government parties).

**TABLE 6: STRUCTURES AND LAND USES ON MOLOKA‘I, 2010: PRIVATE PARCELS**

LAND PARCEL CATEGORIES (Based on Principal Use)	AREA (Acres)	LAND USES					
		Single Family Units	Multi-Fam Residen Units (1)	Multi-Fam Resort Units (1)	Hotel Floor Area (sf)	Commercial Floor Area (sf)	Industrial Floor Area (sf)
Non-Urban							
Conservation	75,441	57	-	-	-	10,296	11,158
Ag/Rural - Large	55,317	199	-	-	-	123,422	62,380
Ag/Rural - Small - SF	527	404	-	-	-	4,992	-
Ag/Rural -Small - Other	1,164	-	-	-	-	12,281	1,796
Residential							
SFR	329	1,380	-	-	-	13,880	-
SFR -Under	73	35	-	-	-	-	600
MFR	57	-	325	282	-	1,770	-
MFR/COM	2	-	2	55	-	7,000	-
Commercial and Industrial							
COM	38	-	-	-	-	208,091	-
IND	34	-	-	-	-	6,200	49,479
COM/IND	23	-	-	-	-	25,934	54,104
Resort							
HOTEL	34	1	-	-	104,414	48,504	2,900
Urban, no Dwelling or Commercial structure Affordable Rental	833	-	-	-	-	-	-
<b>TOTALS:</b>	133,873	2,076	327	337	104,414	462,370	182,417

NOTES: (1) The distinction between "resort" and "residential" units depends on tax classification (classes 7 and 2), and hence cannot be made when that classification is used to identify a Principal Use (Conservation and Agricultural lands).

**TABLE 7: STRUCTURES AND LAND USES ON MOLOKA‘I, 2010: DHHL PARCELS**

LAND PARCEL CATEGORIES (Based on Principal Use)	AREA (Acres)	LAND USES					
		Single Family Units	Multi-Fam Residen Units (1)	Multi-Fam Resort Units (1)	Hotel Floor Area (sf)	Commercial Floor Area (sf)	Industrial Floor Area (sf)
Non-Urban							
Conservation	250	-	-	-	-	-	-
Ag/Rural - Large	8,145	133	-	-	-	2,868	6,520
Ag/Rural - Small - SF	603	290	-	-	-	23,934	-
Ag/Rural -Small - Other	124	-	-	-	-	23,698	-
Residential							
SFR	43	89	-	-	-	-	-
SFR -Under	-	-	-	-	-	-	-
MFR	-	-	-	-	-	-	-
MFR/COM	-	-	-	-	-	-	-
Commercial and Industrial							
COM	-	-	-	-	-	864	-
IND	-	-	-	-	-	-	-
COM/IND	-	-	-	-	-	-	-
Resort							
HOTEL	-	-	-	-	-	-	-
Urban, no Dwelling or Commercial structure Affordable Rental	5						
<b>TOTALS:</b>	9,169	512	-	-	-	51,364	6,520

NOTES: The area identified by Maui County Real Property Tax records as held by DHHL is less than half of the total DHHL acreage on Moloka‘i. The other DHHL lands appear to be in Conservation and not available for residential or other urban use.

(1) The distinction between "resort" and "residential" units depends on tax classification (classes 7 and 2), and hence cannot be made when that classification is used to identify a Principal Use (Conservation and Agricultural lands).



Some of the major findings of the tables are:

### ***Land Acreage***

- The urban area is a very small part of the island (about 1 percent).
- Within the area recognized as urban, a significant share either is vacant or has low residential density. Table 6 shows 833 acres as Urban but not developed, and 73 acres as SFR-Under. In addition, some 1,163 acres are in Agricultural lots of five acres or less, without any residential structure. Since farm dwellings could be built on Agricultural acreage, some of this land could see scattered residential development. All of these lands are, at least theoretically, available for development or redevelopment.
- Government acreage accounts for 16.6 percent of the island land area. With more than 9,000 acres of land, mostly in Agricultural lots, DHHL is the major government landowner.
- For the present study, Project Districts were not considered a land use for existing land use.<sup>15</sup> Molokaʻi's Project District, in Maunaloa, was treated as Agriculture.

### ***Structures and Land Uses***

**Residential (SFR and MFR):** Table 5 identifies a total of 3,502 housing units. The large majority of these are single-family units. While most are on SFR lands, the share on Agricultural lots (39% of single-family units) is higher than on the other islands.

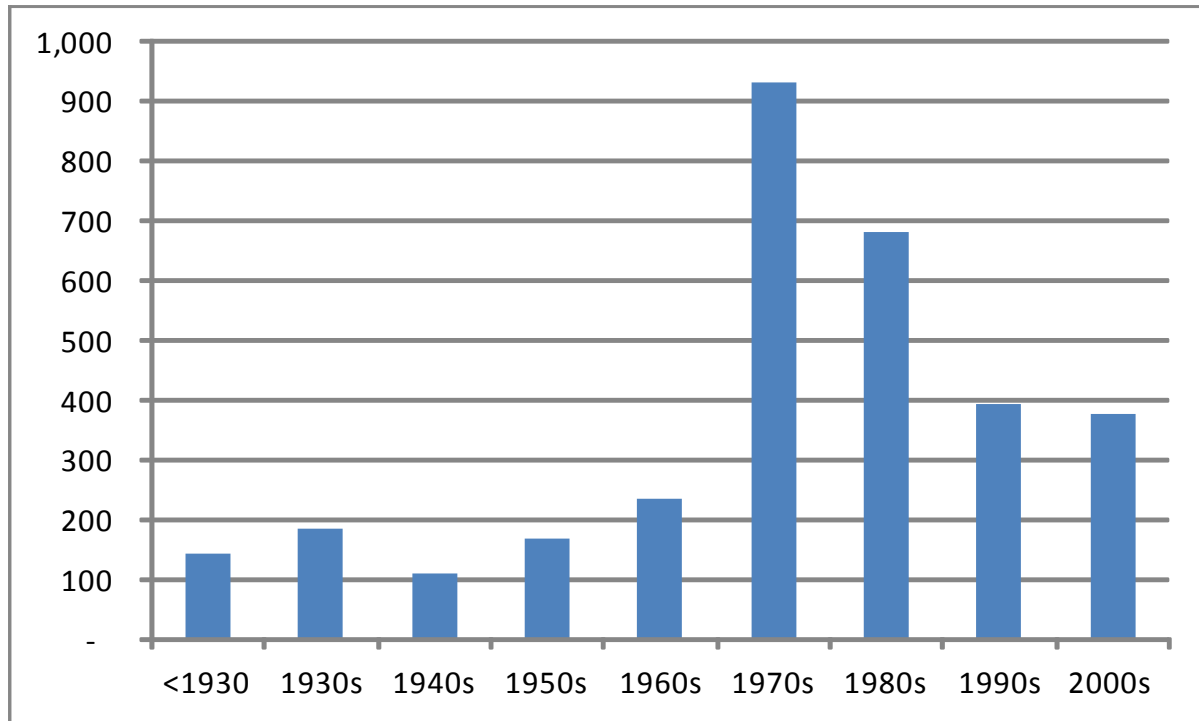
The RPT TMK database shows 3,288 dwellings built before 2010.<sup>16</sup> Of these, some 27 percent were built before the 1970s, and an additional 29 percent (943 units) were built in the 1970s. Housing development has slowed since then. In the first decade of the 21<sup>st</sup> century, 355 units were built on Molokaʻi. Figure 6 shows the historical trends for the island as a whole, and Figure 7 shows this analysis for the three districts. Figure 8 indicates that more home construction has occurred in Central Molokaʻi than in the other districts in each decade. Central Molokaʻi home construction peaked in the 1970s, while West Molokaʻi construction peaked in the next decade. For East Molokaʻi, the increase in construction since 2000 suggests that this area's population could be growing relative to the rest of the island.

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<sup>15</sup> This is a change in method from the 2006 Maui land use report. The aim is to provide a nearly exhaustive account of island lands and structures, without double counting, as well as an inventory of developable private land.

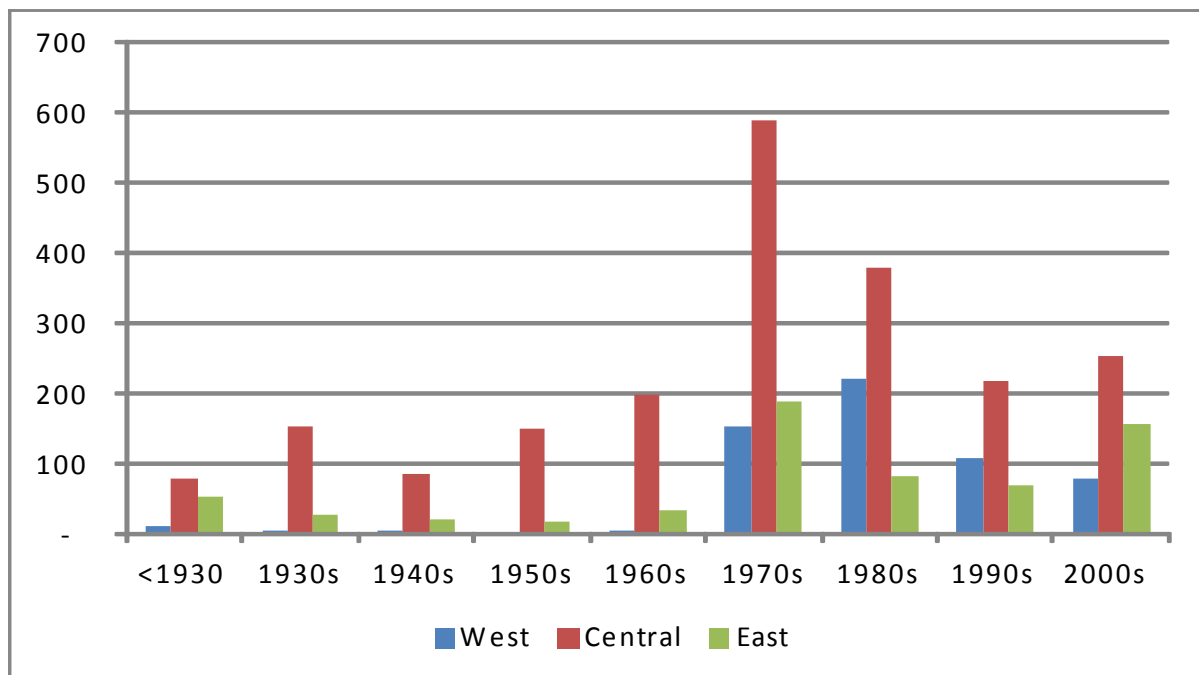
<sup>16</sup> TMK files downloaded in November 2012. No units are shown as built since 2010. The total is smaller than those in the preceding paragraph because TMK records do not count rental apartments units.

**Figure 6: Moloka‘i Dwellings, by Decade Built**



Source: 2010 RPT file dwelldat.dat

**Figure 7: Moloka‘i Dwellings, by District, by Decade Built**



Source: 2010 RPT file dwelldat.dat

The U.S. Census counted 3,602 housing units in 2010, of which 2,513 were occupied, and the remaining 995 were vacant.<sup>17</sup> (Vacant units may be second homes or units held for use by vacationers or migrant workers, or simply unoccupied and ready for rent or sale.) The 2010 vacancy rate (28%) was higher than for Maui Island (23%) and Lānaʻi (25%)..

**Commercial and Industrial:** For zoning purposes, a wide range of structures may count as Commercial: notably stores, offices, gas stations and apartment buildings. The square footage in Table 6 is estimated from RPT records of structures not owned by government. The fact that commercial uses are found at sites in nearly all the primary land use classes points to the fact that Molokaʻi has not seen conventional mall development

**Hotel/Resort:** Molokaʻi has one operating hotel (Hotel Molokai) and shuttered operations (Kaluakoi Hotel, Maunaloa Lodge). Condos near the western shoreline form the only active resort area. Vacation units are also rented in condo properties and individual units elsewhere along the southern shore line. At the east end of the island, Puʻu O Hoku Ranch has both an 11-room lodge and cottages available for rent.

## ***2.3 Projections of Demand***

Supply and demand projections can be based on several sources. The socio-economic forecast identifies demand for housing, and indicates demand for commercial and industrial space, on the basis of population and job growth. In recent years, both the population and employment have declined. Over the long term, increases are likely, and the SE forecast is for slow growth. Table 8 shows the anticipated changes in population and employment for Molokaʻi and the other islands in Maui County.

For Molokaʻi, the forecast recognizes slow growth of the visitor census and jobs as likely, supporting some resident population growth. The anticipated growth in visitor numbers is not expected to support development of new visitor units on Molokaʻi, because visitor unit development is forecast as occurring only when occupancy levels are much higher than on Molokaʻi.

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<sup>17</sup> The U.S. Census count of housing units, higher than the RPT count, could also reflect the presence of more than one household in a single structure (counted as multiple units for Census purposes, but a single unit for land use and real property counts).

**TABLE 8: PROJECTED POPULATION AND EMPLOYMENT, ISLANDS OF MAUI COUNTY, TO 2035**

	<b>Maui Island</b>	<b>Lānaʻi</b>	<b>Molokaʻi</b>
<b>2020 Forecast</b>			
Resident Population	169,540	3,463	8,014
Wage and Salary Jobs	73,088	1,587	2,456
Unemployment Rate	6.6%	5.3%	10.4%
Visitor Units (Total)	19,326	352	392
Average Visitor Census	53,834	793	803
<b>2035 Forecast</b>			
Resident Population	206,884	4,020	9,304
Wage and Salary Jobs	82,740	1,935	2,765
Unemployment Rate	5.0%	4.0%	8.0%
Visitor Units (Total)	22,316	352	392
Average Visitor Census	61,934	912	924
<b>Annual Rate of Change, 2010 to 2035</b>			
Resident Population	1.45%	1.00%	0.95%
Wage and Salary Jobs	1.21%	1.73%	1.41%
Visitor Units (Total)	0.58%	0.00%	0.00%
Average Visitor Census	1.19%	1.22%	1.22%

The forecast shown in Table 8 is the basis for the projected demand shown in Table 9:

**TABLE 9: PROJECTED DEMAND FOR URBAN SPACE ON MOLOKAʻI**

	<b>2000 to</b>		<b>2010 to</b>	
	<b>2020</b>	<b>2035</b>	<b>2020</b>	<b>2035</b>
Change in				
Resident Population	610	1,900	759	2,049
New resident housing demand	418	1,038	320	940
Non-resident demand	NA	NA	90	225
Demand for hotel/resort units	-	-	-	-
Jobs counted as leading to COM space	14	255	315	556
Jobs counted as leading to IND space	76	154	66	143
New COM space demand (1,000 sq. ft.)	<b>5</b>	<b>95</b>	117	207
New IND space demand (1,000 sq. ft.)	<b>65</b>	<b>130</b>	56	121

NOTE: Demand for COM and IND space calculated using 2000 job counts and 2010 space. Density for new space on Molokaʻi based on year 2000 ratios: 2.68 COM jobs per 1,000 square feet; 1.18 IND jobs per 1,000 square feet.

The socio-economic model suggests that some 410 additional housing units will be needed by 2020, and a total of 1,165 new units will be needed between 2010 and 2035.

Since job counts dipped in the first decade of the century, demand for new Commercial and Industrial space is likely to be small in the next few years, as the economy returns to earlier levels. By 2035, demand for Commercial space could reach 95,000 square feet of new interior space, and 130,000 square feet of Industrial space. (The boldface 2000 space demand figures in Table 9 are used in the report; the 2010-based figures, which assume that current spaces are fully used), are included for comparison.)

If the projected demand translated into new Commercial and Industrial space by 2035, the new space would amount to 35% of the interior area dedicated to these uses as of 2010.

Historically, most urban development has occurred in Central Molokaʻi. That trend seems likely to continue. However, residential development has spread along the length of the island, and may weill continue to do so.

## ***2.4 Supply of Urban Land***

For Maui and Lanaʻi, the Planning Department has lists of parcels for which new development is proposed. No proposals for new urban development have come from Molokaʻi in recent years. The supply of land and or redevelopment consists of:

- Vacant or low-density urban lands, as shown in Tables 6 and 7;
- Many small agricultural lots that, if located near basic infrastructure (roads, electrical and perhaps water) could support farm dwellings;
- One undeveloped 62-acre project district, in Maunaloa, for residential and park use;
- Hotel and commercial facilities in West Maui owned by Molokai Ranch, and now closed. These include at least 160 hotel units. Recent RPT records show Molokai Properties as owning some 18,600 square feet of Commercial space and 30,350 square feet of Industrial space. (The Ranch also owns housing, plantation housing, and agricultural facilities.)

In addition, DHHL has proposed development of 74 residential lots as well as agricultural lots.

Environmental factors can limit the land area available for urban development. First, oceanfront parcels may largely consist of wetlands, including fishponds. Such parcels have been treated as not available for development, and removed from the data set.

Next, three wellhead protection areas are located at Ka Lae/Kualapuʻu, Kawela, and Ualapue. These are established on the basis of surveys by the State Department of Health's Safe Drinking Water Branch. The County Department of Water in turn is responsible for regulations and other measures to protect the water supply. Their current practice, which may soon be established by ordinance, is to demand that new homes be on septic systems, not cess pools, that best

management practices to control runoff be included as conditions for new development, and some industrial and commercial uses that are especially likely to generate chemical runoff not be allowed in these areas. Since the wellhead protection measures limit uses, they do not limit the acreage available for development, only the ways in which development may proceed. (A groundwater protection area covers the northeast coast area, including the Pelekunu and Wailau valleys. These are already recognized as Conservation lands in the Community Plan, so the protection area does not limit possible urban land use.)

## ***2.5 Adequacy of Supply to Meet Demand through 2035***

When the information in Tables 9 is combined with indicators of potential supply, a clear picture emerges:

- **Housing:** Table 9 indicates demand for some 940 additional resident units by 2035. Anticipated demand for non-resident units by 2035 amounts to 225 units (based on historical rates of absorption). The available supply of land includes:
  - Urban land with no dwelling or commercial structure: 833 acres (privately held);
  - Small agricultural lots without any farm dwellings: 1,164 acres (privately held);
  - The Maunaloa Project District; and
  - DHHL lands that have been leased but not occupied, or that are slated for development in the coming years: at least 100 units in Central and East Molokaʻi.

The number of units that could be built on these lands depends on suitability for development and density. Table 10 provides an estimate of potential supply. It suggests that there is no need for changes in zoning and Community Plan designation to meet demand by 2035. It assumes that available acreage identified in Table 6 could be 50% occupied for urban uses by 2035.

- **Commercial Space:** The jobs associated with new demand for Commercial space could yield need for an additional 207,000 square feet of space. Much of the demand for space for services and self-employed jobs might be located in existing and future residential space, so actual demand could be less than shown in Table 9. Table 10 indicates that development of a very small fraction of available urban space for this use would result in a much greater supply than appears to be needed by 2035.
- **Industrial Space:** The jobs associated with new demand for Industrial space could yield need for an additional 121,000 square feet of space. Table 10 indicates that development of a very small fraction of available urban space for this use would result in a much greater supply than appears to be needed by 2035.

**TABLE 10: POTENTIAL SURPLUS OF SUPPLY OVER DEMAND FOR URBAN USES BY 2035**

	Area (acres)	Potential for development	Density (per acre)	Results
<b>Land for Development</b>				
Ag/Rural - Small - Other Housing	1,164	50%	0.25	146 units
Urban, No structure Housing	833	40%	4	1,333 units
Commercial		5%	0.3	544,282 sq.ft.
Industrial		5%	0.5	907,137 sq.ft.
Project District Housing	62	50%	2	62 units
DHHL New Lots and Infill				100 units
<b>Potential New Supply by 2035</b>				
Housing				1,640 units
Commercial				544,282 sq.ft.
Industrial				907,137 sq.ft.
<b>Supply minus Demand</b>				
Housing				475 units
Commercial				449,226 sq.ft.
Industrial				776,785 sq.ft.

The density estimates take into account the type of land available and the proposed development. For the Project District, density was lower than typical in urban areas because some share of the district is to be devoted to park space. The estimates of development potential follow on an assumption that half of the available space would be converted by 2035. That assumption is for demonstration purposes; it is not based on historical data or County policy. If it is found to be reasonable, the table indicates that more than enough land is available for potential urban growth.

### 3. METHODOLOGY

#### 3.1 *Existing Land Use Database*

The ELUD was originally developed in 2005 for Maui Island.<sup>18</sup> The current version was developed for the entire County. The ELUD depends on a mix of data resources, starting with the RPT database maintained by the County Department of Finance. Real Property data do not include some of the information needed to track urban land uses comprehensively; additional sources include listings of apartments and visitor accommodations. In developing the current ELUD, analytic steps using RPT data were separated from ones depending on additional information sources.

The information compiled annually by RPT is posted in a series of datasets on the Maui County Document Center. The following files are used for the analysis:

- FullIndarc.class.txt: Parcel data, including area;
- Pardat.txt: Parcel data, including government ownership;
- Fullag.txt: with information about areas dedicated for agricultural use
- Comdat.txt: with information about commercial structures, including type of use (e.g., warehouse, gas station); and
- Dwelldat.txt: including information about dwellings.

Information from these was compiled in a database format. Each file includes parcel taxkeys, so the information in different files could be recombined. For the current analysis 2010 tax records were used; the analysis could be updated in future with later records.

See Tables 5, 6 and 7 for ELUD results.

##### 3.1.1 Structures

Counts of structures were made for all of the Maui County portion of Molokaʻi, using the following definitions:

- SFR: included in Dwelldat.txt as a dwelling, with a total interior area greater than 200 square feet. Condominium identifier = 0: in other words, the dwelling or dwellings are not separately owned as condominiums. (Apartments for rent are not listed as dwellings in the RPT files, so this procedure identifies only single-family and duplex units.)

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<sup>18</sup> PlanPacific, Inc. *Land Use Forecast: Island of Maui, Maui County General Plan 2030*. Prepared for The County of Maui. Posted at [http://www.co.maui.hi.us/documents/Planning/Long%20Range%20Division/General%20Plan%202030/Tech%20Reports/2006\\_LUF\\_Report.pdf](http://www.co.maui.hi.us/documents/Planning/Long%20Range%20Division/General%20Plan%202030/Tech%20Reports/2006_LUF_Report.pdf)



- MFR: included in Dwelldat.txt as a dwelling, with an interior area greater than 200 square feet and a condominium identifier greater than 0.<sup>19</sup>
- COM: Structure in Comdat.txt, identified as commercial, service station or gas station
- IND: Structure in Comdat.txt, identified as warehouse.
- HOT: Structure in Comdat.txt, identified as hotel.

The remaining structure type in the Comdat.txt file for Maui is parking structure; none exist on Moloka‘i.

### 3.1.2 Primary Land Use

The count of structures summarized the buildings on Moloka‘i in 2010. Next, the dataset was analyzed in terms of ownership and primary use type. For each island, parcels owned by government agencies were separated from ones in private hands.

Since parcels can have more than one land use, designation of a “primary” use is a process of applying one rule to group some of the lands, and then another rule to group some of the remainder, and so forth. The following steps were taken for all land (which was also separated into Government and Private holdings):

1. Parcels with a hotel structure count as HOTEL. (This step was taken first because hotel parcels often include Conservation lands in golf courses and beaches.)
2. Parcels including Conservation land (by RPT land class code 6) count as CONS. When a parcel includes both Conservation and Agricultural uses, it is counted as CONS.
3. Parcels in the remaining data set classified as Agricultural (land class code 5) were placed in three categories:
  - a. AG-Large (parcels over five acres in size)
  - b. AG-Small-SF: Class 5 parcels of five acres or less, with dwellings.
  - c. AG-Small-Other: Class 5 parcels of five acres or less, without dwellings. (These could have other structures. The key reason for separating them is that these could come to have farm dwellings without further land use permits. While a farm dwelling could equally be placed on a large parcel, most of these are far from infrastructure, so that the cost of a dwelling would be very high.)
4. Parcels in the rest of the database were counted as urban. Ones with residential uses were sorted as:
  - a. SFR: Single family residential

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<sup>19</sup> The condominium identifier is a sequence of numbers that distinguishes each property within a condominium property regime parcel with a four digit CPR number. Condominium tax map keys typically have a “Condo Master” listing with no interior area and an identifier of “0”, and additional properties identified in sequence (0001, 0002, etc.).

- b. SFR - Under: Single family residential with less than one dwelling unit per acre
  - c. MFR: Parcels in MultiFamily residential use, with less than 3,000 square feet of Commercial use;
  - d. MFR-COM: Parcels with both Commercial use (3,000 square feet or more) and residential use.
- 5. Commercial and Industrial parcels were sorted by the structures on these parcels, with warehouses identified as Industrial and various commercial uses (stores, offices, gas stations) as Commercial.
  - a. For COM parcels, 80% or more of floor space was in Commercial structures;
  - b. IND parcels had 80% or more in Industrial structures; and
  - c. For COM/IND parcels, Commercial floor area was from 20% to 80% of the total floor space.
- 6. Tables 4 and 5 also count apartments, based on an inventory of affordable housing. These are shown as a separate primary land use category, since they are not listed as dwelling units in the RPT data files.
- 7. Urban acreage (as defined by land use class) without a structure was noted as potential areas for future expansion.

This set of procedures focused on residential space and demand, and responded to concerns that much of the Agricultural lands on Maui could be converted to residential use as “gentlemen’s estates” and the like without requesting zoning changes. Few small agricultural lots are found on Moloka‘i, so the procedures used for Maui do not address a current local issue.

### **3.1.3 Adjustments after Completing the RPT Analysis**

The following additions and adjustments were made to the data set:

- The number of hotel units was identified using the Hawaii Visitor Plant Inventory;
- Apartments were identified from the inventory kept by the State and posted by the Hawaii Housing Finance Development Corporation.
- Wetlands and fishponds were excluded from the analysis of urban lands.

## **3.2 Supply of Land for Future Development**

The analysis of vacant parcels depends on TMK reports of vacancy in 2010. Field investigation might indicate that some of these are not suitable for development because of topography or lack of nearby infrastructure.

### **3.3 Demand Analysis**

#### **3.3.1 Housing Demand Indicators from the Socio-Economic Forecast**

Much of the trend analysis in the SE forecast derives from the State DBEDT projections for Maui County as a whole. Special assumptions have been developed for Molokaʻi (and for Molokaʻi and Hāna on Maui) since many population and economic trends in outlying areas are not particularly responsive to changes at the center of Maui Island. Key assumptions for Molokaʻi include:

- Resident population will increase by one percent per year.
- The number of persons per household will continue to become smaller, just as in past decades on the island and county; the rate of decrease in household size is assumed to be the same as for the county as a whole.<sup>20</sup> (The County household size forecast is extrapolated from historical trends for the County and State.)
- Non-resident housing demand is projected to be constant, at a level based on non-resident ownership of housing built in the first decade of the century.

The assumptions used to estimate change in population are independent of past plans submitted by Molokaʻi Ranch.

#### **3.3.2 Multipliers Used to Translate Employment to Demand for Space**

Demand for additional commercial and industrial space is based on projected changes in employment, with the current spaces treated as the space needed for the level of employment found in the year 2000. The assumptions used to estimated demand for commercial and industrial space are shown in Table 11.

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<sup>20</sup> Strictly speaking, the forecast deals with “persons per household,” not “household size” since persons in both households and group quarters are counted. In 2010, no residents on Molokaʻi were counted as in group quarters.

**TABLE 11: EMPLOYMENT AND DEMAND FOR COMMERCIAL OR INDUSTRIAL SPACE**

<b>Industry</b>	<b>Share of employment associated with COM space</b>	<b>Share of employment associated with IND space</b>
Wage and Salary Jobs		
Agriculture	0%	0%
Construction	0%	20%
Manufacturing	0%	100%
Transportation, communication, utilities	0%	100%
Trade	90%	10%
Banking, finance, real estate	100%	0%
Hotel services	0%	0
Other services	100%	0%
Government	0%	0%
Self-Employed Jobs	20%	10%

Source: PlanPacific, Inc. *Land Use Forecast: Island of Maui, Maui County General Plan 2030 Technical Resource Study*. Prepared for The County of Maui. Honolulu, HI, 2006.

Most jobs are wage and salary jobs. “Self-employment” covers a wide range of activities, including work as a sole proprietor of a business without other employees, part-time work as an owner/manager of real estate, and side businesses that may supplement wage and salary income. Many self-employed activities do not generate demand for separate commercial or industrial space.

The current version of the SE model generates the following employment figures by island for key years:

**TABLE 12: EMPLOYMENT AND DEMAND FOR SPACE, BY ISLAND**

<i>Counts</i>	<b>2000</b>	<b>2010</b>	<b>2020</b>	<b>2035</b>
<b>Maui Island</b>				
COM jobs	39,302	38,587	48,228	58,103
IND jobs	9,904	8,033	8,870	10,605
<b>Lānaʻi</b>				
COM jobs	530	544	681	885
IND jobs	133	92	146	196
<b>Molokaʻi</b>				
COM jobs	1,240	939	1,254	1,495
IND jobs	215	226	291	369
<i>Change from 2000</i>				
<b>Maui Island</b>				
COM jobs		(715)	8,926	18,801
IND jobs		(1,871)	(1,034)	701
<b>Lānaʻi</b>				
COM jobs		15	151	355
IND jobs		(41)	13	63
<b>Molokaʻi</b>				
COM jobs		(301)	14	255
IND jobs		11	76	154

NOTE: COM and IND jobs are those jobs identified above as associated with COM or IND space.

Employment in key sectors contracted from 2000 through 2010. Employment counts will rebound and are expected to exceed 2000 levels on Molokaʻi by 2020. To analyze demand for space, 2010 space was taken as baseline, but analyzed in relation to 2000 employment.

For Molokaʻi, 2.68 COM jobs were associated with 1,000 square feet of COM space, and 1.18 IND jobs per 1,000 square feet of IND space.

The 2006 Maui Island analysis focused on the land area available for new development; in this report, emphasis falls on units and interior space, not on acreage. These are more immediate measures of likely demand, and hence are more useful when dealing with Molokaʻi.

## 4. SOURCES OF UNCERTAINTY

Any forecast provides a basis for planning about the future, subject to much uncertainty. The strength of any forecast lies both in (more or less) accurate predictions and in a clear understanding of the limits of the forecast. It is encouraging to know that a forecast has produced numbers that, over time, are useful predictions. It is even more useful to be able to learn whether a forecast depends on assumptions that no longer apply. In that case, stakeholders can revise their expectations based on changed conditions.

Major sources of uncertainty for the Molokaʻi land use forecast are:

- **Straight-line assumptions in the socio-economic and land use forecasts.** The versions of the SE forecast used for the existing Community Plan and the 2006 published SE report depended in part on proposals and expectations in Molokaʻi environmental impact statements. For the current forecast, market assumptions developed in the 1990s have been set aside, and historical trends are used instead to project population and housing demand.
- **Lack of information about resources needed to implement any plans.** The largest private landowner on Molokaiʻi has closed down operations other than stockraising, and announced no definite plans for its property. Sustainment of infrastructure and facilities, much less any redevelopment, would demand levels of investment that apparently are not forthcoming for any party now active on Molokaʻi. Next, any non-agricultural development in Central and West Molokaʻi depends on limited water supplies and on claims to rights to water supply that are likely to be hotly contested.
- **Lack of information about Commercial and Industrial density.** To the outside observer, some of the commercial activities on the island may appear to be shoehorned in older buildings. Adaptive reuse has been an ongoing process, with older single family homes sometimes converted to stores, eating places and other uses. On the other hand, commercial vacancies exist, especially in Maunaloa. The amount of space needed for future uses could vary significantly depending on whether new or renovated facilities are found for them.
- **Proposed new energy development.** This forecast assumes that new energy development will not affect demand for urban lands. The assumption seemed likely for the proposed wind development, but may not apply to other approaches to energy sustainability for Molokaʻi and for Hawaiʻi.
- **Resident demography and employment.** Molokaʻi unemployment has been high over many years. Still, the population has increased slowly, despite little job creation. Unemployment is expected to decline by 2035, while the population continues to grow.
- **Non-resident demand.** Non-resident housing demand has proceeded slowly. This could change with new housing products or marketing. At the state and national levels, there

may be less demand for golf-related resort homes as the baby boom generation ages.<sup>21</sup> Non-resident demand has not been considered a major factor outside of West Molokaʻi.

The Land Use Forecast starts with the existing economy, with structures in place, and with current zoning. Even if innovative new plans are put forward, they will be shaped by these conditions. Again, the impact of such plans can in time be judged by the extent to which new populations, employment, and land uses diverge from the forecasts presented here.

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<sup>21</sup> See, for example, <http://www.realestateconsulting.com/blog/adam-mcabee/hawaii-offers-diverse-investment-opportunities>, from April 2012 and, more generally, N. Howe, “What makes the boomers the boomers?” *Governing*, September 2012, posted at <http://www.governing.com/generations/government-management/gov-what-makes-boomers.html>

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