

PROJECT DOCUMENT

County of Hawai'i General Plan Comprehensive Review

Base Scenario Technical Report

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Introduction

In a CommunityViz scenario planning analysis, the base scenario “sets the stage” and becomes the scenario against which all future scenarios will be measured. In everyday terms, a scenario is both a map and a set of tabular data. Technically, it is a CommunityViz Scenario 360 analysis containing an analysis geodatabase and additional reference data in the form of tables and spatial datasets.

The purpose of the base scenario is to characterize the current conditions in the County of Hawai'i (CoH). It draws on the best available information to represent key attributes such as population, dwelling units, land use, and the locations of nonresidential activity. It typically does not represent one specific moment in time but rather it is a reflection of the present day using data published in the recent past. An effort was made to obtain the most recent data possible; most are less than five years old. Below is a short list of primary data sources and their publication dates. See the final section of this report for a complete list of data used in the analysis:

- Hawai'i Real Property Tax Office (RPT), June, 2015
- US Census American Community Survey (ACS), 2013
- CoH Transportation Road Centerlines, April 2011
- CoH Parcels, April 2014

In this task, the necessary data was gathered, reviewed, pre-processed, and then loaded and further processed to create a Scenario 360 analysis containing the single base scenario.

Residential Dwelling Units and Non-Residential Square Footage

Two of the most important questions that the base scenario attempts to answer are: Where are people living (dwelling units)? and Where are businesses located (non-residential square feet)? To answer these questions, we are relying primarily on RPT data. Received from the RPT Office in June, 2015, this dataset is one of the most up-to-date data sources available. While the RPT database represents a reliable and recent source of information at a very fine scale, these data are primarily collected for purposes of taxation and therefore are not a comprehensive census of dwelling units or non-residential space. As noted in this project's Capacity Technical Report, the RPT data do not address illegal dwelling units, group quarter populations, informal businesses such as home offices, farm stands or certain agricultural businesses. The RPT data join to the parcel data via the tax map key (TMK) system of unique identifying numbers. Because the RPT data sometimes have multiple records per parcel (e.g. condominiums) these data had to be summarized by parcel TMK number before being joined to the parcel data. This process ensured that each parcel has the correct number of dwelling units and nonresidential square feet.

To create future scenarios, we will rely on forecast data provided in the Trends and Forecast Analysis developed by SMS Hawai'i. Much of the trends and forecast analysis draws not from the RPT data but rather from different data sources, including the US Census American Community Survey (ACS). Because of these differing data sources, differences will likely arise between the base scenario and the SMS 2015 forecasts. For example, the number of dwelling units in the base scenario may differ from the number of dwelling units reported in the SMS 2015 forecast.

In the table below the number of dwelling units and non-residential square footage are reported by Forecast Analysis Zone (FAZ).

Name	Dwelling Units	Non-residential Space
Hilo	15,851	12,949,274
Honoka'a- Pa'auilo	2,413	475,779
HPP-Orchidland	6,654	120,247
Ka'ū	3,473	303,389
Kawaihae-Puakō-Waikoloa-Resorts	6,000	5,469,716
Kea'au-Kurtistown	1,650	1,662,139
Lower Puna	4,835	412,579
North Hilo-Hāmākua Coast	2,834	376,681
North Kohala	2,516	544,897
North Kona	17,170	11,647,546
South Kona Villages	3,510	884,231
Upper Puna	4,884	203,331
Waimea	3,310	1,378,579
Total	75,100	36,428,388

Land Use

Current land use was identified using RPT data, primarily using the RPT "Land Class" classification system and residential and non-residential structures. As an RPT product, the land use is by-parcel and does not address land use at a finer scale. This land use classification does not include space dedicated to roads and other rights-of-way that are generally not included in the CoH parcel maps. This explains the discrepancy of 18,864 acres in total land area (the current size of the island is approximately 2,577,920 acres). RPT's Land Class uses nine classes, and to create the base scenario three classes were added to create a more comprehensive land use palette.

Land Use	Acreage
Conservation	65,654
Rural	860,144
Agriculture	46,995
Rural Residential	12,736
Residential	27,504
Residential Multifamily	3,066
Commercial	1,641
Hotel Resort	645
Industrial	906
Government	1,492,582
Vacant	46,606
Unknown	577
Total	2,559,056

The land use categories are defined as the following:

- **Agriculture.** These are parcels with >50% active agriculture regardless of RPT use class. This uses the University of Hawai'i 2012 CropLayer map which represents a broad variety of agricultural uses (e.g., orchards) but does not include pasturelands. May contain residential and/or non-residential uses.
- **Commercial.** This class comes from the RPT land class field of the same name. Commercial use may be loosely defined here and include diverse uses such as offices, retail, food services, churches and private educational facilities among many other uses.
- **Conservation.** This class comes from the RPT land class field of the same name. May be owned by the government, but in these cases their land class attributions were maintained.
- **Government.** The government class was created by querying owner names for federal, state or county owners where the RPT land class was either commercial, industrial or residential with the exception of parcels owned by the Department of Hawai'i Home Lands and Hawai'i Housing Authority where their RPT land class value was retained.
- **Residential.** This class is the merger of the RPT classes Homeowner, Affordable Rental and Residential. This class primarily reflects single family houses although many community and non-profit uses may be present in this category (e.g., hospitals, churches, etc.). Where applicable, some properties in these categories were alternately classified as Residential Multifamily.
- **Residential Multifamily.** The Apartment RPT land class field was renamed Residential Multifamily. Some Residential properties were also reclassified as Residential Multifamily where the number of units made this apparent.
- **Rural.** These are parcels larger than three acres without residential or non-residential buildings and that lack active agriculture (according to the UH crops layer). May contain structures that were included in the RPT data.
- **Rural residential.** Parcels less than three acres with one or more structure that are zoned for agriculture by the State or County but lack active agriculture (according to the UH crops layer).

- Vacant. The RPT did not appear to maintain a vacant land use. Vacant in this sense is defined as any property smaller than 3 acres without any existing dwelling units or non-residential square footage.
- Unknown. Some properties did not have a land class designation. Where possible these properties were assigned to other land uses when the owner name, location and context made the land use apparent. Many but not all of these unclassified parcels were public roads and are discussed below. Properties where the land use remained unclear retained the land use designation of Unknown.

Roads & Parcels

The CoH parcel data included roads as parcel features in the dataset. While managing roads and other right of ways as parcels is useful for ownership and taxation purposes, in terms of spatial planning these features are better represented by a dedicated line feature set (i.e., a roads layer) that has been mapped and attributed for this purpose. In addition it is very uncommon that public roads convert into new land uses, being a remarkably persistent use on the landscape. In light of this, 1,277 road features were removed from the base scenario parcel dataset where this usage was clear. There are many cases, however, of road parcels being classified as residential or agricultural uses and in these cases they are difficult to systematically remove from the analysis. There was an effort to remove many of these features using spatial statistics—the peculiar geometry of roads makes them possible to identify using area and perimeter ratios. While these efforts succeeded in removing an additional 287 roads from the analysis, some may remain. While these remainders may not be a problem in the base scenario, they could cause issues later in the process by becoming areas where new residential or nonresidential uses occur in future scenarios.

List of data used in the Base Scenario analysis

Data Name	CommunityViz Analysis Name	Source Date	Source
Agriculture crops	CropLayer_2012	2012	University of Hawai'i
Agricultural lands of importance	AgLandofImportance	1977	CoH
Major airports in CoH	Airports	Unknown	CoH
Recent building permits (2012-2015)	BuildingPermits_2012_2015_v2	2015	CoH, Department of Public Works
Public bus routes	BusRoutes	Unknown	CoH
2010 Census block groups	CensusBlockGroup2010	2010	US Census
2010 Census blocks	CensusBlocks2010	2010	US Census
Census designated Places	CensusDesignatedPlaces	2013	US Census
2010 Census tracts	CensusTracts2010	2010	CoH
CoH coastline	Coastline	Unknown	CoH
Community development plan boundaries	CommunityDevelopmentPlans	Unknown	CoH
USFWS critical habitat boundaries	CriticalHabitat	Unknown	USFWS
District boundaries	DevelopmentPlanDistricts	Unknown	CoH

HELCO electric utility poles	ElectricUtilityPoles	2015	HELCO
CoH emergency shelters	EmergencyShelters	Unknown	CoH
Business enterprise zones	EnterpriseZone		CoH
Fire stations	FireStations	Unknown	CoH
Forecast analysis zone, from 2010 census tracts	ForecastAnalysisZone	2015	SMS
Hospitals	Hospitals	Unknown	CoH
Land cover map of CoH, with emphasis on vegetation communities	LandCoverGAPHawaii	2003	USGS
Land Use Pattern Allocation Guide (LUPAG)	LUPAG	2012	CoH
Parcel boundaries	Parcels	2014	CoH
Parcels with full RPT attribute dataset attached	Parcels_RPT	2014-15	CoH
Police stations	PoliceStations	Unknown	CoH
Public park areas	PublicParks	Unknown	CoH
Planned unit developments	PUD	2014	CoH
Road centerlines	Roads	2011	CoH
Private Schools	SchoolsPrivate	2011	Hawai'i Association of Independent Schools
Public Schools	SchoolsPublic	2012	State Department of Education
Special Management Area	StateCoastalZoneManagement	2013	CoH
State land use conservation subzones	StateLandUseConservationSubZones	2015	Department of Land and Natural Resources
State land use districts	StateLandUseDistricts	2014	State Land Use Commission
Major subdivisions	SubdivisionsFinal	Unknown	CoH
Major towns as points	Towns	Unknown	CoH
Volcano hazard zones	VolcanoHazardZones	1991	USGS
Waste water sanitary sewer pipeline	WastewaterServicePipeline	2015	CoH
Potable water pipeline	WaterServicePipeline	2015	CoH
Zoning	Zoning	2015	CoH