AIRPORT LAYOUT PLAN UPDATE AND NARRATIVE REPORT

HOLLISTER MUNICIPAL (KCVH) AIRPORT

AIRPORT LAYOUT PLAN UPDATE AND NARRATIVE REPORT

For

HOLLISTER MUNICIPAL AIRPORT
Hollister, California

Prepared for the

CITY OF HOLLISTER

By

Coffman Associates

In Association with

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HOLLISTER MUNICIPAL (KCVH) AIRPORT

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HOLLISTER MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN UPDATE AND NARRATIVE REPORT

This report is intended to provide the City of Hollister, the California Department of Transportation – Division of Aeronautics (CALTRANS), and the Federal Aviation Administration (FAA) with a document that depicts the most current plans for airport improvements at Hollister Municipal Airport (CVH or Airport). This document focuses primarily on the development direction and facility changes that have taken place since the completion and approval of the last Airport Layout Plan (ALP) Update in 2009, and provides a concept for future development potential over the next several years. The report provides a narrative and an updated ALP drawing set, which consists of a computer-generated drawing that depicts the current and future facility conditions.

AIRPORT BACKGROUND

CVH is located approximately 2.5 miles north of the City of Hollister, along Highway 156B in the north-central quadrant of San Benito County, California. On a regional scale, the Airport is located roughly 40 miles to the east of Monterey and 93 miles south of San Francisco. Owned and operated by the City of Hollister, CVH is situated on approximately 343 acres at an elevation of 229.6 feet above mean sea level (MSL). **Exhibit A** depicts the location of the Airport and its surroundings.

The Airport began as a private grass airstrip when aviators Frank Bryant and Roy Francis performed an air show on May 18 and 19, 1912. The airstrip became known as Turner Field in the mid-1920s after the property was acquired by local crop duster, Everett Turner. The year 1932 brought the first annual Hollister Air Race and the first parachute jump and, in 1936, a special airmail delivery service was introduced.

In 1941, the Navy purchased the property and the airfield became Navy Air Auxiliary Station (N.A.A.S. Hollister). At its peak operation, N.A.A.S. Hollister housed 200-300 Navy personnel undergoing advanced weapons training and military operations/attack procedures prior to entering the war zone. N.A.A.S. Hollister operated as a military base until June 1946 when civilian activity was allowed. On December 9, 1947, the facilities were turned over to the City of Hollister through a quit claim deed.


Foresthill
Lincoln
Auburn
South Lake Tahoe
Woodland
505
5
50
Placerville
101
Santa Rosa
Davis
Sacramento
Ione
Jackson
Nevada
California
Petaluma
Napa
Fairfield
5
Lodi
San Andreas
395
Vallejo
Concord
San Francisco
Stockton
Manteca
Oakland
205
Tracy
Modesto
Pacifica
San Carlos
Fremont
580
Mammoth Lakes
Mariposa
Menlo Park
San Jose
Hollister Municipal Airport
Merced
Los Banos
Chowchilla
Santa Cruz
Madera
Hollister
Fresno
California
Marina
Salinas
5
Mendota
Monterey
Seaside
Kingsburg
Orisi
Soledad
Greenfield
Huron
Vicinity Pictured
King City
Coalinga
Avenal
Corcoran
101
Delano
5
Paso Robles
Wasco
Shafter
San Luis Obispo
Taft
Oceano
Santa Maria
Hollister Municipal Airport
Bolsa Rd.
CAL FIRE Firefighter Matt Will Memorial Highway
Santa Barbara
101
San Felipe Rd.
McClosky Rd.
Fairview Rd.
Ventura
Oxnard
Bena Vista Rd.
Santa Ana Rd.
4th St.
Meridian St.

Main Aircraft Parking Apron with Based and Itinerant Aircraft

Since the Airport does not have an airport traffic control tower (ATCT), the number of annual operations taking place at the Airport must be estimated. The aggregate operations were estimated by the Federal Aviation Administration (FAA) in the 2017 *Terminal Area Forecast* (TAF) to total 52,600. These operations comprised 21,600 itinerant general aviation operations; 1,200 itinerant military operations; and 29,800 local general aviation operations. Generally, local operations are characterized by training operations, and itinerant operations are those performed by aircraft with a specific origin or destination away from an airport. Typically, itinerant operations increase with business and commercial use since business aircraft are not usually used for large scale training activities. The TAF projections are based upon local and national economic factors, as well as conditions within the aviation industry. Typically, forecasting at airports without an ATCT is based upon historic operations reported in the Airport Master Record Form 5010. This data is generally held constant for the forecast projections unless specified by a local or regional FAA official.

Although the most current TAF and Airport Master Record report 85 and 173 (including helicopters, gliders, and ultra-light aircraft) based aircraft, respectively, a based aircraft list verified by Airport management reported a total of 140 based aircraft in March 2017. The based aircraft listed are composed of 100 single engine piston fixed-wing aircraft, 10 multi-engine piston fixed-wing aircraft, three turboprops, two rotorcraft, six jets, and 19 gliders which are classified in the “other” category. The “other” category includes aircraft such as gliders, balloons, dirigibles, and ultralights.

CVH is largely surrounded by industrial and agricultural land with some single residence homes situated throughout the area. The Airport does not have mandatory or voluntary noise abatement procedures in place for aircraft operations. It should also be noted that the Airport does not currently have height and hazard zoning in place to protect navigable airspace surrounding the Airport against obstructions.

AIRPORT ROLE

CVH is recognized within the FAA’s *National Plan of Integrated Airport Systems* (NPIAS) as a General Aviation (GA) airport. The NPIAS is a compilation of airports within the United States that are viewed as assets to national air transportation by the FAA. Airports included within the NPIAS are qualified for federal funding through the Airport Improvement Program (AIP).

Given that CVH is designated as a GA airport within the NPIAS, certain criteria must be met in order to be viewed by the federal government as an asset to the air transportation system. Typically, GA airports have at least 10 based aircraft and are approximately 20 miles from any other airport listed in the NPIAS. Within the GA designation, there are four different airport categories: National, Regional, Local, and Basic. CVH is classified within the Local category. Local GA airports are critical components of the GA system, providing communities with access to local and regional markets. Typically, local airports are located near larger population centers but not necessarily in metropolitan areas. They also accommodate flight training and emergency services. These airports account for 38 percent of all NPIAS airports. It should be noted, however, that CVH meets many of the requirements for the Regional airports within the NPIAS. This classification is attained by airports that support regional economies by connecting communities to regional and national markets located in metropolitan areas with relatively large populations.

CalFire Air Attack Base

The Airport also serves as an Air Attack Base for the California Department of Forestry and Fire Protection (CalFire), which plays a large role in suppressing wildfire over a six-county area. CalFire aircraft, which include Grumman S-2T airtankers, UH-1H Super Huey helicopters, and Rockwell OV-10 air tactical aircraft, are strategically located at 13 air attack and nine helitack bases around the state.

In addition to its inclusion in the NPIAS, CVH is also included in the *California Aviation Systems Plan* (CASP). Within the CASP, CVH is designated as a GA regional airport. As presented in **Table A**, this qualification requires 100 percent accommodation of the design aircraft fleet at 60 percent useful load, a 75-foot primary runway width, minimum 12,500 pound single wheel load (SWL) pavement rating, visual approach slope indicator (VASI)/precision approach path indicator (PAPI) visual approach guidance system to a lighted runway, global positioning system (GPS)/very high frequency omnidirectional range (VOR) instrument approach procedures, 24-hour on-field weather observation, Jet A and 100LL fuels, and an ALP not more than five years since its last approval.

TABLE A
CASP Minimum Standards for Regional GA Airports
Hollister Municipal Airport

Facility Description	CASP Regional GA Airports	CVH
Runway Length	Sufficient to accommodate 100% of the aircraft fleet at 60% useful load per FAA AC 150/5325-4B	Yes
Runway Width	75'	100'
Runway Pavement Strength	12,500 lbs SWL	34,000 lbs SWL
Runway Safety Area	Formula determined per AC 150/5300-13	Yes
Visual Aids	VASI/PAPI to lighted runway if no approach lights; REIL for IFR runway without approach lights	PAPI-2 to runway equipped with MIRL and REILs
Approach Procedures	GPS/VOR	RNAV (GPS)
Runway/Approach Lighting	None	None
24-Hour On-Field Automated Weather AWOS/ASOS	24 hour on-field weather observation	AWOS
Fuel Available	Jet A and Avgas	Jet A and Avgas
Airport Layout Plan	Approval date fewer than five years old	Yes (pending approval of this document)

ASOS: Automated Surface Observation System
AWOS: Automated Weather Observation System
GPS: Global Positioning System
IFR: Instrument Flight Rules
lbs: Pounds
PAPI: Precision Approach Path Indicator
REIL: Runway End Identifier Lights
SWL: Single Wheel Loading
VASI: Visual Approach Slope Indicator
VOR: Very High Frequency Omnidirectional Range

Source: *California Aviation System Plan* (CASP), General Aviation System Needs Assessment Element, 2010.

Historical funding and projects are presented in **Table B**. Between 1984 and 2016, CVH received 19 grants from the FAA for a combined total of approximately $22.6 million. Most recently, in 2016, CVH was granted $261,888.00 in AIP entitlement funding to conduct this current ALP Update and Narrative Report.

TABLE B
Grant History
Hollister Municipal Airport

Year	Project	Amount	Grant Number
1984	Conduct airport master plan study	$46,661	001-1984
1985	Install runway and apron lighting	$154,336	002-1985
1987	Rehabilitate runway	$405,090	003-1987
1988	Acquire land for approaches, rehabilitate runway and taxiway	$604,980	004-1988
1991	Improve airport drainage, extend runway and taxiway, install taxiway lighting, install vertical visual guidance system, install apron lighting, acquire ARFF equipment, acquire land for development	$5,000,000	005-1991
1994	Rehabilitate and extend taxiway	$1,220,000	006-1994
2000	Install perimeter fencing, weather reporting equipment, miscellaneous NAVAIDS, and acquire easement for approaches	$1,779,834	007-2000
2001	Conduct airport master plan study	$133,856	008-2001
2005	Install perimeter fencing	$450,000	009-2005
2007	Rehabilitate runway and taxiway – slurry seal	$427,500	010-2007
2008	Rehabilitate runway and taxiway	$127,926	011-2008
2009	Repair vertical visual guidance system, conduct miscellaneous study, rehabilitate taxiway lighting (LED lighting, REILs, and taxiway reflectors)	$192,620	012-2009
2010	Conduct miscellaneous study (PMS study)	$28,443	013-2010
2011	Improve Runway Safety Area for Runway 13-31 (Design) – Grade, drain, compact, and hydro-seed approximately 73 acres; Excavate, grade, reconfigure RSA, approximately 80,000 CY of material; Install/construct over 9,000 linear feet of drainage pipe.	$176,612	014-2011
2012	Improve Runway Safety Area for Runway 13-31 (Construct) - Grade drain, compact, and hydro-seed approximately 73 acres; Excavate, grade, reconfigure RSA, approximately 80,000 CY of material; Install/construct over 9,000 linear feet of drainage pipe.	$2,290,629	015-2012
2013	Rehabilitate runway/Reconstruct northwest 3,690 feet of Runway 13-31 and associated parallel and access taxiways (Phase 1, Design Only)	$383,368	016-2013
2014	Rehabilitate runway/Reconstruct northwest 3,690 feet of Runway 13-31 and associated parallel and access taxiways (Phase 1 Construction)	$3,253,500	017-2014
2015	Rehabilitate runway and taxiway (Design and Construct) – Reconstruct northwest portion of Runway 13-31 (approximately 35,600 SY)	$5,620,666	018-2015
2016	Update airport master plan study (ALP Update and Narrative Report)	$261,888	019-2016
Total		$22,557,909	

LED: Light Emitting Diode
REIL: Runway End Identification Lighting
CY: Cubic Yards
SY: Square Yards
Source: FAA Grant History.

EXISTING FACILITIES

Airport facilities can be categorized into two separate classifications: airside facilities and landside facilities. The airside facilities are directly associated with aircraft operations. These facilities may include, but are not limited to, runways, taxiways, airport lighting, and navigational aids. Landside facilities pertain to facilities necessary to provide safe and efficient transition from surface transportation to air transportation, as well as support aircraft servicing, storage, maintenance, and safe operation. The existing airside and landside facilities are presented in **Exhibit B**.

AIRSIDE FACILITIES

CVH is equipped with two intersecting asphalt runways: Runway 13-31 (northwest-southeast) and Runway 6-24 (northeast-southwest).

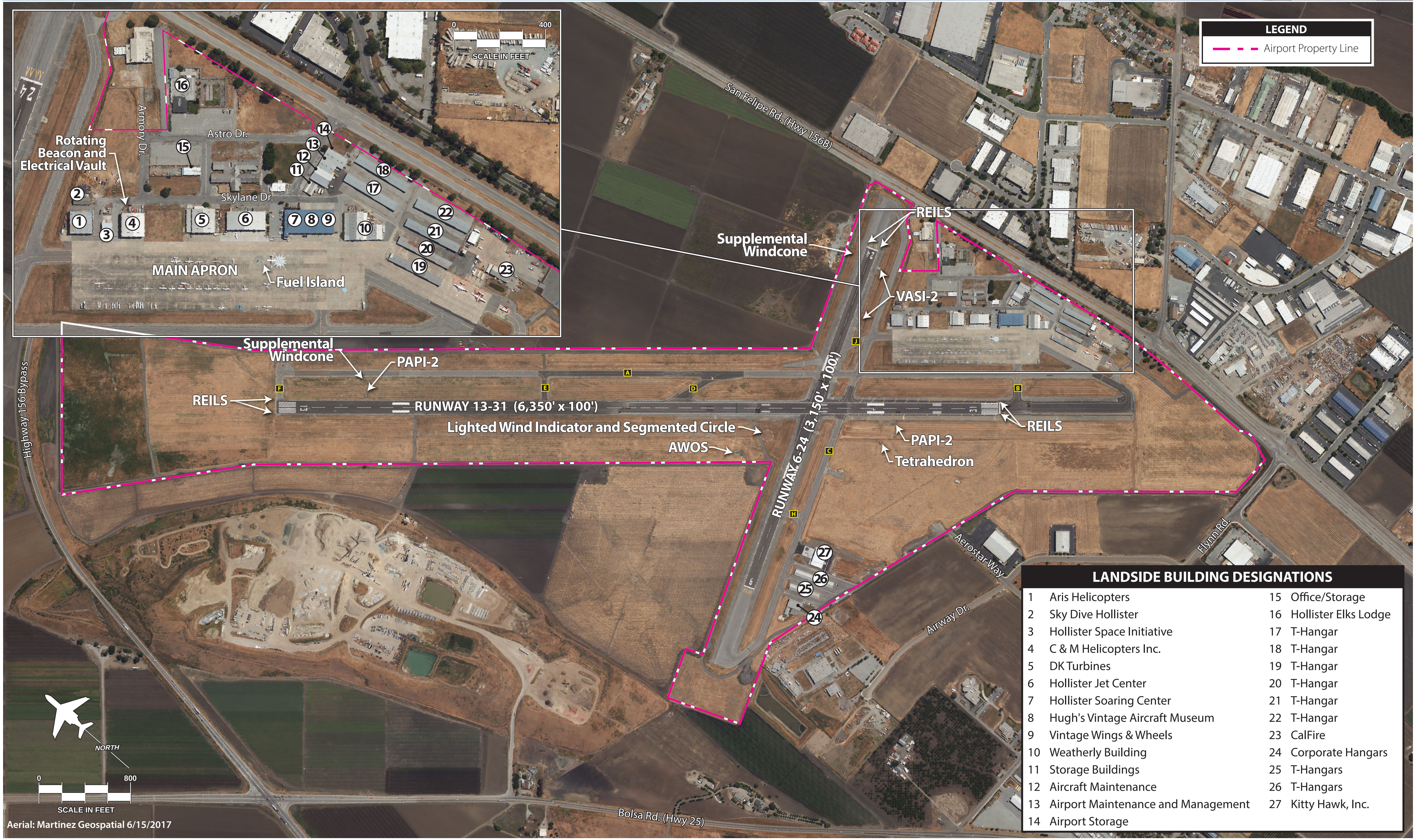
Runway 13-31 is 6,350 feet long by 100 feet wide. Runway 31 is marked as a precision instrument runway, while Runway 13 is marked as a non-precision instrument runway. Precision instrument markings include landing designation, centerline, threshold markings, aiming point, touchdown zone, and edge markings. Non-precision markings include a runway designation, threshold, and aiming point. Runway 13-31 has a gradient of 0.4 percent, sloping up from northwest to southeast. Runway 13-31 is equipped with runway end identifier lights (REILs) and two-box PAPI systems serving both ends. In addition, the pavement strength rating for Runway 13-31 is published as 34,000 pounds for single wheel loading (SWL) and 45,500 pounds for dual wheel loading (DWL). It should be noted that Runway 13-31 has recently undergone reconstruction in an effort to improve its pavement condition. Runway 13-31 is served by a 50-foot wide full length parallel taxiway (Taxiway A), with a separation of 300 feet from runway centerline to taxiway centerline. In addition, there are five taxiways that connect Runway 13-31 and parallel Taxiway A, which include Taxiways B, C, D, E, and F moving southeast to northwest. A sixth taxiway serves as a lead-in taxiway farther southeast providing access to the Runway 31 threshold.

Two-Light Precision Approach Path Indicator

Runway 6-24 is 3,150 feet long by 100 feet wide with basic markings that include runway designations, centerline, and edge markings. Runway 6-24 has a gradient of 1.0 percent, sloping up from east-northeast to west-southwest.

The runway is also served by a 50-foot wide full length parallel taxiway (Taxiway C) with a separation of 250 feet from runway centerline to taxiway centerline. Two taxiways connect Runway 6-24 to parallel Taxiway C and include Taxiways H and J moving southwest to northeast. Lead-in taxiways are also present on each end of the runway, providing additional access to/from the parallel taxiway system.

Runway 6-24 has published pavement strength ratings of 30,000 pounds SWL and 45,000 pounds DWL. Runway 24 is served by two-box VASIs and REILs.



LANDSIDE BUILDING DESIGNATIONS

1	Aris Helicopters	15	Office/Storage
2	Sky Dive Hollister	16	Hollister Elks Lodge
3	Hollister Space Initiative	17	T-Hangar
4	C & M Helicopters Inc.	18	T-Hangar
5	DK Turbines	19	T-Hangar
6	Hollister Jet Center	20	T-Hangar
7	Hollister Soaring Center	21	T-Hangar
8	Hugh's Vintage Aircraft Museum	22	T-Hangar
9	Vintage Wings & Wheels	23	CalFire
10	Weatherly Building	24	Corporate Hangars
11	Storage Buildings	25	T-Hangars
12	Aircraft Maintenance	26	T-Hangars
13	Airport Maintenance and Management	27	Kitty Hawk, Inc.
14	Airport Storage		

Both runways are equipped with medium intensity runway lighting (MIRL). **Table C** summarizes the air-side facilities data available at CVH. Navigational aids (NAVAIDS) include a lighted wind indicator, a tetrahedron that indicates the direction of the wind, supplemental windcones, a segmented circle, and a rotating beacon that remains in operation from sunset to sunrise.

TABLE C
Airside Facilities Data
Hollister Municipal Airport

	Runway 13-31	Runway 6-24
Runway Length (feet)	6,350’	3,150’
Runway Width (feet)	100’	100’
Runway Surface Material	Asphalt	Asphalt
Condition	Good	Good
Pavement Markings	Non-Precision/Precision	Basic
Runway Weight Bearing Capacity		
Single Wheel Weight Bearing Capacity	34,000 lbs	30,000 lbs
Dual Wheel Weight Bearing Capacity	45,500 lbs	45,000 lbs
Runway Lighting	MIRL	MIRL
Runway End Identifier Lights (REILs)	Yes (Both Ends)	Yes (Rwy 24)
Taxiway Lighting	MITL/Edge Reflectors	MITL/Edge Reflectors
Approach Aids	PAPI-2 (Both Ends)	VASI-2 (Rwy 24)
Instrument Approach Procedures	RNAV (GPS) RWY 31	None
Weather or Navigational Aids	AWOS CTAF/UNICOM Segmented Circle Lighted Wind Indicator Tetrahedron Supplemental Windcones Rotating Beacon	

MIRL: Medium Intensity Runway Lighting
MITL: Medium Intensity Taxiway Lighting
PAPI: Precision Approach Path Indicator
VOR: Very High Frequency Omnidirectional and Range
RNAV: Area Navigation
GPS: Global Positioning System
AWOS: Automated Weather Observation System
UNICOM: Universal Communication Frequency
CTAF: Common Traffic Advisory Frequency
REIL: Runway End Identifier Lights

Source: FAA Airport Master Record (Form 5010-1), Hollister Municipal Airport Layout Plan (2009), Airport communication.

CVH is served by a common traffic advisory frequency (CTAF)/universal communication frequency (UNICOM), 123.0 MHz, which can be utilized by pilots to communicate with one another, as well as activate the airport lighting systems by keying the radio microphone. In addition, CVH is home to an automated weather observation system (AWOS-III). The AWOS-III automatically records the following weather conditions:

- Wind speed, gusts, and direction
- Temperature
- Dew point
- Altimeter setting
- Density altitude
- Visibility
- Precipitation accumulation
- Cloud height

Automated Weather Observation System

This information is transmitted at regular intervals on the Airport's AWOS-III aeronautical advisory frequency (120.425 MHz) or via a local telephone number (831-636-4394), where a computer-generated voice will present Airport weather information. AWOS-III broadcasts are updated on a minute-by-minute basis and provide arriving and departing pilots with the current weather conditions.

Instrument approaches and departures are handled by NORCAL Approach and Departure Control on frequency 124.525 MHz.

Parallel Taxiways A and C provide access to Runways 13-31 and 6-24. A series of connecting taxiways provide access and egress for aircraft operating on the runways. Connecting taxiways are equipped with light emitting diode (LED) medium intensity taxiway lighting (MITL), while the remaining taxiway system is equipped with blue reflectors.

LANDSIDE FACILITIES

The Airport offers several amenities to pilots, catering to both itinerant and based aircraft. Hollister Jet Center operates as the Airport's fixed base operator (FBO). Aircraft hangars and apron area are also available for both itinerant and based aircraft. Building and facility footprint measurements are summarized in **Table D**. The aircraft apron has approximately 120 marked tiedown positions, including four large aircraft positions. The aircraft apron and movement area encompasses approximately 42,800 square yards. At this time, CVH has approximately 190,800 sf of hangar space on the airfield. Hangar styles available include T-hangars, executive box/corporate, and conventional.

TABLE D
Landside Facility Data
Hollister Municipal Airport

	Total Footprint Area
Hollister Jet Center	2,500 sf
T-Hangars	88,800 sf
Executive Box/Corporate	22,200 sf
Conventional Hangars	79,800 sf
Apron and Movement Area	42,800 sy

sf: Square feet
sy: Square yards
Source: Google Maps Satellite Photo (2016).

Hollister Jet Center has a single-level structure with a footprint of approximately 13,400 sf consisting of approximately 10,900 sf of conventional hangar space and 2,500 sf of FBO space. The facility offers provisions for pilots and passengers, including a lobby equipped with a large screen television, a conference room, quiet room, flight planning room/weather station, and rental car services. Hollister Jet Center provides the following aviation-related services:

- Aviation fuel
- Aircraft ground handling
- Oxygen service
- Aircraft parking
- Ground power unit (GPU)
- Flight training
- Aircraft rental
- Aerial tours
- Aircraft maintenance

In addition to Hollister Jet Center, there are numerous businesses located on the Airport providing a wide range of services. Below is a list of aviation-related businesses and services provided on the Airport:

- Aris Helicopters — aerial construction and heavy lift operations, firefighting, law enforcement support, and media and aerial photography support.
- Skydive Hollister — tandem and solo skydive operations, as well as instruction for solo jumps.
- C&M Helicopters, Inc. — crop dusting services.
- DK Turbines — parts and solutions for turbine-powered aircraft.
- Hugh's Vintage Aircraft Museum — public tours and vintage aircraft restoration.
- Vintage Wings and Wheels — maintenance, repair, and restoration for vintage aircraft.
- Bay Area Glider Rides — glider rides and glider flight instruction.
- Kitty Hawk Inc. — aircraft development and research

Furthermore, CalFire also has a strong presence on the airfield, utilizing CVH as an air attack base during fire season. In an effort to support ground forces, the CalFire emergency response air program includes a fleet of Grumman S-2T 1,200-gallon airtankers, UH-1H Super Huey helicopters, and OV-10A air-tactical aircraft. These aircraft are operated from 13 air attack and nine helitack bases located around the state. CVH serves as one of the 13 air attack bases. Tactical aircraft are used to fly overhead directing the airtankers and helicopters to critical areas of the fire to disperse water and fire retardant. CalFire aircraft are located throughout the state in such a manner that most fires can be reached within approximately 20 minutes. During high fire activity, however, aircraft may be relocated around the state to provide better air support.

At CVH, the CalFire base is located on the southeastern side of the airfield near Runway 31, as presented on **Exhibit B**. It should be noted, however, that the existing CalFire base is located within critical safety areas serving Runway 13-31. The State of California has shown interest in relocating the CalFire base to the westernmost side of Runway 13-31. Ultimately, the Airport would like to use the existing CalFire location for fuel storage purposes.

The Airport's perimeter is equipped with six-foot fencing with three strands of barbed-wire affixed on top. Controlled access gates located in various locations prevent inadvertent access by unauthorized personnel as well as wildlife.

Fuel facilities available at CVH include self-serve Jet-A and 100LL available for purchase with a credit card on a 24-hour basis. Fuel storage and dispensing facilities are owned by the City of Hollister and operated by Hollister Jet Center. Fuel is stored in two underground 10,000-gallon tanks (one tank designated for Jet-A and the other 100LL) that are used to dispense fuel from a self-service fuel island located on the main apron to the west of Hollister Jet Center. Hollister Jet Center also operates four fueling trucks, one truck with a storage capacity of 750 gallons for 100LL, and three trucks designated for Jet A with capacities of 2,000; 4,000; and 4,500 gallons.

Hollister Jet Center

Utilities serving the Airport include water, sanitary sewer, natural gas, and electricity. Natural gas and electric utilities are provided by PG&E, while water and sanitary sewer services are provided by the City of Hollister. The Airport has an emergency generator capable of operating the Airport beacon, runway, and taxiway lights in the event of a power outage. CVH does not have provisions in place for aircraft rescue and firefighting (ARFF) capabilities as it is a general aviation airport and is not required. The Airport does maintain a compressed air foam firefighting system on one of its maintenance trucks.

The Airport is accessible from the west side of State Highway 156B. The automobile parking lot lies on the western side of Skylane Drive in between the Hollister Jet Center and the Airport management building. Marked automobile parking is designated in two common parking lots consisting of approximately 10,000 sf of combined parking area. These parking lots provide 30 marked parking spaces, including four handicap accessible spaces. Approximately 15,300 sf of unmarked parking is also available on the Airport that can accommodate an estimated 44 vehicles. The apron area is separated from the parking lot through use of a controlled access gate.

VICINITY AIRPORTS

There are multiple airports located within the vicinity of CVH. Given the existence of numerous private and public use airports located near the Airport, **Exhibit C** outlines those facilities that are designated as public use within a 30-nautical mile (nm) radius of CVH. There are varying levels of service located on each airport.

VICINITY AIRSPACE

The airspace within the National Airspace System (NAS) is divided into six different categories or classes. The airspace classifications that make up the NAS are presented in **Exhibit D**. These categories are made up of Classes A, B, C, D, E, and G airspace. Each class of airspace contains its own criteria that must be met in terms of required aircraft equipment, operating flight rules (visual or instrument flight rules), and procedures. Classes A, B, C, D, and E are considered controlled airspace which requires pilot communication with the controlling agency prior to airspace entry and throughout operation within the designated airspace. Pilot communication procedures, required pilot ratings, and required minimum aircraft equipment vary depending upon the class of airspace, as well as the type of flight rules in use. Class G

FRAZIER LAKE AIRPARK (1C9)

Airport NPIAS Classification	NA
FAA Asset Study Classification	NA
Location from CVH	4.4 nm NW
Elevation	152 ft
Weather Reporting	None
ATCT	None
Annual Operations	9,490
Based Aircraft	91
Enplaned Passengers	None

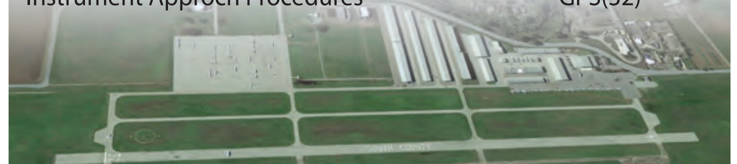
Runways	**5-23**	**5W-23W**
Length	2,500	3,000
Width	100	60
Pavement Strength		
SWL	Turf	Water
DWL	NA	NA
Lighting	LIRL	None
Marking	None	Buoys
Approach Aids	REILs(23)	None
Instrument Approch Procedures	None	None

Services Provided: Aircraft tiedowns.

SAN MARTIN AIRPORT (E16)

Airport NPIAS Classification	Reliever
FAA Asset Study Classification	Local
Location from CVH	14.4 nm NW
Elevation	283.8 ft
Weather Reporting	AWOS
ATCT	None
Annual Operations	32,485
Based Aircraft	67
Enplaned Passengers	None

Runways	**14-32**
Length	3,095
Width	75
Pavement Strength	
SWL	12,500
DWL	NA
Lighting	MIRL
Marking	Basic
Approach Aids	PAPI-2; REILs(32)
Instrument Approch Procedures	GPS(32)



Services Provided: Aircraft hangars and tiedowns, 100LL and Jet A fuel, major airframe and powerplant mainenance, and bottled oxygen.

SALINAS MUNICIPAL AIRPORT (SNS)

Airport NPIAS Classification	GA
FAA Asset Study Classification	Regional
Location from CVH	16.7 nm SW
Elevation	84.3 ft
Weather Reporting	ASOS
ATCT	Yes
Annual Operations	77,745
Based Aircraf	175
Enplaned Passengers	None

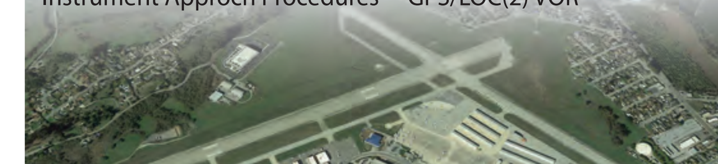
Runways	**8-26**	**13-31**
Length	6,004	4,825
Width	150	150
Pavement Strength		
SWL	25,000	65,000
DWL	32,000	100,000
Lighting	MIRL	HIRL
Marking	NPI	PI
Approach Aids	VASI-2 REILs(26)	VASI-4(13); REILs(13) PAPI-2(31);MALSR(31)
Instrument Approch Procedures	None	GPS/VOR(13) ILS/GPS/LOC(31)

Services Provided: Aircraft hangars and tiedowns, 100LL and Jet A fuel, and major airframe and powerplant mainenance.

WATSONVILLE MUNICIPAL AIRPORT (WVI)

Airport NPIAS Classification	GA
FAA Asset Study Classification	Regional
Location from CVH	18.4 nm W
Elevation	163.2 ft
Weather Reporting	ASOS
ATCT	None
Annual Operations	64,970
Based Aircraft	381
Enplaned Passengers	None

Runways	**2-20**	**9-27**
Length	4,501	3,998
Width	149	98
Pavement Strength		
SWL	81,000	45,000
DWL	96,000	65,000
Lighting	MIRL	None
Marking	NPI	Basic
Approach Aids	PAPI-2; REILs(2)	PAPI-2(9)
Instrument Approch Procedures	GPS/LOC(2) VOR	



Services Provided: Aircraft tiedowns, 100LL and Jet A fuel, minor airframe and major powerplant mainenance, and oxygen.

MARINA MUNICIPAL AIRPORT (OAR)

Airport NPIAS Classification	GA
FAA Asset Study Classification	Local
Location from CVH	21.1 nm SW
Elevation	136.6 ft
Weather Reporting	AWOS
ATCT	None
Annual Operations	41,975
Based Aircraft	49
Enplaned Passengers	None

Runways	**11-29**
Length	3,483
Width	75
Pavement Strength	
SWL	20,000
DWL	50,000
Lighting	MIRL
Marking	Basic
Approach Aids	PAPI-2(29)
Instrument Approch Procedures	GPS/VOR

Services Provided: Aircraft tiedowns, 100LL and Jet A fuel, major airframe and powerplant mainenance and oxygen.

MONTEREY REGIONAL AIRPORT (MRY)

Airport NPIAS Classification	Non-Hub
FAA Asset Study Classification	NA
Location from CVH	27.8 nm SW
Elevation	256.6 ft
Weather Reporting	ASOS
ATCT	Yes
Annual Operations	83,950
Based Aircraft	114
Enplaned Passengers	186,935

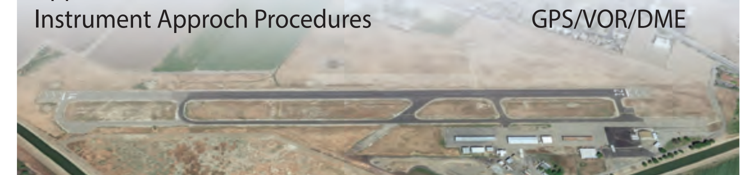
Runways	**10R-28L**	**10L-28R**
Length	7,175	3,503
Width	150	60
Pavement Strength		
SWL	100,000	12,500
DWL	160,000	NA
Lighting	HIRL	MIRL
Marking	PI	Basic
Approach Aids	PAPI-4/REILs; MALSR(10R)	None
Instrument Approch Procedures	ILS/RNP/GPS/LOC	

Services Provided: Aircraft tiedowns, 100LL Jet A fuel, major airframe and powerplant mainenance, and oxygen.

LOS BANOS MUNICIPAL AIRPORT (LSN)

Airport NPIAS Classification	GA
FAA Asset Study Classification	Local
Location from CVH	27.9 nm ENE
Elevation	121.4 ft
Weather Reporting	None
ATCT	AWOS
Annual Operations	16,060
Based Aircraft	18
Enplaned Passengers	None

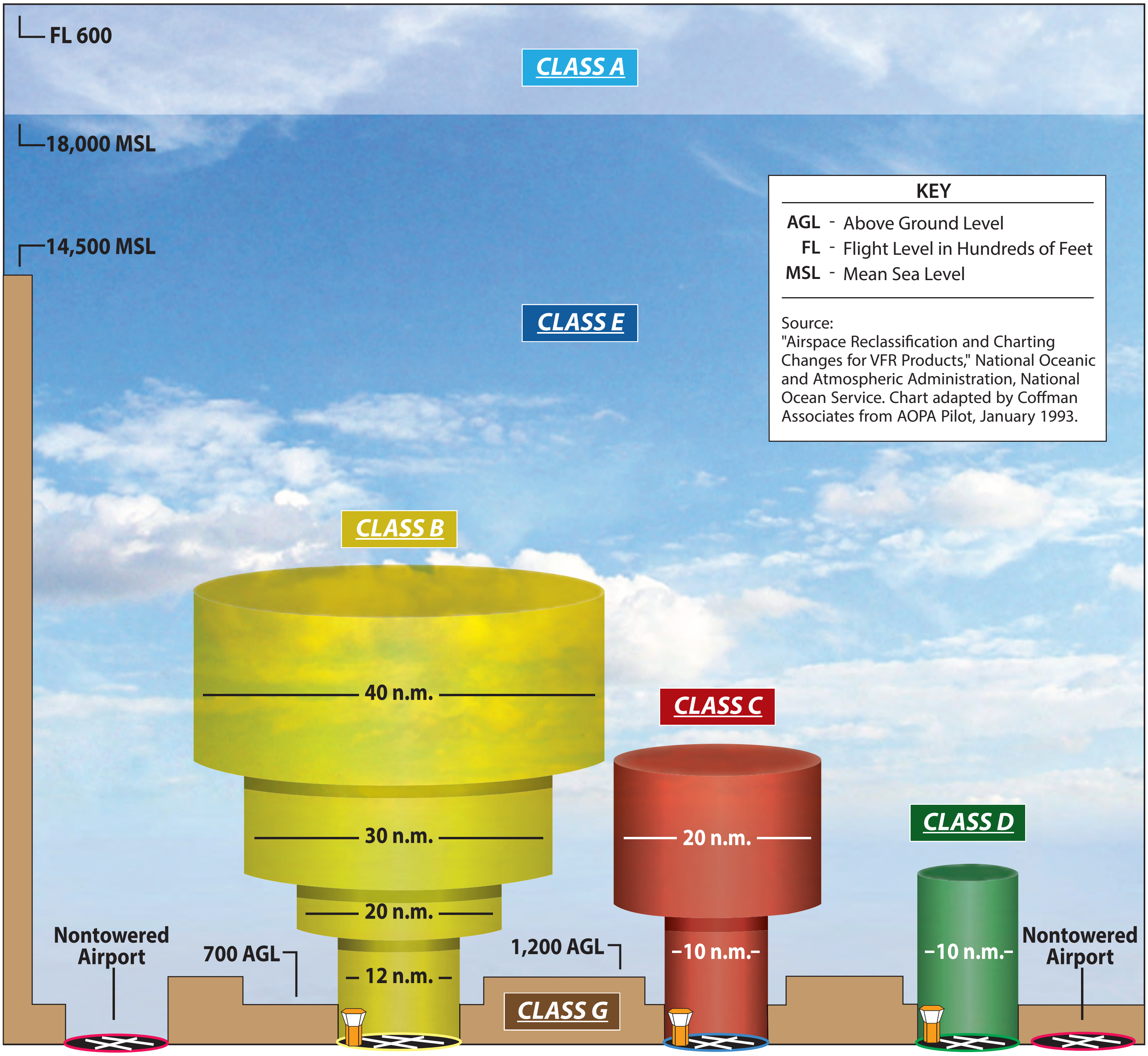
Runways	**14-32**
Length	3,801
Width	75
Pavement Strength	
SWL	23,000
DWL	NA
Lighting	MIRL
Marking	Basic
Approach Aids	PAPI-2; REILs
Instrument Approch Procedures	GPS/VOR/DME



Services Provided: Aircraft tiedowns, 100LL and Jet A fuel, minor airframe and powerplant mainenance.

ABBREVIATION KEY

ATCT	- Airport Traffic Control Tower
ASOS	- Automated surface observation station
AWOS	- Automated Weather Observation System
DME	- Distance measuring equipment
DWL	- Dual Wheel Loading
GA	- General Aviation
GPS	- Global Positioning System
HIRL/LIRL	- High/Low intensity runway edge lighting
ILS	- Instrument landing system
MALSR	- Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
MIRL	- Medium Intensity Runway Lighting
nm	- Nautical Miles
NPI	- Non-Precision Instrument
PAPI	- Precision Approach Path Indicator
REIL	- Runway End Identifier Lights
SWL	- Single Wheel Loading
VOR	- VHF Omni-Directional Range



DEFINITION OF AIRSPACE CLASSIFICATIONS

CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600.
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.
CLASS D	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.
CLASS E	Generally controlled airspace that is not Class A, Class B, Class C, or Class D.
CLASS G	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.

airspace is uncontrolled and extends from the surface to the base of the overlying Class E airspace. Although ATC has no authority or responsibility to control air traffic within this airspace, pilots should remember there are visual flight rule minimums that apply to Class G airspace.

CVH lies within Class E Airspace with a floor 700 feet above the ground, which is a form of controlled airspace; however, only pilots operating under instrument flight rules (IFR) are required to be in communication with the controlling air traffic agency. Pilots operating under visual flight rules (VFR) are not required to be in communication with the controlling agency when operating in Class E Airspace.

CVH is 28 nautical miles (nm) from Monterey Regional Airport and 17 nm from Salinas Municipal Airport, which are within Classes C and D airspace, respectively. **Exhibit E** presents the classifications of airspace within the vicinity of CVH.

SPECIAL USE AIRSPACE

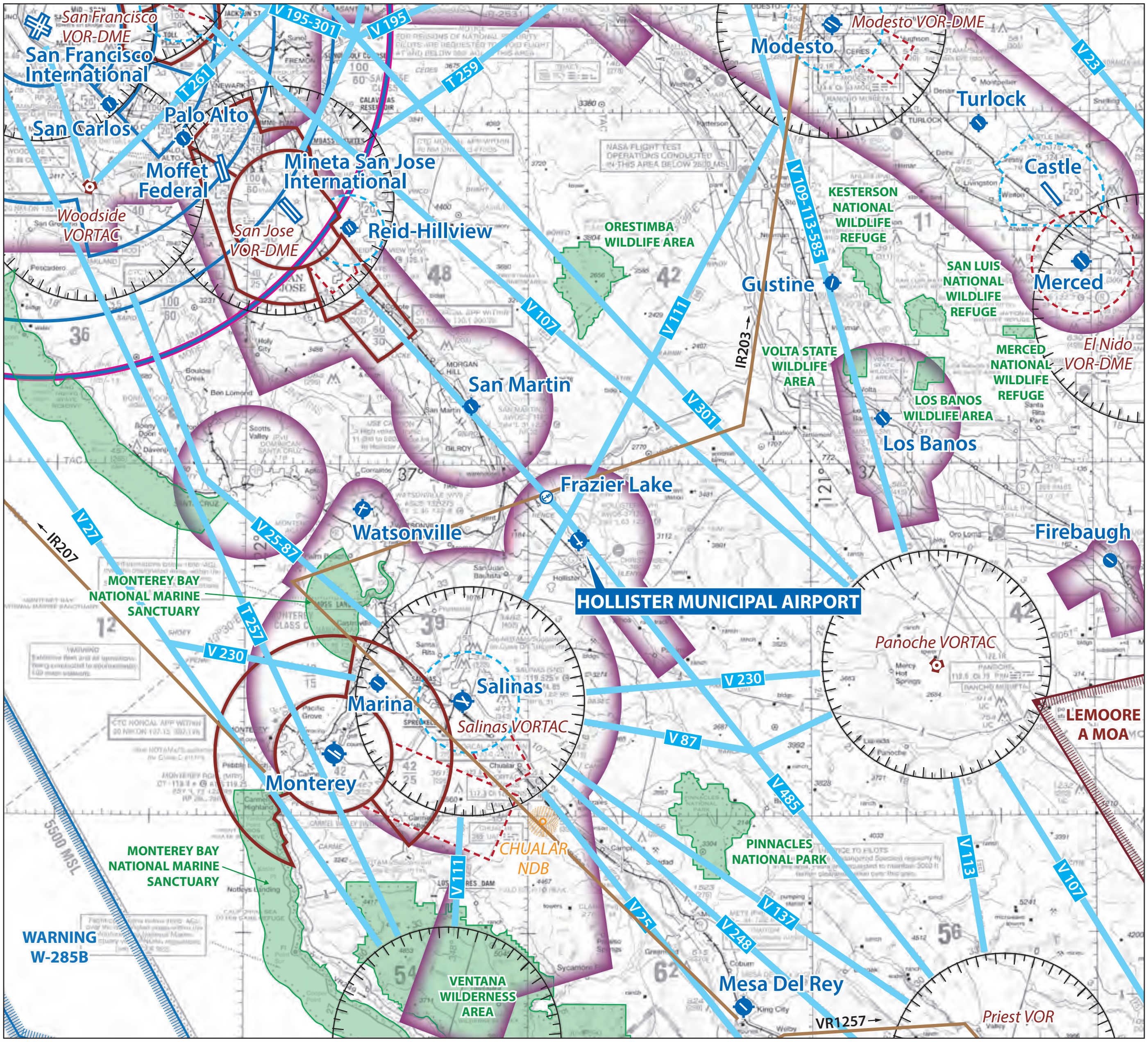
Special use airspace is defined as airspace where activities must be confined because of their nature or where limitations are imposed on aircraft not taking part in those activities. The designation of special use airspace identifies for other users the areas where military activity occurs, provides for segregation of that activity from other fliers, and allows charting to keep airspace users informed. These areas are depicted on **Exhibit E**.

Victor Airways: Victor Airways are designated navigational routes extending between VOR facilities. Victor Airways have a floor of 1,200 feet AGL and extend upward to an altitude of 18,000 feet MSL. Victor Airways are eight nm wide.

Numerous Victor Airways are in the vicinity of the Airport. VOR facilities can also be coupled with tactical aircraft control and navigation facilities (VORTACs), as well as distance measuring equipment (VOR-DME). Victor Airways near CVH extend from the San Francisco, San Jose, El Nido, and Modesto VOR-DMEs, as well as the Woodside, Salinas, and Panoche VORTACs and the Priest VOR.

Military Training Routes: Military Training Routes (MTRs) are designated military flight paths that allow flight in excess of 250 knots at low altitude, typically below 10,000 feet MSL. MTRs can be designated for either VFR or IFR flight at altitudes below 1,500 feet or above 1,500 feet. Non-participating pilots are not restricted from utilizing MTRs, however, extreme caution and vigilance is recommended due to the nature of the participant aircraft using the MTRs. The FAA recommends contacting the nearest Flight Service Station (FSS) to obtain information regarding the activity status of the MTR. MTRs within the vicinity of CVH are located west, north-northeast, and southeast of the Airport and includes IR203.

Military Operations Areas: Military Operating Areas (MOAs) are designated areas of airspace established outside Class A airspace to separate or segregate certain military activities, IFR traffic, and to identify VFR traffic where these activities are conducted. While the FAA does not prohibit civilian VFR traffic from transiting an active MOA, it is strongly discouraged. The MOAs in the vicinity of CVH include the Lemoore MOAs, which is located approximately 50 nm east-southeast of the Airport.



LEGEND

Seaplane Base	Compass Rose	MOA - Military Operations Area
Airport with hard-surfaced runways 1,500' to 8,069' in length	Class B Airspace	Prohibited, Restricted, Warning and Alert Areas
Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'	Class C Airspace	Military Training Routes
Non-Directional Radiobeacon (NDB)	Class D Airspace	Wilderness Areas
VORTAC	Class E Airspace	
VHF Omni Range (VOR)	Class E Airspace with floor 700 ft. above surface	
VOR-DME	Mode C	
	Victor Airways	

Source: San Francisco Sectional Chart, US Department of Commerce, National Oceanic and Atmospheric Administration, August 18, 2016

Restricted Airspace: Restricted areas contain airspace in which the flight of aircraft, while not wholly prohibitive, is subject to restrictions. Activities within these areas must be confined because of their nature, and limitations to aircraft operations may be imposed on those aircraft that are not a part of these activities. Restricted airspace is off-limits for public use unless granted permission from the controlling agency.

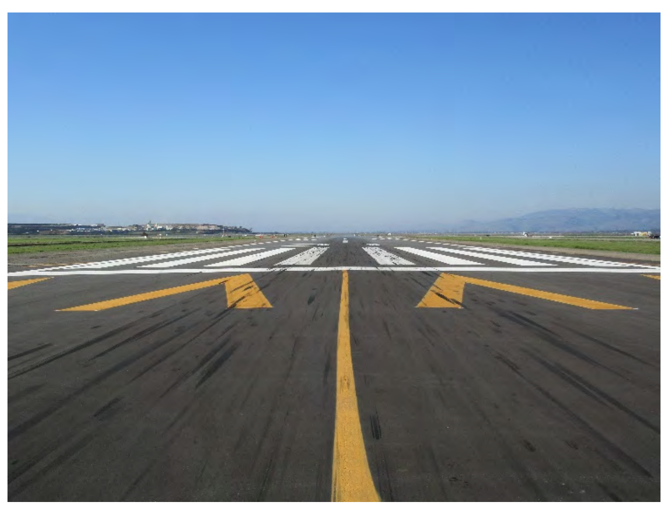
The Air Route Traffic Control Center (ARTCC) facility having jurisdiction over the restricted airspace needs to authorize clearances to aircraft that cannot avoid the restricted area, unless the aircraft is on a previously approved altitude reservation mission or is part of the activity within the restricted area. If the restricted area is not active, the ARTCC facility will allow aircraft to transition through the airspace without issuing special clearances. Currently, there is no restricted airspace in the vicinity of the Airport.

Warning Areas: Warning areas are similar in nature to restricted areas; however, the United States government does not have sole jurisdiction over the airspace. A warning area is airspace of defined dimension, extending from 3 nm outward from the coast of the United States, containing activity that may be hazardous to nonparticipating aircraft. The purpose of such areas is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both. Warning area W-285B is currently located over the Pacific Ocean, approximately 80 nm to the southwest of CVH.

National Park Service, Recreation, and Wilderness Areas: Nine wilderness areas exist in proximity to CVH. Aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface of designated Wilderness Areas, which can include National Park Recreation Areas and wildlife breeding grounds. FAA Advisory Circular (AC) 91-36D defines the "surface" as the highest terrain within 2,000 feet laterally of the route of flight or the uppermost rim of a canyon or valley. The Airport is located in proximity to the Monterey Bay National Marine Sanctuary, Ventana Wilderness Area, Pinnacles National Park, Los Banos Wildlife Area, Merced National Wildlife Refuge, San Luis National Wildlife Refuge, Kesterson National Wildlife Refuge, Volta State Wildlife Area, and Orestimba Wildlife Area.

INSTRUMENT APPROACH PROCEDURES

Runway 31 is served by an area navigation (RNAV) global positioning system (GPS) instrument approach system. This system enables pilots to locate and land at the Airport during low visibility conditions. The instrument procedures are a series of electronic navigational aids, coupled with maneuvers predetermined by the FAA to ensure safe navigation to the Airport in reduced visibility conditions. The lowest minimums available provide for landing with a cloud ceiling of 400 feet above ground level (AGL) and visibility of 1¼-mile utilizing the RNAV GPS local-


Runway 31

izer performance with vertical guidance (LPV) approach. Circling approaches are also available with minimums of not less than 700 feet AGL cloud ceilings and visibility of 1 mile.

The approved approaches for the Airport are for Categories A, B, and C aircraft only. Category A aircraft are those with approach speeds of less than 91 knots. Category B aircraft have approach speeds of 91 knots or greater, but less than 121 knots. Category C aircraft have approach speeds of 121 knots or greater, but less than 141 knots. **Exhibit F** presents the RNAV GPS instrument approach to Runway 31, and its associated cloud ceiling and visibility minimums.

SOCIOECONOMIC CHARACTERISTICS

Socioeconomic characteristics can provide valuable information and insight with regard to growth and economic well-being of the study area. This information can contribute to the understanding and determination of the aviation service level requirements, as well as forecasting future operation and based aircraft levels.

POPULATION

Trends in population can provide an indication of the potential for the region to sustain growth in aviation activity. The historical population for the State of California was determined in 1990 by the California Department of Finance (DOF) to be over 29.76 million. As of July 1, 2016, the California DOF calculated a population total of approximately 39.35 million. This total represents a compound annual growth rate (CAGR) of roughly 1.08 percent from 1990-2016. Over the same period, the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA), which includes the City of Hollister, as well as the entirety of San Benito and Santa Clara counties, experienced a population growth of 453,037 residents. This equates to a 1.00 percent CAGR. San Benito County's population has grown from a reported 36,697 in 1990 to 85,014 in 2016 at a CAGR of 1.78 percent. From 1990 to 2016, the City of Hollister experienced a population CAGR of 2.50 percent reaching 36,484 in 2016. More recently, population growth rates for the State of California, San Benito County, and City of Hollister have been somewhat lower. From 2010-2016, the State of California, San Benito County, and City of Hollister experienced growth rates of 0.88, 0.81, and 0.98 percent, respectively, while the San Jose-Sunnyvale-Santa Clara MSA experienced a slightly higher growth rate of 1.28 percent. **Table E** further presents historical population information.

TABLE E
Historical Population

	Year				
	1990	2010	2016	CAGR (1990-2016)	CAGR (2010-2016)
City of Hollister	19,212	34,413	36,484	2.50%	0.98%
San Benito County	36,697	55,269	58,014	1.78%	0.81%
San Jose-Sunnyvale-Santa Clara MSA	1,535,142	1,842,462	1,988,179	1.00%	1.28%
State of California	29,760,021	37,333,583	39,354,432	1.08%	0.88%
United States	249,622,800	309,347,100	324,506,900	1.01%	0.80%

HOLLISTER, CALIFORNIA AL-6785 (FAA) 16035

RNAV (GPS) RWY 31

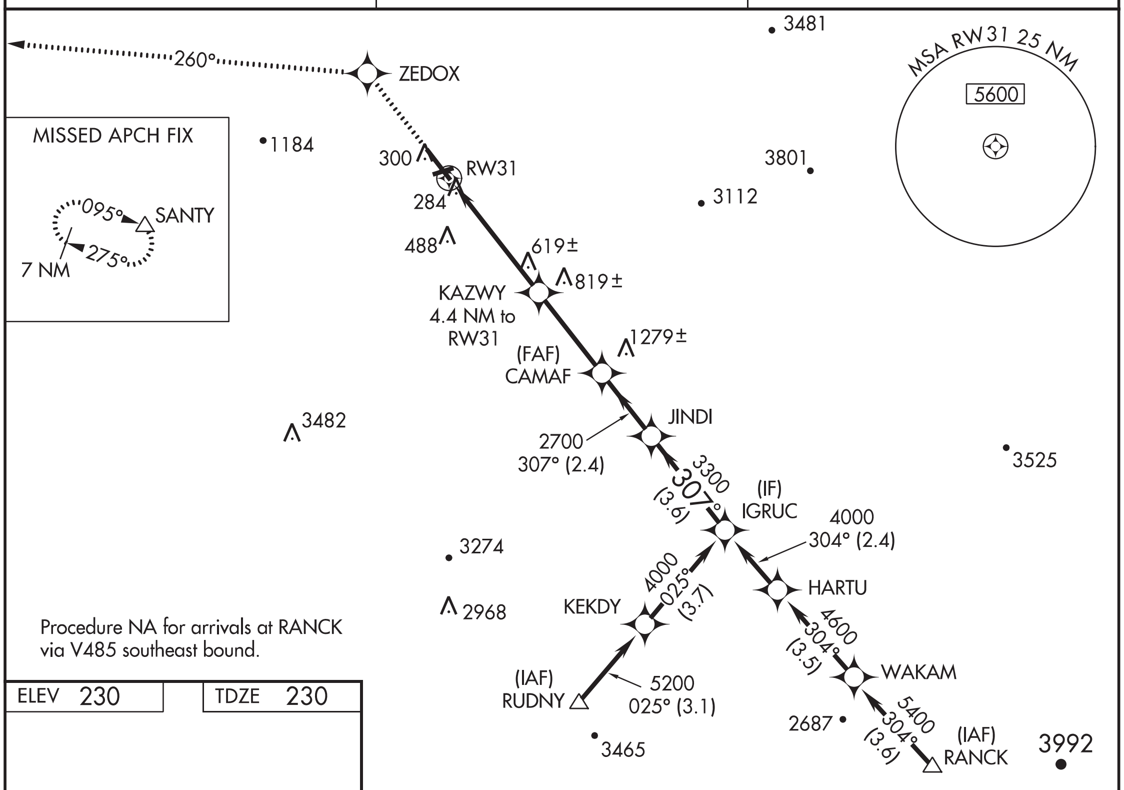
HOLLISTER MUNI (CVH)

WAAS CH 93806 W31A	APP CRS 307°	Rwy Idg 6350 TDZE 230 Apt Elev 230

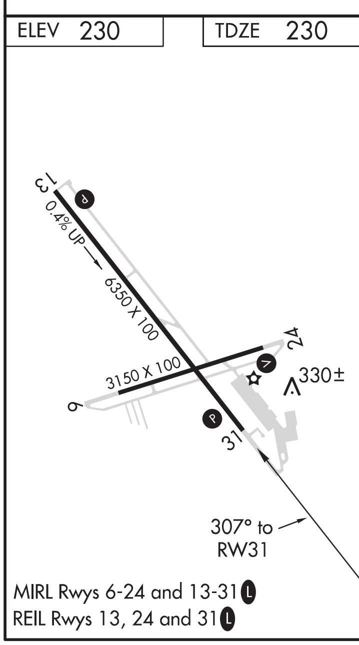
DME/DME RNP-0.3 NA. Visibility reduction by helicopters NA.
Baro-VNAV NA when using Norman Y Mineta (KSJC) San Jose Intl altimeter setting.
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 54°C (130°F).
When local altimeter setting not received, use Norman Y Mineta (KSJC) San Jose Intl altimeter setting, and increase all DAs/MDAs 120 feet and all visibilities ½ mile.
VDP NA when using Norman Y Mineta (KSJC) San Jose Intl altimeter setting.

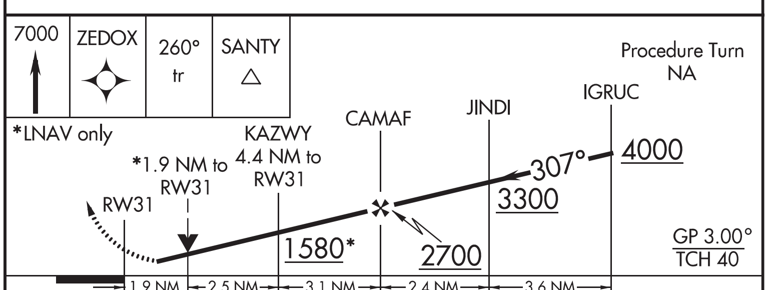
MISSED APPROACH: Climb to 7000 direct ZEDOX and via 260° track to SANTY and hold, continue climb-in-hold to 7000.

AWOS-3	NORCAL APP CON	UNICOM
120.425	124.525 348.675	123.0 (CTAF) L



SW-2, 02 FEB 2017 to 02 MAR 2017





CATEGORY	A	B	C	D
LPV DA	553-1¼ 323 (400-1¼)			NA
LNAV/VNAV DA	801-2 571 (600-2)			NA
LNAV MDA	880-1 650 (700-1)		880-1¾ 650 (700-1¾)	NA
CIRCLING	880-1 650 (700-1)		880-1¾ 650 (700-1¾)	NA

HOLLISTER, CALIFORNIA
Orig 05JUN08
36°54'N-121°25'W

HOLLISTER MUNI (CVH)

RNAV (GPS) RWY 31

Population projections through 2037 retrieved from the 2016 Woods and Poole Complete Economic and Demographic Data Source, as well as the CALTRANS Economic Analysis Branch, are presented in **Table F**. According to the CALTRANS Economic Analysis Branch, the State of California is projected to grow at a CAGR of 0.70 percent through 2037, reaching a population total of 45.60 million. The San Jose-Sunnyvale-Santa Clara MSA population is forecasted to grow at a CAGR of 0.87 percent, resulting in a population of 2.39 million by 2037. San Benito County population is forecasted to grow at a CAGR of 0.92 percent through 2037, reaching 70,348 by 2037.

TABLE F
Forecast Population

Area	2016	2022	2027	2037	CAGR (2016-2037)
San Benito County	58,014	61,168	64,096	70,348	0.92%
San Jose-Sunnyvale-Santa Clara MSA	1,988,179	2,102,125	2,199,851	2,387,107	0.87%
State of California	39,354,432	41,170,000	42,760,000	45,600,000	0.70%
United States	324,506,944	342,963,009	359,050,382	390,716,159	0.89%

CAGR: Compound Annual Growth Rate
Source: California Economic Forecast, 2016-2050, Economic Analysis Branch, Caltrans; The Complete Economic And Demographic Data Source, Woods and Poole 2016.

EMPLOYMENT AND PERSONAL INCOME

An overview of the community's employment and personal income base can provide pertinent information with regard to the economic health of the community. Generally speaking, the economic well-being of the community is greatly influenced by the variety and availability of employment opportunities, as well as wages offered by local employers. **Table G** summarizes employment and income data obtained from Woods and Poole Complete Economic and Demographic Data Source over the past 26 years for San Benito County, San Jose-Sunnyvale-Santa Clara MSA, the State of California, and the United States.

As presented in **Table G**, total employment in San Benito County has increased by 8,394 over a 26-year period, equating to a CAGR of 1.68 percent, outpacing the San Jose-Sunnyvale-Santa Clara MSA total employment CAGR of 0.97 percent. Over the same time period, the county also experienced per capita personal income (PCPI) and mean household income CAGRs of 1.56 percent and 1.59 percent, respectively, while the MSA experienced growth rates of 2.39 percent and 2.50 percent.

During the 26-year timeframe, the State of California and the United States experienced total employment CAGRs of 1.17 percent and 1.27 percent. The State of California experienced PCPI and mean household income CAGRs of 1.53 percent and 1.55 percent, while the United States experienced CAGRs of 1.58 and 1.37 percent, respectively.

Table H presents forecasts for employment, PCPI, and mean household income in San Benito County, San Jose-Sunnyvale-Santa Clara MSA, California, and the United States. If realized, the projected employment growth could provide a base for increased aviation demand in the region. Moreover, PCPI is determined by dividing the total income by population. In order for PCPI to grow, income growth must outpace population growth significantly. Over the planning period, the MSA's PCPI is anticipated to grow at the same rate as the United States and at a greater rate than the State of California.

TABLE G
Historical Employment and Income Data

	1990	2010	2016	CAGR (1990-2016)
San Benito County				
Total Employment	15,501	20,541	23,895	1.68%
PCPI (2009 Dollars)	26,149	33,994	39,115	1.56%
Mean Household Income (2009 Dollars)	82,775	111,296	124,751	1.59%
San Jose-Sunnyvale-Santa Clara MSA				
Total Employment	1,052,577	1,136,653	1,353,173	0.97%
Income Per Capita (2009 Dollars)	37,811	57,835	69,924	2.39%
Mean Household Income (2009 Dollars)	106,789	168,869	202,978	2.50%
State of California				
Total Employment	16,834,530	19,803,750	22,789,470	1.17%
Income Per Capita (2009 Dollars)	31,872	41,721	47,259	1.53%
Mean Household Income (2009 Dollars)	89,794	121,397	134,114	1.55%
United States				
Total Employment	138,330,900	173,034,700	191,870,800	1.27%
Income Per Capita (2009 Dollars)	29,050	39,622	43,613	1.58%
Mean Household Income (2009 Dollars)	76,860	102,642	109,355	1.37%

CAGR: Compound Annual Growth Rate
PCPI: Per Capita Personal Income
Source: The Complete Economic and Demographic Data Source, Woods & Poole, 2016.

TABLE H
Forecast Employment and Income Data

	2016	2022	2027	2037	CAGR (2016-2037)
San Benito County					
Total Employment	23,895	25,830	27,340	30,126	1.11%
PCPI (2009 Dollars)	39,115	41,737	43,649	46,458	0.82%
Mean Household Income (2009 Dollars)	124,751	132,028	139,124	151,762	0.94%
San Jose-Sunnyvale-Santa Clara MSA					
Total Employment	1,353,173	1,495,077	1,614,700	1,855,547	1.51%
PCPI (2009 Dollars)	69,924	76,241	81,562	92,068	1.32%
Mean Household Income (2009 Dollars)	202,978	220,007	237,599	275,910	1.47%
State of California					
Total Employment	22,789,470	24,957,650	26,760,920	30,266,320	1.36%
PCPI (2009 Dollars)	47,259	51,528	55,070	61,334	1.25%
Mean Household Income (2009 Dollars)	134,114	145,938	157,983	182,247	1.47%
United States					
Total Employment	191,870,800	209,147,800	223,284,100	250,168,700	1.27%
PCPI (2009 Dollars)	43,613	47,796	51,287	57,428	1.32%
Mean Household Income (2009 Dollars)	109,355	119,227	129,252	149,162	1.49%

CAGR: Compound Annual Growth Rate
PCPI: Per Capita Personal Income
Source: The Complete Economic and Demographic Data Source, Woods & Poole, 2016.

FORECASTS OF AVIATION DEMAND

Facility planning requires a definition of demand that may be expected to occur during the useful life of the facility's crucial components. For CVH, this involves projecting aviation demand for a 20-year timeframe. In this report, forecasts of registered aircraft, based aircraft, based aircraft fleet mix, annual airport operations, and forecasts of airport peaking characteristics are projected.

The forecasts generated may be used for a multitude of purposes; including facility needs assessments as well as environmental evaluations. The forecasts will be submitted to the FAA for review and approval to ensure accuracy and reasonable projection of aviation activity. The intent of the projections is to enable the City of Hollister and CVH to make facility improvements to meet demand in the most efficient and cost-effective manner possible.

It should be noted that aviation activity can be affected by numerous outside influences on local, regional, and national levels. As a result, forecasts of aviation demand should be used only for advisory purposes. It is recommended that planning strategies remain flexible enough to accommodate any unforeseen facility needs.

FORECASTING APPROACH

Typically, the most accurate and reliable forecasting approach is derived from multiple analytical forecasting techniques. Analytical forecasting methodologies typically consist of regression analysis, trend analysis and extrapolation, market share or ratio analysis, and smoothing. Through the use of multiple forecasting techniques based upon each aviation demand indicator, an envelope of aviation demand projections can be generated. Generally, the preferred planning forecast will consist of a combination of forecasts as the averaged result of multiple forecasts are typically more accurate, although it is possible to use just one forecast result.

Regression Analysis can be described as a forecasting technique that correlates certain aviation demand variables (such as passenger enplanements or operations) with economic measures. When using regression analysis, the technique should be limited to relatively simple models containing independent variables for which reliable forecasts are available (such as population or income forecasts).

Trend Analysis and Extrapolation is a forecasting technique that records historical activity (such as airport operations) and projects this pattern into the future. Oftentimes, this technique can be beneficial when local conditions of the study area are differentiated from the region or other airports.

Market Share or Ratio Analysis can be described as a forecasting technique that assumes the existence of a top-down relationship between national, regional, and local forecasts. The local forecasts are presented as a market share of regional forecasts and regional forecasts are presented as a market share of national forecasts. Typically, historical market shares are calculated and used as a base to project future market shares.

Smoothing is a statistical forecasting technique that can be applied to historical data, giving greater weight to the most recent trends and conditions. Generally, this technique is most effective when generating short-term forecasts.

NATIONAL GENERAL AVIATION TRENDS

The FAA forecasts the fleet mix and hours flown for single engine piston aircraft, multi-engine piston aircraft, turboprops, business jets, piston and turbine helicopters, light sport, experimental, and others (gliders and balloons). The FAA forecasts "active aircraft," not total aircraft. An active aircraft is one that is flown at least one hour during the year. It is important to note that from 2010 through 2013, the FAA undertook an effort to have all aircraft owners re-register their aircraft. This effort resulted in a 10.5 percent decrease in the number of active general aviation aircraft, mostly in the piston category.

The long-term outlook for general aviation is favorable, led by gains in turbine aircraft activity. The active general aviation fleet is forecast to increase 0.1 percent a year between 2016 and 2037, equating to an absolute increase in the fleet of about 3,500 units. While steady growth in both GDP and corporate profits results in continued growth of the turbine and rotorcraft fleets, the largest segment of the fleet – fixed-wing piston aircraft - continues to shrink over the FAA's forecast.

In 2016, the general aviation industry experienced a consecutive decline in aircraft deliveries since 2015. While the single engine piston aircraft deliveries by U.S. manufacturers continued to grow and business jet deliveries recorded a very modest increase compared to the previous year, turboprop deliveries declined by two percent, and the much smaller category of multi-engine piston deliveries declined 23 percent.

In 2016, the FAA estimated there were 140,020 piston-powered aircraft in the national fleet. The total number of piston-powered aircraft in the fleet is forecast to decline by 0.8 percent from 2016-2037, resulting in 117,520 by 2037. This includes -0.9 percent annually for single engine pistons and -0.5 percent for multi-engine pistons.

Total turbine aircraft are forecast to grow at an annual growth rate of 1.9 percent through 2037. The FAA estimates there were 30,595 turbine-powered aircraft in the national fleet in 2016, and there will be 45,305 by 2037. This includes annual growth rates of 1.4 percent for turboprops, 2.3 percent for business jets, and 1.8 percent for turbine helicopters.

While comprising a much smaller portion of the general aviation fleet, experimental aircraft, typically identified as home-built aircraft, are projected to grow annually by 2.3 percent through 2037. The FAA estimates there were 28,475 experimental aircraft in 2016, and these are projected to grow to 35,310 by 2037. Sport aircraft are forecast to grow 4.1 percent annually through the long term, growing from 2,530 in 2016 to 5,885 by 2037. **Exhibit G** presents the historical and forecast U.S. active general aviation aircraft.

The FAA also forecasts total operations based upon activity at control towers across the United States. Operations are categorized as air carrier, air taxi/commuter, general aviation, and military.

U.S. ACTIVE GENERAL AVIATION AIRCRAFT

	2016	2022	2027	2037	AAGR 2016-2037
Fixed Wing					
Piston					
Single Engine	126,820	120,600	115,245	105,550	-0.9%
Multi-Engine	13,200	12,965	12,705	11,970	-0.5%
Turbine					
Turboprop	9,460	9,115	9,755	12,585	1.4%
Turbojet	13,770	15,845	17,745	22,040	2.3%
Rotorcraft					
Piston	3,245	3,770	4,170	5,005	2.1%
Turbine	6,995	8,215	9,185	11,250	2.3%
Experimental					
	28,475	30,895	32,345	35,310	1.0%
Sport Aircraft					
	2,530	3,480	4,285	5,885	4.1%
Other					
	4,950	4,955	4,965	5,015	0.1%
Total Pistons	**143,355**	**137,170**	**131,785**	**121,905**	**-0.8%**
Total Turbines	**30,595**	**33,155**	**36,425**	**45,305**	**1.9%**
Total Fleet	**209,905**	**209,655**	**209,805**	**213,420**	**0.1%**

Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.
Source: FAA Aerospace Forecast - Fiscal Years 2017-2037

General aviation operations, both local and itinerant, declined significantly as a result of the 2008-2009 recession and subsequent slow recovery. Through 2037, total general aviation operations are forecast to grow 0.3 percent annually. Air taxi/commuter operations are forecast to decline by 3.0 percent through 2026, and then increase slightly through the remainder of the forecast period. Overall, air taxi/commuter operations are forecast to decline by 0.9 percent annually from 2016 through 2037.

General Aviation Aircraft Shipments and Revenue

The 2008-2009 economic recession has had a negative impact on general aviation aircraft production, and the industry has been slow to recover. Aircraft manufacturing declined for three straight years from 2008 through 2010. According to the General Aviation Manufacturers Association (GAMA), there is optimism that aircraft manufacturing will stabilize and return to growth, which has been evidenced since 2011. **Table J** presents historical data related to general aviation aircraft shipments.

TABLE J
Annual General Aviation Airplane Shipments
Manufactured Worldwide and Factory Net Billings

Year	Total	SEP	MEP	TP	J	Net Billings ($millions)
1994	1,132	544	77	233	278	3,749
1995	1,251	605	61	285	300	4,294
1996	1,437	731	70	320	316	4,936
1997	1,840	1043	80	279	438	7,170
1998	2,457	1508	98	336	515	8,604
1999	2,808	1689	112	340	667	11,560
2000	3,147	1,877	103	415	752	13,496
2001	2,998	1,645	147	422	784	13,868
2002	2,677	1,591	130	280	676	11,778
2003	2,686	1,825	71	272	518	9,998
2004	2,962	1,999	52	319	592	12,093
2005	3,590	2,326	139	375	750	15,156
2006	4,054	2,513	242	412	887	18,815
2007	4,277	2,417	258	465	1,137	21,837
2008	3,974	1,943	176	538	1,317	24,846
2009	2,283	893	70	446	874	19,474
2010	2,024	781	108	368	767	19,715
2011	2,120	761	137	526	696	19,042
2012	2,164	817	91	584	672	18,895
2013	2,353	908	122	645	678	23,450
2014	2,454	986	143	603	722	24,499
2015	2,331	946	110	557	718	24,129
2016	2,262	890	129	582	661	20,719

SEP - Single Engine Piston; MEP - Multi-Engine Piston; TP - Turboprop; J - Turbofan/Turbojet
Source: General Aviation Manufacturers Association *2016 General Aviation Statistical Databook & 2017 Industry Outlook*

Worldwide shipments of general aviation airplanes decreased in 2016 with a total of 2,262 units delivered around the globe compared to 2,331 units in 2015. Worldwide general aviation billings were also lower than the previous year. In 2016, $20.7 billion in new general aviation aircraft were shipped, but year-end results were mixed across the market segments. Results were impacted by economic uncertainty in key markets, including Brazil, Europe, and China; however, the U.S. experienced stronger delivery numbers, which is cause for cautious optimism.

Business Jets: General aviation manufacturers business jet deliveries declined from 718 units in 2015 to 661 units in 2016. Business jet deliveries were strongest in the North American market at 62.0 percent, an increase in market share compared to 2015.

Turboprops: In 2016, turboprop shipments maintained pace in 2016 at 582 units, a slight increase from 557 in 2015. The share of turboprop shipments in 2016 in North America increased slightly compared to the prior year, 57.8 percent compared to 56.2 percent.

Pistons: In 2016, piston airplane shipments fell to 1,019 units compared to 1,056 units the prior year, a 4.9 percent decrease. The North American market share, however, retained its position and increased to 69.6 percent, which is its largest share of total deliveries in the past decade.

AIRPORT SERVICE AREA

In determining aviation demand for an airport, it is necessary to identify the role of that airport. CVH is classified as a Local GA airport in the NPIAS; however, it meets the many of the Regional GA airport thresholds. According to the NPIAS, Regional airports are those that support regional economies, are located in metropolitan areas serving relatively large populations, and have high levels of activity with some jets and multi-engine propeller aircraft. In order to be classified as a Regional airport in the NPIAS, an airport must meet the above stated description and meet one of the following minimum criteria for annual activity:

- Located in a MSA, 10 or more domestic flights over 500 miles, 1,000 or more instrument operations, and 1 or more based jet or 100 or more based aircraft.
- Reliever airport with 90 or more based aircraft.
- Nonprimary commercial service airport (requiring scheduled service) within a MSA.

The primary role of the Airport is to serve the needs of GA in the service area. GA is a term used to describe a diverse range of aviation activities, which includes all segments of the aviation industry except commercial air carriers and the military. GA is the largest component of the national aviation system and includes activities such as pilot training, recreational flying, and the use of sophisticated turboprop and jet aircraft for business and corporate use.

The initial step in determining the GA demand for an airport is to define its generalized service area. The airport service area is a generalized geographical area where there is a potential market for airport services, particularly based aircraft. Access to GA airports and transportation networks enter the equation to determine the size of a service area, as well as the quality of aviation facilities, distance, and other subjective criteria.

As in any business enterprise, the more attractive the facility is in terms of service and capabilities, the more competitive it will be in the market. If an airport's attractiveness increases in relation to nearby airports, so will the size of its service area. If facilities and services are adequate and/or competitive, some level of aviation activity might be attracted to an airport from more distant locales.

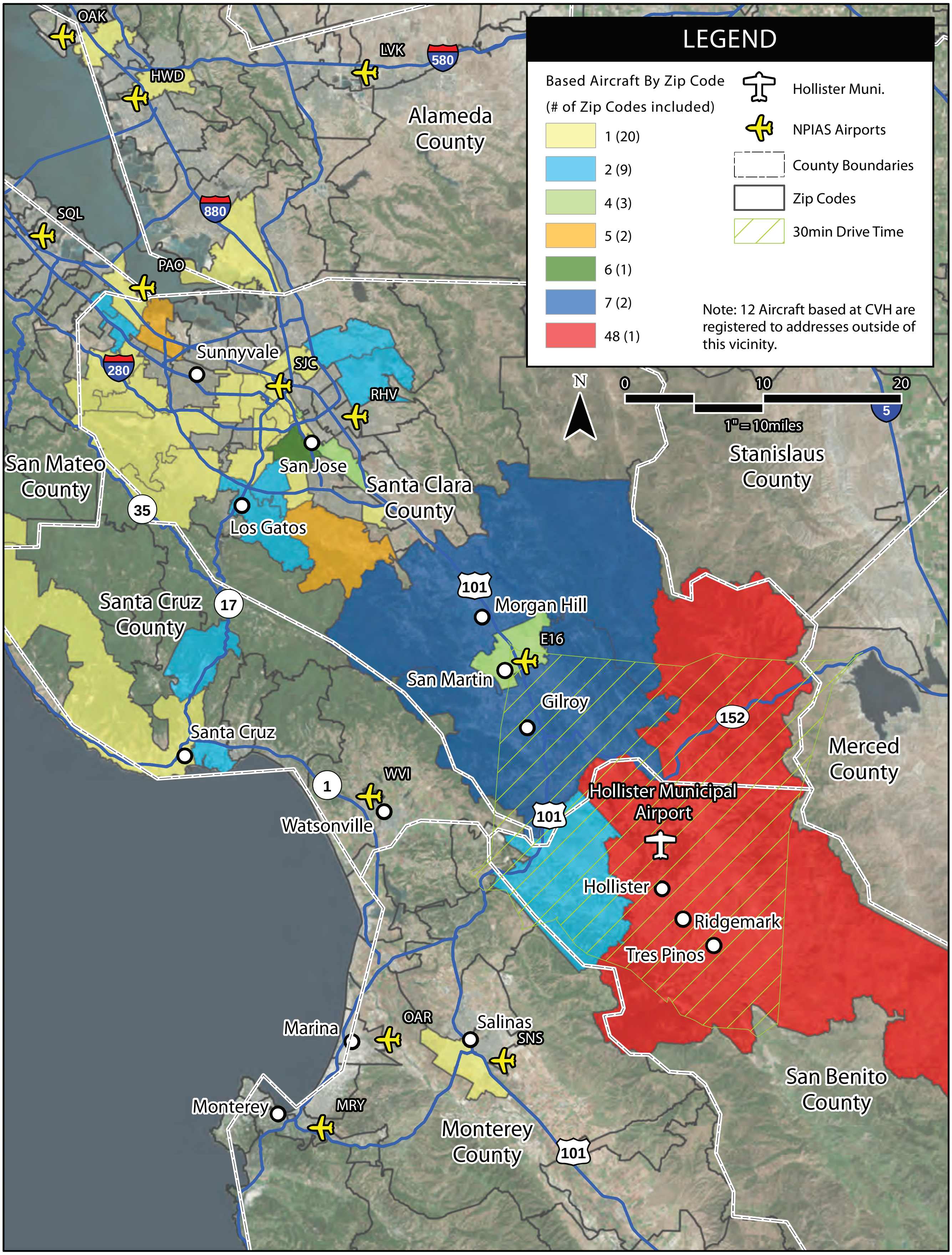
Typically, the service area for a local GA airport can range from a minimum of 30 miles, extending up to approximately 50 miles. The proximity and level of GA services are largely the defining factors when describing the GA service area. A description of nearby airports was previously completed in the Vicinity Airports section, as presented on **Exhibit C**. There are seven public-use airports and three privately owned airports located within 30 nm of the Airport.

Of the seven public-use airports within 30 nm of CVH, Marina Municipal Airport (OAR) and Los Banos Municipal Airport (LSN) are also classified as Local GA airports. In addition, Salinas (SNS) and Watsonville (WVI) Municipal Airports are classified as Regional GA airports, while San Martin Airport (E16) is classified as a Local Reliever, helping to relieve the GA activity associated with San Jose International Airport. Monterey Regional Airport (MRY) is classified as a primary commercial service airport; however, it also accommodates a significant level of GA demand in the region. Frazier Lake Airpark (1C9), located in close proximity to CVH, is a non-NPIAS airport that also serves GA demand mainly associated with small piston-powered aircraft.

Given the surrounding competition for based aircraft and services offered, the most effective method of defining the Airport's service area is by examining the based aircraft listing by their registered address. **Exhibit H** presents the number of CVH based aircraft located within the region by their associated zip code, as well as a 30-minute drive time area from the Airport. It should be noted that 12 based aircraft are registered to addresses outside the regional area, many of which are registered out-of-state.

As depicted on the exhibit, the most concentrated number of aircraft owners are located in the northern portion of San Benito County and southern portion of Santa Clara County, near the cities of Hollister, Ridgemark, Tres Pinos, Gilroy, San Martin, and Morgan Hill. When considering all 140 CVH based aircraft, approximately 79 percent are registered in San Benito and Santa Clara counties, with 31 percent being registered in San Benito County and 48 percent registered in Santa Clara County. The remaining based aircraft are primarily registered in the neighboring counties of Santa Cruz, Monterey, and the southern portion of Alameda.

Although there is strong competition from airports within the region offering services similar to or greater than those available at CVH, the service area appears to extend northwest to include a large portion of Santa Clara County, in addition to San Benito County. Given the services currently offered at CVH and the possibility for expansion to meet future demand, it is likely for the Airport to remain competitive within the region. For the purposes of this study, the primary service area for CVH can be defined as the entirety of San Benito and Santa Clara counties, and more broadly defined as the northern portion of the Central Coast Region as the secondary service area. The Central Coast Region is made up of Santa Cruz, San Benito, Monterey, San Luis Obispo, and Santa Barbra counties.



Source: BasedAircraft.com, ESRI Basemap, Imagery (2014), Coffman Associates Analysis

REGISTERED AIRCRAFT FORECAST

Table K depicts the historical registered aircraft for the counties of San Benito and Santa Clara for years 1993 to 2016. The registered aircraft in the area shows a decreasing trend from years 1993 through 1996, then increasing through 2001. However, after 2001, the service area experienced a downward trend in aircraft registration, reaching a low of 1,500 registered aircraft in 2014. As previously noted, the FAA's effort to re-register aircraft during this timeframe likely contributed to the decrease in registered aircraft ownership in the region, as it did in much of the United States. The service area experienced modest increases in registered aircraft during 2015 and 2016, reaching totals of 1,504 and 1,524, respectively. Although there are no recently prepared forecasts for the Airport service area regarding registered aircraft, one was prepared for this study using market share projection and ratio projection methods.

TABLE K
Historical Registered Aircraft
San Benito and Santa Clara Counties

Year	Helicopter	MEP	Other*	SEP	Turbojet	Turboprop	Total
1993	65	174	102	1,692	75	33	2,141
1994	57	170	99	1,630	74	29	2,059
1995	58	165	107	1,584	79	26	2,019
1996	61	172	116	1,555	65	22	1,991
1997	62	155	120	1,574	65	22	1,998
1998	61	161	123	1,581	63	23	2,012
1999	62	157	117	1,587	78	26	2,027
2000	66	173	131	1,729	84	27	2,210
2001	69	135	132	1,699	101	94	2,230
2002	74	134	132	1,696	102	90	2,228
2003	72	119	130	1,562	89	137	2,109
2004	70	115	134	1,518	86	139	2,062
2005	69	112	130	1,501	85	130	2,027
2006	65	151	128	1,564	62	41	2,011
2007	62	147	141	1,545	58	36	1,989
2008	60	135	142	1,527	71	50	1,985
2009	60	133	137	1,483	70	49	1,932
2010	59	125	129	1,450	67	49	1,879
2011	58	122	125	1,427	68	48	1,848
2012	47	106	104	1,270	59	50	1,636
2013	38	90	99	1,192	58	51	1,528
2014	36	93	82	1,188	59	42	1,500
2015	40	86	87	1,189	61	41	1,504
2016	38	90	93	1,195	58	50	1,524

MEP: Multi-Engine Piston
SEP: Single Engine Piston
* The "Other" aircraft category refers to aircraft such as gliders, electric aircraft, balloons, and dirigibles.
Source: FAA Registered Aircraft

When projecting the registered aircraft, it is helpful to calculate the service area's market share of the total active GA aircraft in the U.S. In conducting this market share analysis, comparison of the service area aircraft ownership trends against the nation's ownership trends can be carried out. **Table L** details the market share analysis, which shows the service area market share of the U.S. active GA aircraft fleet has held a consistent declining trend, ranging from a high of 0.91 percent in 2006 to a low of 0.72 percent in 2015. Holding the 2016 market share of 0.73 percent constant, the market share can be applied to the forecast of U.S. active GA aircraft to generate the forecast registered aircraft in the Airport service area. According to this projection, 1,558 aircraft could be registered in the service area by 2037, yielding a CAGR of 0.11 percent. In addition, an increasing market share percentage was also applied. Despite the declining market share trend, there could be potential for increased market share capturing historical values should the service area experience economic growth. Utilizing this forecasting technique, registered aircraft within the service area could reach 1,750 by 2037 and grow at a CAGR of 0.66 percent.

TABLE L
Registered Aircraft Forecast
San Benito and Santa Clara Counties

Year	Service Area Registered Aircraft	U.S. Active GA Aircraft	% of U.S. Active GA Aircraft	Service Area Population	Aircraft per 1,000 Residents
2005	2,027	224,257	0.90%	1,729,959	1.17
2006	2,011	221,942	0.91%	1,745,283	1.15
2007	1,989	231,606	0.86%	1,766,098	1.13
2008	1,985	228,664	0.87%	1,795,231	1.11
2009	1,932	223,876	0.86%	1,819,573	1.06
2010	1,879	223,370	0.84%	1,842,462	1.02
2011	1,848	220,453	0.84%	1,870,279	0.99
2012	1,636	209,034	0.78%	1,897,969	0.86
2013	1,528	199,927	0.76%	1,928,701	0.79
2014	1,500	204,408	0.73%	1,952,872	0.77
2015	1,504	210,031	0.72%	1,969,711	0.76
2016	1,524	209,905	0.73%	1,988,179	0.77
Constant Market Share Projection of U.S. Active GA Aircraft (CAGR 0.11%)					
2022	1,530	209,655	0.73%	2,102,125	0.73
2027	1,532	209,805	0.73%	2,199,851	0.70
2037	1,558	213,420	0.73%	2,387,107	0.65
Increasing Market Share Projection of U.S. Active GA Aircraft (CAGR 0.66%)					
2022	1,572	209,655	0.75%	2,102,125	0.75
2027	1,615	209,805	0.77%	2,199,851	0.73
2037	1,750	213,420	0.82%	2,387,107	0.73
Constant Ratio Projection Per 1,000 Residents (CAGR 0.90%)—Selected					
2022	1,619	209,655	0.77%	2,102,125	0.77
2027	1,694	209,805	0.81%	2,199,851	0.77
2037	1,838	213,420	0.86%	2,387,107	0.77
Historical Average Ratio Projection Per 1,000 Residents (CAGR 1.96%)					
2022	1,682	209,655	0.80%	2,102,125	0.80
2027	1,870	209,805	0.89%	2,199,851	0.85
2037	2,292	213,420	1.07%	2,387,107	0.96

Source: Historical Registered Aircraft – FAA Aircraft Registry; Historical and Forecast U.S. Active GA Aircraft – *FAA Aerospace Forecast, Fiscal Years 2017-2037*; Historical and Forecast Population – Woods and Poole Complete Economic and Demographic Data Source (2016).

Population trends have also been used to analyze and project aircraft registrations within the service area. This projection method analyzes the service area population as a ratio of the historical registered aircraft per 1,000 residents. In 2016, Woods and Poole Complete Economic and Demographic Data Source (2016) calculated the population of the service area to be approximately 1,988,179. Population within the service area is forecasted to increase to 2,387,107 by 2037. The ratio of registered aircraft to 1,000 population has been trending down from a high of 1.17 in 2005 to a low of 0.76 in 2015. A constant ratio projection maintaining the 2016 ratio of 0.77 yields 1,838 aircraft in the service area by 2037, growing at a CAGR of 0.90 percent.

A historical average ratio projection of 0.96 aircraft per 1,000 people was applied to the projected population to reflect a return to historic ratio levels. This projection yields a total of 2,292 registered aircraft and a CAGR of 1.96 percent.

The constant ratio projection per capita was selected as the planning forecast as it is indicative of the forecast economic and population growth potential within the region. As such, a slight increase in market share is carried forward throughout the planning horizon to continue a trend that was started at the end of 2015, and return to the registered aircraft level that was attained prior to the recession in 2008.

BASED AIRCRAFT FORECAST

According to Airport records, there are currently 140 aircraft based at the Airport. Historical based aircraft data prior to 2016 was also made available by Airport staff and consists of records associated with the FAA National Based Aircraft Inventory Program and FAA Form 5010-1. Building upon the projections previously developed, market share analysis and trend line projection forecasting approaches were used to generate forecasts for the future based aircraft totals at CVH. As presented in **Table M**, from 2011 to 2016, the CVH market share of registered aircraft within the service area has increased significantly. Holding the current market share constant at 9.19 percent, future based aircraft projections were calculated by applying the service area registered aircraft projection to the market share of registered aircraft. This approach results in a projection of 169 based aircraft by the year 2037. The second projection assumes the Airport's market share will increase throughout the planning period, reflecting the five-year trend. An increasing market share projection results in 276 based aircraft by 2037 and a CAGR of 3.28 percent.

Additional projections were prepared by examining the ratio of based aircraft to population. Historic data shows that the ratio of based aircraft per 1,000 residents has also increased significantly from 2011 to 2016. Holding the current value of 0.070 based aircraft per 1,000 residents constant results in a projection of 167 based aircraft by 2037. An increasing ratio of based aircraft per 1,000 residents was also applied to the forecast service area population. Given that the service area population is projected to increase at a CAGR of 0.87 percent over the planning horizon, it is reasonable to assume that based aircraft within the service area could also experience some growth. Increasing the ratio of registered aircraft per 1,000 residents within the service area to 0.085 over the planning horizon results in a projection of 203 based aircraft by 2037 and a CAGR of 1.79 percent.

The forecasts summarized in **Table M** represent a reasonable planning envelope. The selected forecast considers the airport experiencing an increase in market share and an increase in the ratio of the service area population as has been experienced the past several years. By 2037, 203 aircraft are projected to be based at CVH. This forecast results in a 1.79 percent CAGR through the long term planning period.

Future aircraft basing at the Airport will depend on several factors, including the state of the economy, fuel costs, available facilities, competing airports, and adjacent development potential. Forecasts assume a reasonably stable and growing economy, as well as reasonable development of Airport facilities necessary to accommodate aviation demand. Competing airports will play a role in deciding demand; however, CVH should fare well in this competition as it is served by a runway capable of handling the majority of general aviation aircraft and the Airport's capability of being expanded to meet future demand.

TABLE M
Based Aircraft Forecast
Hollister Municipal Airport

Year	CVH Based Aircraft	Service Area Registrations	CVH Market Share	Service Area Population	Aircraft per 1,000 Residents
2011	103	1,848	5.57%	1,870,279	0.055
2012	103	1,636	6.30%	1,897,969	0.054
2013	115	1,528	7.53%	1,928,701	0.060
2014	113	1,500	7.53%	1,952,872	0.058
2015	120	1,504	7.98%	1,969,711	0.061
2016	140	1,524	9.19%	1,988,179	0.070
Constant Market Share Projection of Registered Aircraft (CAGR 0.89%)					
2022	149	1,619	9.19%	2,102,125	0.071
2027	156	1,694	9.19%	2,199,851	0.071
2037	169	1,838	9.19%	2,387,107	0.071
Increasing Market Share Projection of Registered Aircraft (CAGR 3.28%)					
2022	162	1,619	10.00%	2,102,125	0.077
2027	203	1,694	12.00%	2,199,851	0.092
2037	276	1,838	15.00%	2,387,107	0.115
Constant Ratio Projection Per 1,000 Residents (CAGR 0.88%)					
2022	147	1,619	9.09%	2,102,125	0.070
2027	154	1,694	9.09%	2,199,851	0.070
2037	167	1,838	9.09%	2,387,107	0.070
Increasing Ratio Projection per 1,000 Residents (CAGR 1.79%)—Selected					
2022	158	1,619	9.74%	2,102,125	0.075
2027	172	1,694	10.13%	2,199,851	0.078
2037	203	1,838	11.04%	2,387,107	0.085

Note: 2016 CVH based aircraft number from current Airport records, 03/02/2017. Historical based aircraft totals from 2011-2015 derived from the FAA National Based Aircraft Inventory Program and FAA Form 5010-1 records as provided by Airport staff.
Source: Historical Registered Aircraft – FAA Aircraft Registry; Historical Population –U.S. Census Bureau, Forecast Population – Woods and Poole Complete Economic and Demographic Data Source (2016); Airport Communication.

BASED AIRCRAFT FLEET MIX

The current fleet mix based at CVH consists of 100 single engine piston aircraft, 10 multi-engine piston aircraft, three turboprops, six jets, two helicopters, and 19 gliders. It should be noted that glider aircraft are classified in the "other" category. Given that the total number of aircraft based at the Airport is projected to increase, it is important to have an idea of the type of aircraft expected to utilize the airfield. A forecast of the fleet mix will ensure that adequate facilities are planned to accommodate these aircraft in the future.

The projection for the fleet mix of based aircraft was generated by comparing the existing fleet mix of based aircraft at CVH with the U.S. GA fleet trends, as well as discussions with Airport personnel. The forecast for the active U.S. GA fleet shows declining trends in the single and multi-engine categories; however, the larger and more sophisticated aircraft, such as turboprop and turbojet, are forecast to increase. In addition, both piston and turbine rotorcraft are projected to increase through 2037. On a national level, the FAA forecasts no growth in the “Other” aircraft category through 2037. However, with recent growth in based gliders at CVH and the on-Airport presence of Bay Area Glider Rides, a modest increase in based gliders is expected at the Airport over the long term planning horizon. Taking the national trends and Airport communication into consideration, a projected based aircraft fleet mix has been prepared and is detailed in **Table N**.

TABLE N
Based Aircraft Fleet Mix
Hollister Municipal Airport

Aircraft Type	2016	%	2022	%	2027	%	2037	%
Single Engine Piston	100	71.43%	111	70.25%	117	68.02%	133	65.52%
Multi-Engine Piston	10	7.14%	10	6.33%	10	5.81%	8	3.94%
Turboprop	3	2.14%	4	2.53%	6	3.49%	10	4.93%
Jet	6	4.29%	7	4.43%	9	5.23%	14	6.90%
Helicopters	2	1.43%	4	2.53%	5	2.91%	8	3.94%
Other	19	13.57%	22	13.92%	25	14.53%	30	14.78%
Total	140	100.00%	158	100.00%	172	100.00%	203	100.00%

Other: Includes glider aircraft.
Source: Airport records; Coffman Associates’ analysis

ANNUAL OPERATIONS

General aviation operations are classified as either local or itinerant. A local operation is a take-off or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or touch-and-go operations at the airport. Generally, local operations are characterized by training operations. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. Typically, itinerant operations increase with business and commercial use, since business aircraft are not typically used for large scale training activities.

Since the Airport is not equipped with an ATCT, precise operational (takeoff and landing) counts are not available. The FAA TAF does maintain annual operations estimates, which show 52,600 annual operations for each year from 2010 through 2016. To confirm these estimates, a method for estimating operations was utilized. This method, the *Model for Estimating General Aviation Operations at Non-Towered Airports*, was prepared for the FAA Statistics and Forecast Branch in July 2001. This report develops and presents a regression model for estimating general aviation operations at non-towered airports. The model was derived using a combined data set for small towered and non-towered general aviation airports and incorporates a dummy variable to distinguish the two airport types. In addition, the report applies the model to estimate activity at 2,789 non-towered general aviation airports contained in the

FAA *Terminal Area Forecast*. The estimate of annual operations at CVH was computed using the recommended equation (#15) for non-towered airports. Independent variables used in the equation include airport characteristics (i.e., number of based aircraft, number of flight schools), population totals, and geographic location. The results of the equation confirm the TAF operational estimate of 52,600 annual operations for 2016.

According to Airport management, the local/itinerant operations split is approximately 57 percent local and 43 percent itinerant, with military operations accounting for approximately 100 annual operations. As such, these assumptions will be carried forward to the operations forecasts.

Itinerant General Aviation Operations Forecast

Utilizing the FAA TAF operations estimate confirmed by the model described above, four forecasts of itinerant GA operations have been developed and are presented in **Table P**. The forecasts presented examine and/or manipulate variables, such as CVH's market share of itinerant operations and operations per based aircraft. The first projection considers the Airport maintaining its market share of total U.S. itinerant GA operations at a constant level. In 2016, CVH accounted for 0.162 percent of U.S. itinerant operations. By carrying this percentage forward to the plan years of this study, a forecast emerges generating a CAGR of 0.26 percent and 23,835 itinerant GA operations by year 2037. The second forecast considers an increasing CVH market share of national GA itinerant operations and produces a CAGR of 0.49 percent and 25,012 operations by 2037.

TABLE P
Itinerant GA Operations Forecast
Hollister Municipal Airport

Year	CVH Itinerant GA Operations	U.S. ATCT Itinerant GA Operations	Market Share of Itinerant Operations	CVH Based Aircraft	Itinerant Operations per Based Aircraft
2016	22,575	13,904,000	0.162%	140	161
Constant Market Share Projection (CAGR 0.26%)					
2022	22,876	14,121,000	0.162%	158	145
2027	23,185	14,312,000	0.162%	172	135
2037	23,835	14,713,000	0.162%	203	117
Increasing Market Share Projection (CAGR 0.49%)					
2022	23,300	14,121,000	0.165%	158	147
2027	23,901	14,312,000	0.167%	172	139
2037	25,012	14,713,000	0.170%	203	123
Constant Operations per Based Aircraft (CAGR 1.78%)—Selected					
2022	25,438	14,121,000	0.180%	158	161
2027	27,692	14,312,000	0.193%	172	161
2037	32,683	14,713,000	0.222%	203	161
Increasing Operations per Based Aircraft (CAGR 2.18%)					
2022	26,070	14,121,000	0.185%	158	165
2027	29,240	14,312,000	0.204%	172	170
2037	35,525	14,713,000	0.241%	203	175

Sources: Airport based aircraft information; *FAA Aerospace Forecast 2017-2037, Fiscal Years 2017-2037*; FAA Form 5010; 2015 Estimate of operations – Derived from *Model for Estimating General Aviation Operations at Non-Towered Airports*, Equation #15, FAA Statistics and Forecast Branch (July 2001); Coffman Associates' analysis.

Additional forecasts were prepared by examining the Airport's operations per based aircraft. By maintaining the constant ratio of operations per based aircraft of 161 through the planning period, a forecast results in 32,683 itinerant GA operations by 2037 and a CAGR of 1.78 percent. Finally, by increasing the operations per based aircraft throughout the planning horizon, a forecast of 35,525 itinerant GA operations by 2037 and CAGR of 2.18 percent emerges.

Ultimately, the constant operations per based aircraft projection has been carried forward as the selected forecast. Given the forecast potential for GA itinerant operations to increase on a national level, it is possible for CVH to grow its market share within this operational segment. The selected forecast maintains a reasonable level of operations per based aircraft, while modestly increasing the Airport's market share.

Local General Aviation Operations Forecast

A similar methodology was utilized to generate a planning forecast for local GA operations. Four forecasts were developed, with the first considering the Airport maintaining a constant percentage of U.S. local GA operations. The second forecast applies an increasing market share percentage of U.S. local operations throughout the planning horizon. These forecasts generated CAGRs of 0.36 and 0.52 percent, respectively. Local GA operations forecasts are shown in **Table Q**.

TABLE Q
Local GA Operations Forecast
Hollister Municipal Airport

Year	CVH Local GA Operations	U.S. ATCT Local GA Operations	Market Share of Local Operations	CVH Based Aircraft	Local Operations per Based Aircraft
2016	29,925	11,632,000	0.257%	140	214
Constant Market Share Projection (CAGR 0.36%)					
2022	30,514	11,873,000	0.257%	158	193
2027	31,071	12,090,000	0.257%	172	181
2037	32,251	12,549,000	0.257%	203	159
Increasing Market Share Projection (CAGR 0.52%)					
2022	30,870	11,873,000	0.260%	158	195
2027	31,676	12,090,000	0.262%	172	184
2037	33,380	12,549,000	0.266%	203	164
Constant Operations per Based Aircraft (CAGR 1.79%)—Selected					
2022	33,816	11,873,000	0.285%	158	214
2027	36,808	12,090,000	0.304%	172	214
2037	43,442	12,549,000	0.346%	203	214
Increasing Operations per Based Aircraft (CAGR 2.14%)					
2022	34,760	11,873,000	0.293%	158	220
2027	38,700	12,090,000	0.320%	172	225
2037	46,690	12,549,000	0.372%	203	230

Sources: Airport based aircraft information; *f Forecast, Fiscal Years 2017-2037*; FAA Form 5010; 2015 Estimate of operations – Derived from *Model for Estimating General Aviation Operations at Non-Towered Airports*, Equation #15, FAA Statistics and Forecast Branch (July 2001); Coffman Associates analysis.

Forecasts manipulating variables, such as operations per based aircraft, were also prepared. Maintaining the constant operations per based aircraft at 214 projects a total of 43,442 local GA operations by year 2037 and a CAGR of 1.79 percent, while increasing the operations per based aircraft to 230 over the planning horizon projects 46,690 operations and a CAGR of 2.14 percent.

The constant operations per based aircraft has been selected as the planning forecast. The potential for increases in based aircraft indicates possible growth for CVH's local operational levels and increased market share of national local GA operations.

Military Operations Forecast

Military aircraft utilize civilian airports across the country. The FAA TAF operational data identifies 1,200 annual military operations at CVH. Forecasting of military activity is inherently difficult because of the national security nature of their operations and the fact that their mission can change on a daily basis. Thus, it is typical for the FAA to utilize a flat-line number for military operations. However, communication with Airport management indicates that military activity is much lower. For the purposes of this study, 100 annual military operations will be considered throughout the planning horizon.

Operations Forecast Summary

Table R presents the aggregate total of estimated current operational totals, as well as the operational forecasts for the planning horizon.

TABLE R
Operations Forecast Summary
Hollister Municipal Airport

Year	Based Aircraft	Itinerant GA Operations	Local GA Operations	Itinerant Military Operations	Total Operations
2016	140	22,575	29,925	100	52,600
Forecast Planning Horizon					
2022	158	25,438	33,812	100	59,350
2027	172	27,692	36,808	100	64,600
2037	203	32,683	43,442	100	76,225
CAGR	1.79%	1.78%	1.79%	0.00%	1.78%

ANNUAL INSTRUMENT APPROACHES

Forecasts of annual instrument approaches (AIAs) provide guidance in determining an airport's requirements for navigational aid facilities. An instrument approach is defined by the FAA as "an approach to an airport with intent to land by an aircraft in accordance with an IFR flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum approach altitude." To qualify as an instrument approach, aircraft must land at an airport after following one of the published instrument approach procedures. Forecasts of annual instrument approaches (AIAs) provide guidance in determining an airport's requirements for navigational aid facilities. Practice or training approaches do not count as AIAs, nor do instrument approaches that occur in visual conditions.

It is highly unusual for pilots to perform local operations when IFR conditions are in effect. AIAs may be expected to increase as itinerant operations and operations by more sophisticated aircraft (e.g., turboprops and business jets) increase through the planning period. For this reason, AIA projections consider a constant estimate of two percent of annual itinerant operations. The projections are presented in **Table S**.

TABLE S
Annual Instrument Approaches (AIAs)
Hollister Municipal Airport

Year	AIAs	Itinerant Operations	Ratio
2016	454	22,675	2.00%
2022	511	25,538	2.00%
2027	556	27,792	2.00%
2037	656	32,783	2.00%

Source: Coffman Associates' analysis

PEAK PERIOD FORECASTS

Peaking characteristics are an important aspect in generating airport capacity and facility requirements. It should be noted that because CVH does not have a control tower, the generalized peaking characteristics of other non-towered general aviation airports have been used for the purpose of this study. The peaking periods used to develop the capacity analysis and facility requirements are described below.

- Peak Month – The calendar month in which traffic activity is highest.
- Design Day – The average day in the peak month. This indicator is easily derived by dividing the peak month by the number of days in the month.
- Busy Day – The busy day of a typical week in the peak month.
- Design Hour – The peak hour within the design day.

For the purposes of this study, the peak month was estimated at ten percent of the annual operations. By 2037, the estimated peak month is projected to reach 7,623 operations. The design day is estimated by dividing the peak month by its number of days, and the busy day is calculated at 25 percent busier than the design day. The design hour is then calculated at 15 percent of the design day. These projections can be viewed in **Table T**.

TABLE T
Peak Period Forecasts
Hollister Municipal Airport

Year	2016	2022	2027	2037
Annual	52,600	59,350	64,600	76,225
Peak Month	5,260	5,935	6,400	7,623
Design Day	170	191	208	246
Busy Day	212	239	260	307
Design Hour	25	29	31	37

Source: Coffman Associates analysis

FORECAST COMPARISON TO THE FAA TAF

The FAA will review the forecasts presented in this document for consistency with the *Terminal Area Forecast*. The local FAA Airports District Office (ADO) or Regional Airports Division (RO) are responsible for forecast approvals. When reviewing a sponsor's forecast, the FAA must ensure that the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. Forecasts of based aircraft and annual aircraft operations are considered consistent with the TAF if they differ by less than 10 percent in the five-year period and 15 percent in the 10-year forecast period. If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used for FAA decision-making. The reason the FAA allows this differential is because the TAF forecasts are not meant to replace forecasts developed locally (i.e., in this Master Plan). While the TAF can provide a point of reference or comparison, their purpose is much broader in defining FAA national workload measures.

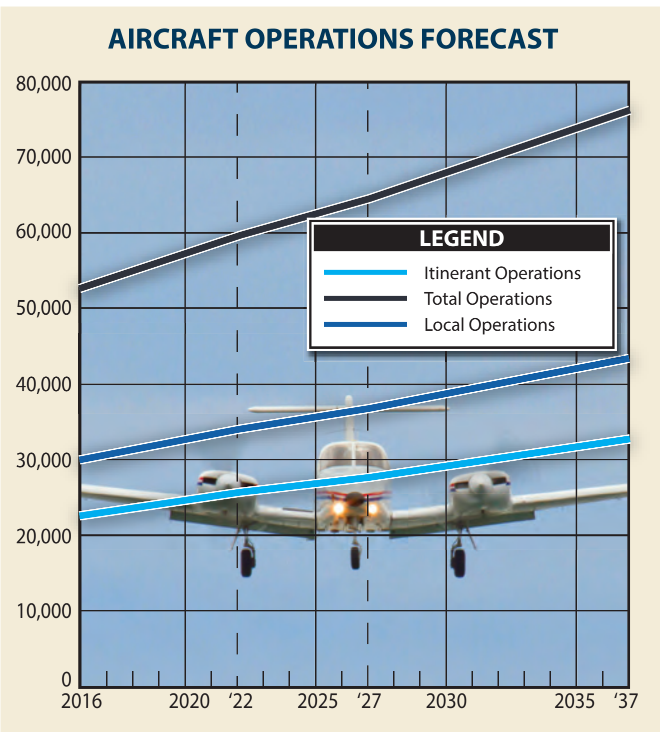
At the time the study forecasts for this Narrative Report were prepared, they were compared to the 2017 TAF. The study forecasts exceeded the 10 percent and 15 percent thresholds for the five- and 10-year periods; however, the 2017 TAF was reporting 85 based aircraft when the airport had a verified based aircraft count of 140. This significant difference in the base year data for based aircraft helps to explain the disparity in the study forecasts versus the TAF. In addition, the 2017 TAF for based aircraft considers a no-growth scenario, while the study forecast for based aircraft accounts for a 1.79 percent CAGR. It is also important to note that the current 2018 TAF more than doubled the forecast number of based aircraft for the airport, now accounting for 173. When making this comparison, the study forecast for based aircraft is within 8.7 percent and 0.6 percent of the 2018 TAF for the five- and 10-year planning periods, respectively. As such, these forecasts are consistent with the TAF.

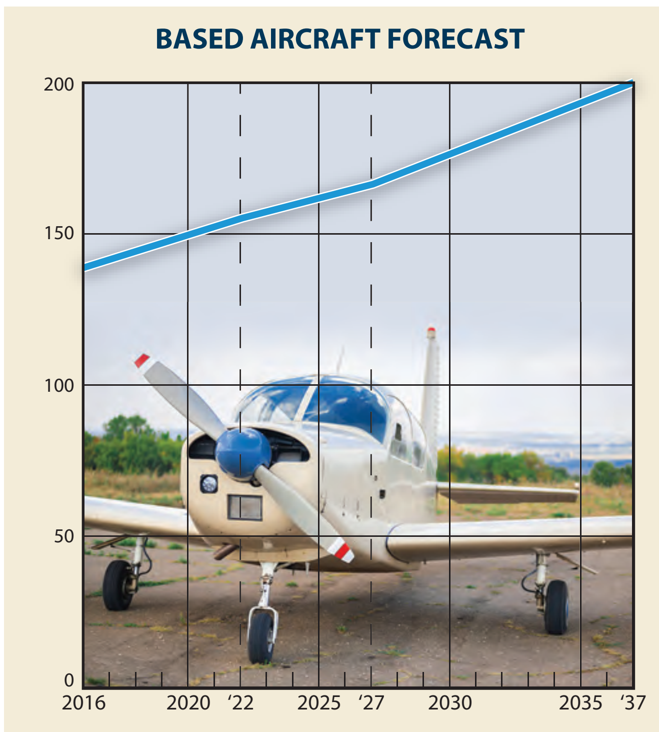
For annual operations, the 2017 and 2018 TAFs maintain a no-growth scenario of 52,600 operations. When comparing the study forecast for annual aircraft operations, the five- and 10-year periods exceed the TAF by 12.8 percent and 22.8 percent, respectively. It is prudent to consider the TAF forecast for annual operations unreliable given the significant gain in based aircraft between 2017 and 2018, yet no change in annual operations to reflect this. A comparison was also made to the FAA Form 5010-1 for Hollister Municipal Airport, which is reporting 56,920 annual operations in 2017. When comparing this number with the study forecast for annual operations, the five-and 10-year forecasts are within 4.3 percent and 13.5 percent, respectively, thus making them consistent.

FORECAST SUMMARY

This section has provided demand-based forecasts of aviation activity at CVH over the next 20 years. An attempt has been made to define the projections in terms of short (1-5 years), intermediate (6-10 years), and long (11-20 years) term planning horizons. **Exhibit J** presents a 20-year forecast summary. Elements, such as local socioeconomic indicators, anticipated regional development, historical aviation data, and national aviation trends, were all considered when determining future conditions.

	Base Year	2022	2027	2037
BASED AIRCRAFT				
Single Engine	100	111	117	133
Multi-Engine Piston	10	10	10	8
Turboprop	3	4	6	10
Jet	6	7	9	14
Rotor	2	4	5	8
Other	19	22	25	30
TOTAL BASED AIRCRAFT	***140***	***158***	***172***	***203***
ANNUAL OPERATIONS				
ITINERANT				
General Aviation	22,575	25,438	27,692	32,683
Military	100	100	100	100
Total Itinerant	***22,675***	***25,538***	***27,792***	***32,783***
LOCAL				
General Aviation	29,925	33,812	36,808	43,442
Total Local	***29,925***	***33,812***	***36,808***	***43,442***
TOTAL OPERATIONS	***52,600***	***59,350***	***64,600***	***76,225***
PEAK OPERATIONS FORECAST				
Peak Month	5,260	5,935	6,460	7,623
Design Day	170	191	208	246
Busy Day	212	239	260	307
Design Hour	25	29	31	37
ANNUAL INSTRUMENT APPROACHES	***454***	***511***	***556***	***656***





Source: Coffman Associates analysis

Exhibit J
FORECAST SUMMARY

AIRPORT/AIRCRAFT/RUNWAY CLASSIFICATION

The FAA has established multiple aircraft classification systems that group aircraft based upon performance (approach speed in landing configuration) and on design characteristics (wingspan and landing gear configuration). These classification systems are used to design certain airport elements, such as separation standards, safety areas, runways, taxiways, and aprons, based upon the aircraft expected to use the airport facilities most frequently.

AIRCRAFT CLASSIFICATION

The use of appropriate FAA design standards is generally based upon the characteristics of aircraft commonly using, or expected to use, the airport facilities. The aircraft used to design the airport is designated as the critical aircraft. The design criteria used in the aircraft classification process are presented in **Exhibit K**. An airport's critical aircraft can be a single aircraft or a collection of multiple aircraft commonly using the airport that fit into a single aircraft category. The design aircraft or collection of aircraft is classified by three different categories: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). The FAA Advisory Circular (AC) 150/5300-13A, *Airport Design,* describes the following classification systems and parameters.

Aircraft Approach Category (AAC): A grouping of aircraft based on a reference landing speed (V_{REF}), if specified, or if V_{REF} is not specified, 1.3 times stall speed (V_{SO}) at the maximum certificated landing weight. V_{REF}, V_{SO}, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry. The AAC generally refers to the approach speed of an aircraft in landing configuration. The higher the approach speed is, the design standards become more restrictive. The AAC, depicted by letters A-E, represents the approach category and relates to the approach speed of the aircraft (operational characteristics). The AAC typically applies to runways and runway-related facilities, such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards.

Airplane Design Group (ADG): The ADG, depicted by a Roman numeral I through VI, is a classification of aircraft which relates to the aircraft wingspan or tail height (physical characteristics). If the aircraft wingspan or tail height fall under two different classifications, the higher category is used. The ADG is used to establish design standards for taxiway safety area (TSA), taxiway obstacle free area (TOFA), taxilane object free area, apron wingtip clearance, and various other separation standards.

Taxiway Design Group (TDG): A classification of airplanes based on outer-to-outer main gear width (MGW) and cockpit to main gear (CMG) distance. The TDG relates to the dimensions of the under-carriage of the design aircraft. The taxiway design elements determined by the application of the TDG include the taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet dimensions, and, in some cases, the separation distance between parallel taxiway/taxilanes. Other taxiway elements, such as the taxiway safety area (TSA), taxiway/taxilane object free area (TOFA), taxiway/taxilane separation to parallel taxiway/taxilanes or fixed or movable objects, and taxiway/taxilane wingtip clearances are determined solely based on the wingspan (ADG) of the design aircraft utilizing those surfaces. It is

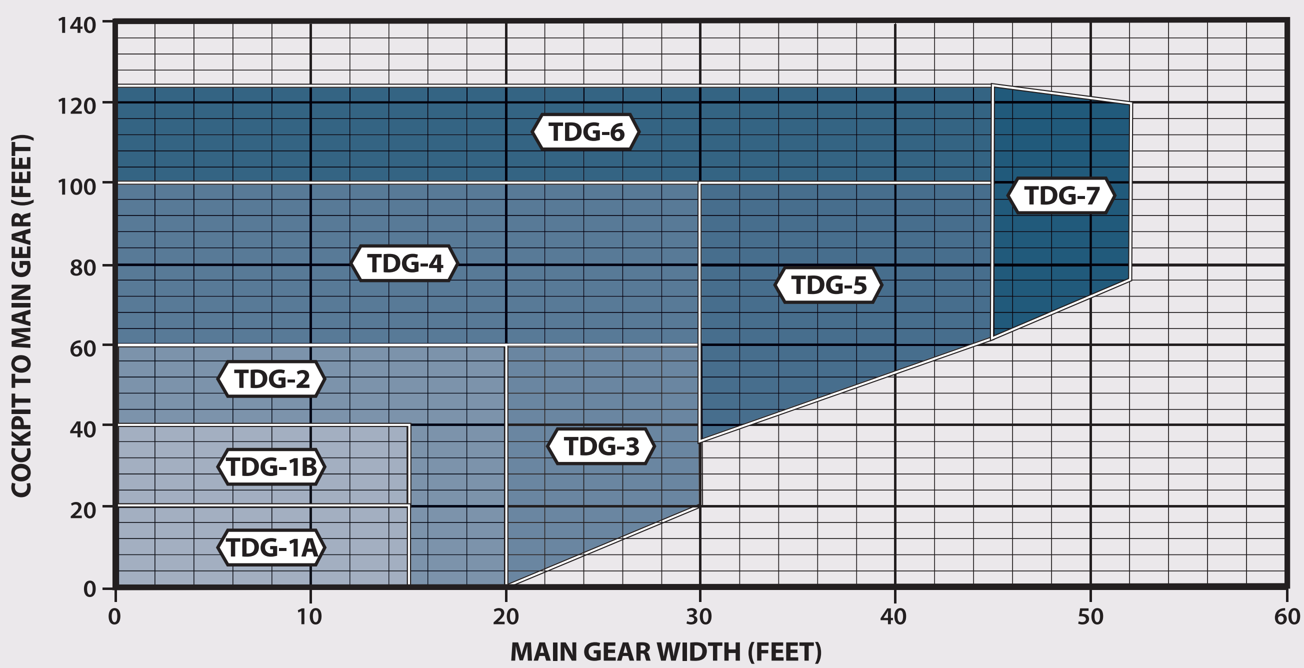
AIRCRAFT APPROACH CATEGORY (AAC)	
Category	**Approach Speed**
A	less than 91 knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

AIRPLANE DESIGN GROUP (ADG)		
Group #	**Tail Height (ft)**	**Wingspan (ft)**
I	<20	<49
II	20-<30	49-<79
III	30-<45	70-<118
IV	45-<60	118-<171
V	60-<66	171-<214
VI	66-<80	214-<262

VISIBILITY MINIMUMS	
RVR* (ft)	**Flight Visibility Category (statute miles)**
VIS	3-mile or greater visibility minimums
5,000	Not lower than 1-mile
4,000	Lower than 1-mile but not lower than ¾-mile
2,400	Lower than ¾-mile but not lower than ½-mile
1,600	Lower than ½-mile but not lower than ¼-mile
1,200	Lower than ¼-mile

***RVR:** Runway Visual Range

TAXIWAY DESIGN GROUP (TDG)



Source: FAA AC 150/5300-13A, Airport Design appropriate for a taxiway to be planned and built to different taxiway design standards based on expected use.

Exhibit L presents the aircraft classification of common aircraft in operation today.

AIRPORT AND RUNWAY CLASSIFICATION

The airport and runway classifications, along with the aircraft classifications defined above, are used to determine the appropriate FAA design standards to which the airfield facilities are to be designed and built.

Airport Reference Code (ARC): An airport designation that signifies the airport's highest runway design code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning and design purposes only and does not limit the aircraft's capability of operating safely on the airport. The current ALP, which was last updated in January 2009 and will be updated as part of this study, indicates that the Airport is currently designed to ARC B-II standards.

Runway Design Code (RDC): A code signifying the design standards to which the runway is to be built. The RDC is based upon planned development and has no operational component.

The AAC, ADG, and runway visual range (RVR) are combined to form the RDC of a particular runway. The RDC provides the information needed to determine certain design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics), whichever is most restrictive. The third component relates to the visibility minimums expressed by RVR values in feet of 1,200 (⅛-mile); 1,600 (¼-mile); 2,400 (½-mile); 4,000 (¾-mile); and 5,000 (1-mile). The RVR values approximate standard visibility minimums for instrument approaches to the runways. The third component should read "VIS" for runways designed for visual approach use only.

Numerous airfield design standards are based upon the RDC. The RDC of any given runway is used to determine specific airfield design standards, which include imaginary surfaces established by the FAA to protect aircraft operational areas in order to keep them free of obstructions that could possibly affect the safe operation of aircraft. Airfield design standards at CVH are further described later in the report.

Approach Reference Code (APRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to landing operations. Like the RDC, the APRC is composed of the same three components: the AAC, ADG, and RVR. The APRC describes the current operational capabilities of a runway under particular meteorological conditions where no special operating procedures are necessary, as opposed to the RDC, which is based upon planned development with no operational component. The APRC for a runway is established based upon the minimum runway to taxiway centerline separation.

A-I

- Beech Baron 55
- **Beech Bonanza**
- Cessna 150
- Cessna 172
- Cessna Citation Mustang
- Eclipse 500/550
- Piper Archer
- Piper Seneca

C-I, D-I

- Beech 400
- **Lear** 31, **35**, 45, 60
- Israeli Westwind

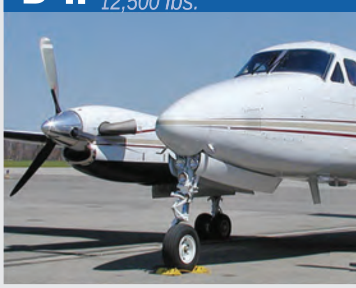
B-I

- Beech Baron 58
- Beech King Air 100
- Cessna 402
- **Cessna 421**
- Piper Navajo
- Piper Cheyenne
- Swearingen Metroliner
- Cessna Citation I (525)

C-II, D-II

- **Cessna Citation X (750)**
- Gulfstream 100, 200,300
- Challenger 300/600
- ERJ-135, 140, 145
- CRJ-200/700
- Embraer Regional Jet
- Lockheed JetStar
- Hawker 800

B-II *less than 12,500 lbs.*



- **Super King Air 200**
- Cessna 441
- Cessna 208 Caravan
- DHC Twin Otter
- Pilatus PC-12

C-III, D-III *less than 100,000 lbs.*

- ERJ-170
- CRJ 705, 900
- Falcon 7X
- **Gulfstream 500**, 550, 650
- Global Express, Global 5000
- Q-400

B-I, B-II *more than 12,500 lbs.*

- Super King Air 350
- Beech 1900
- Jetstream 31
- Falcon 10, 20, 50
- Falcon 200, 900
- **Citation II**, III, IV, V
- Saab 340
- Embraer 120

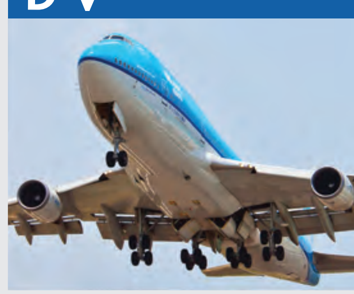
C-IV, D-IV

- B-757
- B-767
- **C-130 Hercules**
- DC-8-70
- MD-11

A-III, B-III

- DHC Dash 7
- **DHC Dash 8**
- DC-3
- Convair 580
- Fairchild F-27
- ATR 72
- ATP

D-V



- **B-747-400**
- B-777
- B-787
- A-330, A-340

Note: Aircraft pictured is identified in bold type.

Currently, the runway to taxiway centerline separation for Runway 13-31 is 300 feet. Given that Runway 13-31 is served by non-precision instrument approach procedures with minimums not lower than one mile, Runway 13-31 meets standards for APRC B/III/5000 and D/II/5000.

The runway to taxiway centerline separation for Runway 6-24 is currently 250 feet and is served by a visual approach to each end of the runway. Given these conditions, Runway 6-24 meets standards for APRC B/II/VIS.

Departure Reference Code (DPRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to take-off operations. The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under particular meteorological conditions with no special operating conditions. The DPRC is similar to the APRC but is composed of two components: AAC and ADG. A runway may have more than one DPRC depending on the parallel taxiway separation distance.

The runway to taxiway centerline separation for Runway 13-31 is currently 300 feet which meets FAA design standards for DPRC B/III and D/II, while the 250-foot taxiway centerline separation for Runway 6-24 meets FAA design standards for DPRC B/II.

CRITICAL DESIGN AIRCRAFT

The selection of airport design criteria is based upon the aircraft currently using, or expected to use, the airport. The critical aircraft is used to establish the design parameters of the airport. These criteria are typically based upon the most demanding aircraft using the airfield facilities on a relatively frequent basis. The critical design aircraft can be a single aircraft or a composite of multiple aircraft that represent a collection of aircraft characteristics. Upon the selection of multiple aircraft, the most demanding aircraft characteristics are used to establish the design criteria of the airport based upon the AAC, ADG, and TDG. If the airport contains multiple runways, a critical design aircraft will be established for each runway.

The primary consideration for a critical design aircraft is to ensure safe operation of the aircraft using the airport. If an aircraft larger than the critical design aircraft is to operate at the airport, it may result in reduced safety margins, or an unsafe operation. However, airports typically do not establish design criteria based solely upon the largest aircraft using the airfield facilities if it operates on an infrequent basis.

The critical design aircraft can be defined as an aircraft conducting at least 500 itinerant annual operations at an airport or the most regularly scheduled aircraft in commercial service. When planning for future airport facilities, it is extremely important to consider the demands of aircraft operating at the airport in the future. As a result of the separation standards based upon the critical aircraft, caution must be exercised to ensure that short-term development does not preclude the long-term needs of the airport. Thus, it is important to strike a balance between the facility needs of aircraft currently operating at the airport and the facility needs of aircraft projected to operate at the airport. Although precautions must be taken to ensure long-term airport development, airports with critical aircraft that do not use the airport facilities on a regular basis are unable to operate economically due to added development and maintenance expenses.

AIRPORT DESIGN AIRCRAFT

It is imperative to have an accurate understanding of what type of aircraft operate at the airport both now and in the future. The type of aircraft utilizing airport facilities can have a significant impact on numerous design criteria. Thus, an aircraft activity study by type and aircraft category can be beneficial in determining future airport standards that must be met in order to accommodate certain aircraft.

The most recent annual data was obtained from the Airport IQ Data Center, a program maintained to monitor the amount and type of aircraft activity at airports. Typically, information is added to the system when pilots file flight plans. The program includes commercial service (air carrier and air taxi) and general aviation aircraft. Although the program is capable of identifying the aircraft operating under filed flight plans, Airport IQ does not account for all aircraft operating at a given airport as it is not a requirement that all aircraft operators file flight plans with the FAA. Thus, it is possible for an airport to experience a considerable amount of operations that are not counted within the Airport IQ system. Despite its shortcomings, the program is a valuable source of information when it comes to identifying the primary airport users and type of aircraft operating at the airport on a regular basis.

Numerous aircraft classified within the B-II category were reported by Airport IQ as operating at CVH. Of the B-II aircraft identified, some have a maximum takeoff weight (MTOW) of less than 12,500 pounds, identifying with the small aircraft category, while others have MTOWs greater than 12,500 pounds which are classified as large aircraft. The operational characteristics of a sampling of the B-II category turbine aircraft operating at CVH are presented in **Table U**.

The 2009 ALP designates the ARC as B-II and identifies the critical aircraft as the Cessna Citation III. Based upon the Airport IQ analysis, as well as based aircraft records, Category B-II remains a prevalent ARC designation for CVH. It should be noted that B-II category aircraft are currently based at CVH, including a Beechcraft King Air 90. In addition, CalFire operates a Grumman S-2T airtanker at the Airport. This aircraft is also classified within the B-II category. According to landing fee reports, the Grumman S-2T has averaged 518 operations annually since 2010 and conducted a total of 902 operations in 2016. The Grumman S-2T is classified within TDG 2 due to the dimensions of the undercarriage of the aircraft. Thus, the airport design aircraft is best described as B-II-2. Although aircraft more demanding than B-II were identified utilizing the Airport, these aircraft do not currently conduct at least 500 annual operations to justify a larger critical design aircraft.

TABLE U
Category B-II Aircraft Characteristics
Hollister Municipal Airport

	MTOW (lbs)	Approach Speed (kts)	Wingspan (ft)	Tail Height (ft)
Beechcraft 1900	17,120	113	58.00	15.50
Beechcraft King Air 100	11,800	111	45.92	15.42
Beechcraft King Air 200	12,500	102	54.50	14.80
Beechcraft King Air 350	15,000	99	57.90	14.30
Beechcraft King Air 90	10,100	101	50.00	14.25
Cessna 441 Conquest	9,925	100	49.30	13.10
Citation Excel/XLS	22,000	114	53.50	16.80
Citation II/Bravo	14,800	112	52.17	15.00
Citation Sovereign	30,775	112	72.33	20.33
Citation Ultra/Encore	16,830	107	55.80	17.20
Falcon/Mystère 50	40,780	113	61.92	22.92
Grumman S-2T Airtanker	26,147	115	72.6	17.50

It should be mentioned, however, that three of the six based jets at CVH are classified within the Category C AAC. Moreover, in communications with Hollister Jet Center, the FBO indicated that it frequently provides fueling services for a variety of jet and turboprop aircraft. A list of based turbine-powered aircraft, as well as the most frequently fueled jet aircraft and their respective ARCs, is presented in **Table V**.

TABLE V
Hollister Municipal Airport
Based and Frequently Fueled Turbine Aircraft

Aircraft	ARC
Aero Vodochody L-39*	C-I
Beechcraft Beech Jet 400	C-I
Beechcraft King Air 90*	B-II
Beechcraft Premier 1	B-I
Bombardier Global Express	C-III
Cessna Citation CJ1*	B-I
Cessna Citation CJ2	B-I
Cessna Citation Sovereign	B-II
Cessna Citation X	B-II
Embraer Phenom 500	A-I
Gulfstream G-450	D-II
Gulfstream G-550	D-III
Grumman S-2T Airtanker*	B-II
Siai Marchetti S-211*	A-I

*Aircraft currently based at CVH
Source: Airport Records and Communication with Hollister Jet Center.

EXISTING RUNWAY DESIGN

As previously discussed, each runway has a designated RDC. The RDC relates to specific design criteria set forth by the FAA that should be met. The RDC is determined by the particular aircraft or category of aircraft expected to use each runway.

Runway 13-31 Runway Design Code

Runway 13-31 is the primary runway and should be designed to accommodate the critical design aircraft. This runway is currently 6,350 feet in length and 100 feet wide. The runway is equipped with instrument approach procedures with visibility minimums not lower than one mile. Given these characteristics, Runway 13-31 is currently categorized as B-II-5000.

Runway 6-24 Runway Design Code

Runway 6-24 is designated as the crosswind runway at CVH. The runway is designed to meet minimum requirements for smaller aircraft that utilize the airport. Runway 6-24 is 3,150 feet in length and 100 feet wide. Furthermore, Runway 6-24 is not served by instrument approach procedures and is designated as a visual runway only. Taking into consideration these characteristics, Runway 6-24 is categorized as B-II-VIS.

FUTURE RUNWAY DESIGN

The aviation demand forecasts indicate the potential for continued growth in turbine activity at the Airport. This includes 14 based jets and 10 turboprops by the long term planning horizon. The type and size of business jets and turboprops using the Airport regularly can impact the design standards to be applied to the airport system. Therefore, it is important to have an understanding of what type of aircraft may use the Airport in the future. Factors, such as population and employment growth, in the airport service area, the proximity to and level of service offered at other regional airports, and development at the Airport can influence future activity.

Most operations throughout the planning period of this study are expected to be by aircraft within AACs A and B and within ADGs I and II. However, the trend toward manufacturing of a larger percentage of medium and large business jets, in AACs C and D, may lead to greater utilization of these aircraft (particularly those in AAC C) at CVH by the long term planning horizon. This is a trend already being realized by Hollister Jet Center and Airport staff as the frequency of fueling operations provided for larger business jets and turboprops have been increasing, as noted in the previous section.

Future Runway 13-31 Runway Design Code

CVH currently has six based jets with eight more projected in the future. As previously mentioned, three of the six current based jets are categorized as AAC C aircraft. With projected growth in based jets, the current AAC C aircraft based at the Airport, and the potential for larger business jets to base at or utilize the Airport on a more frequent basis, the AAC could transition to Category C. The evidence supporting a shift to AAC C verifies the currently approved ALP, which ultimately defines Runway 13-31 as ARC C-II. Thus, the planning effort will consider ARC C-II as the ultimate critical design category and the future RDC to be C-II-5000 for Runway 13-31.

Future Runway 6-24 Runway Design Code

Given that Runway 6-24 is designated as the crosswind runway and meets the required length and width minimums for smaller aircraft that utilize the Airport, the ultimate RDC for Runway 6-24 should remain B-II-VIS.

FACILITY REQUIREMENTS

Previously mentioned in the report, components of an airport contain both airside and landside facilities. Airside facilities include facilities that are related to the approach, departure, and ground movement of aircraft on the airport. Airside facility components encompass runways, taxiways, navigational approach aids, airport signage, marking, and lighting. Landside facilities are needed on an airport to foster the interface of air and ground transportation. Landside facility components include terminal facilities, aircraft hangars and tiedowns, aircraft parking aprons, automobile parking, and airport support facilities.

AIRSIDE FACILITY REQUIREMENTS

Components included within the airside facility requirements section encompass runways, safety area design standards, taxiways, navigational and approach aids, lighting, marking, and signage.

Runway Orientation

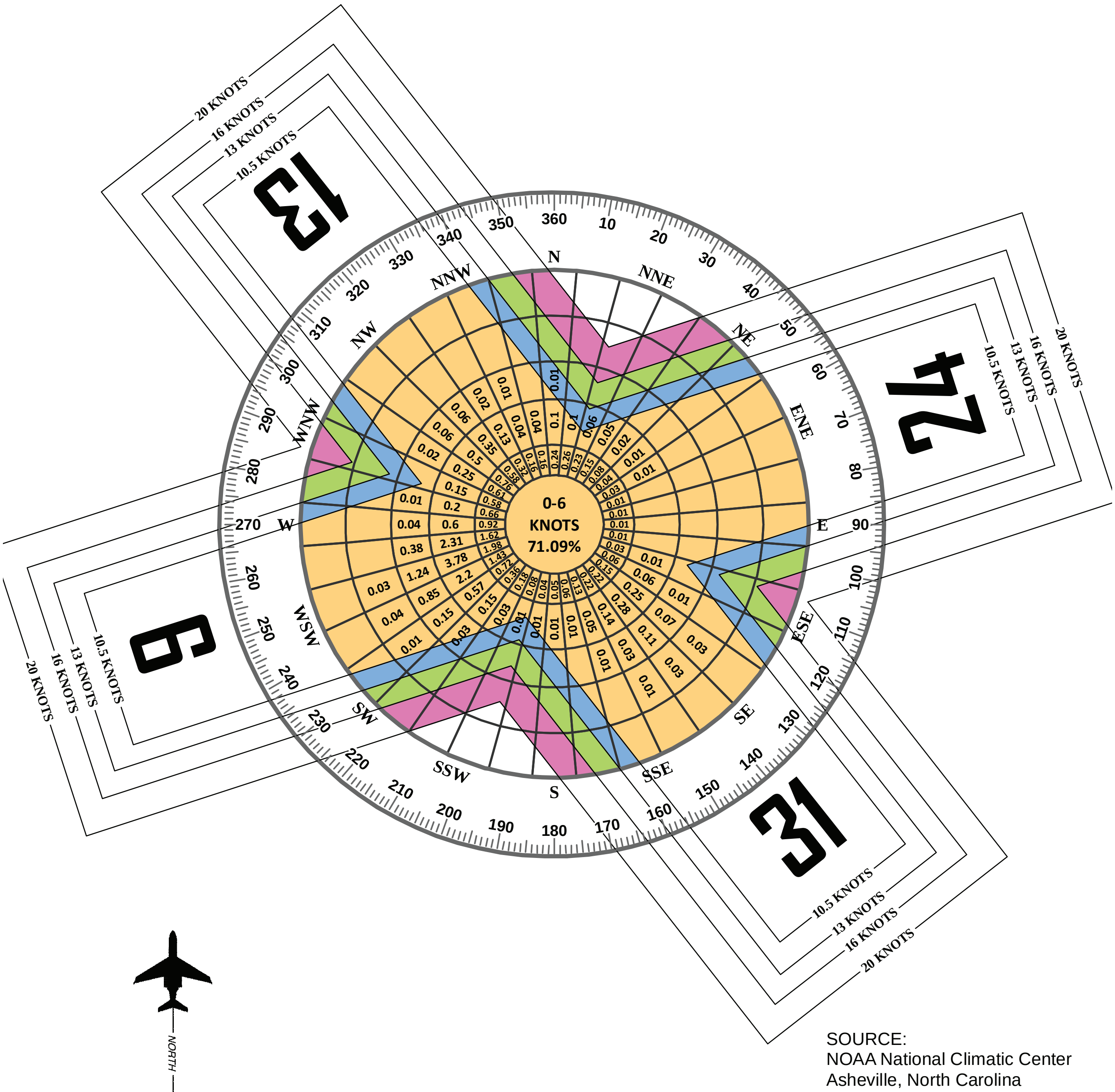
Currently, CVH is served by a two-runway system (13-31 and 6-24) oriented in a northwest—southeast and northeast—southwest configuration. For the operational safety and efficiency of an airport, it is desirable for the primary runway to be oriented as close as possible to the direction of the prevailing wind. This reduces the impact of wind components perpendicular to the direction of travel of an aircraft that is landing or taking off.

FAA Advisory Circular 150/5300-13A, *Airport Design*, recommends that a crosswind runway be made available when the primary runway orientation provides for less than 95 percent wind coverage for specific crosswind components. The 95 percent wind coverage is computed on the basis of not exceeding a 10.5-knot (12 mph) component for RDC A-I and B-I, 13-knot (15 mph) component for RDC A-II and B-II, 16-knot (18 mph) component for RDC A-III, B-III, C-I through C-III, and D-I through D-III and a 20-knot (23) component for RDC A-IV through E-VI.

Data from the AWOS located at CVH was collected from the National Oceanic Atmospheric Administration (NOAA) National Climatic Data Center over a continuous nine-year period from February 1, 2009 through January 31, 2017. A total of 204,828 observations of wind direction and other data points were made. **Exhibit M** presents Runways 13-31 and 6-24 and their associated wind coverage.

In all-weather conditions, Runway 13-31 provides 88.38 percent coverage at 10.5 knots, 92.54 percent coverage at 13 knots, 97.22 percent coverage at 16 knots, and 99.50 percent coverage at 20 knots. In addition, Runway 6-24 provides 97.59 percent coverage at 10.5 knots, 98.70 percent coverage at 13 knots, 99.61 percent coverage at 16 knots, and 99.91 percent coverage at 20 knots. Given that Runway 13-31 does not provide at least 95 percent wind coverage under all-weather conditions at 10.5 and 13 knots, the crosswind runway is justified. The combined wind coverage for both runways under all-weather conditions accommodates 99.87 percent coverage at 10.5 knots, 99.99 percent coverage at 13 knots, and 100 percent coverage at 16 and 20 knots.

ALL WEATHER WIND COVERAGE				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13/31	88.38%	92.54%	97.22%	99.50%
Runway 6/24	97.59%	98.70%	99.61%	99.91%
All Runways	99.87%	99.99%	100.00%	100.00%

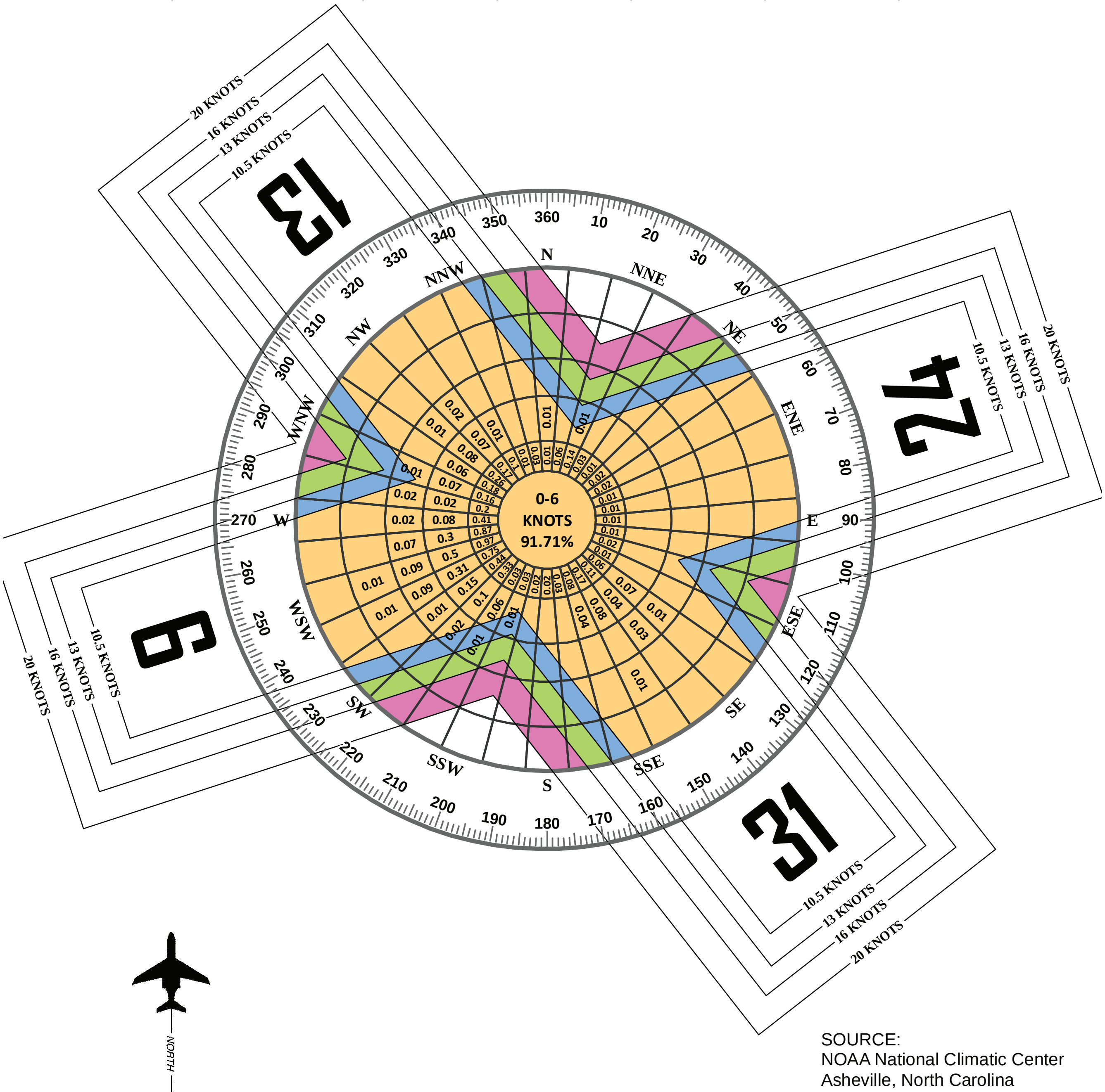


Magnetic Declination
13° 13' 00" East (March 2017)
Annual Rate of Change
00° 06' 00" West (March 2017)

SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Hollister Municipal Airport
Hollister, CA

OBSERVATIONS:
204,828 All Weather Observations
Feb 1, 2009 - Jan, 31 2017

IFR WIND COVERAGE				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13/31	98.28%	98.92%	99.67%	99.94%
Runway 6/24	99.52%	99.76%	99.93%	99.99%
All Runways	99.96%	100.00%	100.00%	100.00%



Magnetic Declination
13° 13' 00" East (March 2017)
Annual Rate of Change
00° 06' 00" West (March 2017)

SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Hollister Municipal Airport
Hollister, CA

OBSERVATIONS:
14,496 IFR Observations
Feb. 1, 2009 - Jan, 31 2017

Runway Length Requirements

Runway length requirements for an airport typically are based on factors, including airport elevation, mean daily maximum temperature of the hottest month, runway gradient (difference in runway elevation of each runway end), critical aircraft type expected to use the airport, and stage length (average distance flown per aircraft departure) of the longest non-stop trip destination. For aircraft with maximum certificated takeoff weights of less than 12,500 pounds, adjustments for runway gradient are not taken into account.

Runway 24

Aircraft performance declines as each of these factors increase. Summertime temperatures and stage lengths are the primary factors in determining runway length requirements. For calculating runway length requirements at CVH, the Airport's elevation is 229.6 feet above mean sea level (MSL) and the mean maximum temperature of the hottest month (July) is 82.0 degrees Fahrenheit (F). The maximum difference in runway elevation is 27.1 feet with a gradient of 0.4 percent.

Using the site-specific data described above, runway length requirements for the various classifications of aircraft that may operate at the airport were examined using FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*. The FAA runway analysis groups general aviation aircraft into several categories, reflecting the percentage of the fleet within each category. The runway design should be based upon the most critical aircraft (or group of aircraft) performing at least 500 annual itinerant operations.

The first step in evaluating runway length is to determine general runway length requirements for the majority of aircraft operating at the airport. The majority of operations at CVH are conducted using smaller single engine piston-powered aircraft weighing less than 12,500 pounds.

Table W summarizes the FAA's generalized recommended runway lengths determined for CVH. FAA AC 150/5325-4B recommends that airports be designed to at least serve 95 percent of small airplanes. The advisory circular further defines the fleet categories as follows:

- 95 Percent of Small Airplane Fleet: Applies to airports that are primarily intended to serve medium-sized population communities with a diversity of usage and a greater potential for increased aviation activities. This category also includes airports that are primarily intended to serve low-activity locations, small population communities, and remote recreational areas.

- 100 Percent of Small Airplane Fleet: This type of airport is primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population community that is remote from a metropolitan area.

Based upon these calculations, primary Runway 13-31 at CVH meets all three categories with its current length of 6,350 feet.

The Airport is also utilized by aircraft weighing more than 12,500 pounds, including small to medium business jet and turboprop aircraft. The FAA runway length AC also includes methods to calculate recommended runway length for large aircraft. Runway length requirements for business jets weighing less than 60,000 pounds have also been calculated based on FAA AC 150/5325-4B. These calculations take into consideration the runway gradient and landing length requirements for contaminated runways (wet). Business jets tend to need greater runway length when landing on a wet surface because of their increased approach speeds.

TABLE W
Runway Length Requirements
Hollister Municipal Airport

AIRPORT AND RUNWAY DATA	
Airport elevation	229.6 feet
Mean daily maximum temperature of the hottest month	82.0° F
Maximum difference in runway elevation	27.1 feet
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with less than 10 passenger seats:	
95 percent of small airplanes	3,100 feet
100 percent of small airplanes	3,600 feet
Small airplanes with 10 or more passenger seats	4,100 feet

Source: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design.*

AC 150/5325-4B stipulates that runway length determinations for large aircraft consider a grouping of airplanes with similar operating characteristics. The AC provides two separate "family groupings of airplanes" each based upon their representative percentage of aircraft in the national fleet. The first grouping is those business jets that make up 75 percent of the national fleet, and the second group is those making up 100 percent of the national fleet (75-100 percent of the national fleet). **Table X** presents a representative list of aircraft for each aircraft grouping. A third group includes business jets weighing more than 60,000 pounds; however, runway length determination for these aircraft types must be based on the performance characteristics of the individual aircraft.

TABLE X
Business Jet Fleet Mix Categories for Runway Length Determination

75 percent of the national fleet	MTOW	75-100 percent of the national fleet	MTOW	Greater than 60,000 pounds	MTOW
Lear 35	20,350	Lear 55	21,500	Gulfstream II	65,500
Lear 45	20,500	Lear 60	23,500	Gulfstream IV	73,200
Cessna 550	14,100	Hawker 800XP	28,000	Gulfstream V	90,500
Cessna 560XL	20,000	Hawker 1000	31,000	Global Express	98,000
Cessna 650 (VII)	22,000	Cessna 650 (III/IV)	22,000		
IAI Westwind	23,500	Cessna 750 (X)	36,100		
Beechjet 400	15,800	Challenger 604	47,600		
Falcon 50	18,500	IAI Astra	23,500		

MTOW: Maximum Take Off Weight

Source: *FAA AC 150/5325-4B, Runway Length Requirements for Airport Design*

Table Y presents the results of the runway length analysis for business jets developed following the guidance provided in AC 150/5325-4B. To accommodate 75 percent of the business jet fleet at 60 percent useful load, a runway length of 5,300 feet is recommended. This length is derived from a raw length of 4,625 feet that is adjusted, as recommended, for runway gradient, then rounded up to the nearest hundred feet (when the raw number is 30 feet or more). To accommodate 100 percent of the business jet fleet at 60 percent useful load, a runway length of 5,500 feet is recommended.

TABLE Y
Runway Length Requirements
Hollister Municipal Airport

Airport Elevation	229.6 feet MSL			
Average High Monthly Temp.	82.0 °F (July)			
Runway Gradient	27.1 feet			
Fleet Mix Category	**Raw Runway Length from FAA AC**	**Runway Length With Gradient Adjustment (+271')**	**Wet Surface Landing Length for Jets (+15%)***	**Final Runway Length**
75% of fleet at 60% useful load	4,625’	4,896’	5,318’	5,300’
100% of fleet at 60% useful load	5,142’	5,413’	5,500’	5,500’

* Max 5,500' for 60% useful load in wet conditions

Source: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design.*

Runway 13-31 Length

Given that Runway 13-31 is designated as a Category B-II runway and is 6,350 feet in length, the runway is capable of serving aircraft greater than 12,500 pounds. According to data presented in previous tables, the runway is capable of accommodating 100 percent of the small aircraft fleet, 100 percent of the small airplanes having 10 or more passenger seats, and 100 percent of the national fleet at 60 percent useful load. As such, Runway 13-31 is deemed to be of adequate length. However, the current configuration of Runway 13-31 could allow additional runway length for departures on Runway 31. This project will be further examined in the Development Concept section of this document. Ultimately, increased runway length would better serve large business jets that may be operating under weight restrictions during hot summer months.

Runway 6-24 Length

Runway 6-24 is designated as a Category B-II runway and is 3,150 feet in length. As previously noted within **Table W**, the runway is capable of accommodating 95 percent of the small aircraft fleet and is 450 feet short of accommodating 100 percent of the small aircraft fleet. Given that the runway is designated as a crosswind runway in support of Runway 13-31, Runway 6-24 is considered to be of adequate length to serve the airfield throughout the planning horizon.

Runway Length Conclusion

The majority of operations taking place at CVH are conducted by smaller, single engine, fixed-wing aircraft weighing less than 12,500 pounds. Following guidance from AC 150/5325-4B, to accommodate 100 percent of these small aircraft, a runway length of at least 4,100 feet is recommended. However, the Airport is also utilized by aircraft weighing more than 12,500 pounds, including small- to mid-sized business jet aircraft. AC 150/5325-4B stipulates that runway length determinations for business jets consider a grouping of airplanes with similar operating characteristics. As such, runway length calculations specific to CVH for business jets that make up 75 percent of the national fleet at 60 percent useful load require a 5,300-foot runway and business jets that make up 100 percent of the national fleet at 60 percent useful load require a 5,500-foot runway. Therefore, runway length calculations for turbine aircraft operating at CVH, including the critical design aircraft, suggest that the current runway length is satisfactory. The additional runway length provided by Runway 13-31 allows for an increased safety margin for larger turbine-powered aircraft, including the CalFire air tankers that operate at the Airport, sometimes taking off with payloads of up to 10,800 pounds. Furthermore, as indicated by Airport records, operations by larger business jet aircraft up to the Gulfstream G550 have been increasing in recent years and are projected to continue to grow over the forecast period. As previously mentioned, Runway 13-31 is configured in a manner that could ultimately increase the usable runway length. The extended runway length is necessary for the safe operation of these larger aircraft that can weigh nearly 100,000 pounds.

Runway Width

The width of each existing runway was examined to ensure compliance with FAA runway design standards assigned for each RDC. Given that Runway 13-31 is designated as an existing Category B-II, and an ultimate Category C-II runway, the current runway width of 100 feet exceeds the current B-II category and is in compliance with the FAA runway design standards for the ultimate C-II category. Ultimately, the runway width of 100 feet should be maintained for Runway 13-31.

Runway 6-24 is currently 100 feet in width and is also currently classified as a Category B-II runway, which exceeds the FAA standard of 75 feet. Given that Runway 6-24 is ultimately planned to remain a Category B-II runway, it is recommended that the current runway width of 100 feet be maintained as an added safety margin, unless financial constraints dictate otherwise.

Runway Pavement Strength

Airport pavement strength is very important as it must be able to withstand repeated operations by aircraft of significant weight. The strength rating of a runway does not preclude aircraft weighing more than the published strength rating from using the runway. All federally obligated airports must remain open to the public, and it is typically up to the pilot of the aircraft to determine if a runway can support their aircraft safely. An airport sponsor cannot restrict an aircraft from using the runway simply because its weight exceeds the published strength rating. On the other hand, the airport sponsor has an obligation to properly maintain the runway and protect the useful life of the runway, typically for 20 years. According to the FAA publication, *Airport/Facility Directory*, "Runway strength rating is not intended as a maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of the published figures." The directory goes on to say that those aircraft exceeding the pavement strength should contact the airport sponsor for permission to operate at the airport.

The current strength rating on Runway 13-31 is 34,000-pounds single wheel loading (SWL) and 45,500-pounds dual wheel loading (DWL). Runway 6-24 is published at 30,000-pounds SWL and 45,000-pounds DWL. Each runway can accommodate activity by the family of critical design aircraft. The FAA has recently moved to implementing the International Civil Aviation Organization (ICAO) pavement classification number (PCN) for identifying strength of airport pavements. The PCN is a five-part code described as follows:

1) PCN Numerical Value: Indicates the load-carrying capacity of the pavement expressed as a whole number. The value is calculated based on a number of engineering factors, such as aircraft geometry and pavement usage.
2) Pavement Type: Expressed as either R for rigid pavement (most typically concrete) or F for flexible pavement (most typically asphalt).
3) Subgrade Strength: Expressed as A (High), B (Medium), C (Low), D (Ultra Low). A subgrade of A would be considered very strong, like concrete-stabilized clay, and a subgrade of D would be very weak, like un-compacted soil.
4) Maximum Tire Pressure: Expressed as W (Unlimited/No Pressure Limit), X (High/254 psi), Y (Medium/181 psi), or Z (Low/72 psi), this indicates the maximum tire pressure the pavement can support. Concrete surfaces are usually rated W.
5) Process of Determination: Expressed as either T (technical evaluation) or U (physical evaluation), this indicates how the pavement was tested.

According to the recently completed runway reconstruction project on Runway 13-31, the PCN for Runway 13-31 is expressed as 13/F/D/X/T. This means that the underlying pavement's value, indicating load-carrying capacity, is 13 (unitless), is flexible (asphalt), is low strength, has high (254 psi) tire pressure restriction, and was calculated through a technical evaluation.

While the pavement strength rating is not the maximum weight limit, aircraft weighing more than the certified strength should only operate on the runway on an infrequent basis. Frequent use by aircraft heavier than the pavement rating is not recommended as it will increase the rate of pavement degradation and shorten the lifespan of the pavement.

Airfield Design Standards

The FAA has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These surfaces include the runway safety area (RSA), runway object free area (ROFA), runway obstacle free zone (ROFZ), and runway protection zone (RPZ).

It is important that the RSA, ROFA, ROFZ, and RPZ remain under direct ownership of the airport sponsor to ensure that these areas remain free of obstacles and can be readily assessed by maintenance and safety personnel. The airport should also own or maintain sufficient land use control over RPZs in an effort to ensure that the area remains obstacle-free. Alternatives to owning RPZs include maintaining positive control through avigation easements or ensuring proper zoning measures are taken to maintain compatible land use. The existing and ultimate safety areas are presented on the front and back side of **Exhibit N**, with existing safety areas presented on the front and ultimate safety areas presented on the back.

Runway Safety Area (RSA)

The RSA is an established surface surrounding a runway that is designed or prepared in order to increase safety and decrease potential damage in the event that an aircraft undershoots, overshoots, or makes an excursion from the runway. The RSA is centered upon the runway centerline and its dimensions are based upon the approach speed and design group of the critical design aircraft using the runway. The FAA states within AC 150/5300-13A that the RSA must be cleared and graded and cannot contain hazardous surface variations. In addition, the RSA must be drained either by grading or storm sewers, capable of supporting snow removal, ARFF equipment, as well as the occasional passage of aircraft without damaging the aircraft. The RSA must remain free of obstacles, other than those considered fixed by function, such as runway lights.

The FAA has placed a higher significance on maintaining adequate RSA at all airports. Under Order 5200.8, effective October 1, 1999, the FAA established the *Runway Safety Area Program*. The Order states, "The objective of the Runway Safety Area Program is that all RSAs at federally-obligated airports…shall conform to the standards contained in Advisory Circular 150/5300-13, *Airport Design*, to the extent practicable." Each Regional Airports Division of the FAA is obligated to collect and maintain data on the RSA for each runway at the airport and perform airport inspections.

The RDC B-II-5000 RSA serving Runway 13-31 is 150 feet wide and extends 300 feet beyond each end of the runway. Based on a site visit and Airport records, there are no known obstructions to the RSA.

Under the ultimate RDC C-II-5000 conditions, the RSA is enlarged to 400 feet wide and extends 1,000 feet beyond the departure end of the runway and 600 feet prior to the landing threshold. The ultimate RDC C-II-5000 RSA would introduce a non-standard condition that would need to be resolved. Under RDC C-II conditions presented on **Exhibit N**, the RSA on the southernmost side of Runway 13-31 is penetrated by the segmented circle, located approximately 190 feet from runway centerline. As a result, future planning should include the relocation of the segmented circle and its associated lighted wind indicator to conform to RSA standards.

The existing and ultimate RDC B-II-VIS RSA serving Runway 6-24 is 150 feet wide and extends 300 feet beyond each runway end. The RSA is unobstructed and should be maintained as such in the future.

Runway Object Free Area (ROFA)

The ROFA can be described as a two-dimensional surface area that surrounds all airfield runways. This area must remain clear of obstructions aside from those that are deemed “fixed by function,” such as runway lighting systems. This safety area does not have to be level or graded as the RSA does. However, the ROFA must be clear of any penetrations of the lateral elevation of the RSA. Much like the RSA, the ROFA is centered upon the runway centerline and its size is determined based upon the critical design aircraft using the runway.

Currently, RDC B-II-5000 FAA standards call for the ROFA serving Runway 13-31 to be 500 feet wide and extend 300 feet beyond each end of the runway. The Runway 13-31 ROFA currently meets FAA dimensional and obstruction standards with the exception of the lighted wind indicator and segmented circle northwest of the Runway 13-31/6-24 intersection and supplemental windcone serving Runway 13, which are located within the ROFA. To comply with FAA ROFA standards for B-II-5000 runways, the lighted wind indicator, segmented circle, and supplemental windcone should be relocated out of the ROFA.

ROFA dimensional standards, presented on **Exhibit N**, for RDC C-II-5000 are 800 feet wide and extend 1,000 feet beyond each end of the runway. Similarly, under ultimate conditions, the ROFA would be obstructed by the segmented circle and its associated lighted wind indicator, as well as the supplemental windcone and tetrahedron serving Runway 13. Furthermore, under ultimate conditions, the ROFA would extend over the southernmost portion of the apron area serving CalFire. These obstructions to the ultimate ROFA should be mitigated prior to upgrading to RDC C-II-5000 standards.

FAA design standards for ROFAs serving RDC B-II-VIS runways are to be 500 feet wide and extend 300 feet beyond each runway end. Similar to Runway 13-31, a supplemental windcone serving Runway 24 is obstructing the existing and ultimate ROFA serving Runway 6-24. The supplemental windcone should be relocated out of the ROFA in order to comply with FAA design standards. In addition, the northern portion of the ROFA serving Runway 6-24 extends beyond Airport property encompassing three acres of arable farmland and farming support facilities. Unowned property within the ROFA should be acquired and the obstructions imposed by the farming support facilities should be relocated outside the ROFA.

Runway Obstacle Free Zone (ROFZ)

An ROFZ can be defined as a portion of airspace centered about the runway, and its elevation at any point is equal to the elevation of the closest point on the runway centerline. The ROFZ extends 200 feet past each end of the runway on the runway centerline. The width of the ROFZ is determined by the critical aircraft utilizing the runway. The ROFZ width for runways accommodating large aircraft is 400 feet. The function of the ROFZ is to ensure the safety of aircraft conducting operations by preventing object penetrations to this portion of airspace. Potential penetrations to this airspace also include taxiing and parked aircraft. Any obstructions within this portion of airspace must be mounted on frangible couplings and be fixed in its position by its function.

The established FAA dimensions for a B-II runway serving large aircraft (over 12,500 pounds) require the ROFZ to be 400 feet in width and extend 200 feet beyond each end of the runway. Runways 13-31 and

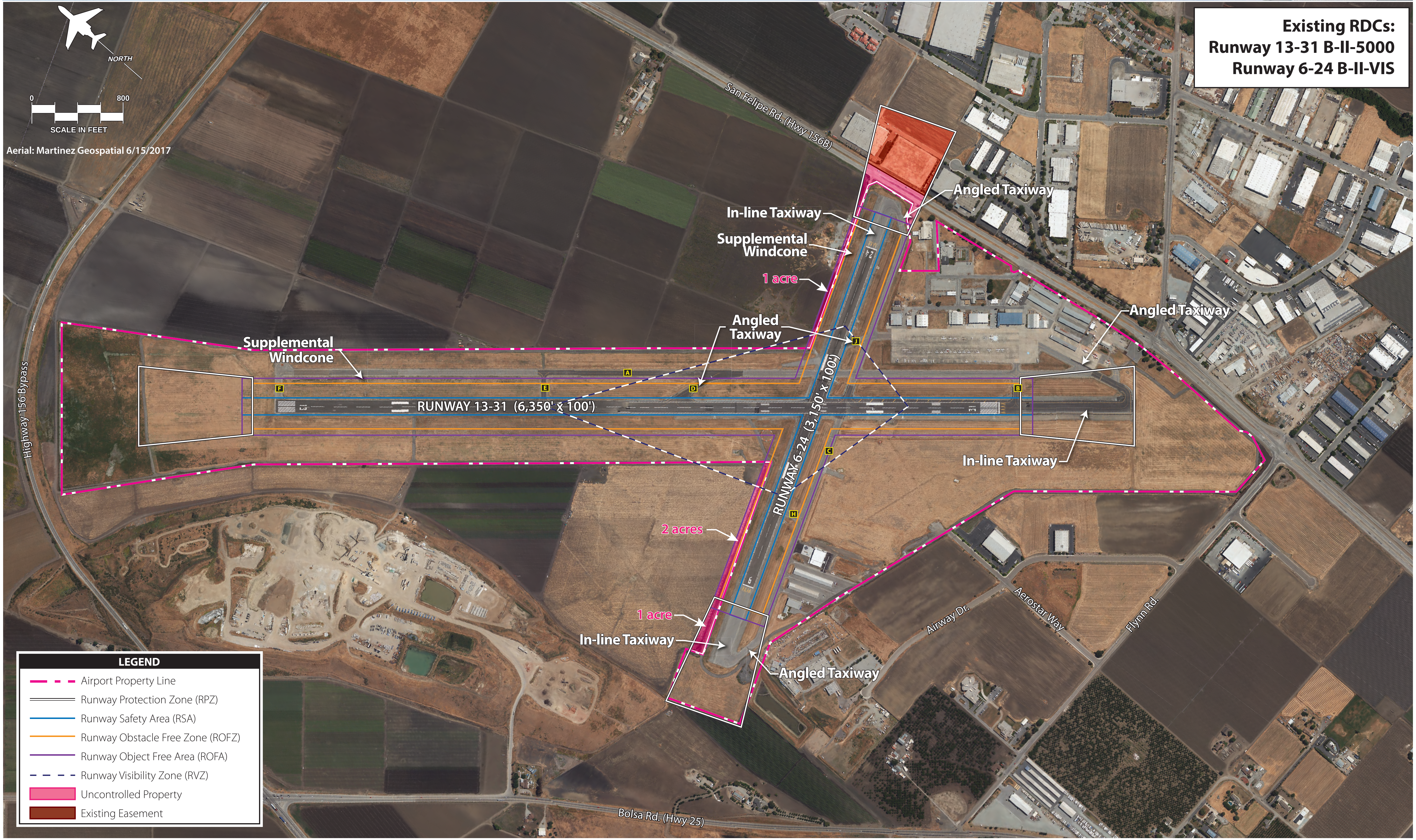


Exhibit N
RUNWAY SAFETY AREAS

Acreage calculations are approximated for planning purposes only and not tied to legal descriptions.

Exhibit N
RUNWAY SAFETY AREAS (CONTINUED)

Acreage calculations are approximated for planning purposes only and not tied to legal descriptions.

6-24 meet the ROFZ design standards for B-II runways serving large aircraft. ROFZ standards for ultimate RDC C-II-5000 serving Runway 13-31 and RDC B-II-VIS serving Runway 6-24 remain the same as the existing ROFZ dimensions; thus, no change would be required.

Runway Protection Zone (RPZ)

An RPZ can be described as a trapezoidal area centered on the extended runway centerline and generally begins 200 feet from the end of the runway. This safety area has been established to protect the end of the runway from airspace penetrations and incompatible land uses. The RPZ is divided into two different portions: the central portion and the controlled activity area. The central portion of the RPZ extends from the beginning to the end of the RPZ, is centered on the runway centerline, and is the same width as the ROFA. The RPZ dimensions are based upon the critical design aircraft using the runway and the visibility minimums serving the runway.

While the RPZ is intended to be clear of incompatible objects or land uses, some uses are permitted with conditions and other land uses are prohibited. According to AC 150/5300-13A, the following land uses are permissible within the RPZ:

- Farming that meets the minimum buffer requirements.
- Irrigation channels as long as they do not attract birds.
- Airport service roads, as long as they are not public roads and are directly controlled by the airport operator.
- Underground facilities, as long as they meet other design criteria, such as RSA requirements, as applicable.
- Unstaffed navigational aids (NAVAIDs) and facilities, such as required for airport facilities that are fixed-by-function in regard to the RPZ.

Any other land uses considered within RPZ land owned by the airport sponsor must be evaluated and approved by the FAA Office of Airports. The FAA has published *Interim Guidance on Land Uses within a Runway Protection Zone* (September 27, 2012), which identifies several potential land uses that must be evaluated and approved prior to implementation. The specific land uses requiring FAA evaluation and approval include:

- Buildings and structures (residences, schools, churches, hospitals or other medical care facilities, commercial/industrial buildings, etc.).
- Recreational land use (golf courses, sports fields, amusement parks, other places of public assembly, etc.).
- Transportation facilities (rail facilities, public roads/highways, vehicular parking facilities, etc.).
- Fuel storage facilities (above and below ground).
- Hazardous material storage (above and below ground).
- Wastewater treatment facilities.
- Above-ground utility infrastructure (i.e., electrical substations), including any type of solar panel installations.

The *Interim Guidance on Land within a Runway Protection Zone* states, "RPZ land use compatibility also is often complicated by ownership considerations. Airport owner control over the RPZ land is emphasized to achieve the desired protection of people and property on the ground. Although the FAA recognizes that in certain situations the airport sponsor may not fully control land within the RPZ, the FAA expects airport sponsors to take all possible measures to protect against and remove or mitigate incompatible land uses."

Currently, the RPZ review standards are applicable to any new or modified RPZ. The following actions or events could alter the size of an RPZ, potentially introducing an incompatibility:

- An airfield project (e.g., runway extension, runway shift).
- A change in the critical design aircraft that increases the RPZ dimensions.
- A new or revised instrument approach procedure that increases the size of the RPZ.
- A local development proposal in the RPZ (either new or reconfigured).

Currently, the RPZs associated with Runway 13-31 begin 200 feet from the end of each runway and are 500 feet in width at the inner portion, 700 feet at the outer portion, and 1,000 feet in length encompassing 13.77 acres of property. Both approach RPZs to Runways 13 and 31 remain on Airport property and conform to FAA RPZ design standards for B-II-5000 runways. Ultimate RPZ design standards for C-II-5000 runways are 500 feet in width at the inner portion, 1,010 feet at the outer portion, and 1,700 feet in length and encompass 29.47 acres of property. Under ultimate conditions, the RPZ serving Runway 31 would extend beyond Airport property to the southeast over Highway 156B and would contain a portion of the Pacific Interlock Pavingstone building. The unowned portion of the ultimate Runway 31 RPZ would consist of three acres.

Existing and ultimate B-II-VIS RPZ dimensions serving Runway 6-24 are required to be 500 feet at the inner portion, 700 feet at the outer portion, and 1,000 feet in length. Currently, the RPZ serving Runway 24 extends to the east beyond Airport property, over Highway 156B, and contains a portion of the Corbin Saddles building. Unowned Airport property associated with the Runway 24 RPZ totals 12 acres, while the Runway 6 RPZ encompasses one acre. It should be noted, however, that the Airport does have an avigation easement in place for a portion of the uncontrolled property associated with the Runway 24 RPZ.

The FAA recommends that an airport have ownership of the RPZ land where feasible that could include outright fee simple ownership or an avigation easement. If an airport cannot fully control the entirety of the RPZ, the RPZ land use standards have recommendation status for that portion of the RPZ not controlled by the airport owner. In essence, this means that the FAA can require a change to the runway environment so as to properly secure the entirety of the RPZ. Objects such as public roads have been allowed within RPZs under previous guidance unless they posed an airspace obstruction. FAA's current guidance, however, does not readily allow for public roads in the RPZ.

Since the new RPZ guidance addresses new or modified RPZs, existing incompatibilities may be grandfathered under certain conditions. For example, roads that are in the current RPZ are typically allowed to remain as grandfathered unless the runway environment changes. The Airport sponsor should take reasonable actions to meet RPZ design standards to the extent practicable. Further analysis in this study will consider the impacts that an enlarged RPZ associated with ultimate C-II standards on Runway 13-31 would create to the airfield environment, in particular with the RPZ associated with Runway 31.

The ultimate RPZ standards for a B-II-VIS runway would remain the same as the existing RPZ standards for Runway 6-24. Given that the ultimate RPZs would remain unchanged, any incompatibilities could still be grandfathered as long as no other changes to the runway environment or approach minimums alter the size or location of the RPZs. The Airport should consider the acquisition of uncontrolled property or, at a minimum, have an avigation easement in place for the entire area contained in the RPZ that is not already included on Airport property.

Taxiways

The taxiway system of an airport is primarily to facilitate aircraft movements to and from the runway system. While some taxiways are constructed to simply provide access from the apron to the runway, other taxiways are constructed to increase the allowable frequency of aircraft operations as air traffic increases.

Taxiway Design Considerations

FAA AC 150/5300-13A, Change 1, *Airport Design*, provides guidance on recommended taxiway and taxilane layouts to enhance safety by avoiding runway incursions. A runway incursion is defined as "any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft."

The taxiway system at Hollister Municipal Airport generally provides for the efficient movement of aircraft; however, recently published AC 150/5300-13A, Change 1, *Airport Design*, provides recommendations for taxiway design. The following is a list of the taxiway design guidelines and the basic rationale behind each recommendation:

1. **Taxi Method:** Taxiways are designed for "cockpit over centerline" taxiing with pavement being sufficiently wide to allow a certain amount of wander. On turns, sufficient pavement should be provided to maintain the edge safety margin from the landing gear. When constructing new taxiways, upgrading existing intersections should be undertaken to eliminate "judgmental oversteering." This is where the pilot must intentionally steer the cockpit outside the marked centerline in order to assure the aircraft remains on the taxiway pavement.

2. **Steering Angle:** Taxiways should be designed such that the nose gear steering angle is no more than 50 degrees, the generally accepted value to prevent excessive tire scrubbing.

3. **Three-Node Concept:** To maintain pilot situational awareness, taxiway intersections should provide a pilot with a maximum of three choices of travel. Ideally, these are right and left angle turns and a continuation straight ahead.

4. **Intersection Angles:** Design turns to be 90 degrees wherever possible. For acute angle intersections, standard angles of 30, 45, 60, 120, 135, and 150 degrees are preferred.

5. **Runway Incursions:** Design taxiways to reduce the probability of runway incursions.

- *Increase Pilot Situational Awareness*: A pilot who knows where he/she is on the airport is less likely to enter a runway improperly. Complexity leads to confusion. Keep taxiway systems simple using the “three node” concept.

- *Avoid Wide Expanses of Pavement*: Wide pavements require placement of signs far from a pilot’s eye. This is especially critical at runway entrance points. Where a wide expanse of pavement is necessary, avoid direct access to a runway.

- *Limit Runway Crossings*: The taxiway layout can reduce the opportunity for human error. The benefits are twofold – through simple reduction in the number of occurrences, and through a reduction in air traffic controller workload.

- *Avoid “High Energy” Intersections*: These are intersections in the middle third of runways. By limiting runway crossings to the first and last thirds of the runway, the portion of the runway where a pilot can least maneuver to avoid a collision is kept clear.

- *Increase Visibility*: Right angle intersections, both between taxiways and runways, provide the best visibility. Acute angle runway exits provide greater efficiency in runway usage, but should not be used as runway entrance or crossing points. A right angle turn at the end of a parallel taxiway is a clear indication of approaching a runway.

- *Avoid “Dual Purpose” Pavements*: Runways used as taxiways and taxiways used as runways can lead to confusion. A runway should always be clearly identified as a runway and only a runway.

- *Indirect Access*: Do not design taxiways to lead directly from an apron to a runway. Such configurations can lead to confusion when a pilot typically expects to encounter a parallel taxiway.

- *Hot Spots*: Confusing intersections near runways are more likely to contribute to runway incursions. These intersections must be redesigned when the associated runway is subject to reconstruction or rehabilitation. Other hot spots should be corrected as soon as practicable.

6. **Runway/Taxiway Intersections:**

- *Right Angle*: Right angle intersections are the standard for all runway/taxiway intersections, except where there is a need for a high speed exit. Right-angle taxiways provide the best visual perspective to a pilot approaching an intersection with the runway to observe aircraft in both the left and right directions. They also provide optimal orientation of the runway holding position signs so they are visible to pilots.

- *Acute Angle*: Acute angles should not be larger than 45 degrees from the runway centerline. A 30-degree taxiway layout should be reserved for high speed exits. The use of multiple intersecting taxiways with acute angles creates pilot confusion and improper positioning of taxiway signage.

- *Large Expanses of Pavement*: Taxiways must never coincide with the intersection of two runways. Taxiway configurations with multiple taxiway and runway intersections in a single area create large expanses of pavement, making it difficult to provide proper signage, marking, and lighting.

7. **Taxiway/Runway/Apron Incursion Prevention:** Apron locations that allow direct access into a runway should be avoided. Increase pilot situational awareness by designing taxiways in such a manner that forces pilots to consciously make turns. Taxiways originating from aprons and forming a straight line across runways at mid-span should be avoided.

- *Wide Throat Taxiways*: Wide throat taxiway entrances should be avoided. Such large expanses of pavement may cause pilot confusion and make lighting and marking more difficult.

- *Direct Access from Apron to a Runway*: Avoid taxiway connectors that cross over a parallel taxiway and directly onto a runway. Consider a staggered taxiway layout that forces pilots to make a conscious decision to turn.

- *Apron to Parallel Taxiway End*: Avoid direct connection from an apron to a parallel taxiway at the end of a runway.

The existing taxiway system at CVH is found to be adequate in meeting air traffic demand. However, the current taxiway layout contains conflicts with the current FAA taxiway design standards established in AC 150/5300-13A. To maintain compliance with the current FAA taxiway design standards, the Airport should consider removing the aligned taxiways preceding Runways 31, 24, and 6. Ultimately, a taxiway preceding a runway places a taxiing aircraft in direct line with aircraft landing or taking off. The resultant inability to use the runway while the taxiway is occupied, along with the possible loss of situational awareness by a pilot, precludes the design of taxiways such as this.

In addition, the Airport should consider relocating the westernmost portion of Taxiway B approximately 200 feet southeast of the threshold of Runway 31. As such, this will eliminate the direct access provided from the main apron to Runway 13-31. It should be mentioned that the Airport is currently considering the addition of a full length parallel taxiway serving the westernmost side of Runway 13-31. This project will be further detailed in the Development Concept section of this document. Taxiway J, extending from the northern portion of the main apron, also provides direct access to Runway 6-24. In order to eliminate direct access, the northernmost portion of Taxiway J, connecting to Runway 6-24, should be removed.

Finally, the airfield contains numerous angled connecting taxiways oriented at other than 90 degrees to the associated runway. As such, Taxiway D should be realigned 90 degrees perpendicular to Runway 13-31. Each runway currently served by an aligned taxiway (Runways 31, 24, and 6) is served by an acute angled connecting taxiway. Given that the portion of each aligned taxiway is recommended to be removed, connecting taxiways should be relocated to 90 degrees perpendicular to the respective threshold of Runways 31, 24, and 6. These taxiway design requirements are primarily to reduce the probability of runway incursions by providing maximum visibility at runway intersections and increase pilot situational awareness by requiring a 90-degree turn from the parallel taxiway to access the runway.

Proposed taxiway geometry changes are presented in the Development Concept section of this report.

Runway End Identifier Light

Instrument, Navigational, and Approach Aids

Runway 31 is accommodated by a non-precision instrument approach providing visibility minimums of not less than one mile. This system allows properly equipped aircraft to navigate to the runway in reduced visibility conditions. Runways 13, 31 and 24 are equipped with REILs to guide aircraft to the approach end of each runway. Lighting systems such as this can be beneficial when the airfield environment is contaminated with lights from the surrounding area, making it difficult for pilots to distinguish the end of the runway. As such, the Airport should consider the addition of REILs on Runway 6.

In addition to the non-precision approach and REIL systems, Runways 13 and 31 are also equipped with PAPI-2 visual approach aids. This is a system consisting of two lights that are color-coded to indicate whether the approaching aircraft is on, above, or below the designated glide slope. Depending upon the aircraft's position relative to the predetermined glide slope, the lights will change colors to inform the pilot of their position. Similarly, Runway 24 is equipped with a two-light visual approach slope indicator (VASI-2). A PAPI-2 system should be considered for Runway 6, and the VASI-2 system serving Runway 24 should be replaced with a PAPI-2, as VASIs are owned by the FAA and gradually being phased out of use. The Airport should consider upgrading the PAPI-2 systems serving Runway 13-31 to four-box PAPIs (PAPI-4), which are recommended for runways that accommodate jet aircraft.

Airfield Marking, Lighting, and Signage

Runway 13 is marked with non-precision runway markings, while Runway 31 is marked with precision runway markings and Runway 6-24 is marked as a basic runway. These markings should be maintained through the long term planning horizon.

Given that Runways 13-31 and 6-24 are designated as B-II runways accommodating large aircraft (over 12,500 pounds), FAA separation standards, stated in AC 150/5300-13A, maintain that runways of this designation must have at least 200 feet of separation between runway centerline and any holding position. Holding positions are markings on taxiways leading to runways, which provide for adequate runway clearance for holding aircraft. Currently, all taxiways serving Runway 13-31 contain hold position markings at runway intersections, located 250 feet from the runway centerline which exceeds the RDC B-II standard. In the future, it is recommended that any additional holding positions be placed at a minimum of 250 feet from the runway centerline to conform to future RDC C-II standards.

Runway/Taxiway Signage

The taxiway system serving Runway 6-24 has two hold positions that are less than 200 feet from the runway centerline, located 160 feet and 185 feet from runway centerline, as well as a hold position that is not parallel to the Runway 6-24 centerline. Non-standard hold positions are located on the northern side of the Taxiway A crossing of Runway 6-24 and on each acutely angled connecting taxiway serving Runways 6 and 24. It is recommended that the Taxiway A hold position, located immediately north of Runway 6-24, is repositioned 200 feet from the Runway 6-24 centerline. Furthermore, when the acutely angled connecting taxiways are relocated to comply with the FAA taxiway geometry standards previously mentioned, it is recommended that each hold position is located 200 feet from runway centerline.

Runway and taxiway lighting systems serve as a primary means of navigation in reduced visibility and night-time operations. Currently, Runways 13-31 and 6-24 are equipped with MIRL, a common runway lighting system, that can be controlled by pilots via the CTAF.

Taxiways supporting the runway system are primarily served by blue reflectors as opposed to taxiway lighting. Connecting taxiways are served by LED MITL. The Airport should consider replacing all blue reflectors with LED MITL.

Airfield signage serves as another means of navigation for pilots. Airfield signage informs pilots of their location on the airport, as well as directs them to major airport facilities, such as runways, certain taxiways, and aprons. Currently, the Airport has appropriate signage to facilitate safe navigation; however, the Airport signage system should be updated and/or expanded should the runway/taxiway system be expanded.

LANDSIDE FACILITY REQUIREMENTS

Components included within the Landside Facility section will encompass terminal facilities, aircraft hangars and tiedowns, aircraft parking aprons, automobile parking, and airport support facilities.

Terminal Building and Parking Requirements

The terminal facilities typically located on GA airports provide space for a variety of activities, as well as pilot services. The GA terminal facility can potentially function as a flight planning area, pilot's lounge, airport management building, storage space, house fixed base operators (FBOs), serve as a passenger waiting area, as well as provide concessions. In addition, if there is a flight instruction program based at the airfield, the terminal building can also function as a classroom. Currently, CVH is served by a terminal facility with an estimated footprint of 2,500 sf.

To estimate GA terminal facility needs, the number of itinerant passengers expected to use terminal facilities during the design hour are taken into consideration. The terminal area space requirements are based upon the allocation of a range of designated square footage per design hour itinerant passenger. Identifying the number of design hour passengers is achieved by simply multiplying the number of itinerant design hour operations by the number of passengers expected on the aircraft. The applied square footage requirements can range between 90 and 120 square feet per design hour itinerant passenger. For the purposes of this study, industry standards of 120 square feet per design hour itinerant passenger were applied. Existing terminal building space is an estimation of terminal space provided at Hollister Jet Center based upon the building footprint. Current and projected terminal building requirements can be viewed in **Table Z**.

TABLE Z
Terminal Facility/Office Requirements
Hollister Municipal Airport

	Currently Available	Short Term	Intermediate	Long Term
Design Hour Itinerant Operations	11	12	13	16
Multiplier	2	2.2	2.3	2.5
Total Design Hour Itinerant Passengers	22	27	31	40
Total Building Space (sf)	2,500	3,200	3,700	4,800

Source: Coffman Associates' analysis.

To calculate the demand for the terminal facility, design hour itinerant operations are estimated at 15 percent of the design day itinerant operations occurring at CVH. This calculation yields a total of 11 design hour itinerant operations for current demand. Given that most aircraft operating at CVH are capable of accommodating multiple passengers, a multiplier of two was utilized for the calculation. This is a reasonable multiplier as most general aviation aircraft do not operate at full capacity on a regular basis. Over the planning horizon, a modest increase was applied to the itinerant passenger multiplier to reflect greater terminal facility space required when both itinerant passengers and operations potentially increase.

When considering the square footage provided by the terminal facility, approximately 2,300 square feet of additional space could be needed by the long term planning period. It should be mentioned, however, that owners of based aircraft may also use the terminal facilities provided. In addition, current and future facilities available at the Airport may generate an increased amount of itinerant traffic and, thus, more terminal area may be desired. As such, additional space should be planned on an as-needed basis.

Aircraft Storage Hangars, Apron, and Maintenance Requirements

Utilization of hangar space varies as a function of local climate, security, and owner preferences. The trend in general aviation aircraft, whether single or multi-engine, is toward more sophisticated (and consequently, more expensive) aircraft. Therefore, many aircraft owners prefer enclosed hangar space to outside tiedowns.

There are a variety of aircraft storage options typically available at an airport, including shade hangars, T-hangars, linear box hangars, executive/box hangars, and bulk storage conventional hangars. Shade hangars are the most basic form of aircraft protection and are common in warmer climates. These structures provide a roof covering, but no walls or doors. There are no shade hangars at CVH, and for purposes of planning, any future shade hangars are included in the T-hangar needs forecast.

T-hangars are intended to accommodate one small single engine piston aircraft or, in some cases, one multi-engine piston aircraft. T-hangars are so named because they are in the shape of a "T," providing a space for the aircraft nose and wings, but no space for turning the aircraft within the hangar. Similar to the T-hangar style is the linear box hangar. Linear box hangars typically provide storage for a single aircraft and can be nested with multiple individual linear box hangars. Unlike the T-hangar, linear box hangars enable the user to store aircraft in more ways than one.

The next type of aircraft hangar common for storage of general aviation aircraft is the executive/box hangar. Executive/box hangars typically provide a larger space, generally with an area between 2,500 and 6,000 square feet. This type of hangar can provide for maneuverability within the hangar, can accommodate more than one aircraft, and may have a small office and utilities. Conventional hangars are the large, clear span hangars typically located facing the main aircraft apron at airports. These hangars provide for bulk aircraft storage and are often utilized by airport businesses, such as a fixed base operator (FBO) and/or aircraft maintenance business. Conventional hangars are generally larger than executive/box hangars and can range in size from 6,000 square feet to more than 20,000 square feet.

Planning for future aircraft storage needs is based on typical owner preferences and standard sizes for hangar space. For determining future aircraft storage needs, a planning standard of 1,200 square feet per based aircraft is utilized for T-hangars. For conventional hangars, a planning standard of 3,000 square feet is utilized for turboprop aircraft, 6,000 square feet is utilized for business jet aircraft, and 1,500 square feet is utilized for helicopter storage needs.

The demand for aircraft storage hangars is dependent upon the number and type of aircraft expected to be based at the Airport in the future. For planning purposes, it is necessary to estimate hangar requirements based upon forecast operational activity. As an industry standard, approximately 250 square feet per based aircraft should be allotted for maintenance purposes. Future hangar requirements are presented in **Table AA**.

As can be seen in the table, it is estimated that there is approximately 190,800 square feet of hangar storage space currently available at the Airport. In the short term, an additional 60,700 square feet is needed, and by the long term, an additional aggregate 220,200 square feet could be needed.

TABLE AA
Aircraft Storage Requirements
Hollister Municipal Airport

		Future Requirements		
	Current Estimate	Short Term Need	Intermediate Need	Long Term Need
Aircraft to be Hangared	101	118	129	155
Hangar Area Requirements (sf)				
T-hangar /Linear Box Hangar Area	88,800	-	-	-
Executive Box Hangar Area	22,200	118,200	131,400	159,600
Conventional Hangar Area	79,800	102,800	116,300	150,800
Office/Maintenance Area (sf)	-	29,500	61,800	100,600
Total Area	190,800	250,500	309,500	411,000

Construction of aircraft storage space should be determined and phased to maximize existing demand. Construction can be undertaken by the Airport or by a private developer, either of which will contribute to fulfilling the overall needs at the Airport.

A parking apron should provide for the number of locally based aircraft that are not stored in hangars, as well as those aircraft used for air taxi and training activities. Parking should be provided for itinerant aircraft as well.

Currently, the primary aircraft parking apron at CVH totals approximately 33,400 square yards (sy) and has 120 marked aircraft tiedown positions, including four large aircraft tiedown positions. In order to determine required aircraft apron space, an industry planning standard of 500 sy per local aircraft, 800 sy per itinerant aircraft, and 1,600 sy for large turboprop and jet aircraft was applied. Future aircraft parking apron requirements are presented in **Table BB**. According to these recommendations, additional aircraft parking space could be needed throughout the planning period.

TABLE BB
Aircraft Apron Parking Requirements
Hollister Municipal Airport

		Future Requirements		
	Available	Short Term Need	Intermediate Need	Long Term Need
Locally Based Aircraft Positions	-	40	43	48
Single/Multi-Engine Transient	-	13	15	17
Large Turboprop and Jet Positions	-	1	2	3
Total Positions	120	54	60	68
Total Apron Area (sy)	33,400	32,500	35,900	41,900

Total vehicle parking area consists of approximately 25,300 sf of parking area with 30 marked parking spaces, as well as an unmarked lot providing parking capacity for approximately 44 vehicles. Parking space requirements were based upon industry standards of 350 square feet per vehicle. Future parking demands have been determined based on an evaluation of the estimated existing and future itinerant traffic, as well as industry standards, which consider one-half of based aircraft at the Airport will require a parking space. As shown in **Table CC**, vehicular parking area currently available is sufficient; however, additional parking capacity will be considered throughout the planning period as new facilities are constructed.

TABLE CC
Vehicle Parking Requirements
Hollister Municipal Airport

		Facility Requirements		
	Available	Short Term Need	Intermediate Need	Long Term Need
Terminal Vehicle Spaces	-	23	27	35
General Aviation Spaces	-	79	86	102
Total Parking Spaces	74	102	113	137
Total Parking Area (sf)	25,300	35,800	39,600	48,000

SUPPORT REQUIREMENTS

Various facilities that do not logically fall within classifications of airfield, terminal building, or general aviation areas have also been identified. These other areas provide certain functions related to the overall operation of the airport and include aircraft rescue and firefighting, fuel storage, and airport maintenance facilities.

Aircraft Rescue and Firefighting

The Airport does not have an aircraft rescue and firefighting (ARFF) building located on the airfield. As a general aviation airport, the FAA does not mandate that ARFF services be provided. This is adequate for the present and projected level of operations. In an effort to increase operational safety on the airfield, it is important to note that the Airport does maintain a compressed air foam firefighting system on one of its maintenance trucks.

Aviation Fuel Storage

The Airport has one fuel farm, which stores 100LL and Jet-A aviation fuel. The fuel storage tanks are located underground and have a capacity of 10,000 gallons for 100LL and Jet-A, comprising a total of 20,000 gallons. 100LL and Jet-A fuels are dispensed through a 24-hour self-serve system, while the Hollister Jet Center FBO offers quick-turn 100LL and Jet-A fueling services utilizing four City-owned fuel trucks. Of the four fuel

Fuel Island

trucks, one 750-gallon fuel truck is designated for 100LL and three fuel trucks with capacities of 2,000, 4,000, and 4,500 gallons are designated for Jet A.

Additional fuel storage capacity should be planned when the Airport is unable to maintain an adequate supply and reserve. While each airport determines their own desired reserve, a 14-day reserve is common for GA airports. When additional capacity is needed, it should be planned in 10,000- to 12,000-gallon increments, which allows for the capacity of common fuel tanker trucks. Given the existing and future operational level estimates, fuel storage capacity could be needed by the end of the planning horizon. It should be mentioned that the Airport is currently considering plans to utilize the existing CalFire facility as a fuel storage area when CalFire moves to the westernmost side of Runway 13-31. Should the Airport expand fueling facilities, it is recommended that aboveground fuel storage tanks are installed, as underground fuel storage tanks are more prone to leaks. Based on average usage assumptions, fuel storage has been estimated and is presented in **Table DD**.

TABLE DD
Fuel Storage Requirements
Hollister Municipal Airport

			Planning Horizon		
	Available	**Current**	**Short Term**	**Intermediate Term**	**Long Term**
Jet-A					
Daily Usage (gal.)		487	600	660	780
14-Day Supply (gal.)	10,000	7,500	8,400	9,200	10,900
Annual Usage (gal.)		177,762	219,000	240,900	284,700
AvGas					
Daily Usage (gal.)		140	170	190	220
14-Day Supply (gal.)	10,000	2,200	2,400	2,600	3,100
Annual Usage (gal.)		50,980	62,100	69,400	80,300

Source: Coffman Associates' analysis

Aircraft Wash Facility

Currently, there is not a designated aircraft wash facility at CVH. Consideration should be given to establishing such a facility at the airport. This would provide for the collection of used aircraft oil and other hazardous materials, as well as provide a covered area for aircraft washing and light maintenance.

Maintenance/Storage Facilities

The Airport currently has building space dedicated to maintenance and/or storage located to the south and east of the main apron, along Airport Drive. These facilities appear to be sufficient to meet current demands and should be maintained and expanded as necessary to meet future demands.

SUMMARY

The intent of this document has been to outline the facilities required to meet potential aviation demands projected for CVH for the planning horizon, as well as determine a direction of development which best meets projected needs. A summary of the airside and landside requirements is presented on **Exhibit P**.

RECOMMENDED DEVELOPMENT CONCEPT

Exhibit Q depicts the overall development concept for CVH. The assessment in the previous sections identified both airside and landside needs, as well as several facility deficiencies. The purpose of this section is to consider the actual physical facilities which are needed to accommodate future demand and meet the program requirements.

AIRSIDE FACILITIES

The facility requirements analysis identified airside deficiencies with FAA guidance materials. Within this section, identified deficiencies are addressed and additional recommendations are stated in an effort to better accommodate future airport development.

Runway 13-31

Given the results of the runway analysis presented in the previous section of this document, the length and width of Runway 13-31 (6,350 feet by 100 feet) is generally sufficient to accommodate the majority of aircraft operating at the Airport. However, additional runway length could benefit larger and faster aircraft such as business jets. Ultimately, a longer primary runway could make the Airport more accessible to business jets during hot summer months as well as provide the opportunity for aircraft to take on more fuel, allowing for longer stage lengths. The pavement strength serving Runway 13-31 is 34,000 pounds SWL and 45,500 pounds DWL. The published pavement strength should be maintained through the long term planning horizon. Runway 13-31 is in accordance with all standards for a non-precision instrument runway serving category B-II aircraft. Long term planning suggests that the runway could transition to RDC C-II-5000. In its existing condition, Runway 31 is served by a lead-in taxiway, which does not meet FAA taxiway design standards. As such, a project is proposed to re-designate the 1,150-foot lead-in taxiway as usable runway and implement a displaced landing threshold serving Runway 31. This project ultimately increases the usable runway length for departures on Runway 31 to 7,500 feet. It should be noted that the RSA and ROFA will not extend beyond the physical end of the runway through the use of declared distances, a tool that may be utilized to obtain additional RSA and/or ROFA and limit or increase runway length. Declared distances imposed on Runway 13-31 are presented on **Exhibit Q** and in **Table EE**.

	EXISTING		RECOMMENDED IMPROVEMENTS OVER PLANNING PERIOD	
RUNWAYS	**Runway 13-31**	**Runway 6-24**	**Runway 13-31**	**Runway 6-24**
Runway Design Code	RDC B-II-5000	RDC B-II-VIS	RDC C -II-5000	Same
Length x Width (in feet)	6,350 x 100	3,150 x 100	7,500 x 100	Same
Pavement Strength (in pounds)				
Single Wheel Loading (S)	34,000	30,000	Same	Same
Dual Wheel Loading (D)	45,500	45,000	Same	Same
Runway Protection Zones	500 x 700 x 1,000	500 x 700 x 1,000	500 x 1,010 x 1,700	Same
Owned	Yes	Partially	Partially	Same
Incompatible Uses	None	Road (24)	Road (31)	Same
TAXIWAYS SERVING	**Runway 13-31**	**Runway 6-24**	**Runway 13-31**	**Runway 6-24**
Taxiway Design Group	2	2	Same	Same
Parallel Taxiway	Full Length	Full Length	Taxiway K	Same
Number of Entrance/Exits	Six	Four	Eleven	Same
Taxiway Widths (in feet)	50	50	Same	Same
AIRFIELD GEOMETRY				
Hot Spots Identified	None	None		
High Energy Runway Crossings	None	Yes (Taxiway A)	Consider Alternatives to Mitigate	
Direct Access Runway/Apron	Yes (Taxiway B)	Yes (Taxiway J)	Realign Taxiway B	Remove Taxiway J
NAVIGATION & WEATHER AIDS				
	AWOS, Lighted Windcone, Supplemental Windcones, Segmented Circle, Beacon		Same	
INSTRUMENT APPROACH PROCEDURE	**Runway 13-31**	**Runway 6-24**	**Runway 13-31**	**Runway 6-24**
GPS LPV	Not lower than 1-mile	None	Same	Same
LIGHTING AND MARKING	**Runway 13-31**	**Runway 6-24**	**Runway 13-31**	**Runway 6-24**
Runway Lighting	MIRL	MIRL	Same	Same
Centerline Lighting	No	No	Same	Same
Touchdown Zone Lights	No	No	Same	Same
Runway Marking	Non-Precision/ Precision	Basic	Same	Same
Taxiway Lighting	MITL	MITL	Same	Same
Approach Lighting System	REIL(13-31)	REIL(24)	Same	REIL(6-24)
Visual Approach Aids	PAPI-2(13-31)	VASI-2(24)	PAPI-4(13-31)	PAPI-2(6-24)

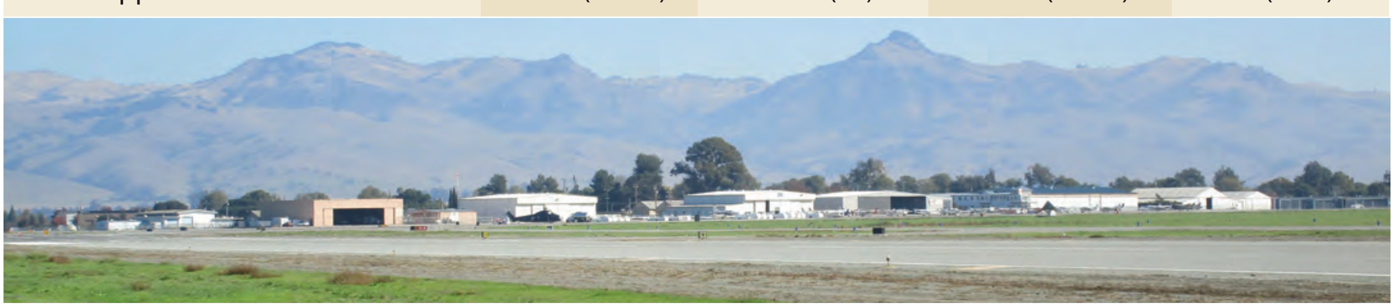


Exhibit P
AIRSIDE FACILITY REQUIREMENT SUMMARY

	CURRENT ESTIMATE	FUTURE REQUIREMENTS		
		SHORT TERM NEED	INTERMEDIATE NEED	LONG TERM NEED
Aircraft Storage Requirements				
Aircraft to be Hangared	101	118	129	155
Hangar Area Requirements (s.f.)				
T-hangar /Linear Box Hangar Area	88,800	-	-	-
Executive Box Hangar Area	22,200	118,200	131,400	159,600
Conventional Hangar Area	79,800	102,800	116,300	150,800
Office/Maintenance Area (s.f)	-	29,500	61,800	100,600
Total Area	**190,800**	**250,500**	**309,500**	**411,000**
Aircraft Apron Parking Requirements				
Locally Based Aircraft Positions	-	40	43	48
Single/Multi-Engine Transient	-	13	15	17
Large Turboprop and Jet Positions	-	1	2	3
Total Positions	120	54	60	68
Total Apron Area (s.y.)	**33,400**	**32,500**	**35,900**	**41,900**
Terminal Facility and Parking Requirements				
Total Building Space (s.f.)	-	23	27	35
GA Terminal Spaces	-	79	86	102
GA Based Owner Spaces	74	102	113	137
Total GA Parking Spaces	**25,300**	**35,800**	**39,600**	**48,000**
Fuel Storage Requirements				
Jet-A				
Daily Usage (gal.)	487	600	660	780
14-Day Supply (gal.)	7,500	8,400	9,200	10,900
Annual Usage (gal.)	177,762	219,000	240,900	284,700
AvGas				
Daily Usage (gal.)	140	170	190	220
14-Day Supply (gal.)	2,200	2,400	2,600	3,100
Annual Usage (gal.)	50,980	62,100	69,400	80,300

Exhibit P
LANDSIDE FACILITY REQUIREMENT SUMMARY

Declared distances represent the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distance performance requirements for turbine powered aircraft. Declared distances include takeoff run available (TORA) and takeoff distance available (TODA), which apply to takeoff; accelerate stop distance available (ASDA), which applies to a rejected takeoff; and landing distance available (LDA), which applies to landing. Each declared distance can be defined as follows:

TABLE EE
Runway 13-31 Declared Distances
Hollister Municipal Airport

Category	Runway 13	Runway 31
LDA	6,514'	6,350'
ASDA	6,514'	7,500'
TORA	6,350'	7,500'
TODA	6,836'	7,500'

LDA: Landing Distance Available
ASDA: Accelerate Stop Distance Available
TORA: Takeoff Run Available
TODA: Takeoff Distance Available
Source: Coffman Associates' analysis.

- TORA: the distance to accelerate from brake release to lift-off, plus safety factors.
- TODA: the distance to accelerate from brake release past lift-off to takeoff climb, plus safety factors.
- ASDA: the distance to accelerate from brake release to takeoff decision speed and then decelerate to a stop, plus safety factors.
- LDA: the distance from the threshold to complete the approach, touchdown, and decelerate to a stop, plus safety factors.

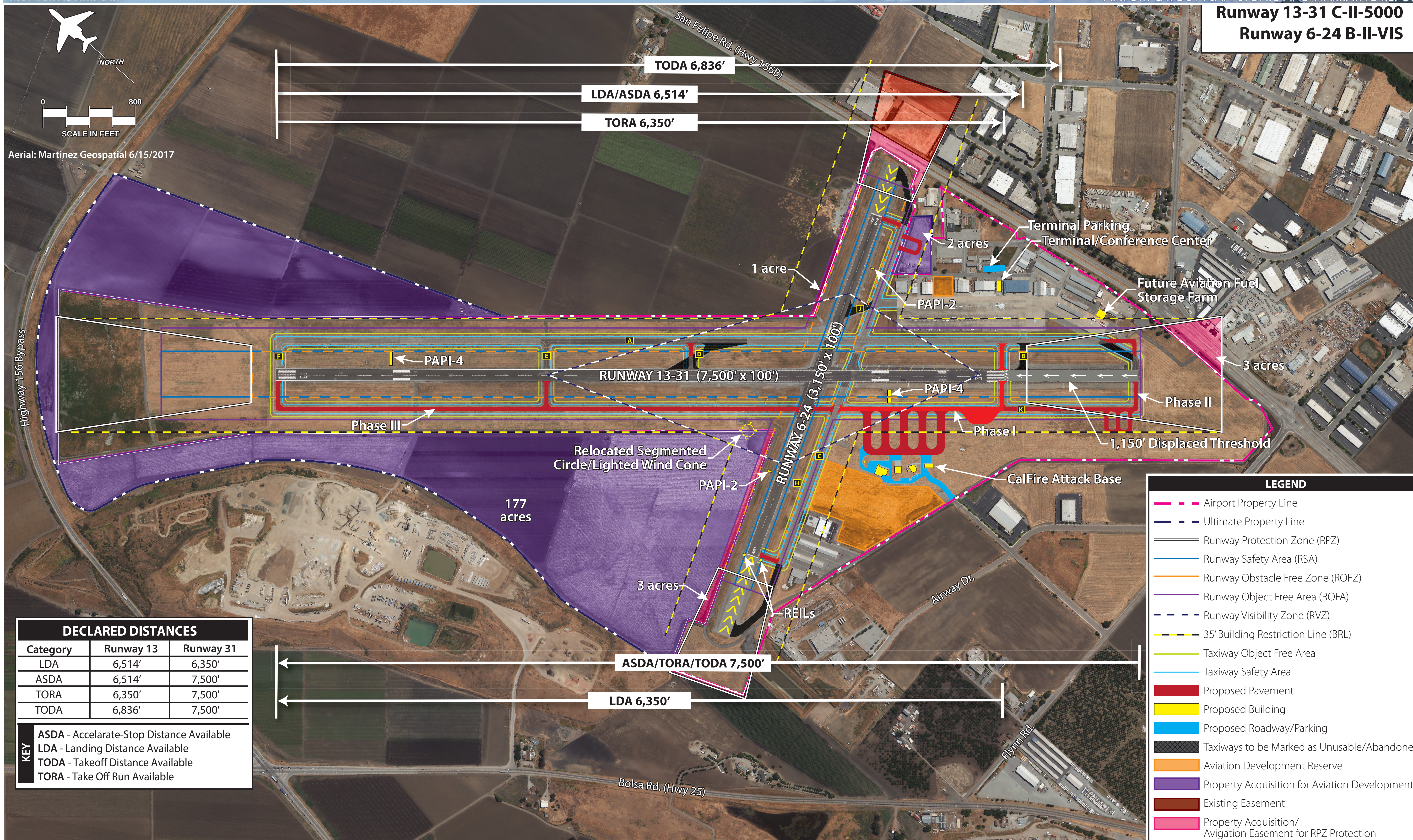
Runway 6-24

The current length and width of Runway 6-24 (3,150 feet by 100 feet) is capable of accommodating 95 percent of the small aircraft fleet and is 100 feet short of accommodating 100 percent of the small aircraft fleet. The existing pavement strength rating serving Runway 6-24 is 30,000 pounds SWL and 45,000 pounds DWL. Given that Runway 6-24 is designated as the crosswind runway, the existing length, width, and pavement strength rating should be maintained through the long term planning horizon.

Safety Areas

A review of the RSA, ROFA, ROFZ, and RPZ was conducted in the previous section to identify existing or potential safety area deficiencies. The RSAs serving the existing Runway 13-31 and existing/ultimate Runway 6-24 are unobstructed. However, the ultimate RSA serving Runway 13-31 would be obstructed by the segmented circle surrounding the lighted windcone located approximately 190 feet on the southernmost side of Runway 13-31. The Airport should relocate the segmented circle and lighted windcone out of the ultimate safety areas prior to upgrading to RDC C-II-5000.

The ROFA serving the existing Runway 13-31 is obstructed by the segmented circle surrounding the lighted windcone as well as the supplemental windcone serving Runway 13. Thus, the segmented circle and supplemental windcone serving Runway 13 should be relocated out of the ROFA. Under ultimate RDC C-II-5000 conditions, the ROFA would also be obstructed by the tetrahedron and a the ROFA would extend over the southernmost portion of the apron area serving CalFire. These obstructions should be



DECLARED DISTANCES

Category	Runway 13	Runway 31
LDA	6,514'	6,350'
ASDA	6,514'	7,500'
TORA	6,350'	7,500'
TODA	6,836'	7,500'

KEY
ASDA - Accelarate-Stop Distance Available
LDA - Landing Distance Available
TODA - Takeoff Distance Available
TORA - Take Off Run Available

Exhibit Q
DEVELOPMENT CONCEPT

Acreage calculations are approximated for planning purposes only and not tied to legal descriptions.

mitigated prior to upgrading to RDC C-II-5000. In addition, the CalFire facilities should be relocated to the westernmost side of Runway 13-31 as shown on **Exhibit Q**. The existing and ultimate ROFA serving Runway 6-24 are obstructed by the supplemental windcone serving Runway 24, and the ROFA extends beyond Airport property on the north side of the runway, encompassing a total of approximately three acres of uncontrolled property. As such, it is recommended that the Airport relocate the supplemental windcone serving Runway 24 and acquire the three acres of unowned property.

The existing and ultimate ROFZs serving Runways 13-31 and 6-24 are unobstructed and should be maintained as such.

The RPZ serving Runway 13-31 is currently unobstructed and is contained on Airport property. However, the ultimate RPZ serving Runway 31 extends beyond Airport property encompassing approximately three acres. This portion of the RPZ extends over Highway 156B and a portion of the Pacific Interlock Paving Stone building. It is recommended that the Airport acquire an avigation easement over the uncontrolled portion of the ultimate RPZ serving Runway 31 prior to upgrading to RDC C-II-5000. The existing and ultimate RPZs serving Runway 6-24 extend beyond Airport property, over Highway 156B, and the Corbin Saddles building located east of Highway 156B. The Airport currently has an avigation easement in place protecting this portion of the Runway 24 RPZ. It is recommended that the easement be maintained throughout the planning horizon and unowned property be acquired.

Taxiways

Multiple projects are proposed to mitigate airfield taxiway geometry issues identified in the Facility Requirements section of this document. Geometry issues identified include taxiways preceding runways, direct access, and angled taxiway connectors. Currently, Runways 31, 24, and 6 have taxiways preceding the runway. As previously outlined, the existing lead-in taxiway serving Runway 31 is planned to be converted to usable runway. The Runway 31 threshold is planned to be displaced 1,150 feet, thereby increasing the useful runway length to 7,500 feet. Re-designating the taxiway preceding Runway 31 as usable runway will also mitigate the taxiway preceding a runway geometry issue. The taxiways preceding Runways 6 and 24 are planned to be marked with chevrons to comply with FAA taxiway geometry standards. Existing Taxiways B and J provide direct access from the apron area to Runways 13-31 and 6-24. As a result, Taxiway B should be abandoned or removed and relocated 200 feet to the north, aligning with the ultimate Runway 31 displaced threshold. Taxiway J should be marked as abandoned or demolished. Finally, Taxiway D and the connecting taxiways serving the thresholds of Runways 31, 24, and 6 should be realigned to 90 degrees perpendicular to their respective runways, and all angled taxiways should be abandoned or demolished.

Aside from addressing taxiway geometry issues, the ultimate taxiway system is planned to provide a full length parallel taxiway serving the southwestern side of Runway 13-31, which will be designated as Taxiway K. The ultimate Taxiway K project is split into three phases in an effort to meet future airfield demand. Ultimately, Taxiway K will provide access to holding bays associated with the relocated CalFire Attack Base and the existing Runway 31 threshold and will support future landside development on the west side of the airfield. Holding bays are also planned for the ultimate extension of Runway 31 as well as existing Runway 24. The plan includes the acquisition of approximately two acres south of the Runway 24 threshold that could accommodate the construction of a holding bay along Taxiway C.

Instrument, Navigational, and Approach Aids

Runway 31 is accommodated by an RNAV (GPS) non-precision instrument approach providing visibility minimums down to 1.25 miles. This system should be maintained through the long term planning horizon. Currently, the Airport is equipped with visual approach aids serving Runways 13-31 and 24. Runways 13 and 31 are served by PAPI-2s and REILs, while Runway 24 is served by a VASI-2 system and REILs. In the future, it is recommended that the Airport consider upgrading the PAPI-2s serving Runway 13-31 to PAPI-4s, which are recommended for runways that accommodate jet traffic. In addition, the VASI-2 system serving Runway 24 should be upgraded to a PAPI-2 as the VASI visual approach aids are being phased out of use. The Airport should also consider the implementation of a PAPI-2 and REILs to serve Runway 6.

Airfield Marking, Lighting, and Signage

Currently, Runway 13 is marked with non-precision runway markings, while Runway 31 is marked with precision runway markings. All markings serving Runway 13-31 associated with non-precision runway markings should be maintained though the planning horizon. Runway 6-24 is marked as a basic runway and should be maintained through the long term planning horizon.

The taxiway system serving Runway 31-31 currently exceeds the RDC B-II-5000 hold position marking standards of 200 feet from runway centerline and meets the ultimate RDC C-II-5000 holding position marking standards of 250 feet from runway centerline. As taxiway projects are completed in the future, ultimate RDC C-II-5000 marking standards should be maintained. The taxiway system serving Runway 6-24 has two holding positions that are less than 200 feet from the runway centerline, located 160 feet and 185 feet from runway centerline, as well as a holding position that is not parallel to the Runway 6-24 centerline. These non-standard holding positions are located on the north side of Taxiway A where it intersects with Runway 6-24 and on each acutely angled connecting taxiway serving Runways 6 and 24. It is recommended that the Taxiway A holding position be repositioned 200 feet from the Runway 6-24 centerline. Furthermore, when the acutely angled connecting taxiways are marked unusable to comply with the FAA taxiway geometry standards previously mentioned, it is recommended that each holding position is located 200 feet and 90 degrees perpendicular to runway centerline on the new right-angled connecting taxiways.

Existing taxiways supporting the runway system are primarily served by blue reflectors as opposed to taxiway lighting. Connecting taxiways are served by LED MITL. In the future, the Airport should consider replacing all blue reflectors with LED MITL on existing and proposed new or reconfigured taxiways.

The Airport has appropriate airfield signage to facilitate safe navigation; however, the airfield signage system should be updated and/or expanded as the runway/taxiway system is expanded.

LANDSIDE FACILITIES

The facility requirements analysis identified several opportunities to improve the existing landside facilities in order to better accommodate future aviation demand. This section will specify the recommended improvements pertaining to landside facilities.

Landside Concept

According to analysis conducted in the Facility Requirements section of this document, terminal space requirements could necessitate an additional 2,300 square feet by the long term planning horizon. As such, a terminal building/conference center is planned for construction between the Hollister Jet Center and the Hollister Soaring Center. The location of the new terminal building/conference center would ultimately preclude any automobile parking in this area, which is the current use of this location. To mitigate this parking issue, a terminal parking area is proposed directly across Skylane Drive to the northeast. Furthermore, the Airport could experience increased demand for aircraft storage hangars. If demand dictates, aviation development reserve areas have been identified between the C & M Helicopters Inc. and DK Turbines buildings as well as adjacent to the southwest general aviation development near the threshold of Runway 6. In an effort to ensure better separation between general aviation activities and CalFire operations, the CalFire Attack Base is planned to be relocated to the southwestern side of Runway 13-31, with roadway access to the Attack Base via Aerostar Way. Once CalFire relocates its facilities, the Airport could install an aboveground aviation fuel storage farm in this location. Should continued aviation growth occur at CVH, a combined 181 acres of land are proposed for acquisition and could be utilized for future aviation development as well as ROFA and RPZ safety area property acquisition for Runway 6-24.

NON-STANDARD CONDITIONS

Per the request of the FAA, **Table FF** contains a listing of non-standard conditions that are currently identified on the Airport Data Sheets as part of the ALP drawing set (see Appendix B). It is important to note that the ALP ultimately shows the removal and/or relocation of these non-standard conditions in order to adhere to appropriate airfield design standards. For more detailed information, please refer to Appendix B.

TABLE FF
Airport Data Sheet - Non-Standard Table
Hollister Municipal Airport

Non-Standard Condition	Effected Design Standard	Standard	Existing	Proposed Disposition
Existing Fence parallel to Runway 6 on North/West Side	ROFA	500' wide (250' from rwy centerline)	194' from Runway 6 Centerline	Future Property Acquisition/Relocate Fence
Existing Road parallel to Runway 6 on North/West Side	ROFA	500' wide (250' from rwy centerline)	166' from Runway 6 Centerline	Future Property Acquisition/Relocate Road
Existing Fence parallel to Runway 24 on North/East Side	ROFA	500' wide (250' from rwy centerline)	193' from Runway 24 Centerline	Future Property Acquisition/Relocate Fence
Existing Road parallel to Runway 24 on North/East Side	ROFA	500' wide (250' from rwy centerline)	176' from Runway 24 Centerline	Future Property Acquisition/Relocate Road
Existing Buildings near Runway 24 on North/East Side	ROFA	500' wide (250' from rwy centerline)	246' from Runway 24 Centerline	Relocate or Remove Buildings
Windsock near Runway 13 End	ROFA	500' wide (250' from rwy centerline)	225' from Runway 13 Centerline	To Be Removed/ Relocated
Windsock near Runway 24 End	ROFA	500' wide (250' from rwy centerline)	170' from Runway 24 Centerline	To Be Removed/ Relocated
Segmented Circle/Windsock	ROFA	500' wide (250' from rwy centerline)	239' from Runway 13 Centerline	To Be Relocated

ROFA: Runway Object Free Area
Source: Survey Data performed by Martinez Geospatial; Coffman Associates' analysis

CAPITAL IMPROVEMENT PROGRAM

The analyses completed in the preceding section outlined airside and landside development needs to meet projected aviation demand based on forecast activity, facility requirements, safety standards, and operational efficiency. This section will provide a description and overall cost of each project identified in the capital improvement program (CIP) and development schedule. The program outlined has been evaluated from a variety of perspectives and represents a comparative analysis of basic budget factors, demand, and priority assignments.

The CIP is developed following FAA and CALTRANS guidelines for airport planning and primarily identifies those projects that are likely eligible for FAA and/or CALTRANS funding assistance. Other aviation projects that are not programmed to receive federal and/or state funding participation are also presented.

While the FAA requires the Airport to submit a five-year Airport Capital Improvement Program (ACIP) each year, the planning effort affords the opportunity to examine projects (and their potential financing) beyond the short term planning horizon. Several factors may influence the timing of projects in the intermediate and long term planning periods. Therefore, greater flexibility must be considered with regard to their implementation. The timing for capacity-related projects, such as hangar construction, will need to be based upon activity levels (e.g., operations, based aircraft) and the types of aircraft using the facility. Other projects, such as property acquisition for the protection of the airfield safety areas, focus on meeting FAA design standards and providing a safe operating environment. Finally, over the course of any ACIP, consideration must be given to the ongoing maintenance and preservation of airfield pavements. Consequently, this planning document must remain flexible to unforeseen changes which may occur over time. The CVH five-year ACIP and long term CIP are shown on **Exhibit R**, while **Exhibit S** graphically depicts the CIP overlaid onto the Airport aerial photograph and broken out into planning horizons.

CAPITAL IMPROVEMENT SUMMARY

The CIP is intended as a road map of airport improvements to help guide the City of Hollister, the FAA, and CALTRANS. The plan as presented will help accommodate increases in forecast demand at CVH over the next five years and beyond. The sequence of projects may change due to availability of funds or changing priorities. Nonetheless, this is a comprehensive list of capital projects the Airport should consider in the next 5+ years.

Total, the five-year CIP proposes approximately $11.9 million in Airport development needs. Of this total, approximately $10.7 million could be eligible for federal and $0.5 million for state funding assistance. The local funding estimate for the proposed CIP is $0.7 million. For projects planned beyond the short term planning period, the CIP proposes an estimated $14.3 million in airport development.

FUNDING SOURCES

Through federal legislation over the years, various grant-in-aid programs have been established to develop and maintain a system of public-use airports across the United States. The purpose of this system and its federally based funding is to maintain national defense and to promote interstate commerce. The most recent legislation affecting federal funding was enacted on February 17, 2012 and is titled, *FAA Modernization and Reform Act of 2012*.

Some airport projects are eligible for FAA funding through the Airport Improvement Program (AIP). Funding for AIP-eligible projects is undertaken through a cost-sharing arrangement in which the FAA provides up to 90 percent of the cost. Airports which are included in the NPIAS, such as CVH, can apply for airport improvement grants. The FAA provides up to 90 percent of the cost of eligible projects for the Airport.

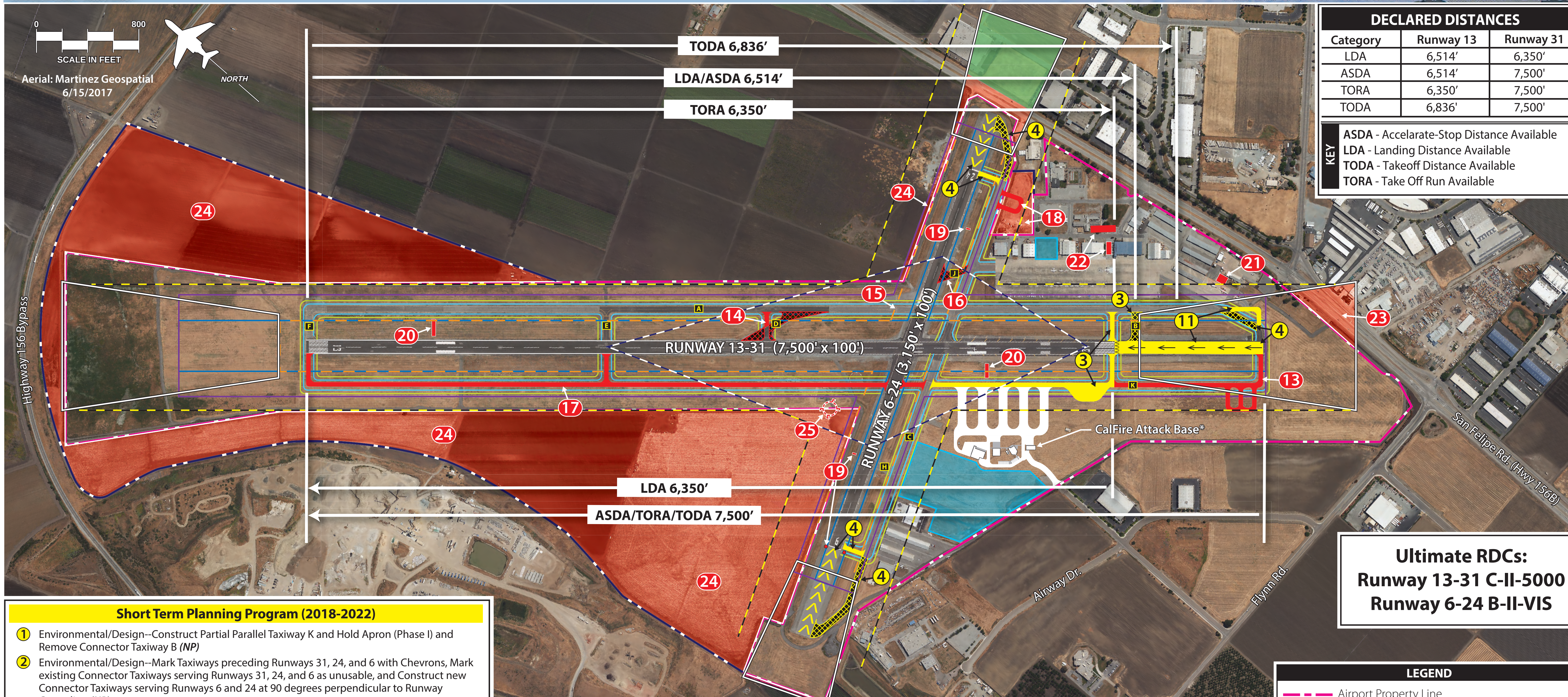
A portion of the FAA AIP grants can be matched with state funds. The current matching rate is 5.0 percent of the federal portion of the total project cost. A project which is being funded by an AIP grant must be included in the airport CIP. The amount set aside for AIP matching is determined by the California Transportation Commission each year.

Project #		Project Category	Federal Funding	State Funding	Airport/Local Share	Total Project Cost Estimate
Short Term Project Description						
Planning Year 2018						
1	Environmental/Design--Construct Partial Parallel Taxiway K and Hold Apron (Phase I) and Remove Connector Taxiway B	SS/EF	$ 232,065	$ 11,603	$ 14,182	$ 257,850
2	Environmental/Design--Mark Taxiways preceding Runways 31, 24, and 6 with Chevrons, Mark existing Connector Taxiways serving Runways 31, 24, and 6 as unusable, and Construct new Connector Taxiways serving Runways 6 and 24 at 90 degrees perpendicular to Runway Centerline	SS	$ 144,045	$ 7,202	$ 8,803	$ 160,050
2018 Total			**$ 376,110**	**$ 18,806**	**$ 22,985**	**$ 417,900**
Planning Year 2019						
3	Construct--Partial Parallel Taxiway K and Hold Apron (Phase I) and remove Connector Taxiway B	SS/EF	$ 1,942,470	$ 97,124	$ 118,707	$ 2,158,300
4	Construct--Mark Taxiways preceding Runways 31, 24, and 6 with Chevrons, Mark existing Connector Taxiways serving Runways 31, 24, and 6 as unusable, and Construct new Connector Taxiways serving Runways 6 and 24 at 90 degrees perpendicular to Runway Centerline	SS	$ 1,504,710	$ 75,236	$ 91,955	$ 1,671,900
2019 Total			**$ 3,447,180**	**$ 172,359**	**$ 210,661**	**$ 3,830,200**
Planning Year 2020						
5	Environmental/Design--Install Taxiway Lighting serving Taxiway A	SS	$ 117,000	$ 5,850	$ 7,150	$ 130,000
6	Environmental/Design--Install Taxiway Lighting serving Taxiway C	SS	$ 117,000	$ 5,850	$ 7,150	$ 130,000
2020 Total			**$ 234,000**	**$ 11,700**	**$ 14,300**	**$ 260,000**
Planning Year 2021						
7	Construct--Install Taxiway Lighting serving Taxiway A	SS	$ 990,000	$ 49,500	$ 60,500	$ 1,100,000
8	Construct--Install Taxiway Lighting serving Taxiway C	SS	$ 990,000	$ 49,500	$ 60,500	$ 1,100,000
9	Environmental/Design--Extend Runway 13-31 to 7,500 feet and Realign Connecting Taxiway 90 degrees perpendicular to the Runway	DM/OP	$ 171,000	$ 8,550	$ 10,450	$ 190,000
10	Environmental/Design--Reconstruct Southwest Hangar Area Taxiways	MN	$ 315,000	$ 15,750	$ 19,250	$ 350,000
2021 Total			**$ 2,466,000**	**$ 123,300**	**$ 150,700**	**$ 2,740,000**
Planning Year 2022						
11	Construct--Extend Runway 13-31 to 7,500 feet and Realign Connecting Taxiway 90 degrees Perpendicular to the Runway	DM/OP	$ 1,152,000	$ 57,600	$ 70,400	$ 1,280,000
12	Construct--Reconstruct Southwest Hangar Area Taxiways	MN	$ 2,997,000	$ 149,850	$ 183,150	$ 3,330,000
2022 Total			**$ 4,149,000**	**$ 207,450**	**$ 253,550**	**$ 4,610,000**
Total Short Term Program			***$ 10,672,290***	***$ 533,615***	***$ 652,196***	***$ 11,858,100***
Projects Beyond the Short Term Program						
13	Extend Partial Parallel Taxiway K to relocated Runway 31 Threshold (Phase II)	DM/SS	$ 1,395,000	$ 69,750	$ 85,250	$ 1,550,000
14	Construct Connecting Taxiway D at 90 degrees perpendicular to Runway 13-31 and remove existing Taxiway D	SS	$ 149,400	$ 7,470	$ 9,130	$ 166,000
15	Relocate Taxiway A Hold Position Markings north of Runway 6-24 to 200-feet from Runway Centerline	SS	$ 1,800	$ 90	$ 110	$ 2,000
16	Mark Taxiway J, providing direct access to Runway 6-24, as unusable	SS	$ 24,300	$ 1,215	$ 1,485	$ 27,000
17	Extend Partial Parallel Taxiway K to full length Parallel Taxiway serving Runway 13-31 (Phase III)	DM/SS	$ 3,346,200	$ 167,310	$ 204,490	$ 3,718,000
18	Acquire approximately two (2) acres adjacent to the southern side of the Runway 24 Threshold and Construct Hold Bay serving Runway 24	DM/EF	$ 258,300	$ 12,915	$ 15,785	$ 287,000
19	Install PAPI-2s serving Runways 6-24 and REILs serving Runway 6	SS	$ 131,400	$ 6,570	$ 8,030	$ 146,000
20	Upgrade PAPI-2s to PAPI-4s serving Runway 13-31	SS	$ 100,800	$ 5,040	$ 6,160	$ 112,000
21	Construct Fuel Farm	DM/OP	$ 504,000	$ 25,200	$ 30,800	$ 560,000
22	Construct Terminal/Conference Center and Parking	DM/OP	$ 1,194,300	$ 59,715	$ 72,985	$ 1,327,000
23	Acquire Easement for the Ultimate RPZ serving Runway 31 (approx. 3 acres)	SS	$ 34,200	$ 1,710	$ 2,090	$ 38,000
24	Acquire 181 Acres for Aviation Development and Safety Area mitigation located on the West Side of the Airfield	DM/OP	$ 5,701,500	$ 285,075	$ 348,425	$ 6,335,000
25	Relocate Segmented Circle and Lighted Wind Indicator	SS	$ 16,200	$ 810	$ 990	$ 18,000
Projects Beyond Short Term Program Total			***$ 12,857,400***	***$ 642,870***	***$ 785,730***	***$ 14,286,000***
Capital Improvement Program Total			***$ 23,529,690***	***$ 1,176,485***	***$ 1,437,926***	***$ 26,144,100***

Category Legend:

SS - Safety/Security
EN - Environmental
MN - Maintenance
EF - Efficiency
DM - Demand
OP - Opportunity

Exhibit R
CAPITAL IMPROVEMENT PROGRAM



DECLARED DISTANCES

Category	Runway 13	Runway 31
LDA	6,514'	6,350'
ASDA	6,514'	7,500'
TORA	6,350'	7,500'
TODA	6,836'	7,500'

KEY
- **ASDA** - Accelarate-Stop Distance Available
- **LDA** - Landing Distance Available
- **TODA** - Takeoff Distance Available
- **TORA** - Take Off Run Available

Ultimate RDCs:
Runway 13-31 C-II-5000
Runway 6-24 B-II-VIS

Short Term Planning Program (2018-2022)

1. Environmental/Design--Construct Partial Parallel Taxiway K and Hold Apron (Phase I) and Remove Connector Taxiway B *(NP)*
2. Environmental/Design--Mark Taxiways preceding Runways 31, 24, and 6 with Chevrons, Mark existing Connector Taxiways serving Runways 31, 24, and 6 as unusable, and Construct new Connector Taxiways serving Runways 6 and 24 at 90 degrees perpendicular to Runway Centerline *(NP)*
3. Construct--Partial Parallel Taxiway K and Hold Apron (Phase I) and remove Connector Taxiway B
4. Construct--Mark Taxiways preceding Runways 31, 24, and 6 with Chevrons, Mark existing Connector Taxiways serving Runways 31, 24, and 6 as unusable, and Construct new Connector Taxiways serving Runways 6 and 24 at 90 degrees perpendicular to Runway Centerline
5. Environmental/Design--Install Taxiway Lighting serving Taxiway A *(NP)*
6. Environmental/Design--Install Taxiway Lighting serving Taxiway C *(NP)*
7. Construct--Install Taxiway Lighting serving Taxiway A *(NP)*
8. Construct--Install Taxiway Lighting serving Taxiway C *(NP)*
9. Environmental/Design--Extend Runway 13-31 to 7,500 feet and Realign Connecting Taxiway 90 degrees perpendicular to the Runway *(NP)*
10. Environmental/Design--Reconstruct Southwest Hangar Area Taxiways *(NP)*
11. Construct--Extend Runway 13-31 to 7,500 feet and Realign Connecting Taxiway 90 degrees Perpendicular to the Runway
12. Construct--Reconstruct Southwest Hangar Area Taxiways *(NP)*

NP - Not Pictured

Projects Beyond the Short Term Program (2023-2037)

13. Extend Partial Parallel Taxiway K to relocated Runway 31 Threshold (Phase II)
14. Construct Connecting Taxiway D at 90 degrees perpendicular to Runway 13-31 and remove existing Taxiway D
15. Relocate Taxiway A Hold Position Markings north of Runway 6-24 to 200-feet from Runway Centerline
16. Mark Taxiway J, providing direct access to Runway 6-24, as unusable
17. Extend Partial Parallel Taxiway K to full length Parallel Taxiway serving Runway 13-31 (Phase III)
18. Acquire approximately two (2) acres adjacent to the southern side of the Runway 24 Threshold and Construct Hold Bay serving Runway 24
19. Install PAPI-2s serving Runways 6-24 and REILs serving Runway 6
20. Upgrade PAPI-2s to PAPI-4s serving Runway 13-31
21. Construct Fuel Farm
22. Construct Terminal/Conference Center and Parking
23. Acquire Easement for the Ultimate RPZ serving Runway 31 (approximately 3 acres)
24. Acquire 181 Acres for Aviation Development and Safety Area mitigation located on the West Side of the Airfield
25. Relocate Segmented Circle and Lighted Wind Indicator

LEGEND

- Airport Property Line
- Ultimate Property Line
- Runway Protection Zone (RPZ)
- Runway Safety Area (RSA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Object Free Area (ROFA)
- Runway Visibility Zone (RVZ)
- 35' Building Restriction Line (BRL)
- Taxiway Object Free Area
- Taxiway Safety Area
- Aviation Development Reserve
- Existing Easement

Acreage calculations are approximated for planning purposes only and not tied to legal descriptions. *It is assumed that the CalFire Attack Base will be privately funded.

PLAN IMPLEMENTATION

When implementing the CIP, the Airport must recognize that planning is a continuous process and does not end with the approval of this document. It is recommended that the Airport establish measures to track certain demand indicators, such as based aircraft, hangar demand, and operations.

It should be noted that actual need for facilities is best established by activity levels rather than a specified date. For example, projections have been made as to when additional hangars may be needed at the Airport. In reality, the timeframe in which the development is needed may be substantially different. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate development. Although every effort has been made in this planning process to conservatively estimate facility development, aviation demand will dictate timing of facility improvements.

In summary, the planning process requires the City of Hollister to consistently monitor the progress of CVH in terms of based aircraft, hangar demand, and operations. Analysis of aircraft demand is critical to the timing and need for new airport facilities.