

10. AVIATION SYSTEM ELEMENT

The aviation system is part of a multimodal transportation system, as it connects people and packages to surface, sea, and rail transport. Aviation is a part of the global transport system; California’s more than 300 airports move goods to and from domestic and international markets. The Humboldt region’s nine public-use airports, give residents and visitors access to faster travel which can connect them to interregional, interstate, and international destinations.

California’s public-use airports are also job centers, trade hubs, and emergency facilities; serving a variety of freight, passenger, as well as related business and government operations. As the single commercial airport in the region, California Redwood Coast–Humboldt County Airport is a key transportation asset for the region’s mobility and its tourism and business economies, and preparedness for disaster response and recovery.



Photo credit: humboldt.gov.org



Source: Caltrans 2021

AIRPORT ACCESS & MOBILITY

In the recent update of the California Transportation Plan 2050 (CTP 2050 (February 2021 Draft)), Caltrans emphasizes the State's goals for integrating the aviation system with a multi-modal transportation system:

"Aviation gives the State's multimodal transportation system access, range, and speed."

— 2017 RTP Guidelines for RTPAs

BY 2050. As the economy recovers and interregional travel and tourism begin to rise, California's airports will become increasingly vital elements of the state's multimodal transportation system. California's Aviation System Plan is focused on enhancing future connectivity between air travel and other modes, improving airport access in small and rural communities, and expanding sustainable energy solutions to curb aviation-related emissions.

AIRSIDE & LANDSIDE

For those familiar with airport operations, "airside" and "landside" are terms that distinguish between the areas dedicated for boarding flights and the areas more related to ground transport. When navigating around airports, landside generically means the area outside (external to) the passenger boarding area, and airside generically means the internal area for boarding aircraft, including skyways and runways. The boundary between the two is that area of security checkpoints, and passport and customs control. When discussing airports in the context of transportation planning, the landside and airside areas are considered more broadly. In this context, the landside area encompasses the external roads and other travelways that give ingress and egress to the airport, which usually means local roads and state highways. The broader airside includes the airport's surface grounds for ground support and emergency vehicles, including ramps, aprons, runways, and taxiways.

Congestion and other barriers on either side can impede mobility. Congestion on the landside can affect whether passengers make or miss their scheduled flights; congestion on the airside can affect how well airplanes meet their scheduled arrival and departure times. In this sense, landside deals more with ground transportation, whereas airside deals more with air transportation. In furthering the goal for regional transportation mobility, access, and connectivity, the multi-modal transportation system focuses on local airports' landside.

Ground access to airports is important not only to passengers, but also to airport employees, air cargo, and public transit. To have an integrated, multi-modal system, people must have a choice of modes to reach an airport, with access being comfortable and convenient for walking, biking, transit, and taxis/shuttles, as well as driving. The quality of ground access also certainly affects goods movement/freight operations/performance. For instance, the pavement condition (particularly for heavier trucks), number of lanes, and lane widths will affect freight access/movement.

Prior to COVID-19, which caused nationwide enplanements to decline 93 percent, California's airports welcomed over 227 million passengers and moved 4.8 million tons of air-cargo annually.

— Caltrans, Feb. 2021

AVIATION PLANNING

STATE PLANNING

The *California Aviation System Plan 2020 (CASP)* is one of Caltrans' six modal transportation plans that together comprise the *California Transportation Plan 2050 (CTP 2050)*.

Caltrans updated the CASP 2020 with an explicit purpose to identify a new vision for California's aviation system, identify the relationships between aviation and other transportation modes, and seek out solutions to make California's aviation facilities resilient to the effects of global climate change while identifying new ways to serve California's growing population. (Caltrans 2020). The CASP includes the Aeronautics Division Capital Improvement Program (CIP) for both commercial and GA airports, as submitted to Caltrans by airport sponsors/owners. Generally, CIP projects are based on the airports' master plans (or comparable long-range plan). The CIP, which Caltrans compiles every two years, covers a 10-year timeframe.



REGIONAL PLANNING

Airport Land Use Compatibility

Every county in which a public-use airport is located is required to establish an Airport Land Use Commission (ALUC) (per California PUC, Sections 21670 et seq.) This Commission has the single purpose to protect airports and public safety by overseeing the compatibility of land uses adjacent to public-use airports. ALUCs are an advisory body to local planning jurisdictions.

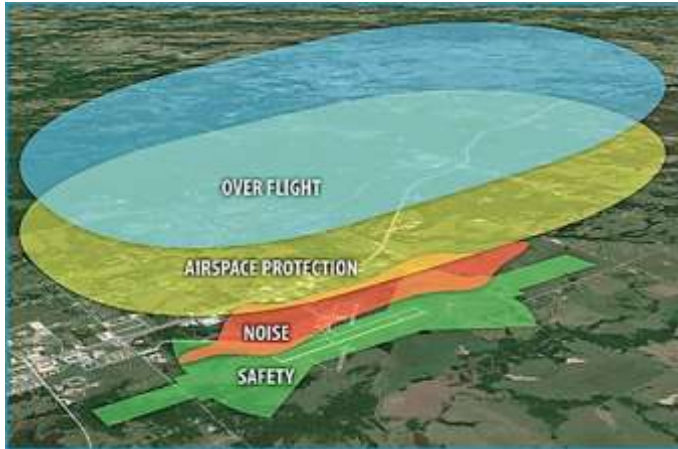
CTP 2050: OUR AIRPORTS

CHALLENGES

- ▶ **Carbon footprint** for planes has improved over the years, improvements are still needed; although planes contribute a large share of emissions to the environment, they are vital to our economy and livelihood.
- ▶ **Unmanned Aerial Vehicles (UAV)** driven by increasing consumer and industrial demand, may result in operational and safety issues related to airspace management.
- ▶ **Limited capacity** at many airports may not be able to accommodate long-term forecasted growth in demand.

OPPORTUNITIES

- ▶ **More efficient goods movement** as aviation provides a high-speed mode of transportation for high-value goods.
- ▶ **Shifting short-haul air** travel within the State to High-Speed Rail.
- ▶ **Improved connectivity** by increasing accessibility to emergency response and evacuation lifelines as air travel is often one of the most viable modes of transportation to rural areas of the state.
- ▶ **New technology** options such as electric and hybrid jet engines could reduce emissions and fuel consumption in the aviation industry.
- ▶ **Improved airport-land use planning** that incorporates airports as regional economic and transportation hubs.



Source: Mead & Hunt, Inc., 2019

The Humboldt County Board of Supervisors is the county’s designated ALUC. As the ALUC, they have authorized a nine-member Aviation Advisory Committee (AAC) to advise them on aviation matters within the county. The two planning bodies, the ALUC and AAC, must evaluate potential conflicts concerning noise, safety, airspace protection, and aircraft overflight in land uses near an airport. They do this in two primary ways: (i) by preparing Airport Land Use Compatibility Plans (ALUCPs); and (ii) by reviewing local agency general and specific plans for consistency with the ALUCP goals and objectives (per CPUC §21676(a)). The ALUC makes safety

recommendations via consistency determinations.

The *Humboldt County Airport Land Use Compatibility Plan* “provides the policies and criteria to be used by the ALUC when assessing the compatibility between the County’s public use airports and proposed land use development in the areas surrounding them.” The compatibility criteria set standards for building heights, building construction, and restricted uses of land. The standards and criteria are designed to

- (1) minimize the exposure of the public to noise and safety hazards,
- (2) provide for safer aircraft operations,
- (3) protect the airport from encroachment and minimize incompatible development in the immediate vicinity of the airport, and
- (4) ensure that prospective buyers of real estate (within the Airport Influence Areas) are notified that the airport and aircraft overflights are present (ALUCP, updated April, 2021).

While ALUCs can adopt ALUCPs, they do not have the authority to implement their own compatibility policies.

—California Aviation System Plan, 2020

The ALUCP applies to land use in areas surrounding all public-use airports within Humboldt County with these exceptions:

- the Hoopa Valley Airport located on the Hoopa Valley Reservation and owned and operated by the sovereign Hoopa Valley Tribe.
- ALUCs have no authority over federal, State or tribal lands
- the ALUCs have no authority over areas “already devoted to incompatible uses.”

Airport Ground Access Improvement Program

The Redwood Coast Airport is a primary air carrier airport because it has annual enplanements over 10,000 (86,147 enplanements in 2019) (FAA-2021a). Primary air carrier airports are required to have an Airport Ground Access Improvement Program (AGAIP), which must address mass transit, road (major arterial and highway), and other ground access deemed appropriate by the Airport Land Use Commission (California Government Code 65081.1(a)). Since the update of the RTP in 2014, the HCAOG Board, with a recommendation from the Humboldt County Aviation Advisory Committee, has adopted the AGAIP as part of the RTP updates. See Appendix for full program report.

Airport Master Plans

The purpose of airport master plans is to assess the demand for airport facilities, and to guide actions that would help meet those demands. An airport master plan is prepared for, and adopted by, the agency that owns and/or operates the airport.

Each of the County-owned airports operates according to its respective Airport Master Plan. The current airport master plans are:

- *Arcata-Eureka Airport Master Plan Report, Public Review Draft.* Accepted by the Board of Supervisors on September 9, 2005 (County of Humboldt, 2005a). (This airport is being renamed the California Redwood Coast–Humboldt County Airport.)
- *Dinsmore Airport Master Plan Report, Revised May 2007* (County of Humboldt, 2007a).
- *Garberville Airport Master Plan Report.* Accepted by the Board of Supervisors on September 4, 2007 (County of Humboldt, 2007b).
- *Kneeland Airport Master Plan Update.* September 2005 (County of Humboldt, 2005b).
- *Murray Field Airport Master Plan Report.* Accepted by the Board of Supervisors on September 4, 2007 (County of Humboldt, 2007c).
- *Rohnerville Airport Master Plan Report.* Accepted by the Board of Supervisors on September 4, 2007 (County of Humboldt, 2007d).

(Hoopa, Samoa Field, and Shelter Cove Airports do not currently have master plans.)

REGIONAL AVIATION SYSTEM

The most well-known airport in Humboldt County is probably the California Redwood Coast–Humboldt County Airport (formerly the Arcata-Eureka Airport),¹ because it is the only one that provides scheduled passenger service. It is, of the nine public-use airports in Humboldt County, the only commercial airport.

“Of the various ways to transport cargo, aircraft—with their speed and distance—are especially efficient at transporting long-haul, low-weight, high value, time-sensitive goods.”

— *California Aviation System Plan, 2011*

The region’s other eight airports are all General Aviation (GA) airports. General Aviation consists of all aviation activity except military flights, scheduled passenger airlines, or air cargo service. GA airports serve a wide array of public interests and services, such as: individuals flying private aircraft, flight training, charter flights, recreational flying, on-demand cargo flights, private and corporate air transport, agriculture flights, firefighting, and medical and emergency response operations.

AIRPORT FACILITIES & SERVICES

Humboldt County has nine public-use airports (Figure 10.1, see Maps Tab). One is a commercial airport and eight are general aviation airports (GA). The County of Humboldt owns the commercial airport and five GA airports:

- California Redwood Coast-Humboldt County Airport (Arcata-Eureka) — commercial airport

¹ The County of Humboldt has applied to the FAA to rename the airport.

"While GA generates significant economic activity, commercial airlines dominate the aviation industry in terms of jobs and output."

— California Aviation System Plan, 2020

- Dinsmore Airport
- Garberville Airport
- Kneeland Airport
- Murray Field Airport
- Rohnerville Airport

The Humboldt County Aviation Department manages all County airports.²

The other three airports are owned by separate jurisdictions:

- City of Eureka owns and manages Samoa Field Airport (formerly called Eureka Municipal Airport);
- Hoopa Valley Tribal Council owns and manages the Hoopa Airport; and
- Shelter Cove Resort Improvement District #1 owns and manages the Shelter Cove Airport.

The Caltrans's Division of Aeronautics applies its own Airport Functional Classification system (apart from the FAA). It further categorizes GA airports as limited use, community, regional, or metropolitan. Humboldt's eight GA airports are classified as:

- **GA Limited Use Airports: Dinsmore, Hoopa** – Airports that provide limited access, usually located in non-urban areas, provide no services and may be used for a single purpose, and have a few or no based aircraft.
- **Community Airports: Garberville, Kneeland, Samoa Field, Shelter Cove** – Airports that provide access to other regions and states; located near small communities or in remote locations; serve, but are not limited to, recreational flying, training, and local emergencies, accommodate predominantly single engine aircraft under 12,500 pounds gross vehicle weight, provide basic or limited services for pilots or aircraft.
- **Regional Airports: Murray Field, Rohnerville** – Airports that in addition to interregional and interstate access may provide international access as well; serve several cities or counties in an area with a larger population base and higher concentration of business and corporate aircraft activity than Community airports. They may provide aviation fuel and most services for pilots and aircraft, and have a published instrument approach. They may have a tower.³

² The County recreated the independent Department of Aviation in 2018, changing it from a division under the Public Works Department.

³ California Aviation System Plan: 2016 Policy Element (Caltrans Division of Aeronautics, October 2016).

Table Aviation-1. **Public-use Airports in Humboldt County: Location, Facilities, Services**

AIRPORT			LOCATION		FACILITIES					SERVICES	
FAA Identifier	Name	Owner	Community	Distance ¹ / Direction	Based Aircraft ²	Longest Runway (ft.)	Surface	Lighted	Visibility ³	Approach	Control Tower, Airline Service, AvGas, Jet Fuel, Maintenance, Automobile Rentals, Food
O33	Samoa Field (formerly called Eureka Municipal)	City of Eureka	Eureka	13 SW	10	2,700	Asphalt	No	Vis		n/a
O21	Hoopa	Hoopa Tribe	Hoopa	20 E	1	2,325	Asphalt	No	Vis		n/a
0Q5	Shelter Cove	Resort Improvement District #1	Shelter Cove	56 S	0	3,407	Asphalt	No	Vis		Food
ACV	California Redwood Coast	County	McKinleyville	–	27	6,046	Asphalt	Yes	Prec		Airline service ⁴ , AvGas, jet fuel, automobile rentals, food
D63	Dinsmore	County	Dinsmore	37 SE	1	2,510	Asphalt	No	Vis		n/a
O16	Garberville	County	Garberville	55 S	18	2,783	Asphalt	No	Vis		AvGas
O19	Kneeland	County	Kneeland	17 SE	1	2,252	Asphalt	No	Vis		n/a
EKA	Murray Field	County	Eureka	11 S	22	3,011	Asphalt	Yes	NP		AvGas, maintenance
FOT	Rohnerville	County	Fortuna	25 S	29 ⁵	4,025	Asphalt	Yes	NP		AvGas, maintenance

¹ Distance (in nautical miles) and direction from Redwood Coast Airport.

² FAA Information Effective 25 March 2021" (www.airnav.com/airports, accessed April 1, 2021).

³ Statute mile. [Precision; Visual; Non-Precision].

⁴ Including Air Taxi

⁵ Bill Wickman correspondence to HCAOG Senior Planner Oona Smith, September 1, 2021.

Source: Arcata-Eureka Airport Master Plan Report" (Caltrans 2005b)

The following describes each airport's locale, services, and intermodal transportation links.

ACV California Redwood Coast–Humboldt County Airport (formerly the Arcata-Eureka Airport) (County of Humboldt)

The California Redwood Coast–Humboldt County Airport (Redwood Coast Airport/ACV, a.k.a. Arcata Airport or Arcata-Eureka Airport) lies on a 200-foot-high plateau above the Pacific Ocean. It is located in McKinleyville within the unincorporated County, approximately seven miles north of Arcata and 15 miles north Eureka. The United States Navy established the "Arcata-Eureka Airport" in 1942. The County of Humboldt owns and operates this airport. In 2013 the County Board of Supervisors approved renaming it to California Redwood Coast–Humboldt County Airport.

Airport grounds cover 745 acres. A 247-acre site at the airport is a designated Foreign Trade Zone (Site #4). The site is restricted to 50 acres of activated area. There is room for expanding facilities (e.g. box hangars, tie downs, and hangars) on the north side of the general aviation ramp. The County also leases space, for example, for the U.S. Coast Guard Search and Rescue Base and an FAA Federal Service Station. The airport's terminal building (1,400-square foot) houses offices of the Humboldt County Aviation Department, U.S. Coast Guard, and Transportation Security Administration (U.S. Department of Homeland Security). The terminal also houses three car rental companies, a conference room, and a restaurant (vacant in recent years).

Nine acres at the airport now support a solar and storage microgrid (a 2.3 megawatt photovoltaic array and eight megawatt-hour battery storage system), which is the largest solar array in Humboldt County at the time it commenced operations at year's end 2021 (Goff, Andrew 2018). The microgrid supports 18 electric accounts including the airport and the U.S. Coast Guard Air Station. The Schatz Energy Research Center (SERC) at Humboldt State University, designed the microgrid. The project partners were the County, Redwood Coast Energy Authority, SERC, and PG&E. The County's Aviation Department reports that the microgrid will reduce the airport's energy bills \$50,000 annually (County of Humboldt 2021b).

Commercial Airline Service

The Redwood Coast Airport is a non-hub, primary commercial airport with both commercial passenger air service and freight service. Enplanements (i.e., commercial passenger boardings) at Redwood Coast Airport (ACV) declined each year between 2009 and 2015, primarily due to the loss of service during those years. (See Table *Aviation-2*) In 2010, Horizon Air (offering service through Alaska Airlines) cancelled daily flights to Seattle-Tacoma International Airport (SEA), then pulled out altogether in April 2011, which ended direct flights from ACV to LAX. One carrier then remained at ACV: Skywest operating United Express flights to Sacramento (SAC) and San Francisco International Airports (SFO). In December 2014, however, Skywest/United Express cancelled service to Sacramento. In 2015 the decline in enplanements reversed with an upswing of 6.7%, although the year's enplanements were still only 54% of 2009's. In April, 2016, Peninsula Airlines, Inc., (PenAir) began serving ACV with flights to Portland International Airport (PDX) and Redding Municipal Airport (RDD); however, in early August, 2017, PenAir dropped its Humboldt service, and a few days later announced that the company had filed for Chapter 11 bankruptcy protection and was also seeking to terminate its Crescent City flights.

ACV enplanements were trending upwards in 2018 and 2019. With the onset of the COVID-19 global pandemic in March 2020, flight service and enplanements fell in all markets across the world. However, in 2021, scheduled flights out of ACV grew for two carriers. In April, 2021, "America's first new mainline airline in nearly 15 years" (according to their press release) launched. Avelo Airlines is based out of the Hollywood

Table Aviation-2. California Redwood Coast Airport Enplanements 2009-2019

Calendar year	Enplanements ¹	Change from previous year ¹	Airline service changes
2009	102,440	--	
2010	93,402	-8.8%	Delta Airlines leaves (April); flights to SEA end (August)
2011	70,455	-24.6%	Flights to LAX end (April)
2012	61,705	-12.4%	
2013	56,682	- 8.9%	
2014	51,688	- 9.7%	Flights to SAC end (Dec)
2015	55,168	+6.7%	
2016	69,732	+26.40%	
2017	65,932	-5.45%	
2018	69,575	+5.35%	
2019	86,147	+23.82%	
2021	TBD		Avelo Airlines launches service to Burbank (L.A. County), flights begin to Phoenix and Las Vegas

¹FAA 2021a and b

Burbank Airport and offers non-stop flights between Burbank and 11 destinations (previously unserved routes) in the western U.S. Burbank to Arcata is one of its inaugural routes. The new airline launched with \$19 one-way fares for the first month. Flights began May 2021. In August, American Airlines increased to two flights per day to Phoenix, Arizona.

Intermodal Links

Airport Road provides direct access from the airport to U.S. 101 and Central Avenue, a regionally significant roadway (arterial). The airport is served by two public transit lines: Redwood Transit System (local) and Amtrak (regional). Three car rental companies have staffed kiosks at the airport. Private (commercial) shuttle and taxicab companies and local hotels also provide ground transport.

The airport parking lot has 296 long-term parking spaces and 55 short-term parking spaces. Additionally, there are 27 parking spaces reserved for employees.

Dinsmore Airport (County of Humboldt)

D63

The Dinsmore Airport is located a quarter-mile east of Dinsmore, in an isolated area of eastern Humboldt County, less than three miles from the Trinity County line to the east. The airport is in a canyon of the Van Duzen River Valley. Lands uses surrounding the airport are timberland, agricultural, and rural residential.

The airport opened in 1956 and has mostly retained the original layout. Adjacent hills rise 1,000 feet above the runway elevation. Pilots flying in and out of Dinsmore Airport must know mountain flying and nonstandard approach/departure paths. Airport property includes 23 acres owned in fee-simple plus 426 acres in easements. There is one hangar. This airport operates only during daytime.

Intermodal Links

Dinsmore Airport is accessed by State Route 36, a two-lane road. It is almost 42 miles along SR 36 to the interchange with U.S. 101. The SR 36 directly accesses the airport's gravel parking area for automobiles, adjacent to the west apron. A gravel driveway leads to the east apron and automobile parking area. Access to the active airfield is provided at both aprons via pedestrian and vehicle gates; the entire perimeter is fenced to prevent unauthorized vehicles and pedestrians from entering the airfield.

O16 Garberville Airport (County of Humboldt)

Garberville Airport is located approximately two miles southwest of downtown Garberville. It rests on a bluff, elevation 551 feet above mean sea level. Adjacent to the west, terrain rises up to 1,000 feet above the runway within one mile. Rural residential uses are as close as a quarter-mile to the south and east of the airport. Other surrounding land uses are timberland and agricultural along the South Fork Eel River.

Humboldt County has owned and operated the airport since 1950. The County has 51 acres owned in fee and 6 acres of easements. The airport has one runway and is mostly used for private planes.

Intermodal Links

Garberville Airport is accessed from Sprowel Creek Road, which connects to U.S. 101 two miles to the east.

O21 Hoopa Airport (Hoopa Valley Tribe)

The Hoopa Airport is located one mile southeast of Hoopa, serving the Hoopa-Willow Creek area. It is owned and operated by the Hoopa Valley Tribe. It is a public airport, classified as a Limited Use General Aviation Airport. The airport covers 40 acres and has one runway and aircraft tiedowns. The airport is open for day use only; however, in the case of emergencies the airport can place battery-powered lights along the edge of the runway to permit landings.

Intermodal Links

Hoopa Airport is on Hoopa Airport Road, which crosses Hospitality Road and intersects with Tish Tang Road, both local roads. The airport is approximately two road miles to State Route 96 via Tish Tang Road, and 14 miles to State Route 299 in Willow Creek.

O19 Kneeland Airport (County of Humboldt)

Kneeland Airport is on a butte approximately 15 miles southeast of the City of Eureka. The terrain falls sharply immediately beyond the end of its single runway; otherwise it is surrounded by mountainous open space. The airport is at elevation 2,737 feet above mean sea level, which often places it above foggy conditions. Thus, the Kneeland Airport principally serves as an alternate landing site when other airports in the Humboldt Bay area are temporarily closed due to fog (e.g., Redwood Coast, Samoa Field, Murray Field, and Rohnerville). The airport supports flight training and small-package delivery services. Cal Fire's heliport and associated buildings are located just west of the airport.

Intermodal Links

Kneeland Airport accesses U.S. 101 principally via Kneeland Road/Freshwater Road. The road distance to Eureka or Arcata is about 20 miles.

EKA Murray Field Airport (County of Humboldt)

Murray Field covers 131 acres immediately east of Humboldt Bay, at an elevation of 10.5 feet above mean sea level. It is located less than two miles from Eureka and approximately five miles from Arcata. The airport is bounded by Fay Slough to the north and by Eureka Slough to the southwest and east. The Airport has one runway (asphalt).

Murray Field Airport supports public, private, and commercial aviation services, including air freight transport businesses (see Goods Movement Element). Northern Air has operated there for over 40 years and is the airport's Fixed Base Operator (FBO). They lease two hangars from the County. Their services include fuel, transient aircraft parking, aircraft rental, flight instruction, and engine maintenance repair. Additionally, the U.S. Coast Guard conducts training maneuvers at Murray Field Airport.

Intermodal Links

From Airport Road, Murray Field directly accesses U.S. 101 and Jacobs Avenue, a frontage road to U.S. 101.

FOT Rohnerville Airport (County of Humboldt)

Rohnerville airport is located 0.8 miles south of Fortuna. The airport sits on a plateau above the Eel River, adjacent to rural residential area and undeveloped land. The airport has one asphalt runway, which ends at rapidly falling terrain south of the airfield. The current runway length can accommodate 100 percent of small aircraft with less than 10 passenger seats, excluding larger Cal Fire aircraft. A Cal Fire station has been operating on the east side of Rohnerville Airport since 1964. The Cal Fire station is an air attack base and a fire-fighter training facility.

Intermodal Links

The Rohnerville Airport has access to U.S. 101 via a route of arterial and minor local roads; the routes range from approximately four to 5.5 miles long. The lack of direct airport-highway access (for high volumes of cars and large trucks) constrains opportunities to expand the airport's airfreight services and general aviation, or to develop complementary commercial and industrial uses. The County of Humboldt, City of Fortuna, and Caltrans District 1 are partnering on the "Rohnerville Airport Connectivity Study" project to identify viable route alternatives and decide on a preferred alternative or prioritized alternatives. The study was partially funded in FY 2016-17 and HCAOG expects additional funding will be available in the next one to two fiscal years.

O33 Samoa Field Airport (City of Eureka)

Samoa Field Airport is located on a peninsula, west of downtown Eureka and Humboldt Bay. Samoa Field, formerly called Eureka Municipal Airport, is owned and managed by the City of

Eureka. The airport serves primarily recreational and personal business purposes. There is one asphalt runway; it is not lighted and night operations are prohibited. The airport has 11 hangars for public use and ten runway tiedowns. No aviation services are available. A WWII-era building onsite houses a private bed and breakfast.

Intermodal Links

The Samoa Field Airport is positioned next to road, rail, and harbor modes. It is accessed by New Navy Base Road, a regionally significant roadway (arterial), which connects the Samoa Peninsula to State Route 255 (northbound to Manila and Arcata, and eastbound to Woodley Island and Eureka). The airport is close to two harbor facilities: the Fairhaven Terminal and the Simpson Chip Export Dock (approximately 1.5 to 2 miles). The airport is also less than two miles from the end of the NCRA railroad tracks (Eel River Division) in Samoa.

Shelter Cove Airport (Shelter Cove Resort Improvement District #1)

0Q5

Shelter Cove Airport, in Shelter Cove, is located in the principal population center of Humboldt County's southern Lost Coast region. The land uses that surround the airport are commercial recreation, and low- to medium-density residential. Residential land use is within one-quarter mile of the airport. The airport is publicly owned and is operated by the Shelter Cove Resort Improvement District #1 (located in Shelter Cove). The airport has one runway; it is not lighted and night operations are prohibited. Aircraft parking is available. The Airport is unmanned and offers no services.

Intermodal Links

From the Shelter Cove Airport, local roads access Shelter Cove Road, a regionally significant roadway (County jurisdiction). It is approximately 25 miles to U.S. 101, near Redway/Garberville.

Table Aviation-3. **Forecast Airport Activity for Humboldt County, 2017-2039**

Airport	Forecasted Number of Based Aircraft	Forecasted Operations in 2039
California Redwood Coast Airport (ACV)	Assumed to remain similar to existing conditions in 2017 for all airports	Approximately 42,312 annual operations
Dinsmore Airport (D63)		Approximately 1,600 annual operations. [Based on slight increase to baseline operations and approximately 1,600 annual operations in 2017.]
Garberville Airport (O16)		Approximately 16,500 annual operations. [Based on slight increase to baseline operations and approximately 16,500 annual operations in 2017.]
Kneeland Airport (O19)		Approximately 7,000 annual operations
Murray Field Airport (EKA)		Approximately 55,450 annual operations or 152 average annual daily operations
Rohnerville Airport (FOT)		Approximately 27,500 annual operations or 75 average annual daily operations
Samoa Field Airport (O33)		Approximately 2,764 annual operations or eight average annual daily operations
Shelter Cove Airport (0Q5)		Approximately 2,208 annual operations or six average annual daily operations [Based on approximately nine annual average daily operations, with approximately 250 operations per month during the high-season, circa 2021.]

Source: Humboldt County Airport Land Use Compatibility Plan (ALUCP), February 2021.
 Note: Hoopa Airport is not subject to the ALUCP.

The Tables *Aviation-4* and *Aviation-5* below show demand forecasts from 2010 to 2025 for Humboldt County public airports, as reported in the airport master plans or from airport staff. Future demand for aviation services was projected based on existing levels of based aircraft and annual operations.

GOAL, OBJECTIVES, & POLICIES

GOAL: The regional aviation system has safe and efficient facilities and services. It is part of a strong multimodal transportation system and is adequately linked to the national aviation network for freight and passenger service. Humboldt’s public-use airports and adjacent land uses and circulation patterns are compatible.

OBJECTIVES: To strive for this goal, HCAOG shall support policies that help achieve the RTP’s main objectives/planning priorities (in alphabetical order):⁴

MAIN OBJECTIVE:	AVIATION SUB-OBJECTIVES (◆) AND POLICIES
<p>Balanced Mode Share/ Complete Streets</p>	<ul style="list-style-type: none"> ◆ Retain and enhance Humboldt County’s access to scheduled passenger airline service so that residents, visitors, and businesses have transportation mobility options. ◆ Increase intermodal connections between regional aviation facilities and the surface transportation system for freight and for all airport users, including passengers, tenants, and employees. <p>Policy AS-1. HCAOG shall support efforts to integrate aviation with other modes of transportation for the conveyance of people and goods. HCAOG shall encourage programs and projects that improve multimodal surface transportation to the commercial airport (e.g. transit/microtransit, secure bicycle storage, safe pedestrian access, rideshare, mobility on-demand). HCAOG shall apply Complete Streets strategies to commercial airport access road improvements for regional projects included in the Regional Transportation Plan and/or the accompanying Airport Ground Access Improvement Program (AGAIP) for the Redwood Coast Airport (per California Government Code §65081.1(a)).</p>
<p>Economic Vitality</p>	<ul style="list-style-type: none"> ◆ Improve the economic benefits of the regional aviation system’s air freight, commerce, and tourism capacities. <p>Policy AS-2. HCAOG supports improving ground access to airports in order to enhance passenger, air cargo, and general aviation airport opportunities. (Consistent with California State Aviation Plan–Policy MB-3.)</p>

⁴ The objectives are described in more detail in Chapter 2, *Renewing Our Communities*.

MAIN OBJECTIVE:	AVIATION SUB-OBJECTIVES (◆) AND POLICIES
Efficient & Viable Transportation System	<ul style="list-style-type: none"> ◆ Maximize the utility and compatibility of regional air freight and passenger airline services with adjacent land uses. ◆ Provide affordable and sustainable multimodal options for small and rural communities to access the national air transportation system. <p>Policy AS-3. HCAOG shall support regional, long-term airport planning to maintain the utility of Humboldt County airports and maximize connections to the national aviation network, including intermodal connections. HCAOG encourages airport operators to review airport needs and regularly update airports plans, and implement capital improvement programs.</p> <p>Policy AS-4. HCAOG shall support fix-it-first facility improvements for airports and efforts to maintain and expand air freight and scheduled passenger airline service for Humboldt County.</p>
Environmental Stewardship & Climate Protection	<ul style="list-style-type: none"> ◆ Reduce air pollutant emissions and air quality impacts of air freight transport and air passenger travel. <p>Policy AS-5. HCAOG shall promote programs to reduce aviation-related air pollution, including promoting projects and programs that increase the energy efficiency and use of clean energy sources in aviation transportation.</p>
Equitable & Sustainable Use of Resources	<ul style="list-style-type: none"> ◆ Reduce aircraft noise, ground access congestion, and encroachment concerns resulting from conflicts between incompatible land uses and airport space. <p>Policy AS-6. HCAOG supports lead agencies’ regulatory authority to ensure that land use and proposed development in the vicinity of public airports are compatible with airport activities. (Consistent with California State Aviation Plan 2016– Policy PL-2)</p>
Safety & Public Health	<ul style="list-style-type: none"> ◆ Achieve orderly expansion of airports and adoption of land use measures and transportation designs that minimize the public’s exposure to safety hazards within areas around public airports. (Consistent with California Aviation System Plan 2020) <p>Policy AS-7. Support the Airport Land Use Commission and airport operators in identifying, avoiding, and eliminating activities which introduce potential aviation safety hazards, airspace hazards, or security hazards.</p>

NEEDS ASSESSMENT

The top priority need for airports is to meet all safety requirements. Safety needs include proper design and conditions for all airport facilities (e.g., access roads, boarding areas, runways, etc.), proper security, and compatible land uses around airports. After safety, priority needs are determined by how well the region’s airports are meeting the demand for aviation services, and whether or not opportunities and fiscal resources are available to meet the need.

GROUND ACCESS

Ground access needs around airports arise from constraints such as congestion, inadequate or substandard bicycle, pedestrian, and Americans with Disabilities Act access, poor internal and external circulation, and inadequate signage or traffic controls. Constraints that impede efficient cargo and commerce transport include congestion, inadequate intermodal services (e.g., freight, rail, transit), inadequate local roads, conflicts between goods movement and passenger operations, and poor airport access due to surrounding land use encroachment (Caltrans 2020).

"The (Aeronautics) Division considers promoting a safe aviation environment for pilots, passengers, and persons on the ground its most important obligation."

—California Aviation System Plan, 2016

The Airport Ground Access Improvement Plan (AGAIP) for Redwood Coast Airport states, "The dominant ground transportation issue is the lack of pedestrian and bicycle connectivity to access the airport terminal from adjacent properties." The AGAIP identifies potential improvements, some of which are: pedestrian facilities on Airport Road and Airport Loop Road, and bicycle lockers. Refer to Appendix II, "Airport Ground Access Improvement Plan for California Redwood Coast– Humboldt County Airport" for full report.

CLIMATE CHANGE & SEA LEVEL RISE

The global climate crisis from greenhouse gas emissions will impact the aviation system. The *California Aviation System Plan* (CASP 2020) discusses where airports are particularly vulnerable to sea-level rise, and identifies the 11 California airports that will be affected by SLR as water increases above the existing mean higher highwater datum (MHHW). Four of these 11 are commercial service airports. One coastal airport in Humboldt Bay and four airports adjacent to the San Francisco Bay are vulnerable to a 3-foot increase in SLR, according to the CASP 2020 (Caltrans 2021). The following two tables and map, excerpted from the CASP 2020, show Humboldt's vulnerable airports:

Airport (FAA ID)	Sea Level Rise (above MHHW)			
	0 feet	3 feet	5 feet	10 feet
Humboldt Bay Area				
Murray Field Airport (EKA)		Y	Y	Y
Samoa Field (O33)				Y
San Francisco Bay Area				
Sonoma Valley Airport (0Q3)		Y	Y	Y
Napa County Airport (APC)				Y
Gross Field Airport (DVO)	Y	Y	Y	Y
Metropolitan Oakland International Airport (OAK)			Y	Y

Preliminary Draft Page 268

Source: Caltrans 2021

Below, “Table 6-7” predicts the extent of SLR that would occur at coastal airports based on three probability scenarios: high, medium, and low probability.

Year	High probability (66%)	Medium probability (0.5%)	Extremely Low probability
North Spit Gauge (Humboldt County) – as measured in feet			
2030	0.7	1	1.2
2040	1.1	1.6	2
2050	1.5	2.3	3.1
San Francisco Gauge – as measured in feet			
2030	0.5	0.8	1
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
San Luis Obispo Gauge – as measured in feet			
2030	0.5	0.7	1 foot
2040	0.7	1.2	1.6
2050	1	1.8	2.6
Santa Barbara Gauge – as measured in feet			
2030	0.4	0.7	1
2040	0.7	1.1	1.6

California Natural Resources Agency, *State of California Sea-Level Rise Guidance, 2018 Update*.

In Humboldt County, sea level rise from global warming is compounded by tectonic subsidence, and miles of coastline multiply the area that is at-risk of being inundated. These factors make Humboldt one of the State’s counties most vulnerable to sea level rise. Local engineers, scientists, and planners have been monitoring and researching regional vulnerabilities and risks, especially around Humboldt Bay. A recent study has identified critical assets that are at risk for projected sea level rise; in the report the author states that Murray Field Airport is in an area already at-risk under current (2014) conditions, because it is located in areas that were mapped as vulnerable to tidal inundation by MMMW (*mean monthly maximum water*) tides (7.74 feet) and MAMW (*mean annual maximum water*) king tide (8.79 feet) and are most at risk if shoreline structures such as dikes and railroad beds are breached or overtopped (Trinity Associates 2015).

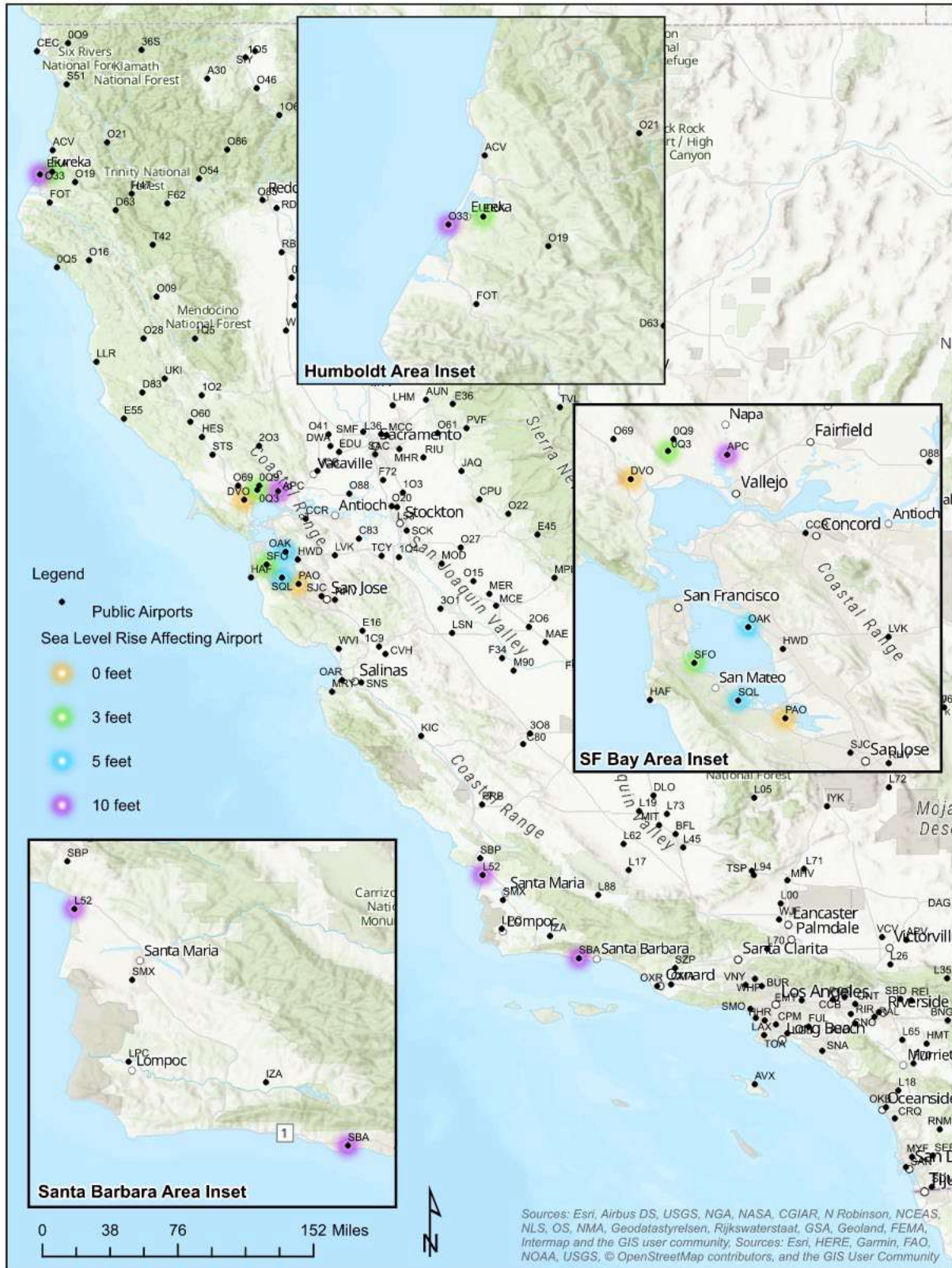
Correspondingly, Murray Field Airport is also deemed vulnerable to inundation under conditions projected in the near-term (2015 to 2050: MMMW +0.5 m.) and long-term (2050 to 2100: MMMW +1.0 m) planning periods.

The aviation sector contributes greenhouse gas emissions from ground operations to elevations as high as 43,000 feet. In the past 15 to 20 years, airports worldwide have upgraded buildings and ground fleets for energy efficiency, resulting in cutting energy use and GHG emissions. Results from the air, however, have been the opposite: GHG emissions from commercial flights have been increasing due to increases worldwide in air travel and air freight.

Technological prospects for transitioning to zero-emission commercial aircraft lag far behind EV and ZEV cars and trucks. Such a transition is not expected within the next 20 years as it is not, as of yet, a top strategy that state or federal governments are planning or pursuing. Decisions and actions for reducing aviation GHG emissions fall largely on individual choice: To fly or not to fly?

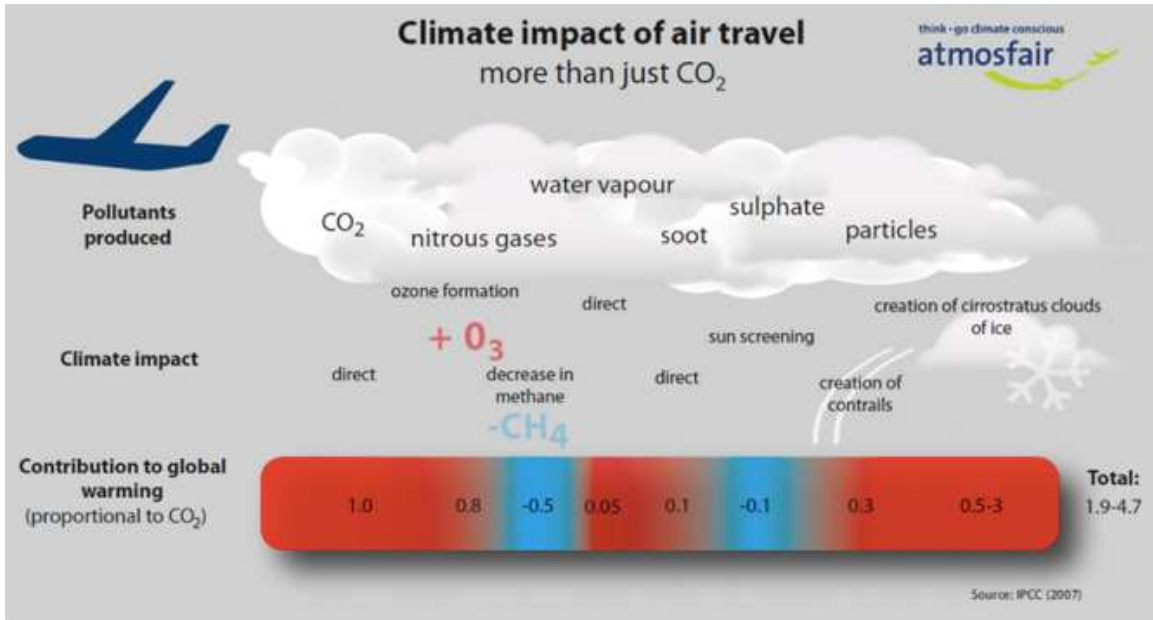
“While our collective use of automobiles, our production of electricity, and the industrial and agricultural sectors each exceed the climate change impact of commercial aviation, passenger air travel is producing the highest and fastest growth of individual emissions, despite a significant improvement in efficiency of aircraft and flight operations over the last 60 years.”

— EESI, 2019



Map reproduced from the CASP 2020 (Caltrans 2021)

Figure Aviation-1 Sea Level Rise Affecting Public Airports in California



Source: Atmosfair (Germany) (www.atmosfair.de/en/air_travel_and_climate/flugverkehr_und_klima/)

It would make sense to consider the carbon footprint when planning most trips, and whenever deciding on whether or not to fly. A decision-tree or standard framework for weighing the pros and cons can be used at the individual level as well as at an institutional or agency level. One example is the “Tyndall Travel Strategy,” developed by the Tyndall Centre for Climate Change initially for the academic/scientific research professions. Their framework strategy includes a Code of Conduct to support a low-carbon research culture, a decision tree, and a reporting and scoring tool (Tyndall Travel Tracker <http://travel.tyndall.ac.uk>). The strategy is self-guided and self-monitored voluntarily. The Tyndall Center is open and transparent, making the air-travel emissions public because, they say, “We want the public to know that we are taking our emissions seriously and acting to reduce them.” (More information at <https://tyndall.ac.uk/about/travel-strategy/>.)

One simple and available mitigation for air travel is to purchase carbon offsets for the GHG emissions contributed by one’s flights. A carbon offset represents reducing one metric ton (approximately 2,205 pounds) of carbon dioxide emissions. Revenue generated from carbon offsets helps fund projects that sequester carbon. Carbon offsets can be purchased to offset any mode of travel or any activity that contributes GHG to the atmosphere.

Carbon offset programs exist at local, state, national, and international levels, and fund carbon-sequestration projects across the globe. HCAOG encourages travelers to buy carbon offsets, especially for local sequestration projects.

FACILITY NEEDS

The summaries below describe what local airports need in order to accommodate existing and forecasted demand for aviation services. Following in the next subsection, the Action Plan, Table *Aviation-6* lists each airport’s proposed Capital Improvement Plan projects.

California Redwood Coast- Humboldt County Airport

The recently updated *Airport Land Use Compatibility Plan* listed these improvements for the airport:

ACV – Planned Facility Improvements	
Airside	<ul style="list-style-type: none"> • Box hangars • Executive hangars • Runway 1 PAPI • Runway 19 PAPI • Corporate hangar area • Electrical vault • Relocated beacon • Air traffic control tower (ATCT) • Runway 14 touchdown zone lights
Landside	n/a

Source: Humboldt County ALUCP, Table G-1 (April 2021)

Dinsmore Airport: Runway

Dinsmore Airport’s principal constraints to increasing operations are its runway length and non-standard approach and departure procedures. The runway length is 766 feet shorter than required for 75 percent of small airplanes with 10 passenger seats or less. It will be relatively more costly to extend or realign this airport’s runway due to the sloping terrain, the location of Highway 36, and dense forest on the east and west sides of the airport. The *Dinsmore Airport Master Plan* recommends that Humboldt County request a modification of FAA standards to maintain the current width of the runway, to allow part of Highway 36 to remain inside the runway safety area, to allow nonstandard conditions with regard to the object-free area for Runway 9-27, and to maintain tiedowns within the aircraft parking limit. It also recommends that space be established and preserved for aircraft storage facilities, in case demands increase.

The *Humboldt County Airport Land Use Compatibility Plan* notes, “The planned improvements to the (Dinsmore) Airport shown in the Master Plan and on the ALP include a 20-year plan that discusses sites for future rehabilitation and reconstruction of the runway, ramp, storm drain, as well as fencing and gates” (ALUCP, April 2021).

Garberville Airport: Facilities for Future Demand

The *Garberville Airport Master Plan* shows a forecast of the airport adding eight based aircraft from 2005 to 2025. Between 2005 and 2014, however, the airport’s based aircraft decreased from 20 to 18 (FAA 2014). If demand were to increase, development would include extending the apron further north; constructing two taxiway exits and hangars; and adding tiedown parking positions, aircraft storage units, and designated parking. The existing space at the airport could accommodate ten new tie-downs.

The recently updated *Airport Land Use Compatibility Plan* listed these additional improvements:

Planned Facility Improvements – Garberville Airport

- Airside • Design underground storm drainage for runway safety area (RSA) enhancement; construct.
- Design ramp reconstruction, rehabilitation and expansion; construct.
- Design relocation of wind cone and segmented circle; relocate.

Source: Humboldt County ALUCP (April 2021)

Hoopa Airport: Runway

The Hoopa Airport is a Limited Use General Aviation Airport, but it does not meet all the minimum standards of that class of airport. The airport's runway length and weight-bearing capacity are short of the minimum standards, according to the last General Aviation System Needs Assessment (GASNA) that Caltrans Division of Aeronautics prepared (Caltrans 2013).

Kneeland Airport: Runway Expansion

Operational levels at Kneeland Airport are most restricted by the runway length and clearance. The runway length (2,235 feet) is 885 feet shorter than required for 75 percent of small airplanes with 10 passenger seats or less. Expanding the runway has three major constraints:

1. The most significant factor is the environmental constraint presented by the Kneeland Prairie pennycress, a perennial herb of the coastal uplands of Humboldt County. The Kneeland Prairie pennycress is on the California Endangered Species list (since February 2000) and is a designated critical habitat. There are two known populations (colonies): one on either side of the airport's runway. The plant's endangered species status precludes modifying the airfield;
2. The Cal Fires' Helitack Base (for helicopter-delivered firefighting resources), located immediately west of the airfield, limits that airport's ability to satisfy lateral runway clearance requirements; and,
3. Topographic and geologic conditions "severely limit" how much the runway can be expanded (County of Humboldt, 2005a).

The updated *Airport Land Use Compatibility Plan* notes that Kneeland Airport's 20-year plan "mostly discusses stabilization and sealing of Runway 15 33" (Humboldt County ALUCP 2021)

Murray Field Airport: Preserve Land for Expansion

Murray Field Airport's priority needs are to construct the runway/taxiway and to install wildlife fencing. The *Murray Field Airport Master Plan Report* recommends that the County of Humboldt preserve three acres on the south/southwest side of the airport for future needs to expand airport facilities (i.e., based-aircraft storage and parking). The report also identifies three acres on the north side of the airport that might be useful for future airport development. The building area at Murray Field Airport are constrained by the presence of protected wetlands which attract wildlife. (County of Humboldt, 2007c).

Rohnerville Airport: Facilities for Future Demand

The *Rohnerville Airport Master Plan* (County of Humboldt, 2007d) outlines phased development to expand the airport facilities for projected growth. Development plans include: reconfiguring, expanding, or adding new aprons; constructing a new taxiway, T-hangers or tiedowns, and perimeter fencing; installing new runway lighting; and improving the runway safety area.

Samoa Field Airport: Airport Classification Standards

Although Samoa Field Airport is classified as a Community General Aviation Airport, it does not meet all the minimum standards of this airport class. The airport's longest runway does not reach the minimum length, width, or weight-bearing standards. Additionally, the airport does not have visual aid equipment, 24-hour on-field weather services, or an instrument approach procedure.

Shelter Cove Airport: Airport Classification Standards

Like Samoa Field Airport, the Shelter Cove Airport is also classified as a Community General Aviation Airport but does not meet all the minimum standards. It, too, does not have visual aid equipment, 24-hour on-field weather services, or an instrument approach procedure. Neither does its longest runway meet minimum standards for length.

ACTION PLAN: PROPOSED PROJECTS

The proposed projects in Table *Aviation-6* were identified from current Airport Master Plans (which date back to 2005-2007), and *Humboldt County Aviation Division of Public Works–Airport Capital Improvement Plan* (ACIP). Several projects had estimated implementation for years from 2014 to 2020; we have updated these implementation years to "unknown." Funds may or may not be available to implement these projects within the RTP's short-term or long-term planning horizon.

Table Aviation-4. Regional Airport Capital Improvement Plan (CIP) and Planning Projects¹

Project Name/Description	FAA	State	Local	Implementation Year(s)	Estimated Cost ² (000s)
Redwood Coast Airport (Arcata Airport) – County of Humboldt					
Obstruction Mitigation Plan	tbd		tbd	unknown	\$75
Pavement Maintenance Management Plan	tbd		tbd	unknown	\$85
Taxiways B&G Drainage Improvements	tbd		tbd		
Air Freight Needs Assessment (Redwood Coast, Murray Field, and Rohnerville Airports)		tbd	tbd	TBD	\$38
Phase 3 construct fire station	tbd		tbd	unknown	\$3,700
Design runway lighting improvements*	699,653	0.00	78	unknown	\$777
Obstruction Removal*	180,000	0.00	20	unknown	\$200
Study hazard removal	tbd		tbd	unknown	\$150
Construct runway lighting improvements*	4,398	0.00	489	unknown	\$4,887
RNR TWY B&G/drainage (design complete 2006)	tbd		tbd	unknown	\$509
Design roadway entrance to airport	tbd		tbd	unknown	\$250
Construct Runway Lighting Improvements Phase 3*	3,208	0.00	356	unknown	\$3,564
Safety Management System*	45	0.00	5	unknown	\$50
Install sidewalk on Airport Road (see Complete Streets Element, Table Streets-4, for project details)					
				<i>Subtotal</i>	<i>\$14,285</i>
Dinsmore Airport – County of Humboldt					
Design west end storm drain improvements	tbd		tbd	unknown	\$50
Install fence and gates	tbd		tbd	unknown	\$40
Design windsock and segmented circle	tbd		tbd	unknown	\$42
Obstruction Mitigation Plan & AGIS Survey*	135	7	8	unknown	\$150
Construct windsock and segmented circle	tbd		tbd	unknown	\$88
Construct west end storm drain improvements	tbd		tbd	unknown	\$300
Remove/lower hazard to aircraft/ obstructions*	135	7	8	unknown	\$150
Construct fence and gates	tbd		tbd	unknown	\$166
Design ramp improvements	tbd		tbd	unknown	\$50
				<i>Subtotal</i>	<i>\$1,036</i>
Garberville Airport					
Design runway	tbd		tbd	unknown	\$53
Construct runway RNR	tbd		tbd	unknown	\$368
Construct ramp RNR and expansion*	509	25	31	unknown	\$565
Obstruction removal plan & AGIS Survey*	109	5	7	unknown	\$121
Study removing or lowering hazards to aircraft	tbd		tbd	unknown	\$50

Project Name/Description	FAA	State	Local	Implementation Year(s)	Estimated Cost ² (000s)
Design runway safety area drainage	tbd		tbd	unknown	\$7
Remove or lower aircraft hazards*	180	9	11	unknown	\$200
Construct runway safety area drainage	tbd		tbd	unknown	\$564
Ramp improvements and apron expansion	509	25	31	2021	\$565
				<i>Subtotal</i>	\$2,493
Hoopa Airport – Hoopa Valley Tribe					
Taxiway extension to runway	tbd	tbd	tbd	unknown	\$50
Kneeland Airport – County of Humboldt					
RSA study	tbd		tbd	unknown	\$157
Study removing or lowering hazards to aircraft	tbd		tbd	unknown	\$5
Design stabilization	tbd		tbd	unknown	\$108
Construct stabilization	tbd		tbd	unknown	\$1,078
Obstruction Mitigation Plan & AGIS Survey	135	68	8	unknown	150
Design fencing and gates	tbd		tbd	unknown	\$45
Remove or lower hazards to aircrafts*	135	68	8	unknown	\$150
Construct fencing and gates	tbd		tbd	unknown	\$350
				<i>Subtotal</i>	\$2,043
Murray Field Airport – County of Humboldt					
Construct wildlife perimeter fencing/gates	tbd		tbd	unknown	\$609
ALP update	tbd		tbd	unknown	\$83
Design AWOS system	tbd		tbd	unknown	\$25
Beacon, security lighting, emergency generator connection	tbd		tbd	unknown	\$25
Install and implement AWOS type system	tbd		tbd	unknown	\$270
Construct Runway 12/30 Rehabilitation (Phase 2)*	810	41	50	unknown	900
Beacon, security lighting, emergency generator connection	tbd		tbd	unknown	\$100
Design RWY/TWY RNR	tbd		tbd	unknown	\$63
Construct RWY/TWY RNR*	584	29	36	unknown	\$649
Design entry road rehabilitation	tbd		tbd	unknown	\$40
Design lighting upgrade for runway and taxiway*	tbd		tbd	unknown	\$50
Construct entry road rehabilitation	tbd		tbd	unknown	\$480
Air Freight Needs Assessment—see under Redwood Coast Airport					
				<i>Subtotal</i>	\$3,294
Rohnerville Airport					
Obstruction removal*	135	7	8	unknown	\$150
Construct upgrade of RWY/TWY lighting system*	1,199	60	73	2021	\$1,332
Rehabilitate Runway – Design*	132	7	8	unknown	\$147

Project Name/Description	FAA	State	Local	Implementation Year(s)	Estimated Cost ² (000s)
Rehabilitate Runway – Construct Phase 2*	1,112	56	68	unknown	\$1,234
Rehabilitate Runway – Construct Phase 3*	555	28	34	unknown	617
Design and construct wildlife exclusion fence/gates*	536	27	33	2021	\$595
Rohnerville Airport Connectivity Study (with City of Fortuna, Caltrans)				unknown	\$99
				Subtotal	\$4,174
Shelter Cove Airport – SCRID No. 1					
Airport Land Use Plan Update	0	93	10.34	unknown	\$103.4
Taxiway realignment planning	0	81	9	unknown	\$90
Tiedown area paving, SE and NW tiedown	504	25.2	30.8	unknown	\$560
Improve drainage – southeast tiedown area	0	450	50	unknown	\$500
Pilots’ lounge	0	67.5	7.5	unknown	\$75
Taxiway realignment	630,000	31.5	38.5	unknown	\$700
10 space pilot’s parking lot planning and design	0	23	3	2026	\$26
10 space pilot’s parking lot	0	90	10	2027	\$100
				Subtotal	\$1,501
Samoa Field (formerly Eureka Municipal) – City of Eureka					
Resurface runway/repaint markings*	0	135	15	unknown	\$150
T-Hangar Improvements	0	180	20	2021	\$200
Resurface Parking Areas	0	0	0	2022	\$0
Design T-hangars*	0	27	3	2023	\$30
Construct ten T-hangars*	0	270	30	2024	\$300
Remove/prune willow stand*	0	37.8	4.2	2026	\$42
Install runway lights*	0	495	55	2027	\$550
Construct security fencing*	0	139.5	15.5	2028	\$155
				Subtotal	\$1,130
				Subtotal	\$36,468
				Regional Projects–Funded (constrained) Subtotal	TBD
				Regional Projects–Not funded (unconstrained) Subtotal	TBD
				REGIONAL AVIATION PROJECTS TOTAL (000s)	\$36,468

¹Projects identified in Airport Master Plans (2005-2007) unless noted otherwise.

²To estimate the cost in year of implementation, assume a 2% annual rate of inflation.

* Project is listed in the “California Aviation System Plan: Capital Improvement Plan Year 2017-2026 (Caltrans, May 2017)

Acronyms: Reconstruct and Rehabilitate (RNR), Automated Weather Observation System (AWOS), taxiway (TWY), runway (RWY), .

PERFORMANCE INDICATORS

The table below lists performance indicators for the region’s aviation system. The table groups indicators by “goal,” which correspond to the RTP’s six main objectives/planning priorities.

Table Aviation-5. Performance Indicators for the Regional Aviation System Operations

GOALS	INDICATORS	MEASURES	DATA SOURCES
Safety	Have rates of crashes, fatalities, and injuries decreased?	<ul style="list-style-type: none"> Severity of collisions and injuries. Number of safety improvement projects implemented. Fatal accident rate of commercial air carrier or general aviation. 	Accident statistics collected by Caltrans District 1 Safety Division, CHP, local agencies, Federal Aviation Agency (FAA).
	Are safety accidents decreasing? Do all airports have a safety management system? Are airport tarmac areas and fueling facilities securely fenced? Are there secure boundaries for airport runways, taxiways, aprons?	<ul style="list-style-type: none"> Number of runway incursions and/or operational errors. Number of preventable workplace injuries. Airports without a safety management system. Area of unsecure fencing at airport perimeters, card access, gate monitoring system. 	Airport Master Plans or safety reports, Caltrans Office of Aviation Planning, Division of Aeronautics, FAA statistics.
Balanced Mode Shares (Complete Streets)	Has access to active transportation trips to airports increased?	<ul style="list-style-type: none"> Quantity and quality of multi-modal connections to commercial airport (e.g., public transit service, rideshare services, bicycle facilities, pedestrian access). 	Passenger surveys.
Efficient, Viable Transportation System	Do aviation facilities meet standards for state of good repair?	<ul style="list-style-type: none"> Condition of aviation facilities. Total cost per capita to sustain (modal) system performance at base-year level. Maintenance cost per capita to preserve (modal) system at base-year conditions. 	Aviation Depts, Caltrans District 1, Harbor District, goods movement industry, StreetSaver or other pavement management software.
	Have investments improved system efficiency and/or productivity? Are aviation market shares increasing for freight or commercial passenger services?	Per one thousand dollars invested: <ul style="list-style-type: none"> Increased frequency and reliability of aviation service. Percentage of passenger seats filled on commercial flights . 	Caltrans, Public Works Departments, local and state environmental compliance reporting, commercial airlines.

Table continues on next page.

GOALS	INDICATORS	MEASURES	DATA SOURCES
Environmental Stewardship & Climate Protection (CO₂ reduction)	Has fuel consumption decreased?	<ul style="list-style-type: none"> Fuel consumption gallons per capita, countywide or regionwide. Fossil fuel use ratio of passenger miles traveled (per modes). Ratio of fossil fuel use to freight miles traveled. Decrease in air pollution emissions. 	Caltrans annual traffic counts, environmental and compliance reporting, FAA statistics, CARB.
	Have transportation investments advanced environmental justice (EJ) objectives? Are land uses and development compatible for adjacent transportation facilities?	<ul style="list-style-type: none"> Percentage of RTP/RTIP expenditures in environmental justice tracts. Percentage of homes within half-mile of airport, EJ and non-EJ tracts. Acres of land adjacent to airports that are zoned compatibly for airport noise and height restrictions/acres of incompatible encroachment. 	US Census, American Community Survey General Plan updates, Airport Land Use Compatibility Plan, Airport Master Plans.
Economic Vitality	Have aviation investments contributed to economic growth, including increases in access to jobs, markets, and/or services?	<ul style="list-style-type: none"> Direct and indirect economic benefits from increased aviation options. 	

REFERENCES

CITATIONS

- Caltrans 2013** "201310xx_GASNA(1).xlsx" [Caltrans General Aviation System Needs Assessment document] accessed at <http://dot.ca.gov/hq/planning/aeronaut/documents/casp/index.htm> ["California Aviation System Plan (CASP) Elements"], link: "Appendix IV Update (XLSX) 2013" accessed August 30, 2017).
- Caltrans 2017** California Aviation System Plan: Capital Improvement Plan 2017-2026
- Caltrans 2019**, Aeronautics Capital Improvement Plan 2019-2028
- Caltrans 2020** *California Aviation System Plan 2020*. Prepared by the Division of Aeronautics. Caltrans 2021 California Aviation System Plan (Adopted by the California Transportation Commission on August 18, 2021. (https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/2020_casp_adopted_divofaero_dor081821.pdf, accessed September 26, 2021)
- Caltrans 2021** California Transportation Plan 2050 (**CTP 2050**) (February 2021)
- County of Humboldt 2005a** *Kneeland Airport Master Plan Update*. Mead & Hunt. (September 2005)
- County of Humboldt 2005b** *Arcata-Eureka Airport Master Plan Report*. Mead & Hunt. (September 2005)
- County of Humboldt 2007a** *Dinsmore Airport Master Plan Report*. Mead & Hunt.
- County of Humboldt 2007b** *Garberville Airport Master Plan Report*. Mead & Hunt. (January 2007)
- County of Humboldt 2007c** *Murray Field Airport Master Plan Report*. Mead & Hunt. (January 2007)
- County of Humboldt 2007d** *Rohnerville Airport Master Plan Report*. Mead & Hunt. (January 2007)
- County of Humboldt 2021a** *Humboldt County Airport Land Use Compatibility Plan*. Prepared for Humboldt County Airport Land Use Commission by ESA. (April 2021)
- County of Humboldt 2021b** Aviation Advisory Committee Minutes, July 27, 2021. (https://humboldt.gov.org/AgendaCenter/ViewFile/Minutes/_07272021-1954, accessed September 26, 2021)
- EESI 2019** (Environmental and Energy Study Institute) "Fact Sheet: The Growth in Greenhouse Gas Emissions from Commercial Aviation (2019)" by Jeff Overton. October 17, 2019. (<https://www.eesi.org/papers/view/fact-sheet-the-growth-in-greenhouse-gas-emissions-from-commercial-aviation>, accessed December 29, 2021.)
- FAA 2014** (Federal Aviation Administration) "Appendix A: List of NPIAS Airports with 5-Year Forecast Activity and Development Cost," *2015-2019 National Plan of Integrated Airport Systems (NPIAS) Report*. (Transmitted to Congress on September 30, 2014.) (www.faa.gov/airports/planning_capacity/npias/reports/historical, accessed September 5, 2017.)
- FAA 2016** "2017-2021 National Plan of Integrated Airport Systems." (September 2016) check citation
- FAA 2021a** "Calendar Years 2019 Enplanements by State – CY 2019 ACAIS, FAA Airports." (September 2020) (www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger, accessed April 22, 2021.)
- FAA 2021b** "Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports - Previous Years." Federal Aviation Administration. (www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/previous_years, accessed April 22, 2021.)
- Goff, Andrew 2018** "Microgrid Featuring Nine Acres of Solar Panels to be Built at ACV," Lost Coast Outpost (February 23, 2018). (<https://lostcoastoutpost.com/2018/feb/23/microgrid-featuring-nine-acres-solar-panels-be-ins/>, accessed September 26, 2021)
- Trinity Associates 2015** "Humboldt Bay Sea Level Rise Adaptation Planning Project Phase II Final Report" by Aldaron Laird. (February 2015)

RESOURCES

Air Cargo Mode Choice and Demand Study. Prepared for Caltrans-Office of System and Freight Planning by TranSystems. (July 2, 2010)

"Aviation Emissions and Air Quality Handbook, Version 3, Update 1." FAA Office of Environment and Energy. (January 2015)

"Aviation Emissions, Impacts & Mitigation: A Primer." (Prepared by FAA Office of Environment and Energy, January 2015)

California Aviation System Plan 2016-2025: Capital Improvement Plan. Prepared by Caltrans-Division of Aeronautics. (August 2015)

Capital Improvement Plan 2014-2023 of the California Aviation System Plan. Prepared by Caltrans-Division of Aeronautics. (August 2013)

Humboldt County General Plan-Planning Commission Hearing Draft: "Safety Element," (Part 4, Chapter 14). County of Humboldt. (November 20, 2008)

Humboldt County General Plan Planning Commission Approved Draft: "Circulation Element" (Part 2, Ch 7); "Economic Development Element" (Part 2, Ch. 9). County of Humboldt. (March 19, 2012)

"Report 10: Performance Measures for Freight Transportation" of the National Cooperative Freight Research Program. Prepared for the Transportation Research Board by Gordon Proctor & Associates et al. (2011)