

## 6. AVIATION SYSTEM ELEMENT

With the region's nine public-use airports, residents and visitors have access to faster travel which can connect them to (or from) interregional, interstate, and international destinations. The aviation system is part of a multimodal transportation system, as it connects people and packages (air passengers and air freight) to surface (highway), sea, and rail transport. Humboldt's aviation system is part of a robust California aviation system which

improves mobility options, generates tax revenue, saves lives through emergency response, medical, and firefighting services, produces over \$170 billion in air cargo revenues annually, and generates over \$14 billion to the State's tourism industry (2016 RTP Guidelines).

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

– California Aviation System Plan, 2016

### AIRPORT ACCESS & MOBILITY

#### Airside & Landside

"Airside" and "landside" are terms that describe areas of an airport. 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 including 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.

## REGIONAL AVIATION SYSTEM

Of the region's nine public-use airports, six are owned by the County of Humboldt and managed by the Aviation and Airport Division of the Humboldt County Public Works Department. The other three are owned by three different jurisdictions: the City of Eureka owns and manages Samoa Field Airport (formerly called Eureka Municipal Airport); the Hoopa Valley Tribal Council owns and manages the Hoopa Airport; and the Shelter Cove Resort Improvement District #1, owns and manages the Shelter Cove Airport, located in Shelter Cove.

The only airport with commercial passenger service is the County's California Redwood Coast–Humboldt County Airport (formerly the Arcata-Eureka Airport).<sup>1</sup>

### AIRPORT PLANNING

The perception that airports are just places for airplanes to take-off and land has long been dismissed by aviation system planners. Instead, airports should more accurately be viewed as economic enterprise hubs, employment centers, mixed-use commercial business centers, bulk cargo transfer centers, transit hubs, and more.

– California Aviation System Plan, 2011

#### Airport Land Use Commission

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. The ALUC is responsible for preventing the creation of new noise and safety problems in the vicinity of public-use airports in its jurisdiction. ALUCs are an advisory body to local planning jurisdictions.

The Humboldt County Board of Supervisors is the county's designated ALUC. As the ALUC, the Board has authorized a nine-member Aviation Advisory Committee (AAC) to advise them on aviation matters within the county. The two planning bodies, the ALUC and the AAC, must evaluate potential conflicts such as noise, safety, airspace, and overflight. 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.

HCAOG consulted with the Humboldt AAC for updating the Aviation Element, Goods Movement Element, and the *Airport Ground Access Improvement Plan* (an appendix of the RTP). HCAOG attended several of the AAC's meetings during 2017, and communicated with Humboldt County staff of the Aviation Division (Public Works Department).

<sup>1</sup> The County of Humboldt has applied to the FAA to rename the airport.

## Airport Plans

Airports must be operated consistently with the policies of the region-wide Airport Land Use Compatibility Plan (ALUCP). California statute authorizes ALUCs to prepare the ALUCP, and apply it when they review local government general plans and specific plans, including airport master plans.

Acting under its authority as the ALUC, the County Board of Supervisors adopted the *Airport Land Use Compatibility Plan: Humboldt County Airports* (last amended and adopted in 1998) (County of Humboldt, 1998). The *Airport Land Use Compatibility Plan* (ALUCP) sets policies and criteria for assessing whether land uses between Humboldt’s public use airports and proposed development in surrounding areas are compatible. The compatibility criteria set standards for building heights, building construction, and restricted uses of land. The ALUCP’s compatibility criteria and review policies apply broadly to all airports in the County. Additionally, the plan has specific policies, compatibility maps, and background data for the five County-operated General Aviation airports plus Shelter Cove Airport. The ALUCP does not contain specific policies or compatibility zones for the Samoa Field Airport (formerly Eureka Municipal Airport) or the Hoopa Airport or, although has policies and criteria that regulate allowed uses and residential densities around the Hoopa 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).
- *Robnerville 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.)

“Incompatible land uses around airports are considered the largest imminent and continuous threat to California’s air transportation system of public-use airports.”

– California Aviation System Plan, 2016

## AIRPORT FACILITIES

The FAA categorizes public airports as primary or nonprimary in the National Plan of Integrated Airport Systems (NPIAS). Primary airports have scheduled air carrier service for 10,000 or more enplaned passengers per year; nonprimary airports have scheduled passenger service for 2,500 to 9,999 enplaned passengers per year. The nonprimary category also includes general aviation airports and reliever airports (FAA 2016a). The California Redwood Coast Airport is the only primary airport in Humboldt. The other eight are classified as general aviation (GA) airports, which do not have scheduled passenger service, typically have at least ten based aircraft, and are 20 miles or farther away from the nearest NPIAS airport. General aviation airports serve air couriers, air ambulances, air charter, law enforcement, and private pilots.

“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 Caltrans’s Division of Aeronautics applies its own Airport Functional Classification system. 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.<sup>2</sup>

Humboldt County has nine public-use airports (Figure 7.1, see Maps Tab). As noted above, the airport owners/operators are the County of Humboldt, City of Eureka, Hoopa Tribe, and Shelter Cove Resort Improvement District #1. Below describes each airport’s locale, services, and intermodal transportation links, followed with further details in Table *Aviation-1*.

<sup>2</sup> California Aviation System Plan: 2016 Policy Element (Caltrans Division of Aeronautics, October 2016).

**Table Aviation-1. California Redwood Coast Airport Enplanements 2009-2015**

Calendar year	Enplanements	Change from previous year	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%	

Source: FAA 2016b and c

**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, aka Arcata Airport) lies on a 200-foot-high plateau overlooking the Pacific Ocean. It is located in McKinleyville within the unincorporated County, approximately seven miles north of Arcata and 15 miles north Eureka. The County of Humboldt owns and operates this 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 Redwood Coast Airport is a non-hub, primary commercial airport with both commercial passenger air service (the only serving the region) and freight service. As the only commercial airport in Humboldt County, it is a key transportation asset for the region’s mobility, as well as its tourism and business economies. The airport building houses the U.S. Coast Guard Search and Rescue Base and offices of the Humboldt County Airports Division Offices, the Federal Aviation Administration (FAA), and the Transportation Security Administration (U.S. Department of Homeland Security).

Enplanements at Redwood Coast Airport (ACV) have dropped significantly since 2009, primarily due to the loss of service. Horizon Air, offering service through Alaska Airlines, cancelled daily flights to Seattle-Tacoma International Airport (SEA) in 2010, then pulled out altogether in April 2011, which ended direct flights from ACV to LAX. The only carrier serving ACV was then 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.

**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.

**Dinsmore Airport (County of Humboldt)**

The Dinsmore Airport is located a quarter-mile east of Dinsmore, in an isolated area of eastern Humboldt County. The airport is in a canyon of the Van Duzen River Valley. 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. This airport operates only during daytime.

**Intermodal Links**

Dinsmore Airport is accessed by road from State Route 36. It is almost 42 miles along SR 36 to the interchange with U.S. 101.

**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 climbs rapidly, rising up to 1,000 feet above the runway within one mile. The airport's major aviation use is for private planes.

**Intermodal Links**

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

**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.

### **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 the runway; otherwise it is surrounded by mountainous open space, 2,737 feet above mean sea level. At this elevation, the airport is often 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.

### **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 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. 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.

### **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. Its runways end 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.

“Simply stated, if airports are to be the job and economic growth centers they can be, then it is incumbent on the (Aeronautics) Division to recommend projects that would first improve airport infrastructure to safely accommodate local and regional markets.”

– California Aviation System Plan, 2016

**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.

**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. No aviation services are available, the runway is not lighted, and night operations are prohibited. The airport has 11 hangars for public use and ten runway tiedowns. 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)**

Shelter Cove Airport, in Shelter Cove, is located in the principal population center of Humboldt County's southern Lost Coast region. 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.

**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-2. Public-use Airports in Humboldt County**

AIRPORT			LOCATION		FACILITIES							SERVICES
FAA Identifier	Name	Owner	Community	Distance <sup>1</sup> / Direction	Based Aircraft <sup>2</sup>	Aircraft ops: Avg. for 12-mo. period ending 12/31/2017	Number of Runways	Longest Runway (ft.)	Surface	Lighted	Approach Visibility <sup>3</sup>	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	48/wk	2	2,700	Asphalt	No	Vis	n/a
O21	Hoopa	Hoopa Tribe	Hoopa	20 E	1	75/yr	2	2,325	Asphalt	No	Vis	n/a
0Q5	Shelter Cove	Resort Improvement District #1	Shelter Cove	56 S	0	58/wk	2	3,400	Asphalt	No	Vis	Food
ACV	Redwood Coast (formerly called Arcata-Eureka)	County	McKinleyville	–	15	115/d	2	5,998	Asphalt	Yes	Prec	Airline service <sup>4</sup> , AvGas, jet fuel, automobile rentals, food
D63	Dinsmore	County	Dinsmore	37 SE	1	31/wk	2	2,510	Asphalt	No	Vis	n/a
O16	Garberville	County	Garberville	55 S	18	45/d	2	3,045	Asphalt	No	Vis	AvGas
O19	Kneeland	County	Kneeland	17 SE	1	134/wk	2	2,240	Asphalt	No	Vis	n/a
EKA	Murray Field	County	Eureka	11 S	48	152/d	2	3,010	Asphalt	Yes	NP	AvGas, maintenance
FOT	Rohnerville	County	Fortuna	25 S	10	75/d	2	4,025	Asphalt	Yes	NP	AvGas, maintenance

<sup>1</sup> Distance (in nautical miles) and direction from Redwood Coast Airport.

<sup>2</sup> “FAA Information Effective 17 August 2017” (www.airnav.com/airports, accessed August 28, 2017).

<sup>3</sup> Statute mile. [Precision; Visual; Non-Precision].

<sup>4</sup> Including Air Taxi

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

The tables *Aviation-3* and *Aviation-4* below show forecasts of future demand (to the year 2025) for Humboldt County public airports. Future demand for aviation services was estimated based on existing levels of based aircraft and annual operations. These forecasts come from the airport master plans or from current airport staff.

**Table *Aviation-3*. Aviation Activity Forecast for Based Aircraft**

Aircraft type	Based Aircraft Forecast <sup>1</sup>			
	2010	2015	2020	2025
<b><i>Redwood Coast Airport</i></b>				
Single-Engine	6	8	11	15
Twin-Engine	2	3	4	5
Turbo-Prop	1	6	6	6
Jets	2	3	6	10
Helicopter	4	4	4	4
<i>Total</i>	<i>15</i>	<i>24</i>	<i>31</i>	<i>40</i>
<b><i>Dinsmore Airport</i></b>				
Single-Engine	2	4	6	8
<i>Total</i>	<i>2</i>	<i>4</i>	<i>6</i>	<i>8</i>
<b><i>Garberville Airport</i></b>				
Single-Engine	20	21	21	22
Twin-Engine	2	2	4	5
Helicopter	0	1	1	1
<i>Total</i>	<i>22</i>	<i>24</i>	<i>26</i>	<i>28</i>
<b><i>Hoopa Airport</i></b>				
Based Aircraft	1	1	1	1
<i>Total</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
<b><i>Kneeland Airport</i></b>				
Based Aircraft	0	0	0	0
<i>Total</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<b><i>Murray Field Airport</i></b>				
Single-Engine	91	92	93	94
Twin-Engine	12	13	14	15
Jet	2	3	3	4
Helicopter	1	1	2	2
<i>Total</i>	<i>106</i>	<i>109</i>	<i>112</i>	<i>115</i>
<b><i>Rohnerville Airport</i></b>				
Single-Engine	31	32	32	33
Twin-Engine	5	5	5	5
Jet	1	1	2	2
Helicopter	1	1	1	1
<i>Total</i>	<i>38</i>	<i>39</i>	<i>40</i>	<i>41</i>
<b><i>Samoa Field Airport</i></b>				
Based Aircraft	11	23*	23	23
<i>Total</i>	<i>11</i>	<i>23</i>	<i>23</i>	<i>23</i>
<b><i>Shelter Cove</i></b>				
Based Aircraft	0	0	0	0
<i>Total</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

<sup>1</sup>Forecasts for County airports are from their respective master plans. Hoopa, Samoa Field, and Shelter Cove Airports' forecasts are from their respective staff.

\*If local demand warrants building 10 T-hangars.

**Table Aviation-4. Aviation Activity Forecast for Annual Operations**

Operation Type <sup>1</sup>		Annual Operations Forecast <sup>2</sup>			
		2010	2015	2020	2025
<b>Redwood Coast Airport</b>					
Itinerant	Air Carrier	11,650	11,700	11,675	11,650
	Air Taxi	4,650	5,600	6,450	7,300
	General Aviation	9,700	9,800	9,950	10,100
	Dedicated Air Cargo	1,250	1,400	1,625	1,850
	<i>Subtotal</i>	<i>27,250</i>	<i>28,500</i>	<i>29,700</i>	<i>30,900</i>
Local	General Aviation	7,700	7,800	7,950	81,00
	Military / Government	15,000	15,000	15,000	15,000
	Dedicated Air Cargo	550	700	800	900
	<i>Subtotal</i>	<i>23,250</i>	<i>23,500</i>	<i>23,750</i>	<i>24,000</i>
	<i>Total</i>	<i>50,500</i>	<i>52,000</i>	<i>53,450</i>	<i>54,900</i>
<b>Kneeland Airport</b>					
Itinerant	Single-Engine Fixed	3,000	3,000	3,300	3,300
	Single-Engine Variable	2,000	2,000	2,000	2,000
	<i>Subtotal</i>	<i>5,000</i>	<i>5,000</i>	<i>5,300</i>	<i>5,300</i>
Local	Single-Engine Turboprop	50	50	100	100
	Helicopters	500	500	500	500
	Light Twin-Engine	50	50	100	100
	Single-Engine Fixed	500	500	800	800
	Single-Engine Variable	400	400	700	700
	<i>Subtotal</i>	<i>1,500</i>	<i>1,500</i>	<i>2,200</i>	<i>2,200</i>
	<i>Total</i>	<i>6,500</i>	<i>6,500</i>	<i>7,500</i>	<i>7,500</i>
<b>Dinsmore Airport</b>					
	Itinerant General Aviation	1,045	1,105	1,170	1,236
	Local General Aviation	630	665	700	740
	<i>Total</i>	<i>1,670</i>	<i>1,770</i>	<i>1,870</i>	<i>1,975</i>
<b>Garberville Airport</b>					
	Itinerant General Aviation	7,475	7,896	8,340	8,809
	Local General Aviation	8,542	9,022	9,530	10,066
	<i>Total</i>	<i>16,017</i>	<i>16,918</i>	<i>17,870</i>	<i>18,875</i>
<b>Hoopa Airport</b>					
	Itinerant General Aviation	TBD			
	Local General Aviation	TBD			
	<i>Total</i>	<i>TBD</i>			
<b>Murray Field Airport</b>					
Itinerant	Air Taxi	160	170	180	190
	General Aviation	21,360	22,560	23,830	25,170
	Military / Government	320	340	360	380
	<i>Subtotal</i>	<i>21,840</i>	<i>23,070</i>	<i>24,370</i>	<i>25,740</i>
	Local General Aviation	48,050	50,750	53,600	56,620
	<i>Total</i>	<i>69,890</i>	<i>73,820</i>	<i>77,970</i>	<i>82,360</i>

Table continues on next page.

**Table Aviation-4. Aviation Activity Forecast for Annual Operations** *continued*

Operation Type <sup>1</sup>		Annual Operations Forecast <sup>2</sup>			
		2010	2015	2020	2025
<b><i>Robnerville Airport</i></b>					
Itinerant	General Aviation	11,360	12,020	12,710	13,450
	Military / Government	390	390	390	390
	<i>Subtotal</i>	<i>11,750</i>	<i>12,410</i>	<i>13,100</i>	<i>13,840</i>
	Local General Aviation	17,620	18,610	19,660	20,760
<i>Total</i>		<i>29,370</i>	<i>31,020</i>	<i>32,760</i>	<i>34,600</i>
<b><i>Samoa Field Airport</i></b>					
	Itinerant General Aviation	100	100	100	100
	Local General Aviation	200	400*	400	400
<i>Total</i>		<i>300</i>	<i>500</i>	<i>500</i>	<i>500</i>
<b><i>Shelter Cove Airport</i></b>					
	Itinerant General Aviation	TBD			
	Local General Aviation	TBD			
<i>Total</i>		<i>TBD</i>			

<sup>1</sup> An operation is counted for each landing and each departure, such that a touch-and-go flight is counted as two operations.

<sup>2</sup> Forecasts for County airports are from their respective master plans; Samoa Field Airport forecasts are from City of Eureka staff.

\* Estimate if additional hangars are built.

## 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):<sup>3</sup>

- ❖ Balanced Mode Share/Complete Streets
- ❖ Economic Vitality
- ❖ Efficient & Viable Transportation System (includes Preserving Assets)
- ❖ Environmental Stewardship & Climate Protection
- ❖ Equitable & Sustainable Use of Resources
- ❖ Safety

### OBJECTIVE: BALANCED MODE SHARE/COMPLETE STREETS

*Specific Aviation Objective:*

<sup>3</sup> The objectives are described in more detail in the RTP Introduction (Chapter 1).

- ◆ *Retain and enhance Humboldt County’s access to scheduled passenger airline service so that residents 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.*

**Policy AS-1** HCAOG shall include feasible aviation projects in the Regional Transportation Plan, including facility improvements and efforts to maintain and expand air freight and scheduled passenger airline service for Humboldt County. *(Also supports objective: Economic Vitality)*

**Policy AS-2** HCAOG shall support multimodal trips by encouraging programs and projects to integrate scheduled passenger airline service with other travel modes (e.g. transit routes/schedules, secure bicycle storage).

**Policy AS-3** HCAOG shall apply Complete Streets strategies to airport access road improvements for regional projects included in the Regional Transportation Plan, as well as for local projects in jurisdictions’ Capital Improvement Programs.

**Policy AS-4** HCAOG shall consider feasible projects to develop or extend surface transportation or mass transit systems to improve intermodal ground access to the airport, and any other ground access improvement projects the RTPA deems appropriate to that end. Proposed projects will be 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)).

**OBJECTIVE: ECONOMIC VITALITY**

***Specific Aviation Objective:***

- ◆ *Support actions to improve the economic benefits of the regional aviation system’s airfreight, commerce, and tourism capacities.*

**Policy AS-5** HCAOG shall help promote full utilization of airfreight capabilities in Humboldt County, and shall support increasing regional aviation resources for intermodal goods movement.

**Policy AS-6** 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.)

## OBJECTIVE: EFFICIENT & VIABLE TRANSPORTATION SYSTEM

### *Specific Aviation Objectives:*

- ◆ *Maximize the utility and potential of regional air freight and passenger airline services with adjacent land uses.*
- ◆ *Foster small and rural communities' access to the national air transportation system. (Consistent with California State Aviation Plan—Policy MB-1.)*

**Policy AS-7** HCAOG shall support regional, long-term airport planning to maintain the utility of Humboldt County airports and maximize connections to the national aviation network. HCAOG encourages airport operators to review airport needs every five years, regularly update airports plans, and implement capital improvement programs.

**Policy AS-8** 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. HCAOG encourages the Humboldt County Airport Land Use Commission to update the *1993 Airport Land Use Compatibility Plan—Humboldt County Airports* and to maintain a current ALUCP.

## OBJECTIVE: ENVIRONMENTAL STEWARDSHIP

### *Specific Aviation Objective:*

- ◆ *Reduce air pollutant emissions and air quality impacts of air freight transport and air passenger travel.*

**Policy AS-9** HCAOG shall promote projects and programs that increase the energy efficiency and use of “clean” energy sources in aviation transportation; HCAOG shall also promote programs to reduce aviation-related air pollution.

## OBJECTIVE: EQUITABLE & SUSTAINABLE USE OF RESOURCES

- ◆ *Reduce aircraft noise, ground access congestion, and encroachment concerns resulting from conflicts between incompatible land uses and airport space.*

**Policy AS-10** Promote compatibility planning between airports and surrounding land uses. (Consistent with California State Aviation Plan 2016— Policy PL-2)

## OBJECTIVE: SAFETY

### *Specific Aviation Objective:*

- ◆ *Provide support and coordination for the continued operation of safe and efficient aviation services and facilities in Humboldt County.*
- ◆ *Ensure the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to safety hazards within areas around public airports. (Consistent with California State Aviation Plan 2016—Objective SF0-5)*

**Policy AS-11** 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.

## 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.

"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

### 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 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.

### Global Warming & Sea Level Rise

The global climate crisis from greenhouse gas emissions will impact the aviation system. 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. As the State’s Aeronautics Division summarizes, “Low elevation coastal airports will need to address this issue from their operational perspective” (Caltrans 2016).

### **General Aviation System Needs Assessment (GASNA)**

Semi-annually, airports statewide turn in lists of their core project needs to Caltrans’s Aeronautics Division. The Division compiles the data into the General Aviation System Needs Assessment (GASNA) “to help the FAA understand the types of projects that might best serve the entire State aviation system of airports” (Caltrans 2016). The GASNA highlights what capital improvement projects (CIP) airports need to better meet safety and infrastructure needs, along with capability upgrades. Table *Aviation-5* shows what local airports need in order to meet minimum standards for their airport classification, as reported in the 2013 updates to the GASNA (Caltrans’ Aeronautics Division did not update the GASNA in 2015 or 2017).

Additionally, the summaries below describe what local airports need in order to accommodate existing and forecasted demand for aviation services. There are needs for infrastructure and non-infrastructure projects, i.e., for both airport planning and upgrading or expanding facilities. Following in the next subsection, the Action Plan, Table *Aviation-5* lists each airport’s proposed Capital Improvement Plan projects.

## **PLANNING NEEDS**

### **Airport Land Use Commission: Update ALUCP**

The County’s *Airport Land Use Compatibility Plan: Humboldt County Airports (ALUCP)* was written in March 1993, and is out of date. The plan must be updated to ensure that the compatibility criteria and policies adequately reflect current public health and safety concerns and needs.

### **Airport Ground Access Improvement Program**

The Redwood Coast Airport is a primary air carrier airport because it has annual enplanements over 10,000 (55,168 enplanements in 2015) (FAA 2016b). 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)). The HCAOG Board, with a recommendation from the Humboldt County Aviation Advisory Committee, has adopted the AGAIP in as part of the RTP, first in 2014 and again in 2017. See Appendix for full program report.

## FACILITY NEEDS

### 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.

### 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 has decreased from 20 to 18 (FAA 2014). If demand increases, 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.

### Hoopaa 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 (see Table *Aviation-4* for details).

### 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).

### **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. See Table *Aviation-4* for details.

### **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. See Table *Aviation-5* for details.

The Caltrans Division of Aeronautics prepares, in odd years, the General Aviation System Needs Assessment (GASNA) to supplement the Capital Improvement Plan (of the CASP). With the GASNA, the Division of Aeronautics staff inform and recommend to airport operators, local governments, and the FAA those improvement projects they surmise would benefit California’s overall aviation system. The GASNA recommends priorities of unfunded safety, capacity, and capability projects at primarily GA airports. The table below reproduces the 2013 GASNA table by Caltrans (the most recent available at time of printing).

**Table Aviation-5. Airport Enhancement Needs to Upgrade to Minimum Standards** (Airports in Caltrans District 1)

District 1 All Projects Attribute Details							Longest Runway Attributes					
Airport by Caltrans Airport Functional Classification <sup>1</sup>	Min. std length <sup>2</sup> (Feet)	Length (Feet)	Extension cost estimate	Width (feet)	Widening cost estimate	Asphalt runway pavement condition (G-good, F- fair, P-poor)	PCI <sup>3</sup>	PCI or visual inspec- tion year	New pavement overlay cost for existing runway length	Usable runway rehabili- tation cost estimate	Weight bearing capacity <sup>4</sup> (single wheel/000 lbs)	Run- way safety area <sup>5</sup>
<b>Primary Commercial Service Non-Hub</b>				<b>150</b>		<b>Good</b>	<b>Very Good</b>				<b>50</b>	
REDWOOD COAST (formerly Arcata)	7,000	5,998	\$1,107,711	150		ASPH-G	79	2006	\$408,865	\$408,105	60	S
<b>Regional General Aviation</b>				<b>75</b>		<b>Good</b>	<b>Very Good</b>				<b>12.5</b>	
MURRAY FIELD*	5,500	3,000	\$1,381,875	75		ASPH-G	99	2006			19	
ROHNERVILLE*	5,600	4,005	\$1,175,515	100		ASPH-G	76	2006	\$180,225	\$180,225	30	
<b>Community General Aviation</b>				<b>75</b>		<b>Fair</b>	<b>Very Good</b>				<b>12.5</b>	
SAMOA FIELD (formerly Eureka Muni)	3,500	2,700	\$353,760	60	\$386,925	ASPH-G	91	2002			10	
GARBERVILLE	3,700	3,050	\$359,288	75		ASPH-F	53	2011	\$528,413	\$93,893	30	
KNEELAND*	4,500	2,252	Infeasible- terrain	50	\$829,125	ASPH-G	95	2006			13	U
SHELTER COVE	3,500	3,400	\$44,220	60	386,925	ASPH-G	100	2011			20	
<b>Limited Use</b>				<b>60</b>		<b>Fair</b>	<b>Very Good</b>				<b>12.5</b>	
DINSMORE	3,800	2,510	\$456,350	48	\$336,072	ASPH-P	32	2006	\$278,309	\$835,581	unknown	
HOOPA	3,100	2,325	\$285,588	50	\$228,470	ASPH-F	N/A	N/A			10	
<b>Cost Totals</b>			<b>\$5,164,307</b>		<b>\$2,167,517</b>					<b>\$1,596,260</b>		

Table continues on next page.

**Table Aviation-5.** (continued)

District 1 All Projects Attribute Details		Other Desirable Airport Safety Attributes						
Airport by Caltrans Airport Functional Classification <sup>1</sup>	Visual aid	Visual aid equip. and install. cost estimate	Instrument approach procedure	24-hour on-field automated weather services	24-hour on-field automated weather services equip. & install. cost estimate	Available fuel & grade	Fuel equip. & install. cost estimate	Airport layout plan <sup>2</sup> (date)
<b>Primary Commercial Service Non-Hub</b>	<b>VASI/PAPI<sup>3</sup></b>		<b>ILS</b>	<b>Yes</b>				<b>100LL &amp; Jet A</b>
REDWOOD COAST (formerly Arcata)	PAPI		ILS	Yes				100LL & Jet A 1/1/2002
<b>Regional General Aviation</b>	<b>VASI/PAPI</b>		<b>GPS/VOR</b>	<b>Yes</b>				<b>100LL &amp; Jet A</b>
MURRAY FIELD*	VASI		GPS	None	\$130,000	100LL	\$50,000	7/16/2010
ROHNERVILLE *	VASI		GPS	Yes		100LL	\$50,000	7/16/2010
<b>Community General Aviation</b>	<b>VASI/PAPI</b>		<b>GPS/VOR</b>	<b>Yes</b>		<b>100LL</b>		
SAMOA FIELD (formerly Eureka Munic.)	None	\$60,000	None	None	\$130,000	None	\$100,000	1/1/1984
GARBERVILLE	None	\$60,000	None	Yes		100LL		7/16/2010
KNEELAND*	None	\$60,000	None	None	\$130,000	None	\$100,000	5/1/1993
SHELTER COVE	None	\$60,000	None	None	\$130,000	None	\$100,000	8/1/1997
<b>Limited Use</b>	<b>None</b>		<b>None</b>	<b>None</b>		<b>100LL</b>		
DINSMORE	None		None	None		None	\$100,000	11/3/2010
HOOPA	None		None	None		None	\$100,000	12/1/1992
<b>Cost Totals</b>		<b>\$240,000</b>			<b>\$520,000</b>		<b>\$600,000</b>	

**Note:** Airport enhancement needs and estimated costs to upgrade to minimum standards as defined in the System Needs Assessment are listed in priority order from left to right.

<sup>1</sup> Priority 1 Airport (grey highlight); Priority 2 Airport (\*); Non-NPIAS Facility (bold italic text); All runway dimensions (in feet); Minimum standard deficient (red text);

<sup>2</sup> Airport layout Plan minimum standard (> 5-years in red text).

<sup>3</sup> VASI=Visual approach slope indicator. PAPI= Precision approach path indicator.

Source: Caltrans 2013 (most current GASNA available as of August 2017).

## ACTION PLAN: PROPOSED PROJECTS

The proposed projects in Table *Aviation-6* address airports’ current or anticipated needs for projected future demand. Funds may or may not be available to implement these projects within the RTP’s short-term or long-term planning horizon. Project priorities may change based on funding, FAA priorities, or national emergencies. Projects were identified based on Airport Master Plans, *Humboldt County Aviation Division of Public Works–Airport Capital Improvement Plan (ACIP)*, *California Aviation System Plan: Capital Improvement Plan 2017-2026 (Caltrans 2017)*, and communications with local agency staff and committee members.

**Table *Aviation-6*. Regional Airport Capital Improvement Plan (CIP) and Planning Projects**

Project Name/Description	Short or Long Term <sup>1</sup>	FAA	State	Local	Implementation Year(s)	Estimated Cost <sup>2</sup> (000s)
<b>Redwood Coast Airport (Arcata Airport) – County of Humboldt</b>						
Obstruction Mitigation Plan	ST	tbd		tbd	2016	\$75
Pavement Maintenance Management Plan	ST	tbd		tbd	2016	\$85
Taxiways B&G Drainage Improvements	ST	tbd		tbd		
Air Freight Needs Assessment (to study Redwood Coast, Murray Field, and Rohnerville Airports)	ST		tbd	tbd	TBD	\$38
Phase 4 ARFF – Construct ARFF Building*	ST	5,321	0.00	591	2016	\$5,912
Phase 3 construct fire station	ST	tbd		tbd	2017	\$3,700
Design runway lighting improvements*	ST	699,653	0.00	78	2018	\$777
Obstruction Removal*	ST	180,000	0.00	20	2018	\$200
Study hazard removal	ST	tbd		tbd	2018	\$150
Construct runway lighting improvements*	ST	4,398	0.00	489	2019	\$4,887
RNR TWY B&G/drainage (design complete 2006)	ST	tbd		tbd	2019	\$509
Design roadway entrance to airport	ST	tbd		tbd	2019	\$250
Construct Runway Lighting Improvements Phase 3*	ST	3,208	0.00	356	2020	\$3,564
Safety Management System*	ST	45	0.00	5	2020	\$50
Install sidewalk on Airport Road (see Complete Streets Element, Table <i>Streets-4</i> , for project details)						
					<i>Subtotal</i>	<i>\$20,197</i>

*Table continues on next page.*

Project Name/Description	Short or Long Term <sup>1</sup>	FAA	State	Local	Implementation Year(s)	Estimated Cost <sup>2</sup> (000s)
<b>Dinsmore Airport – County of Humboldt</b>						
Design west end storm drain improvements	ST	tbd		tbd	2016	\$50
Install fence and gates	ST	tbd		tbd	2016	\$40
Design windsock and segmented circle	ST	tbd		tbd	2016	\$42
Obstruction Mitigation Plan & AGIS Survey*	ST	135	7	8	2017	\$150
Construct windsock and segmented circle	ST	tbd		tbd	2017	\$88
Construct west end storm drain improvements	ST	tbd		tbd	2018	\$300
Remove/lower hazard to aircraft/ obstructions*	ST	135	7	8	2019	\$150
Construct fence and gates	ST	tbd		tbd	2019	\$166
Design ramp improvements	ST	tbd		tbd	2019	\$50
					<i>Subtotal</i>	<i>\$1,036</i>
<b>Garberville Airport</b>						
Design runway	ST	tbd		tbd	2014	\$53
Construct runway RNR	ST	tbd		tbd	2015	\$368
Construct ramp RNR and expansion*	ST	509	25	31	2016	\$565
Obstruction removal plan & AGIS Survey*	ST	109	5	7		\$121
Study removing or lowering hazards to aircraft	ST	tbd		tbd	2017	\$50
Design runway safety area drainage	ST	tbd		tbd	2018	\$7
Remove or lower aircraft hazards*	ST	180	9	11	2019	\$200
Construct runway safety area drainage	ST	tbd		tbd	2019	\$564
Ramp improvements and apron expansion	ST	509	25	31	2021	\$565
					<i>Subtotal</i>	<i>\$2,493</i>
<b>Hoopa Airport – Hoopa Valley Tribe</b>						
Taxiway extension to runway	ST	tbd	tbd	tbd	2016	\$50
<b>Kneeland Airport – County of Humboldt</b>						
RSA study	ST	tbd		tbd	2015	\$157
Study removing or lowering hazards to aircraft	ST	tbd		tbd	2015	\$5
Design stabilization	ST	tbd		tbd	2016	\$108
Construct stabilization	ST	tbd		tbd	2017	\$1,078
Obstruction Mitigation Plan & AGIS Survey	ST	135	68	8	2017	150
Design fencing and gates	ST	tbd		tbd	2018	\$45
Remove or lower hazards to aircrafts*	ST	135	68	8	2016	\$150
Construct fencing and gates	ST	tbd		tbd	2019	\$350
					<i>Subtotal</i>	<i>\$2,043</i>

Project Name/Description	Short or Long Term <sup>1</sup>	FAA	State	Local	Implementation Year(s)	Estimated Cost <sup>2</sup> (000s)
<b>Murray Field Airport – County of Humboldt</b>						
Construct wildlife perimeter fencing/gates	ST	tbd		tbd	2013	\$609
ALP update	ST	tbd		tbd	2014	\$83
Design AWOS system	ST	tbd		tbd	2015	\$25
Design beacon security lighting, and emergency generator connection	ST	tbd		tbd	2015	\$25
Install and implement AWOS type system	ST	tbd		tbd	2016	\$270
Construct Runway 12/30 Rehabilitation (Phase 2)*	ST	810	41	50	2017	900
Beacon, security lighting, and emergency generator connection	ST	tbd		tbd	2017	\$100
Design RWY/TWY RNR	ST	tbd		tbd	2017	\$63
Construct RWY/TWY RNR*	ST	584	29	36	2018	\$649
Design entry road rehabilitation	ST	tbd		tbd	2018	\$40
Design lighting upgrade for runway and taxiway*	ST	tbd		tbd	2015	\$50
Construct entry road rehabilitation	ST	tbd		tbd	2019	\$480
Air Freight Needs Assessment— <i>see under Redwood Coast Airport</i>						
					<i>Subtotal</i>	<i>\$3,294</i>
<b>Rohnerville Airport</b>						
Obstruction removal*	ST	135	7	8	2020	\$150
Construct upgrade of RWY/TWY lighting system*	ST	1,199	60	73	2021	\$1,332
Rehabilitate Runway – Design*	ST	132	7	8	2018	\$147
Rehabilitate Runway – Construct Phase 2*	ST	1,112	56	68	2019	\$1,234
Rehabilitate Runway – Construct Phase 3*	ST	555	28	34	2020	617
Design and construct wildlife exclusion fence/gates*	ST	536	27	33	2021	\$595
Rohnerville Airport Connectivity Study (with City of Fortuna, Caltrans)	ST				2017-18	\$99
					<i>Subtotal</i>	<i>\$4,174</i>
<b>Shelter Cove Airport – SCRID No. 1</b>						
Slurry seal taxiway/miscellaneous pavement	ST	0.00	191	21	2017	\$213
Airport Land Use Plan Update	ST	0.00	90	10	2018	\$100
Improve drainage – southeast tiedown area	ST	0.00	127	14	2016	\$141
Pilots' lounge	ST	0.00	54	6	2016	\$60

Table continues on next page.

Project Name/Description	Short or Long Term <sup>1</sup>	FAA	State	Local	Implementation Year(s)	Estimated Cost <sup>2</sup> (000s)
Taxiway realignment planning	ST	0.00	45	5	2016	\$50
Tiedown area paving, SE and NW tiedown	ST	458	23	28	2016	\$509
Taxiway realignment	ST	299,295	15	18	2019	\$333
10 space pilot's parking lot planning and design	ST	0.00	23	3	2025	\$25
10 space pilot's parking lot	ST	0.00	63	7	2026	\$70
					<i>Subtotal</i>	<i>\$1,501</i>
<b>Samoa Field (formerly Eureka Municipal) – City of Eureka</b>						
Resurface runway/repaint markings*	ST	0.00	126	14	2018	\$140
Remove/prune willow stand*	ST	0.00	32	4	2018	\$35
Construct security fencing*	ST	0.00	113	13	2021	\$125
Design T-hangars*	ST	0.00	27	3	2023	\$30
Construct ten T-hangars*	ST	0.00	270	30	2024	\$300
Install runway lights*	ST	0.00	450	50	2026	\$500
					<i>Subtotal</i>	<i>\$1,130</i>
<b>Airport Land Use Commission – County of Humboldt</b>						
County-wide update of the <i>Airport Land Use Compatibility Plan: Humboldt County Airports (ALUCP)</i> *	ST	0.00	495	55	2017-18	\$550
					<i>Subtotal</i>	<i>\$550</i>
					<i>Short-term Subtotal</i>	<i>\$37,018</i>
					<i>Long-term Subtotal</i>	<i>\$0</i>
					<b>Regional Projects–Funded (constrained) Subtotal</b>	<b>TBD</b>
					<b>Regional Projects–Not funded (unconstrained) Subtotal</b>	<b>TBD</b>
					<b>REGIONAL AVIATION PROJECTS TOTAL</b>	<b>\$37,018</b>

<sup>1</sup> Short-term is 1-5 years; long-term is 6-10 years. <sup>2</sup> To 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), Aircraft Rescue and Fire Fighting Building (ARFF).

## PERFORMANCE MEASURES

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

**Table Aviation-7. Performance Measures for the Regional Aviation System**

GOALS	FACTORS	INDICATORS	PERFORMANCE MEASURES	DATA SOURCES
<b>Safety</b>	<i>Collision rates</i> <i>Aviation safety</i>	Have rates of crashes, fatalities, and injuries decreased?	<ul style="list-style-type: none"> <li>Severity of collisions and injuries.</li> <li>Number of safety improvement projects implemented.</li> <li>Fatal accident rate of commercial air carrier or general aviation.</li> </ul>	Accident statistics collected by Caltrans District 1 Safety Division, CHP, local agencies, Federal Aviation Agency (FAA).
	<i>Airport hazards</i>	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"> <li>Number of runway incursions and/or operational errors.</li> <li>Number of preventable workplace injuries.</li> <li>Airports without a safety management system.</li> <li>Area of unsecure fencing at airport perimeters, card access, gate monitoring system.</li> </ul>	Airport Master Plans or safety reports, Caltrans Office of Aviation Planning, Division of Aeronautics, FAA statistics.
<b>Balanced Mode Shares (Complete Streets)</b>	<i>Mobility</i>	Has travel time decreased for passengers, freight/goods trips?	<ul style="list-style-type: none"> <li>Travel mode split (shares) for freight transport.</li> </ul>	US Census, American Community Survey, goods movement industry.
	<i>Reliability</i> <i>Performance</i>	Has the speed and/or reliability of on-time performance improved?	<ul style="list-style-type: none"> <li>Percentage of on-time deliveries/arrivals for commercial freight/passenger trips.</li> </ul>	FAA statistics, goods movement industry studies.

GOALS	FACTORS	INDICATORS	PERFORMANCE MEASURES	DATA SOURCES
<b>Efficient, Viable Transportation System</b>	<i>System condition</i>	Do aviation facilities meet standards for state of good repair?	<ul style="list-style-type: none"> <li>• Condition of aviation facilities.</li> <li>• Maintenance/rehabilitation funding shortfalls.</li> </ul>	Aviation Depts, Caltrans District 1, Harbor District, goods movement industry, StreetSaver or other pavement management software.
	<i>System preservation</i>	Is the road (runway) maintenance or rehabilitation backlog decreasing?	<ul style="list-style-type: none"> <li>• Total cost per capita to sustain (modal) system performance at base-year level.</li> <li>• Maintenance cost per capita to preserve (modal) system at base-year conditions.</li> </ul>	
	<i>State of good repair</i>	Is the road (runway) maintenance or rehabilitation backlog decreasing?	<ul style="list-style-type: none"> <li>• Condition of aviation facilities.</li> <li>• Maintenance/rehabilitation funding shortfalls.</li> <li>• Total cost per capita to sustain (modal) system performance at base-year level.</li> <li>• Maintenance cost per capita to preserve (modal) system at base-year conditions.</li> </ul>	
<b>Environmental Stewardship &amp; Climate Protection (CO<sub>2</sub> reduction)</b>	<i>Cost effectiveness of investments</i>	Are investments in RTIP projects helping achieve RTP goals?	Per one thousand dollars invested: <ul style="list-style-type: none"> <li>• Decreased safety violations/accidents.</li> <li>• Decrease in system-operating cost.</li> <li>• Increased frequency and reliability of aviation service.</li> <li>• Decrease in air pollution emissions.</li> <li>• Increase in commercial passenger miles carried.</li> </ul>	Caltrans, California Air Resources Board (CARB), CHP, Public Works Departments, local and state environmental compliance reporting.
	<i>Benefits to costs ratio</i>	Have investments improved system efficiency and/or productivity?  Have system operating and maintenance costs decreased?  Are truck, harbor, aviation, or rail market shares increasing for commercial passenger/freight services?	<ul style="list-style-type: none"> <li>• Decreased safety violations/accidents.</li> <li>• Decrease in system-operating cost.</li> <li>• Increased frequency and reliability of aviation service.</li> <li>• Decrease in air pollution emissions.</li> <li>• Increase in commercial passenger miles carried.</li> </ul>	
		Has fuel consumption decreased?	<ul style="list-style-type: none"> <li>• Fuel consumption gallons per capita, <a href="#">countywide or regionwide</a>.</li> <li>• Fossil fuel use ratio of passenger miles traveled (per modes).</li> <li>• Ratio of fossil fuel use to freight miles traveled.</li> </ul>	
<b>Environmental Stewardship &amp; Climate Protection (CO<sub>2</sub> reduction)</b>	<i>Air quality</i>	Have air pollutant emissions decreased from general aviation sources?	<ul style="list-style-type: none"> <li>• PM<sub>2.5</sub>, PM<sub>10</sub> emissions.</li> <li>• Air quality levels, <a href="#">including greenhouse gas emissions</a>.</li> <li>• Diesel exhaust emissions.</li> </ul>	CARB, FAA, local and state environmental and compliance reporting.
	<i>Adaptability and resilience to climate change impacts</i>	Have transportation CO <sub>2</sub> emissions decreased?	<ul style="list-style-type: none"> <li>• Total transportation CO<sub>2</sub> per capita, countywide, and/or air-basin-wide.</li> <li>• Passenger transportation CO<sub>2</sub> per capita, countywide, and/or air-basin-wide.</li> </ul>	

GOALS	FACTORS	INDICATORS	PERFORMANCE MEASURES	DATA SOURCES
<b>Equitable &amp; Sustainable Use of Resources</b>	<i>Equity</i>	Have transportation investments advanced environmental justice (EJ) objectives?	<ul style="list-style-type: none"> <li>• Percentage of RTP/RTIP expenditures in environmental justice tracts.</li> <li>• Percentage of homes within half-mile of airport, EJ and non-EJ tracts.</li> </ul>	US Census, American Community Survey
	<i>Environmental justice</i>	<p>Has new transportation infrastructure developed agricultural or natural resource land?</p> <p>Are land uses and development compatible for adjacent transportation facilities?</p>	<ul style="list-style-type: none"> <li>• Acres of sensitive lands on which transportation infrastructure is built.</li> <li>• Acres of land adjacent to airports that are zoned compatibly for airport noise and height restrictions/acres of incompatible encroachment.</li> </ul>	General Plan updates, Airport Land Use Compatibility Plan, Airport Master Plans.
<b>Economic Vitality</b>	<i>Economic sustainability</i>	<p>Have aviation investments contributed to economic growth?</p> <p>Has access to jobs, markets, and/or services increased as a result of recent aviation investments?</p>	<ul style="list-style-type: none"> <li>• Direct and indirect economic benefits from increased aviation options.</li> </ul>	

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