

# Technical Memorandum

Date: December 14, 2006 (w/revisions as of 1/24/2007)

To: STS Community Advisory Committee

From: Michael McClintock, AMP Project Manager

Subject: STS General Aviation and Air Taxi Forecasts

At its October 12, 2006 meeting your committee reviewed and approved the air carrier and commuter airline forecasts for the Sonoma County Airport. This memorandum presents the second component of the master plan aviation activity forecasts—the General Aviation and Air Taxi forecasts.<sup>1</sup> There are two parts to the forecasts—Based Aircraft and Aircraft Operations. Since this information was first presented to the CAC on December 14, 2006, the FAA has updated its Terminal Area Forecast (TAF) for the Sonoma County Airport. This memorandum has been updated to include the new TAF information as the basis for the master plan air taxi and general aviation aircraft operations forecasts.

## Based Aircraft Demand Factors

Current and future demand for based aircraft parking space in hangars, tiedowns, and transient parking at the Sonoma County Airport is influenced by a variety of factors. Some of these factors are national or regional in character; others are specific to the Airport. Each of these demand factors needs to be considered in the development of based aircraft forecasts for the airport.

**National Demand Factors.** National influences on local based aircraft demand are significant in that they are external influences, largely beyond the direct control of the airport or local community. These demand factors are part of what determines the growth rates of general aviation. The FAA *Aerospace Forecasts, 2006-2017* cites the following national demand factors:

- Total active general aviation aircraft fleet
- Total hours flown by aircraft type
- Total active pilots

The overall growth of the active general aviation aircraft fleet is forecast to increase at an average annual rate of 1.4 percent over the FAA's 12-year forecast period (2006-2017), with the number of active aircraft increasing from 214,591 in 2005 to 252,775 in 2017. The more sophisticated and expensive turbine-powered fleet is projected to grow at an average of 4.0 percent a year over the 12-year forecast period, with the turbine jet fleet doubling in size. The *Aerospace Forecasts* assume that the new Very Light Jets (VLJs) will begin to enter the active GA fleet in 2006 and grow by 400 to 500 aircraft a year thereafter, with almost 5,000 of these aircraft in the fleet by 2017. Another new category of aircraft was created in 2005—Light Sport Aircraft. These aircraft evolved from and emulate ultralight aircraft not currently included in the FAA's aircraft registry counts.<sup>2</sup> An

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<sup>1</sup> *General Aviation is all civil aviation except that classified as air carrier or air taxi. The types of aircraft used in general aviation activities range in size from the smallest single-engine propeller aircraft to large multi-engine jet aircraft, including many aircraft of the type used in commercial service (e.g., Boeing B-737). Air Taxi operations include those by non-certificated commuter airlines, mail carriers under contract with the U.S. Postal Service, and operators of nonscheduled air taxi (charter) services. Typically, air taxis do not utilize aircraft with a payload of over 7,500 pounds or capable of carrying more than 30 passengers.*

<sup>2</sup> *The FAA created the new rule for the manufacture, certification, operation, and maintenance of light-sport aircraft. Light-sport aircraft weigh less than 1,320 pounds (1,430 pounds for aircraft intended for operation on water) and are heavier and faster than ultralight vehicles and include airplanes, gliders, balloons, powered parachutes, weight-shift-control aircraft, and gyroplanes. This action is necessary to address advances in sport and recreational aviation technology, lack of appropriate regulations for existing aircraft, several petitions for rulemaking, and petitions for exemptions from existing regulations. The intended effect of this action is to provide for the manufacture of safe and economical certificated aircraft that exceed the limits currently allowed by ultralight regulation, and to allow operation of these aircraft by certificated pilots for sport and recreation, to carry a passenger, and to conduct flight training and towing in a safe manner.*

anticipated 300-500 newly manufactured light-sport aircraft are projected to enter the active national GA fleet on an annual basis beginning in 2006. The Aerospace Forecast assumed registration of some 14,000 of these aircraft by 2017.

The number of general aviation hours flown is projected to increase by 3.2 percent annually through 2017. The projected increase is reflective of increased flying by business and corporate aircraft. Hours flown by turbine aircraft are forecast to increase 6.4 percent yearly through 2017, compared with 1.8 percent for piston-powered aircraft. Jet aircraft are anticipated to account for the greatest increase in hours flown, growing at an anticipated annual rate of 10.2 percent through 2017. The projected increase in jet hours flown is anticipated to result from the introduction of the VLJs and from increases in the fractional ownership fleet. Fractional ownership aircraft fly about 1,200 hours per year compared to about 350 hours for all business jets in other applications. Some analysts project utilization rates as high as 2,000 hours per year for the VLJs used in on-demand air taxi services. However, the FAA believes the VLJ utilization rate will be closer to the rates achieved by fractional operators.

Growth in the active general aviation pilot population (excluding air transport pilots) is projected to result in about 535,000 pilots in 2017, and increase of 67,300 from 2005 (an annual increase of 1.1 percent over the FAA's 12-year forecast period). The FAA is also projecting that 13,600 new sports pilots will be certified by 2017.

By all indices, the growth rate of general aviation will be generally positive in the years ahead, but, as noted above, certain sectors of general aviation will not grow as fast as others. For example, the number of piston-powered aircraft is projected to increase at an average annual rate of 1.0 percent per year, but even this estimate is largely driven by a projected growth rate of 6.7 percent annually through 2017 for piston-powered rotorcraft. Single-engine and multi-engine piston-powered fixed wing aircraft are only anticipated to grow at 0.3 and 0.1 percent, respectively.

**State and Regional Demand Factors.** Statewide forecasts have been established by the *California Aviation System Plan (CASP)*(1999). The System Plan includes all public use airports in California. The state's forecast methodology allocates aviation activity in a top-down manner; the forecasts are distributed to respective geographic areas, then sub-areas and ultimately to individual airports. The 1999 CASP projected that the Sonoma County Airport would have from 500 to 585 based aircraft by 2010.<sup>3</sup> There are currently 415 aircraft based at the Sonoma County Airport.

**Demands Specific to Sonoma County Airport.** Increases in the number of based aircraft at the Sonoma County Airport will mainly depend on decisions by individuals and businesses as to where to base their aircraft. Such decisions are influenced by the following local factors:

- **Nearby Airports**—Six public-use airports are located in the Sonoma County. Sonoma County Airport is the only airport in the county offering airline service and precision approach capabilities. Sonoma County Airport also has the longest runway (5,115 feet) in the County. It is also the closest airport to the County's largest city and county seat, Santa Rosa. Sonoma County Airport also offers a comprehensive array of aeronautical services and facilities to the general aviation pilot community. These factors make the Sonoma County Airport a more convenient airport to base one's aircraft at if proximity to Santa Rosa's business and governmental services are a factor.
- **Airport Role**—Currently, operational activity at the Sonoma County Airport includes significant use by corporate/business general aviation aircraft and personal general aviation aircraft. Its future role will be defined more by the reintroduction of scheduled air carrier and/or commuter airline service than by changes in the volume of activity and the types of aircraft of the existing uses (i.e., fleet mix). In other words, the addition of scheduled air carrier and/or commuter airline service will not change the basic character of the Airport, but will add an additional component to the range of services offered.

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<sup>3</sup> The 1999 CASP based aircraft forecast for STS was based on forecasts contained in the 1994 Regional Aviation System Plan prepared by the San Francisco Bay Area Metropolitan Transportation Commission.

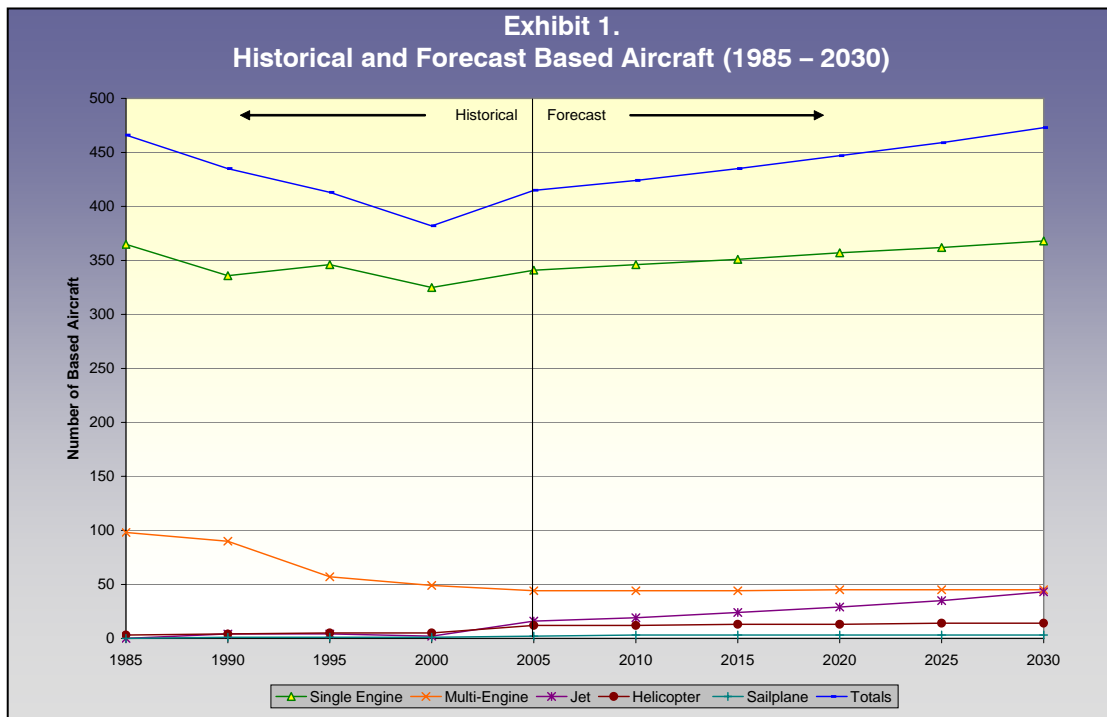
- **Availability of Services**—Existing facilities and services at the Sonoma County Airport are more comprehensive than at other Sonoma County airports. The Airport also has sufficient developable land to accommodate new or expanded aeronautical services.
- **Proximity to Nearby Industry**—Commercial and industrial growth in the Sonoma County Region will have a positive effect on the Airport’s aviation activity. As the Airport Business Park develops, users of business aircraft desiring easy access to the area are expected to make increasing use of the Airport.
- **Regional Population**—Historically, there has been a weak correlation between population growth and based aircraft; it is not a significant factor in forecasting based aircraft at the Sonoma County Airport.
- **Demand for Hangar Space**—Increasingly more sophisticated and expensive equipment is being added to aircraft. New aircraft are being manufactured with state-of-the-art avionics (electronic and navigational equipment) and existing aircraft have become more valuable. Hangars offer aircraft owners increased security and safety for their aircraft as well as protection from climatic conditions. There is significant interest in hangars for general aviation aircraft at Sonoma County Airport. There are 69 aircraft owners on the waiting list for hangars at the Airport.

**Methodology.** Considering the above demand factors and the FAA policy that GA activity forecasts should not deviate too much from published FAA forecast information, the following forecasts are derived primarily from information presented in the “FAA Aerospace Forecasts Fiscal Years 2006-20017,” and are supplemented by the FAA’s “Terminal Area Forecast Summary Fiscal Years 2005-2025” (March 2006).

**Based Aircraft Demand Conclusions.** In recognition of the above-noted national, state, and local demand factors and FAA planning projections, the *Airport Master Plan Update* concludes that there is potential for an increase in Sonoma County Airport’s based aircraft population.<sup>4</sup> The plan projects that based aircraft at the Sonoma County Airport will increase by 58 additional aircraft over forecast period. This assumes that the Airport’s facilities and services will be adequately maintained, additional hangar space would be provided, and the County continues to efficiently operate the Airport. Table 1 summarizes the *Master Plan’s* forecast for future based aircraft for the Airport by aircraft classification. Exhibit 1 compares the forecast data with historical based aircraft.

<b>Table 1. Based Aircraft Forecast (2005 – 2030)</b>						
<b>Aircraft Classification</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Single-Engine	341	346	351	357	362	368
Multi-Engine	44	44	44	45	45	45
Jet	16	19	24	29	35	43
Helicopter	12	12	13	13	14	14
Sailplane (motorized)	2	3	3	3	3	3
<b>Totals</b>	<b>415</b>	<b>424</b>	<b>435</b>	<b>447</b>	<b>459</b>	<b>473</b>

<sup>4</sup> The forecasts of based aircraft are derived from the annual growth rates set forth for general aviation in the “FAA Aerospace Forecasts Fiscal Years 2006-2017,” as follow: Single-engine piston (0.3%), multi-engine piston (0.1%), jet-turbine (4.0%). The FAA Aerospace Forecast projected an annual growth rate of 6.7% for piston-engine helicopters, but it is not believed that STS could attract that many additional helicopters, given that several of the helicopters “based” at STS are rotated between other airports. The FAA Aerospace Forecast growth rates were projected through 2030.



## General Aviation and Air Taxi Operations

The number of aircraft operations at an airport is influenced both by national and regional conditions and by various circumstances specific to the individual airport. Major influences impacting the Sonoma County Airport’s general aviation and air taxi aircraft operations forecast include:

- **Facilities and Services Available**—Existing general aviation facilities and air taxi services at the Sonoma County Airport are satisfactory for the Airport’s current level of activity. The two primary fixed base operators at the Airport (Apex and Sonoma Jet Center) have both expressed an interest in expanding their operations and services in the future.
- **Air Taxi Services**—Historically, there have always been a significant number of air taxi operations at the Sonoma County Airport, including those by non-certificated commuter airlines. In the future, particularly with the advent of on-demand air taxi services by the New Light Jets, air taxi operations are anticipated to increase.
- **CDF Operations**—Flight training and fire suppression operations conducted by the California Department of Forestry and Fire Suppression (CDF) are largely seasonal, but nonetheless contribute to overall military and governmental operations at Sonoma County Airport.
- **Extent of Transient Aircraft Use**—Increased business, corporate, and industrial development within Sonoma County is expected to generate increased aircraft operations at the Airport. Larger general aviation aircraft, including turboprops and business jets, will generate much of this increased activity.
- **Number and Type of Based Aircraft**—The shift toward proportionately more complex single-engine and multi-engine airplanes, along with some VLJs and light sport aircraft at Sonoma County Airport will tend to push operations counts upward more rapidly than the rate of based aircraft growth. Typically, complex aircraft are used more frequently and thus generate more operations per aircraft.

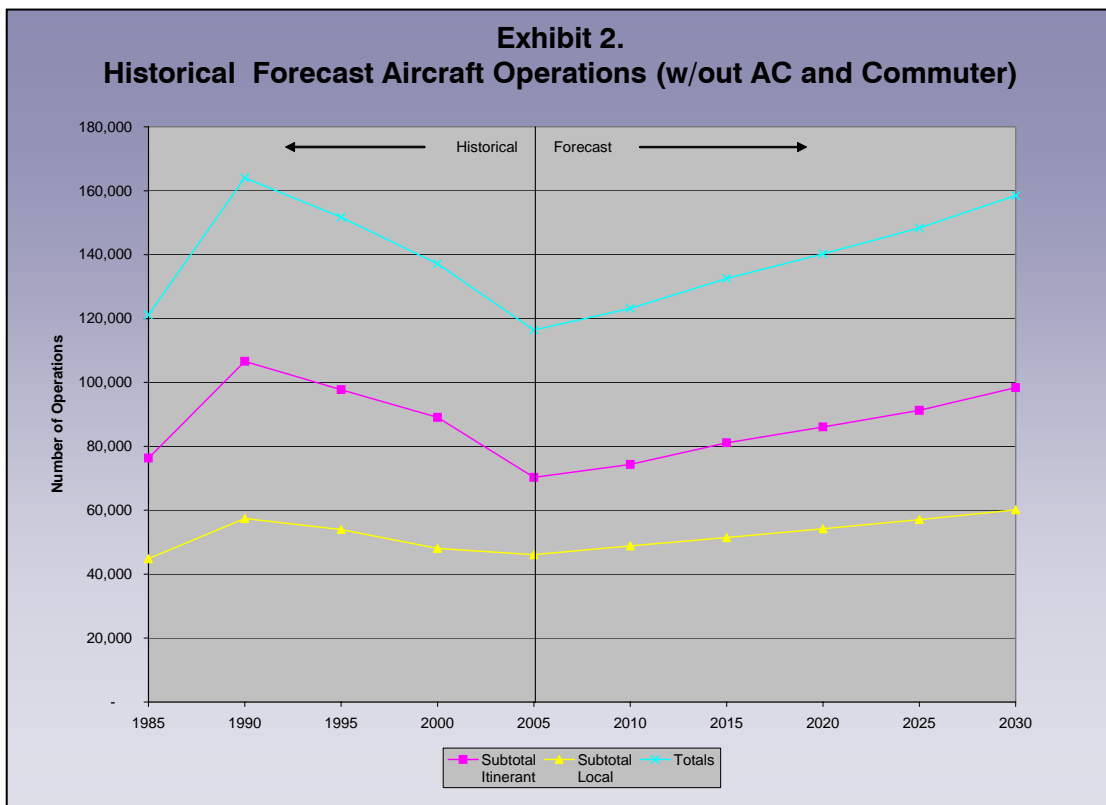
**Methodology.** As with the based aircraft forecasts, the annual operations forecasts consider the above demand factors and FAA policies guiding the preparation of activity forecasts at GA airports. The following forecasts are derived primarily from information presented in the “FAA Aerospace Forecasts Fiscal Years 2006-20017,” and are supplemented by the FAA’s “Terminal Area Forecast Summary Fiscal Years 2005-2025” (March 2006).

**Annual Operations Demand Conclusions.** Continued growth in annual aircraft operations at Sonoma County Airport is anticipated. This growth in operations will be generated by the anticipated increase in air taxi activity and increased use by transient (i.e., not based at STS) corporate/business aircraft. The percentage split between

itinerant general aviation and air taxi operations<sup>5</sup> and local operations is projected to change only slightly by 2030. The current split is 60.4 percent of operations being itinerant and 39.6 percent local. By 2030, it is projected that 62.1 percent of all general aviation and air taxi operations will be itinerant and 37.9 percent will be local.

Table 2 summarizes the Master Plan forecasts<sup>6</sup> of future annual general aviation and air taxi aircraft operations for the Sonoma County Airport. The Master Plan forecast projects that total annual aircraft operation will increase from the current (2005) level of 116,406 to 158,503 in the year 2030. Exhibit 2 provides a comparison of historical and forecast aircraft operations (does not include air carrier or commuter airline operations).

<b>Table 2. Aircraft Operations Forecast (2005 – 2030)</b>						
<b>Operations by Aircraft Class</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
<b>Itinerant</b>						
Air Taxi	4,836	5,063	5,436	5,838	6,268	6,825
GA	65,139	68,926	75,342	79,862	84,651	91,193
Military/Government	330	338	347	356	365	374
Subtotal	70,305	74,327	81,125	86,056	91,284	98,392
<b>Local</b>						
GA	46,035	48,794	51,390	54,126	57,009	60,036
Military/Government	66	68	69	71	73	75
Subtotal	46,101	48,862	51,459	54,197	57,082	60,111
<b>Totals</b>	<b>116,406</b>	<b>123,189</b>	<b>132,584</b>	<b>140,253</b>	<b>148,366</b>	<b>158,503</b>



<sup>5</sup> Operations are categorized as Itinerant, Local or Instrument Flight Rules (IFR). Itinerant means an operation is arriving from outside the traffic pattern or departs the airport traffic pattern. Local means an operation that stays within the traffic pattern airspace (non-itinerant). IFR means an operation that is conducted under Instrument Flight Rules. IFR operations are a sub-category of the total number of operations as they can be either Local or Itinerant. Total Operations = Itinerant Operations + Local Operations.

<sup>6</sup> For air taxi and general aviation operations the forecast uses the 2006 FAA APO TAF annual growth rates through 21005 and projected to 2030. Because military/government aircraft operations have not been a significant factor at the airport in recent years, a constant growth rate of 0.5% per annum was used in the forecast. For local GA operations the 2006 FAA APO TAF growth rates were use through 2025 and projected to 2030.

## Forecast Comparison

Table 3 compares the above General Aviation and Air Taxi forecasts<sup>7</sup> with the projected aviation activity levels for the Sonoma County Airport as set forth in the “Comprehensive Land Use Plan for Sonoma County (CALUP 2010)”<sup>8</sup> and the draft “Sonoma County General Plan 2020, Air Transportation Element (ATE 2020).”<sup>9</sup> From Table 3 it can be determined that the FAA’s updated Terminal Area Forecast (TAF) data for general aviation and air taxi operations at the Sonoma County Airport for 2010 and 2020, as used in the master plan, are significantly less than as projected for the CALUP 2010 and ATE 2020. In addition, the master plan’s general aviation and air taxi forecasts for 2030 are also less than the CALUP 2010 and ATE 2010 projected activity levels. Both the CALUP 2010 and draft ATE 2020 overstate potential general aviation and air taxi activity levels at the Airport by a wide margin.

<b>Table 3 Forecast Comparison Data</b>			
	<b>2010</b>	<b>2020</b>	<b>2030</b>
<b>2007 AMP GA &amp; Air Taxi Operations</b>	<b>123,189</b>	<b>140,253</b>	<b>158,503</b>
<b>CALUP 2010 General Aviation Operations</b>	<b>210,000</b>		
<b>Draft ATE 2020 General Aviation Operations</b>		<b>240,000</b>	

## Next Steps

It is requested that the Committee review the above forecasts prior to its February 8, 2007 meeting. At the February meeting the Committee will be asked to approve the forecasts. Once approved, the GA and air taxi forecasts will be combined with the previously approved air carrier and commuter airline forecasts and be incorporated into the Master Plan report forecast chapter. Ultimately, the forecasts will be used to determine the need for any additional aviation facilities (e.g., hangars) and to assess the environmental impacts of Master Plan implementation.

<sup>7</sup> Includes military operations for simplicity.

<sup>8</sup> Sonoma County Airport Land Use Commission, January 2001.

<sup>9</sup> Sonoma County Permit and Resource Management Department. January 2006.