SEBRING REGIONAL AIRPORT
MASTER PLAN UPDATE

FINAL DRAFT

PREPARED FOR:
SEBRING AIRPORT AUTHORITY

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JANUARY 29, 2003

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Sebring Regional Airport

1.1 GENERAL GUIDELINES

The goals and objectives will be used as general guidelines for development of the Master Plan Update.

This chapter provides general direction to the study with respect to the development of concepts and plans relating to the future development of Sebring Regional Airport (SEF). The general approach is to consider alternative Airport development plans, necessary to provide a "balanced" Airport system. The proposed alternatives will address landside/airside facilities, non-aviation development, and the Airport's role in Highlands County as well as its influence on the adjacent counties of South Central Florida.

The following are some of the key objectives:

- Identify airside, landside, and airfield improvements for a 20+-year planning period.
- Recommend land use options on and in the vicinity of the airfield to further optimize the economic aspects of the Airport while enhancing safety and operational capacity.
- Establish an implementation schedule for short-, intermediate-, and long-term improvements and associated financial feasibility.
- Identify short-term requirements and recommend short-term funding opportunities to be incorporated in the Florida Department of Transportation (FDOT) Joint Automated Capital Improvement Program (JACIP).
- Ensure that short-term actions and recommendations do not preclude long-term planning options.
- Incorporate the interests of the public, Airport users, and government agencies into the planning process.
- Reflect current comprehensive land use (off- and on-Airport property) and make recommendations as to compatible land uses and the appropriate steps necessary to ensure proper zoning and noise impacts minimization.
- Quantify the economic impact of the Airport, including the Foreign Trade Zone (FTZ) on surrounding communities.
- Address any major environmental issues that are directly related to the continued development of the Airport with an evaluation of viable alternatives/solutions.

Since the existing 1994 Airport Master Plan Update the Airport has changed significantly in its role of serving the Highlands County area and the aviation system. The following key conditions and issues at the Airport will be evaluated with respect to changes that have occurred since the 1994 Master Plan Update.

Since the previous Airport Master Plan Update was conducted in 1994, the Airport has changed significantly in its role of serving the Highlands County area.

Key issues include:

- Aviation activity (general aviation operations, military aircraft, design aircraft, and Airport role in the Florida system plan)
- Condition of Airport buildings, equipment, and facilities
- Change in design aircraft, including assessment of runway capabilities and capacities associated with potential change in design aircraft.
- Pavement condition

- Environmental conditions
- Active land acquisition program
- Land use on and in the vicinity of the airfield
- Existence of new structures and airfield improvements affecting navigable airspace in the Airport's approaches and vicinity
- Flight training activities
- Medical Evacuation (AeroMed) activities
- Sebring internal raceway long-range plans
- Commerce/industrial park development for revenue diversification
- Ground access
- Infrastructure improvements
- Inventory of permitted projects (in process and pending)
- Need for increased security measures

1.2 GOALS AND OBJECTIVES

The goal of the Master Plan Update is to provide SEF with detailed planning guidance to ensure that Airport facilities and associated land uses will be adequate to meet short-, intermediate-, and long-term aviation demand. This document will serve as a management guide for the implementation of necessary improvements to meet potential aviation activity demand over a planning period of 20+ years, through the end of 2021.

The City of Sebring, FDOT, and Highlands County share the funding for the 2002 Sebring Regional Airport Master Plan. Coordination of this study with appropriate local, regional, and national agencies will be maintained throughout the preparation of this Master Plan. In addition, public input will be requested both formally and informally at public hearings before the Sebring Airport Authority (SAA) Board of Directors at key milestones in the planning project.

This Master Plan is prepared in accordance with Federal Aviation Administration (FAA) Advisory Circulars *AC 150/5370-6A Airport Master Plans* and *AC 150-5300-13, Change 6 Airport Design,* in conjunction with the FDOT's *Guidebook for Airport Master Planning* and other related standards. Furthermore, current guidance will be incorporated from the FAA Airports District Office (Orlando), FDOT Aviation Office, SAA, and other local government agencies. Planning efforts of the city, county, region, state, and nation have been coordinated in the Master Plan to provide the most preeminent plan for the benefit of SEF and all of the participating organizations.

The Master Plan provides an effective written and graphic representation of the ultimate development of the Airport and associated land uses adjacent to the Airport, while establishing a schedule of priorities and phasing for the various improvements proposed. The planning document presents a conceptual development plan, over a 20+-year period, for the Airport. Realistic master planning is a continuing and evolutionary process due to the justification and funding required during the implementation process. Many adjustments are likely to take place to meet the changing industry before facilities are designed, approved, and built to completion.

An approved Airport Master Plan provides long-range recommendations for development of an airport and is essential for an airport to qualify for federal and/or state assistance for realization of the plan.

An approved Airport Master Plan provides long-range recommendations for development of an airport and is essential for an airport to qualify for federal and/or state assistance for realization of the plan. Government assistance is provided in the form of financial grants to the airport sponsor. The grants are provided by the FAA and by the FDOT budgetary processes via Joint Participation Agreements (JPA).

Due to significant changes at SEF, the SAA has taken the initiative to plan for changes, which will not only impact the Airport, but the City of Sebring, Highlands County and the region as well. Through continuous and effective planning, the SAA will maintain and increase its role as an economic asset to the City of Sebring, Highlands County, and the surrounding areas.

In order to address a number of internal and external factors, which may have an impact on SEF, a list of goals and objectives were identified to guide the study effort. These goals and objectives follow and are not in any order of priority.

1.2.1 Goal No. 1

Continue to meet and enhance the level of service provided to all Airport users.

Objectives:

- Provide adequate runway capacity for estimated demand in terms of aircraft type and annual and hourly operations.
- Provide adequate runway length to meet existing and forecast operations needs.
- Provide opportunities for development of services associated with potential air carrier, charter, and corporate GA, cargo, military, flight training, and recreational flying operations.
- Provide for potential integration of commercial and non-commercial operations.
- Provide other aviation related support facilities required for a full range of aviation services

1.2.2 Goal No. 2

Provide guidelines for future development, while satisfying anticipated demand.

Objectives:

- Implementation of non-aviation development to enhance revenue diversification.
- Provide adequate airside and landside facilities to meet anticipated demand, and if required, FAA Part 139 and Title 49 Code of Federal Regulations, Parts 1540, 1542 and 1544 (formerly FAR Part 107) requirements.
- Effectively market potential commercial and non-commercial aviation facilities.
- Develop self-sustaining commerce and industrial parks, which will benefit the Airport and community as a whole.

1.2.3 Goal No. 3

Provide an Airport that is safe and reliable.

Objectives:

- Provide navigational aids (NAVAIDS), flight support services, and meteorological facilities, which enhance the safety and reliability of operations under all weather conditions.
- Protect FAA mandated safety areas, runway protection zones (RPZs), and other clear zones.
- Minimize possible obstructions to air navigation.
- Provide adequate fire fighting, rescue and emergency services, access roads, facilities, equipment, and personnel to maintain minimum response time under all conditions.
- Ensure that airside and landside operations and facilities meet all applicable security standards.
- Ensure that aircraft parking facilities are adequately sized and easy to negotiate.
- Develop facilities to meet the demands of the current and future critical aircraft.

1.2.4 Goal No. 4

Develop the Airport and its vicinity to minimize negative environmental impacts.

Objective:

- Identify the major environmental issues of concern.
- Minimize potential environmental impacts, and provide special attention to minimizing noise impacts, air and water pollution, and wetland impacts.
- Provide a facility, which minimizes adverse effects on other environmental concerns.

1.2.5 Goal No. 5

Promote the development of compatible land use in undeveloped areas within the Airport vicinity.

Objectives:

- Promote land use planning and development objectives, for on- and off-Airport land use, which are compatible with the anticipated long-range needs of the Airport and the community as a whole.
- Designate areas for future development (i.e., air cargo, heavy aircraft maintenance, commercial service, military refueling, hangar homes, commerce park, etc.).
- Locate Airport facilities so that growth may be controlled through land-use planning and zoning.

1.2.6 Goal No. 6

Develop an Airport that supports local and regional economic goals while accommodating new opportunities or shifts in development patterns.

Objectives:

- Achieve a level of service and user convenience such that the Airport is a positive factor in regional economic development decisions.
- Achieve capacities of the airfield, the terminal area systems, FTZ, industrial park, and commerce park so that the Airport may be an attractive location for commercial air service, airline maintenance, cargo, and other aviation related commercial activities.
- Provide appropriate and achievable commercial opportunities adjacent to and on the Airport.
- To assure economic feasibility, identify an equitable distribution of user charges; distribute the burden of capital investment, maintenance, and operating costs, while keeping overall costs within an acceptable level.
- Identify financial alternatives and funding sources available for the implementation of aviation and non-aviation projects.
- Quantify financial resources available for project funding.
- Develop an airport layout plan (ALP) that easily integrates with existing and proposed transportation infrastructure, to encourage economic growth.

1.2.7 Goal No. 7

Minimize aircraft delay associated costs to all airfield users (i.e. military operations, recreational pilots, experimental aircraft, flight training facilities, etc.).

Objectives:

- Minimize airspace congestion and delays for GA aircraft and potential air carrier through procedural changes and/or provision of additional NAVAIDS.
- Minimize airside congestion through construction of runways, taxiways, and aprons, when the costs of providing the additional capacity are less than the additional operating costs associated with aircraft delays.

1.2.8 Goal No. 8

Ensure adequate and convenient ground access to the Airport.

Objectives:

- Provide safe access and easy-to-follow signs to Airport roadways and facilities.
- Provide adequate lane capacity on roads leading to the Airport, to serve existing and future activity.
- Provide adequate land capacity on internal circulation roadways serving functional areas (terminal, GA, industrial park, raceway, etc.).
- Provide parking facilities (for GA, terminal, industrial park, etc.) that are conveniently located and easily accessible.
- Incorporate rail service opportunities into Airport development plans.

- Maintain close coordination with Regional Planning Council, Metropolitan Planning Organizations (MPO), FDOT, and other transportation groups.

1.2.9 Goal No. 9

Minimize the impact of noise on neighboring residents and noise-sensitive land uses through noise abatement and mitigation.

Objectives:

- Design and select noise abatement measures that minimize the number of people exposed to noise above Day-Night Noise Level (DNL) greater than 65 decibels, if applicable.
- In selecting noise abatement actions, avoid actions that would adversely affect capacity, impose restrictions on Airport use that would be discriminatory, or that could erode prudent margins of safety.
- Design and select (if necessary) land-use mitigation measures for noise sensitive land uses exposed to aircraft noise between 65 and 75 decibels.
- To the extent possible, maximize any environmental noise mitigation projects that may be eligible for FAA funding assistance.
- When necessary, encourage local construction restrictions to reduce impact of Airport/aviation and raceway noise.
- Consider possible changes to development and real estate restrictions or disclosures to reduce potential conflicts.

1.2.10 Goal No. 10

Develop an Airport that is consistent with federal, state, regional, and local plans.

Objectives:

- Develop the Airport as the region's chosen aviation alternative and make it consistent with national, state, regional and metropolitan system plans.
- Develop the Airport in accordance with local land use and transportation plans.

These goals and objectives reflect policy goals to be reached through the master planning process. They include the ultimate development of self-supporting facilities to serve the existing and future aviation needs of the region; the achievement of compatible land uses in the vicinity of the Airport; and provisions for the type of development that will yield the most public benefit of the investment represented by the Airport. Finally, these goals must be manageable within existing limitations of funds and design principles.

1.3 TASKS

Some of the key tasks involved in the master planning process include: evaluating existing and anticipated aviation activity, existing and future facilities, environmental constraints, and the Airport's overall participation in the national and state aviation system plan. An important component of the Airport Master Plan process provides a public forum for the development of the study, and includes the following steps:

- **Data Collection and Evaluation** – Inventory of existing Airport facilities.
- **Activity Projection** – Forecasts of future growth at SEF.
- **Demand/Capacity Analysis** – Identifying constraints/impacts of forecasts on operational capacities.
- **Facility Requirements Development** – Identifying capacity enhancements/needs to airside and landside facilities.
- **Airport Plan Development** – Graphic representation of existing and proposed development.
- **Cost Estimating and Financial Planning** – Developing a realistic revenue plan to implement the Capital Improvement Program.
- **Project Coordination** – Consensus participation to facilitate implementation of the Master Plan.
- **Public Involvement** – Public information processing to obtain input for the master planning process.

A graphic representation of this process is depicted in **Figure 1-1**, Steps in the Master Planning Process.

Ultimately, this Master Plan Update will provide SEF, the City of Sebring, Highlands County, and federal and state officials, information and guidance to manage and develop facilities to meet the forecasted growth for the next 20+ years.

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Figure 1-1. Steps in the Master Planning Process

1.4 PRIOR PLANNING DOCUMENTATION

A major goal in the master planning process is the need to update information and plans at strategic intervals with recommended development concepts. This updating is necessary since prior Airport projects may have changed due to evolving conditions or policies in the political, social, and economic environment. The demand for scheduled services, GA services, or other aviation services may fluidly adjust in response to changes in the environment, and/or role of the Airport.

Highlights of planning projects and infrastructure development during the last ten+ years include the following projects:

- Master Plan Update
- Apron Rehabilitation, Phase II
- Haywood Taylor Boulevard
- Apron Rehabilitation, Phase III and IV
- Potable Water Plant
- Wastewater Treatment Plant
- T-Hangars, 30 Units
- Demolition Program, Phase I
- Community Redevelopment Authority
- Group 44, Inc.
- Lockwood Aviation
- Leza Aircam Manufacturing
- Ulmann Drive
- Hancor, Inc.
- SIR, Inc. Master Plan
- Lesco Expansion and Rail Service
- Apron Rehabilitation, Phase IV
- Leza Lane
- Sebring Custom Tanning Facilities
- Wastewater Pond Clean-up Removal
- South Florida Water Management District (SFWMD) Stormwater Master Plan
- Master Drainage Plan Implementation, Phase I
- Airport Road Land Acquisition.

Current and recently completed projects include:

- Chateau Elan Lodge
- Rail Spur Rehabilitation
- Sebring Airside Center
- Air Traffic Control Tower, Relocation and Rehabilitation
- Commercial Hangars
- T-Hangars, Ten Units
- Building 60 Rehabilitation

This master plan document will identify and address new issues as well as address any unresolved or uncompleted projects from previous planning efforts. Some of the issues include the following:

- Airport Road Intersection and Widening
- Commerce Park Concept Phase
- SAA Development Standards
- Master Plan Update
- Taxiway A, Phase I
- Runway 18-36 Pavement Maintenance
- Everglades Seasoning Facility
- Commercial Hangars, Phase II
- Air Service Study
- Automated Weather Observing System (AWOS)

1.5 AIRPORT MANAGEMENT

The Airport management of SEF consists of an Airport Authority governed by a volunteer Board of Directors. The organization chart for the Airport is outlined in **Figure 1-2**.

Figure 1-2. Sebring Regional Airport Authority

EXISTING AIRPORT FACILITIES, STATISTICS, AND ENVIRONMENT

2

Sebring Regional Airport

2.1 OVERVIEW AND DESCRIPTION

As outlined in the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-61, *Airport Master Plans*, and the Florida Department of Transportation (FDOT) *Guide to Airport Master Planning*, the initial step in the Master Plan for Sebring Regional Airport (SEF) is the collection and evaluation of information about the Airport and the area it serves. This chapter provides a physical inventory and description of facilities and services now provided by and at the Airport. Inventory will include:

- Background information about the Sebring area and a description of development that has recently taken place at the Airport.
- Population and socioeconomic information, which provides a sign of possible future development in the Sebring area.
- A comprehensive review of the existing regional plans and studies to determine potential influence on the development and implementation of the Airport Master Plan.

An accurate and complete inventory is essential to the success of any master-planning document. The objective of the inventory task is to provide background information essential to the completion of the Master Plan Update. The inventory task for SEF was accomplished through physical inspection of the facilities, field interviews, telephone interviews, and review of appropriate administrative records. Additional information was gained from documents and studies about the Airport and the Sebring area. These documents include the Airport Master Plan Update, November 1994, the existing Airport Layout Plan (ALP), 1993, Sebring Airport Authority (SAA) Financial Statements, Sebring Flight Service Center's fuel and aircraft operations records, and miscellaneous reports generated by the University of Florida Bureau of Economic and Business Research.

This chapter provides a general description of SEF and its service area. It describes data relevant to the Airport's history, geographic location, climate, and operational role in today's aviation environment.

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2.2 AIRPORT HISTORY

In 1940, several representatives of the City of Sebring traveled to Washington D.C. to lobby for a military facility in the Sebring area. For patriotic and financial reasons, the city wished to offer facilities to support the war effort while boosting the area's economy. The representatives argued that Sebring offered a central location in the state, existing railroad, power, water, and housing availability, and an enduring record of cooperation by city officials and citizens.

Almost one year later, a site was selected south of Sebring for Highlands County's first United States (U.S.) Air Corps Flying Training Command. The command would serve as a pilot training base concurrently supporting approximately 1,500 men and officers and 250 cadets. In order to accommodate the facility, the City of Sebring bought the property and leased 9,200 acres to the Secretary of War. The lease amount of $1.00 per year for 99 years allowed the command to concentrate on attracting operations. The U.S. Government advertised a legal notice for bids on the Basic Flying School at Sebring, Florida through the U.S. Engineering Department in June 1941. According to Army Air Corps Colonel Leonard H. Rodreck, who designed the base, supervised construction of the base, and became the first commanding officer of the base, "a larger area than was necessary for a flying training base was requested of the city and, as a result, it was possible to design the layout plan for the runways so they could be greatly increased in width and more than doubled in length to accommodate any future designed type of military aircraft." (1)

By the end of 1941, the base had become the first Combat Crew Training School. Entire crews including pilots, copilots, navigators, bombardiers, aerial engineers, radio operators, and gunners received detailed training in Sebring. On January 29, 1942, the first B-17 Flying Fortress landed at Hendricks Field. The Flying Fortresses avidly used the airfield to provide in-depth training for U.S. bombing crews.

In January 1942, the base was named Hendricks Field in memory of First Lieutenant Laird Woodruff Hendricks, a native of Ocala, Florida. In the beginning, the base consisted of four runways, 150 feet (ft) by 5,000 ft, with directional bearings N-S, NE-SW, E-W, and NW-SE. Hendricks Field also included an aircraft parking apron and several landside buildings and facilities. By mid-1942, the runways were widened to 300 ft, and the perimeter taxiways were constructed. Late in 1942, the function of Hendricks Field again changed becoming exclusively a First Pilots flying school for B-17s.

At the end of World War II, on December 31, 1945, Hendricks Field was deactivated. The air base property was declared surplus to the needs of the U.S. Government and the lease became void. The U.S. surrendered the property and the existing facility to the City of Sebring in January 1946. The airfield, roadways, utilities, some buildings, various equipment and miscellaneous items were released to the city with typical restrictions concerning utilization of the land and Airport. At that point in time, many of the facilities were either sold or demolished to make way for future development.

On February 21, 1946, the City was awarded a temporary permit to operate Hendricks Field as a civilian Airport. Soon after receiving the permit, the City Council of Sebring appointed an Airport Committee to oversee the operation of the Airport. Initially, the City Council was reluctant to assume responsibility as custodian of the field because of the high annual maintenance expenses. To compensate for the cost of maintenance, the City agreed to lease the field with an agreement that they would not expend any money other than revenues derived from subletting facilities at the field. A few days later, the Sebring Flying Service introduced the first commercial operation from Hendricks Field as two passenger flights departed from the field.

In May 1946, the city began airfield operations under a Right of Entry Permit. The permit stipulated that the airfield, three hangars, and all buildings immediately adjacent to the landing area be turned over to the City of Sebring. The first two tenants on the Airport opened for business, Eighth Air Depot and Veterans' Airlines; both provided aircraft repair and maintenance services.

The City of Sebring agreed to take over management of the Airport in January 1947. The Airport's name was changed to Sebring Air Terminal to avoid confusion with the Airport’s previous function and to attract industry to the field. Although they were unable to secure absolute title to the field, six buildings connected with the field's water supply, nine buildings associated with sewage, nine administrative buildings involved in care of the field, one building that enclosed electrical equipment, one building that enclosed telegraphic equipment, and eight buildings that enclosed equipment for the repair of aircraft were transferred to the control of the City of Sebring. Under the terms of the transfer from the U.S. Government, the Airport buildings could only be used for aviation-related purposes. At that time, the Army Air Force reserved the right to use 25 percent of the capacity of the field during peacetime. Some 221 other buildings on the base remained the property of the government. Upon assuming management of the field, the City sold some of the property. Essentially, the remaining territory forms the existing Airport property line.

The Government released all of the old Hendricks Field properties to the City of Sebring to allow for the development of industry, trade, and air transportation at the Sebring Air Terminal. Then in June 1947, the City of Sebring purchased the railroad system at Hendricks Field for $4,000.

It was not until November 1958, that the City Council passed an ordinance establishing an Airport Advisory Committee to make recommendations to the City of Sebring relative to the operation, management, and control of the Sebring Air Terminal. In 1967, the city turned over the deed of the Airport to the SAA, formed by the State Legislature.

Under the SAA in the early 1970s, an industrial park was planned and created. The Airport name was changed to Sebring Airport and Industrial Park. Airport improvements consisted of the installation of taxiway lights on the two connecting taxiways, a non-directional radio beacon (NDB) in 1970, runway lighting on 18-36, a new rotating beacon in 1972, and runway lighting on 14-32 in 1983. During 1981, the Authority sold 35 acres of land to the Sebring Utilities Commission to form the current Airport property boundaries. The Airport is now identified in the Florida State Aviation System as the Sebring Regional Airport, or SEF, and owns approximately 1,770 acres of property (2)

In the past ten years, SEF has completed a number of projects to further improve the Airport, including apron rehabilitation, rail spur rehabilitation, building and road rehabilitation, and air traffic control tower (ATCT) relocation and rehabilitation.

In the past ten years, SEF has completed a number of projects to further improve the Airport, including apron rehabilitation, rail spur rehabilitation, building and road rehabilitation, and air traffic control tower (ATCT) relocation and rehabilitation. The Airport initiated Phase I of a demolition plan to remove functional obsolete structures comprising more than 30 buildings on the property. In addition to constructing several commercial hangars and T-hangars, the Airport also built a brand new terminal building, known as the Sebring Airside Center.

The Airport has executed a number of environmental projects, including a potable water plant, wastewater treatment plant, master stormwater and drainage plan and implementation, and wastewater pond removal and clean-up.

Projects are underway to widen the Airport access road, to fully develop the commerce park, and to construct Taxiway A, a full-length taxiway parallel to Runway 18-36. The SAA is also in the process of constructing more commercial hangars and installing an aviation weather observation station (AWOS).

2.3 AIRPORT LOCATION

SEF is located in the south central portion of Highlands County about seven statute miles southeast of Sebring, Florida. The City of Sebring is approximately the geographical center of the Florida peninsula. See **Figure 2-1 and 2-2** for a location map and vicinity map of the Airport.

Off-Airport access to SEF consists of both vehicular and rail service. US Highway 27 provides a major north-south highway, linking the City of Sebring with Interstate (I)-4 and I-75 to the north and Miami/Ft. Lauderdale to the south. SEF is located approximately five miles east of US 27 and is accessed by US Highway 98 and Airport Road. State Road 623 provides access to the Airport from downtown Sebring.

The Seaboard System Railroad provides rail transportation linkage with freight service furnished by a spur from the main track into the center of the industrial park. The rail spur was recently renovated using funds provided by an FDOT grant and is owned by the SAA.

According to SEF's reference point coordinates, based on the North American Datum (NAD 83), are latitude 27°27'23.050" north and longitude 81°20'32.640" west. The Airport's elevation is 63 ft above mean sea level (AMSL).

2.4 METEOROLOGICAL INFORMATION

Weather conditions are an important consideration in the planning and development of an Airport. Temperature is a critical factor in determining runway length, and wind speed and direction determine runway orientation. Also, the frequency of cloud cover limiting local area visibility affects the need for navigational aids (NAVAIDS) and lighting. These issues will be discussed in further detail in Chapter 6, "Demand/Capacity Analysis and Facility Requirements."

Sebring benefits from a relatively moderate climate. The mean minimum temperature is 62.5 degrees Fahrenheit (F) and the mean maximum temperature is 83.1 degrees F. On average, the hottest month is August, ranging from a median high temperature of 92.6 degrees F to a median low temperature of 74.1 degrees F. The coolest month is typically December, with a mean high temperature of 71.7 degrees F and a median low temperature of 51.3 degrees F. Average monthly precipitation for the area is 4.6 inches (in) and there are no recorded snowfalls. (3)

Figure 2-1. Location Map

Figure 2-2. Vicinity Map

2.5 EXISTING AIRSIDE FACILITIES

The identification, location, and potential of existing aviation facilities to meet the Airport's daily needs are an essential element of the master planning process. The existing airside facilities at SEF are described in the following pages, and include runways, taxiways, aprons, airfield lighting, NAVAIDS, terminal area facilities, aircraft maintenance facilities, flight training facilities, hangar and aircraft storage facilities, and fuel storage areas. The ALP graphic depicted in **Figure 2-3** and the Airport diagram in **Figure 2-4** serve as an overview of the existing airside and landside facilities at SEF.

2.5.1 Runways

The SEF airfield consists of two active runways and one closed runway. Runway 18-36, the primary runway, is situated in a north-south orientation. Runway 14-32 is used for crosswind operations and is situated in a northwest-southeast orientation. Neither runway is certified for air carrier use. Runway 04-22 is closed.

2.5.1.1 Existing Pavement Strength/Condition

Runway 18-36 measures approximately 5,224 ft long and 100 ft wide with 100-ft wide paved shoulders. According to the FAA Airport Facility Directory, Southeast U.S. (Effective 13, June 2002 to 8 August, 2002), the pavement consists of an existing asphalt surface over a concrete base and is capable of supporting 26,000 pounds (lb) for single-wheel load (SWL), 50,000 lb for double-wheel load (DWL), and 85,000 lb for dual-tandem wheel load (DTWL). The original concrete runway was constructed during World War II and consisted of a 7-in thick non-reinforced concrete pavement measuring approximately 5,190 ft long and 300 ft wide. In 1988, the center 100 ft of the concrete runway was crushed for base material and 5 in of asphalt surface (P-401) was placed. At the time of this writing, Runway 18-36 is undergoing pavement rehabilitation, and is, therefore, observed to be in excellent condition.

Runway 14-32 measures approximately 5,000 (Mr. Kevin Flowers, Lead Cartographer, FAA/NOAA, July 31, 2002) ft long and 300 ft wide and was observed to be in very poor condition based upon the 1998 pavement condition index findings as described in the *Florida Airport Pavement Evaluation, Sebring Regional Airport*, conducted by Eckrose/Green Associates Inc. The pavement consists of 7-in thick concrete and was also originally constructed during World War II. This runway has a displaced threshold of 650 (Mr. Kevin Flowers, Lead Cartographer, FAA/NOAA) ft at runway end 14, making the active runway length approximately 4,350 ft. (Based on 5,000 ft – 650 ft = 4,350 ft.) The runway is capable of supporting 26,000 lb for SWL, 50,000 lb for DWL, and 85,000 lb for DTWL. See **Tables 2-1 and 2-2** for details concerning runway specifications and conditions.

Figure 2-3. Airport Layout Plan

Figure 2-4. Airport Diagram

Table 2-1. Runway Specifications

	Runway 18-36		Runway 14-32		Runway 04-22
Status	Primary		Crosswind		Closed
Total Length (ft)	5,224		5,000		
Active Runway Width (ft)	100		300’		
Displaced Threshold (ft)	no		650’		
Surface Material	Asphalt		Concrete		
Load Bearing Capacity by Gear Type					
SWL (lb)	26,000		26,000		
DWL (lb)	50,000		50,000		
DTWL (lb)	85,000		85,000		
Approach Slope	20:1,34:1		20:1,20:1		
Effective Gradient	0.11%		0.15%		
Latitude	27°27' 45.49"	27°26’ 53.76”	27°27’ 44.09”	27°27’ 09.18”	
Longitude	81°20' 35.09"	81°20’ 34.90”	81°20’ 49.85”	81°20’ 10.49”	
True Bearing	179°48’ 21.60”		134°49’ 37.20”		

Source: Sebring Airport Authority, 2001,
FAA Airport Facility Directory, Southeast U.S. (Effective 13, June 2002 to 8 August, 2002)
National Aeronautical Charting Office, 2002,
FDOT Surveying and Mapping Office, 2002

Table 2-2. Runway Conditions

Runways	Approximate Dimensions (ft)	Pavement Type	Condition	Airplane Design Group
18-36	5,224 x 100	Asphalt with concrete overlay	Good	D-II
14-32	5,000 x 300	Concrete	Good	B-II

Sources: Sebring Airport Authority, 2001,
National Aeronautical Charting Office, 2002,
FDOT Surveying and Mapping Office, 2002

2.5.1.2 Safety Areas

The runway safety area (RSA) is centered on the runway centerline. Its dimensional standards are based upon the Aircraft Design Group that normally utilizes that runway. In addition, the RSA has the following design requirements:

- Cleared and graded with no potentially hazardous surface variations.
- Drained by grading or storm sewers to prevent water accumulation.
- Capable of supporting aircraft rescue and fire fighting equipment and the occasional passage of aircraft without causing structural damage.
- Free of objects, except for those needed because of function. (4)

According to the November 1994 Airport Master Plan Update, Runway 18-36 is the primary runway at SEF. The runway is 5,224 ft long and 100 wide, and intersects Runway 14-32. The design aircraft for Runway 18-36 is Approach Category D, Group II aircraft, and as published in Airport Design, FAA AC 150/5300-13, Change 6. The design aircraft for crossfield Runway 14-32 is Approach Category B, Group II aircraft. The existing RSA's meet standards contained in FAA AC 150/5300-13, Change 6 and, the actual dimensions of the RSA's along the entire length of the runways and beyond each end, as depicted on the ALP, are shown in **Table 2-3**.

Table 2-3. Runway Safety Area Specifications

Runways	Airplane Design Group	Length beyond runway end (ft)	Width (ft)
18	D-II	1,000	500
36	D-II	1,000	500
14	B-II	700	500
32	B-II	600	500

Source: Sebring Regional Airport, ALP, 1993

2.5.1.3 Runway Protection Zone

The runway protection zone (RPZ) is a trapezoidal area, centered about the extended runway centerline, whose function is to enhance the protection of people and property in the immediate vicinity. The RPZ consists of the runway object free area (ROFA) and the controlled activity area. The RPZ begins 200 ft beyond the end of the area usable for takeoff or landing. It is recommended that all objects be cleared from the RPZ. However, some uses are permitted as long as they are not wildlife attractants, do not interfere with NAVAIDS, and are outside the ROFA.

The RPZ dimensional standards are for the runway end with the specified approach visibility minimums and aircraft approach categories. See **Table 2-4** for complete RPZ specifications as depicted on the existing ALP.

Table 2-4. Runway Protection Zone (RPZ) Dimensions

Runways	Approach Visibility Minimums	Aircraft Approach Category	Length (ft)	Inner Width (ft)	Outer Width (ft)	RPZ (Acres)
18	Visual, >= 1 mile	A & B	1,000	500	700	13.7
36	Non-Precision, >= 1 mile	C & D	1,700	500	1,010	29.5
14	Visual, >= 1 mile	A & B	1,000	500	700	13.7
32	Visual, >= 1 mile	A & B	1,000	500	700	13.7

Source: Sebring Regional Airport, ALP, 1993

It is highly recommended by the FAA that the Airport own the area contained within the RPZ. Where it is determined to be impracticable for the Airport to acquire and plan the land uses within the RPZ, recommendation status exists. This area should be free of land uses that create glare, smoke, or other hazards to air navigation. Also, the construction of residences, fuel-handling facilities, churches, schools, and offices is not recommended in the RPZ.

2.5.1.4 Runway Object Free Areas (ROFA)

The ROFA is centered on the runway centerline and must be clear of aboveground objects protruding above the RSA edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects in the ROFA that are necessary for navigational or aircraft ground maneuvering purposes. It is also acceptable to taxi and hold aircraft in the ROFA.

Table 2-5. Runway Object Free Area (ROFA) Dimensions

Runways	Approach Visibility Minimums	Airplane Design Group	Length Beyond Runway End (ft)	Width (ft)
18	Visual, >= 1 mile	D-II	1,000	800
36	Non-Precision, >= 1 mile	D-II	1,000	800
14	Visual, >= 1 mile	B-II	300	500
32	Visual, >= 1 mile	B-II	300	500

Source: Sebring Regional Airport, ALP, 1993
AC 150/5300-13 Change 6

2.5.2 Taxiways

SEF has a number of taxiways and connectors that range in width from 35 to 75 ft. The majority of the system is concrete with a rated strength of 30,000 lb for SWL, with the exception of taxiway connectors A-3 and A-4, which are concrete with an asphalt overlay. A-3 and A-4 are rated at 60,000 lb for DWL. Reference **Table 2-6** for description, designation, width, type, and load bearing weight details for the SEF taxiway system.

Table 2-6. Taxiway System

Description	Designation	Width (ft)	Type	Load Bearing Weight (lb)
Connector Taxiway	A-2	75	C	30,000 SWL
Connector Taxiway	A-3	35	CA	60,000 DWL
Connector Taxiway	A-4	35	CA	60,000 DWL
Apron Edge Taxiway	B-1	35	C	30,000 SWL
Apron Edge Taxiway	B-2	35	C	30,000 SWL
Apron Edge Taxiway	B-3	35	C	30,000 SWL
Connector Taxiway	B-4	75	C	30,000 SWL
Perimeter (between R/W ends 18 and 22)		75	C	30,000 SWL
Perimeter (between R/W ends 22 and 32)		75	C	30,000 SWL
Perimeter (between R/W ends 32 and 36)		75	C	30,000 SWL

Source: Sebring Airport Authority, 2001,
FAA Airport Facility Directory, Southeast U.S. (Effective 13, June 2002 to 8 August, 2002),
Sebring Regional Airport, ALP, 1993
Note: C refers to Concrete; CA refers to Concrete with Asphalt overlay.

2.5.2.1 Pavement Strength/Condition

Taxiway connector A-2 joins the approach end of Runway 18 to the approach end of Runway 14 on the northwest quadrant of the airfield. The connector is 75 ft wide, and is comprised of concrete pavement. It can withstand a load bearing weight of 30,000 lb for SWL. Based upon physical observation and the 1998 PCI inspection, the existing pavement condition for Taxiway A-2 is considered good.

Taxiway connector A-3, a 'stub' taxiway, provides access from the central portion of the Airport apron area to the intersection of Runways 14-32 and 18-36, approximately 1,250 ft from Runway 14 displaced threshold and 1,450 ft from Runway 18. The stub is 35 ft wide with 30-ft shoulders on each side and consists of concrete with an asphalt overlay. It can withstand a load bearing weight of 60,000 lb for DWL, and its pavement condition is designated as good.

Taxiway connector A-4, a 'stub' taxiway, provides access from the southern portion of the Airport apron area to Runway 36 approximately 1,700 ft from the approach threshold. The connector is 35 ft wide with 30-ft shoulders on each side and consists of concrete with an asphalt overlay. It can withstand a load bearing weight of 60,000 lb for DWL. However, based upon physical observation and the 1998 Eckrose Green Report, Taxiway A-4 is in very poor condition.

Apron edge Taxiways B-1, B-2, and B-3 serve as the eastern boundary of the Airport apron. Taxiway B-1 borders the northern portion of the ramp and runs parallel to Runway 14-32 separated by 500 ft. Taxiway B-2 borders the southern portion of the ramp and is parallel to the closed runway, 04-22. Taxiway B-3 borders the central portion of the ramp and is parallel to Runway 18-36 separated by 500 ft. This taxiway system is also 35 ft wide and consists of concrete pavement. Taxiways B-1, B-2, and B-

3 can withstand a load bearing weight of 30,000 lb for SWL aircraft, but are all considered in very poor condition based upon the last inspection.

Taxiway connector B-4 joins the approach end of Runway 14 with the north end of the Airport apron area. The connector is 75 ft wide and consists of concrete pavement. It can withstand a load bearing weight of 30,000 lb for SWL aircraft, but its pavement condition index rates Taxiway B-4 as very poor.

Currently, a full-length, parallel taxiway to the west of Runway 18-36 is under construction. Taxiway A will be 50 ft wide and will be separated from 18-36 by approximately 400 ft. The taxiway will consist of asphalt pavement and will be strength rated to bear 80,000 lb for DWL aircraft.

2.5.2.2 Safety Areas

In addition to safety areas associated with runways, there are object free areas (OFAs) and safety areas associated with taxiways and taxilanes as well. The associated safety area dimensions are centered on the taxiway centerline and are based upon the associated aircraft design group utilizing the facility.

2.5.2.3 Taxiway Object Free Area

The taxiway object free area (TOFA) clearing standards prohibit service vehicle roads, parked airplanes, and aboveground objects, except for objects that need to be located in the TOFA for air navigation or aircraft ground-maneuvering purposes. Vehicles may operate within the TOFA provided they give right-of-way to oncoming aircraft by either maintaining a safe distance ahead or behind the aircraft or by exiting the TOFA to let the aircraft pass.

2.5.2.4 Taxiway Safety Area

The taxiway safety area (TSA) follows the same design criteria as the runway safety area, but does not have the same dimensional criteria. Centered on the taxiway centerline, the airplane design group designates its dimensional standards. Based upon this information, the TSAs at SEF range from approximately 79 ft to 214 ft wide and extend along the length of the taxiways. **Table 2-7** provides design standards concerning the TSAs at SEF.

Table 2-7. Taxiway Safety Area Standards

Description	Airplane Design Group	TSA Width (ft)	TOFA Width (ft)
A-2	V	214	320
A-3	II	79	131
A-4	II	79	131
B-1	II	79	131
B-2	II	79	131
B-3	II	79	131
B-4	V	214	320
Perimeter (between R/W ends 18 and 22)	V	214	320
Perimeter (between R/W ends 22 and 32)	V	214	320
Perimeter (between R/W ends 32 and 36)	V	214	320

Source: Sebring Regional Airport, ALP, 1993
FAA Part 150/5300-13 Change 7, Airport Design

2.5.3 Lighting And Markings

A variety of lighting aids are available at SEF to facilitate identification, approach, landing, and taxiing operations at night and in adverse weather conditions. The systems, categorized by function, are further described in the following sections.

2.5.3.1 Identification Lighting

A rotating airport beacon light universally indicates the location and presence of an airport. The beacon is equipped with an optical system that projects two beams of light (one green and one white), 180 degrees apart. At SEF the beacon is located approximately 50 ft south of the Sebring Airside Center adjacent to the fuel farm.

2.5.3.2 Obstruction Lighting

Obstructions in the vicinity of the Airport, that cannot be removed, are marked or lighted to warn pilots of their presence. These obstructions may be identified for pilots on approach charts and on the official Airport Obstruction Chart, published by the National Oceanic and Atmospheric Administration.

2.5.3.3 Approach Lighting

Approach lighting systems (ALS) are used in the approaches to runways as adjuncts to electronic NAVAIDS for the final portion of instrument flight rules (IFR) approaches and visual guides for nighttime approaches under visual flight rules (VFR) conditions. The approach lighting system provides the pilot with visual clues concerning aircraft alignment; roll angle, height, and position relative to the runway threshold.

At SEF, the only runways equipped with ALS are Runways 18 and 36. Each of these runway ends features a precision approach path indicator (PAPI) system. The PAPI is a system of lights located near the runway end, which provides the pilot with visual descent guidance information during an approach to the runway. This type of installation has a visual range of approximately four miles. PAPIs are relatively newer and more efficient systems than their predecessors, vertical approach slope indicator (VASI) systems. Runway 18-36 is equipped with a 4-light PAPI system at each end.

2.5.3.4 Runway Edge Lighting

Runway edge lighting is used to outline the edges of a runway during periods of darkness and/or restricted visibility. These systems are classified in accordance with their intensity or brightness. At SEF, Runway 18-36 is equipped with medium intensity runway lights (MIRL), while Runway 14-32 has no runway edge lighting system.

2.5.3.5 Taxiway Lighting

The final segment of flight commences with the taxi operation to the terminal gate, parking apron, or aircraft hangar. Taxiway lighting delineates the taxiway edges or centerline, providing guidance to pilots during periods of low visibility and at night. The most commonly used type of taxiway lighting is known as medium intensity taxiway lighting (MITL). MITL consists of a series of blue fixtures located at a minimum of 200 ft intervals along the taxiway edges. This system provides lighting for the taxiway up to the Airport apron area. Connector taxiways A-2, A-3, and B-3 had MITL installed in 1988. The remaining taxiways are not illuminated at this time.

2.5.3.6 Apron Lighting

With the exception of the medium intensity taxiway lightsMITL on taxiway connector B-3 and some ambient light from the air service center, there is no lighting for the Airport apron area.

Table 2-8 provides an overview of airside facilities including approach aids, lighting, and markings.

Table 2-8. Airside Facilities

Pavement	Approach Aids	Lighting	Markings
Runways:			
18	PAPI-4	MIRL	Non-Precision
36	Global Positioning System (GPS), PAPI-4	MIRL	Non-Precision
14	None	None	Visual
32	None	None	Visual
Taxiways:			
A-2	NA	MITL	Visual
A-3	NA	MITL	Visual
A-4	NA	None	Visual
B-1	NA	None	Visual
B-2	NA	None	Visual
B-3	NA	MITL	Visual
B-4	NA	None	Visual

Source: PBS&J Airport Layout Plan, 1993
Note: Aiming point markers are needed for non-precision
GPS – global positioning system

2.5.4 Navigational Aids

NAVAIDS include any visual or electronic device, either airborne or on the ground, that provides point-to-point guidance information or position data of an aircraft in flight. A couple of types of NAVAIDS are utilized at SEF. Ground based electronic NAVAIDS that are located on or near the Airport are classified as enroute NAVAIDS, terminal area NAVAIDS, and landing aids.

2.5.4.1 Terminal Area Navigational Aids and Landing Aids

Included in this group are NAVAIDS located at or near the airfield for the purpose of providing aircraft guidance information while arriving, departing, or overflying the area under any weather condition. Landing aids provide either precision or non-precision approaches to an airport or runway. Currently, however, SEF is equipped with only a non-precision approach on Runway 36.

As mentioned in Section 2.5.3.3, PAPIs are utilized at SEF. The Airport has a lighted wind tetrahedron with an unlighted segmented circle located adjacent and to the west of Runway 18-36 in front of taxiway connector B-3. There is also an unlighted wind cone located adjacent and to the east of Runway 18-36.

According to the instrument approach procedures published in U.S. Terminal Procedures, Southeast, Volume 3 of 4, 13 June 2002, a very high frequency omni-directional range tactical air navigation (VORTAC) instrument is located in nearby LaBelle. The VORTAC is located approximately 37.7 nautical miles to the south of the Airport and transmits radio waves on Channel 41 (military frequency) and 110.4 Kilohertz (Khz) for civilian use.

A VORTAC is a facility consisting of two components, VOR (VHF omni directional range) and TACAN (tactical aircraft control and navigation), and provides three individual services: VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME) at one site. Although consisting of more than one component, incorporating more than one operating frequency, and using more than one antenna system, a VORTAC is considered to be a unified flight NAVAID. No published approach exists utilizing the VORTAC; however, pilots can use the NAVAID for en route and terminal air navigation.

Since the Airport is a former military facility, there is a historical ATCT on the premises. The ATCT was recently relocated northwest of the Airside Center, slightly north of the Group 44 hangar, during the construction of the new Airside Center. The ATCT is an unequipped functional tower that is only occupied during major racing events.

Since the Airport is a former military facility, there is a historical ATCT on the premises.

2.5.5 General Aviation Facilities

General aviation (GA) activity at SEF consists primarily of recreational, corporate, and medical helicopter operations. The Authority has a special fueling contract with the U.S. Department of Defense making them one of only two civilian groups in the country trained to fuel military helicopters while the engines are engaged. Because of this “hot” fueling contract there is a significant amount of military helicopter operations, and, until recently, air cargo operations. Thus, a variety of aviation facilities are located at the Airport.

2.5.5.1 Terminal Facilities

Fall 2000 marked the opening of the new 18,450 sq ft Sebring Airside Air Center. This facility is a classic example of Mediterranean architecture typical of South Florida and serves as an impressive gateway to the city of Sebring and Highlands County (see **Figures 2-5 and 2-6**).

With over 6,400 sq ft of office space, the Airside Center is also the home of the Sebring Airport Authority (SAA). The building is located on the west side of the airfield, adjacent to the central portion of the aircraft apron area (see **Figure 2-7**, Terminal Building Location).

The Airside Center provides various amenities to pilots, passengers, commuter airlines, and SAA. Sherianne's Runway Café is located in the south wing of the building and occupies approximately 3,000 sq ft, which includes kitchen and patio space. The restaurant features indoor dining, as well as an outdoor ramp-side eating area. The interior of the restaurant is adorned with World War II memorabilia.

The galleria is decorated with artwork illustrating the historical eras of the 12 Hours of Sebring race. Four commercial retail spaces, public restrooms, a waiting lounge, Fixed Base Operator (FBO)/information desk, and designated areas for passenger baggage claim, airline ticket sales, and car rental are located within the Airside Center.

For the pilot, the Airside Center provides a complete pilot facility with lounge, restrooms, and showers. Pilots have full access to a communication room for flight planning and weather services. There is also a special event room and a multipurpose room available within the terminal.

Figure 2-5. Sebring Airside Center - Landside

Figure 2-6. Sebring Airside Center - Airside

Figure 2-7. Terminal Building Location

2.5.5.2 Aircraft Storage Buildings

Storage needs for GA aircraft reflect local climatic conditions. In addition, the size and sophistication of the Airport's based aircraft fleet reflects the type of hangar storage needs at the Airport. In general, aircraft with higher values are more likely to be stored in larger, more secure facilities.

There are three types of hangar spaces available at SEF, commercial/corporate hangars, T-hangars, and shade hangars based upon information from SAA. Out of the total 84 aircraft, including one helicopter and eight ultralights, based at SEF in 2001, 52 aircraft are stored in T-hangars and at least 15 are stored in conventional type hangars. The remaining aircraft are stored on the aircraft tie-down apron. The existing shade hangars are closed and planned to be demolished. See the aircraft storage facility layout in **Figure 2-8**.

T-Hangar Facilities

T-hangar facilities at SEF consist of seven buildings. Six buildings, containing a total of 52 stalls for aircraft storage, are located at the north side of the aircraft apron area. The former shade T-Hangars located on the south portion of the aircraft apron area are closed and will be removed. Of the 52 stalls, 40 were built to house multi-engine aircraft and 12 were constructed to house single-engine aircraft. All T-hangars are currently occupied, and there is a significant demand by current Airport users and other potential tenants.

As of the year 2000, more than 60 percent (52 ÷ 84 = 61.9%) of based aircraft are stored in T-hangars. The total T-hangar area is approximately 300,000 sq ft with 10,000 sq ft designated for single-engine aircraft and 290,000 sq ft designated for multi-engine aircraft. Due to the outstanding demand for aircraft storage facilities at SEF, at the time of this writing, a 10-unit T-hangar facility was in the process of being designed and constructed in the vicinity of the existing T-hangar facilities. Therefore, for the purposes of this plan, 62 T-hangar units will be used as the historic base for future development.

Conventional Hangar Facilities

"Conventional" or "commercial" hangar is a term used to describe large open bay hangars capable of accommodating multiple aircraft in a community setting. Such community hangars are typically owned and operated by an FBO. Conventional hangars are also used to describe corporate hangars where a business may own one or two business aircraft stored in a privately owned hangar.

A review of the Airport's existing conventional hangars shows there are seven conventional hangar facilities on the SEF field based upon information obtained from SAA. The hangars provide approximately 118,800 sq ft of aircraft storage and maintenance space. The conventional hangar facility at the far north end of the Airport apron area is a 46,400 sq ft facility that has space for five tenants. The conventional hangar located farthest south on the Airport apron houses two tenants, while one tenant per hangar occupies the remaining facilities.

Figure 2-8. Aircraft Storage Facilities

However, at the time of this writing, two additional convention (commercial) hangars were in the process of being built on the Northside Apron. These facilities will provide a total of eight additional aircraft storage units.

2.5.5.3 Airport Apron Area

Apron area on the field, shown in **Figure 2-9**, consists of basically one continuous section bordering the west portion of the airfield. The apron area is in excess of 1.1 million sq ft extending in a north-south orientation. The apron area is used for aircraft tie-down stations and access to the Airport's runways.

The apron is comprised of concrete and has a load bearing weight of 30,000 lb SWL. Throughout the past ten years, the Airport has been involved in four phases of apron rehabilitation. The rehabilitation includes concrete replacement, crack repair, and repair of spauled surfaces. Due to the rehabilitation program the apron is currently in good condition.

Conventional Hangar Apron

Conventional hangar apron is required to allow aircraft room to taxi in and out of hangar facilities. Typically, the FAA recommends that the amount of hangar apron equal the amount of storage space inside the hangar. Approximately 200,000 sq ft of apron space is designated as conventional hangar apron. The area is not limited in the amount of apron space, however, it is located in a disadvantaged area of the airport and its overall condition is inadequate. See **Figure 2-9**, Aircraft Apron Area.

Based Aircraft Apron

FAA guidelines recommend tie-down space for all based aircraft not stored in hangar facilities. At present, 10 aircraft require tie-down storage. Based upon the planning ratio of 900 sq ft (300 sq yd) per aircraft, approximately 9,000 sq ft of pavement are necessary to meet existing based aircraft tie-down storage. Currently, there are a total of 40 tie-down spaces, or approximately 36,000 sq ft of space at SEF for based or transient aircraft. The largest tie-down area is located on the Airside Terminal Center ramp. There are also tie-down areas near J. B. Aircraft and Carter Aviation. It is important to note that the majority of tie-down spaces are designated as multi-purpose, neither specifically designated for single-engine or multi-engine aircraft.

Transient Aircraft Apron

Tourist activities, area businesses and industries, and the availability of maintenance and FBO services attract transient aircraft to the Airport. The transient ramp is used for the loading and unloading of passengers, for short-term parking by aircraft utilizing FBO or maintenance facilities, or for those who are simply visiting the area. Usually, the total transient apron parking requirements are based upon the maximum number of parked aircraft anticipated at the Airport at a one time. As a result, 200,000 sq ft of apron space are currently designated for transient apron parking.

Figure 2-9. Aircraft Apron Area

2.5.5.4 Aviation Tenants

From pilot support to aircraft maintenance to emergency services, SEF has a variety of aviation-related operators on the premises. Equally distributed along the north-south axis of the Airport apron area, these operators are located in single corporate facilities and multi-component structures. Information concerning existing tenants was obtained from tenant surveys, site visits, and SAA. See **Figure 2-10**, Aviation Tenants, for a location map of these operations.

Sebring Flight Center

Sebring Flight Center is the Airport's only full-service FBO. The Flight Center is located in the newly completed Sebring Airside Center and offers a variety of services to pilots, passengers, and Airport visitors. The Flight Center provides fuel, parking, hangars, a pilot's lounge, supplies, car rentals, telephones, restrooms, showers, a library, cable TV, a flight planning room, and on-line DTN weather computers. Because the Airport is designated as a foreign trade zone (FTZ), fuel purchased from the Flight Center for offshore flights is not subject to U.S. fuel taxes. The Flight Center offers competitive prices compared to other airports in the area for Chevron fuel in 100LL and Jet A.

Aero-Med II

Based at the Airport since June 1994, Aero-Med II is a Level I Trauma Unit specializing in air transport. Aero-Med is not strictly associated with one hospital; however, the main base of operations occurs at the Tampa General Hospital. Aero-Med facilities at SEF, located slightly south of the Sebring Regional Airside Center, include two singlewide trailers with living quarters and a helipad consisting of a stacked-rock surface. The unit's one BK117-B Eurocopter logs approximately 650 operations annually and they purchase approximately 70,000 gallons of Jet-A fuel per year from the SAA.

The existing Aero-Med facilities do not meet the architectural and/or aesthetic standards of the Airport.

Currently there is a need to relocate Aero-Med facilities to a new location on Airport property. In the past few years the Airport has improved the aesthetic value of the property by demolishing dilapidated buildings, rehabilitating buildings and pavement, and constructing a new terminal and parking area. The existing Aero-Med facility consists of modular units not in keeping with the architectural standards of the terminal area.

Barr-Cliff Aircraft Repair

Barr-Cliff Aircraft Repair is located in the new conventional hangar located on the northernmost portion of the Airport apron area, leasing approximately 4,000 sq ft of hangar space. Barr-Cliff is an aircraft maintenance operation specializing in annual inspections and routine maintenance of ultralight and experimental aircraft. The company also conducts sheet metal repair, fabric covering and repair, and supplemental type certificate (STC) modifications and installation. Customers can also visit Barr-Cliff to participate in FAA and Federal Communication Commission (FCC) computer testing programs.

Figure 2-10. Aviation Tenants

Carter Aircraft, Inc.

Carter Aircraft, Inc. initiated operations at the Airport in 1976, and is an FAA approved airframe repair station specializing in small aircraft repair, maintenance, and painting. Carter provides annual inspections, 100-hour inspections, corrosion removal, and major airframe repair. The Carter Aircraft Engine Division conducts custom Lycoming and Continental engine overhauls, cylinder exchange and repair.

Carter and J.B. Aircraft co-lease the existing 10,000 sq ft facility, which includes hangar, storage, and office space. As determined necessary, future plans may include refurbishing the existing building or building a new facility. Currently, Carter does not lease apron space or tie-downs, nor do they sell any type of fuel. Two-thirds of their business comes from east and west coast transients. Carter employs six full-time personnel.

Civil Air Patrol

Civil Air Patrol (CAP) is a United States Air Force (USAF) emergency service search and rescue aerospace education and cadet program, which established operations at the Airport in 1991. The CAP is a component of the USAF and is the agent of the Secretary of the Air Force, authorized to confer Air Force assigned mission status to certain of its own missions.

Experimental Aircraft Association

Experimental Aircraft Association (EAA) Chapter #803 is a non-profit organization of aviation enthusiasts, established at the Airport in 1991, promoting private aviation to youth and to the public in general.

Group 44

Group 44 houses a private collection of vintage automobiles and aircraft, which was established at SEF in 1994. Group 44 currently occupies a spotless, 16,000-ft facility, which houses a hangar, office, restrooms, storage, and fabrication shop. The hangar is typically open to the public, so visitors can peruse the collection of vintage aircraft and automobiles.

J.B. Aircraft Engine Services, Inc.

J. B. Aircraft Engine Services, Inc. has been conducting aircraft engine overhauls at SEF since August 1998. J. B. specializes in power plant repair and maintenance on small piston-driven single- and multi-engine aircraft. As previously mentioned, J. B. co-leases a 10,000 sq ft building with Carter Aircraft. The building is approximately 30 years old and is in poor condition. The parking facilities are unpaved grass and gravel areas. Ground access to the facility is in need of improvement as well.

J. B.'s business consists of transient pilots from the east and west coast of Florida (i.e., Okeechobee, Naples, Ft. Pierce, etc.). Unfortunately, transient traffic from the north is limited by Avon Park Bombing Range activity. J. B. and Carter usually host 10-12 aircraft at a time. J. B. employs five full-time staff members.

Leza Aircam Corporation

Leza Aircam Corporation opened for business at SEF in September 1997, manufacturing light aircraft kits. Leza has of a 40-year lease for the property on which their new 42,000 sq ft hangar is built.

Lockwood Aviation, Inc.

Lockwood Aviation, Inc. opened its doors in January 1994. The business is three-fold, including: Lockwood Aviation, Lockwood Aviation Supply, and Lockwood Aviation Repair. Lockwood Aviation is a flight school that provides flight instruction, aircraft rental, ground school, and testing services. Lockwood Aviation Supply is a distributor of parts and accessories for light aircraft, including Rotax Aircraft Engines. Lockwood Aviation Repair is an FAA-licensed and authorized Kodiak Service Center for Rotax Aircraft Engines.

Lockwood's existing leasehold includes a two-story, 10,000 sq ft building on the south portion of the Airport apron area, directly south of the Sebring Airside Center. The building consists of 4,500 sq ft of hangar space that usually hosts up to five aircraft per week. The remainder of the facility is designated as office, shop, storage, lobby, lounge, and restrooms. Because most orders are shipped via miscellaneous ground carriers, Lockwood does not lease apron space for aircraft parking. It, however, does have adequate automobile parking facilities to meet existing needs. The paved automobile parking lot is capable of accommodating approximately 15 vehicles at a time. However, ground access to this facility is in need of major improvement.

Lockwood Aviation, Inc. is one of only two Rotax distributors in the nation. If growth continues, Lockwood plans to expand the facility and increase staff. Currently, Lockwood employs 11 full-time staff members, and has recently added a 3,000 sq ft anchor store adjacent to its existing facilities.

P.J. Aircraft, Inc.

P. J. Aircraft, Inc. is an aircraft maintenance shop specializing in Mooney aircraft. P. J. provides maintenance, repair, and inspections of small single- and twin-engine aircraft of all makes, including Cessna, Piper, Beech, and Mooney. P. J. also provides delivery and pick-up service of aircraft throughout the state of Florida. Routine maintenance usually takes a week, but annual overhauls could take up to eight weeks. P. J. has two full-time mechanics on staff.

P. J. currently leases 5,200 sq ft in the new commercial hangar located at the northernmost portion of the Airport apron area. Approximately 450 sq ft is designated as office, storage, and restrooms. The remaining 4,750 sq ft is used for hangar space. Typically, P. J. hosts a maximum of five aircraft at a time.

Spectrum Aircraft, Inc.

Spectrum Aircraft, Inc. is a sales point and distributor for single- and twin-sport aircraft manufactured by Aeroprakt, Ltd. The company offers light and very-light, but not ultralight, aircraft that are very competitive in performance and price to other similar single and twin sport aircraft on the market today. They also import, sell, service, evaluate, and assist in the building of experimental aircraft. Spectrum employs one full-time employee, in addition to the owner.

Spectrum leases approximately 4,000 sq ft in the new conventional hangar located at the northernmost portion of the Airport apron area. Approximately 500 sq ft are designate as office, storage, and restroom areas. The remaining portions are used as hangar space housing three to four aircraft at a time. Spectrum does not lease apron or automobile parking space at this time.

2.5.5.5 Non-Aviation Tenants

Based upon site visits and tenant surveys, it was found that non-aviation tenants at SEF represent a variety of industries. Members of the automobile racing, hotel, and fertilizer industries, as well as a wide variety of manufacturers have selected SEF for operational headquarters. **Figure 2-11** illustrates major non-aviation tenants located on Airport property.

Chateau Elan Hotel and Spa

Chateau Elan Hotel and Spa is located on the southwest perimeter of the Airport adjacent to the Sebring International Raceway. The four-story, 81-room facility opened in Spring 2000 and experiences peak business during race weeks. Amenities include: spa, restaurant, lounge, banquet halls, meeting rooms, pool, workout room, Jacuzzi, gift shop, business center, and air-conditioned tent adjoining the main facility. The hotel and spa employ approximately 50 staff members. More information on Chateau Elan will be provided in Chapter 3, “Socio-Economic Influences.”

Davis Cattle

Davis Cattle is a family-owned cattle company, which owns over 1,000 acres of property adjacent to the northeast border of SEF. SAA has a ten-year option to purchase the Davis parcel for future development.

Gulf Kist Sod

Gulf Kist Sod, established in 1995, is a sod farm adjacent to SEF. As Airport drainage is a key issue in the strong relationship between Gulf Kist Sod and SEF, these two organizations have worked together in the past.

Hancor, Inc.

Hancor, Inc. located its operation at SEF in 1997. Hancor is a producer of high-density polyethylene plastic drainage pipe (HDPE pipe). This piping is typically used for agricultural, residential, commercial, highway, and storm sewer construction. Hancor distributes piping throughout the U.S. and foreign markets. There are 51 full-time employees with a total annual payroll of $1.8 million.

Figure 2-11. Major Non-Aviation Tenants

Hobby Hill Gifts

Hobby Hill provides commercial shopping inside the Sebring Airside Center, with miscellaneous souvenirs, race memorabilia, and other seasonal items. The shop supports one full-time position at the Airport.

Lesco, Inc.

Lesco, Inc. has been operating from the SEF since 1981. As the U.S.'s largest manufacturer and distributor of a broad line of turf care and golf course maintenance products for the professional segment of the green industry, Lesco is one the County's largest employers with over 100 employees and total annual payroll of approximately $1 million.

Linpac Plastics

Linpac Plastics has been an Airport tenant since the early 1970s, manufacturing polystyrene products, supplying the food industry with Styrofoam products, egg cartons and trays, and other insulating containers and materials. Also one of the County's largest employers, Linpac has 130 full-time and 20 part-time employees at the Airport with a total annual payroll of approximately $3.2 million.

Panoz Racing School

Panoz Racing School is located on the southern portion of the Sebring International Raceway leasehold. The school provides safe, real-life racing instruction for the racing novice or enthusiast. Racing programs consist of classroom instruction and car control exercises in the Panoz Grand Tour Racing Arena (GT-RA), the only purpose-built GT racing sports car used in a racing school anywhere in the world.

1-800-Partyshop

1-800-Partyshop, operating at the Airport since 1998, is a multi-level direct marketing company known throughout the country for the sale and distribution of party supplies. Partyshop products are generally sold through home parties. With corporate headquarters approximately five miles from the Airport along I-98N, Partyshop leases a 22,000 sq ft building on the Airport, which serves as a major distribution center for its line of products. Currently, there are 30 employees on staff with 18 working at the Airport warehouse.

RANS, Inc.

Rans, Inc. at SEF consists of an East coast sales office, showroom and distribution center for light aircraft as well as offering flight instruction to clients.

Highland Bowhunters

Highland Bowhunters of Sebring is a Charter member of the National Field Archery Association.

Sebring Custom Tanning

Sebring Custom Tanning established its operation at SEF in 1987. This internationally known company specializes in tanning a variety animal hides, from the average to the unique. Custom Tanning processes approximately $2 million - $3 million worth of animal skins each year, and employs five full-time and two part-time employees. The business has operated on the Airport property since 1987. The current facility is 14,500 sq ft of processing and storage space and 1,500 sq ft of office space, for a total of 16,000 sq ft. The automobile parking facilities are adequate and road access is good. Future plans include a possible addition of 10,000 sq ft to the existing building.

Sebring International Raceway

Sebring International Raceway held its first race in 1950 and has made a name for itself in the automotive racing industry. The raceway includes a year-round track available for rent for sporting events, and is home to the 12 Hours of Sebring International Grad Prix of Endurance Race. The Raceway employs approximately 15 full-time staff and 20-25 part-time staff in the off-season. During race week and special events, 50-75 contract workers are hired as servers, parking attendants, ticketing agents, and ushers. The Sebring International Raceway location offers a permanent road course with three different circuit layouts, including the classic 17-turn, 3.7 mile, “12 Hours of Sebring” configuration.

The Raceway will be discussed in greater detail in Chapter 3, “Existing Socio-Economic Influences.”

Sherianne’s Runway Café

Sherianne’s Runway Café, located in the new Airside Center, has been located at the Airport since 1996, but has been under new management and ownership since 1998. The Café serves breakfast and lunch and specialized Catering and banquet facilities are available.

Skip Barber Racing School

Skip Barber Racing School is an automotive racing school located within the leasehold of the Sebring International Raceway. The Skip Barber racing school has been in operation for more than 25 years, and offers a range of automotive entertainment, education, and competition.

The school maintains a nationwide presence from four base locations. The four satellites, Laguna Seca Raceway, Lime Rock Park, Road America, and Sebring International Raceway, house a combined fleet of 130 race cars and 70 production vehicles as well as administrative offices for over 150 instructors.

Industrial Park

The Sebring Airport Industrial Park is presently confined along the northwest border of the SEF property. The park was established in the early 1970s and FTZ status was awarded in 1997 for the entire 2,000-acre Airport property. The park is a full-service operation with excellent rail sites available. There are also considerable tax benefits available through the Community Redevelopment Authority Board. For more information concerning the Sebring Airport Industrial Park, see Chapter 3, “Existing Socio-Economic Influences.” For a list of current industrial park tenants, see **Tables 2-9 and 2-10**.

Table 2-9. Aviation Tenants

Name	Location	Hangar Space (sq ft)	Office Space (sq ft)	Total Space (sq ft)	Total Employees
Sebring Airport Authority/Sebring Airside Air Center	130 Authority Lane	N/A	576	18,450	8 FT
Sebring Flight Center/ Sebring Airside Air Center	130 Authority Lane	N/A	~200	18,450	5 FT
Aero-Med	121 Authority Lane	N/A	1,722	1,722	6 FT
Barr-Cliff Aviation	Challenger Drive	4,000	200	4,200	2 FT
Carter Aircraft Inc.	201 Challenger Drive	Share 9,900	Share 100	Share 10,000	6 FT
Civil Air Patrol	Off-Airport	N/A	N/A	N/A	---
Experimental Aircraft Association	T-Hangars	N/A	N/A	---	---
Group 44	44 Victory Lane	14,966	1,034	16,000	3 FT
J.B. Aircraft Engine Services Inc	201 Challenger Drive	Share 9,900	Share 100	Share 10,000 with Carter	5 FT
Leza Aircam Corporation	1 Leza Drive	~41,000	~1,000	42,000	6 FT
Lockwood Aviation Inc.	1 Lockwood Lane	4,500	5,500	10,000	11 FT
P.J. Aircraft	Challenger Drive	4,750	450	5200	2 FT
Spectrum Aircraft	Challenger Drive	3,500	500	4000	1 FT

Source: Sebring Airport Authority Leasehold Information and Airport Surveys
Note: FT – Full Time employees, PT- Part Time employees

Table 2-10. Non-Aviation Tenants

Tenant	Description	Address	Leasehold	Employees
Hancor Inc	Pipe Manufacturer	1 Ulmann Drive	35,445 sq ft	51 FT
Lesco Inc	Turf and Golf Course Care	425 Haywood Taylor Blvd	343,428 sq ft	100+ FT
Linpac Plastics	Polystyrene Manufacturer	116 Chicane Drive	160,857 sq ft	130 FT/ 20 PT
1800Partyshop	Party Supply Distribution	185 Sabre Drive	21,368 sq ft	30 FT
Sebring Custom Tanning	Animal Hide Preparation	429 Webster Turn Drive	22,697 sq ft	5 FT/ 2 PT
Chateau Elan & Spa	Hotel	150 Midway Drive		50+ FT
Davis Cattle	Agricultural	Land Only	Land Only	10 FT
Gulf Kist Sod	Sod Farm	Land Only	Land Only	15 FT
Highland Bowhunters	Hunting Organization	Off-Airport	Off-Airport	NA
Hobby Hill Gifts	Gifts	130 Authority Lane	250 sq ft	3 FT
Panoz Racing School	Automotive Racing School	100 Earwood Blvd	N/A	20 FT
Sebring International Raceway	Automotive Racing	113 Midway Drive	N/A	15 FT/ 25 FP
Sherrianne's Runway Café	Restaurant	130 Authority Lane	3,000 sq ft	18 FT
Skip Barber Racing School	Automotive Racing School	108 Golden Eagle Drive	N/A	15 FT

Source: Sebring Airport Authority, Sebring Airport Authority Leasehold Information, and PBS&J Airport Surveys, 2002

2.6 EXISTING LANDSIDE FACILITIES

Landside facilities at SEF consist of miscellaneous aviation support facilities, ground access, utilities, commercial properties, and environmental data. Refer to **Figure 2-12** for a location map of major landside facilities.

2.6.1 GA Automobile Parking

The main GA parking lot is adjacent to the existing terminal building and contains approximately 80 paved and marked automobile parking spaces. There are also miscellaneous parking areas behind several of the hangars on the north and south ends of the Airport.

Figure 2-12. Landside Facilities

2.6.2 Terminal Building Curb Frontage

The current curb frontage available directly in front of the Sebring Regional Airside Center is equivalent to ten to twelve mid-size vehicles and includes two lanes of traffic around the curb: one thru lane and one loading/unloading lane. Terminal curb frontage provides space for passenger and baggage drop-off and pick-up. Currently, SEF has sufficient building curb frontage space on the Airside Terminal Building to meet existing demand.

2.6.3 Support Facilities

Several support facilities serve important roles in ensuring the efficiency and safety of aviation operations at SEF. These services include Airport maintenance, police, and fueling services, and are key players in the support of the Airport.

2.6.3.1 Airport Maintenance

The task of supervising the maintenance of the Airport belongs to the SAA. Maintenance equipment and offices are located in a building on the northwest side of the Airport. FAA guidelines indicate maintenance-building needs are directly related to the amount of paved areas and activity levels at the Airport. For instance, increases in runway, taxiway, and apron pavement, combined with increasing activity levels, will result in the need to provide additional maintenance building space. Currently, Frank’s Lawn Care provides the landscaping and lawn maintenance services.

2.6.3.2 Airport Police Department

The Highlands County Sheriff’s Office (HCSO) provides law enforcement services for the Airport. HCSO is capable of responding to any existing emergency or law enforcement needs of the Airport. The Craig D. Graybill, Jr. Security Service provides additional security services for the Airport and industrial park. Security services to the Airport are provided 24-hours per day, seven days a week.

2.6.3.3 Aircraft Rescue and Fire Fighting

The DeSoto City Volunteer Fire Department (DVFD) provides aircraft rescue and fire fighting (ARFF) services to the Airport, with backup services provided by the City of Sebring Fire Department. The fire protection system has been designed to obtain a favorable rating from the International Organization of Standardization (ISO) to maintain attractive tenant insurance rates.

2.6.3.4 Fuel Storage

The fuel farm is owned by the SAA, and fuel is distributed by the Sebring Flight Center. No other tenant is allowed to sell fuel to airport users. The Authority offers Chevron 100 Low Lead and Jet-A fuel. The fuel farm is located due south of the Sebring Regional Airside Center and consists of two aboveground 10,000-gallon tanks equipped with meters, filters, and emergency shut-off systems. In addition, the Airport has one 750-gallon Avgas truck, three 5,000-gallon Jet A trucks, and one 1,200-gallon Jet A truck. Some of the trucks are currently slated for sale, and the Airport is planning to include self-fueling facilities in its list of future amenities.

The Authority has a special fueling contract with the U.S. Department of Defense and with Avon Park Air Force Range. Through negotiations, SAA contracts with Defense Energy Support Center (DESC) to provide fuel at a variable rate that changes weekly according to their price adjustment procedures. The fuel farm's location within FTZ #215 allows for other purchase incentives as well.

2.6.4 Ground Access System

The existing transportation network of the region is important in assessing the future development of the Airport. Off-Airport access to SEF consists of both vehicular and rail service. US Highway 27 provides a major north-south highway, which links the City of Sebring with I-4 and I-75 to the north and Miami/Ft. Lauderdale to the south. SEF is located approximately five miles east of US 27 and is accessed by US Highway 98 and Airport Road. State Road 623 provides access to the Airport from downtown Sebring. State highways 17 and 17A further enhance general circulation in the area of the Airport.

The Seaboard System Railroad provides rail transportation linkage with freight service provided by a spur from the main track into the center of the industrial park. The rail spur has recently been renovated using funds provided by an FDOT grant. **Figure 2-13** illustrates the airport access and roadway system.

2.6.5 Utilities

The availability and capacity of the utilities serving SEF are important factors in determining future development. The primary concern is the availability of adequate water, sewer, and power sources. All of these utilities are currently available at the Airport.

Highlands County is famous for its quality water, as much of its spring water is bottled and sold all over the U.S. Municipal water is provided from deep wells in the Florida aquifer running beneath the county. Unlike the coastal areas of Florida, there is no saltwater intrusion problem. Each municipality has a locally owned and managed plant that is operated under the jurisdiction of the Florida Public Service Commission. (5)

The entire potable water system at the Airport has been renovated to meet the needs of all current and future demand of aviation and non-aviation tenants. The Airport is a self-sufficient system that is serviced by three wells. First, the water is pumped to a 375,000-gallon raw water reservoir at the ground level. The water treatment system includes chlorination and high service pumping. To maintain the utmost efficiency, the Airport installed distribution pipes ranging from 6 to 16 inches in diameter. System reliability has been further enhanced by the addition of on-site emergency power generation. (6)

Municipally owned and operated collection and treatment facilities, as well as privately owned plants, provide sewage disposal services to the area. The on-site facilities for sewer collection, treatment, and disposal of wastewater have recently been constructed to have an initial phase capacity of 90,000 gallons per day. A municipal and countywide solid waste disposal system provides garbage collection services.

Figure 2-13. Airport Access and Roadway System

Florida Power Corporation, a Fortune 500 utility, operates an integrated power system to provide the Airport's electrical power. Eighteen steam units and 43 combustion turbines serve the system with a total net generating capacity of 7,563 megawatts (MW). In addition, Florida Power maintains sufficient reserve capacity to meet the needs of any new business or industry. A 7.2 kilovolt (KV) transmission line serves the industrial park. Standard service is a single-phase, three-wire, or three-phase, four-wire. Standard voltages are 120 volts Alternating Current (VAC)/240 VAC, 120 VAC/208 VAC, and 277 VAC/480 VAC. (7)

In Highlands County, Liquid Petroleum (LP) Gas is available through distributors and natural gas is available in some areas.

2.6.6 Sebring International Raceway

The Sebring International Raceway leasehold encompasses approximately 400 acres at the southern portion of SEF, as shown in **Figure 2-14**, Sebring International Raceway. It includes of a quarter mile-long pit row and garage area with a four-story tower, elevated viewing, and hospitality suites, and a track which can be configured for various length races.

The Sebring International Raceway leasehold encompasses approximately 400 AC at the southern portion of SEF.

The raceway has become a local tradition, involving second and third generation spectators and participants. Founded over a half a century ago, the raceway is the home of the internationally known "12 Hours of Sebring" endurance race. Thousands of people visit the area each year, including race teams, drivers, major vendors, and race fans from all over the world. The endurance race is held in conjunction with other preliminary events, including the Historic Sports Car Race.

The raceway is the home of many historic events and exciting training facilities. Located on the raceway leasehold, are two major racing schools. The Panoz Racing School operates within a new 7,500 sq ft facility on the southern portion of the raceway property. The Skip Barber Racing School is located on the eastern boundary of the leasehold and utilizes two buildings for classroom training, as well as sharing rights to the track.

The raceway also remains busy approximately 250 days of the year with testing being conducted by some of the biggest names in racing, corporate events, sports car club races, and other special events.

To support the raceway events and year-round use a new hotel has been added to the complex. Sebring's Chateau Elan Lodge is a four-story hotel located near the raceway's hairpin turn. The Lodge features a health spa, Jacuzzi, pool, and upscale restaurant. (8)

Figure 2-14. Sebring International Raceway

2.6.7 Stormwater/Drainage

Currently, the SEF stormwater/drainage system includes a number of ditches, culverts, watersheds, and retention basins. The system collects runoff from the runways, taxiways, and apron areas and allows flow of runoff to Arbuckle Creek. Phase one of the master drainage plan contains a retention pond near the new water treatment facility. There are approximately 19 internal discharge points, and seven (see **Figure 2-15**) external discharge points on Airport property. See **Figure 2-15** for the Existing Drainage Map, Discharge Locations, and Major Watersheds.

The South Florida Water Management District (SFWMD) approved the current Master Drainage Plan for SEF in December 2001. The Master Drainage Plan serves as a planning guide for future design and development of internal drainage systems. According to the plan, the purpose is to maintain the adequacy of stormwater management facilities, meet regulatory requirements, and provide a basis for approval of any permits necessary for future development.

The plan incorporates information from the entire Airport property, including both aviation and non-aviation uses. The plan shows that SEF will have the facilities to meet state-mandated regulations, to meet mitigation requirements, and to maintain flexibility meeting short-term and long-term expansion goals. This topic will be discussed in greater detail in the environmental chapter.

2.6.8 Wetland Inventory

Also included in the SEF Master Drainage Plan is an identification of existing wetland areas. True to the characteristics of central inland Florida, the Airport has a number of areas designated as wetland areas by the SFWMD and the Army Corp of Engineers (ACOE). There are 11.13 AC of preserved wetlands on the south portion of Airport property. Scattered along the northeast to southeast boundary of the Airport, there are 12.73 AC of proposed impacted wetlands. Also, there are approximately 128.65 AC of proposed preserved wetlands to the northeast of the Airport. Refer to **Figure 2-16**, Airfield Master Drainage Plan, for more detail.

2.7 AIRSPACE AND APPROACH PROCEDURES

The National Airspace System (NAS) is defined as the common network of U.S. airspace, including air navigation facilities, airports, and landing areas, aeronautical charts and information, associated rules, regulations, and procedures, technical information, personnel, and materials. System components shared jointly with the military are also included.

Airspace in and around SEF is unique due to its proximity to Avon Park Airport and MacDill Air Force Base Auxiliary Airport. As a result, SEF's airspace operations are somewhat restricted by the military operating areas (MOAs) and restricted areas (RAs) associated with the Avon Park Bombing Range, which is located within the RAs.

Figure 2-15. Existing Drainage Map

Figure 2-16. Airfield Master Drainage Plan

2.7.1 Airspace Management and Approach Procedures

Airspace Management is defined as the “direction, control, and handling of flight operations in the volume of air that overlies the geopolitical borders of the U.S. and its territories” (Federal Aviation Regulation, Airman's Information Manual (FAR/AIM 2002)). Created under the Federal Aviation Act of 1958 to enforce safety, the FAA was placed under the jurisdiction of Congress. The FAA establishes policies, designations, and flight rules to protect aircraft in the airfield and en route environment, and in special use airspace (SUA) areas identified for military or other governmental activities. Management of this resource considers how airspace is designated, used, and administered to best accommodate the individual and common needs of military, commercial, and GA. Because of these multiple and sometimes competing demands, the FAA considers all aviation airspace requirements in relation to airport operations, Federal Airways, Jet Routes, military flight training activities, and other special needs to determine how the NAS can best be structured to satisfy all user requirements.

The FAA has designated four types of airspace above the U.S. They are controlled, SUA, other, and uncontrolled airspace.

- Controlled airspace is categorized into five separate classes: Class A, B, C, D, and E airspace. These classes identify airspace that is controlled, airspace supporting airport operations, and designated airways affording en route transit from place to place. Air Traffic Controlled Assigned Airspace (ATCAA) falls into this type of airspace. The classes also dictate pilot qualification requirements, rules of flight that must be followed, and the type of equipment necessary to operate within that airspace.
- SUA is designated as airspace within which flight activities are conducted that require confinement of participating aircraft, or place operating limitations on non-participating aircraft. Prohibited areas, restricted areas, warning areas, and military operations areas are examples of SUA.
- Other airspace consists of advisory areas, areas that have specific flight limitations or designated prohibitions, areas designated for parachute jump operations, military training routes (MTRs) and aerial refueling tracks (ARTs).
- Uncontrolled airspace is designated Class G and has no specific prohibitions associated with its use.

2.7.2 Airspace Structure

Airspace is classified as controlled or uncontrolled. Controlled airspace is supported by ground-to-air communications, NAVAIDS, and air traffic services. In September 1993, the FAA reclassified major airspace. The new classifications are graphically depicted in **Figure 2-17**, FAA Airspace Classifications, with airspace requirements listed in **Figure 2-18**.

Types of controlled airspace include:

- Class A airspace, which includes all airspace between 18,000 ft MSL and 60,000 ft MSL (as well as waters within 12 nautical miles [nm] of the coast of the 48 contiguous states).

- Class B Airspace (formerly referred to as the terminal control area), which includes all airspace from the airport's established elevation up to 10,000 ft MSL, and consists of four airspace layers.
- Class C airspace (formerly referred to as the airport radar service area), which includes all airspace from that airport's established elevation up to 4,000 ft MSL, and consists of two airspace layers.
- Class D airspace (formerly referred to as the airport traffic area) for airports with ATCTs, which normally extends from the surface to 2,500 ft above an airport's established elevation (charted in MSL), and includes control zones and airport traffic areas.
- Class E airspace, which includes all controlled airspace other than Class A, B, C, or D. Class E airspace extends upward from either the surface of the designated altitude to overlying or adjacent controlled airspace. Class E airspace includes transition areas and control zones for airports without ATCTs.
- Class G airspace, which is uncontrolled airspace, begins at the surface and rises to the base of the overlying airspace.

Only those areas that pertain to SEF (Class E, Restricted Airspace and Military Operating Areas) are described further. The Miami Air Route Traffic Control Center (ARTCC) is responsible for en route control of all aircraft operating in an IFR flight into the Sebring area. See **Figure 2-19**, Regional Airspace.

Controlled airspace directly associated with SEF includes Class E, which is depicted on the Miami Sectional Aeronautical Chart, January 2002, by a graduated magenta band surrounding the Airport, and SUA, which includes warning areas and MOAs and is depicted by blue and red outlines. The Class E Airspace surrounding SEF has its floor 700 ft above the surface. Class E Airspace allows aircraft to transition to or from the MOA into the airport control zone.

Within warning areas, while multiple use of the airspace is not prohibited, avoidance is advised during time of military training use. Joint use of MOAs is also allowed. Pilots flying in MOAs are responsible to employ "see and avoid" standards of flight safety. Both warning areas and MOAs are plotted on aeronautical charts so all pilots are aware of their location and the potential for military flight training in the airspace.

MOAs associated with the Avon Park Bombing Range and MacDill AFB Auxiliary Airport (AGR) operations limit SEF's airspace operations. The restricted areas, as indicated in **Figure 2-19**, indicate those areas that are continuously in effect and limit where aircraft can operate. As indicated, most of the areas restrict civilian aircraft to fly below 14,000 ft MSL. The MOA is considerably larger than the restricted areas and is in effect intermittently during daylight hours Monday through Friday, and occasionally on weekends, but does allow aircraft to fly lower than 7,000 ft on a limited basis. (*Miami Aeronautical Sectional Chart*, January 2002)

Restricted airspace (RA) to the northeast of SEF, though not entirely prohibited to flight activity, are areas in which unauthorized incursion is not only illegal, but also extremely dangerous. Restricted areas are identified on aeronautical Sectional Charts by a defined area marked with the letter "R," followed by a number. Altitudes and times differ for each restricted area. These areas generally contain operations that do not mix well with aircraft such as artillery firing, guided missiles, or aerial gunnery. Permission to fly in restricted areas can be given by ATCT. **Table 2-11** lists specific RAs and MOAs in the region surrounding SEF.

Table 2-11. Sebring Regional Airspace

RESTRICTED AREAS			
Number	**Usage Altitude**	**Usage Time**	**Controlling Agency**
R-2901A	To 14,000’	Continuous	ZMA CNTR
R-2901B	14,000’ to FL 180	Continuous	ZMA CNTR
R-2901C	To 14,000’	Continuous	ZMA CNTR
R-2901D	500’ to 4,000’ East of 81 21’ 00” W; 1,000’ AGL to 4,000’ West of 81 21’ 00” West	Continuous	ZMA CNTR
R-2901E	1,000” to 4,000’	Continuous	ZMA CNTR
R-2901F	4,000’ to 5,000’	Continuous	ZMA CNTR
R-2901G	To 5,000’	Continuous	ZMA CNTR
R-2901H	1,000’ to 4,000’	Continuous	ZMA CNTR
R-2901I	1,500’ to 4,000’	Continuous	ZMA CNTR
MILITARY OPERATIONS AREAS			
Name	**Usage Altitude**	**Usage Time**	**Controlling Agency**
Avon North	5,000’	Intermittent daylight hours: contact FSS	ZMA CNTR
Avon East	500’ AGL to But not including 14,000’	Intermittent daylight hours Mon-Fri	ZMA CNTR
Avon South	4,000’	Daylight hours Mon – Fri	ZMA CNTR
Basinger	500’ AGL to 5,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR
Lake Placid	7,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR
Lake Placid North	15,000’	Intermittent daylight hours; contact FSS	ZMA CNTR
Marian	500’ AGL to 5,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR

Source: Department of Transportation, U.S. Terminal Procedures Southeast, Volume 3 of 4, November 1, 2001

Figure 2-17. FAA Airspace Classification

Figure 2-18. Airspace Classification Detail

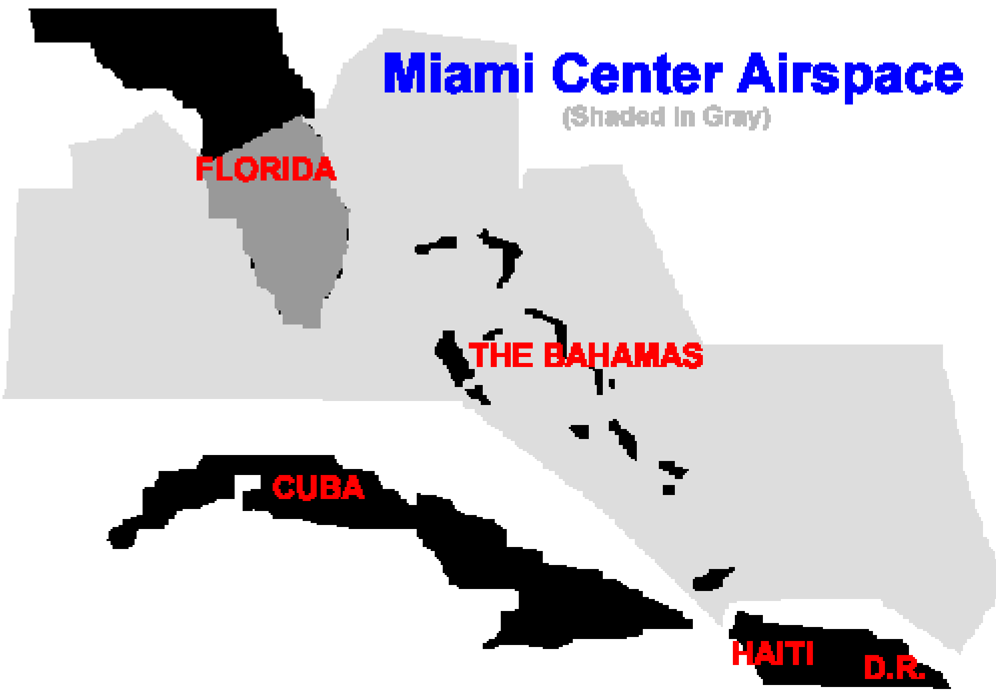
Figure 2-19. Regional Airspace

2.7.3 Delegation of Air Traffic Control Responsibilities

The FAA operates 21 ARTCC's, which control aircraft operating under IFR, within controlled airspace, while in the en route phase of flight. SEF is within the area controlled by the Miami center, which includes airspace that "borders on airspace delegated to four FAA centers: Houston to the west; Jacksonville to the north; New York to the northeast; and San Juan CERAP to the southeast." (9)

The gray area on the map denotes Miami ARTCC coverage.

Figure 2-20. Miami Center Airspace Coverage



Miami ARTCC exercises their control of activity into and out of SEF through remote radar and radio facilities located throughout the region. (10)

2.7.4 En Route Navigational Aids

En route NAVAIDS are established to maintain accurate en route air navigation. They use ground-based transmission facilities and onboard receiving instruments. Several en route NAVAIDS operate in the south Central Florida operating area. SEF en route NAVAIDS located on the airfield include PAPI, MIRL and runway markings. Additionally, an off-site VORTAC, located in nearby LaBelle, provides radial and distance measuring information to military and civilian pilots navigating to the Airport.

All of the NAVAIDS associated with SEF are shown in **Table 2-12**.

Table 2-12. Navigational Aids

Approach Aids	Runway 18	Runway 36	Runway 14	Runway 32
PAPI-4	Yes	Yes	No	No
Runway Lighting	MIRL	MIRL	No	No
Runway Marking	Visual	Visual	Visual	Visual
GPS		Yes		

Source: Sebring Regional Airport, 2001,
FAA Airport Facility Directory, Southeast U.S. (Effective 13, June 2002 to 8 August, 2002),
Sebring Regional Airport, ALP, 1993

2.8 LAND USE

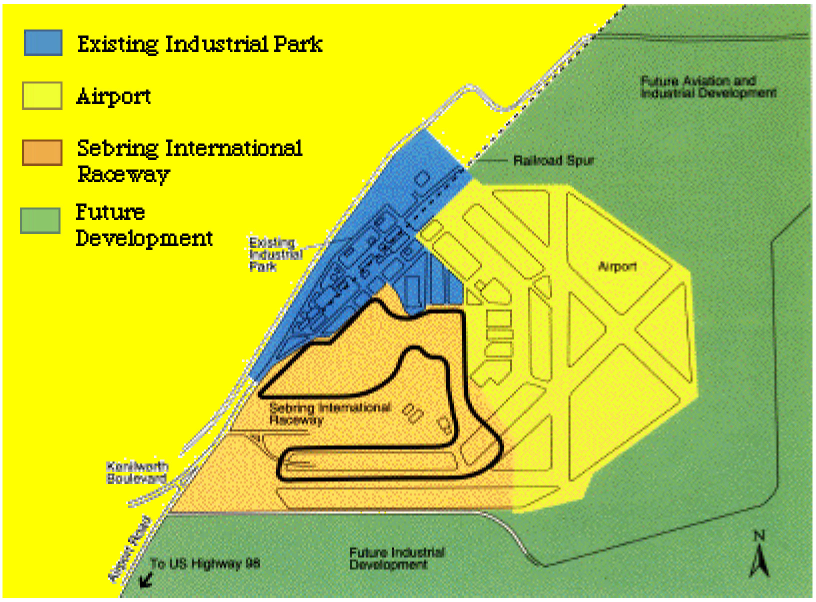
Highlands County Board of County Commissioners, in conjunction with appointive advisory planning and zoning agencies, regulates the land use within the municipalities of Avon Park, Lake Placid, and Sebring, as well as the unincorporated areas. The Planning and Zoning Board is an advisory board with members appointed by the Commissioners, and has offices located at the county courthouse complex.

Land utilization plans, whether city, county, or regional, should consider existing and future activities of the Airport. Currently, the properties to the north and west of the Airport property are zoned for agriculture, according to the Future Land Use Element (FLUE Policy 1.3.E.1). To the southwest, there is some land designated for industrial use (FLUE Policy 1.3.E.10) mixed in with agriculturally zoned properties. The majority of the southern border of the Airport is adjacent to residentially zoned areas, designated as vested subdivisions (FLUE Policy 2.3, Policy 10.1 Table, Policy 13.E.13). Vested subdivisions also comprise the southeastern border up to the area directly east of the Airport. From this point to the north, the land has been zoned for agricultural utilization. The property belonging to the SAA is zoned as public lands (FLUE Policy 1.3.E.5). See **Figure 2-21**, Land Use. The public use is not considered a zoning category for the regulation of land uses. The recommendation of zoning classifications will be addressed in the planning process.

2.8.1 Currently Vacant and Underutilized Land

Within the Airport boundary, portions of the land are utilized for aviation, industrial, agricultural, and commercial purposes. Agriculture zoning surrounds the majority of the Airport, but portions to the south and east are zoned for residential usage. The Airport views these areas, especially the designated agricultural zoned areas, as potential development areas, and designates these areas as future aviation and industrial development. The northwest portion of the Airport property is set-aside for the industrial park. There is much opportunity for marketing and development of the areas within the park. Finally, the Sebring International Raceway encompasses the area of the Airport to the southwest.

Figure 2-21. Land Use



Source: http://sebring-airport.com

2.8.1.1 Davis Property

The Davis Property is located along the north and northeast border of the existing Airport property (see **Figure 2-22**, Potential Development). SAA has a binding option for 1,000 acres. The purchase of this land would allow for a master mitigation strategy to be developed for the Airport using Arbuckle Creek; provide land for additional aviation development, such as new runway, aprons, buildings, and other associated infrastructure; as well as to provide additional land for sound mitigation. The size and location of the Davis property make it an ideal platform for a variety of business developments.

2.8.1.2 South Property

Along the southern border of the Davis property, to the east of Runway 18-36, there is an adjacent property that is being considered for potential residential development (see **Figure 2-22**, Potential Development). A possible use for this property is hangar homes, allowing residents who are also involved in aviation to have homes adjacent to or directly on Airport property. This would provide unique and additional revenue while providing for the establishment of a compatible land use. The opportunity is subject to on-going discussions and negotiations with the landowner.

2.8.1.3 East Property

The eastern property is already part of the current Airport leasehold. This property is located directly east of Runway 18-36. With the closure of Runway 4-22, a significant amount of land became available (see **Figure 2-22**, Potential Development). One potential option for this land is for light industrial development, whether aviation or non-aviation related. This, again, will provide an additional revenue stream to the Airport

Authority. In addition, light industrial development between the airside and potential residential development will provide additional sound mitigation.

2.9 AREA-WIDE PLANS

Throughout the master planning process, it is extremely important to coordinate the goals of the Master Plan with the goals of area wide plans. Planning occurs at the national, state, and local levels; therefore, these plans must be included in the documentation of the Airport Master Plan. For the Sebring Regional Airport Master Plan, it is necessary to incorporate countywide, regional, statewide, and national planning goals.

2.9.1 Highlands County Comprehensive Plan

The Countywide Plan was developed by the Highlands County Commission and the Countywide Planning Authority to develop a future land use plan with a managed growth perspective coordinating all the elements in the plan. The plan focuses on capital improvements, traffic circulation, infrastructure, housing, conservation, recreation, coastal, and intergovernmental coordination. The plan has goals, policies, and economic assumptions in a general format to serve as a basis for rational decisions and review of plans submitted by local governments.

The goal of the transportation element is to develop a transportation system that provides for all the movement needs of people and goods in both purpose and mode. The plan maintains that the transportation system should be adequate to serve the growth of the County and its socioeconomic function, while serving all segments of the County's population. Another goal is to maximize use of existing facilities and minimize negative environmental impacts on the ecosystem and neighborhoods. The plan mandates the coordination of the transportation system with other public facilities as a major source of support in the recognition of the role of tourism. The plan also mandates provision of safety standards and movement of industrial and commercial goods with minimal interference.

2.9.2 Central Florida Strategic Regional Policy Plan (SRPP)

The five counties of DeSoto, Hardee, Highlands, Okeechobee, and Polk consist of nearly 5,000 sq mi of inland territory and form the basis for the Central Florida region. The region's Strategic Regional Policy Plan (SRPP) serves as a long-range planning guide for physical, economic, and social development. The SRPP simply provides direction to steer the region toward a more healthy and sustainable future. The plan addresses the issues of natural resources, economic development, regional transportation, affordable housing, and emergency preparedness.

This region is the only Aviation Planning Region in the State of Florida without commercial air service.

This region is the only Aviation Planning Region in the State of Florida without commercial air service. Due to the projected population growth, economic activity, and free trade areas, overall aviation activity is expected to increase dramatically. One of the main goals of the SRPP is to prepare for that growth by improving the transportation infrastructure and substructures, develop key facilities, and prioritize projects for the utmost efficiency.

Figure 2-22. Potential Development

2.9.3 Florida Airport System Plan

The Florida Aviation System Plan (FASP) is the FDOT's 20-year aviation system plan for development at Florida's publicly owned airports. The FASP is a continuing planning process supported by multiple databases that provide current data on Florida's aviation industry. Because the plan must reflect and keep pace with Florida's dynamic aviation industry, it addresses new and challenging areas of study in addition to the well-established aviation planning disciplines. The plan incorporates such topics as intermodal transportation networking, economic impact of airports on the local community and the state of Florida, and development of long-range visions and strategies through strategic planning. FASP further enhances the FDOT's primary goal for aviation, which is - providing a quality system that meets the current and future growth needs of Florida.

SEF is classified within the Continuing Florida Aviation System Planning Process (CFASPP) Central Florida Region, which consists of twelve other Airports. The other Airports categorized within the Central Florida Region are:

- Lakeland-Linder Regional Airport (Lakeland)
- Lake Wales Municipal Airport (Lake Wales)
- Arcadia Municipal Airport (Arcadia)
- Winter Haven Municipal Airport (Winter Haven)
- Avon Park Municipal Airport (Avon Park)
- Bartow Municipal Airport (Bartow)
- Wauchula Municipal Airport (Wauchula)
- Chalet Suzanne Air Strip (Lake Wales)
- Jack Browns Sea Plane Base (Winter Haven)
- Okeechobee County Airport (Okeechobee)
- River Ranch Airport (River Ranch)
- South Lakeland Airport (Mulberry)

2.9.4 National Plan of Integrated Airport Systems

The National Plan of Integrated Airport Systems (NPIAS) was submitted to Congress in accordance with Section 47103 of Title 49 of U.S. Code. The plan identifies 3,344 existing airports that are significant to national air transportation, and contains estimates that $35.1 billion in infrastructure development, eligible for Federal aid, will be needed over the next five years to meet the needs of all segments of civil aviation. A primary purpose of the NPIAS is to determine eligibility of the significant airports to receive grants under the Airport Improvement Program (AIP). The NPIAS is composed of all commercial service airports, all reliever airports, and selected GA airports.

The NPIAS includes a section on the condition and performance of the airport system, highlighting six topics: safety, capacity, pavement condition, financial performance, accessibility, and noise. The findings are generally favorable, indicating that the system is safe, convenient, well maintained, and largely supported by rents, fees, and taxes paid by users. Problems are apparent in specific areas, with a large number of people exposed to high noise levels and delays due to airfield and ground access congestion at some of the busiest airports.

The NPIAS classifies the SEF as a GA airport. GA airports may be included in the NPIAS if they account for enough activity and are at least 20 miles from the nearest NPIAS airport. There are 2,472 GA airports in the NPIAS, according to the FAA. GA airports included in the plan have an average of 29 based aircraft and account for approximately 37 percent of the nation's GA fleet. GA airports are a convenient source of air transportation and are particularly important to rural areas, such as Highlands County. SEF has approximately 84-based aircraft and 64,000 operations per year.

2.10 AIRPORTS IN THE REGION

It is essential to note the location and operating characteristics of other airports in the region served by the airport under study. These airports compete for GA activity in the region, and, thereby, affect the amount of air traffic as a whole. In addition, airports compete for federal or state resources in terms of development grant funding and air traffic control staff services, which also influence system planning. Traffic from airports in close proximity may also affect the interaction of traffic to and from neighbors outside of the region.

Airspace interaction is defined as the potential for conflicts among aircraft on approach or departure to other airfields and may require the defining or adjustments of operating procedures at the affected airports. SEF is directly affected by high performance air traffic and ATC procedures from AGR.

The number of public use airports in a region can affect both the overall market demand for services as well as airspace and airport congestion. To clarify the point, the following sub-sections provide some background information on the significant airports in the Sebring and surrounding areas. **Figure 2-23** depicts the airports in the region surrounding Sebring and Highlands County.

2.10.1 Lakeland Linder Regional Airport (LAL)

Lakeland Linder Regional Airport (LAL) is located approximately 56 statute miles to the northwest of SEF and four miles southwest of Lakeland. The Airport is owned and operated by the City of Lakeland and the Airport administration personnel.

LAL consists of two grooved, asphalt runways, both in good condition. Runway 05-23 is 5,000 ft long and 150 ft wide and is situated in an east-west orientation. Runway 05-23 is rated for 60,000 lb SWL, 73,000 lb DWL, and 135,000 lb DTWL. This runway is equipped with high intensity runway edge lighting (HIRL), a medium intensity approach lighting system with runway alignment indicator lights (MALSR), and an instrument landing system (ILS).

Runway 09-27 is 8,500 ft long and 150 ft wide and is situated in a southwest-northeast orientation. Runway 09-27 is rated for 40,000 lb SWL, 60,000 lb DWL, and 100,000 lb DTWL. This runway is equipped with MIRL and four-light PAPIs.

LAL hosts approximately 224 based aircraft on the field, the majority of which are single-engine aircraft, and hosts approximately 201,000 operations per year. There are several FBOs at the Airport that provide fuel services, major engine repair, major airframe repair, charter flights, flight instruction, aircraft rental, aircraft sales, and miscellaneous pilot support services.

Figure 2-23. Airports in the Region

2.10.2 Lake Wales Municipal Airport (X07)

Lake Wales Municipal Airport (X07) is located 6 statute miles to the north of SEF and two miles west of Lake Wales. The Airport is owned and operated by the City of Lake Wales.

X07 consists of two asphalt runways. Runway 06-24 is 3,999 ft long and 100 ft wide and consists of asphalt. The existing asphalt is in fair condition with signs of cracking. Grass is growing through some cracked areas. This runway is rated at 15,000 lb SWL and is equipped with MIRL and 4-light PAPIs at each runway end.

Runway 17-35 is 3,999 ft long and 75 ft wide, and consists of asphalt in good condition. This runway is rated at 15,000 lb SWL and is not equipped with any lighting or NAVAIDS. This runway is not equipped with lights and is closed to all turbine-powered aircraft.

X07 has approximately 32 based aircraft on the field, most of which are single-engine aircraft. There are approximately 20,000 operations per year. The Airport FBOs offer fuel services, hangar and tiedowns, major engine repair, major airframe repair, flight instruction, and aircraft rental. There is ultralight and sky diving activity on and in the vicinity of the Airport.

2.10.3 Arcadia Municipal Airport (X06)

Arcadia Municipal Airport (X06) is located 30 statute miles to the southwest of SEF and one mile southeast of Arcadia. The Airport is owned and operated by the City of Arcadia.

X06 consists of two runways. Runway 05-23 is 3,700 ft long by 75 ft wide. This runway consists of asphalt and is in good condition. The strength rating for this pavement is unknown. However, it is equipped with MIRL.

Runway 13-31 is 2,780 ft long and 140 ft wide. This runway consists of a turf surface in fair condition. The strength rating for this surface is also unknown. This runway is not equipped with lighting or NAVAIDS.

X06 hosts approximately 28 based aircraft on the airfield, the majority of which are single-engine aircraft. There are approximately 19,370 operations per year. X06 services include fuel services, pilot support services, major engine repair, major airframe repair, aircraft painting, aircraft interiors, flight instruction, and aircraft rental.

2.10.4 Winter Haven Municipal Airport (GIF)

Winter Haven Municipal Airport (GIF), or Gilbert's Field, is located 25 statute miles to the north of SEF and three miles northwest of Winter Haven. The Airport is owned and operated by the City of Winter Haven.

GIF consists of two asphalt runways. Runway 04-22 is 5,006 ft long and 100 ft wide and is in fair condition. This runway is rated at 30,000 lb SWL and is equipped with MIRL and two-light PAPIs at each end.

Runway 11-29 is 3,999 ft long and 100 ft wide and is in good condition. This runway is rated at 12,500 lb SWL and is not equipped with lighting or NAVAIDS.

MLB GIF hosts approximately 153 based aircraft on the airfield, the majority of which are single-engine aircraft. There are approximately 60,000 operations per year. GIF FBO's provide fuel services, pilot support services, major engine repair, major airframe repair, flight instruction, aircraft rental, aircraft sales, and charter flights. There is a seaplane base on the north side of the Airport and there is glider and ultralight activity in the vicinity of the Airport.

2.10.5 Avon Park Municipal Airport (AVO)

Avon Park Municipal Airport (AVO) is located 15 statute miles northwest of SEF and two miles west of Avon Park. The Airport is owned and operated by the City of Avon Park.

AVO consists of two asphalt runways in fair to poor condition. Runway 04-22 is 5,364 ft long and 75 ft wide and is oriented in a southwest-northeast configuration. This runway is rated at 26,000 lb SWL and is equipped with MIRL and four-light PAPIs on both runway ends.

Runway 09-27 is 3,825 ft long and 75 ft wide and is oriented in an east-west configuration. This runway is rated at 10,000 lb SWL and is not equipped with lights or visual NAVAIDS.

Of the approximately 61 aircraft based on the field, most are single-engine aircraft. There are approximately 32,000 aircraft operations per year. The Airport services include flight instruction, aircraft rental, and aircraft sales.

2.10.6 Bartow Municipal Airport (BOW)

Bartow Municipal Airport (BOW) is located 42 statute miles to the north of SEF and four miles northeast of Bartow. The Airport is owned and operated by the Bartow Municipal Airport Development Authority.

BOW consists of three asphalt runways. Runway 05-23 is 5,000 ft long and 100 ft wide and is in fair condition. This runway is rated at 35,000 lb SWL, 60,000 lb DWL, and 110,000 lb DTWL. Runway 05-23 is equipped with MIRL and 4-light PAPIs at each end.

Runway 9L-27R is 5,001 ft long and 150 ft wide and is in good condition. The pavement strength rating for runway 9L-27R is unknown. This runway is equipped with MIRL, 4-light PAPIs at each end, and nonprecision instrument markings.

Runway 9R-27L runs parallel to runway 9L-27R. Runway 9R-27L is 4,400 ft long and 150 ft wide and is in good condition. The pavement strength rating for runway 9R-27L is unknown. This runway is not equipped with lighting or NAVAIDS.

BOW hosts approximately 101 based aircraft on the airfield, the majority of which are single-engine aircraft. There are approximately 55,000 operations per year. BSO FBOs provide fuel services, pilot support services, major engine repair, major airframe repair, avionics services, flight instruction, aircraft rental, aircraft sales, agricultural operations, and aerial surveying. There is ultralight activity on and in the vicinity of the Airport, as well as aerobatic flight activity.

2.10.7 Wauchula Municipal Airport (F37)

Wauchula Municipal Airport (F37) is located approximately 29 statute miles west of SEF and five miles southwest of Wauchula. The Airport is owned and operated by the City of Wauchula.

F37 consists of one asphalt runway configured in a north-south orientation. Runway 18-36 is 4,000 ft long and 75 ft wide and is in good condition. The runway is equipped with MIRL, but no NAVAIDS are installed.

There are approximately 42 based aircraft at F37 and 8,200 operations per year. Airport amenities include fuel services, minor airframe repair, major engine repair, flight training, aircraft sales, and aircraft rental.

2.10.8 MacDill Air Force Base Auxiliary Field (AGR)

MacDill Air Force Base Auxiliary Field (AGR) is located approximately 12 miles northeast of SEF and eight miles north east of Avon Park within the Avon Park Air Force Range. The Airport is owned by the United States Air Force (USAF) and is used primarily by the 1st Combat Support Group Tactical Command (SPT GP TAC).

AGR consists of one asphalt runway configured in a southwest-northeast orientation. Runway 05-23 is 8,000 ft long and 150 ft wide and is equipped with MIRL.

AGR is used primarily as a training facility for the nation's combat aircraft and crews.

2.11 SUMMARY

The information in this section provides the foundation upon which the remaining elements of the Master Plan process will be developed. Information on current infrastructure and operations will serve as a basis for the development of forecasts of aviation activity and facility requirements.

This information will provide guidance to assess potential changes to facilities and/or procedures necessary to meet the goals of the Airport planning process. Analysis of the inventory of Airport facilities determines and prepares for the needs presented by the Airport users in the short-, intermediate, and long-term. Thus, the inventory of existing conditions is the first step in the complex process to determine those steps that are needed to meet projected aviation demands in the community. The information collected as a basis for the analysis and forecasting of future Airport activity and facilities is based upon year 2001 numbers.

EXISTING SOCIO-ECONOMIC INFLUENCES

3

Sebring Regional Airport

3.1 GENERAL OVERVIEW

Levels of aviation activity at local and regional airports can be generally predicted from the size and wealth of the surrounding community. These characteristics can be defined for a region from a variety of statistical information published regularly in Florida by professional demographers at the University of Florida's Bureau of Economic and Business Research (BEBR). The purpose of this section is to identify and define key social and economic characteristics in the Highland County region from which forecasts of aviation activity are developed.

The purpose of this section is to identify and define key social and economic characteristics in the Highland County region from which forecasts of aviation activity are developed.

Communities surrounding an airport closely influence demand for a wide range of aviation services that airports provide. The better equipped the airport is to provide these services, the stronger the demand. Although local and regional population is a primary driver, demand for these services may well extend beyond definable regional, state, or even national boundaries.

The demand for aviation services can generally be related to key statistics, which, when combined, profile the larger community served by the local airport. Aviation services can include commercial air carrier, flight training, maintenance, cargo, and storage of private aircraft. Usually the level of demand is directly related to the size and composition of the regional population. The population may be described in terms of earnings (the ability to pay for services) and the employment providing such earnings.

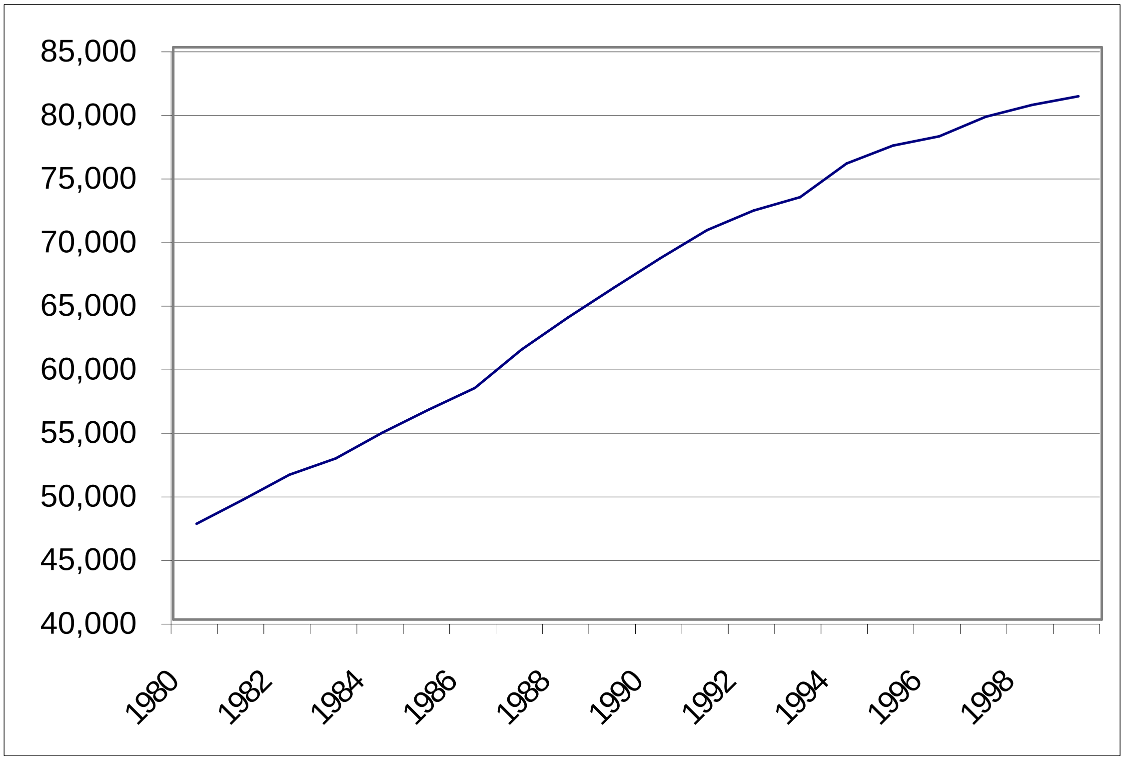
The statistical link between these social and economic indicators provides a gauge of the community's predictable demand for aviation services. This can be used as a base to forecast likely future aviation activity. Any necessary airport facilities can then be planned accordingly. The following section describes key population, employment, and income trends in Highlands County as they relate to aviation activity.

3.2 POPULATION

When using socioeconomic factors to develop aviation forecasts, it is critical to define the service area correctly. Sebring Regional Airport (SEF) is located approximately 8 miles southeast of Sebring in the north-central portion of Highlands County. Encompassing 1,107 square miles of Florida's heartland, Highlands County is located on the rolling hills of Central Florida's ridge area and lake country. Over 85 percent of the state's population is within a 150-mile radius, which means SEF has access to over 12 million potential customers.

Highlands County has three incorporated cities. Sebring is the county seat and has a population of 8,856. Avon Park is the northern-most city with a population of 8,162, and is one of the heaviest citrus-producing areas in the state. Lake Placid is the Caladium Capital of the World, and has a population of 1,412. The population of the unincorporated area totals 62,713. Over the past 20 years, the entire population of Highlands County has gradually increased as shown by **Figure 3-1**.

Figure 3-1. Highlands County Historical Population from 1980-1999



Source: University of Florida, Bureau of Economic and Business Research, Florida County Perspectives, 2000.

Located equal distance from eight commercial service airports, of which seven have international designation, SEF has tremendous growth potential in the hub and spoke network. This growth potential is recognized by programming SEF as a future air carrier Airport supported by commuter service linkage to the Central Florida region. Currently, SEF and Avon Park Municipal Airport (AVO) provide public facilities to serve the Highlands County general aviation (GA) market. In addition, five other private facilities combine to make up the aircraft base for Highlands County.

3.2.1 Distribution and Size

Highlands County covers approximately 1,107 square miles, including 77.9 square miles of water areas. Highlands County is located in central Florida and shares borders with Polk, Osceola, Okeechobee, Glades, Charlotte, DeSoto, and Hardee County. Approximately 77 percent of the County population, or 62,713 individuals, reside in the County's unincorporated areas. The remainder of the population resides in the three cities within the County: Avon Park (8,162), Lake Placid (1,412), and Sebring (8,856). **Table 3-1** provides a comparison of population and size between Highland County and the surrounding counties.

Table 3-1. Statistical Comparison of Highlands County to Surrounding Counties

	Population (1999)	Property (square miles)
Highlands	**81,143**	**1,106.4**
Charlotte	136,773	859.3
DeSoto	28,438	639.6
Glades	9,867	986.2
Hardee	22,594	638.4
Okechobee	35,510	892.0
Osceola	157,376	1,506.5
Polk	474,704	2,010.2

Source: University of Florida, Bureau of Economic and Business Research, Florida Statistical Abstract, 2000.

The population density of the County is 79 persons per square mile of land, while the population density of the state of Florida is 284 persons per square mile. In comparison, the population density of Pinellas County, the most densely populated county in the state, is 3,208 persons per square mile and the least densely populated county, Liberty, has a population density of 10 persons per square mile.

3.2.2 Recent Changes in Population

Table 3-2 shows that over the past 20 years, Highlands County has experienced an average growth in population of 2.9 percent, while the state of Florida only experienced a 2.4 percent growth. That gap decreased over the past 10 years as the County experienced an average growth in population of 2.1 percent, and the state of Florida experienced a 2.0 percent growth. Looking at the average change over the past five years, Florida's 2.0 percent average growth in population has certainly bypassed the County as the population growth has slowed to 1.4 percent average.

Table 3-2. Population and Growth Rate Highlands County vs. Florida

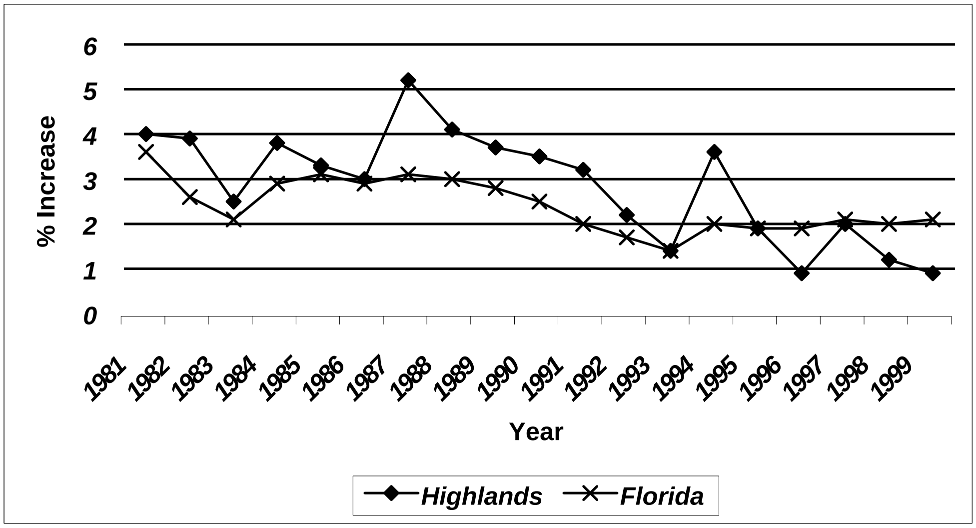
	Highlands		Florida	
	Population	**Growth Rate**	**Population**	**Growth Rate**
1980	47,526		9,747,411	
1981	49,428	4.0%	10,102,000	3.6%
1982	51,375	3.9%	10,361,520	2.6%
1983	52,669	2.5%	10,575,340	2.1%
1984	54,686	3.8%	10,881,570	2.9%
1985	56,497	3.3%	11,219,460	3.1%
1986	58,207	3.0%	11,545,720	2.9%
1987	61,224	5.2%	11,907,840	3.1%
1988	63,734	4.1%	12,270,410	3.0%
1989	66,112	3.7%	12,617,110	2.8%
1990	68,432	3.5%	12,937,930	2.5%
1991	70,609	3.2%	13,195,950	2.0%
1992	72,157	2.2%	13,424,420	1.7%
1993	73,203	1.4%	13,608,630	1.4%
1994	75,860	3.6%	13,878,900	2.0%
1995	77,270	1.9%	14,149,317	1.9%
1996	77,996	0.9%	14,411,563	1.9%
1997	79,536	2.0%	14,712,922	2.1%
1998	80,458	1.2%	15,000,475	2.0%
1999	81,143	0.9%	15,322,040	2.1%

Average change over past 20 years	2.9%		2.4%
Average change over past 10 years	2.1%		2.0%
Average change over past 5 years	1.4%		2.0%

Source: University of Florida, BEBR, Florida County Perspectives, 2000

The Highlands County population numbers show a gradual, but consistent increase over the past 20 years. However, the growth rate throughout the past five years appears to be slowing. It is important to note that the state of Florida population numbers also show a gradual, but consistent increase over the past 20 years, but the growth rate in the past five years has remained consistent. **Figure 3-2** provides a comparison of the annual population growth rates of Highlands County to the State of Florida.

Figure 3-2. Annual Population Growth Rates Highlands County vs. Florida



Source: University of Florida, BEBR, Florida County Perspectives, 2000

3.2.3 Population Projections

The numbers illustrated by **Table 3-3** show a continuing increase in population in Highlands County for the next two decades, consistent with the growth rate for the state of Florida. Following 25 years of growth, the expected 5.8 percent increase in population will be followed by a period of decreased growth spanning 2020 to 2025.

Table 3-3. Estimated Population and Growth Rates Highlands County vs. Florida

Population Projections				
	Highlands	**%Change**	**Florida**	**%Change**
1999	81,143	0.85%	15,322,040	2.00%
2000	81,424	0.35%	15,551,871	1.50%
2005	89,300	9.67%	16,882,800	8.56%
2010	95,800	7.28%	18,121,300	7.34%
2020	109,400	14.20%	20,725,000	14.37%
2025	116,100	6.12%	22,014,100	6.22%

Source: University of Florida, BEBR, Florida Statistical Abstract, 2000

It is also important to take into account the population projections for the surrounding counties, which are projected to experience significant growth throughout the next couple of decades as well. In fact, practically all of Highlands County and the surrounding areas are expected to grow in proportion to the state of Florida. **Table 3-4** provides a breakdown of predictions for population in the area.

Table 3-4. Projected Population Growth for Florida, Highlands, and Surrounding Counties

	1999	2005	2010	2020	2025	Avg. % change
Florida	**15,322,040**	**16,882,800**	**18,121,300**	**20,725,000**	**22,014,100**	**9.53**
Highlands	**81,143**	**89,300**	**95,800**	**109,400**	**116,100**	**9.41**
Charlotte	136,773	155,500	170,400	201,900	217,700	12.40
DeSoto	28,438	31,700	33,700	38,000	40,200	9.08
Glades	9,867	11,000	11,800	13,400	14,300	9.76
Hardee	22,594	23,200	23,600	24,400	24,700	2.26
Okechobee	35,510	38,700	41,000	46,100	48,500	8.14
Osceola	157,376	189,400	215,200	270,500	298,300	17.49
Polk	474,704	516,800	550,000	619,400	653,400	8.35

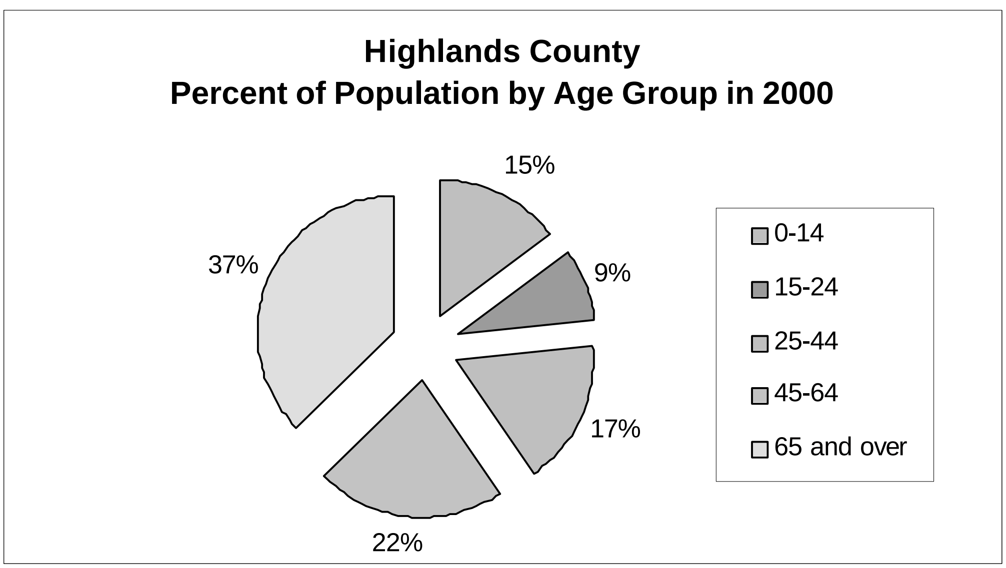
Source: Florida Statistical Abstract, 2000

3.3 DEMOGRAPHICS

3.3.1 Age

Economic activity, especially in relation to demand for aviation services, is closely linked to the age demographics of the regional population group. Highlands County ranks number one in the state for residents 65 and older, as 37 percent of the county's population fits within this category. The county's median age in 2000 was 54.5 years, also ranking number one in the state. **Figure 3-3** illustrates the percent of population categorized by age group in the year 2000.

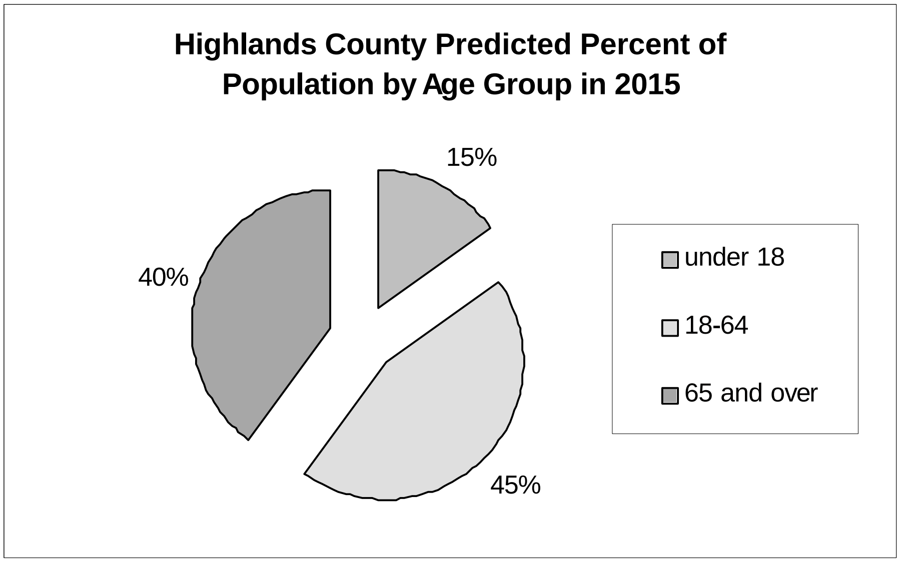
Figure 3-3. Highlands County Percent of Population by Age Group in 2000



Source: University of Florida, BEBR, Florida County Perspectives, 2000

Population age projections indicate that the 65 and over category will be surpassed by an increase in the age 18-64 category by the year 2015, as shown in **Figure 3-4**.

Figure 3-4. Highlands County Predicted Percent of Population by Age Group in 2015



Source: University of Florida, BEBR, Florida County Perspectives, 2000

As they approach retirement, people are more likely to use the Airport and its services for a variety of reasons, such as leisure travel, and visits with family and friends. This age group is also a draw for out-of-state travelers visiting local family members. In addition, aviation services are often required to finalize burials.

3.3.2 Education

There are 19 public schools in the Highlands County area and approximately 10,219 school-aged children. Currently, the school system is in a transitional stage from small to middle-sized district designation by the Florida Department of Education. The district maintains the best characteristics of both designations by providing a close sense of family with the capability of offering advanced curriculums. The high school graduation rate is 70 percent, while the high school drop out rate is 4.2 percent. In 1999, 554 students completed high school and 412 students enrolled in the state university system. Approximately, 18 percent of the area's workers have a 4-year college degree, and 42 percent have education beyond a high school diploma.

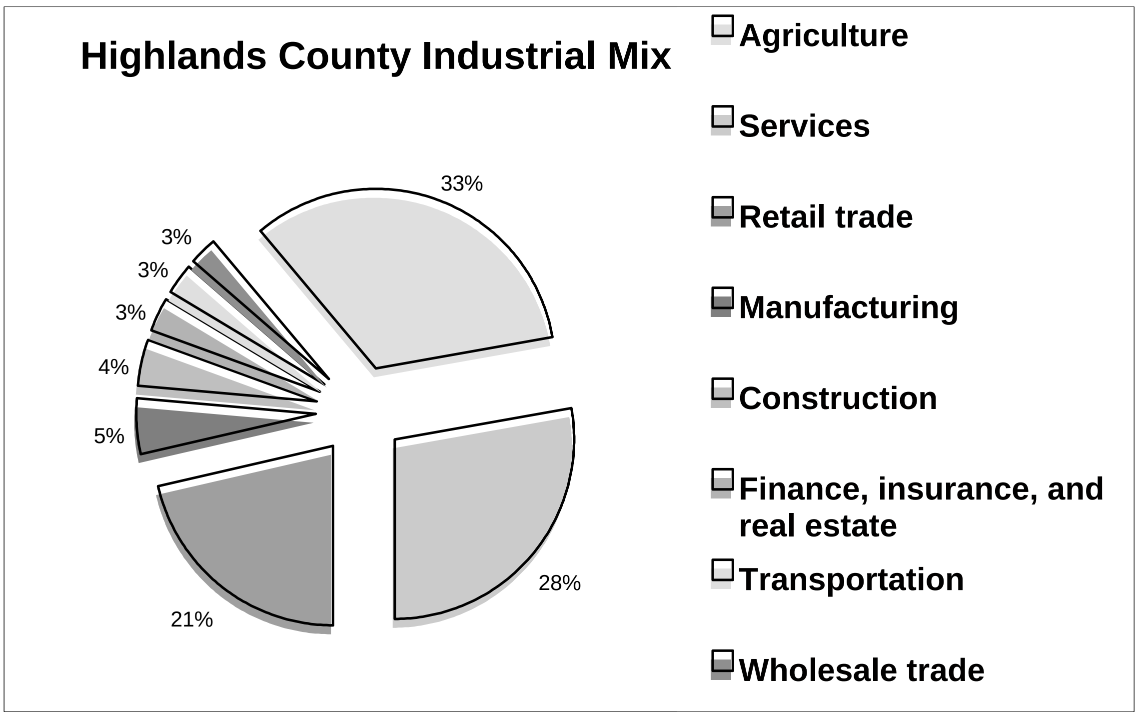
South Florida Community College (SFCC) is the only local resource for higher education. The school is located in the Avon Park community and enrolls approximately 4,500 full-time students per year. Opened in 1966, SFCC is an established institution of higher learning that provides quality services, cultural experiences, collegiate athletics, informational services, and other programs that enrich the quality of community life (11).

With funding through the Federal Workforce Investment Act of 1998 and State of Florida Workforce Innovation Act of 2000, the Heartland Workforce Investment Board, Inc. provides education and training, job placement, and other employee assistance programs. A cooperative effort of this board, the SFCC, and other local state agencies have formed a comprehensive “one-stop system” that will meet the labor and training needs of business and industry in the Highlands County area. This working relationship is also shared by the Economic Development Commission for the development and implementation of programs in recruitment, job training, and placement (12).

3.4 EMPLOYMENT

The Highlands County economy is tied to a variety of industries. **Figure 3-5** identifies the distribution of Highlands County Industrial Mix, which was obtained from the Florida Statistical Abstract, 2000.

Figure 3-5. Highlands County Industrial Mix



Source: University of Florida, BEBR, Florida County Perspectives, 2000

According to the Highlands County Economic Development Commission Survey of Labor Force Availability, September 2000, approximately 99,700 adults age 18 and over within a 40-mile radius of Sebring are in the labor force. Seventy-six percent are employed full-time, 17 percent are employed part-time, and 7 percent are not currently employed. The average worker travels 12 miles to work, and spends an average of 18 minutes on the commute.

Twenty-five percent of the labor force has experience in general manufacturing or mechanical occupations, including 12 percent who have experience in engine mechanics. Nine percent reported having experience in occupations related to aircraft manufacturing. The median age of the labor force is 43 and the average earnings per job are $21,195.

Some of the strongest existing industrial sectors are boat building, containers and packaging materials, fruit juice processing, printing and publishing, and fertilizers. A study conducted by the PHH Fantus consulting firm also identifies Highlands County as an excellent location for the following additional industries: plastic products, surgical and medical instruments and supplies, textile products, mobile homes, and sheet metal work. The county would also make an ideal location for distribution of groceries, farm products, medical supplies, and toilet preparations. **Table 3-5** lists the major manufacturers and distributors in the area.

Table 3-5. Highlands County Major Manufacturers and Distributors

Employer Manufacturers	Product
Florida Hospitals Heartland	Hospital
Highlands Regional Hospital	Hospital
Consolidated-Tomoka	Citrus packing
LESCO	Fertilizer
Lake Placid Growers LLC	Citrus packing
Ben Hill Griffin, Inc.	Citrus
Georgia Pacific	Corrugated boxes
Sun Pure LTD	Citrus juice
Sprint	Telecommunications
Bank of America	Finance
Elberta	Packaging
Douglas	Fertilizer and chemicals
Lin Pac Plastics	Packaging
Hancor	Plastic pipe
Twyford Plant Labs	Horticulture
New-Sun	Publishing
Cargill Citro Pure	Fruit juices
Kegel Company	Bowling lane equipment
Distributors	
Bernie Little Distribution	Beer
Highlands Coca-Cola Bottling	Coca-Cola

Source: Highlands County Economic Development Commission, http://www.highlandsedc.com

There are five industrial parks in Highlands County with over 3,000 acres of developed properties. Industrial support services include bonded warehousing, computer services, freight forwarding, machine shops, security services, automobile rental, engineering, job printing, and plating. The Sebring Airport Industrial Park is a prime location for manufacturing and distribution. The park is operated by the Sebring Airport Authority (SAA) and is a full-service park with rail sites available. The SAA will build to specification and has better than comparable lease rates.

The Sebring Airport Industrial Park is a prime location for manufacturing and distribution. The park is operated by the Sebring Airport Authority (SAA) and is a full-service park with rail sites available.

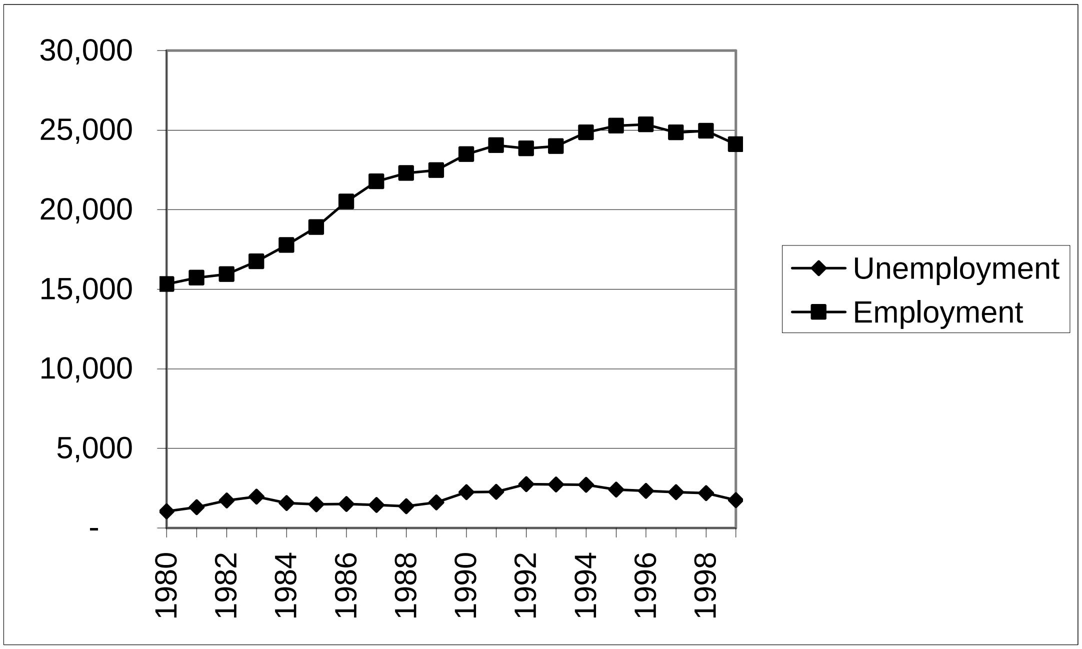
Key regional assets of Highlands County include a strong agricultural work ethic, good labor/management relationship, ample and productive workforce, proximity to central

Florida markets, strong public-private cooperation for business attraction, and considerable civic pride.

3.4.1 Potential Employment Trends

From 1980-1999, employment in Highlands County has increased at an average rate of 2.5 percent per year. However, employment has leveled out since the early 1990s. During the decade of 1990-1999, employment only increased an average of 0.7 percent per year. Unemployment has remained fairly constant throughout the past 20 years. See **Figure 3-6** for details.

Figure 3-6. Highlands County Employment vs. Unemployment



Source: University of Florida, BEBR, Florida County Perspectives, 2000

3.4.2 Employment Projections

Highlands County is one of seven counties within the South Central non-metropolitan statistical area (MSA). The other counties include DeSoto, Glades, Hardee, Hendry, Indian River, and Okeechobee. The University of Florida Bureau of Economic and Business Research's long-term forecasts for Highlands County suggest that employment and unemployment will continue to steadily increase over the next ten years as a result of changes in demographics and industry, from manufacturing and agriculture to high-technology businesses. The long-term forecasts predict that the unemployment rate for Highlands County will be significantly higher than the state of Florida, but will remain lower than the South Central Non-MSA. See **Table 3-6** for more information.

Table 3-6. Employment Projections Comparing Highlands County, the South Central Non-MSA, and the State of Florida

	1999	2000	2001	2005	2010
Highlands County					
Nonagricultural wage/salary jobs	19,500	20,000	20,400	21,800	23,500
Unemployment rate (%)	6.8	6.6	6.9	7.1	7.5
South Central Non-MSA					
Nonagricultural wage/salary jobs	90,300	92,600	94,600	102,300	111,200
Unemployment rate (%)	8.1	7.9	8.2	8.3	8.8
Florida					
Nonagricultural wage/salary jobs	6,876,800	7,074,800	7,205,600	7,838,100	8,597,200
Unemployment rate (%)	3.9	3.8	4.2	4.2	4.6

Source: University of Florida, BEBR, Florida Long-term Economic Forecast 2000, Volume 1 and 2

3.5 INCOME

Per capita income is the most direct indicator of prosperity. The following table compares historical per capita income (PCPI) in Highlands County to PCPI for the state of Florida. During this 20-year historical period, the average per capita income in Highlands County has been increasing. However, the average per capita income is still less than the state average for that same time period. **Table 3-7** shows historical income patterns for the county and the state.

Table 3-7. Historical Income Highlands County vs. Florida

Income	1980	1985	1990	1995	1999
Highlands					
Total personal income ($1,000)	421,106	719,786	1,139,979	1,452,882	1,721,412
Per capita personal income ($)	8,861	12,740	16,659	18,803	21,215
Florida					
Total personal income ($1,000)	98,881,848	166,949,255	258,479,049	333,525,354	423,755,500
Per capita personal income ($)	10,144	14,878	19,978	23,572	27,657

Source: University of Florida BEBR, Florida Long-term Economic Forecast 2000, Volume 1 and 2

According to the Florida County Perspectives, Highlands County ranks in the middle of the pack for incomes adjusted for price level index and non-farm values, but the county ranks number one in income from dividends, interest, and rent.

In 1998, Highlands County recorded earnings of $699 million in comparison to the state's reported earnings of $248.4 billion. The majority of earnings stem from wage and salary disbursements (70.4 percent), while portions are a result of proprietor's income (20 percent) and other labor income (9.7 percent).

3.5.1 Income Projections

Consistent with the population and employment projections, the University of Florida forecasts project income to grow steadily until 2005 with a substantial surge by the year 2010. Total Highland County income is projected to increase from $1.8 billion in 2000 to $2.9 billion in 2010, an average annual increase of 18 percent. This is slightly lower than the anticipated 22 percent of growth in statewide income. Refer to **Table 3-8** for more details.

Table 3-8. Projected Income Highlands County vs. Florida

Projected Income	2000	2001	2005	2010
Highlands				
Total personal income (millions)	1,823	1,904	2,298	2,946
Per capita personal income (millions of 92 dollars)	20,921	21,318	22,801	25,122
Florida				
Total personal income (millions)	452,982	478,685	598,193	801,941
Per capita personal income (millions of 92 dollars)	25,426	25,992	28,054	31,426

Source: University of Florida, BEBR, Florida Long-term Economic Forecast 2000, Volume 1 and 2

3.6 SOCIO-ECONOMIC ACTIVITY

An area's socio-economic profile can have a direct relationship to the demand for aviation related services. The following sections describe the characteristics of the Sebring and Highlands County area.

3.6.1 Agriculture

According to the University of Florida Bureau of Economic and Business Research data contained in the *Florida Statistical Abstract 2000*, there are 779 farms in Highlands County totaling 489,579 acres. The use of the farms varies from cropland, woodland, pastureland, integrated land, and miscellaneous. The average size of a farm in this area is 628 acres and the average market value per farm is approximately $1.2 million.

Highlands County ranks fourth in the state of Florida for total citrus production, with 9.75 percent of the state total. The county ranks number one in the production of Valencia oranges, producing over 54.7 percent of the state's Valencia orange crop. It is estimated that citrus production accounts for more than $200 million in annual economic benefits to the area.

The greatest use of land area in Highlands County comes from the cattle industry. Over 60 percent of the total 700,000 acres of land in the county are used for cattle grazing. The county currently ranks second in the state of Florida for beef cattle, which includes 68,000 head of beef production brood cows that have calved at least once. Highlands County also ranks second in the state for total number of cattle of all classes, beef and dairy. There are over 112,000 total cattle grazing on over 425,000 acres of land (Florida

County Perspectives, 2000). The state of Florida markets over $480 million of cattle each year. Recently, Highlands County received over $31 million in annual gross sales for the more than 300 beef cattle producers (13).

3.6.2 Tourism

Highlands County has 26 licensed hotels and motels providing a total of 1,256 units available for tourist rental. Rental condominiums and transient apartment buildings combine for approximately 640 available units. In addition, there are approximately 3,700 licensed recreational vehicle (RV) parking spaces and approximately five campgrounds available for tourists. There are also 157 food service establishments with a total seating volume of 13,800 people.

In 2000, the highly touted, Chateau Elan Hotel and Spa opened its doors to the public. Chateau Elan features a four-story design located near the famous "hairpin turn" of the Sebring International Raceway. The lodge serves as the anchor facility for meetings, conferences, and racing and training programs. Chateau Elan Hotel and Spa was designed to recreate the tradition of the famous Chateau Elan, a five star resort near Road Atlanta in Georgia. The Lodge features a health spa, pool, and Jacuzzi, as well as an acclaimed restaurant.

Tourists visit Highlands County for a variety of offerings. The county features approximately 50,000 acres of open water distributed among 72 pristine fresh water lakes, serving as excellent sites for many water sports. The oldest state park in Florida, Highlands Hammock State Park, is a 4,896 acre wildlife preserve that is filled with nature trails, camping, and picnic facilities. The county offers many heritage-based activities including ranch and grove tours, other wildlife preserves, and historical museums. A two-hour drive can take you to either coast of Florida or to major shopping areas north or south. Warm, fresh air offers a daily invitation to enjoy outdoor activities such as golf, fishing, tennis, boating, or simply relaxing. Recently, the Lake Placid community received honors as "Florida's Outstanding Rural Community" and is known as the Caladium Capital of the World.

Highlands County hosts two civic auditoriums with seating capacities of 250-350 people. There are 14 shopping centers and one regional mall in the area. The mile-long mall is located in Avon Park and is a focal point for year-round community activities, including the Annual Avon Park Mall Festival in March. The newly restored historic downtown Sebring hosts the Annual Arts Festival, one of the top-rated art shows in the state. Historical attractions include the Avon Park Museum, the Lake Placid Historical Museum, and the Sebring Historical Society's Lakeside Archives.

SEF plays a valuable role in the tourism industry, especially since the Sebring International Raceway is located within the Airport boundary. The Raceway is one of America's oldest and most famous road racing tracks and is the mecca of sports car racing, hosting the famous 12 Hours of Sebring endurance auto race every March. Each year, nearly 100,000 people from all over the world attend this race. The raceway also hosts the Historic Sports Car Race, Trans-Am series racing, Panoz Racing School, Skip Barber Racing School, and a wide variety of daily testing by some of the biggest names in racing, corporate events, club races, and driving schools. The raceway pumps thousands of dollars into the local economy and helps make the name Sebring known throughout the world as one of the greatest motor sport racing facilities.

3.6.3 Other

The Avon Park Air Force Range also shares territory within the borders of Highlands County and Polk County, approximately nine miles east of the city of Avon Park and 95 miles east of MacDill Air Force Base. The 106,000-acre facility is the world's largest bombing and gunnery range east of the Mississippi River. By landmass, the range is the second largest military installation in Florida after Eglin Air Force Base. The range has been a partner in the growth of Highlands County since its installation in 1942. It has been instrumental in the training of aircrews for combat duty in World War II, the Cold War, Korea, Vietnam, Southeast Asia, Operation Just Cause in Panama, the Gulf War, Operation Urgent Fury in Grenada, Operation Restore Democracy in Haiti, and the Kosovo Air Campaign (14).

The range continues to serve as an important training facility for active and reserve military units as well as providing other non-operational programs, which substantially contribute to the Highlands County economy. The range provides a unique example of dual land use enhancing the economy through operational expenses and job creation. According to the Year 2000 Economic Impact Analysis, the range provides an economic impact of approximately $70 million and creates a total of 1,294 jobs in the community (15).

The range's expansive area and remote location make the facility an excellent training location for the military's new Air Expeditionary Force (AEF) concept. AEF is an operational training technique for teaching controlled, crisis management in the early stages in unfamiliar environments. Also, the Air Force Reserves have examined the possibility of developing a coordinate search and rescue training operation for both air and ground troops. This activity could potentially yield an undetermined number of full-time positions at the range and bring over 900 military personnel into the community for training annually (16).

3.7 TRANSPORTATION

The existing transportation network of the region is another factor that is important in the assessment of development potential of the Airport. Highlands County, one of the most centrally located counties in Florida, takes full advantage of the state's transportation systems. U.S. Highway (US) 27, US 98, and state road 70 cross Highlands County and provide ready access to I-4, I-75, I-95, and the Florida Turnpike.

Highlands County is well served by various modes of transportation. The county hosts a number of major carriers of interstate and intrastate motor freight. Greyhound Bus Lines serves all three incorporated cities and Annett Travel provides local transportation service, as well as chartered bus travel in the area. Railroad freight service, provided by CSX Transportation, Inc., includes sidetrack service to several industrial areas. Passenger service is provided by Amtrak, which has scheduled arrivals and departures from Sebring.

3.8 OTHER FACTORS

Sebring and Highlands County is a community where progress is at the center of attention by local civic, business, and government leaders.

Sebring and Highlands County is a community where progress is at the center of attention by local civic, business, and government leaders. Since Highlands County is a community planning for the future, it offers an outstanding business climate. The Economic Development Commission of Highlands County (EDC), in cooperation with the Private Industry Council, the Heartland Workforce Development Board, the Wages Program, and the County Planning Department, work diligently to support the interests of expanding and attracting new business and industry to the area.

Highlands County showcases a wide variety of assets, which attract industry to the area. There are considerable cost savings for labor-intensive business and industry, as well as low manufacturing and clerical wages. The county is also known as a provider of a low cost of living, especially in regards to land and housing, and a wealth of civic pride. Overall, Highlands County has an accommodating tax structure, sizable labor pool, close proximity to other Florida markets, and strong public/private cooperation for business attraction. Also, local developers will build to suit with attractive lease or purchase options. Of the 701,709 acres in Highlands County, 3,500 acres are zoned for industrial development.

A survey, conducted by the International Trade Commission, found that the presence of a foreign trade zone (FTZ) was the fourth most identifiable factor in plant site location decisions. FTZ's provide customs services at a cost savings and encourage improved inventory control. Through the use of FTZ's, U.S.-based production is placed on more equal footing with production in a foreign country. In addition, FTZ's have had a significant impact in retaining U.S. production and employment as well as stimulation of new activity.

One such development is the Sebring Airport Industrial Park. The SEF's entire 2,000-acre area is designated as Foreign Trade Zone #215 and is a prime location for manufacturing and distribution. The full-service park is operated by the SAA and rail service is readily available. Many businesses are engaged in foreign trade within Foreign Trade Zone #215, which was authorized by the U.S. Department of Commerce's Foreign Trade Zones Board in 1997. Two enterprise zones on the Airport offer excellent incentives to businesses, including development incentives, accommodating tax climate and tax credits, and a low cost of living.

The SAA makes the State of Florida's Community Redevelopment incentives program available to businesses that choose to locate at the Sebring Industrial Park. In 1996, Sebring Regional Airport & Industrial Park property was designated as a Florida Community Redevelopment Area, thus giving SAA and its Community Redevelopment Agency (CRA) the ability to provide financing assistance and other incentives to businesses leasing land and building facilities on the Airport and industrial park property. These incentives may include offsetting or deferring lease payments through the use of the Authority's CRA's Tax Increment Trust Fund, or loans to assist in financing site improvements, parking lot construction, and special infrastructure needs.

As mentioned previously, Highlands County offers a range of tax incentives to businesses that locate and create new jobs within its Rural Enterprise Zone. These incentives consist of sales and use tax credits, including, but not limited to, a sales tax refund on business machinery, equipment, and building materials purchased for use in the enterprise zone. The Qualified Target Industry Tax Refund (QTI) program provides an inducement for target industry to locate new facilities in Florida or expand existing facilities in Florida. The program provides tax refunds of $3,000 per new job created. This incentive is increased to $6,000 per job, if the company locates in a rural county or enterprise zone. Higher awards are available to companies paying very high wages. To qualify for the QTI program, a company must create at least ten new jobs (or a 10 percent increase for expanding Florida companies), pay at least 15 percent above the average area wage, have a significant positive impact on the community, and have local support (17).

Other enterprise zone incentives available for new or expanded businesses include a credit or corporate income tax equal to 96 percent of ad valorem taxes paid up to a maximum of $50,000 annually, if 20 percent or more of employees reside in the enterprise zone. The credit is limited to $25,000 annually, if less than 20 percent of employees reside in the zone. Currently, the Jobs Tax Credit incentive offers a tax credit of 10 percent of monthly wages for new hires, with an increase to 15 to 20 percent if employees are residents of the enterprise zone. The tax credit may be taken against corporate income tax or sales and use tax.

Beginning in January 2002, businesses located within the enterprise zone will also receive a higher tax credit for a longer period when creating new jobs and hiring zone residents. The base Job Tax Credit will be 30 percent of monthly wages for new jobs created in a rural enterprise zone. The length of the credit is extended to 24 months, if the employee is employed for 24 months. Businesses located in a rural enterprise zone will also become eligible to receive the base Jobs Tax Credit for hiring any person living in a rural county.

There are other economic indicators associated with Highlands County, as well. The total value of building permits in 1998 was $69.5 million and taxable sales were approximately $645 million. The cost of living in Highlands County is slightly lower than the national average and the state of Florida with a price level index of 93.22.

Members of the financial community actively support the Highlands County Economic Development Commission in recruiting new business and industry and encouraging the expansion of the existing businesses and industries. Members of the financial community include Big Lake National Bank, Wauchula State Bank, First Union National Bank, Highlands Independent Bank, Huntington National Bank, Sun Trust Bank, Bank of America, Heartland National Bank, Community Bank, and Mid Florida Schools Federal Credit Union. Funds are readily available for a number of commercial purposes including site acquisitions, construction, purchase of machinery and equipment, and obtaining working capital through state and federal agencies. Additionally, the Board of Commissioners of Highland County, in support of economic development, established the Highlands County Industrial Development Authority, which provides for industrial revenue bond financing (18).

3.9 AVIATION INDUSTRY FACTORS

Although socioeconomic factors are an important determinant of passenger demand, the future structure of the aviation industry will also have a major impact on the level and type of activity and how that activity is translated into aircraft operations. Factors include average aircraft size, load factor, operations, military operations, fueling, and potential development in the regional carrier industry, and potential trends in air cargo and GA (to be discussed in Chapter 4).

3.10 SUMMARY

A variety of historical and forecast socioeconomic information related to the City of Sebring and Highlands County has been collected for use in various elements of the Master Plan. This combined information is essential to determining air transportation service level requirements, as well as forecasting the number of based aircraft and operations at the Airport. These forecasts are normally keyed to the economic strength of the region and its ability to sustain a strong economic base over an extended period of time. This type of data provides valuable insight into the trends and character of the community as well as highlighting market opportunities for the Airport itself.

HISTORICAL AVIATION ACTIVITY STATISTICS

4

Sebring Regional Airport

Historical aviation data for the Sebring Regional Airport (SEF) is evaluated in this chapter in order to provide a reliable baseline for potential future demand. As part of this analysis, such trends as based aircraft, annual operations, peaking characteristics, itinerant aircraft parking, general aviation (GA) passengers, automobile parking, and fuel sales will be evaluated. The intent of this analysis is to provide a baseline upon which future aviation demand and activity may be modeled, and thus, determine a feasible development plan.

The intent of this analysis is to provide a baseline upon which future aviation demand and activity may be modeled, and thus, determine a feasible development plan.

4.1 BASED AIRCRAFT

The number of based aircraft at an airport facility is dependant upon availability of storage facilities, fuel, and repair stations, as well as the number of active pilots found in the region served by the Airport. In the case of SEF, based upon 2001 Federal Aviation Administration (FAA) Master Records (5010 Forms), 84 aircraft, including one helicopter and eight ultralights, are based at the Airport. The number and type of based aircraft at SEF compared to other airports will give Airport management and local, regional, and state planning officials a reflection of overall Airport performance. **Table 4-1** lists the number of based aircraft by type at SEF over the past ten years.

Table 4-1. Based Aircraft (1990-2001)

	Piston		Turbine				
Year	Single Engine	Multi-Engine	Turbo Prop	Jet	Helicopter	Ultralight	Total Aircraft
1990	26	6	0	0	0	0	32
1991	28	7	0	0	2	0	37
1992	40	3	0	0	0	0	43
1993	30	9	0	0	0	4	43
1994	30	9	0	0	1	3	43
1995	30	9	0	0	1	3	43
1996	37	12	0	0	1	4	54
1997	57	18	0	0	1	8	84
1998	57	18	0	0	1	8	84
1999	57	18	0	0	1	8	84
2000*	57	18	0	0	1	8	84
2001*	57	18	0	0	1	8	84

*Source: *Sebring Regional Airport Records, FAA 5010 Forms (Years 2000 and 2001)*
Sebring Master Plan Update, 1994 (Years 1991 & 1992), PBS&J
FAA/Terminal Area Forecast (TAF), 2001 (Years 1993-1999)

4.2 ANNUAL AIRCRAFT OPERATIONS

4.2.1 Local GA Operations

According to FAA Advisory Circular (AC) 150/5070-7, local operations are "arrivals and departures of aircraft which operate in the local traffic pattern or within sight of the tower and are known to be departing for, or arriving from, flights in local practice areas within a 20-nautical mile radius of the airport and/or tower". An analysis of local GA operations provides a snapshot of development as well as a baseline for future projections, which will be discussed in later sections.

The information on local operations at SEF was gathered from the FAA's Airport Master Record (Form 5010) data, Terminal Area Forecasts, and Sebring Airport Authority (SAA) Data. Conflicts between these reports were noted for the years 1996 through 2001. For forecasting purposes, this anomaly was adjusted, in a later section, to represent a trend over time. Local GA operations are represented in **Table 4-2**.

Table 4-2. Local GA Operations

Year	Local GA Operations
1990	4,500 (1)
1991	8,000 (1)
1992	13,000 (1)
1993	13,000 (2)
1994	13,000 (2)
1995	13,000 (2)
1996	20,500 (3)
1997	13,000 (3)
1998	27,500 (3)
1999	28,875 (3)
2000	30,375 (3)
2001	31,549 (4)

Source: (1) FAA Master Record 5010 (1989-1992),
(2) FAA TAF, 2001
(3) Sebring Regional Airport Statistics, and
(4) FAA Master Record, Form 5010, 2001

4.2.2 Itinerant GA Operations

All operations that do not involve aircraft that are currently based at SEF are considered itinerant. Itinerant operations for SEF are based upon historical FAA 5010 forms, Sebring Regional Airport Authority Data, and Terminal Area Forecast (TAF) information. Like the local GA operations data, conflicts were noted between the historical FAA TAF data and the SAA data, especially for the years 1996 through 1998. This appears to be a reporting anomaly, and therefore, will be reviewed during the trend forecast analysis in later sections. (See **Table 4-3**.)

Table 4-3. Itinerant GA Operations

Year	Itinerant GA Operations
1990	15,000 (1)
1991	19,500 (1)
1992	22,500 (1)
1993	22,500 (2)
1994	21,000 (2)
1995	21,000 (2)
1996	25,200 (3)
1997	23,000 (3)
1998	32,200 (3)
1999	34,238 (3)
2000	35,835 (3)
2001	42,610 (4)

Source: (1) FAA Master Record 5010 (1990-1992),
(2)FAA TAF, 2001 (1992-1995)
(3) Sebring Regional Airport Statistics (1996-2000)
(4) FAA Master Record 5010, 2001 (www.gcr1.com/5010forms)

4.2.3 Military Operations

Military operations at SEF are considered itinerant since military aircraft are not based at SEF facilities. Because of a special fueling contract with the U.S. Department of Defense and with Avon Park Air Force Range, military operations occur with great frequency at SEF. In addition, the SAA staff is one of only two civilian groups in the country trained to "hot fuel" military helicopters. Military operations at SEF are denoted in **Table 4-4**.

Table 4-4. Military Operations

Year	Military Operations
1990	500 (1)
1991	500 (1)
1992	500 (1)
1993	500 (2)
1994	500 (2)
1995	500 (2)
1996	2,500 (3)
1997	500 (3)
1998	2,000 (3)
1999	1,000 (3)
2000	1,000 (3)
2001	500 (4)

Source: (1) FAA Master Record 5010 (1990-1992),
(2)FAA TAF, 2001 (1992-1995)
(3) Sebring Regional Airport Statistics (1996-2000)
(4) FAA Master Record 5010, 2001 (www.gcr1.com/5010forms)

4.2.4 Helicopter Operations

The majority of helicopter operations at SEF are associated with AeroMED (Tampa General Health Care), a Level I trauma unit specializing in air transport. AeroMED has been based at SEF since 1994. The unit uses one BK117-B Eurocopter, and averages 650 operations annually.

4.2.5 Instrument Operations

At SEF, Runway 36 is equipped with a 4-light precision approach path indicator (PAPI-4) and is designed for a global positioning system (GPS) non-precision instrument approach. Current FAA TAF data reports instrument flight rules (IFR) activity to be less than 1,000 operations annually, and is, thus, reported as zero. However, NOAA climatic data shows that IFR weather occurs approximately five percent of the time. Therefore, this percentage will be used to forecast instrument operations through the planning period. The potential for additional precision and non-precision approaches are currently being considered, and are dependent upon the type of aircraft and potential number of IFR operations forecast for SEF. This will be discussed in more detail in later sections.

4.3 PEAK OPERATIONS

During the year, aircraft operations may have periods of heightened activity. These peak periods may be associated with a one-time event, a yearly scheduled event, or multiple factors that may coincide. These peak periods, which may occur on a regular basis, are often times caused by external influences in the region and market areas. Possible influences could be the warm weather conditions, increased military activity, air shows, festivals, or sporting events. Typically, SEF's peak period occurs during the spring, and usually coincides with the 12 Hours of Sebring International Grand Prix of Endurance Race. However, other smaller peaks in activity, historically, have been associated with the Highlands County Annual Arts Festival, the Hendrick's Field Air Fest, the Sebring Aerobatics Championship, and the Sebring Speed Fest.

Typically, SEF's peak period occurs during the spring, and usually coincides with the 12 Hours of Sebring International Grand Prix of Endurance Race.

Due to the lack of an operating air traffic control tower (ATCT) on the airfield, except during March, which coincides with the Sebring International Raceways sporting events, peak operations were determined through the evaluation of available fuel records. Through discussions with the SAA and Sebring Flight Center and an analysis of fuel receipts, the peak period of aircraft activity at SEF was determined to be February through September. Based upon this information, the month of March appears to be the busiest month for GA activity at SEF while July seems the busiest month for military activity.

By utilizing the peak percentage of fuel sales for these months, peak operations were calculated to be approximately 58 percent higher than that of an average month during the year. This equates to a total of 9,835 operations during the peak month in 2001. The average day was obtained by dividing the peak month by the average days in a month (approximately 30.42). The peak hour was calculated by determining 12 percent of the average day of the peak month. By utilizing this formula, the peak hour at SEF for 2001 was 39 operations. (See **Table 4-5**.) Peak operations will be forecast through the 20+-year planning period and discussed in greater detail in Chapter 5.

Table 4-5. Historical Peak Hourly Operations

Year	Total Operations	Peak Monthly Operations	Peak Daily Operations	Peak Hourly Operations
1991	28,000	3,689	121	15
1992	36,000	4,743	156	19
1993	36,000	4,743	156	19
1994	34,500	4,545	149	18
1995	34,500	4,545	149	18
1996	48,200	6,350	209	25
1997	36,500	4,808	158	19
1998	61,700	8,128	267	32
1999	64,113	8,446	278	33
2000	67,210	8,854	291	35
2001	74,659	9,835	323	39

Source: SEF MPU, 1994 (Years 1991-1992)
FAA TAF, 2001 (Years 1993-1995)
SAA 5010 Forms, 2001 (Years 1996-2001)
Note: Monthly peak of 58.08% ~58.1% based upon fuel sales (28,211.1 - 17,845.6 / (28,211.1))

4.4 AIRCRAFT PARKING

Based and itinerant aircraft at SEF currently share the 122,210 sq yd (approximately 1.1 million square feet) of available apron space. It is estimated that 12 percent of based aircraft and one half of the busy hour itinerant aircraft will require tie-down space at any one time. By applying this formula, approximately 10 based aircraft and 11 itinerant aircraft currently require apron tie-down space. (See **Table 4-6**.) Future aircraft parking requirements will be discussed in more detail in later sections.

Table 4-6. Historical Aircraft Parking Demand

Year	Peak Hour Operations	Based Aircraft Parking	Itinerant Aircraft Parking
1991	15	4	5
1992	19	5	6
1993	19	5	6
1994	18	5	6
1995	18	5	6
1996	25	6	7
1997	19	10	6
1998	32	10	9
1999	33	10	9
2000	35	10	10
2001	39	10	11

Source: Sebring Airport Authority and PBS&J, 2002

4.5 GENERAL AVIATION PASSENGERS AND AUTOMOBILE PARKING

4.5.1 GA Passengers

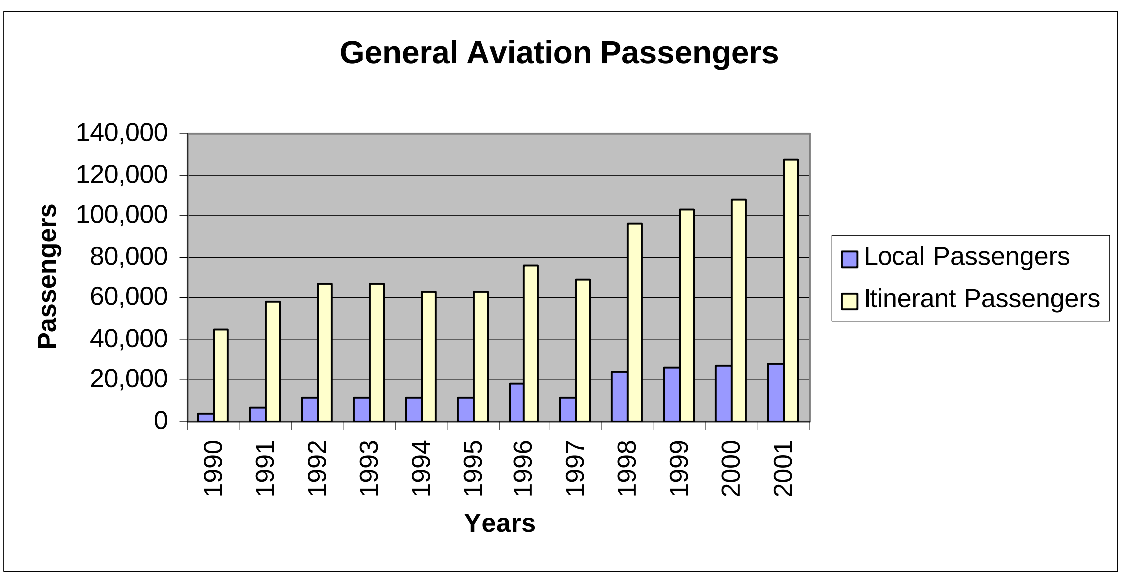
A record of GA passengers for SEF does not currently exist. Therefore, based upon the level and type of operations, an estimate of the current level of GA passengers was determined. This was accomplished utilizing the typical load carried by the GA fleet as published in the FAA's aviation economic guidelines, *Estimating the Economic Impact of Airports*. Standards set forth in this document establish a guideline of three passengers per itinerant operations and 0.9 passengers per local operation. **Table 4-7** and **Figure 4-1** illustrate the estimated level of GA passenger activity at SEF from 1990 to 2001.

Table 4-7. General Aviation Passengers

Year	Local Operations	Local Passengers	Itinerant Operations	Itinerant Passengers	Total Passengers
1990	4,500	4,050	15,000	45,000	49,050
1991	8,000	7,200	19,500	58,500	65,700
1992	13,000	11,700	22,500	67,500	79,200
1993	13,000	11,700	22,500	67,500	79,200
1994	13,000	11,700	21,000	63,000	74,700
1995	13,000	11,700	21,000	63,000	74,700
1996	20,500	18,450	25,200	75,600	94,050
1997	13,000	11,700	23,000	69,000	80,700
1998	27,500	24,750	32,200	96,600	121,350
1999	28,875	25,988	34,238	102,714	128,702
2000	30,375	27,338	35,835	107,505	134,843
2001	31,549	28,394	42,610	127,830	156,224

Source: Sebring Regional Airport, FAA 5010 Forms, FAA TAF, 2002 and PBS&J, 2002

Figure 4-1. General Aviation Passengers



4.5.2 Auto Parking

The main automobile parking lot at SEF is located adjacent to the Sebring Airside Terminal Building. This main lot has approximately 100+ spaces available that may be used for public parking. Parking associated with various tenants and T-hangar facilities are located adjacent to those tenant facilities.

Based upon the estimated GA passenger data, previously discussed, and a planning factor of 1.3 parking spaces for a busy hour passenger, approximately 92 parking spaces are currently required to meet 2001 passenger demand. (See **Table 4-8**.) Forecasts, which may affect automobile parking and other Airport facilities, will be discussed in detail in later sections.

Table 4-8. Historical Automobile Parking Demand

Year	Peak Hour Total Operations	Peak Hour Itinerant Operations	Peak Hour Local Operations	Total Passengers	Total Automobile Parking Demand
1991	15	10	5	34	44
1992	19	12	7	42	55
1993	19	12	7	42	55
1994	18	11	7	39	51
1995	18	11	7	39	51
1996	25	14	11	52	68
1997	19	12	7	42	55
1998	32	18	14	67	87
1999	33	18	15	68	88
2000	35	19	16	71	92
2001	39	23	16	83	108

Source: Sebring Regional Airport 5010 Forms and PBS&J, 2002

4.6 FUEL SALES

Sebring Regional Airport is a designated Foreign Trade Zone (FTZ #215). Therefore, fuel purchased at the Airport for offshore flights is not subject to some taxes, resulting often times in a significant cost savings. The fuel farm is owned and by SAA and is distributed by the Sebring Flight Center. No other tenant is allowed to sell fuel on-Airport to the public. The fuel farm is located due south of the Sebring Regional Airside Center and consists of two aboveground 10,000-gallon tanks equipped with meters, filters, and emergency shut-off systems. In addition, the Airport has one 750-gallon Avgas truck, three 5,000-gallon Jet A trucks, and one 1,200-gallon Jet A truck.

In addition, as mentioned previously, SAA has a special fueling contract with the U.S. Department of Defense and with Avon Park Air Force Range. Through negotiations, SAA contracts with Defense Energy Support Center (DESC) to provide fuel at a variable rate. The fuel farm's location within FTZ #215 also allows for additional purchase incentives.

Sebring Flight Center fuel records show reoccurring fuel purchase peaks during the months of February through April, and again in August through October. These peaks are denoted in **Table 4-9**, which depicts historical fuel sales as reported by the Sebring Flight Center and Sebring Airport Management.

4.7 STATISTICAL SUMMARY

SEF has seen fluctuations of based aircraft and operations over the past fifteen years. However, both based aircraft and GA activity has, on average, increased at a steady growth rate. The increase in based aircraft is the direct result of the construction of new hangar facilities and the Sebring Airside Terminal Center. Various improvements at SEF have allowed the Airport to become an economic generator for the City of Sebring and Highlands County. Since the Airport is host to a variety of events, such as: the Sebring Aerobatic Championship, Hendricks Field Airfest, Historic Sports Car Racing, Sebring Speed Fest, as well as the most famous, The 12 hours of Sebring Endurance Challenge, it is well-positioned for future growth. The Airport provides a unique resource to the county since it is designated as an FTZ, it maintains a fueling contract with the Department of Defense, and it is home to the AeroMED Level I Trauma Unit.

Based upon these factors, it appears that growth at SEF will continue, requiring additional Airport facility and capacity enhancements. **Table 4-10** presents a summary of the statistics identified in this section. These statistics will provide the baseline for the 20+-year forecasts, which are discussed in Chapter 5.

Table 4-9. Monthly Fuel Sales

	1999				2000				2001			
	AVGAS	**JET A**	**MIL JET**	**TOTAL**	**AVGAS**	**JET A**	**MIL JET**	**TOTAL**	**AVGAS**	**JET A**	**MIL JET**	**TOTAL**
January	5,097.8	11,749.0	2,756	19,602.8	5,246.60	7,627.0	101,094	113,967.6	5,674.7	11,754.1	2,521.0	19,949.8
February	6,006.3	6,349.2	8,749	21,104.5	6,313.63	11,423.7	8,071	25,808.3	9,248.8	11,901.3	3,851.0	25,001.1
March	7,683.4	21,679.1	12,191	41,553.5	5,050.90	26,083.6	5,351	36,485.5	8,013.9	19,905.2	292.0	28,211.1
April	10,037.1	7,345.3	782	18,164.4	7,606.20	7,419.0	0	15,025.2	10,974.5	7,759.5	223.0	18,957.0
May	4,841.8	9,557.1	1,966	16,364.9	4,644.90	11,378.0	5,419	21,441.9	8,150.1	6,322.5	432.0	14,904.6
June	3,436.2	6,276.9	3,264	12,977.1	4,870.70	10,978.4	0	15,849.1	4,855.9	6,204.0	200.0	11,259.9
July	4,584.2	6,486.2	471	11,541.4	4,350.52	7,360.8	872	12,583.3	4,915.3	3,265.3	11,261.0	19,441.6
August	3,400.6	5,935.4	2,974	12,310	5,285.30	4,149.5	90	9,524.8	5,757.2	5,512.8	3,136.0	14,406.0
September	2,980.5	4,030.8	0	7,011.3	5,241.50	7,539.9	0	12,781.4	4,778.8	3,700.3	0.0	8,479.1
October	6,096.2	7,942.8	169	14,208.0	5,419.60	6,170.6	0	11,590.2	---	---	---	---
November	7,251.4	5,158.8	1,657	14,067.2	7,481.90	10,223.3	0	17,704.6	---	---	---	---
December	4,043.5	10,645.2	659	15,347.7	5,503.90	13,314.1	2,189	21,007.0	---	---	---	---
Total	65,459.0	103,155.8	35,638.0	204,252.8	67,015.70	116,128.0	123,086.0	313,768.9	62,369.2	76,325.0	21,916.0	160,610.2

Source: Sebring Regional Airport and Sebring Flight Center Records, 1999, 2000, and January to September 2001.

Table 4-10. Historical Statistical Summary

Activity	1999	2000	2001
Based Aircraft			
Single-Engine	57	57	57
Multi-Engine	18	18	18
Jet	0	0	0
Helicopter	1	1	1
Other	8	8	8
Total	**84**	**84**	**84**
Aircraft Operations			
Local GA	28,875	30,375	31,549
Itinerant GA	34,238	35,835	42,610
Military	1,000	1,000	500
Air taxi	0	0	0
Total	**64,113**	**67,210**	**74,659**
Instrument Operations*	0	0	0
Peak Operations			
Month	8,446	8,854	9,835
Day	278	291	323
Hour	33	35	39
Aircraft Parking			
Based aircraft	10	10	10
Itinerant aircraft	9	10	11
Total	19	20	21
GA Passengers	128,702	134,843	156,224
Automobile Parking (Spaces)	88	92	108
Fuel Sales (gal)	204,252.8	313,768.9	160,610.2**

Source: Sebring Airport Authority, 2002 and PBS&J, 2002
*Note: * See Section 4.2.5*
*** Fuel Sales from January to September, 2001*

PROJECTION OF AVIATION DEMAND

Sebring Regional Airport

5

5.1 INTRODUCTION

An Airport Master Plan provides an estimate of activity from which future facility needs will be determined for the 20+-year planning period. Projections of aviation demand are an important element of the Sebring Regional Airport (SEF) Master Plan Update, as these projections provide the basis for:

- Determining the Airport's future role regarding the types of aircraft that may need to be accommodated as well as the overall type of future demand.
- Evaluating the capacity of existing Airport facilities to meet projected aviation demand.
- Estimating the type and size of airside and landside facilities required in future years.

The forecast items will include based aircraft, annual aircraft operations, peak month, day, and hour operations, fuel sales, instrument approach and operations activity, itinerant aircraft parking, and general aviation (GA) passengers and auto parking. The forecast information will be used to determine the facility requirements at SEF from an aviation demand and capacity analysis of the forecasted activity in relation to the existing airfield conditions and services. This analysis and facility recommendations will be discussed in later sections.

This chapter provides projections of activity at the Airport from 2000 (baseline year) through the year 2021. The assumptions underlying the activity projections are documented throughout this chapter.

5.1.1 Objective

The object of the activity forecasts is to estimate, in a logical manner, the anticipated growth and future Airport activity at SEF. These forecasts provide a guide for the future development of airport facilities in order to ensure that safe and efficient operational capacity is achieved.

The object of the activity forecasts is to estimate, in a logical manner, the anticipated growth and future Airport activity at SEF. These forecasts provide a guide for the future development of airport facilities in order to ensure that safe and efficient operational capacity is achieved. The forecasts are based upon a number of historic and current sources, which were acquired through previous aviation forecasts and databases, as well as objective and subjective techniques, in order to assess potential growth at SEF and in the regional market area.

The forecasts will present annual information from the base year of 2000 to the end of the forecast period (2021). The year 2000 was chosen as the base year for the forecast assumptions due to the events of the September 11 terrorist attacks and the resulting aftermath. The historic 2001-year data, which is denoted in DOT Form 5010, states that SEF's annual operations for the year would be 74,659. This information appears unlikely since GA operations, which comprise the majority of aviation activity, were grounded for approximately one week. However, the Federal Aviation Administration (FAA) determined that this incident is not expected to have a mid- or long-term effect on aviation performance. Therefore, in order to obtain a realistic estimate of forecast growth at SEF to develop future capacity requirements, the year 2000 historical data would best demonstrate the operations at SEF through the year 2021.

5.1.2 Methodology

Various methods of forecasting aviation demand exist and are widely used throughout the industry. The FAA and other government agencies recommend that airports establish positive correlations with the communities they serve. SEF is equipped with a non-functional tower, which is used primarily during racing events, and, therefore, cannot provide accurate historical data of aircraft operations. There is, however, a mechanical counter that tracks movement on the airfield, but this information is limited. Therefore, a relationship between socioeconomic factors and local, state, and national aviation operations was established in order to develop future projection of aviation activity at the Airport. The resulting socio-economic factors were then compared to SEF operations as recommended in the GRA, Inc. *Model for Estimating General Aviation Operations at Non-Towered Airports (prepared for Statistics and Forecast Branch, FAA),* using a number of statistical methodologies, such as ratio analyses, market share analyses, regression techniques, and annual average growth rates (AAGR).

Previous forecasts and their accuracy over time will also be considered in identifying historical trends and their relation to national, state, and local socioeconomic and aviation activities. These methods have been applied to develop accurate forecasts at SEF and will be discussed in greater detail throughout this chapter.

Additionally, the activity forecasts in this section have been developed in accordance with the standards and guidelines set forth in FAA Advisory Circulars 150/5070-7 and 150/5300-13 Change 6, *Forecasting Aviation Activity By Airport*, FAA, 2001, the Florida Department of Transportation (FDOT) *Guidebook for Airport Master Planning*, and other applicable federal and state publications.

5.1.2.1 External Factors – September 11, 2001

As a direct result of the events of the September 11, 2001 terrorist attacks and the resultant economic recession and downturn in world economic activity, the FAA aviation forecasts predict slower growth in the demand for aviation products and services than was previously published. In addition, these recent events have also increased the risk and uncertainty of both short- and long-term forecasts. FAA GA forecasts rely heavily on analysts' judgments and expert opinions with regard to the expected impacts as well as the timing of the recovery from these events.

In addition, GA aircraft were grounded due to FAA "No Fly" zone restrictions imposed on the operation of aircraft in particular security sensitive areas of the country. Many flight schools also curtailed pilot training as new restrictions were imposed.

At SEF, the events of September 11th curtailed operations for approximately one week. According to Sebring Flight Center records, the local FBO, three aircraft operations were recorded on September 11 prior to the FAA airspace shutdown. No aircraft operations were recorded again until September 16th.

In addition, when comparing AvGas sales for the first six months of 2001 and 2000, AvGas fuel sales were up by approximately 32.79 percent. Yet, when reviewing fuel sale records for the month of September 2001 and 2000, a significant drop in both AvGas and Jet A fuel sales was revealed, which coincides with the grounding of the GA fleet.

According to the FAA Office of Aviation Policy and Plans, GA operations nationwide are in a decline, especially among the piston aircraft fleet. However, the one bright spot for GA, according to the FAA, is the business/corporate segment of the industry with the increased growth of fractional ownership. It appears that the fallout from September has spurred interest in fractional and corporate aircraft ownership, thus, providing new growth opportunities (19).

In the case of SEF, based upon information received from the Sebring Flight Center and SAA, aircraft operations have remained robust throughout the last quarter of 2001 and first quarter of 2002. This is directly attributed to SEF's corporate, military, and experimental aircraft activity as well as its lack of flight training. Since the Airport is marketing itself to both corporate/fractional owners and potential commuter airlines, it is anticipated that growth at SEF will increase steadily over the 20+-year planning period.

Because the historical data for the year 2001 is skewed as a result of the events of September 11th, it was determined that the year 2000 would be a more accurate base year for the 20+-year forecast period. In the short-term, the forecasts may not match recorded information for the years 2002 and 2003. However, in the mid- to long-term the forecasts for the Airport will be more reliable.

5.2 FORECAST OF BASED AIRCRAFT

The following database forecasts were used in determining the forecast of based aircraft information at SEF:

- Florida Aviation System Plan (FASP), 1999-2021
- Airport Master Plan, 1994
- FAA Terminal Area Forecast (TAF), 2001
- Fiscal Years 2002-2013, FAA Aerospace Forecasts

The following statistical methods, as recommended by the FAA's *Forecasting Aviation Activity By Airport* methodology, were used to obtain individual forecast projections and develop a range of forecast possibilities:

- Ratio Analysis
- Regression Analysis on Socio-Economic Trends
- Market Share Analysis.

The primary forecast variable for Sebring Regional Airport is fuel sales since they offer the most reasonable, and complete records. Most other forecasts can be derived from projected growth in this variable.

Additionally, ratio analyses of national, state, and regional based aircraft; national, state, and county populations; and national, state, and county pilot populations were used to select the most accurate forecast.

Before forecasting based aircraft, historical information was gathered and verified through the use of FAA TAF and Airport Master Record (5010) documentation. These documents represent based aircraft numbers at SEF, as reported to the FAA from 1990 to the time of this writing. Historical based aircraft on a national, state, and regional basis were also collected from the FAA Aerospace Forecasts and FDOT Aviation Forecasts to aid in establishing a historical trend and analysis comparison. In addition, the FAA TAF, 1994 Master Plan, and Continuing Florida Aviation System Planning Process (Central Florida Region) (CFASSP) also provide historical and forecast based aircraft data.

Based upon historic information as discussed in Chapter 4, there are 84 current based aircraft at SEF for the year 2000. This year will be used as the starting point for the based aircraft projection based upon the previous discussion. **Table 5-1**, and **Figures 5-1 and 5-2** represent the historical and forecast based aircraft information reported by available existing forecasts.

Figure 5-1 shows both the historical and forecast estimates of based aircraft at SEF. As can be seen, there are a number of variations in the historical accounts of based aircraft at SEF, which results in divergent forecast results. Therefore, the FAA Master Record, Form 5010, which is based upon reported SAA data is used as the historical baseline for all based aircraft forecast analyses for SEF.

Figure 5-2 represents the FAA's and FDOT's forecast of total based aircraft throughout the nation, state, and Central Florida Region. This data will be used in determining what percentage of each of these markets SEF based aircraft represent. As can be noted from **Figure 5-2**, a modest growth is expected for national (0.54%), state (1.36%), and regional (1.42%) based aircraft through the planning forecast period.

Figure 5-1. Existing Based Aircraft Forecasts

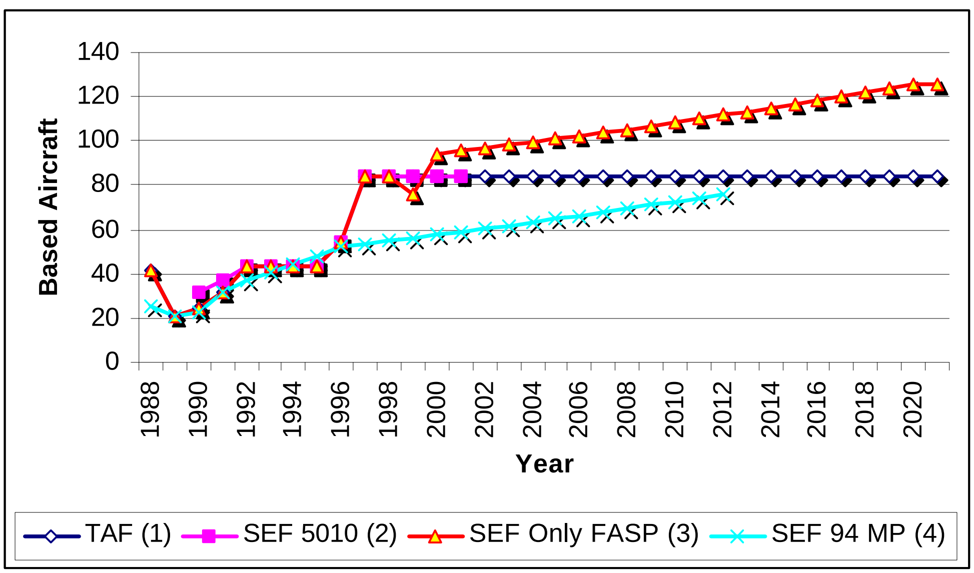
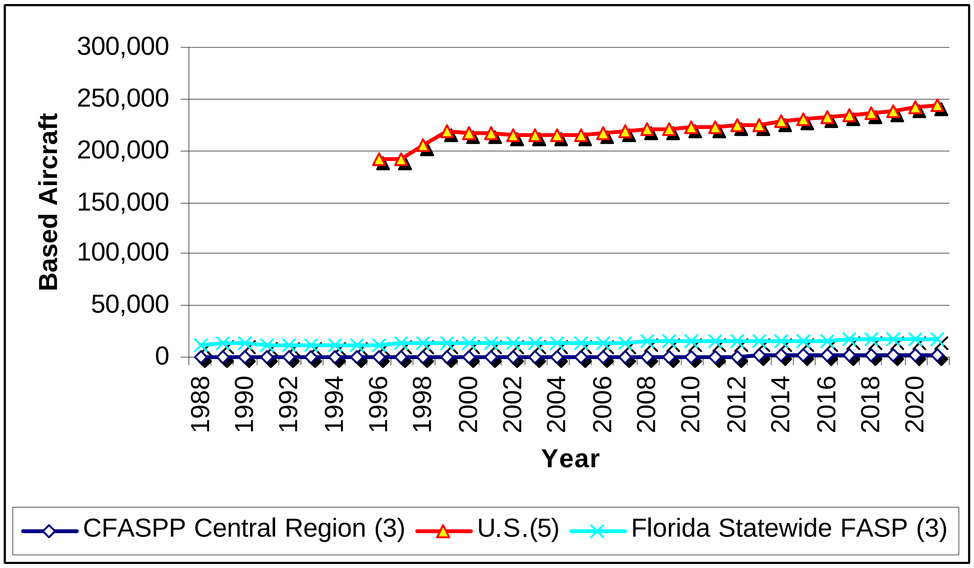


Table 5-1. Based Aircraft Forecasts

	Airport Forecasts				National	State	Region	
Year	**TAF (1)**	**SEF 5010 (2)**	**SEF Only FASP (3)**	**SEF 94 MP (4)**	**U.S.(5)**	**Florida Statewide FASP (3)**	**CFASPP Central Region (3)**	
1980	59							
1981	65							
1982	69							
1983	75							
1984	75							
1985	75							
1986	42							
1987	42							
1988	42		42	25		12,049	593	
1989	21		21	21		12,907	685	
1990	24	32	24	23		12,612	640	
1991	32	37	32	32		12,172	674	
1992	43	43	43	37		12,089	693	
1993	43	43	43	*40*		12,095	702	
1994	43	43	43	*44*		12,076	693	
1995	43	43	43	*48*		12,158	765	
1996	54	54	54	52	191,129	12,579	781	
1997	84	84	84	*53*	192,414	13,032	837	
1998	84	84	84	*55*	204,710	13,178	837	
1999	84	84	76	*56*	219,464	13,294	846	
2000	84	84	94	*58*	217,533	13,246	814	Historic
2001	**84**	**84**	**95**	**59**	**216,150**	***13,414***	***826***	Forecast
2002	84		97	*60*	214,350	*13,584*	*837*	
2003	84		98	*62*	213,950	*13,756*	*849*	
2004	84		99	*63*	214,490	*13,931*	*861*	
2005	84		101	*65*	215,690	*14,107*	*873*	
2006	**84**		**102**	***66***	**216,895**	**14,286**	**886**	
2007	84		104	*68*	218,250	*14,480*	*899*	
2008	84		105	*69*	219,755	*14,676*	*911*	
2009	84		107	*71*	221,210	*14,875*	*924*	
2010	84		109	*73*	222,410	*15,077*	*937*	
2011	**84**		**110**	***74***	**223,360**	**15,281**	**951**	
2012	84		112	76	224,310	*15,496*	*965*	
2013	84		113		225,260	*15,714*	*978*	
2014	84		115		*227,448*	*15,936*	*992*	
2015	84		117		*229,657*	*16,160*	*1,006*	
2016	84		118		*231,887*	*16,387*	*1,020*	
2017	84		120		*234,139*	*16,618*	*1,035*	
2018	84		122		*236,413*	*16,852*	*1,050*	
2019	84		123		*238,709*	*17,089*	*1,065*	
2020	84		125		*241,027*	*17,330*	*1,080*	
2021	**84**		**126**		***243,368***	**17,574**	**1,095**	
AAGR 2000-2021 (%)	**0.00%**	**--**	**1.40%**	**--**	**0.54%**	**1.36%**	**1.42%**	

Source: (1) FAA Terminal Area Forecast, 2001
(2) FAA Airport Master Record,
(3) Florida Aviation Systems Plan (FASP)
(4) 1994 Sebring Regional Airport Master Plan
(5) FAA Aerospace Forecasts - Fiscal Years
Based upon Table 27, Active GA and Air Taxi Aircraft

Figure 5-2. Existing Based Aircraft Forecasts



5.2.1 FAA Terminal Area Forecast (TAF)

The FAA TAF (see **Table 5-1**) depicts historical data from 1980 to 2000 and estimates based aircraft forecasts through the year 2015. However, the TAF forecast shows no growth after 1997, the last year of available data. Therefore, the TAF was used primarily as an indication of the historical trend of the past 20 years and not as a viable forecast of based aircraft.

5.2.2 Market Share Analysis

As stated in the FAA Aerospace Forecasts and FDOT Aviation Forecasts, this forecast was determined by using the total market share of based historical aircraft at SEF in relation to historical national, state, and regional aircraft in order to determine a percentage or share of Sebring's based aircraft to the total market. This allowed the future based aircraft for SEF to be estimated through the year 2021. As shown in **Table 5-2**, the three market-share forecasts vary considerably depending upon the ratio of based aircraft, with the state and regional forecasts growing at the rate of (1.35%) compared to the national forecast (0.54%).

Due to the higher aviation growth rates in the southern region of the United States, the market share analysis illustrates higher forecasts of based aircraft for the state and regional market as compared to the rest of the nation.

Table 5-2. Market Share Forecast Analysis Based Aircraft

	National			State			Region			
Year	**National (1)**	**Market Share**	**Based Aircraft**	**State**	**Market Share**	**Based Aircraft (Florida)**	**Central Florida CFASPP Region**	**Market Share**	**Based Aircraft**	
Historical										
1988				12,049			593			
1989				12,907			685			
1990			32	12,612	0.25%	32	640	5.00%	32	
1991			37	12,172	0.30%	37	674	5.49%	37	
1992			43	12,089	0.36%	43	693	6.20%	43	
1993			43	12,095	0.36%	43	702	6.13%	43	
1994			43	12,076	0.36%	43	693	6.20%	43	
1995			43	12,158	0.35%	43	765	5.62%	43	
1996	191,129	0.03%	54	12,579	0.43%	54	781	6.91%	54	
1997	192,414	0.04%	84	13,032	0.64%	84	837	10.04%	84	
1998	204,710	0.04%	84	13,178	0.64%	84	837	10.04%	84	
1999	219,464	0.04%	84	13,294	0.63%	84	846	9.93%	84	
2000	217,533	0.04%	84	13,246	0.63%	84	814	10.32%	84	Historic
2001	**216,150**	**0.04%**	**84**	**13,414**	**0.63%**	**84**	**826**	**10.17%**	**84**	Forecast
2002	214,350	0.04%	86	*13,584*	0.63%	86	837	10.17%	85	
2003	213,950	0.04%	86	*13,756*	0.63%	87	849	10.17%	86	
2004	214,490	0.04%	86	*13,931*	0.63%	88	861	10.17%	88	
2005	215,690	0.04%	86	*14,107*	0.63%	89	873	10.17%	89	
2006	**216,895**	**0.04%**	**87**	**14,286**	**0.63%**	**90**	**886**	**10.17%**	**90**	
2007	218,250	0.04%	87	*14,480*	0.63%	91	899	10.17%	91	
2008	219,755	0.04%	88	*14,676*	0.63%	92	911	10.17%	93	
2009	221,210	0.04%	88	*14,875*	0.63%	94	924	10.17%	94	
2010	222,410	0.04%	89	*15,077*	0.63%	95	937	10.17%	95	
2011	**223,360**	**0.04%**	**89**	**15,281**	**0.63%**	**96**	**951**	**10.17%**	**97**	
2012	224,310	0.04%	90	*15,496*	0.63%	98	965	10.17%	98	
2013	225,260	0.04%	90	*15,714*	0.63%	99	978	10.17%	99	
2014	*227,448*	0.04%	91	*15,936*	0.63%	100	992	10.17%	101	
2015	*229,657*	0.04%	92	*16,160*	0.63%	102	1,006	10.17%	102	
2016	*231,887*	0.04%	93	*16,387*	0.63%	103	1,020	10.17%	104	
2017	*234,139*	0.04%	94	*16,618*	0.63%	105	1,035	10.17%	105	
2018	*236,413*	0.04%	95	*16,852*	0.63%	106	1,050	10.17%	107	
2019	*238,709*	0.04%	95	*17,089*	0.63%	108	1,065	10.17%	108	
2020	*241,027*	0.04%	96	*17,330*	0.63%	109	1,080	10.17%	110	
2021	***243,368***	**0.04%**	**97**	**17,574**	**0.63%**	**111**	**1,095**	**10.17%**	**111**	
AAGR 2000-2021 (%)	**0.54%**	**0.17%**	**0.70%**	**1.36%**	**-0.03%**	**1.32%**	**1.42%**	**-0.07%**	**1.35%**	

Source: FAA Aerospace Forecasts-Fiscal Years 2000-2012, FDOT Aviation Forecasts 2000, and PBS&J, 2002
(1) FAA Forecast, 2002-2013 (Total Combined AC Ops. At Airports with FAA and Contract Traffic Control Service)

5.2.3 Based Aircraft Population Ratio

Another method used to estimate future based aircraft at SEF is a ratio analyses, which involves the conversion of numbers into ratios. The definition of a ratio is “the relative size, expressed as the number of times one quantity is contained in another.” (*Basic Business Statistics, Concepts and Applications*, p. 14.) Ratios allow the comparison of one set of numbers or forecasts to another. Since ratios look at relationships, a forecast of one size can be directly compared to a second or collection of forecasts, which may be larger or smaller. Ratios are a method of comparison that are not dependent on the size of the data source and provide a broader basis for comparison than do raw numbers. (20)

Therefore, based aircraft at SEF was compared to the national and county general populations and pilot populations in order to determine the ratio between these factors. As shown in **Tables 5-3 and 5-4**, six population scenarios were created and are based on population forecasts from the United States Bureau of the Census and the Florida county rankings. These are Highlands County population ratio, state population ratio, national population ratio, Highlands County pilot population, state pilot population, and national pilot population ratio.

Based aircraft forecasts were then developed by establishing a ratio of historical based aircraft to general population and to pilot population, and then projecting future based aircraft based upon the population forecasts. The ratio between based aircraft and pilot population or total population data is determined by dividing the population by the historical number of based aircraft. Thus, using the year 2001 ratio between based aircraft and population as the standard, forecasts of future based aircraft at SEF were estimated. These forecasts help establish a reasonable range of based aircraft forecasts.

Table 5-3 shows the ratio of forecast based aircraft at SEF to the national, state and county pilot populations. **Table 5-4** shows the ratio analysis of forecast based aircraft at SEF to total national, state, and county total population.

Table 5-3. Based Aircraft to Pilot Population Ratio

	National			State			Region			
Year	**Pilots**	**Ratio**	**Based Aircraft**	**Florida Pilots ***	**Ratio**	**Based Aircraft**	**County Pilots***	**Ratio**	**Based Aircraft**	
1988										
1989										
1990	*573,909*	17,935	32.0	*42,691*	1,334	32.0	191	6.0	32.0	
1991	*571,731*	15,452	37.0	*42,529*	1,149	37.0	190	5.1	37.0	
1992	*568,175*	13,213	43.0	*42,265*	983	43.0	189	4.4	43.0	
1993	*561,280*	13,053	43.0	*41,752*	971	43.0	187	4.3	43.0	
1994	*557,593*	12,967	43.0	*41,477*	965	43.0	186	4.3	43.0	
1995	639,184	14,865	43.0	*47,547*	1,106	43.0	213	5.0	43.0	
1996	622,261	11,523	54.0	*46,288*	857	54.0	207	3.8	54.0	
1997	616,342	7,337	84.0	*45,848*	546	84.0	205	2.4	84.0	
1998	618,298	7,361	84.0	45,993	548	84.0	206	2.5	84.0	
1999	635,472	7,565	84.0	*47,271*	563	84.0	212	2.5	84.0	
2000	625,583	7,447	84.0	*46,535*	554	84.0	208	2.5	84.0	Historic
2001	**649,957**	**7,738**	**84.0**	***48,348***	**576**	**84.0**	**217**	**2.6**	**84.0**	Forecast
2002	*646,215*	7,738	83.5	*48,070*	576	83.5	215	2.6	83.5	
2003	*648,215*	7,738	83.8	*48,218*	576	83.8	216	2.6	83.7	
2004	*653,820*	7,738	84.5	*48,635*	576	84.5	218	2.6	84.4	
2005	*661,975*	7,738	85.6	*49,242*	576	85.6	221	2.6	85.5	
2006	***671,380***	**7,738**	**86.8**	***49,942***	**576**	**86.8**	**224**	**2.6**	**86.7**	
2007	*680,785*	7,738	88.0	*50,641*	576	88.0	227	2.6	87.9	
2008	*690,940*	7,738	89.3	*51,397*	576	89.3	230	2.6	89.2	
2009	*701,095*	7,738	90.6	*52,152*	576	90.6	234	2.6	90.5	
2010	*711,250*	7,738	91.9	*52,907*	576	91.9	237	2.6	91.8	
2011	***721,405***	**7,738**	**93.2**	***53,663***	**576**	**93.2**	**240**	**2.6**	**93.2**	
2012	*731,560*	7,738	94.5	*54,418*	576	94.5	244	2.6	94.5	
2013	*741,715*	7,738	95.9	*55,174*	576	95.9	247	2.6	95.8	
2014	747,871	7,738	96.7	*55,631*	576	96.7	249	2.6	96.6	
2015	754,078	7,738	97.5	*56,093*	576	97.5	251	2.6	97.4	
2016	760,336	7,738	98.3	*56,559*	576	98.3	253	2.6	98.2	
2017	766,646	7,738	99.1	*57,028*	576	99.1	255	2.6	99.0	
2018	773,009	7,738	99.9	*57,501*	576	99.9	258	2.6	99.8	
2019	779,425	7,738	100.7	*57,979*	576	100.7	260	2.6	100.7	
2020	785,893	7,738	101.6	*58,460*	576	101.6	262	2.6	101.5	
2021	**792,416**	**7,738**	**102.4**	***58,945***	**576**	**102.4**	**264**	**2.6**	**102.3**	
AAGR 2000-2021 (%)	**1.13%**	**0.18%**	**0.95%**	**1.13%**	**0.18%**	**0.95%**	**1.13%**	**0.19%**	**0.94%**	

Source: National And local pilots estimated from FAA Aerospace Forecasts - Fiscal Year 2000-2012 & 2001 Florida County Rankings

Table 5-4. Based Aircraft General Population Ratio

	National			State			County			
Year	**Population**	**Population ¸ Based Aircraft**	**Based Aircraft**	**Population**	**Population ¸ Based Aircraft**	**Based Aircraft**	**Popula-tion**	**Population ¸ Based Aircraft**	**Based Air-craft**	
1980	228,289,000	3,869,305	59	9,747,411	165,210	59	47,526	806	59	
1981	230,480,000	3,545,846	65	10,102,000	155,415	65	49,428	760	65	
1982	232,641,000	3,371,609	69	10,361,520	150,167	69	51,375	745	69	
1983	234,721,000	3,129,613	75	10,575,340	141,005	75	52,669	702	75	
1984	236,789,000	3,157,187	75	10,881,570	145,088	75	54,686	729	75	
1985	238,948,000	3,185,973	75	11,219,460	149,593	75	56,497	753	75	
1986	241,105,000	5,740,595	42	11,545,720	274,898	42	58,207	1,386	42	
1987	243,291,000	5,792,643	42	11,907,840	283,520	42	61,224	1,458	42	
1988	245,537,000	9,821,480	25	12,270,410	490,816	25	63,734	2,549	25	
1989	247,962,000	11,807,714	21	12,617,110	600,815	21	66,112	3,148	21	
1990	250,542,000	7,829,438	32	12,937,930	404,310	32	68,432	2,139	32	
1991	253,393,000	6,848,459	37	13,195,950	356,647	37	70,609	1,908	37	
1992	256,268,000	5,959,721	43	13,424,420	312,196	43	72,157	1,678	43	
1993	258,902,000	6,020,977	43	13,608,630	316,480	43	73,203	1,702	43	
1994	261,393,000	6,078,907	43	13,878,900	322,765	43	75,860	1,764	43	
1995	263,870,000	6,136,512	43	14,149,317	329,054	43	77,270	1,797	43	
1996	266,339,000	4,932,204	54	14,411,563	266,881	54	77,996	1,444	54	
1997	268,912,000	3,201,333	84	14,712,922	175,154	84	79,536	947	84	
1998	271,464,000	3,231,714	84	15,000,475	178,577	84	80,458	958	84	
1999	273,866,000	3,260,310	84	15,322,040	182,405	84	81,143	966	84	
2000	274,634,000	3,269,452	84	*15,549,746*	185,116	84	*82,311*	980	84	Historic
2001	***276,866,798***	**3,269,452**	**84**	***15,780,837***	**185,116**	**84**	***83,497***	**994**	**84**	Forecast
2002	*279,117,749*	3,269,452	85	*16,015,362*	185,116	85	*84,699*	980	86	
2003	*281,387,000*	3,269,452	86	*16,253,372*	185,116	87	*85,919*	980	88	
2004	*283,674,700*	3,269,452	87	*16,494,919*	185,116	88	*87,156*	980	89	
2005	285,981,000	3,269,452	87	*16,740,056*	185,116	89	*88,411*	980	90	
2006	***288,290,399***	**3,269,452**	**88**	***16,988,836***	**185,116**	**90**	***89,684***	**980**	**92**	
2007	*290,618,447*	3,269,452	89	*17,241,314*	185,116	92	*90,976*	980	93	
2008	*292,965,296*	3,269,452	90	*17,497,543*	185,116	93	*92,286*	980	94	
2009	*295,331,095*	3,269,452	90	*17,757,581*	185,116	95	*93,615*	980	96	
2010	297,716,000	3,269,452	91	*18,021,483*	185,116	96	*94,963*	980	97	
2011	***300,159,170***	**3,269,452**	**92**	***18,289,306***	**185,116**	**97**	***96,330***	**980**	**98**	
2012	*302,622,390*	3,269,452	93	*18,561,110*	185,116	99	*97,717*	980	100	
2013	*305,105,825*	3,269,452	93	*18,836,954*	185,116	100	*99,125*	980	101	
2014	*307,609,639*	3,269,452	94	*19,116,897*	185,116	102	*100,552*	980	103	
2015	310,134,000	3,269,452	95	19,401,000	185,116	103	102,000	980	104	
2016	*312,615,568*	3,269,452	96	*19,689,325*	185,116	105	*103,469*	980	106	
2017	*315,116,992*	3,269,452	96	*19,981,936*	185,116	106	*104,959*	980	107	
2018	*317,638,432*	3,269,452	97	*20,278,895*	185,116	108	*106,470*	980	109	
2019	*320,180,048*	3,269,452	98	*20,580,267*	185,116	110	*108,003*	980	110	
2020	322,742,000	3,269,452	99	*20,886,117*	185,116	111	*109,559*	980	112	
2021	***325,324,452***	**3,269,452**	**100**	***21,196,514***	**185,116**	**113**	***111,136***	**980**	**113**	
AAGR 2000-2021 (%)	**0.81%**	**0.00%**	**0.81%**	**1.49%**	**0.00%**	**1.41%**	**1.44%**	**0.00%**	**1.44%**	

Source: Population from Florida County Rankings (2001) & U.S. Bureau of the Census, PBS&J, 2002

5.2.4 Regression Analysis

Another projection of based aircraft growth can be developed using regression analysis. Regression analysis is a widely accepted technique used in forecasting to define the mathematical relationship between changes in two or more variables over time. The relationship is stated as the correlation between such factors as growth in population and growth in the number of based aircraft. The measure for the reliability of forecasts obtained through regression analysis is (R-Squared - R^2), or the coefficient of correlation. The closer the value of this coefficient is to one (or 100%), the more reliable the forecast. The coefficient is a measure of the activity to be forecasted (such as based aircraft or aircraft operations) and other variables known or believed to influence the activity. In aviation, these other variables include wealth, growth in population, and/or growth in employment. However, in order to conduct a meaningful analysis of the relationship between aviation activity and social or economic indicators, consistent and reliable historical data are required for all variables.

In the case of GA airports, the available historical data is often non-linear. Unless the available historical based aircraft data is arranged in a coherent format that lends itself to regression analysis, meaningful regression analysis cannot be performed. By applying a linear fit to the data, fluctuations in the data, arising from factors related to aviation activity changes at the airport, are removed and a linear historical trend is created that is related to the socio-economic trends of the county or region.

A regression analysis using this linear trend and the historical population growth of the county resulted in a coefficient of correlation (R^2) value of 96.8 percent. Therefore, it can be stated that nearly 96.8 percent of the growth in based aircraft at SEF can be explained by growth in the general county population. This forecast is considered reliable since the (R^2) value is close to 100 percent, and therefore, proves that there is a strong relation between local socioeconomic data and based aircraft at SEF. Based aircraft projections using this regression analysis are presented in **Table 5-5**.

Table 5-5. Regression Analysis

Year	TAF Based Aircraft	TAF Based Aircraft (Linear Feet)	County Population	Regression Forecast	
1980	59		47,526		
1981	65	60	49,428		
1982	69	61	51,375		
1983	75	62	52,669		
1984	75	63	54,686		
1985	75	64	56,497		
1986	42	66	58,207		
1987	42	67	61,224		
1988	25	68	63,734		
1989	21	69	66,112		
1990	32	70	68,432		
1991	37	72	70,609		
1992	43	73	72,157		
1993	43	74	73,203		
1994	43	76	75,860		
1995	43	77	77,270		
1996	54	78	77,996		
1997	84	80	79,536		
1998	84	81	80,458		
1999	84	83	81,143		
2000	84	84	82,311		Historic
2001			**83,497**	**81**	Forecast
2002			84,699	82	
2003			85,919	83	
2004			87,156	84	
2005			88,411	85	
2006			**89,684**	**85**	
2007			90,976	86	
2008			92,286	87	
2009			93,615	88	
2010			94,963	89	
2011			**96,330**	**90**	
2012			97,717	91	
2013			99,125	92	
2014			100,552	93	
2015			102,000	93	
2016			**103,469**	**94**	
2017			104,959	95	
2018			106,470	96	
2019			108,003	97	
2020			109,559	98	
2021			**111,136**	**100**	
AAGR 2000-2021 (%)			**1.44%**	**0.81%**	

Source: University of Florida, BEBR, 2001
FAA Aerospace Forecasts, 2000-2012
Note: Linear fit based on a AAGR from 1988-2000 of 1.782%
Regression Forecast AAGR 2000-2021(%) using 84 based aircraft in 2000 and 100 based aircraft in 2021.

Table 5-5 (Continued). Regression Analysis

Regression Analysis				
The regression equation is Based Aircraft (Linear Fit) = 26.28 +0.000659 Population				
Predictor	Coefficient	Standard Error of the Coefficient	T-value	P-value
Constant	26.28	1.91	13.76	0
Population	0.000659	2.757E-05	23.89	0
R-Squared		96.80%		
R-Squared (Adj)		96.60%		

5.2.5 Selected Based Aircraft Forecast

The selected based aircraft forecast is based upon the average of the market share, ratio, operations per based aircraft, and socio-economic regression analyses. This resulted in an AAGR of approximately 1.07 percent. This growth rate appears to be in line with current growth at the Airport, especially since there is currently limited aircraft storage space available. If more storage space does become available, it is likely that an increase in based aircraft operations could occur. However, based upon this current growth rate, 105 aircraft are likely to be based at SEF by 2021.

Figure 5-3. Selected and Supporting Based Aircraft Forecasts

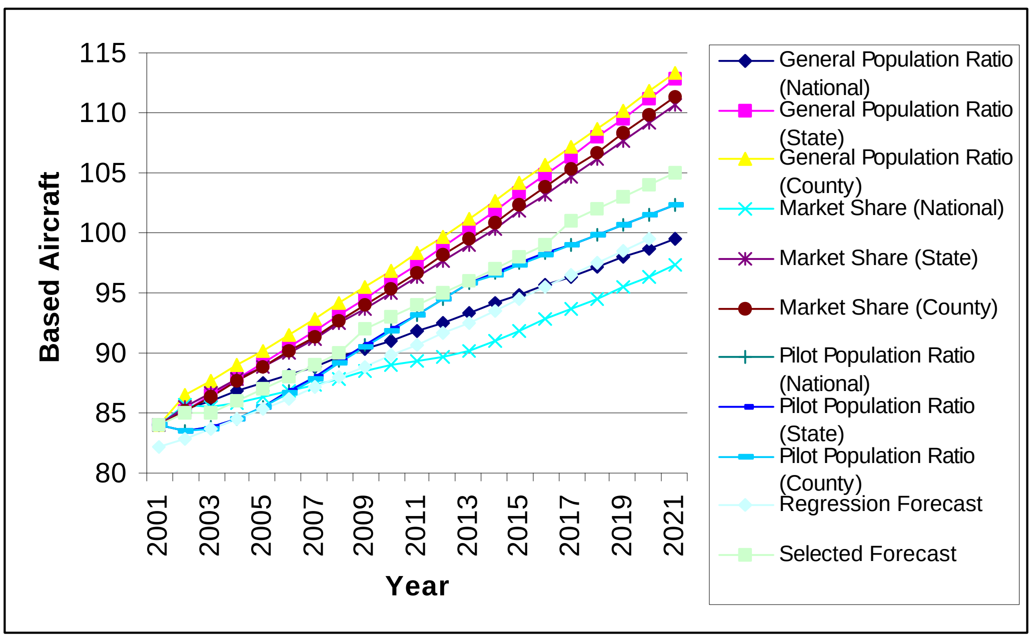


Table 5-6. Based Aircraft Forecasts

	General Population Ratio			Market Share			Pilot Population Ratio			Regression	Selected Forecast	
Year	**Based Aircraft (National)**	**Based Aircraft (State)**	**Based Aircraft (County)**	**Based Aircraft (National)**	**Based Aircraft (State)**	**Based Aircraft (County)**	**Based Aircraft (National)**	**Based Aircraft (State)**	**Based Aircraft (County)**	**Based Aircraft**	**Based Aircraft**	
2000	84	84	84	84	84	84	84	84	84	--	84	Historic
2001	**84**	**84**	**84**	**84**	**84**	**84**	**84**	**84**	**84**	**81**	**84**	Forecast
2002	85	85	86	86	86	85	84	84	83	82	85	
2003	86	87	88	86	87	86	84	84	84	83	85	
2004	87	88	89	86	88	88	84	84	84	84	86	
2005	87	89	90	86	89	89	86	86	85	85	87	
2006	**88**	**90**	**92**	**87**	**90**	**90**	**87**	**87**	**87**	**85**	**88**	
2007	89	92	93	87	91	91	88	88	88	86	89	
2008	90	93	94	88	92	93	89	89	89	87	90	
2009	90	95	96	88	94	94	91	91	91	88	92	
2010	91	96	97	89	95	95	92	92	92	89	93	
2011	**92**	**97**	**98**	**89**	**96**	**97**	**93**	**93**	**93**	**90**	**94**	
2012	93	99	100	90	98	98	95	95	94	91	95	
2013	93	100	101	90	99	99	96	96	96	92	96	
2014	94	102	103	91	100	101	97	97	97	93	97	
2015	95	103	104	92	102	102	97	97	97	93	98	
2016	**96**	**105**	**106**	**93**	**103**	**104**	**98**	**98**	**98**	**94**	**99**	
2017	96	106	107	94	105	105	99	99	99	95	101	
2018	97	108	109	95	106	107	100	100	100	96	102	
2019	98	110	110	95	108	108	101	101	101	97	103	
2020	99	111	112	96	109	110	102	102	101	98	104	
2021	**100**	**113**	**113**	**97**	**111**	**111**	**102**	**102**	**102**	**100**	**105**	
AAGR 2000-2021 (%)	**0.81%**	**1.41%**	**1.44%**	**0.70%**	**1.32%**	**1.35%**	**0.95%**	**0.95%**	**0.94%**	**0.81%**	**1.07%**	

Source: FAA Aerospace Forecast 2000-2012, Florida County Rankings (1999 & 2001), U.S. Bureau of the Census, FDOT Aviation Forecast, FAA TAF (2001) and PBS&J, 2002
*Note: * AAGR for regression forecasts from 2002 to 2021. AAGR (%) may differ slightly due to rounding.*

5.2.6 Based Aircraft Fleet Mix Forecast

Future Airport requirements will be based, in part, on the type of based aircraft expected at SEF. The FAA divides based aircraft into the following categories: single-engine piston, multi-engine piston, turbo prop, jet, rotorcraft, and other. Aircraft by type and forecast year are presented in **Table 5-7**. All aircraft types are expected to increase or remain consistent at SEF during the forecast period.

The growth in single-engine and multi-engine piston aircraft is inline with the type of growth and customer base at SEF. If facilities are built to accommodate larger business jets, this growth rate is likely to increase to some degree.

Table 5-7. Based Aircraft Forecast by Type

	Piston		Turbine					
Year	**Single Engine**	**Multi-Engine**	**Turbo Prop**	**Jet**	**Helicopter**	**Ultralight**	**Total Aircraft**	
1990	26	6	0	0	0	0	32	
1991	28	7	0	0	2	0	37	
1992	40	3	0	0	0	0	43	
1993	30	9	0	0	0	4	43	
1994	30	9	0	0	1	3	43	
1995	30	9	0	0	1	3	43	
1996	37	12	0	0	1	4	54	
1997	57	18	0	0	1	8	84	
1998	57	18	0	0	1	8	84	
1999	57	18	0	0	1	8	84	
2000	57	18	0	0	1	8	84	Historic
2001	**57**	**18**	**0**	**0**	**1**	**8**	**84**	Forecast
2002	58	18	0	0	1	8	85	
2003	58	18	0	0	1	8	85	
2004	58	18	0	0	1	8	86	
2005	59	19	0	0	1	8	87	
2006	**60**	**19**	**0**	**0**	**1**	**8**	**88**	
2007	60	19	0	0	1	8	89	
2008	61	19	0	0	1	9	90	
2009	62	20	0	0	1	9	92	
2010	63	20	0	0	1	9	93	
2011	**64**	**20**	**0**	**0**	**1**	**9**	**94**	
2012	64	20	0	0	1	9	95	
2013	65	21	0	0	1	9	96	
2014	66	21	0	0	1	9	97	
2015	67	21	0	0	1	9	98	
2016	**67**	**21**	**0**	**0**	**1**	**9**	**99**	
2017	69	22	0	0	1	10	101	
2018	69	22	0	0	1	10	102	
2019	70	22	0	0	1	10	103	
2020	71	22	0	0	1	10	104	
2021	**71**	**23**	**0**	**0**	**1**	**10**	**105**	
Percent of Fleet	67.86%	21.43%	0.00%	0.00%	1.19%	9.52%	100.00%	
AAGR 2000 - 2021 (%)							1.07%	

Source: FAA Aerospace Forecast - Fiscal Years 2002-2013 and PBS&J, 2002

5.3 FORECAST OF ANNUAL AIRCRAFT OPERATIONS

A variety of forecast information was available for projecting future aircraft operations at SEF. These include: Florida Aviation System Plan (FASP), 1994 Master Plan, FAA Aerospace Forecasts 2002-2013, FAA 5010 and TAF, and FDOT Aviation Forecasts. All of these resources were used in developing the preferred aircraft operations forecast for this study. **Tables 5-8** and **Figures 5-4 and 5-5** illustrate the existing aircraft operations forecasts.

5.3.1 2001 FAA Terminal Area Forecast (TAF)

Again, the FAA TAF (see **Table 5-8**) depicts historical data from 1988 to 2000 and estimates annual aircraft operations through the year 2021. However, the TAF forecast shows no growth after 1997, and predicts no growth from the year 1999, the last year of available data, through 2015. The TAF is used primarily as an indication of the historical trend of the past 20 years and not as a viable forecast of based aircraft. These data were extrapolated to the end of the planning period for preparing the selected activity forecasts.

5.3.2 Florida Department of Transportation (FDOT) Aviation Forecast

The forecast developed by the FDOT provides an analysis of total GA operations in the state of Florida. This information will be used in both the market share and ratio methodology in order to determine SEF's percentage of the total Florida GA market. The FDOT has assigned a growth of 1.73 percent for total GA operations in the state, which is higher than the national percentage of 1.05 percent (see **Table 5-8)**. However, this has historically been correct due to Florida's prominence as a flight training center as well as its 300+ days of sunshine per year.

5.3.3 FAA Master Record – Form 5010

Historical data for SEF as reported by the Airport itself is recorded on the FAA Master Record, Form 5010. When comparing the FAA's TAF and the Form 5010 annual aircraft operations data, a discrepancy for the years 1988-1991 and 1996-1998 was found. The TAF recorded significantly higher annual aircraft operations for those years than did SAA. Utilizing a linear historical trend analysis, which is based upon the average annual compound growth rate between the years 1998 and 2000, it was determined that 566,451 operations will occur in 2021 (see **Table 5-8**).

Table 5-8. General Aviation Aircraft Operations Forecast

	Airport Operations Data				National GA Operations	State GA Operations	Regional GA Operations	
Year	TAF (1)	5010 (2)	1994 SEB MP (3)	FASP Forecasts (4)	GA/Mil US Forecasts (5)	FASP Forecasts (4)	Central Florida CFASPP Forecasts (6)	
1988	41,193	20,000	20,000	41,193		7,483,562	377,627	
1989	42,254	21,500	21,500	42,254		8,142,733	378,150	
1990	43,350	20,000	20,000	43,350		8,520,880	390,389	
1991	45,328	28,000	28,000	45,328		8,295,432	360,020	
1992	36,000	36,000	36,000	36,000		8,086,252	376,418	
1993	36,000	36,000	39,542	36,000		7,826,636	387,690	
1994	34,500	34,500	43,433	34,500		7,551,654	379,596	
1995	34,500	34,500	47,706	34,500		7,437,291	403,613	
1996	34,500	48,200	52,400	34,500	37,845,200	7,436,160	414,971	
1997	121,900	36,500	53,862	121,900	39,356,900	7,718,499	535,555	
1998	121,900	61,700	55,365	121,900	40,828,000	7,819,874	529,533	
1999	64,113	64,113	56,910	64,113	42,950,100	8,145,458	462,235	
2000	64,113	67,210	58,498	66,213	42,790,100	8,397,018	489,684	Historic
2001	**64,113**	**74,659**	**60,130**	**67,644**	**40,538,800**	**8,518,775**	**500,261**	Forecast
2002	64,113	82,620	61,725	69,106	40,274,700	8,642,297	511,067	
2003	64,113	91,430	63,363	70,599	43,348,400	8,767,610	522,106	
2004	64,113	101,180	65,044	72,125	43,862,200	8,894,741	533,383	
2005	64,113	111,969	66,769	73,684	44,382,800	9,023,714	544,904	
2006	**64,113**	**123,909**	**68,540**	**75,276**	**44,910,300**	**9,154,687**	**556,637**	
2007	64,113	137,122	70,359	77,033	45,444,900	9,318,831	569,050	
2008	64,113	151,744	72,225	78,831	45,962,700	9,485,917	581,740	
2009	64,113	167,925	74,141	80,671	46,487,100	9,656,000	594,713	
2010	64,113	185,831	76,108	82,553	47,018,000	9,829,132	607,975	
2011	**64,113**	**205,647**	**78,127**	**84,480**	**47,555,600**	**10,005,316**	**621,511**	
2012	64,113	227,576	80,200	86,135	48,100,000	10,192,425	634,063	
2013	64,113	251,843	82,328	87,823	48,651,200	10,383,034	646,869	
2014	64,113	278,698	84,512	89,544	49,208,716	10,577,207	659,933	
2015	64,113	308,417	86,754	91,298	49,772,622	10,775,011	673,261	
2016	**64,113**	**341,305**	**89,055**	**93,087**	**50,342,989**	**10,976,515**	**686,858**	
2017	64,113	377,699	91,418	94,911	50,919,893	11,181,787	700,730	
2018	64,113	417,975	93,843	96,770	51,503,407	11,390,897	714,882	
2019	64,113	462,545	96,332	98,666	52,093,608	11,603,918	729,319	
2020	64,113	511,869	98,888	100,599	52,690,573	11,820,923	744,049	
2021	**64,113**	**566,451**	**101,511**	**104,580**	**53,294,378**	**12,042,001**	**759,075**	
AAGR 2000-2021 (%)	**0.00%**	**10.68%**	**2.66%**	**2.20%**	**1.05%**	**1.73%**	**2.11%**	

Source: (1) FAA Terminal Area Forecast, 2001
(2) FAA Airport Master Record, 2001
(3) 1994 Sebring Regional Airport Master Plan
(4) Florida Aviation Systems Plan (FASP), 1988-2021
(5) FAA Aerospace Forecasts - Fiscal Years 2002-2013 (Total FAA and Contract ATC)
(6) CFASPP Central Region is 3.68% of Total Florida (FASP Forecast) Operations
PBS&J, 2002

Figure 5-4. Existing Aircraft Operations Forecasts

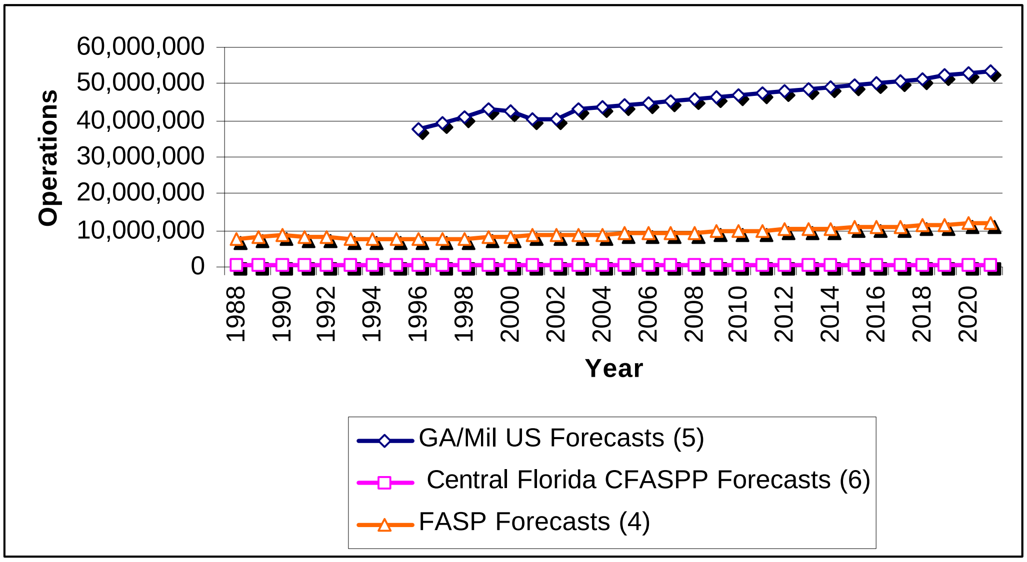
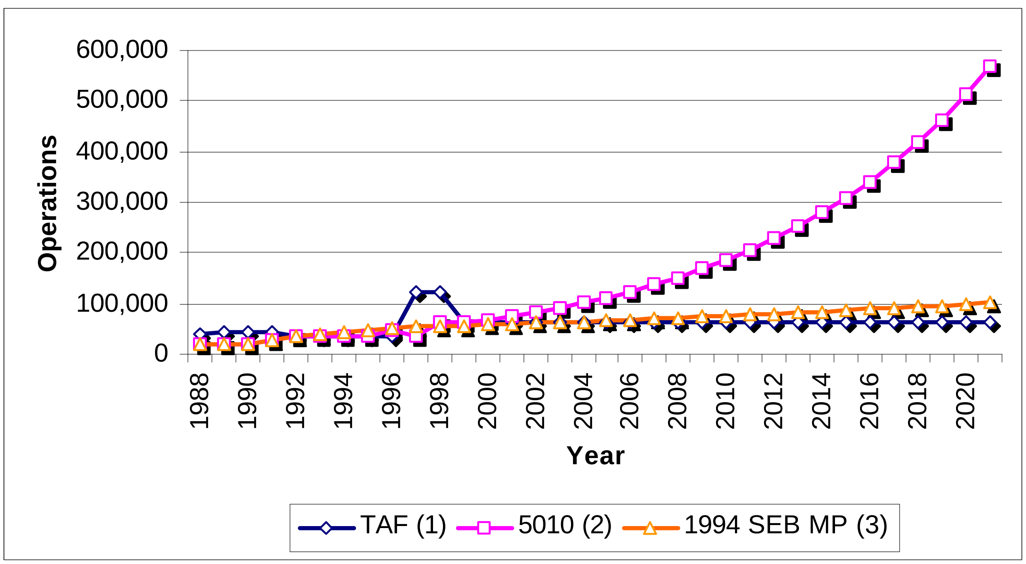


Figure 5-5. Existing Aircraft Operations Forecasts



5.3.4 Florida Aviation System Plan (FASP)

There are two forecasts produced through the FASP: Total General Aviation Operations for the State of Florida and the CFASPP Central Region Forecast of GA operations.

5.3.4.1 Total General Aviation Operations

The FASP evaluates the total GA traffic in the state of Florida. Using historic data as well as trends in the region, the FASP forecast 12,042,001 total GA operations for the year ending 2021. Utilizing the AAGR of 1.73 percent, based upon the forecast annual operations for the years 2000 and 2021, it was determined that for the year ending 2021, annual GA operations in the state would equal 12,042,001 operations. This information will be used in the market share analysis to determine the amount of GA operations directly attributed to SEF. See **Table 5-8**.

5.3.4.2 Central Regional Forecast of GA Operations

The FASP also produces an analysis of GA operations for each region as well as for each airport in that particular region. Again, the Central Florida CFASPP, of which SEF is a part, utilizes historical trend line data to forecast future GA operations in the region through the year 2010. As a result, the CFASPP forecast 621,511 GA operations for the year ending 2011. Again, using the AAGR of 2.11 percent, it was determined that 759,075 GA operations could be attributed to the central Florida region (see **Table 5-8**).

5.3.5 1994 Airport Master Plan

The 1994 Master Plan predicted that SEF's operations by the year 2012 would include some commercial service operations. As of yet, this has not occurred. However, the infrastructure that has been put into place is conducive to the development of commercial operations. For the year 2012, the 1994 Master Plan forecast 80,200 operations. Using the AAGR of 2.68 percent as demonstrated between the years 1998 and 2012, the forecast for the year 2021 is predicted to be 101,511 operations (see **Table 5-8**).

5.3.6 Based Aircraft Ratio

One of the methodologies approved by the FAA is that total aircraft operations are tied to based aircraft at an airport. This theory is demonstrated in **Table 5-9**. The FAA ratio for operations per based aircraft for small, non-towered airports, according to FAA Order 5090.3C, Chapter 3, is 637 operations per based aircraft. However, based upon historical data, it was determined that the factor for operations per based aircraft is approximately 289. Using this factor as well as the forecast for based aircraft at SEF, it was determined that approximately 35,105 local operations are forecast to occur in the year 2021.

5.3.7 Market Share Analysis

The market share analysis is similar to that methodology used in the based aircraft forecast. In order to forecast future SEF annual aircraft operations, National, state, and regional (CFASPP) operations data was divided by historical SEF aircraft operations in order to determine what share of the total operations could be attributed to SEF. Future SEF annual aircraft operations were determined by taking the growth rates for the years 1990 through 2000, and adding it to the market share for the year 2001 in order to obtain a standard market share factor for national, state, and regional data. This resulted in a prediction of SEF operations for 2021 of 105,664, 115,632, and 122,682 based upon national, state, and regional forecast data.

This resulted in an average forecast of 114,659 for the year 2021, which is an AAGR of 2.17 percent. **Table 5-10** and **Figure 5-6** demonstrate the relationship between the national, state, and county aircraft operations to the historical SEF annual operations.

Table 5-9. Operations Per Based Aircraft Forecasts

	Local Operations				Based Aircraft	Operations ¸ Based Aircraft				
Year	**Based on TAF (1)**	**Based on 5010 (2)**	**Based on SEF**	**Average Local Operations**	**Selected Forecast**	**Based on TAF**	**Based on 5010**	**Based on SEF**	**Average**	
1988	18,619	9,040	9,040	12,233	25	745	362	362	489	
1989	19,099	9,718	9,718	12,845	21	909	463	463	612	
1990	19,594	9,040	9,040	12,558	32	612	283	283	392	
1991	20,488	12,656	12,656	15,267	37	554	342	342	413	
1992	16,272	16,272	16,272	16,272	43	378	378	378	378	
1993	16,272	16,272	17,873	16,806	43	378	378	416	391	
1994	15,594	15,594	19,632	16,940	43	363	363	457	394	
1995	15,594	15,594	21,563	17,584	43	363	363	501	409	
1996	15,594	21,786	23,685	20,355	54	289	403	439	377	
1997	55,099	16,498	24,346	31,981	84	656	196	290	381	
1998	55,099	27,888	25,025	36,004	84	656	332	298	429	
1999	28,979	28,979	25,723	27,894	84	345	345	306	332	
2000	28,979	30,379	26,441	28,600	84	345	362	315	340	Historic
2001	**28,979**	**31,720**	**27,179**	**29,293**	**84**	**670**	**378**	**405**	**484**	Forecast
2002	28,979	31,725	27,900	29,535	85	341	373	400	371	
2003	28,979	31,353	28,640	29,657	85	341	369	394	368	
2004	28,979	31,345	29,400	29,908	86	337	364	389	363	
2005	28,979	31,329	30,180	30,162	87	333	360	384	359	
2006	**28,979**	**31,303**	**30,980**	**30,421**	**88**	**329**	**356**	**379**	**355**	
2007	28,979	31,269	31,802	30,684	89	326	351	373	350	
2008	28,979	31,226	32,646	30,950	90	322	347	368	346	
2009	28,979	31,517	33,512	31,336	92	315	343	363	340	
2010	28,979	31,453	34,401	31,611	93	312	338	358	336	
2011	**28,979**	**31,379**	**35,314**	**31,891**	**94**	**308**	**334**	**352**	**331**	
2012	28,979	31,297	36,250	32,175	95	305	329	347	327	
2013	28,979	31,206	37,212	32,466	96	302	325	342	323	
2014	28,979	31,106	38,199	32,761	97	299	321	337	319	
2015	28,979	30,997	39,213	33,063	98	296	316	331	314	
2016	**28,979**	**30,880**	**40,253**	**33,371**	**99**	**293**	**312**	**326**	**310**	
2017	28,979	31,062	41,321	33,787	101	287	308	321	305	
2018	28,979	30,922	42,417	34,106	102	284	303	316	301	
2019	28,979	30,774	43,542	34,432	103	281	299	310	297	
2020	28,979	30,618	44,697	34,765	104	279	294	305	293	
2021	**28,979**	**30,452**	**45,883**	**35,105**	**105**	**276**	**290**	**300**	**289**	
AAGR 2000-2021 (%)	**0.00%**	**0.01%**	**2.66%**	**0.98%**	**1.07%**	**-1.06%**	**-1.05%**	**-0.23%**	**-0.78%**	

Source: (1) FAA Terminal Area Forecast, 2001
(2) FAA Airport Master Record, 2001
Note: Linear regression used to predict Operations per based aircraft

Table 5-10. Market Share Analysis Forecasts Annual Aircraft Operations

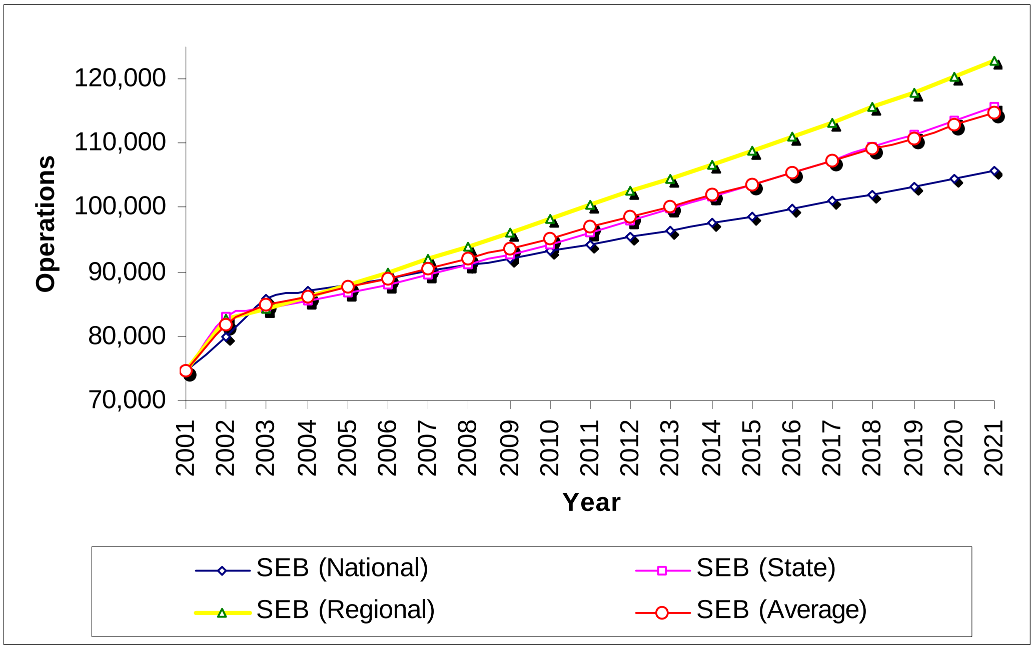
	National			State			Regional				
Year	Total GA/Mil US (1)	SEB GA Operations	SEF Share of National GA Operations	Total GA Florida - FASP (2)	SEB GA Operations	SEF Share of State GA Operations	Total GA Central Florida CFASPP Region (3)	SEB GA Operations	SEF Share of Regional GA Operations	Average Operations	
1988	0	20,000		7,483,562	20,000	0.27%	377,627	20,000	5.30%	20,000	
1989	0	21500		8,142,733	21500	0.26%	378,150	21500	5.69%	21500	
1990	0	20,000		8,520,880	20,000	0.23%	390,389	20,000	5.12%	20,000	
1991	0	28,000		8,295,432	28,000	0.34%	360,020	28,000	7.78%	28,000	
1992	0	36000		8,086,252	36000	0.45%	376,418	36000	9.56%	36000	
1993	0	36,000		7,826,636	36,000	0.46%	387,690	36,000	9.29%	36,000	
1994	0	34,500		7,551,654	34,500	0.46%	379,596	34,500	9.09%	34,500	
1995	0	34500		7,437,291	34500	0.46%	403,613	34500	8.55%	34500	
1996	37,845,200	48,200	0.13%	7,436,160	48,200	0.65%	414,971	48,200	11.62%	48,200	
1997	39,356,900	36,500	0.09%	7,718,499	36,500	0.47%	535,555	36,500	6.82%	36,500	
1998	40,828,000	61,700	0.15%	7,819,874	61,700	0.79%	529,533	61,700	11.65%	61,700	
1999	42,950,100	64,113	0.15%	8,145,458	64,113	0.79%	462,235	64,113	13.87%	64,113	
2000	42,790,100	67,210	0.16%	8,397,018	67,210	0.80%	489,684	67,210	13.73%	67,210	Historic
2001	**40,538,800**	**74,659**	**0.18%**	**8,518,775**	**74,659**	**0.88%**	**500,261**	**74,659**	**14.92%**	**74,659**	Forecast
2002	40,274,700	79,851	0.20%	8,642,297	82,987	0.96%	511,067	82,599	16.16%	81,812	
2003	43,348,400	85,945	0.20%	8,767,610	84,190	0.96%	522,106	84,383	16.16%	84,839	
2004	43,862,200	86,963	0.20%	8,894,741	85,411	0.96%	533,383	86,205	16.16%	86,193	
2005	44,382,800	87,996	0.20%	9,023,714	86,649	0.96%	544,904	88,067	16.16%	87,571	
2006	**44,910,300**	**89,041**	**0.20%**	**9,154,687**	**87,907**	**0.96%**	**556,637**	**89,964**	**16.16%**	**88,971**	
2007	45,444,900	90,101	0.20%	9,318,831	89,483	0.96%	569,050	91,970	16.16%	90,518	
2008	45,962,700	91,128	0.20%	9,485,917	91,088	0.96%	581,740	94,021	16.16%	92,079	
2009	46,487,100	92,168	0.20%	9,656,000	92,721	0.96%	594,713	96,117	16.16%	93,669	
2010	47,018,000	93,220	0.20%	9,829,132	94,383	0.96%	607,975	98,261	16.16%	95,288	
2011	**47,555,600**	**94,286**	**0.20%**	**10,005,316**	**96,075**	**0.96%**	**621,511**	**100,448**	**16.16%**	**96,937**	
2012	48,100,000	95,366	0.20%	10,192,425	97,872	0.96%	634,063	102,477	16.16%	98,572	
2013	48,651,200	96,458	0.20%	10,383,034	99,702	0.96%	646,869	104,547	16.16%	100,236	
2014	49,208,716	97,564	0.20%	10,577,207	101,567	0.96%	659,933	106,658	16.16%	101,930	

Table 5-10 (Continued). Market Share Analysis Forecasts Annual Aircraft Operations

2015	49,772,622	98,682	0.20%	10,775,011	103,466	0.96%	673,261	108,812	16.16%	103,653
2016	**50,342,989**	**99,813**	**0.20%**	**10,976,515**	**105,401**	**0.96%**	**686,858**	**111,010**	**16.16%**	**105,408**
2017	50,919,893	100,956	0.20%	11,181,787	107,372	0.96%	700,730	113,252	16.16%	107,193
2018	51,503,407	102,113	0.20%	11,390,897	109,380	0.96%	714,882	115,539	16.16%	109,011
2019	52,093,608	103,283	0.20%	11,603,918	111,426	0.96%	729,319	117,872	16.16%	110,861
2020	52,690,573	104,467	0.20%	11,820,923	113,509	0.96%	744,049	120,253	16.16%	112,743
2021	**53,294,378**	**105,664**	**0.20%**	**12,042,001**	**115,632**	**0.96%**	**759,075**	**122,682**	**16.16%**	**114,659**
AAGR 2000-2021 (%)	**1.05%**	**2.18%**		**1.73%**	**2.62%**		**2.11%**	**2.91%**		**2.58%**

Source: (1) Historic Data from FAA Aerospace Forecasts - Fiscal Years 2002-2013 (Total FAA and Contract ATC)
(2) Historic Data from Florida Aviation Systems Plan (FASP), 1988-2021
(3) In 2000, CFASPP Central Region was 5.838% of Total Florida (FASP Forecast) GA Operations
PBS&J, 2002

Figure 5-6. Market Share Analysis



5.3.8 Ratio Analysis

A ratio analysis as described is based upon a relationship between, in this case, the number of active pilots in the system and the number of operations at SEF. A ratio between total U.S. pilots, Florida pilots, and Highland County (regional) pilots to the historical number of operations at Sebring revealed a correlation trend. Thus, using a fixed ratio throughout the 20+-year forecast period, forecasts of annual operations for SEF were determined. The ratio analysis used here compares pilot populations in the nation, state, and county to operations at SEF. In all cases, the difference between the forecasts based upon national, state, and county forecasts were nominal, 101,870 for each, which gives viability to the forecasts. Taking the average of these three forecasts, 101,870 aircraft operations are predicted to occur at SEF for the year ending 2021. This represents an AAGR of 2 percent. **Table 5-11** depicts the aircraft operations to pilot ratio forecasts.

Table 5-11. Aircraft Operations to Pilot Ratio Forecasts

	National			State			Regional				
Year	**Pilots**	**Ratio**	**GA Operations**	**Pilots ***	**Ratio**	**GA Operations**	**Pilots ***	**Ratio**	**GA Operations**	**Average Operations**	
1988			20,000			20,000			20,000	20,000	
1989			21,500			21,500			21,500	21,500	
1990	*573,909*	0.0348	20,000	*42,691*	0.4685	20,000	191	104.5966	20,000	20,000	
1991	*571,731*	0.0490	28,000	*42,529*	0.6584	28,000	190	146.9931	28,000	28,000	
1992	*568,175*	0.0634	36,000	*42,265*	0.8518	36,000	189	190.1739	36,000	36,000	
1993	*561,280*	0.0641	36,000	*41,752*	0.8622	36,000	187	192.5101	36,000	36,000	
1994	*557,593*	0.0619	34,500	*41,477*	0.8318	34,500	186	185.7088	34,500	34,500	
1995	639,184	0.0540	34,500	*47,547*	0.7256	34,500	213	162.0033	34,500	34,500	
1996	622,261	0.0775	48,200	*46,288*	1.0413	48,200	207	232.4904	48,200	48,200	
1997	616,342	0.0592	36,500	*45,848*	0.7961	36,500	205	177.7468	36,500	36,500	
1998	618,298	0.0998	61,700	45,993	1.3415	61,700	206	299.5146	61,700	61,700	
1999	635,472	0.1009	64,113	*47,271*	1.3563	64,113	212	302.8170	64,113	64,113	
2000	625,583	0.1074	67,210	*46,535*	1.4443	67,210	208	322.4628	67,210	67,210	Historical
2001	**649,957**	**0.1149**	**74,659**	***48,348***	**1.5442**	**74,659**	**217**	**344.7690**	**74,659**	**74,659**	Forecast
2002	*646,215*	0.1286	83,075	*48,070*	1.7282	83,075	215	385.8552	83,075	83,075	
2003	*648,215*	0.1286	83,332	*48,218*	1.7282	83,332	216	385.8552	83,332	83,332	
2004	*653,820*	0.1286	84,053	*48,635*	1.7282	84,053	218	385.8552	84,053	84,053	
2005	*661,975*	0.1286	85,101	*49,242*	1.7282	85,101	221	385.8552	85,101	85,101	
2006	**671,380**	**0.1286**	**86,310**	***49,942***	**1.7282**	**86,310**	**224**	**385.8552**	**86,310**	**86,310**	
2007	*680,785*	0.1286	87,519	*50,641*	1.7282	87,519	227	385.8552	87,519	87,519	
2008	*690,940*	0.1286	88,825	*51,397*	1.7282	88,825	230	385.8552	88,825	88,825	
2009	*701,095*	0.1286	90,130	*52,152*	1.7282	90,130	234	385.8552	90,130	90,130	
2010	*711,250*	0.1286	91,436	*52,907*	1.7282	91,436	237	385.8552	91,436	91,436	
2011	**721,405**	**0.1286**	**92,741**	***53,663***	**1.7282**	**92,741**	**240**	**385.8552**	**92,741**	**92,741**	
2012	*731,560*	0.1286	94,047	*54,418*	1.7282	94,047	244	385.8552	94,047	94,047	
2013	*741,715*	0.1286	95,352	*55,174*	1.7282	95,352	247	385.8552	95,352	95,352	
2014	747,871	0.1286	96,144	*55,631*	1.7282	96,144	249	385.8552	96,144	96,144	
2015	754,078	0.1286	96,942	*56,093*	1.7282	96,942	251	385.8552	96,942	96,942	
2016	760,336	0.1286	97,746	*56,559*	1.7282	97,746	253	385.8552	97,746	97,746	
2017	766,646	0.1286	98,557	*57,028*	1.7282	98,557	255	385.8552	98,557	98,557	

Table 5-11 (Continued). Aircraft Operations to Pilot Ratio Forecasts

2018	773,009	0.1286	99,375	*57,501*	1.7282	99,375	258	385.8552	99,375	99,375
2019	779,425	0.1286	100,200	*57,979*	1.7282	100,200	260	385.8552	100,200	100,200
2020	785,893	0.1286	101,032	*58,460*	1.7282	101,032	262	385.8552	101,032	101,032
2021	**792,416**	**0.1286**	**101,870**	***58,945***	**1.7282**	**101,870**	**264**	**385.8552**	**101,870**	**101,870**
AAGR 2000-2021 (%)	**1.13%**		**2.00%**	**1.13%**		**2.00%**	**1.13%**		**2.00%**	**2.00%**

Source: National And local pilots estimated from FAA Aerospace Forecasts - Fiscal Year 2002-2013
FDOT Aviation Forecasts 2000-2020

5.3.9 Regression Analysis

A regression analysis assumes that operations at an airport are directly affected by economic factors. This forecast is useful especially if 10+ years of historical data are available, and there are no significant data variances in any of the factors. For SEF the total population and employment figures for the State of Florida were used since limiting economic information to only Highlands County would have provided serious inadequacies in the forecast. Due to Sebring's location in relation to major cities in Florida, as well as it being the home of the Sebring Race Track, it was determined that using the socio-economic data for the entire state would allow for a better correlation between operations and socioeconomic data. This resulted in a coefficient of correlation, R^2, of 99.87 percent, which is considered reliable.

As a result, using the year 2000 as the base year for operations, 67,210 operations are predicted for the year 2021, which equals an estimated 125,760 operations, a 3.38 percent AAGR over this period. Based upon the measure for the reliability of forecasts through regression, this forecast will be used to determine the selected forecast. **Table 5-12** shows the regression analysis and forecast results.

5.3.10 Selected Aircraft Operations Forecast

The selected aircraft operations forecast for SEF is based upon the average of four viable forecasts representing the low (101,870), median (114,659), and high (125,760) range of the forecast spectrum for potential GA aircraft operations at Sebring. This resulted in a median forecast prediction of 114,096 annual aircraft operations, based upon a 2.55 percent AAGR for the years 2000 through 2021. **Table 5-13** shows the selected operations forecasts and **Figure 5-7** shows the forecast analysis in graphical form.

Figure 5-7. Selected and Supporting Operations Forecasts

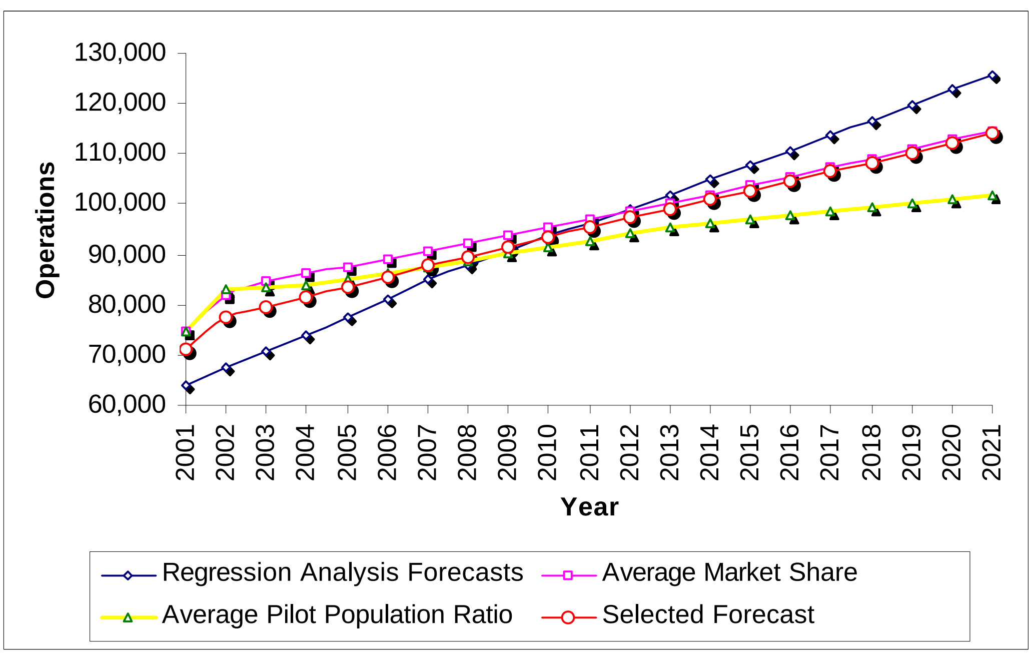


Table 5-12. Aircraft Operations Regression Analysis

Year	Annual GA Operations	Annual Operations (Linear Fit)	Florida Population	Florida Employment	Regression	
1988	20,000	15,637	9,747,411	5,066,657		
1989	21,500	19,546	10,102,000	5,260,783		
1990	20,000	23,455	10,361,520	5,387,338		
1991	28,000	27,364	10,575,340	5,294,323		
1992	36,000	31,273	10,881,570	5,358,729		
1993	36,000	35,182	11,219,460	5,571,471		
1994	34,500	39,091	11,545,720	5,799,356		
1995	34,500	43,000	11,907,840	5,996,037		
1996	48,200	46,909	12,270,410	6,183,238		
1997	36,500	50,818	12,617,110	6,414,422		
1998	61,700	54,727	12,937,930	6,636,483		
1999	64,113	58,636	13,195,950	6,876,800		
2000	67,210	62,545	13,424,420	7,074,800		Historic
2001			**13,608,630**	**7,205,600**	**64,031**	Forecast
2002			13,878,900	7,358,600	67,362	
2003			14,149,317	7,516,600	70,681	
2004			14,411,563	7,663,800	73,916	
2005			14,712,922	7,838,100	77,620	
2006			**15,000,475**	**8,021,400**	**81,110**	
2007			15,322,040	8,184,200	85,122	
2008			15,549,746	8,326,000	87,895	
2009			15,780,837	8,459,200	90,736	
2010			16,015,362	8,597,200	93,612	
2011			**16,253,372**	**8,806,331**	**96,351**	
2012			16,494,919	9,020,549	99,125	
2013			16,740,056	9,239,979	101,935	
2014			16,988,836	9,464,746	104,782	
2015			17,241,314	9,694,980	107,665	
2016			**17,497,543**	**9,930,815**	**110,586**	
2017			17,757,581	10,172,387	113,544	
2018			18,021,483	10,419,835	116,540	
2019			18,289,306	10,673,303	119,574	
2020			18,561,110	10,932,936	122,647	
2021			**18,836,954**	**11,198,885**	**125,760**	
AAGR 2000-2021 (%)			**1.63%**	**2.21%**	**3.38%**	

Regression Analysis					
The regression equation is Annual Operations (Linear Fit) = - 104961 + 0.0138 Population - 0.00261 Employment					
Predictor	Coefficient	Standard Error of the Coefficient	T-value	P-value	
Constant	-104961.000	2161.000	-48.57	0	
Population	0.0137525	0.0009723	14.14	0	
Employment	-0.0026130	0.0017880	-1.46	0.175	
R-Squared		99.87%			
R-Squared (Adj)		99.70%			

Source: UF BEBR, 2000, FAA Master Record 5010, and PBS&J, 2002

Table 5-13. Selected Aircraft Operations Forecasts

Year	Average Pilot Population Ratio	Average Market Share	Regression Analysis Forecasts	Selected Forecast	
1988	20,000	20,000	20,000	20,000	
1989	21,500	21,500	21,500	21,500	
1990	20,000	20,000	20,000	20,000	
1991	28,000	28,000	28,000	28,000	
1992	36,000	36,000	36,000	36,000	
1993	36,000	36,000	36,000	36,000	
1994	34,500	34,500	34,500	34,500	
1995	34,500	34,500	34,500	34,500	
1996	48,200	48,200	48,200	48,200	
1997	36,500	36,500	36,500	36,500	
1998	61,700	61,700	61,700	61,700	
1999	64,113	64,113	64,113	64,113	
2000	67,210	67,210	67,210	67,210	Historic
2001	**74,659**	**74,659**	**64,031**	**71,116**	Forecast
2002	83,075	81,812	67,362	77,416	
2003	83,332	84,839	70,681	79,618	
2004	84,053	86,193	73,916	81,387	
2005	85,101	87,571	77,620	83,431	
2006	**86,310**	**88,971**	**81,110**	**85,464**	
2007	87,519	90,518	85,122	87,720	
2008	88,825	92,079	87,895	89,599	
2009	90,130	93,669	90,736	91,512	
2010	91,436	95,288	93,612	93,445	
2011	**92,741**	**96,937**	**96,351**	**95,343**	
2012	94,047	98,572	99,125	97,248	
2013	95,352	100,236	101,935	99,174	
2014	96,144	101,930	104,782	100,952	
2015	96,942	103,653	107,665	102,753	
2016	**97,746**	**105,408**	**110,586**	**104,580**	
2017	98,557	107,193	113,544	106,431	
2018	99,375	109,011	116,540	108,309	
2019	100,200	110,861	119,574	110,212	
2020	101,032	112,743	122,647	112,141	
2021	**101,870**	**114,659**	**125,760**	**114,096**	
AAGR 2000-2021 (%)	**2.00%**	**2.58%**	**3.03%**	**2.55%**	

Source: FAA Aerospace Forecast – Fiscal Year 2000-2012
FDOT Aviation Forecast
PBS&J, 2002

5.3.11 Local GA Operations Forecast

A breakdown of local and itinerant GA operations was determined in order to provide the user with an analysis of future GA passengers, automobile parking, aircraft facilities, fuel demand, and fleet mix. The methodology used to determine total annual operations at SEF was used to provide the breakdown of local airport operations compared to national, state and regional operations.

In 2001, local GA operations (excluding military operations) at SEF equaled approximately 42 percent of total operations. It is expected that this ratio will remain stable in the future.

5.3.11.1 Market Share Analysis of Local Operations

Using the Market Share methodology, as shown in previous analyses, local aircraft operations at SEF were compared to national, state, and regional aircraft operations, thus, providing a percentage or correlation between local operations and each of these forecasts. This analysis provides a low, median, and high forecast of predicted local operations at SEF. Taking the average of the four predicted estimated SEF local aircraft operations, it was determined that approximately 50,100 local aircraft operations are predicted to occur at SEF in year 2021.

5.3.11.2 Ratio Analysis of Local Operations

A ratio analysis provides a direct correlation between pilot populations and local operations. This methodology often provides an accurate prediction of local GA operations at an airport since local, and in some cases regional, pilot populations, for the most part, hangar their aircraft at the local facility.

SEF, and to some extent all of Florida, is a little different since there is a large population of “Snow Birds”. These are individuals who are not permanent residents of the state of Florida, but who come to live in the state during the winter months. These individuals often base their aircraft at SEF either all year or for the season.

This is why the national pilot population provides an excellent correlation between local operations and pilot population. Thus, based upon national, state, and county pilot populations, the analysis produced the following forecasts for the year 2021: 46,157 equally. Therefore, an average of this value predicts 46,157 local operations for the year 2021. See **Table 5-15**.

Table 5-14. Market Share Forecast Local Aircraft Operations

	National			State			Regional				
Year	Total GA/Mil US (1)	SEF GA Operations	SEF Share of National GA Operations	Total GA Florida - FASP (2)	SEF GA Operations	SEF Share of State GA Operations	Total GA Central Florida CFASPP Region (3)	SEF GA Operations	SEF Share of Regional GA Operations	Average Operations	
1988		*4,500*		7,483,562	*4,500*	0.0601%	377,627	*4,500*	1.1917%	4,500	
1989		*4,838*		8,142,733	*4,838*	0.0594%	378,150	*4,838*	1.2793%	4,838	
1990		4,500		8,520,880	4,500	0.0528%	390,389	4,500	1.1527%	4,500	
1991		8,000		8,295,432	8,000	0.0964%	360,020	8,000	2.2221%	8,000	
1992		13,000		8,086,252	13,000	0.1608%	376,418	13,000	3.4536%	13000	
1993		13,000		7,826,636	13,000	0.1661%	387,690	13,000	3.3532%	13,000	
1994		13,000		7,551,654	13,000	0.1721%	379,596	13,000	3.4247%	13,000	
1995		13,000		7,437,291	13,000	0.1748%	403,613	13,000	3.2209%	13000	
1996	37,845,200	20,500	0.0542%	7,436,160	20,500	0.2757%	414,971	20,500	4.9401%	20,500	
1997	39,356,900	13,000	0.0330%	7,718,499	13,000	0.1684%	535,555	13,000	2.4274%	13,000	
1998	40,828,000	27,500	0.0674%	7,819,874	27,500	0.3517%	529,533	27,500	5.1933%	27,500	
1999	42,950,100	28,875	0.0672%	8,145,458	28,875	0.3545%	462,235	28,875	6.2468%	28,875	
2000	42,790,100	30,375	0.0710%	8,397,018	30,375	0.3617%	489,684	30,375	6.2030%	30,375	Historic
2001	**40,538,800**	**31,549**	**0.0778%**	**8,518,775**	**31,549**	**0.3703%**	**500,261**	**31,549**	**6.3065%**	**31,549**	Forecast
2002	40,274,700	33,699	0.0837%	8,642,297	36,810	0.4259%	511,067	36,638	7.1689%	35,716	
2003	43,348,400	36,271	0.0837%	8,767,610	37,344	0.4259%	522,106	37,429	7.1689%	37,015	
2004	43,862,200	36,701	0.0837%	8,894,741	37,885	0.4259%	533,383	38,238	7.1689%	37,608	
2005	44,382,800	37,137	0.0837%	9,023,714	38,435	0.4259%	544,904	39,064	7.1689%	38,212	
2006	**44,910,300**	**37,578**	**0.0837%**	**9,154,687**	**38,993**	**0.4259%**	**556,637**	**39,905**	**7.1689%**	**38,825**	
2007	45,444,900	38,025	0.0837%	9,318,831	39,692	0.4259%	569,050	40,795	7.1689%	39,504	
2008	45,962,700	38,459	0.0837%	9,485,917	40,403	0.4259%	581,740	41,704	7.1689%	40,189	
2009	46,487,100	38,897	0.0837%	9,656,000	41,128	0.4259%	594,713	42,634	7.1689%	40,887	
2010	47,018,000	39,342	0.0837%	9,829,132	41,865	0.4259%	607,975	43,585	7.1689%	41,597	
2011	**47,555,600**	**39,792**	**0.0837%**	**10,005,316**	**42,616**	**0.4259%**	**621,511**	**44,556**	**7.1689%**	**42,321**	
2012	48,100,000	40,247	0.0837%	10,192,425	43,413	0.4259%	634,063	45,455	7.1689%	43,038	
2013	48,651,200	40,708	0.0837%	10,383,034	44,225	0.4259%	646,869	46,373	7.1689%	43,769	
2014	49,208,716	41,175	0.0837%	10,577,207	45,052	0.4259%	659,933	47,310	7.1689%	44,512	

Table 5-14 (Continued). Market Share Forecast Local Aircraft Operations

2015	49,772,622	41,647	0.0837%	10,775,011	45,894	0.4259%	673,261	48,265	7.1689%	45,269
2016	**50,342,989**	**42,124**	**0.0837%**	**10,976,515**	**46,752**	**0.4259%**	**686,858**	**49,240**	**7.1689%**	**46,039**
2017	50,919,893	42,607	0.0837%	11,181,787	47,627	0.4259%	700,730	50,235	7.1689%	46,823
2018	51,503,407	43,095	0.0837%	11,390,897	48,517	0.4259%	714,882	51,249	7.1689%	47,620
2019	52,093,608	43,589	0.0837%	11,603,918	49,425	0.4259%	729,319	52,284	7.1689%	48,433
2020	52,690,573	44,088	0.0837%	11,820,923	50,349	0.4259%	744,049	53,340	7.1689%	49,259
2021	**53,294,378**	**44,593**	**0.0837%**	**12,042,001**	**51,291**	**0.4259%**	**759,075**	**54,417**	**7.1689%**	**50,100**
AAGR 2000-2021 (%)	**1.05%**	**1.85%**		**1.73%**	**2.53%**		**2.11%**	**2.82%**		**2.41%**

Source: (1) Historic Data from FAA Aerospace Forecasts - Fiscal Years 2002-2013 (Total FAA and Contract ATC)
(2) Historic Data from Florida Aviation Systems Plan (FASP), 1988-2021
(3) CFASPP Central Region is 3.68% of Total Florida (FASP Forecast) Operations
PBS&J, 2002

Table 5-15. Ratio Analysis Pilot Population Compared to Local Aircraft Operations

Year	National			State			Regional			Average Local GA Operations	
	Pilots	Ratio	Local GA Operations	Pilots *	Ratio	Local GA Operations	Pilots *	Ratio	Local GA Operations		
1988			*4,500*			*4,500*			*4,500*	4,500	
1989			*4,838*			*4,838*			*4,838*	4,838	
1990	*573,909*	0.0078	4,500	*42,691*	0.1054	4,500	191	23.5342	4,500	4,500	
1991	*571,731*	0.0140	8,000	*42,529*	0.1881	8,000	190	41.9980	8,000	8,000	
1992	*568,175*	0.0229	13,000	*42,265*	0.3076	13,000	189	68.6739	13,000	13,000	
1993	*561,280*	0.0232	13,000	*41,752*	0.3114	13,000	187	69.5175	13,000	13,000	
1994	*557,593*	0.0233	13,000	*41,477*	0.3134	13,000	186	69.9772	13,000	13,000	
1995	639,184	0.0203	13,000	*47,547*	0.2734	13,000	213	61.0447	13,000	13,000	
1996	622,261	0.0329	20,500	*46,288*	0.4429	20,500	207	98.8808	20,500	20,500	
1997	616,342	0.0211	13,000	*45,848*	0.2835	13,000	205	63.3071	13,000	13,000	
1998	618,298	0.0445	27,500	45,993	0.5979	27,500	206	133.4951	27,500	27,500	
1999	635,472	0.0454	28,875	*47,271*	0.6108	28,875	212	136.3817	28,875	28,875	
2000	625,583	0.0486	30,375	*46,535*	0.6527	30,375	208	145.7344	30,375	30,375	Historic
2001	**649,957**	**0.0485**	**31,549**	***48,348***	**0.6525**	**31,549**	**217**	**145.6906**	**31,549**	**31,549**	Forecast
2002	*646,215*	0.0582	37,641	*48,070*	0.7831	37,641	215	174.8307	37,641	37,641	
2003	*648,215*	0.0582	37,758	*48,218*	0.7831	37,758	216	174.8307	37,758	37,758	
2004	*653,820*	0.0582	38,084	*48,635*	0.7831	38,084	218	174.8307	38,084	38,084	
2005	*661,975*	0.0582	38,559	*49,242*	0.7831	38,559	221	174.8307	38,559	38,559	
2006	***671,380***	**0.0582**	**39,107**	***49,942***	**0.7831**	**39,107**	**224**	**174.8307**	**39,107**	**39,107**	
2007	*680,785*	0.0582	39,655	*50,641*	0.7831	39,655	227	174.8307	39,655	39,655	
2008	*690,940*	0.0582	40,246	*51,397*	0.7831	40,246	230	174.8307	40,246	40,246	
2009	*701,095*	0.0582	40,838	*52,152*	0.7831	40,838	234	174.8307	40,838	40,838	
2010	*711,250*	0.0582	41,429	*52,907*	0.7831	41,429	237	174.8307	41,429	41,429	
2011	***721,405***	**0.0582**	**42,021**	***53,663***	**0.7831**	**42,021**	**240**	**174.8307**	**42,021**	**42,021**	
2012	*731,560*	0.0582	42,613	*54,418*	0.7831	42,613	244	174.8307	42,613	42,613	
2013	*741,715*	0.0582	43,204	*55,174*	0.7831	43,204	247	174.8307	43,204	43,204	
2014	747,871	0.0582	43,563	*55,631*	0.7831	43,563	249	174.8307	43,563	43,563	

Table 5-15 (Continued). Ratio Analysis Pilot Population Compared to Local Aircraft Operations

2015	754,078	0.0582	43,924	*56,093*	0.7831	43,924	251	174.8307	43,924	43,924
2016	760,336	0.0582	44,289	*56,559*	0.7831	44,289	253	174.8307	44,289	44,289
2017	766,646	0.0582	44,656	*57,028*	0.7831	44,656	255	174.8307	44,656	44,656
2018	773,009	0.0582	45,027	*57,501*	0.7831	45,027	258	174.8307	45,027	45,027
2019	779,425	0.0582	45,401	*57,979*	0.7831	45,401	260	174.8307	45,401	45,401
2020	785,893	0.0582	45,777	*58,460*	0.7831	45,777	262	174.8307	45,777	45,777
2021	**792,416**	**0.0582**	**46,157**	***58,945***	**0.7831**	**46,157**	**264**	**174.8307**	**46,157**	**46,157**
AAGR 2000-2021 (%)	**1.13%**		**2.01%**	**1.13%**		**2.01%**	**1.13%**		**2.01%**	**2.01%**

Source: National And local pilots estimated from FAA Aerospace Forecasts - Fiscal Year 2002-2013
FDOT Aviation Forecasts 2000-2020

5.3.11.3 Local Operations Selected Forecast

The selected forecast for local airport operations is based upon the average of several forecasts, Operations per Based Aircraft (OPBA), Regression Analysis, Market Share and Pilot Ratio Analysis.

The regression analysis used the same socio-economic data, employment, and population that were applied in **Table 5-12**, Aircraft Operations Regression Analysis, but applied it to historical local operations only to obtain a correlation between local operations and these factors. This analysis produced an R^2 of 99.8 percent. This is significant since local aircraft operations are more often affected by local socio-economic factors than transient aircraft operations. The regression analysis resulted in a prediction of 64,351 local operations for the year 2021. This represents the high end of the selected forecast graph. See **Table 5-16** and **Figure 5-8** for the local operations regression forecasts.

Historically, local operations at SEF have represented approximately 42 percent of total annual aircraft operations (excluding military operations). By applying the OPBA ratios calculated earlier in this section it was predicted that approximately 35,105 local GA aircraft operations in 2021 would be attributed to local aircraft.

The methodology used to determine the Market Share forecast and Pilot Ratio forecast for Total Annual Aircraft Operations at SEF was applied to SEF local aircraft operations. This resulted in two average estimates of local aircraft operations based upon these two methodologies. Comparing SEF local operations to national, state, and regional aircraft operations resulted in a market share based average forecast prediction of 50,100 local operations in 2021. Also, by comparing local operations to national, state, and local pilot populations resulted in an average forecast of 46,157 local operations for SEF in 2001.

Since there is variability amongst the forecast results, it was determined that an average of the four forecasts would provide the best prediction of local operations through the forecast period. This yielded a prediction of 48,928 selected local operations for the year 2021 with an AAGR of 2.37 percent (see **Table 5-17** and **Figure 5-8**).

Table 5-16. Local Aircraft Operations Socioeconomic Regression Analysis

Year	Annual Local GA Operations	Annual Local Operations (Linear Fit)	Florida Population	Florida Employment	Regression	
1988	*4,500*	1,870	9,747,411	5,066,657		
1989	*4,838*	4,103	10,102,000	5,260,783		
1990	4,500	6,336	10,361,520	5,387,338		
1991	8,000	8,569	10,575,340	5,294,323		
1992	13,000	10,802	10,881,570	5,358,729		
1993	13,000	13,035	11,219,460	5,571,471		
1994	13,000	15,268	11,545,720	5,799,356		
1995	13,000	17,501	11,907,840	5,996,037		
1996	20,500	19,734	12,270,410	6,183,238		
1997	13,000	21,967	12,617,110	6,414,422		
1998	27,500	24,200	12,937,930	6,636,483		
1999	28,875	26,433	13,195,950	6,876,800		
2000	30,375	28,666	13,424,420	7,074,800		Historic
2001			**13,608,630**	**7,205,600**	**29,206**	Forecast
2002			13,878,900	7,358,600	31,103	
2003			14,149,317	7,516,600	32,993	
2004			14,411,563	7,663,800	34,835	
2005			14,712,922	7,838,100	36,944	
2006			**15,000,475**	**8,021,400**	**38,931**	
2007			15,322,040	8,184,200	41,216	
2008			15,549,746	8,326,000	42,794	
2009			15,780,837	8,459,200	44,412	
2010			16,015,362	8,597,200	46,050	
2011			**16,253,372**	**8,806,331**	**47,609**	
2012			16,494,919	9,020,549	49,188	
2013			16,740,056	9,239,979	50,788	
2014			16,988,836	9,464,746	52,409	
2015			17,241,314	9,694,980	54,050	
2016			**17,497,543**	**9,930,815**	**55,713**	
2017			17,757,581	10,172,387	57,397	
2018			18,021,483	10,419,835	59,102	
2019			18,289,306	10,673,303	60,830	
2020			18,561,110	10,932,936	62,579	
2021			**18,836,954**	**11,198,885**	**64,351**	
AAGR 2000-2021 (%)			**1.63%**	**2.21%**	**3.93%**	

Regression Analysis					
The regression equation is Annual Operations (Linear Fit) = - 47442 + 0.00622 Population - 0.00118 Employment					
Predictor	Coefficient	Standard Error of the Coefficient	T-value	P-value	
Constant	-67021.000	1235.000	-54.29	0	
Population	0.0078561	0.0005554	14.14	0	
Employment	-0.0014930	0.0010220	-1.46	0.175	
R-Squared		99.87%			
R-Squared (Adj)		99.70%			

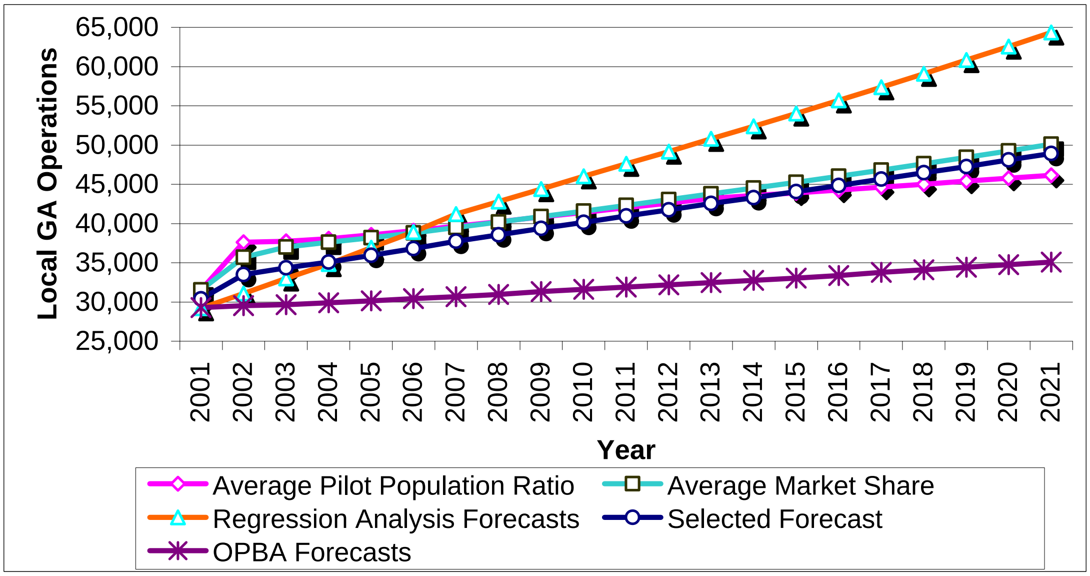
Source: UF BEBR, 2000, FAA Master Record 5010, and PBS&J, 2002

Table 5-17. Selected Forecast Local GA Operations

Year	Average OPBA Forecasts	Average Pilot Population Ratio	Average Market Share	Regression Analysis Forecasts	Selected Forecast	
1988	*12,233*	*4,500*	*4,500*	*4,500*	*6,433*	
1989	*12,845*	*4,838*	*4,838*	*4,838*	*6,839*	
1990	12,558	4,500	4,500	4,500	6,515	
1991	15,267	8,000	8,000	8,000	9,817	
1992	16,272	13,000	13,000	13,000	13,818	
1993	16,806	13,000	13,000	13,000	13,951	
1994	16,940	13,000	13,000	13,000	13,985	
1995	17,584	13,000	13,000	13,000	14,146	
1996	20,355	20,500	20,500	20,500	20,464	
1997	31,981	13,000	13,000	13,000	17,745	
1998	36,004	27,500	27,500	27,500	29,626	
1999	27,894	28,875	28,875	28,875	28,630	
2000	28,600	30,375	30,375	30,375	29,931	Historic
2001	**29,293**	**31,549**	**31,549**	**29,206**	**30,399**	Forecast
2002	29,535	37,641	35,716	31,103	33,499	
2003	29,657	37,758	37,015	32,993	34,356	
2004	29,908	38,084	37,608	34,835	35,109	
2005	30,162	38,559	38,212	36,944	35,969	
2006	**30,421**	**39,107**	**38,825**	**38,931**	**36,821**	
2007	30,684	39,655	39,504	41,216	37,765	
2008	30,950	40,246	40,189	42,794	38,545	
2009	31,336	40,838	40,887	44,412	39,368	
2010	31,611	41,429	41,597	46,050	40,172	
2011	**31,891**	**42,021**	**42,321**	**47,609**	**40,960**	
2012	32,175	42,613	43,038	49,188	41,754	
2013	32,466	43,204	43,769	50,788	42,557	
2014	32,761	43,563	44,512	52,409	43,311	
2015	33,063	43,924	45,269	54,050	44,077	
2016	**33,371**	**44,289**	**46,039**	**55,713**	**44,853**	
2017	33,787	44,656	46,823	57,397	45,666	
2018	34,106	45,027	47,620	59,102	46,464	
2019	34,432	45,401	48,433	60,830	47,274	
2020	34,765	45,777	49,259	62,579	48,095	
2021	**35,105**	**46,157**	**50,100**	**64,351**	**48,928**	
AAGR 2000-2021 (%)	**0.98%**	**2.01%**	**2.41%**	**3.64%**	**2.37%**	

Source: PBS&J 2002

Figure 5-8. Local Aircraft Operations Selected Forecast



5.4 MILITARY OPERATIONS

GA activity at SEF consists primarily of recreational, corporate, and medical helicopter operations. However, there is a significant amount of military helicopter operations as a result of the "hot" fueling contract with the U.S. Department of Defense (DOD). The SAA staff is one of only two civilian groups in the country trained to "hot fuel" military helicopters.

The SAA staff is one of only two civilian groups in the country trained to "hot fuel" military helicopters.

Military helicopters and C-130 aircraft represent the type of military aircraft currently using SEF. Other high performance and transport military aircraft do not currently use SEF due to a safety requirement, which requires a field length of approximately 8,500 feet. As a result, it is predicted, unless there is a significant change in the facilities (i.e. longer runways), that military operations will remain stable through the year 2021, as shown in **Table 5-18**.

Table 5-18. Military Operations Forecast

Year	Military Operations	
1990	500	
1991	500	
1992	500	
1993	500	
1994	500	
1995	500	
1996	2,500	
1997	500	
1998	2,000	
1999	1,000	
2000	1,000	Historic
2001	**1,000**	Forecast
2002	1,000	
2003	1,000	
2004	1,000	
2005	1,000	
2006	**1,000**	
2007	1,000	
2008	1,000	
2009	1,000	
2010	1,000	
2011	**1,000**	
2012	1,000	
2013	1,000	
2014	1,000	
2015	1,000	
2016	**1,000**	
2017	1,000	
2018	1,000	
2019	1,000	
2020	1,000	
2021	**1,000**	
AAGR 2000-2021 (%)	0.00%	

Source: FAA Master Record 5010 (1990-1992), FAA TAF, 2001 (1992-1995)
Sebring Regional Airport Statistics (1996-2000), FAA Master Record 5010

5.5 BREAKDOWN OF TOTAL AIRCRAFT OPERATIONS

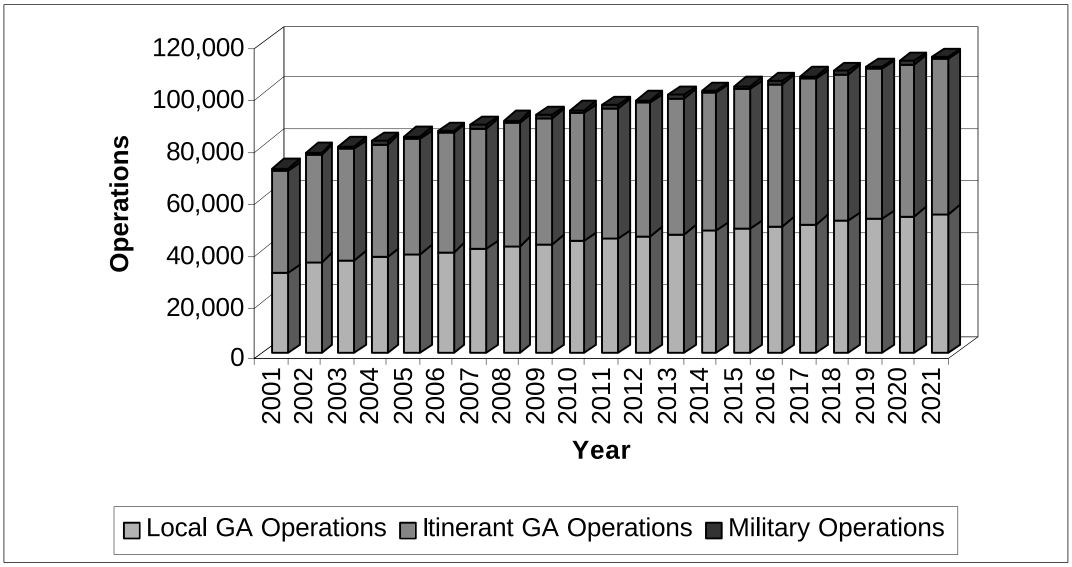
A breakdown of Total Aircraft Operations by type is demonstrated in **Table 5-19** and **Figure 5-9**, following. This information is valuable in determining peaks in operations, facility development, and types of aircraft utilizing SEF.

Table 5-19. Aircraft Operations Forecast by Type

Year	Local GA Operations	Itinerant GA Operations	Military Operations	Total Operations	
1988	*6,433*	*13,567*	*0*	*20,000*	
1989	*6,839*	*14,661*	*0*	*21,500*	
1990	6,515	12,985	500	20,000	
1991	9,817	17,683	500	28,000	
1992	13,818	21,682	500	36,000	
1993	13,951	21,549	500	36,000	
1994	13,985	20,015	500	34,500	
1995	14,146	19,854	500	34,500	
1996	20,464	25,236	2500	48,200	
1997	17,745	18,255	500	36,500	
1998	29,626	30,074	2000	61,700	
1999	28,630	34,483	1000	64,113	
2000	29,931	36,279	1000	67,210	Historic
2001	**30,399**	**39,717**	**1,000**	**71,116**	Forecast
2002	33,499	42,918	1,000	77,416	
2003	34,356	44,262	1,000	79,618	
2004	35,109	45,279	1,000	81,387	
2005	35,969	46,461	1,000	83,431	
2006	**36,821**	**47,643**	**1,000**	**85,464**	
2007	37,765	48,955	1,000	87,720	
2008	38,545	50,054	1,000	89,599	
2009	39,368	51,143	1,000	91,512	
2010	40,172	52,273	1,000	93,445	
2011	**40,960**	**53,383**	**1,000**	**95,343**	
2012	41,754	54,494	1,000	97,248	
2013	42,557	55,618	1,000	99,174	
2014	43,311	56,640	1,000	100,952	
2015	44,077	57,677	1,000	102,753	
2016	**44,853**	**58,727**	**1,000**	**104,580**	
2017	45,666	59,766	1,000	106,431	
2018	46,464	60,845	1,000	108,309	
2019	47,274	61,938	1,000	110,212	
2020	48,095	63,046	1,000	112,141	
2021	**48,928**	**64,168**	**1,000**	**114,096**	
AAGR 2000-2021 (%)	**2.37%**	**2.75%**	**0.00%**	**2.55%**	

Source: FAA Master Record 5010 (1990-1992), FAA TAF, 2001 (1992-1995)
Sebring Regional Airport Statistics (1996-2000), FAA Master Record 5010, 2001 (www.gcr1.com/5010forms)
Note: 1988 & 1999 are estimated from historic local and itinerant operations split

Figure 5-9. Aircraft Operations Forecast by Type



5.6 ANNUAL OPERATIONS PER AIRCRAFT TYPE

An estimation of annual GA operations by type of aircraft was conducted to support the demand/capacity and facility requirements analyses. Due to the absence of an air traffic control tower (ATCT), annual aircraft operations were calculated based upon the FAA national estimate of operations per aircraft type. The FAA predicts the following approximate changes from 2002 through the year 2013 (21):

- Single engine piston aircraft will increase from 146,500 to 152,000 by 2013.
- Multi-engine piston aircraft will decrease from 20,800 to 20,700 by 2013.
- Turboprop aircraft will increase from 5,700 to 6,000 by 2013.
- Turbojet aircraft will increase from 7,300 to 10,900 by 2013.
- Rotorcraft will increase from 7,000 to 7,500 by 2013.
- Other aircraft (i.e. gliders) will increase from 6,700 to 6,900 by 2013
- Experimental aircraft will increase from 20,400 to 21,400 by 2013.

Applying the FAA's National Estimate of operations per aircraft type to the historical breakdown of GA operations per aircraft type, and the total annual aircraft forecast, the following was predicted for the year 2021 (excluding military operations) and shown in **Table 5-20**:

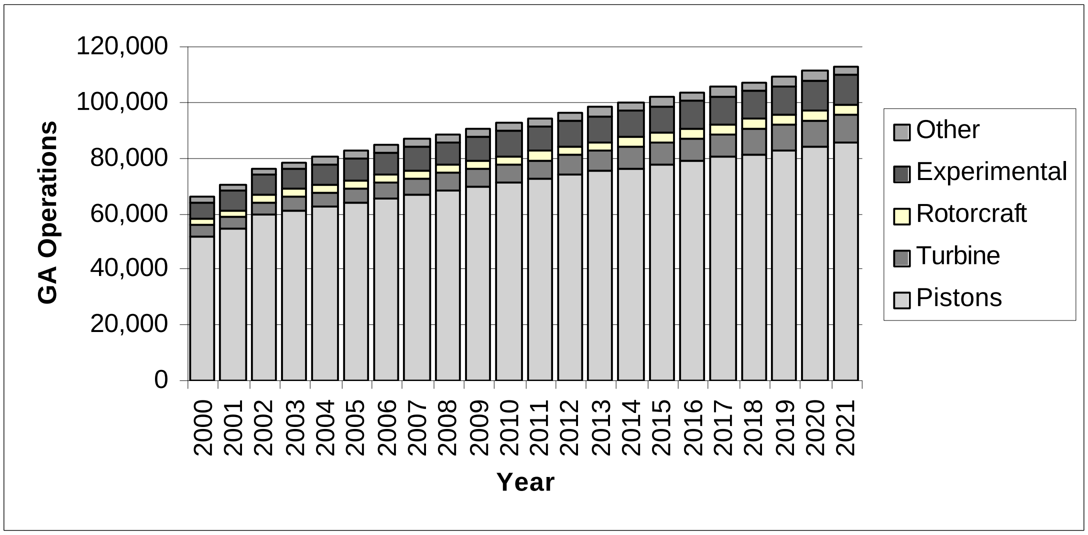
- Single-engine piston aircraft operations would equal 66.7 percent of total operations.
- Multi-engine piston aircraft operations would equal 8.8 percent of total operations.
- Turboprop aircraft operations would equal 2.6 percent of total operations.
- Turbojet aircraft operations would equal 6.1 percent of total operations.
- Rotorcraft would operations equal 3.4 percent of total operations.
- Experimental aircraft operations would equal 9.4 percent of total operations.
- Other aircraft operations would equal 3.0 percent of total operations.

Table 5-20. Annual Operations by Aircraft Type

Year	Piston Engine	Single Engine	Multi-Engine	Turbine	Turboprops	Turbojets	Rotorcraft	Experimental	Other	Total GA Operations	
2000	51,899	45,479	6,419	3,885	1,754	2,131	2,176	6,211	2,039	66,210	Historic
2001	**54,822**	48,009	6,812	**4,185**	1,865	2,319	**2,319**	**6,618**	**2,173**	**70,117**	Forecast
2002	59,643	52,228	7,415	4,617	2,014	2,602	2,496	7,273	2,389	76,416	
2003	61,255	53,649	7,606	4,832	2,076	2,756	2,572	7,496	2,462	78,618	
2004	62,541	54,802	7,739	5,038	2,125	2,913	2,635	7,661	2,512	80,387	
2005	64,033	56,137	7,895	5,267	2,182	3,086	2,708	7,852	2,571	82,431	
2006	**65,511**	57,462	8,049	**5,503**	2,237	3,266	**2,780**	**8,041**	**2,628**	**84,464**	
2007	67,155	58,933	8,222	5,761	2,298	3,463	2,860	8,252	2,693	86,720	
2008	68,501	60,144	8,357	6,001	2,348	3,653	2,927	8,426	2,745	88,599	
2009	69,866	61,372	8,494	6,250	2,398	3,852	2,996	8,602	2,798	90,512	
2010	71,241	62,610	8,630	6,508	2,449	4,059	3,066	8,780	2,851	92,445	
2011	**72,580**	63,819	8,761	**6,771**	2,497	4,274	**3,134**	**8,955**	**2,903**	**94,343**	
2012	73,919	65,028	8,891	7,041	2,545	4,496	3,203	9,129	2,955	96,248	
2013	75,267	66,246	9,022	7,322	2,593	4,729	3,273	9,305	3,007	98,174	
2014	76,494	67,358	9,136	7,599	2,636	4,963	3,338	9,466	3,054	99,952	
2015	77,733	68,481	9,251	7,886	2,679	5,206	3,404	9,629	3,102	101,753	
2016	78,983	69,616	9,367	8,182	2,722	5,460	3,471	9,794	3,150	103,580	
2017	80,245	70,762	9,483	8,489	2,764	5,724	3,539	9,961	3,199	105,431	
2018	81,519	71,920	9,599	8,806	2,807	5,999	3,608	10,129	3,247	107,309	
2019	82,804	73,088	9,716	9,135	2,849	6,285	3,677	10,299	3,297	109,212	
2020	84,101	74,268	9,833	9,474	2,891	6,583	3,748	10,471	3,346	111,141	
2021	**85,410**	**75,460**	**9,951**	**9,825**	**2,932**	**6,893**	**3,820**	**10,645**	**3,396**	**113,096**	
AAGR 2000-2021 (%)	**2.40%**	**2.44%**	**2.11%**	**4.52%**	**2.48%**	**5.75%**	**2.72%**	**2.60%**	**2.46%**	**2.58%**	

Source: FAA Aerospace Forecasts - Fiscal Years 2002-2013
PBS&J, 2002
Note: Excludes military operations.

Figure 5-10. Fleet Mix Annual Operations by Aircraft Type



5.7 FUEL FLOWAGE

Fuel storage and capacity are primary concerns for airport operators and FBOs. Because of increasing operations, fuel sales are expected to increase as well. A correlation of historical fuel sales and historic operations was established and applied to the preferred operations forecast to determine if it is necessary to improve or expand the existing fuel facilities.

However, due to the nature of the fleet mix at SEF, it was necessary to determine what percentage of both local and transient operations were piston and those that were turbine. Using the information presented in **Table 5-20**, Annual Operations by Aircraft type, it was possible to determine the demand for both Avgas and Jet-A fuel. Based upon this information, it was determined that 50 percent of experimental aircraft use Avgas while the remaining 50 percent used other types of fuel. Furthermore, the majority of rotorcraft operations, approximately 70 percent, are turbine. As a result, a breakdown of operations by type is shown in **Table 5-21**.

5.7.1 General Aviation Fuel Flowage

Fuel projections for GA were developed using an average ratio of gallons of fuel sold to the number of operations. This resulted in an average of 1.18 gallons of fuel per GA piston operation and 12.18 gallons of fuel per GA turbine operation. The fuel volumes include avgas for piston-powered operations and Jet-A for turbine-powered aircraft and rotorcraft. By applying this ratio to the preferred operational forecast, it is estimated that a total of 110,647 gallons of Avgas and 237,777 gallons of Jet A are forecast to be sold at SEF annually by 2021. **Table 5-21** illustrates the total fuel volume as well as the breakdown between Jet A and Avgas fuel sales volume projected for SEF.

Table 5-21. Fuel Flowage Forecast

Avgas Fuel Flow by Type											
Year	**Pistons**	**Single Engine**	**Multi-Engine**	**Turbine**	**Turboprops**	**Turbojets**	**Rotorcraft**	**Experimental**	**Other**	**Total**	
2000	61,366	53,775	7,590	0	0	0	772	3,672	1,206	67,016	Historic
2001	**64,822**	**56,767**	**8,055**	**0**	**0**	**0**	**823**	**3,912**	**1,285**	**70,842**	Forecast
2002	70,523	61,755	8,768	0	0	0	885	4,300	1,412	77,120	
2003	72,429	63,435	8,994	0	0	0	912	4,432	1,456	79,229	
2004	73,949	64,799	9,150	0	0	0	935	4,529	1,485	80,899	
2005	75,714	66,378	9,336	0	0	0	960	4,642	1,520	82,836	
2006	**77,462**	**67,944**	**9,517**	**0**	**0**	**0**	**986**	**4,754**	**1,554**	**84,755**	
2007	79,405	69,684	9,722	0	0	0	1,014	4,878	1,592	86,890	
2008	80,997	71,115	9,882	0	0	0	1,038	4,981	1,623	88,639	
2009	82,610	72,567	10,043	0	0	0	1,063	5,086	1,654	90,413	
2010	84,236	74,032	10,204	0	0	0	1,087	5,191	1,686	92,200	
2011	**85,820**	**75,460**	**10,360**	**0**	**0**	**0**	**1,112**	**5,294**	**1,717**	**93,942**	
2012	87,403	76,890	10,513	0	0	0	1,136	5,397	1,747	95,684	
2013	88,998	78,330	10,667	0	0	0	1,161	5,501	1,778	97,438	
2014	90,448	79,645	10,803	0	0	0	1,184	5,596	1,806	99,035	
2015	91,913	80,974	10,939	0	0	0	1,207	5,693	1,834	100,647	
2016	93,391	82,315	11,075	0	0	0	1,231	5,790	1,862	102,275	
2017	94,883	83,671	11,213	0	0	0	1,255	5,889	1,891	103,918	
2018	96,389	85,039	11,350	0	0	0	1,280	5,988	1,920	105,577	
2019	97,909	86,421	11,488	0	0	0	1,304	6,089	1,949	107,251	
2020	99,443	87,816	11,627	0	0	0	1,329	6,191	1,978	108,942	
2021	**100,991**	**89,225**	**11,766**	**0**	**0**	**0**	**1,355**	**6,293**	**2,008**	**110,647**	
AAGR 2000-2021 (%)	**2.40%**	**2.44%**	**2.11%**				**2.72%**	**2.60%**	**2.46%**	**2.42%**	

Table 5-21 (Continued). Fuel Flowage Forecast

Jet-A Fuel Flow by Type											
Year	**Pistons**	**Single Engine**	**Multi-Engine**	**Turbine**	**Turboprops**	**Turbojets**	**Rotorcraft**	**Experimental**	**Other**	**Total**	
2000	0	0	0	47,320	21,363	25,957	18,557	37,831	12,420	116,128	Historic
2001	**0**	**0**	**0**	**50,974**	**22,721**	**28,253**	**19,777**	**40,305**	**13,237**	**124,294**	Forecast
2002	0	0	0	56,238	24,536	31,702	21,279	44,295	14,548	136,361	
2003	0	0	0	58,861	25,290	33,571	21,933	45,657	14,995	141,446	
2004	0	0	0	61,369	25,891	35,478	22,471	46,662	15,301	145,803	
2005	0	0	0	64,163	26,575	37,588	23,088	47,825	15,657	150,733	
2006	**0**	**0**	**0**	**67,037**	**27,248**	**39,789**	**23,703**	**48,977**	**16,007**	**155,725**	
2007	0	0	0	70,175	27,989	42,187	24,385	50,258	16,400	161,218	
2008	0	0	0	73,095	28,599	44,496	24,962	51,318	16,718	166,093	
2009	0	0	0	76,132	29,214	46,918	25,548	52,393	17,041	171,114	
2010	0	0	0	79,276	29,826	49,449	26,140	53,477	17,366	176,258	
2011	**0**	**0**	**0**	**82,477**	**30,419**	**52,057**	**26,725**	**54,540**	**17,684**	**181,426**	
2012	0	0	0	85,774	31,002	54,772	27,312	55,602	17,999	186,687	
2013	0	0	0	89,191	31,588	57,602	27,909	56,673	18,316	192,089	
2014	0	0	0	92,567	32,116	60,451	28,464	57,654	18,603	197,287	
2015	0	0	0	96,058	32,638	63,420	29,024	58,648	18,894	202,624	
2016	0	0	0	99,667	33,158	66,509	29,595	59,654	19,185	208,101	
2017	0	0	0	103,403	33,675	69,728	30,173	60,667	19,482	213,724	
2018	0	0	0	107,271	34,193	73,079	30,761	61,691	19,778	219,502	
2019	0	0	0	111,271	34,706	76,565	31,356	62,729	20,079	225,435	
2020	0	0	0	115,405	35,211	80,194	31,958	63,776	20,382	231,522	
2021	**0**	**0**	**0**	**119,687**	**35,716**	**83,971**	**32,570**	**64,836**	**20,685**	**237,777**	
AAGR 2000-2021 (%)				**4.52%**	**2.48%**	**5.75%**	**2.72%**	**2.60%**	**2.46%**	**3.47%**	

Source: Sebring Airport Authority Fuel Sales, 1988-2001
FAA Forecasts-Fiscal Year 2000-2012
FAA Master Record, Form 5010,
PBS&J, 2002

5.7.2 Military Operations Fuel Flowage

Military fuel projections were developed in much the same manner as GA. A ratio between Jet A fuel sold to the military in relation to future military operations was developed. This resulted in an average of 123.086 gallons of fuel per Military operation. By applying this ratio to the preferred forecast of military operations, it is estimated that approximately 123,086 gallons of fuel will be sold to the military in 2021. **Table 5-22** illustrates the total fuel volume expected from military operations through the year 2021.

Table 5-22. Military Fuel Sales Forecast

Year	Military Fuel Sales	
2000	123,086	Historic
2001	**123,086**	Forecast
2002	123,086	
2003	123,086	
2004	123,086	
2005	123,086	
2006	**123,086**	
2007	123,086	
2008	123,086	
2009	123,086	
2010	123,086	
2011	**123,086**	
2012	123,086	
2013	123,086	
2014	123,086	
2015	123,086	
2016	**123,086**	
2017	123,086	
2018	123,086	
2019	123,086	
2020	123,086	
2021	**123,086**	
AAGR 2000-2021 (%)	**0.00%**	

Source: Sebring Regional Airport Fuel Sales Statistics

5.8 PEAK ACTIVITY

Peak hour activity tests an airport's ability to accommodate demand as represented by an increased level of activity that occurs with somewhat predictable frequency. The determination of peak activity will aid in the development and sizing of airport facilities to meet the heightened demand. FAA defines the theoretical "peak hour operations" as the total number of aircraft operations and passengers expected to use the airport, averaged for two adjacent peak hours of a typical peak time or busiest hour on record.

The most common methodology of converting the forecasts to an hourly demand baseline is the Average Day/Peak Month (AD/PM). To determine the average day of the peak month, the peak month must first be identified. Since there is no staffed air traffic facility at SEF to record aircraft movements, with the exception of during the Sebring 12 hour race, fuel sales from the Sebring Flight Office were used to determine period of peak activity. The operations for the peak month are then divided by approximately 30.42 days (average day per month per year) to obtain the average day of the peak month.

The peak hour activity is determined to establish airport facility requirements such as the spatial requirements of the terminal building and apron size and capacity. Peak hour activity typically ranges from 12 to 20 percent of the average day of the peak month. For the purposes of this study, a historical rate of 12 percent was used to calculate the peak-hour demand. This percentage represents a close approximation of the peak-hour activity at a GA airport without an ATCT or a part-time tower in operation. **Tables 5-23, 5-24, and 5-25** depict the peaking characteristics of SEF.

Table 5-23. Annual Operations Peak Hour Forecast

Year	Total GA Operations	Peak Monthly Operations	Peak Daily Operations	Peak Hourly Operations	
1991	28,000	3,689	121	15	
1992	36,000	4,743	156	19	
1993	36,000	4,743	156	19	
1994	34,500	4,545	149	18	
1995	34,500	4,545	149	18	
1996	48,200	6,350	209	25	
1997	36,500	4,808	158	19	
1998	61,700	8,128	267	32	
1999	64,113	8,446	278	33	
2000	67,210	8,854	291	35	Historic
2001	**71,116**	**9,369**	**308**	**37**	Forecast
2002	77,416	10,199	335	40	
2003	79,618	10,489	345	41	
2004	81,387	10,722	352	42	
2005	83,431	10,991	361	43	
2006	**85,464**	**11,259**	**370**	**44**	
2007	87,720	11,556	380	46	
2008	89,599	11,804	388	47	
2009	91,512	12,055	396	48	
2010	93,445	12,310	405	49	
2011	**95,343**	**12,560**	**413**	**50**	
2012	97,248	12,811	421	51	
2013	99,174	13,065	429	52	
2014	100,952	13,299	437	52	
2015	102,753	13,536	445	53	
2016	104,580	13,777	453	54	
2017	106,431	14,021	461	55	
2018	108,309	14,268	469	56	
2019	110,212	14,519	477	57	
2020	112,141	14,773	486	58	
2021	**114,096**	**15,031**	**494**	**59**	
AAGR 2000-2021 (%)	**2.55%**	**2.55%**	**2.55%**	**2.55%**	

Source: SEF MPU, 1994 (Years 1991-1992)
FAA TAF, 2001 (Years 1993-1995)
SAA 5010 Forms, 2001 (Years 1996-2001)
Note: Monthly peak of 58.08% ~58.1% based upon fuel sales (28,211.1 - 17,845.6 / (17,845.6))

Table 5-24. Local Operations Peak Hour Forecast

Year	Total Local Operations	Peak Monthly Operations	Peak Daily Operations	Peak Hourly Operations	
1991	9,817	1,293	43	5	
1992	13,818	1,820	60	7	
1993	13,951	1,838	60	7	
1994	13,985	1,842	61	7	
1995	14,146	1,864	61	7	
1996	20,464	2,696	89	11	
1997	17,745	2,338	77	9	
1998	29,626	3,903	128	15	
1999	28,630	3,772	124	15	
2000	29,931	3,943	130	16	Historic
2001	**30,399**	**4,005**	**132**	**16**	Forecast
2002	33,499	4,413	145	17	
2003	34,356	4,526	149	18	
2004	35,109	4,625	152	18	
2005	35,969	4,738	156	19	
2006	**36,821**	**4,851**	**159**	**19**	
2007	37,765	4,975	164	20	
2008	38,545	5,078	167	20	
2009	39,368	5,186	170	20	
2010	40,172	5,292	174	21	
2011	**40,960**	**5,396**	**177**	**21**	
2012	41,754	5,501	181	22	
2013	42,557	5,606	184	22	
2014	43,311	5,706	188	23	
2015	44,077	5,807	191	23	
2016	44,853	5,909	194	23	
2017	45,666	6,016	198	24	
2018	46,464	6,121	201	24	
2019	47,274	6,228	205	25	
2020	48,095	6,336	208	25	
2021	**48,928**	**6,446**	**212**	**25**	
AAGR 2000-2021 (%)	**2.37%**	**2.37%**	**2.37%**	**2.37%**	

Source: SEF MPU, 1994 (Years 1991-1992)
FAA TAF, 2001 (Years 1993-1995)
SAA 5010 Forms, 2001 (Years 1996-2001)
Note: Monthly peak of 58.08% ~58.1% based upon fuel sales (28,211.1 - 17,845.6 / (17,845.6))

Table 5-25. Itinerant Operations Peak Hour Forecast

Year	Total Itinerant Operations	Peak Monthly Operations	Peak Daily Operations	Peak Hourly Operations	
1991	17,683	2,330	77	9	
1992	21,682	2,856	94	11	
1993	21,549	2,839	93	11	
1994	20,015	2,637	87	10	
1995	19,854	2,616	86	10	
1996	25,236	3,325	109	13	
1997	18,255	2,405	79	9	
1998	30,074	3,962	130	16	
1999	34,483	4,543	149	18	
2000	36,279	4,779	157	19	Historic
2001	**39,717**	**5,232**	**172**	**21**	Forecast
2002	42,918	5,654	186	22	
2003	44,262	5,831	192	23	
2004	45,279	5,965	196	24	
2005	46,461	6,121	201	24	
2006	**47,643**	**6,276**	**206**	**25**	
2007	48,955	6,449	212	25	
2008	50,054	6,594	217	26	
2009	51,143	6,737	221	27	
2010	52,273	6,886	226	27	
2011	**53,383**	**7,032**	**231**	**28**	
2012	54,494	7,179	236	28	
2013	55,618	7,327	241	29	
2014	56,640	7,462	245	29	
2015	57,677	7,598	250	30	
2016	58,727	7,737	254	31	
2017	59,766	7,873	259	31	
2018	60,845	8,015	263	32	
2019	61,938	8,160	268	32	
2020	63,046	8,305	273	33	
2021	**64,168**	**8,453**	**278**	**33**	
AAGR 2000-2021 (%)	**2.75%**	**2.75%**	**2.75%**	**2.75%**	

Source: SEF MPU, 1994 (Years 1991-1992)
FAA TAF, 2001 (Years 1993-1995)
SAA 5010 Forms, 2001 (Years 1996-2001)
Note: Monthly peak of 58.08% ~58.1% based upon fuel sales

5.9 INSTRUMENT APPROACH ACTIVITY

An instrument approach to an airport is an actual Instrument Flight Rules (IFR) approach conducted in IFR weather and differs from an instrument operation, which may be conducted in either Visual Flight Rules (VFR) or IFR weather. Activity levels under these conditions often differ considerably at Sebring since they do not have an FAA ATCT in full-time operation. As a result, during IFR conditions, many pilots will not or are not certified to fly.

Instrument approach activity at SEF is controlled by Miami Approach Control Center, and SEF weather conditions are recorded at Avon Park Airport, some ten nautical miles (nm) to the northeast. Discussions with Miami Approach Control Center revealed that

IFR operations and/or approaches to SEF are not maintained at the center. However, the FAA maintains and reports instrument approach and operations data at its Air Traffic Activity Data System (ATADS), the official source for air traffic activity for Airport and instrument operations counts. See **Table 5-26**. Historically, SEF's instrument operations were less than 1,000 operations; therefore, they are not recorded on the ATADS.

In addition, according to the weather data obtained from the National Climatic Data Center, VFR conditions exist 95 percent of the time at Sebring. Thus, it was anticipated that instrument approaches to SEF would occur 5 percent of the time. See **Tables 5-26 and 5-27.**

Table 5-26. Regional Instrument Activity

	Total Ops (2001)	**Instrument Operation**	**Percent Operations**	**Instrument Approaches**	**Percent Approaches**
Vero Beach	216,722	36,913	17%	497	1%
Melbourne	192,153	39,076	20%	164	0%
Lakeland Linder	201,443	19,755	10%	1,057	5%
Average	***203,439***	***31,915***	***16%***	***573***	***2%***
Estimate for Sebring	**71,116**	**11,183**	**16%**	**559**	**5%**

Source: FAA Air Traffic Activity Data System (ATADS), March 2002

Instrument operations and approaches have been forecast for SEF by evaluating SEF and regional instrument activity. Based upon the information obtained from the ATADS data, it was determined that the Vero Beach, Melbourne, and Lakeland Linder Regional Airports would provide the best estimate of potential instrument operations at SEF. Therefore, the ratio of instrument approaches to instrument operations for airports in the region was determined and applied to the reported instrument approaches at SEF. This established the predicted number of instrument operations at SEF for 2001.

Instrument approaches were then forecast as a percentage of annual operations. Through this analysis, instrument operations are forecast to increase from 10,569 in 2000 to 17,942 by 2021. Instrument approaches are forecast to increase from 528 in 2000 to 897 in 2021. **Table 5-27** depicts the forecast of instrument operations and approaches for SEF through the 20+-year planning period.

Table 5-27. Instrument Activity Forecast

Year	Total Operations	Instrument Operations (16% of Total Operations)	Instrument Approaches (5% of Instrument Operations)	
1991	28,000	4,403	220	
1992	36,000	5,661	283	
1993	36,000	5,661	283	
1994	34,500	5,425	271	
1995	34,500	5,425	271	
1996	48,200	7,579	379	
1997	36,500	5,740	287	
1998	61,700	9,702	485	
1999	64,113	10,082	504	
2000	67,210	10,569	528	Historic
2001	**71,116**	**11,183**	**559**	Forecast
2002	77,416	12,174	609	
2003	79,618	12,520	626	
2004	81,387	12,798	640	
2005	83,431	13,119	656	
2006	**85,464**	**13,439**	**672**	
2007	87,720	13,794	690	
2008	89,599	14,090	704	
2009	91,512	14,390	720	
2010	93,445	14,694	735	
2011	**95,343**	**14,993**	**750**	
2012	97,248	15,292	765	
2013	99,174	15,595	780	
2014	100,952	15,875	794	
2015	102,753	16,158	808	
2016	104,580	16,445	822	
2017	106,431	16,736	837	
2018	108,309	17,032	852	
2019	110,212	17,331	867	
2020	112,141	17,634	882	
2021	**114,096**	**17,942**	**897**	
AAGR 2000-2021 (%)	**2.55%**	**2.55%**	**2.55%**	

Source: SEF MPU, 1994 (Years 1991-1992)
FAA TAF, 2001 (Years 1993-1995)
SAA 5010 Forms, 2001 (Years 1996-2001)
PBS&J, 2002

Note: Instrument Operation: Instrument procedure and/or approach conducted in either Visual Flight Rules (VFR) or Instrument Flight Rules (IFR) weather conditions.
Instrument Approach: Instrument approach conducted under actual IFR weather conditions (ceiling less than 1,000 feet and visibility less than 3 miles).

5.10 AIRCRAFT PARKING

Peak hour operations at SEF will help identify the need for improved or expanded apron facilities to accommodate expected aviation parking demand. As discussed in Chapter 4, aircraft parking by means of tie-downs was forecast using a formula of 12 percent for based aircraft and one half of the peak hour itinerant aircraft. This results in 10 based aircraft and 10 itinerant (including military) aircraft in 2000 and 13 based aircraft and 17 itinerant aircraft in 2021, which would require aircraft tie-down space. This is an increase of approximately 1.26 percent for based aircraft parking and 2.56 percent for itinerant aircraft parking over the planning period. **Tables 5-28 and 5-29** illustrate the aircraft parking demand (tie-down, itinerant parking, and hangar parking) throughout the planning period.

5.11 GENERAL AVIATION (GA) PASSENGERS AND AUTOMOBILE PARKING

5.11.1 General Aviation Passengers

Passenger forecasts will be used to determine the required capacity and improvement for such facilities as the terminal building. GA passengers were forecast using a formula of 0.9 passengers for each local operation and three passengers for every itinerant operation as indicated in the FAA's *Estimating the Economic Impact of Airports*. Thus, by multiplying the number of operations by the correct passenger coefficient, the number of GA passengers for the planning period was determined and is presented in **Table 5-30**.

Table 5-28. Aircraft Parking Forecast

Year	Total GA Operations	Itinerant Operations	Local Operations	Military Operations	Peak Hourly Total Operations	Tie-Down Aircraft Parking	Itinerant Aircraft Parking	
1991	28,000	17,683	9,817	500	15	4	5	
1992	36,000	21,682	13,818	500	19	5	6	
1993	36,000	21,549	13,951	500	19	5	6	
1994	34,500	20,015	13,985	500	18	5	5	
1995	34,500	19,854	14,146	500	18	5	5	
1996	48,200	25,236	20,464	2500	25	6	7	
1997	36,500	18,255	17,745	500	19	10	5	
1998	61,700	30,074	29,626	2000	32	10	8	
1999	64,113	34,483	28,630	1000	33	10	9	
2000	67,210	36,279	29,931	1000	35	10	10	Historic
2001	**71,116**	**39,717**	**30,399**	**1000**	**37**	**10**	**11**	Forecast
2002	77,416	42,918	33,499	1000	40	10	11	
2003	79,618	44,262	34,356	1000	41	10	12	
2004	81,387	45,279	35,109	1000	42	10	12	
2005	83,431	46,461	35,969	1000	43	10	12	
2006	**85,464**	**47,643**	**36,821**	**1000**	**44**	**11**	**13**	
2007	87,720	48,955	37,765	1000	46	11	13	
2008	89,599	50,054	38,545	1000	47	11	13	
2009	91,512	51,143	39,368	1000	48	11	14	
2010	93,445	52,273	40,172	1000	49	11	14	
2011	**95,343**	**53,383**	**40,960**	**1000**	**50**	**11**	**14**	
2012	97,248	54,494	41,754	1000	51	11	14	
2013	99,174	55,618	42,557	1000	52	12	15	
2014	100,952	56,640	43,311	1000	52	12	15	
2015	102,753	57,677	44,077	1000	53	12	15	
2016	104,580	58,727	44,853	1000	54	12	16	
2017	106,431	59,766	45,666	1000	55	12	16	
2018	108,309	60,845	46,464	1000	56	12	16	
2019	110,212	61,938	47,274	1000	57	12	16	
2020	112,141	63,046	48,095	1000	58	12	17	
2021	**114,096**	**64,168**	**48,928**	**1000**	**59**	**13**	**17**	
AAGR 2000-2021 (%)	**2.55%**	**2.75%**	**2.37%**	**0.00%**	**2.55%**	**1.26%**	**2.56%**	

Source: SEF MPU, 1994 (Years 1991-1992)
FAA TAF, 2001 (Years 1993-1995)
SAA 5010 Forms, 2001 (Years 1996-2001)
PBS&J, 2002

Note: Tie-Down Aircraft Parking = 12% of Based Aircraft (Rounded to the nearest decimal)
*Itinerant Parking = 0.5 * (Peak Hour Itinerant and Military Operations) - (Rounded to the nearest decimal)*

Table 5-29. Based Aircraft Parking

Year	Based Aircraft	Hangar Parking	Tie-Down Parking	
1991	37	33	4	
1992	43	38	5	
1993	43	38	5	
1994	43	38	5	
1995	43	38	5	
1996	54	48	6	
1997	84	74	10	
1998	84	74	10	
1999	84	74	10	
2000	84	74	10	Historic
2001	**84**	**74**	**10**	Forecast
2002	85	75	10	
2003	85	75	10	
2004	86	76	10	
2005	87	77	10	
2006	**88**	**77**	**11**	
2007	89	78	11	
2008	90	79	11	
2009	92	81	11	
2010	93	82	11	
2011	**94**	**83**	**11**	
2012	95	84	11	
2013	96	84	12	
2014	97	85	12	
2015	98	86	12	
2016	99	87	12	
2017	101	89	12	
2018	102	90	12	
2019	103	91	12	
2020	104	92	12	
2021	**105**	**92**	**13**	
AAGR 2000-2021 (%)	**1.07%**	**1.04%**	**1.26%**	

Source: PBS&J, 2002
Note: Hangar Parking = 88% of Based Aircraft (Rounded to the nearest decimal)

Table 5-30. Forecast of General Aviation Passengers

Year	Local Operations	Local Passengers	Itinerant Operations	Itinerant Passengers	Total Passengers	
1990	4,500	4,050	15,000	45,000	49,050	
1991	8,000	7,200	19,500	58,500	65,700	
1992	13,000	11,700	22,500	67,500	79,200	
1993	13,000	11,700	22,500	67,500	79,200	
1994	13,000	11,700	21,000	63,000	74,700	
1995	13,000	11,700	21,000	63,000	74,700	
1996	20,500	18,450	25,200	75,600	94,050	
1997	13,000	11,700	23,000	69,000	80,700	
1998	27,500	24,750	32,200	96,600	121,350	
1999	28,875	25,988	34,238	102,714	128,702	
2000	30,375	27,338	35,835	107,505	134,843	Historic
2001	**30,399**	**27,359**	**39,717**	**119,152**	**146,511**	Forecast
2002	33,499	30,149	42,918	128,753	158,902	
2003	34,356	30,920	44,262	132,786	163,706	
2004	35,109	31,598	45,279	135,836	167,434	
2005	35,969	32,372	46,461	139,384	171,756	
2006	**36,821**	**33,139**	**47,643**	**142,928**	**176,066**	
2007	37,765	33,988	48,955	146,866	180,854	
2008	38,545	34,691	50,054	150,163	184,854	
2009	39,368	35,431	51,143	153,430	188,862	
2010	40,172	36,155	52,273	156,820	192,975	
2011	**40,960**	**36,864**	**53,383**	**160,148**	**197,012**	
2012	41,754	37,578	54,494	163,482	201,061	
2013	42,557	38,301	55,618	166,853	205,154	
2014	43,311	38,980	56,640	169,921	208,901	
2015	44,077	39,669	57,677	173,031	212,699	
2016	44,853	40,367	58,727	176,181	216,549	
2017	45,666	41,099	59,766	179,297	220,396	
2018	46,464	41,818	60,845	182,534	224,351	
2019	47,274	42,546	61,938	185,814	228,360	
2020	48,095	43,286	63,046	189,137	232,422	
2021	**48,928**	**44,036**	**64,168**	**192,504**	**236,540**	
AAGR 2000-2021 (%)	**2.30%**	**2.30%**	**2.81%**	**2.81%**	**2.71%**	

Source: Sebring Regional Airport, FAA 5010 Forms, FAA TAF, 2002 and PBS&J, 2002

5.11.2 Automobile Parking

Automobile parking forecasts have been developed using a factor of 1.3 parking spaces per busy hour passenger as suggested in the Transportation Research Boards publication, *Measuring Airport Landside Capacity*. These forecasts will be used in a later section to determine the facility requirements and the extent, if necessary, of improvements to the parking area. **Table 5-31** illustrates the forecast parking spaces throughout the 20+-year planning period.

Table 5-31. Forecast of Automobile Parking Spaces

Year	Peak Hourly Total Operations	Peak Hour Passengers	Total Automobile Parking Demand	
1991	15	34	44	
1992	19	42	55	
1993	19	42	55	
1994	18	39	51	
1995	18	39	51	
1996	25	52	68	
1997	19	42	55	
1998	32	67	87	
1999	33	68	88	
2000	35	71	92	Historic
2001	**37**	**76**	**99**	Forecast
2002	40	83	108	
2003	41	85	111	
2004	42	87	113	
2005	43	89	116	
2006	**44**	**91**	**118**	
2007	46	94	122	
2008	47	96	125	
2009	48	98	127	
2010	49	100	130	
2011	**50**	**102**	**133**	
2012	51	104	135	
2013	52	107	139	
2014	52	109	142	
2015	53	111	144	
2016	54	113	147	
2017	55	115	150	
2018	56	117	152	
2019	57	119	155	
2020	58	121	157	
2021	**59**	**123**	**160**	
AAGR 2000-2021 (%)	**2.55%**	**2.65%**	**2.65%**	

Source: Sebring Regional Airport, FAA 5010 Forms, FAA TAF, 2002 and PBS&J, 2002
Note: Peak Hour Passengers and Total Automobile Parking (Rounded to the nearest decimal)

5.12 COMMERCIAL SERVICE ACTIVITY

SEF has been identified, since 1987 in Florida Aviation System Plan, as a future commercial service facility to meet the capacity requirements of the Central Florida region. The Airport acreage and central location, as well as foreign trade zone (FTZ), within the regional market makes SEF a prime candidate for commuter service within the timeframe of this study.

As a result, an air service study is currently being conducted to determine the type and likelihood of commercial passenger operations at SEF, and will be included in Appendix A.

It is important to note that with the increasing trend of regional jets and the ability of these aircraft to produce profitable routes where previous attempts have failed, future commercial service at SEF from such regional carriers as ASA and ComAir may be realized. Therefore, the existing terminal facilities, itinerant aircraft parking areas, and Part 139 certifications should be maintained and obtained in the event scheduled service is established.

The commercial service at SEF may occur before 2006 if attempts are made to attract carriers from nearby airports. If such efforts are successful, a detailed study of forecast commercial operations should be completed to ensure adequate capacity is provided to meet the increased demand.

5.13 FORECAST SUMMARY

The aviation forecasts developed in this section reflect reasonable and acceptable methods of forecasting. The year 2000 historical aircraft operations for SEF were used as the base year for the 20+ year forecasts. This information was obtained from a variety of sources, including FAA 5010 reported data, historical fuel sales, Sebring Flight Center data, aircraft electronic counter, and some recorded ATCT data. FAA TAF data predicted that 64,113 aircraft operations would occur for the year ending 2000. However, the SAA reported 67,210 aircraft operations for the year ending 2000. This reporting discrepancy is the result of the FAA using the year 1999 as its base year for the 15 year forecast period. The TAF for SEF predicts a flat-line or zero percent growth rate. This is unlikely since, according to the FAA Aerospace Forecasts for Fiscal Years 2002-2013, GA growth nationwide will have an average annual growth rate of 1.6% for both itinerant and local aircraft operations.

For SEF, an average annual growth rate of two percent was determined based upon a variety of forecast methodologies for the 20+-year planning period. This growth rate is considered conservative since the SAA is looking to expand its GA facilities as well as institute limited commercial service. Growth at SEF over the past five years has increased at an average annual rate of more than eight percent. Thus, a zero-percent growth as reported by the FAA TAF for SEF is considered unlikely.

Tables 5-32 and 5-33 present a summary of the GA and military operations forecasts, which were developed in this chapter. These forecasts will be used in later sections to develop demand/capacity analysis and facility requirements over the forecast period.

Table 5-32. Comparison of Airport Planning and TAF Forecast

	Airport			AF/TAF
	Year	Forecast	TAF	(% Difference)
Passenger Enplanements				
Base yr	2000	0	0	0.00%
Base yr + 6yr	2006	0	0	0.00%
Base yr + 11yr	2011	0	0	0.00%
Base yr + 16yr	2016	0	0	0.00%
Base yr + 21yr	2021	0	0	0.00%
Commercial Operations				
Base yr	2000	0	0	0.00%
Base yr + 6yr	2006	0	0	0.00%
Base yr + 11yr	2011	0	0	0.00%
Base yr + 16yr	2016	0	0	0.00%
Base yr + 21yr	2021	0	0	0.00%
Total Operations				
Base yr	2000	67,210	64,113	4.83%
Base yr + 6yr	2006	85,464	64,113	33.30%
Base yr + 11yr	2011	95,343	64,113	48.71%
Base yr + 16yr	2016	104,580	64,113	63.12%
Base yr + 21yr	2021	114,096	64,113	77.96%

Table 5-33. Summary of Airport Operations

A. Forecast Levels and Growth Rates											
AIRPORT NAME:	**SEF**	**Specify base year:**		**2000**							
							AAGR (%)				
	Base Yr Level	**Base Yr + 1 yr**	**Base Yr + 6 yr**	**Base Yr + 11 yr**	**Base Yr + 16 yr**	**Base Yr + 21 yr**	**Base Yr to +1 yr**	**Base Yr to +6 yr**	**Base Yr to +11 yr**	**Base Yr to +16 yr**	**Base Yr + 21 yr**
Air Carrier	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
Commuter	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
Operations											
Itinerant											
Air Carrier	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
Commuter/Air Taxi	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
Total Commercial Operations	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
General Aviation	36,279	39,717	47,643	53,383	58,727	64,168	9.5%	4.6%	3.6%	3.1%	2.8%
Military	1,000	1,000	1,000	1,000	1,000	1,000	0.0%	0.0%	0.0%	0.0%	0.0%
Local											
General Aviation	29,931	30,399	36,821	40,960	44,853	48,928	1.6%	3.5%	2.9%	2.6%	2.4%
Military	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL OPERATIONS	67,210	71,116	85,464	95,343	104,580	114,096	5.8%	4.1%	3.2%	2.8%	2.6%

Table 5-33 (Continued). Summary of Airport Operations

Instrument Approaches	528	559	672	750	822	897	5.8%	4.1%	3.2%	2.8%	2.6%
Peak Hour Operations	35	37	44	50	54	59	5.8%	4.1%	3.2%	2.8%	2.6%
Cargo/Mail (Enplaned + Deplaned Tons)	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
Based Aircraft											
Single Engine (Non-jet)	57.0	57.0	59.7	63.8	67.2	71.3	0.0%	5.0%	12.0%	18.0%	25.0%
Multi Engine (Non-jet)	18.0	18.0	18.9	20.1	21.2	22.5	0.0%	5.0%	12.0%	18.0%	25.0%
Jet Engine	0.0	0.0	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0%	0.0%	0.0%
Helicopter	1.0	1.0	1.0	1.1	1.2	1.3	0.0%	5.0%	12.0%	18.0%	25.0%
Other	8.0	8.0	8.4	9.0	9.4	10.0	0.0%	5.0%	12.0%	18.0%	25.0%
TOTAL	84.0	84.0	88.0	94.0	99.0	105.0	0.0%	0.8%	1.0%	1.0%	1.1%
B. Operational Factors											
	Base Yr Level	**Base Yr + 1 yr**	**Base Yr + 6 yr**	**Base Yr + 11 yr**	**Base Yr+ 16 yr**	**Base Yr + 21 yr**					
Average Aircraft Size (Seats)											
Air Carrier	0	0	0	0	0	0					
Commuter	0	0	0	0	0	0					
Average Enplaning Load Factor											
Air Carrier	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%					
Commuter	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%					
Local GA Operations per Based Aircraft (Based on selected forecasts)	356	362	418	436	453	466					

DEMAND CAPACITY ANALYSIS

Sebring Regional Airport

6

6.1 INTRODUCTION

A key step in the Master Plan process is developing requirements of airport facilities, which will allow for airside and landside evolution over the term of the planning period. By comparing the existing conditions of the Airport to predicted growth projections based upon both existing and future aircraft usage as reported, the Airport can define requirements for runways, taxiways, aprons, terminal, and other related facilities to accommodate growth over the short-, intermediate-, and long-terms. Demand-capacity analysis aids in the identification of airport deficiencies, surpluses, and opportunities for future development.

This chapter of the Master Plan will analyze the ability of the current facilities at the Sebring Regional Airport (SEF) to meet both the forecast planning activity levels shown in Chapter 5, *Projection of Aviation Demand*, as well as to meet anticipated aircraft group category demand. Using Federal Aviation Administration (FAA) methodologies and typical sizing factors, the aviation projections are converted into facility requirements that will be discussed in Chapter 7 over the 20+-year planning period.

6.2 GENERAL

An essential step in the process of predicting airport needs is the determination of an airport's current capacity to accommodate anticipated demand. Demand-capacity analyses yield information, which is used to design the airport layout plan and stage facility development. This study was developed to determine the capacity of SEF to accommodate anticipated aviation demand.

There are two inter-related types of aviation demand: Operational Demand and Aircraft Group Category Demand. Each of these demand types effect capacity and development at an airport. Demand associated with operational capacity is determined through an analysis of the Air Service Volume (ASV). The ASV determines an airport's annual capacity based upon historic and forecast operations and fleet mix. It does not take into account, however, significant changes in aircraft group categories, which do not historically or currently exist at an airport in significant number. This is a deficiency in the airport capacity analysis. ASV only accounts for deficiencies in runway use, aircraft fleet mix, weather conditions, etc. that would be encountered based upon the existing aircraft group category and usage.

In order to compensate for this deficiency, capacity and demand based upon potential aircraft group category was determined. The Airport Group Category demand analysis evaluates not only the existing fleet mix, but also anticipated future fleet mix based upon a variety of external and internal factors unique to each particular airport. In the case of SEF, potential changes in roadway infrastructure, introduction of high speed rail, existing military fueling contracts, foreign trade zone designation, existing demand by sophisticated corporate and regional jet aircraft, testing facility for Small Aircraft Transportation System (SATS), etc., all effect airport infrastructure, such as runway length, strength, navigational aids (NAVAIDS), etc.

Three separate facility groups, each with the potential to constrain growth, were investigated. The maximum obtainable airport capacity could be dependent upon the limitations of any one of the following:

- Airspace Capacity
- Airfield Capacity
- Landside Capacity

6.3 AIRSPACE CAPACITY

Airspace capacity at an airport can be impacted when the flight paths of air traffic at nearby airports, or local navigational aids (NAVAIDS), interact to affect operations at the study airport. Additionally, obstructions near or in the approaches to an airport, that require aircraft to alter flight paths to avoid the obstruction, can limit the number of aircraft processed, and adversely affect airspace capacity. Therefore, a review of the obstructions, airports, special use airspace and associated approach procedures that surround SEF was completed to determine airspace capacity. **Figure 6-1** illustrates the overall airspace surrounding SEF, as depicted in FAA Miami Sectional Aeronautical Chart, 69th Edition, September 6, 2001.

6.3.1 Airspace Limitations

As discussed in Chapter 2, the Miami Air Route Traffic Control Center (ARTCC) controls the airspace in the Sebring area, and is responsible for en route control of all aircraft operating under instrument flight rules (IFR) in the Sebring area. Controlled airspace associated with SEF includes Class E, airspace that includes all controlled airspace other than Class A, B, C, or D, and special use airspace (SUA), which includes warning areas, restricted areas, military training routes (MTRs), and military operating areas (MOAs). While multiple use of the airspace is not prohibited within warning areas and MOAs, avoidance is advised during time of military training use. Joint use of MOAs is allowed; however, pilots flying within the MOAs are responsible to employ “see and avoid” standards of flight safety. Warning areas, restricted areas, MTRs, and MOAs are plotted on aeronautical charges so that pilots are aware of their location and the potential of military flight training in the vicinity.

6.3.1.1 Military Airspace

SEF is located within the Lake Placid MOA. MOAs and other SUAs associated with the Avon Park Bombing Range and MacDill Air Force Base Auxiliary Airport (AGR) limit SEF’s airspace operations. The restricted areas, as indicated in **Figure 6-1**, indicate those areas that are continuously in effect and limit where non-military aircraft can operate. As indicated, most of the areas restrict civilian aircraft to fly below 14,000 ft mean sea level (MSL). The Lake Placid MOA, in which SEF, Avon Park (AVO) and Lake Wales (X07) Airports are located, is in effect intermittently during daylight hours Monday through Friday, and occasionally on weekends, but does allow aircraft to fly lower than 7,000 feet on a limited basis. **Table 6-1** lists specific restricted areas and MOAs in the region surrounding SEF.

Table 6-1. Sebring Regional Airspace

Number	Usage Altitude	Usage Time	Controlling Agency
RESTRICTED AREAS			
Number	**Usage Altitude**	**Usage Time**	**Controlling Agency**
R-2901A	To 14,000’	Continuous	ZMA CNTR
R-2901B	14,000’ to FL 180	Continuous	ZMA CNTR
R-2901C	To 14,000’	Continuous	ZMA CNTR
R-2901D	500’ to 4,000’ East of 81 21’ 00” W; 1,000’ AGL to 4,000’ West of 81 21’ 00” West	Continuous	ZMA CNTR
R-2901E	1,000” to 4,000’	Continuous	ZMA CNTR
R-2901F	4,000’ to 5,000’	Continuous	ZMA CNTR
R-2901G	To 5,000’	Continuous	ZMA CNTR
R-2901H	1,000’ to 4,000’	Continuous	ZMA CNTR
R-2901I	1,500’ to 4,000’	Continuous	ZMA CNTR
MILITARY OPERATIONS AREAS			
Name	**Usage Altitude**	**Usage Time**	**Controlling Agency**
Avon North	5,000’	Intermittent daylight hours: contact FSS	ZMA CNTR
Avon East	500’ AGL to but not including 14,000’	Intermittent daylight hours Mon-Fri	ZMA CNTR
Avon South	4,000’	Daylight hours Mon – Fri	ZMA CNTR
Basinger	500’ AGL to 5,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR
Lake Placid	7,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR
Lake Placid North	15,000’	Intermittent daylight hours; contact FSS	ZMA CNTR
Marian	500’ AGL to 5,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR

Source: Department of Transportation, U.S. Terminal Procedures, Southeast Volume 3 of 4, 1 November 2001
Note: ZMA CNTR Miami ARTCC

A review of the flight paths to SEF in relation to SUA associated with the Avon Park Bombing Range and AGR, including associated NAVAIDS, was completed to determine the level of impact that the SUA operations have on the airspace capacity for SEF. Currently, arrivals and departures to SEF are primarily north-south depending upon wind direction and speed.

With the closure of the Vieques Bombing Range in Puerto Rico, U.S. Naval aircraft bombing missions have been relocated to the Avon Park Bombing Range. These missions often require low altitude training runs within the MOAs and military training routes (MTRs) in the area surrounding SEF. Also, as a result of the terrorist attack on September 11, and the United States’ mission to combat terrorism, military training maneuvers in south-central Florida have and are expected to increase. As the mission and priorities of the Avon Park Bombing Range and AGR change, coordination is required with the local airports in the area in order to mitigate any possible conflicts between military and civilian aircraft operations. This will be discussed in more detail in Chapter 8, Airport Alternatives.

6.3.2 Instrument Approach Limitations

Currently, approaches to SEF are primarily visual only. However, there is a published global positioning system (GPS) and VHF Omnidirectional Range and Tactical Aircraft Control and Navigation (VORTAC) approach associated with Runway 36, which uses the following waypoints, La Belle, Embru, and POPMM, to provide a straight approach to Runway 36. **Figure 6-2** illustrates the GPS approach procedure to Runway 36 for SEF.

As discussed in Chapter 2, and further demonstrated in this chapter, the airspace surrounding SEF is somewhat limited by SUA associated with the Avon Park Bombing Range and AGR. Terminal instrument approach procedures associated with Instrument Landing System (ILS), Microwave Landing System (MLS), and/or GPS approach procedures require a final approach distance of approximately 50,000 feet for a Cat I instrument approach, as well as designated missed approach and departure procedures. Depending upon the size, weight, and maneuverability of the aircraft, these operating procedures may cause infiltration into the restricted areas located to the east of SEF. Limited approach and departure procedures to Runway 18 could be mitigated by initiating coordination and approach procedures between the bombing range and SEF. In addition, current approaches to Runways 14-32 appear to skim the edge of the restricted areas. Therefore, this runway configuration allows for limited intrusion into such SUA.

Increases in aircraft operations at SEF will not exceed the airspace capacity in its existing configuration. However, limitations on additional approaches at SEF do exist.

Though the airspace surrounding SEF is constrained as a result of the location of SUA (MOAs and restricted areas), the number of aircraft operations is not completely limited by airspace restrictions. Increases in aircraft operations at SEF will not exceed the airspace capacity in its existing configuration. Continued coordination between ARTCC, AVO, ARG and the other airports in the region will ensure that safe and efficient operations continue, while maintaining the smallest amount of delay possible. However, limitations to potential instrument approach operations at SEF do exist, and could potentially restrict development on existing Runways 14-32 and 18-36. Such an instrument operation would require significant analysis and coordination to ensure that conflicts with the bombing range and SEF are avoided.

Figure 6-1. SEF Surrounding Airspace

Figure 6-2. GPS Approach to Runway 36

6.4 AIRFIELD CAPACITY

As discussed earlier, airfield capacity consists of two types of demand: operational capacity and aircraft group category demand. Airfield operational capacity is defined as the number of aircraft that can be safely accommodated on the runway-taxiway system at a given point in time. Delay is the difference between “constrained” and “unconstrained” aircraft operating time, usually expressed in minutes. As demand approaches capacity, individual aircraft delay is increased. Successive hourly demands exceeding the hourly capacity will result in unacceptable delays. Aircraft delays can still occur even when the total hourly demand is less than hourly capacity if the demand during a portion of that hour exceeds the capacity during that hour.

Aircraft group category demand/capacity is based upon the type of aircraft group category that can safely use the Airport based upon available airport facilities and infrastructure. This type of demand evaluates capacity in relation to potential opportunity costs in order to determine if significant demand for infrastructure development exists. If limiting infrastructure exists, i.e. runway length inadequate to accommodate potential aircraft group or groups demand for facilities, then it is likely that the Airport will loose its competitive edge in the marketplace.

6.4.1 Airfield Operational Capacity

Operational demand and capacity analysis of airfield or airside systems and facilities, such as the Airport’s runways and taxiways, results in calculated hourly capacities for Visual Flight Rules (VFR) and IFR conditions. Additionally, an ASV, which identifies the total number of aircraft operations that may be accommodated at the Airport without excessive delay, is also calculated.

Since the magnitude and scheduling of user demand is relatively uncontrollable, especially at a general aviation (GA) airport, reductions in aircraft delay can best be achieved by improving airfield facilities to increase overall capacity. Airfield capacity is quantified by two calculable factors:

- Weighted hourly capacity (Cw) is the theoretical number of aircraft that can be accommodated by the Airport in an hour, considering all runway use configurations.
- ASV is the Airport’s theoretical annual operational capacity.

To determine Cw and ASV and conduct the capacity analysis, a number of prime determinates specific to SEF must be identified. These include:

- Meteorological conditions
- Runway use configuration
- Aircraft mix (based upon existing aircraft group demand)
- Percent arrivals
- T&G operations
- Exit taxiways

The FAA defines operational capacity as a reasonable estimate of the Airport’s annual capacity that would be encountered over a year’s time. The parameters, assumptions, and calculations required for this analysis are included in the following sections.

6.4.1.1 Runway Orientation, Utilization, and Wind Coverage

Ideally, the active runway should match the wind direction as closely as possible. To a lesser extent, runway use is also determined by proximity to the terminal area, available runway length, and instrumentation. At SEF, use of more than one runway for arrivals and departures is rare since SEF is a non-towered Airport.

Runway 18-36, which is aligned to the north and south, is the primary runway in use at SEF, while Runway 14-32, aligned to the northwest-southeast, is used as the crosswind runway. The use and orientation of Runways 18-36 and 14-22 were evaluated to determine the capacity of the airfield, which is the sum of capacities determined for each operation (takeoff and landing). Each operation is defined by its direction, which is often influenced by wind, available instrument approaches, noise abatement procedures, airspace restrictions, and/or other operating parameters. The runway use configurations used for capacity calculations considered runway orientations of 14-32 and 18-36 in various combinations. The operations were evaluated utilizing the intersecting or open "V" runway design, Model #43, (FAA AC 150/5060-5, *Airport Capacity and Delay*) under VFR and IFR conditions.

Runway use was determined through an analysis of statistical wind data obtained from the National Oceanic and Atmospheric Administration's (NOAA's) National Climatic Data Center (NCDC) in Asheville, North Carolina, as well as information provided by the tenants and Airport management. This information was analyzed to determine the percent of operations that typically utilize each runway, based on the type of aircraft, wind direction, and overall weather conditions. The resulting runway utilizations will later be factored into the capacity calculations for the airfield. **Table 6-2** presents runway utilization for VFR and IFR conditions at SEF.

Table 6-2. Runway Utilization (Percent)

Runway	VFR Conditions	IFR Conditions
14	10.0%	0.0%
32	5.0%	0.0%
18	20.0%	0.0%
36	61.1%	3.0%
Closed		0.9%

Source: NOAA, NCDC May 2002, Sebring Airport Authority and Sebring Flight Center

The single most important criterion for runway orientation is wind coverage. The runways should provide the maximum opportunity for takeoff and landing into the wind. The FAA requires the crosswind coverage of the runway systems to be at least 95 percent. To determine the wind coverage at SEF, a wind analysis was completed using Version 4.2D of the FAA's computer program, *Airport Design for Microcomputers*. Crosswind components of 10.5, 13, and 16 knots were applied where appropriate. **Figure 6-3** illustrates the resulting wind rose for SEF.

Figure 6-3. All Weather and IFR Windrose Data

Crosswind coverage and maximum crosswind components are applied to runways based on the overall size of the aircraft utilizing the runway, and the FAA design group (A, B, C, or D) applied. Therefore, crosswind components of 10.5, 13, and 16 knots were applied to Runways 18-36 and 14-32 based on the existing and anticipated aircraft design group for the two runways. The wind analysis yielded 99.61 percent coverage for all weather conditions, and 99.54 percent coverage for IFR conditions with a 13-knot crosswind. These percentages were the result of utilizing Runway 14-32 for crosswind coverage for all weather conditions only. Only Runway 18-36 is equipped for instrument procedures, therefore, crosswind coverage is unavailable.

6.4.1.2 Airfield Operational Capacity Parameters and Assumptions

Calculated airfield operational capacity is developed by methods, parameters, and assumptions described in FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*. The calculations are based on the runway utilizations that produce the highest sustainable capacity consistent with existing air traffic rules, practices, and guidelines. The criteria and values used in the AC 150/5060-5 are typical of U.S. airports with similar runway configurations, and are designed to enable calculation of airport capacity as accurately as possible. The parameters and assumptions identified in this section were used to calculate the airfield capacity for SEF.

Aircraft Mix Index

The FAA has developed a classification system for aircraft, based on size, weight, and performance. **Table 6-3** illustrates this classification as it is presented in the FAA AC 150/5060-5. This classification is used to develop an aircraft mix, which is the relative percentage of operations conducted by each of the four classes of aircraft (A, B, C, and D). The aircraft mix is used to calculate a “mix index”, which is used in airfield capacity studies. The FAA defines the mix index as a mathematical expression, %(C+3D), which represents the percent of Class C aircraft, plus three times the percent of Class D aircraft. The following is a list of the mix indices that may be used in capacity calculations.

- 0 to 20
- 21 to 50
- 51 to 80
- 81 to 120
- 121 to 180

The current facilities at the Airport can accommodate all four classes of aircraft (A-D). However, a review of base year operations by each class of aircraft at SEF determined that operations were divided across the four classes (A-D) of aircraft at approximately 86, 11, 3, and 0 percent, respectively. This is an estimate since there were discrepancies in aircraft reporting. Utilizing this information, the base year mix index at SEF, for purposes of airfield capacity calculations, is 3.0 percent. Additionally, based upon the forecasts presented in Chapter 5, the mix index was estimated for cardinal forecast years of 2006, 2011, 2016, and 2021, resulting in 3.40, 3.6, 3.9, and 4.0 percent, respectively. The mix index for these years will be used to determine the ratio of demand to total capacity at each cardinal year. This analysis will be discussed in the capacity calculations section of this chapter.

A review of base year operations by each class of aircraft at SEF determined that operations were divided across the four classes of aircraft at 86, 11, 3 and 0 percent, respectively.

Table 6-3. FAA Aircraft Classifications

Aircraft Class	Max. Cert. Takeoff Weight (lb)	Number of Engines	Wake Turbulence Classification
A	12,500 or less	Single	Small (S)
B		Multi	
C	12,500 – 300,000	Multi	Large (L)
D	Over 300,000	Multi	Heavy (H)

Source: FAA AC 150/5060-5, Airport Capacity and Delay

Percent Arrivals

The percent of arrivals is the ratio of arrivals to total operations. It is typically safe to assume that the total annual arrivals will equal total departures, and that average daily arrivals will equal average daily departures. Interviews with the fixed base operators (FBOs) and aviation tenants at SEF confirmed that arrivals equal departures. Therefore, an arrival percentage of 50 percent was used for the airfield capacity calculations.

Percent Touch and Go

The T&G percentage is the ratio of landings with an immediate takeoff, to total operations. This type of operation is typically associated with flight training. The number of T&G operations normally decreases as the number of air carrier operations increases, demand for service and number of total operations approach runway capacity, and/or weather conditions deteriorate. Typically, T&G operations are assumed to be between zero and 50 percent of total operations.

Since SEF does not have an air traffic control tower (ATCT), limited information was available to determine what percentage of the total operations at SEF are T&G. However based upon interviews and discussions with the Sebring Flight Center and local aviation tenants, T&G operations on average account for less than 30 percent of total operations

It is estimated that touch and go operations account for approximately 30 percent of total operations at SEF.

Taxiway Factors

Taxiway entrance and exit locations are an important factor in determining the capacity of an airport's runway system. Runway capacities are highest when full-length, parallel taxiways, and ample runway entrance and exit taxiways are available, but no active runway crossings exist. FAA Advisory Circular 150/5060-5 identifies the criteria for determining taxiway exit factors at an airport. The criteria for exit factors are generally based on the mix index and the distance the taxiways are from the threshold and each other. Because the mix index for SEF was calculated to be 3.0 for the base year, and forecast to be 4.0 by 2021, only exit taxiways that are between 2,000 and 4,000 feet from the threshold, spaced at least 750 feet apart, were considered, and contributed to the taxiway exit factor. Taxiways that met these parameters were considered in completing the capacity calculations for all directions and all conditions.

Taxiway exits were evaluated for northerly and southerly flow for Runway 18-36 and northwesterly and southeasterly flow for Runway 14-32, during VFR and IFR conditions. The number of exit taxiways available for each runway can impact runway capacity. Runway 18-36 has two exit taxiways in addition to those located at the runway thresholds. There are two taxiways available for Runway 14-32. However, based on this information and the location of the taxiways, it was determined that on average a total of one taxiway met the requirements contributing to the taxiway exit factor. Thus, using Figures 3-27 and A3-2B, Hourly Capacity in a Non Radar Environment from AC 150/5060-5, the taxiway exit factor identified for Runway 18-36 was 0.85 for VFR operations, and 1.00 for IFR operations, and will be used in the capacity calculations for north and south operations. For Runway 14-32, the taxiway exit factor was 0.80 for VFR operations only. The maximum factor available for both weather conditions is 1.0.

Figure 6-4 illustrates the existing taxiway system at SEF. It should be noted that improvements to the taxiway system are currently underway; therefore, it is anticipated that any current deficiencies in the taxiway system will be alleviated. All necessary improvements to the taxiway system and airfield capacity will be discussed further in Chapter 7, *Facility Requirements*.

General Airspace Limitations

As discussed in Section 6.3, *Airspace Capacity*, airspace surrounding SEF is moderately constrained as a result of SUA associated with the Avon Park Bombing Range and AGR. Instrument operations are severely limited since SEF doesn't have an active ATCT on site. Miami ARTCC provides air traffic route control in the area. Also, as a result of the September 11, closure of the Vieques Bombing Range in Puerto Rico, and the changing mission of the military, it is expected that military traffic in the area surrounding SEF will increase. Thus, greater coordination between the military and civilian airports in the area is recommended. Future development at SEF will need to be coordinated to some extent with military operations in order to avoid potential conflicts between aircraft, and to efficiently utilize local airspace. This will be discussed in more detail in the facility requirements and development alternative chapters, Chapter 7 and Chapter 8, respectively, of this working paper.

One of the considerations raised in the last Master Plan included the potential closure of Runway 14-32 and the reopening of Runway 4-22. Based upon information from local pilots, this is more in-line with current wind conditions. However, Runway 4-22 was dismantled as part of the parallel taxiway project on Runway 18-36. In addition, the orientation of Runway 4-22 would have caused conflicts with civilian aircraft entering the restricted area located along the approach path to Runway 4. Additional limiting airspace capacity factors that have been identified at SEF include potential limitations to an ILS approach to Runway 18 as a result of the proximity of the military restricted areas and AVO. An ILS approach requires a longer final approach path to the runway. This may cause conflicts to the restricted area due to low flying training runs as well as potential conflicts with approaches to AVO and AGR. The airspace and overall approach requirements for ILS and other instrument approaches are significant, and the addition of a north approach to SEF would likely cause considerable conflicts with existing approaches to AVO and AGR, in addition to potential encroachment into military restricted airspace. Future instrument approach procedures at SEF will need to be coordinated with the range to limit conflicts associated with different types of aircraft.

Figure 6-4. Existing Taxiway System

Since SEF is not equipped with an active ATCT, and only Runway 36 is equipped for a non-precision instrument approach, these factors were considered in the airfield capacity calculations. It is important to note that these factors have a significant affect on airport capacity since, in times of especially inclement weather conditions (IFR), aircraft operations at SEF are limited or cease all together.

The lack of an instrument approach, ATCT, and location in relation to military airspace were all identified as having a potentially negative affect on SEF overall airport capacity.

Runway Instrumentation

The capacity calculations for SEF include one primary runway and one crosswind runway. The primary runway, 18-36, provides GPS and NDB approach capabilities from Runway 36. Additionally, air traffic control (ATC) facilities, equipment, and services within the region are adequate to carry out operations in a radar and non-radar environment.

Weather Influences

Weather data obtained from the NCDC identified that IFR conditions (ceiling greater than or equal to 200 but less than 1,000 feet, and/or visibility greater than or equal to ½ mile, but less than 3 miles) occur approximately 5 percent of the time. The Airport is considered closed to landing aircraft in IFR conditions when cloud ceiling or visibility is below 250 feet and ½ mile, respectively, approximately .9-percent of the time. The prevalent wind direction is from the northeast.

6.4.1.3 Airfield Capacity Calculations

The airfield operational capacity calculations in this section were performed using the parameters and assumptions discussed above. These calculations also utilize data from the preferred aviation demand forecast, as presented in Chapter 5, for portions of the capacity calculations. The following sections outline the hourly capacities in VFR and IFR conditions, as well as the annual service volume for SEF.

The capacity of SEF to accommodate projected increases in aircraft operations was conducted in accordance to procedures contained in FAA AC 150/5060-5, *Airport Capacity and Delay*. **Table 6-4** provides the existing airfield configuration capacity analysis for the Airport.

Table 6-4. Airfield Capacity Factors

Runway Use Condition	Hourly Capacity Base (C*)	Touch and Go Factor (T)	Exit Rating (E)	Hourly Capacity (C* x T x E)	Weight Factor (W)	Percent-age Use VFR	Percent-age Use IFR
Takeoff 18 Landing 18 VFR	108	1.13	.85	103.734	1	20%	
Takeoff 18 Landing 18 IFR	0	0	0	0	4		0%
Takeoff 36 Landing 36 VFR	108	1.13	.85	103.734	1	61.1%	
Takeoff 36 Landing 36 IFR	31	1.00	1.00	31	4		3.0%
Takeoff 14 Landing 14 VFR	108	1.13	.80	97.63	1	10%	
Takeoff 14 Landing 14 IFR	0	0	0	0	4		0%
Takeoff 32 Landing 32 VFR	108	1.13	.80	97.63	1	5%	
Takeoff 32 Landing 32 IFR	0	0	0	0	4		0%
Airport Closed	0	0	0	0	25		.9%
TOTAL						96.1%	3.9%

Notes: Maximum Hourly Capacity = 103.734

Hourly Capacity = (Column 2 x Column 3 x Column 4)

Weighted Hourly Capacity Cw=E (Column 5 x Column 6 x Column 7)/E(Column 6 x Column 7) =

Daily Demand Ratio (D) with Aircraft Mix Index of 0% to 20%

- *67,210/285.6 = 235.36*

Hourly Demand Ratio (H) with Aircraft Mix Index of 0% to 20%

- *235.36/35 = 8.16*

Annual Service Volume (Cw x D x H) =

The weight factor calculation for both IFR and VFR conditions is as outlined in the methodology found in FAA AC 150/5060-5, Airport Capacity and Delay, Table 3-1

Since Runway 36 is equipped with GPS, the majority of IFR operations are performed on this runway

Hourly VFR Capacity

The hourly VFR capacities for Runways 18-36 and 14-32 were calculated based on the guidance and procedures in FAA AC 150/5060-5, *Airport Capacity and Delay*. The hourly VFR capacity was calculated to be 104 operations per hour and 98 operations per hour, respectively. The following equation and calculations present the step-by-step method that was utilized to calculate the hourly VFR capacities, based on the guidance provided in FAA AC 150/5060-5.

Hourly VFR Equation

Hourly Capacity Base (C*) x Touch & Go Factor (T) x Exit Factor (E) = Hourly Capacity

Runway 18-36 Hourly Capacity	Runway 14-32 Hourly Capacity
C* x T x E = C	C* x T x E = C
108 x 1.13 x 0.85 = 104	108 x 1.13 x .80 = 98

These hourly capacities will be used to determine the Cw and the annual service volume (ASV) calculations for the SEF.

Hourly IFR Capacity

Since SEF does not have radar coverage and is not equipped with an ILS, it was necessary to follow the analysis described in Chapter 4, *Special Applications*, in FAA AC 150/5060-5 to determine the IFR capacity of the airfield. Thus, using the wind information obtained from AVO NOAA, IFR conditions occur approximately 3.9 percent of the time. Of that 3.9 percent, approximately .9 percent of the time IFR conditions prohibit the use of the Airport, thus, effectively closing the Airport to flight operations. Using Figure 4-15, *Hourly Capacity in Non-Radar Environment*, in FAA AC 150/5060-5, it was determined that the hourly capacity base for the Airport is equal to 31 operations. During IFR operations, T (the Touch and Go Factor) will always equal 1.00. Therefore, the IFR hourly capacity for Runway 36, the only runway equipped for instrument operations, was calculated to be 31 operations per hour under IFR conditions. The hourly IFR capacity equation and calculations are shown below.

Hourly IFR Equation

Hourly Capacity Base (C*) x Touch & Go Factor (T) x Exit Factor (E) = Hourly Capacity

Runway 36 Hourly Capacity	Runway 14, 18, and 32 Hourly Capacity
C* x T x E = C	C* x T x E = C
31 x 1.0 x 1.0 = 31	0 x 1.0 x 0 = 0

Weighted Hourly Capacity (Cw)

The Cw for SEF is determined by multiplying the hourly capacity x weighted factor x percent of runway use which is then divided by the weight factor x runway percent of use for all runway configurations. This represents the maximum number of hourly operations that can occur at the Airport, based upon the airfield configuration, before significant operational delay is encountered. For SEF, the Cw equals 78.48 operations per hour.

$$Cw = (C1 \times W1 \times P1) + (C2 \times W2 \times P2)/(W1 \times P1) + (W2 \times P2)$$

Annual Service Volume (ASV)

The ASV is the maximum number of annual operations that can occur at the Airport before an assumed maximum operational delay value is encountered. The ASV is calculated based on the existing runway configuration, aircraft mix, and the parameters and assumptions identified herein, and incorporates the hourly VFR and IFR capacities calculated previously. Utilizing this information and the guidance provided in FAA AC 150/5060-5, the ASV for existing conditions at SEF was calculated to be 150,701 operations. It should be noted that the ASV represents the existing airfield capacity in its present configuration, with one north-south primary runway and one crosswind runway. The equation and calculations used to obtain the ASV were taken from the FAA AC, and are presented following.

The ASV for existing conditions at SEF was calculated to be150,701 operations.

<u>ASV Equation</u>

Weighted Hourly Capacity (Cw) x Annual/Daily Demand (D) x Daily/Hourly Dem. (H) = Annual Service Volume (ASV)

<u>ASV Calculation</u>

Cw x D x H = ASV

78.48 x 235.32 x 8.16 = 150,701

The ASV calculations are based on the previously mentioned parameters and assumptions, and are directly derived from the guidance provided in FAA AC 150/5060-5, *Airport Capacity and Delay*. The results of the airfield capacity calculations represent an in-depth airport specific analysis, and have been deemed appropriate and necessary for this level of airport master planning effort.

Furthermore, the current aviation demand in number of aircraft operations for the base year 2000 at the Airport, as presented in Chapter 5 of this document, is 67,210 operations. This equals approximately 44.60 percent of the present ASV. Additionally, according to the FAA, the following guidelines should be used to determine necessary steps as demand reaches designated levels.

- 60 percent of ASV: Threshold at which planning for capacity improvements should begin.
- 80 percent of ASV: Threshold at which planning for improvements should be complete and construction should begin.
- 100 percent of ASV: Airport has reached the total number of annual operations (demand) the airport can accommodate, and capacity-enhancing improvements should be made to avoid extensive delays.

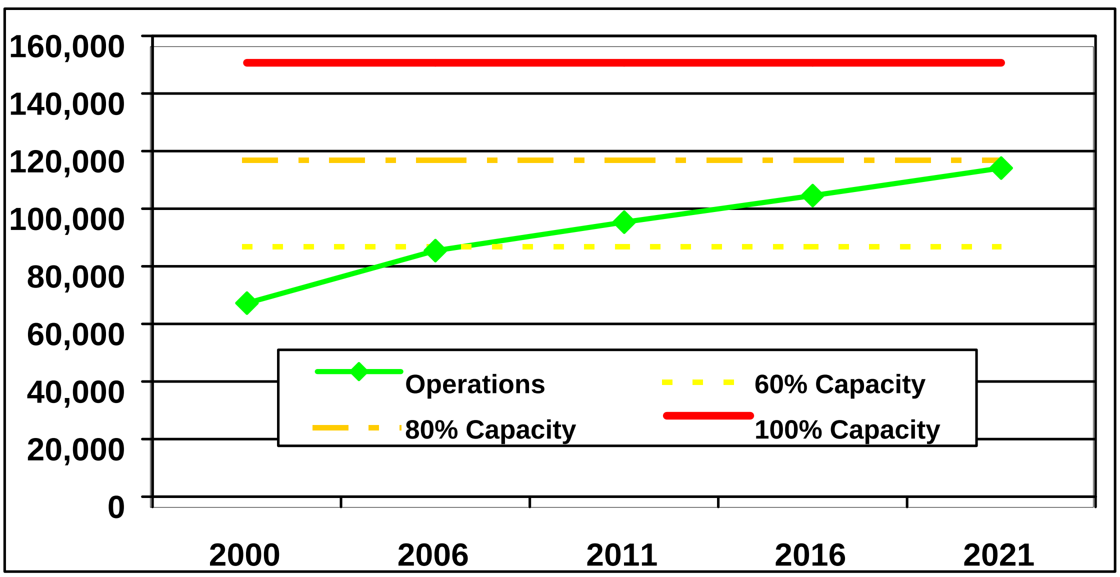
Table 6-5 and **Figure 6-5** illustrate the preferred aviation demand forecast for SEF, based upon Chapter 5 forecasts, and its relation to the Airport's ASV under VFR and IFR conditions. Based upon existing demand criteria, planning of additional capacity enhancing projects will be needed during 2008, or when the 90,421 operations mark (60 percent of ASV) is crossed. If, however, the Airport's role changes from a GA to a transport/commercial service facility as predicted by the National Plan of Integrated Airport Systems (NPIAS) and Continuing Florida Aviation System Plan (CFASP), then demand levels are expected to change. Capacity-enhancing improvements would include, but are not limited to, runway extensions, runway construction, runway instrumentation, and/or taxiway improvements. A detailed review of operational capacity enhancing facility requirements will be discussed in Chapter 7, Facility Requirements.

Table 6-5. Annual Service Volume vs. Demand

Year	Aircraft Mix Index	Annual Operations	Annual Service Volume (ASV)	Percent of ASV
2000	3.0%	67,210	150,701	44.60%
2006	3.4%	85,464	150,701	56.71%
2011	3.6%	95,343	150,701	63.27%
2016	3.9%	104,580	150,701	69.40%
2021	4.0%	114,096	150,701	75.71%

Source: FAA AC 150/5060-5, Airport Capacity and Delay and PBS&J, 2002

Figure 6-5. Annual Service Volume vs. Demand



According to these calculations, the Airport will achieve 60 percent operational capacity during the year 2008. In addition, should operational capacity constraints occur at other local airports such as AVO and/or operational requirements change, there could be an increase in demand and, thus, a need for greater capacity at SEF. This demand will trigger the need for additional facilities, such as an ATCT and/or an additional runway, which could increase the capacity of the Airport to potentially 355,000 annual aircraft operations. (22)

The Airport will achieve 60 percent operational capacity in 2008.

6.4.2 Aircraft Group Capacity Demand

Based upon operational demand alone, SEF should not plan for additional capacity enhancing projects until the year 2008, or when the 90,421 operations mark (60 percent of ASV) is crossed. However, the Sebring Airport Authority (SAA) is determined to maintain or increase its position in the community as an economic generator. Therefore, airport development is considered highly desirable.

As a result, an Aircraft group capacity demand analysis was performed. Aircraft Group Capacity Demand is based upon a group or groups of aircraft that have or are anticipated to use SEF in the future if certain infrastructure improvements are made. According to the 1994 Airport Layout Plan, the existing ARC for SEF is Category D-II. Based upon current information received from SAA and Sebring Flight Center, it was determined that there is currently demand for airport facilities by aircraft designated under Category D-IV with the potential for aircraft usage by category D-V aircraft. Currently, aircraft designated within the Class D-IV category use SEF on an irregular basis due to runway length constraints. Operators of more sophisticated and larger aircraft have stated that they would use the Airport if facilities were in place to meet their needs. Potential users include corporate aircraft, fractional ownership aircraft, turboprop and turbojet GA aircraft, commercial and charter service aircraft, special use aircraft, and heavy cargo aircraft.

Based upon discussions with existing and potential users, Sebring Flight Center, tenants, and SAA, the number of aircraft in the D-IV aircraft group category would likely increase if adequate runway length was available. In order to determine the anticipated effect of this demand on SEF, opportunity cost analyses for each potential user was determined.

6.4.2.1 Corporate and General Aviation

First, like many smaller, regional airports in Florida, SEF receives significant revenue from non-aviation sources, such as the Sebring International Raceway and Airport Industrial Park. As part of its development and revenue diversification strategy, SAA plans to develop a commerce park within its boundaries to attract aviation and non-aviation tenants as well as additional T-hangar facilities. Thus, providing additional sources of revenue.

Businesses can and do, to some degree, attract aircraft operations. Historically, aircraft operations at SEF increase significantly during the months of March and September, coinciding with a variety of auto racing events. In addition, attendees often fly larger aircraft, such as the Gulfstream II and Learjet 25. However, due to limited runway length and instrument approach capabilities, many users who would like to use the Airport are prohibited from doing so.

This problem is not new. There have already been several instances when aircraft typically used by fractional ownership companies have been forced to bus their passengers from SEF due to inadequate takeoff runway length associated with pavement, hot weather or other conditions.

As a result, potential income associated with this and similar operations at SEF are lost, thus, representing lost opportunities or an opportunity cost. Based upon the forecast aircraft mix for SEF over the 20+-year planning period, turbine aircraft, especially turbojet aircraft, are expected to grow at an average annual growth rate of 5.75 percent. Thus, turbine operations at SEF are expected to represent 8.69 percent of the total aircraft operations at SEF. Again this number is somewhat deceiving since it is merely based upon historical data and does not take into account the number of aircraft that cannot use the Airport due to facility, especially runway, limitations. Based upon letters from potential users and discussions with Airport management, **Table 6-6** shows the type and estimated revenue generation of aircraft that would utilize the Airport if adequate runway length were available.

Table 6-6. Corporate/GA Opportunity Costs

Aircraft	Passen-gers	Minimum Field Length (2) (ft)	Fuel Capacity (Gallons)	Estimated Fuel Revenue	Estimated Maximum Landing Weight (lb)	Estimated Landing Fees
Fractional Ownership Fleet (1)						
Falcon 2000	8 to 19	5,440	1,841	$3,497.90	13,424	$10.07
Challenger 604	19	5,700	2,941	$5,587.90	18,729	$14.05
Airbus Corporate Jet	124	6,300	10,800	$20,520.00	79,900	$59.93
ERJ 140	44	6,463	11,435	$21,726.50	41,226	$30.92
Business/GA Aircraft						
Learjet 60	12	5,450	1,181	$2,243.90	8,281	$7.25
Gulfstream IV	19	5,450	4,370	$8,303.00	27,730	$20.80
Boeing Business Jet	2 to 100+	5,450	10,000	$19,000.00	67,000	$50.25

Source: Aviation Week and Space Technology Handbook, January 1999 and PBS&J, 2002
Note: (1) Based upon information obtained from FlexJet and Bombardier Business Jets
(2) For Insurance and Safety purposes, requires additional 200+ ft of runway due to hot day or wet pavement.
Max. Landing Weight = Gross Weight - Empty Weight - Fuel Capacity

Again, this table represents potential lost revenue to the Airport since the Airport will not obtain landing fees, fuel sales, aircraft parking fees, automobile parking fees, concession sales, etc. from these potential aircraft operations. Furthermore, most businesses require enough runway length to accommodate their insurance safety requirements for the hottest day of the year and/or wet pavement. Both of these environs have and will continue to affect takeoff field length requirements; therefore, an additional 200 feet of runway length is suggested to meet the takeoff field length requirements of the most demanding aircraft within either the fractional ownership or corporate/GA fleet.

In order for SEF to capitalize on this existing demand, either an extension to an existing runway or construction of a new runway would be required. In addition, the installation of a precision instrument approach on one or more runway end would allow the Airport to support aircraft during inclement weather conditions.

6.4.2.2 Commercial and Charter Service

Input from residents of Highlands County as well as statistics from tourism surveys suggest that, in addition to corporate and GA traffic, some sort of commercial service would be welcome at SEF. Furthermore, with expansion both the north-south and east-west roadway system and potential development of a high speed rail facility, it is likely that SEF will become a multimodal hub offering train, surface and air access. As a result, SAA is aggressively pursuing the regional air carrier and charter markets. Currently, visitors and residents to Highlands County must drive on average more than 100-miles to a commercial service airport such as Orlando International (MCO), Tampa International (TPA), Sarasota International (SQR), etc.

Furthermore, future development at the Sebring International Raceway, Commerce and Industrial Parks, as well as in the county itself is expected to trigger increased demand for domestic air service and international charter operations, as well as fractional ownership and corporate operations. According to recent studies, Canadian and European citizens represent the largest tourist market in Highlands County.

Aircraft types that can operate most economically on a given route generally determine the composition of the fleet. Larger capacity, wide-body aircraft typically serve longer routes (hauls or stage lengths) while smaller capacity, narrow body jet, or turboprop aircraft generally serve shorter routes. The type of anticipated commercial aircraft likely to use SEF if commercial service was instituted are shown in **Table 6-7**.

Table 6-7. Commercial Service Opportunity Costs Based Upon Aircraft Type

Aircraft	Passen-gers	Anticipat-ed PFC (1)	Estimated Fuel* (Gallons)	Anticipated Fuel Sales	Maximum Landing Weight	Anticipated Landing Fees	Minimum Field Length
Long Haul Routes							
B747-200C	409	$1,227.00	152,560	$289,864.00	630,000	$472.50	10,900
B767-200	181	$543.00	82,240	$156,256.00	278,000	$208.50	6,500
A300-600	302.5	$907.50	96,350	$183,065.00	304,200	$228.15	7,200
A310-300	220	$660.00	119,050	$226,195.00	273,400	$205.05	7,400
A330-200	316.5	$949.50	138,335	$262,836.50	396,800	$297.60	8,200
Short Haul Routes							
B727-200	145	$435.00	68,475	$130,102.50	154,500	$115.88	9,300
B737-200C	120	$360.00	10,400	$19,760.00	107,000	$80.25	8,970
A320-200	150	$450.00	41,300	$78,470.00	142,200	$106.65	7,050
MD-88	143	$429.00	26,525	$50,397.50	130,000	$97.50	6,650

Source: Aviation Week and Space Technology Sourcebook, January 1999
PBS&J, 2002
(1) PFC are based upon $3.00 per passenger multiplied by number of passengers
(2) Anticipated fuel sales is based upon estimated fuel multiplied by $1.90 per gallon of Jet A (Current price at FBO)
*(3) Anticipated landing fees are based upon Max landing weight/1000 lb * $.75*
*Note: * Fuel load determined by (Gross Weight-Empty Weight - Cargo Capacity - (# of Pax * 160lb)*

However, due primarily to runway length constraints, SEF is unable to capitalize on this potential revenue source. Thus, the Airport is losing potential passenger facility charge revenue, fuel sales, landing fees, etc., and the community as a whole is loosing the economic benefits associated with commercial passenger service. Again, in order to accommodate this type of demand at SEF, a new runway and associated commercial infrastructure will have to be developed. This will be discussed in more detail in the Facilities Requirements and Alternatives chapters, Chapters 7 and 8, respectively.

6.4.3 Heavy Cargo

As mentioned earlier, in addition to corporate, GA, and commercial passenger demand, there exists a demand for cargo services. Cargo service demand at SEF is not related to the express package market, but rather to the transportation of raw goods, such as those used in manufacturing and/or high-end ticket items such as racecars. Existing demand for heavy cargo services via air transportation is currently limited. However, it is anticipated that air cargo demand will be directly influenced by aviation and non-aviation development at the Airport. An existing source of demand is associated with the Sebring International Raceway. Since the racetrack is available year round for training, as well as a variety of racing activities, competitive air cargo operations may entice teams from around the world to ship their cars and equipment to SEF rather than transport them via ship and truck. As interest in racing continues to grow and new opportunities arise, it is likely that Sebring International Raceway will attract more racing participants and visitors from around the globe.

SEF is designated as a Foreign Trade Zone (FTZ) offering a variety of tax breaks to potential users. FTZ procedures allow domestic activity involving foreign items to take place as if it were outside the U.S. Customs territory, thus offsetting customs advantages available to overseas producers who export in competition with products made in the U.S. (http://ia.ita.doc.gov/FTZpage). FTZs benefit companies since "goods entering FTZs are not subject to custom's tariffs until the goods leave the Zone and are formally entered into U.S. Customs Territory. Merchandise that is shipped to foreign countries from FTZs is exempt from duty payments. This is especially useful to firms that import components in order to manufacture finished projects for export." (http://ia.ita.doc.gov/FTZpage) Thus, the importation of raw goods from around the world to SEF will allow aviation and non-aviation related businesses within the FTZ to be more competitive in both the domestic and international market. Part of SAA's long-term development plan includes construction and expansion of its industrial and commerce parks. As a result, businesses located within these commerce parks are likely to reap the benefits of the FTZ. It is anticipated that as commercial development grows the demand for heavy cargo service will also increase.

Table 6-8 shows the type of aircraft typically used in each market segment, while **Table 6-9** provides an estimate of potential revenue associated with development of this market demand.

Table 6-8. Typical Commercial Jet Freight Fleet

Domestic	International	
Medium Narrow-Body (Payload Capacity from 60,000 to 120,000 lb)	**Medium Wide-Body (Payload Capacity from 70,000 to 140,000 lb)**	**Large Wide-Body (Payload Capacity over 140,000 lb)**
B707-320	A310-300	B-747-100
B757-200	A300B4	B747-200
DC-8-50	A300-600	B747-300
DC-8-60	B767-300	B-747-400
DC-8-70	DC-10-10	DC-10-30/40

Source: Air Cargo Management Group/Cargo Facts, October 1998

Table 6-9. Commercial Freight Aircraft Estimated Opportunity Cost by Aircraft

Aircraft	Landing Weight (lb)	Estimated Landing Fee per Operation (1)	Field Length	Fuel Capacity (gal)	Estimated Fuel Sales per Operation (2)	Cargo Capacity
Medium Narrow Body:						
B757-200	210,000	$157.50	7,800	58,300	$110,770.00	84,350
DC-8-50	230,000	$172.50	10,000	110,428	$209,813.20	63,500
DC-8-60	240,000	$180.00	10,000	112,438	$213,632.20	66,665
Medium Wide Body						
A310-300F	273,400	$205.05	7,400	94,700	$179,930.00	88,400
A300-600	310,000	$232.50	7,400	76,300	$144,970.00	120,800
B767-300	326,000	$244.50	9,600	163,550	$310,745.00	60,450
DC-10-10	363,500	$272.63	9,810	192,382	$365,525.80	70,618
L-1011-200F	368,000	$276.00	9,200	126,000	$239,400.00	125,000
Large Wide Body:						
B747-200	630,000	$472.50	10,900	245,600	$466,640.00	245,300
B747-300	605,000	$453.75	10,900	273,600	$519,840.00	177,900
B-747-400	652,000	$489.00	9,800	265,000	$503,500.00	244,470
DC-10-30/40	436,000	$327.00	10,700	166,000	$315,400.00	177,000
MD-11	481,500	$361.13	10,000	111,000	$210,900.00	254,500

Source: PBS&J, 2002
Note: (1) Landing Fee is based upon $.75 per 1,000 lb
(2) Fuel Sales is based upon Fuel Capacity x $1.90 gallons
Fuel Capacity = Gross Weight - Empty Weight-Cargo Capacity
Landing Fee information taken from Tweed New Haven Regional Airport

However, SEF cannot attract heavy freight aircraft without significant infrastructure development. Typically, freighter aircraft, which are usually refurbished passenger aircraft, especially from long-haul markets, require a runway length of greater than 8,000 ft. Thus, in order for SEF to capitalize on this market demand, construction of a 10,000 ft runway is recommended. Otherwise, SEF will never be able to capitalize on this demand, and, thus, the potential revenue associated with heavy cargo aircraft would become an opportunity cost to the Airport.

6.4.4 Antique Aircraft

SEF is home to a number of antique aircraft, primarily War Birds from World War I and II. Based upon successes at other airports and demand by current users at SEF, SAA is evaluating the cost and revenue potential associated with installing a parallel turf runway to Runway 14-32. Older GA aircraft, such as warbirds, use turf runways, since they decrease the amount of wear on the aircraft by providing a softer landing surface. Even though the potential exists for SEF to become a commercial airport, SAA does not want to loose touch with the needs of its existing tenants. Since SEF hosts a number of Aerobatic shows and is home to a number of antique aircraft, the development of a turf runway will incur a minimum cost to the Airport but will reap a variety of benefits associated with GA development, i.e. aircraft storage, hangar homes, etc. Based upon discussions with existing and potential aircraft tenants as well as other GA users, a turf runway at SEF would be welcomed.

6.4.5 Small Aircraft Transportation System (SATS)

Another possible source of revenue for SEF is through the NASA SATS program. Currently, SAA is working with SATS members and providing testing facilities for SATS aircraft at the Airport. The SATS program is a partnership among various organizations including NASA, the FAA, U.S. Aviation Industry, state and local aviation officials and universities. The system partners intend to relieve the nation’s current problems of highway gridlock and airport delays. At equivalent highway system cost, SATS is anticipated to reduce transportation times to more communities by half in ten years and two-thirds in 25 years.

A significant need for a small aircraft transportation system currently exists. The Nation’s 30 major airports are overwhelmed with increased air traffic, thus leading to frequent delays and cancellations. The SATS system would utilize the over 5000 small airports already in place across the country and would allow air service to smaller communities.

SATS aircraft provide another source of potential demand at SEF. These high-performance aircraft, however, require less takeoff field length than traditional turbine aircraft and are far quieter. As a result, the aircraft demand associated with smaller GA aircraft and SATS experimental aircraft could be met on a runway field length of less than 4,000 ft. This demand would potentially allow the Airport to reconfigure existing runway infrastructure in order to meet this demand as well as increase the overall operational capacity of the Airport. The demand will allow SEF to continue to concurrently meet both its GA and Commercial Service demand. It is anticipated that the SATS program will be fully operational in the next 10 to 15 years.

6.5 AIRSIDE AREAS

Currently, activity at SEF consists of recreational, corporate, military, medical, and helicopter operations. However, if commercial service is initiated, then a variety of facility requirements and infrastructure upgrades will be required based upon CFR 49 Part 139, Airport Certification. This will be discussed in more detail in Chapters 7 and 8, *Facility Requirement* and *Development Plans*, respectively.

Outside of the airfield, the principal types of facilities that can constrain capacity at an airport are terminal buildings, aircraft hangars, aircraft parking positions, vehicular parking lots, and fuel capacity.

As discussed in Chapter 2, a variety of aviation facilities are located at the Airport. The facilities most associated with the GA operations include aircraft storage buildings (T-hangars and conventional hangars), apron for conventional hangars, and aircraft tie-down apron. In addition, SEF recently completed construction of a new GA terminal facility in the fall of 2000. The following sections compare the existing capacity of these facilities with the projected demand over the planning period. Specific facility requirements for each area will be identified in Chapter 7.

6.5.1 Terminal Capacity

This section identifies the existing capacity of the current terminal facility at the Airport and compares it to the projected demand. Once the comparison of existing capacity and demand in relation to projected activity is completed, the overall capacity and adequacy of the existing terminal facilities will be evaluated, to determine necessary facility requirements and future improvements to the various components.

The demand for terminal space at a GA airport relates to the need for facilities that can accommodate both pilots and passengers at an airport. Normally these facilities include a lounge for pilots and passengers, a flight planning room, rest rooms, and administration offices.

The recently opened Sebring Flight Center has an area of 18,450 sq ft The building, which is located on the west side of the airfield, is home to the SAA, Runway Café Restaurant, and the Sebring Flight Center. The Airside Center also provides a complete pilot facility with lounge, restrooms, and showers. Pilots have access to the communication room for flight planning and weather services as well as a special event room and multipurpose room located within the terminal facility.

The open design allows for four commercial retail spaces, public restrooms, a waiting lounge, FBO/information desk, and designated areas for future passenger baggage claim, airline ticket sales, and car rental.

The primary consideration for GA terminal design under federal guidelines is that the facility be capable of handling the amount of passengers, pilots, and visitors associated with peak hour operations. This consideration is presented in Appendix 5 of AC 150/5300-13 *Airport Design*, which provides guidelines for small airport buildings, including GA terminals. Additional guidelines were found in AC 150/5040-2, *Aviation Demand and Airport Facility Design Forecasts*, Appendix 2, and “General Aviation Terminal Buildings”. By assessing peak demand, minimum square footage allotments are assigned to the facility to derive terminal space requirements. Peak usage of the terminal was calculated from forecast aircraft operations and is summarized in **Table 6-10** for the 20+-year forecast period.

Although future needs will depend upon FBO services, corporate business use, and the potential for both charter and limited air taxi operations, for planning purposes, a structure based upon 150 sq ft per peak hour pilot/passenger factor was used to estimate gross GA terminal area. It is important to note that if SEF plans to initiate commercial service at the Airport, a structural requirement of at least 200 sq ft per peak hour passenger will be needed to determine future terminal facility needs.

Table 6-10 presents the demand capacity relationship for the terminal building at SEF.

Table 6-10. Terminal Capacity Versus Demand (Existing Capacity = 18,450 sq ft)

Year	Peak Hour Pilot/Passenger	Square Feet (sq ft) Factor	Forecast Demand (sq ft)	Long-Term Planning Requirement (sq ft)*
2000	105	150 sq ft	15,767	25,227
2001	113	150 sq ft	16,886	27,018
2006	135	150 sq ft	20,309	32,494
2011	151	150 sq ft	22,711	36,338
2016	166	150 sq ft	24,954	39,927
2021	182	150 sq ft	27,254	43,607

Source: FAA AC 150/5360-9 Planning and design of Airport Terminal Facilities at Non-Hub Locations and PBS&J, 2002
*Note: *Long-term planning requirement equals an additional 60 percent of total forecast demand*

The previous analysis assumes 1.9 persons, including one pilot and .9 passengers, for every peak hour local operation and four persons, one pilot and three passengers, per every itinerant peak hour operation. The long-term planning requirement applies a 60 percent factor to demand to allow for ample time for the next stage of improvements. Based on current runway capacity estimates, additional terminal building capacity may not be required at SEF until 2006. However, future expansion to the terminal building will be required depending upon the needs of the FBO as well as the potential for commercial service. Future improvements and specific facility requirements relating to this will be broken down into functional areas, and will be discussed further in Chapter 7, Facility Requirements.

6.5.2 Aircraft Storage Buildings

Buildings used to store aircraft can generally be categorized as:

- T-hangars: Normally sized for single class A or B aircraft. Structure consists of multiple units.
- Port-a-ports: Normally sized for single class A or B aircraft. Structure is a single unit.
- Corporate/conventional hangars: Normally sized for single class C and turboprop aircraft.
- Service hangars: Normally used by multiple class A and B aircraft, but in some instances turboprop and class C types.

Service hangars (and in some instances corporate and larger T-hangars) are used to store more than one aircraft depending upon the hangar owner's arrangement with the aircraft owner. In many instances, service hangars house maintenance operations and do not have the capability to store aircraft.

Three types of aircraft storage buildings are currently available at the Airport, and include T-hangars and conventional hangars.

The existing T-hangar facilities, at the time of this writing, at SEF total seven buildings, which contain a total of 62 units for aircraft storage. Of the 62 available storage units, 50 are sized for typical twin-engine GA aircraft, while the remaining 12 are sized for single-engine aircraft only. 52 T-hangar units are currently occupied. Since there is significant demand for additional stalls, it is expected that the additional 10 T-hangar units currently under construction will be occupied shortly after completion.

Currently, there are seven conventional hangar facilities at SEF that provide approximately 118,800 sq ft of aircraft storage and maintenance space. These hangars currently house an estimated 15 aircraft. In addition, two additional conventional (commercial) hangars, which include four storage units each, are currently being built. Therefore, for all extensive purposes, SEF's existing conventional hangar facilities will consist of 15 units, and will, therefore, be the base for the future demand and development analysis.

Demand for storage space of GA aircraft typically reflects the local climatic conditions and the type of aircraft. Generally, multi-engine, turboprop, and jet aircraft require hangar facilities. Furthermore, SEF is home to numerous experimental aircraft, also requiring hangar facilities.

Approximately 88 percent of based aircraft at SEF are stored in hangar facilities, with a growing demand for additional hangar space.

In Florida, a general rule of thumb is that 85 percent of based aircraft owners will desire hangar space for aircraft storage, primarily for protection from weather, and for lower maintenance costs. Currently, approximately 88 percent of based aircraft at SEF are stored in hangar facilities, with a growing demand from owner's of based aircraft for additional hangar space. Based on this information, **Table 6-11** shows the demand for aircraft storage space, in total number of aircraft, over the planning period.

Table 6-11. Existing and Projected Aircraft Storage Demand

	2000 (Existing)	2006	2011	2021
Forecast Based Aircraft	84	88	94	105
Total Aircraft Requiring Storage*	74	77	83	92

Source: PBS&J, 2002
Note: Approximately 88% of aircraft at SEF require hangar storage throughout planning period

6.5.3 Apron Area

Apron space should be provided for 100 percent of the transient (non-based) itinerant aircraft, and based aircraft that are not hangared. Parking areas designated for transient aircraft should accommodate peak day demand when the number of transients will be at its maximum. However, the recommended parking spaces are not intended to have the capacity for handling increased aircraft activity as a result of special events, such as the "12 Hours of Sebring" auto race and air show.

The existing aircraft apron at SEF totals approximately 1.1 million sq ft (122,210 sq yd) and could accommodate approximately 340 aircraft based upon a criterion of 360 sq yd per aircraft. (Note: Typically, 300 sq yd is required for based aircraft, usually single engine piston, and 360 sq yd for itinerant aircraft, usually multi-engine piston.) In the event that the Airport provides service to larger corporate and charter aircraft, the footprint requirement will likely be 10% greater than the wingspan and length of the aircraft. The Airport currently has approximately 40 designated tie-down spaces.

Currently, on the average day, peak month, there are approximately seven unhangared-based aircraft on the Airport (many of which would be hangared at SEF if space were available). During the typical peak periods as many as 15-20 transient, out-of-town aircraft are on the apron at one time. Abandoned pavements and grassy areas are currently utilized at SEF for aircraft parking overflow during the "12 Hours of Sebring" auto race, which is considered an atypical peak period.

6.5.3.1 Conventional Hangar Apron

Conventional hangar apron is required to park aircraft of various sizes, adjacent to the hangars. Currently, the conventional hangar apron areas at SEF are limited since they are being used for non-aviation purposes. As discussed in Chapter 2, the FAA recommends that the hangar apron equal the amount of storage space located within the hangar itself. It is estimated that approximately 22,222 sq yd (200,000 sq ft) of conventional hangar apron space currently exist at the Airport. Thus, additional conventional hangar apron capacity is not necessary to meet the projected demand at this time.

With the addition of these hangar facilities, apron space equal to the hangar area must be identified and included. The total amount of necessary conventional hangar apron space will be determined by the amount of hangar space required and will be discussed further in Chapter 7.

6.5.3.2 Aircraft Tie-Down Apron

Approximately ten percent of based aircraft at every airport will not require hangar space. These remaining non-hangared aircraft will require tie-down positions on GA apron. Sizing criteria for tie-down positions vary according to aircraft size, including space for circulation and fueling. In addition, itinerant traffic typically does not utilize hangar space. Therefore, since 88 percent of based aircraft, are estimated to require hangar space, tie-downs should be planned to accommodate the remaining based aircraft, and one-half of the busy-hour itinerant aircraft.

The existing based and itinerant GA aircraft tie-down apron space available at SEF is approximately 1.1 million sq ft (122,210 sq yd). However, SEF does not officially designate apron as tie-down or conventional categories. Although more space is available, there are only 40 tie-down spaces encompassing approximately 4,000 sq yd (36,000 sq ft). Founded on the based aircraft forecast and the GA operations forecast, **Table 6-12** shows the projected demand for tie-down apron. The total area of tie-down apron required to meet the projected demand will be identified in Chapter 7, Facility Requirements.

Table 6-12. Existing and Projected Demand for Aircraft Tie-Downs

	2000 (Existing)	2006	2011	2021
Forecast Based Aircraft Requiring Tie-Down	10	11	11	13
Busy Hour Itinerant Aircraft requiring Tie-Down*	9	12	14	17
Total Aircraft Requiring Tie-Down	20	23	25	29

Source: FAA AC 150/5300-13 Airport Design and PBS&J, 2002
*Notes: *Busy hour itinerant aircraft tie down demand is equal to 50% of the busy hour itinerant aircraft*

6.5.3.3 Helicopter Tie-Down Analysis

In 2000, the Airport designated an area located on the landside portion of the Sebring Flight Center for helicopter parking by Aero-Med II. A BK117-B Eurocopter was selected as the design-critical type to determine typical space needs for helicopters on the airfield. Applying this model, space requirements for each helicopter, including safety area, is calculated to be 14,884 sq ft (a 122 by 122 foot area) or approximately 1,654 sq yd.

6.6 FUEL STORAGE

SEF is unusual since it currently provides fuel to military aircraft through a Department of Defense contract. This contract, SEF's designation as a foreign trade zone (FTZ), and various local events such as the "12 hours of Sebring" have increased the demand for fuel compared to other airports in the area. Thus, using the fuel flowage analysis in Chapter 5, existing and future demand for fuel facilities was identified. For the year 2000, it was determined that an annual demand for approximately 66,879 gallons of AvGas exists at SEF, compared to 116,115 gallons of Jet A fuel. An additional requirement of 123,086 gallons of Jet A was determined to meet the year 2000 military aircraft demand.

Existing and future demand projections for AvGas, Military Jet A Fuel, and GA Jet A fuel are presented in the following **Tables 6-13 through 6-15**. Fueling records from 1996-2000 indicate that approximately 22 percent of all fuel sales were Avgas while the remaining 78 percent were Jet A sales.

Table 6-13. AvGas Fuel Demand

Year	Estimated Piston Operations*						Gallons per Operation	Annual Fuel Demand (gal)
	Single Engine	Multi Engine	Rotorcraft	Experimental	Other	Total		
2000	45,479	6,419	653	3,106	1,020	56,677	1.18	66,879
2001	48,009	6,812	696	3,309	1,087	59,913	1.18	70,697
2006	57,462	8,049	834	4,021	1,314	71,680	1.18	84,582
2011	63,819	8,761	940	4,477	1,452	79,449	1.18	93,750
2016	78,983	9,367	1,041	4,897	1,575	95,863	1.18	113,118
2021	75,460	9,951	1,146	5,323	1,698	93,577	1.18	110,420

Source: PBS&J, 2002
*Note: *Piston operations include single engine and multi-engine aircraft (100%), rotorcraft (30%), experimental (50%), and other (50%)*
Numbers differ slightly from forecast due to rounding errors

Table 6-14. GA Jet A Fuel Demand

Year	Estimated Turbine Operations						Gallons Per Operation	Annual Fuel Demand
	Turboprops	Turbojets	Rotorcraft	Experimental	Other	Total		
2000	1,754	2,131	1,523	3,106	1,020	9,533	12.18	116,115
2001	1,865	2,319	1,624	3,309	1,087	10,204	12.18	124,280
2006	2,237	3,266	1,946	4,021	1,314	12,784	12.18	155,707
2011	2,497	4,274	2,194	4,477	1,452	14,894	12.18	181,405
2016	2,722	5,460	2,430	4,897	1,575	17,084	12.18	208,078
2021	2,932	6,893	2,674	5,323	1,698	19,520	12.18	237,751

Source: PBS&J, 2002

Table 6-15. Military Jet A Fuel Demand

Year	Turbine Operations	Estimated Gallons Per Operation	Annual Fuel Demand
2000	1000	123	123,086
2001	1000	123	123,000
2006	1000	123	123,000
2011	1000	123	123,000
2016	1000	123	123,000
2021	1000	123	123,000

Source: PBS&J, 2002

A 30-day storage requirement for aviation fuel is normal for GA airports such as SEF. Using peak month operations, the following storage requirements and resultant capacity percentages were determined for the Airport and are presented in **Table 6-16 and 6-17**. The additional 60 percent factor used to identify facility-planning requirements was then programmed into the fuel storage demand for long-term planning.

Table 6-16. Peak Month AvGas Storage Capacity (Gallons)

Year	Current Monthly AvGas Storage Capacity	Peak Month AvGas Storage Demand	Long-Term Planning Requirement
2000	10,750	8,811	14,098
2001	10,750	9,314	14,903
2006	10,750	11,144	17,830
2011	10,750	12,352	19,763
2016	10,750	14,903	23,845
2021	10,750	14,548	23,277

Source: PBS&J, 2002
Note: Storage capacity consists of one 10,000 gallon tank and one 750 gallon truck
Long-term planning requirement is 60 percent increase of total demand

In the next five years, additional AvGas fuel facilities will be needed.

Table 6-17. Monthly Jet A Fuel Storage Capacity (Gallons)

Year	Current Monthly Jet A Storage Capacity	Peak Month Jet A Storage Demand*	Long-Term Planning Requirement
2000	26,200	28,735	45,976
2001	26,200	29,801	47,682
2006	26,200	33,942	54,307
2011	26,200	37,328	59,724
2016	26,200	40,842	65,347
2021	26,200	44,751	71,602

Source: PBS&J, 2002
Note: Calculation includes GA and military Jet A demand
Storage capacity includes one 10,000 gallon tank, three 5,000 gallon trucks, and one 1,200 gallon truck
Long-term planning requirement is 60 percent increase of total demand

Currently, there is a need for additional Jet A fuel storage facilities.

The above analysis indicates that there is a current need for additional Jet A fuel storage capacity and a short-term need for AvGas fuel storage capacity.

6.7 LANDSIDE CAPACITY

This section will identify the existing capacity of various on-Airport landside facilities, which include Airport access and terminal roads, automobile parking, and the Airport Industrial Park. A determination as to the overall capacity of each facility, and its ability to meet the projected demand, will be made. Additionally, this analysis will serve as a general overview of existing capacity of the above facilities, in order to identify where any required facility improvements are necessary.

6.7.1 Ground Access and Terminal Roads

Ground access and terminal roadways serve passengers, employees, visitors, and anyone who travels to and from the Airport. Circulation systems within the Airport boundaries should minimize congestion and support efficient access to the passenger/airside terminal. Additionally, it is important to ensure that the access and terminal roadway systems are well planned, and provide adequate capacity to meet the projected demand imposed by vehicular traffic. The roadway system must be able to accommodate peak levels of activity without creating excessive or unwarranted delay.

Ground access to SEF is available via CSX rail line or highway. US Highway 98 is the major east-west route and lies 1 mile south of the Airport Industrial Park. US Highway 27 is the major north-south corridor located approximately 4.5 miles west. These roads along with US Highway 70 and other state highways link the area to the Florida Turnpike, I-4, I-95, and I-75.

Currently, there are two access points to SEF. The main entrance is via the intersection of Kenilworth Boulevard and Airport Road. Kenilworth Boulevard provides access from downtown Sebring while Airport Road provides access to State Road 98. However, the existing geometry is not able to accommodate the expected increase in capacity as discussed in Chapter 5, *Airport Forecasts,* and, therefore, the intersection will be redesigned or reconfigured to meet demand. Furthermore, an entrance road should provide both the Airport and Sebring International Raceway the opportunity to create a strong identity. The entrance road continues onto the Airport property and divides into Webster Turn Drive, which provides access to the industrial park, and Haywood Taylor Boulevard, which connects with Challenger Drive and Authority Lane, to provide access to the Sebring Flight Center.

The second entrance, known as the South Access Road, runs south along the Sebring International Raceway southern leasehold boundary. This entrance provides access into the Davis Property. Presently, the entrance does not provide direct access to the main terminal facility, it is not commonly used to access the Airport.

In addition, rail access is available at SEF. A rail spur, owned and operated by the Authority (SAA), connects the Sebring Industrial Park to the CSX mainline to the east of the Airport. This mainline is being considered as a possible corridor for future highspeed rail.

It is recommended that ground access circulation into the industrial park and main Airport facilities be upgraded as a result of road realignment and storm water drainage studies. Improvements to the primary access roads, terminal access roads, and terminal frontage and curb areas will be discussed further in Chapter 7, Facility Requirements.

6.7.2 Automobile Parking

There are no exact parameters, which can be applied to determine automobile parking requirements at GA airports. During development, areas should be reserved for parking with adequate room for expansion. However, using the guidelines noted in FAA AC 150/5360-13, *Planning and Design Guidelines for Airline Terminal Facilities*, a realistic forecast of demand can be determined. Historically, at an origin and destination airport, 40 to 85 percent of the originating passengers arrive in private automobiles. Consequently, adequate public parking facilities are a valuable part of good terminal design. Automobile parking facilities are not only intended to provide space for passengers, but also for employees and visitors. The FAA suggests providing parking spaces for 1.3 times the number of peak hour passengers. When developing plans for an automobile parking lot, a planner must reserve approximately 350 to 400 sq ft, including lanes for each parked automobile. However, it is important to note that parking at GA airports are usually spread around the airport. Historically, GA operators with aircraft storage facilities on airport typically use these hangars to store their vehicle when they are out of town.

Thus, the following estimate of automobile parking demand for SEF is presented in **Table 6-18**, using a forecast factor representative of peak hour operations and pilot/passenger demand, as well as public and employee parking demand. The formula used is based upon one space per peak hour pilot/passenger plus 50 percent weight factor for Airport employees and general public parking demand.

Table 6-18. Auto Parking Capacity Versus Demand

Year	Peak Hour Pilot/Pax	Peak Hour Pilot/Pax Demand (Spaces)	Peak Hour Public & Employee Demand	Total Auto Parking Demand (Spaces)	Long Term Planning Requirement (Spaces)
2000	105	137	53	189	219
2001	113	146	56	203	234
2006	135	176	68	244	282
2011	151	197	76	273	315
2016	166	216	83	299	346
2021	182	236	91	327	378

Source: PBS&J, 2002

Based upon this analysis, it would appear that automobile parking at SEF is inadequate. However, since automobile parking is divided between various areas of the airport, as shown in **Table 6-19**, Existing Airport Automobile Parking, there is adequate space in the short-term to meet anticipated demand.

Table 6-19. Existing Airport Automobile Parking

Location on Airport	Number of Spaces			
	Public	Private	Employee	Total
Terminal	70		10	
Corporate		35		
Tullius		20		
Leza		40		
Other Private		12		
SAA			12	
Lockwood		10		
JB/Carter		5		
Total	**70**	**122**	**22**	**214**

However, if commercial service becomes a reality at SEF, a significant amount of parking will be needed. Therefore, it is recommended that the long-term planning requirement of a minimum of 378 parking spaces be reserved. This will be discussed in more detail in Chapter 7, Facility Requirements.

6.8 NON-AVIATION USE

6.8.1 Airport Industrial Park

Industrial and commerce parks are often valuable methods for an Airport to diversify its revenue sources, and capitalize on land that may otherwise go unused by aviation business and activities. A well planned and executed industrial or commerce park can generate significant amounts of revenue that the Airport may use for virtually any purpose, including operational and facility improvements on the airside, as well as other areas of Airport property.

The industrial park at SEF is an identified area of land that has been reserved for the development of non-aviation businesses, and/or those businesses that do not require access to the airside facilities. Currently, the Airport consists of a total of 1,770 acres of developable land, of which 1,200 acres are still available. Lease parcels are available from one acre to 600 acres parcels. Approximately 570 acres of the total 1,200 acres available for development are located within the Airport Industrial Park. The industrial park is located along the northwest border of the SEF property, and is currently occupied by six tenants. As a result, approximately 68 percent of the available land remains and may be developed as demand warrants.

In 1997, the Sebring Regional Airport and Industrial Park was designated as Foreign Trade Zone (FTZ) Number 215. This allows for a variety of cost savings to current tenants as well as attractant to future development at the Airport. Additional demand for industrial development at SEF could consist of both aviation and non-aviation development.

The existing capacity of the industrial park is expected to meet any immediate demand for development, but will require short-term improvements and possible expansion during the planning period. At the time of this writing, a high-end, stand alone facility was in the process of being developed within the Airport Industrial Park. Specific facility requirements associated with Airport Industrial Park development will be discussed in detail in Chapters 7 and 8.

6.8.2 Sebring International Raceway

The Sebring International Raceway leasehold encompasses approximately 400 acres at the southern portion of the SEF property. The property includes the quarter mile long pit row and garage area, four-story tower, elevated viewing stands, hospitality suites, and the Chateau Elan Lodge.

Events at the Sebring International Raceway are one of the main attractants at the Airport. During the “12 hours of Sebring” in March, aircraft from all over the country travel to SEF. Aircraft range from small single-engine piston to large corporate aircraft. This trend continues on and off for at least 250 days per year since testing, corporate events, sports car club races, and other special events occur at the raceway, attracting people from all over the world. Also, since SEF is designated as an FTZ, racecars from all over the world could be flown to SEF for minimal costs if adequate runway length were available.

Demand associated with the races and special events directly affects the overall demand for runway, taxiways, aircraft parking, tie-down, fuel, ground access, automobile parking, terminal facilities, etc. Demand associated with the Sebring Raceway, Chateau Elan Lodge and Spa, Sherianne's Runway Café as well as a variety of special air events at the Airport effect the demand for services as well as the Airfield configuration requirements. This will be discussed in more detail in Chapter 7, Airport Facilities, and Chapter 8, Alternatives.

6.9 SUMMARY

In estimating the capacity of the existing SEF operational areas, the primary elements of airfield capacity were examined to determine the Airport's ability to accommodate anticipated levels of aviation activity. The results indicate that:

- Airspace in the vicinity of the Airport does have limitations for additional instrument approach procedures, but will likely accommodate future aviation activity through coordination with local military authorities.
- Additional IFR approach capabilities in a southeast-northwest orientation may be required to reduce existing approach minimums and improve IFR capacity.
- Runway orientation is adequate, based on existing and historical wind characteristics.
- Total airside and landside capacity will need to be increased to meet the projected demand associated with both GA and Commercial aircraft operations.
- Initiation of commercial service will require SEF to meet the facility guidelines stated under CFR 49 Part 139, *Airport Certification*.
- Improvements to the primary Airport access and terminal roads will be necessary to ensure adequate capacity for vehicular traffic.
- Potential development of a high-speed rail facility at SEF will fuel demand for commercial service.
- Additional automobile parking capacity and facilities will be required to meet forecast demand for public and employee parking.
- The Airport Industrial Park has adequate capacity for additional development and will likely meet the future demand for non-aviation business at the Airport. However, buildings and roadways are in need of improvement.
- Sebring International Raceway, the Runway Café, Chateau Elan's Lodge and Spa as well as a variety of local and aviation related events significantly influence demand at SEF.
- The existing aircraft parking and hangar facilities will not adequately satisfy forecast demand, and expansion will be required.
- Existing fuel facilities are inadequate to meet forecast demand for monthly Jet A and AvGas fuel loads.

Presently, an Air Service Study for Highlands County is being performed concurrently with this document.

Capacity and demand requirements have been determined for essentially all aspects of SEF's operations. These calculations, which are based on various components, should be regarded as generalized planning tools, which assume attainment of forecast levels as described in Chapter 5 as well as demand associated with potential general aviation and commercial aircraft operations.

It is important to note; however, that SAA is aggressively marketing to a number of commercial air carrier operators and business developers. In addition to potential commercial air carrier service, Airport management is also promoting the Airport as an engine for economic development in Highlands County. As a result, SAA is promoting various special events, business and commercial development, and land acquisition options. These marketing initiatives, especially the initiation of commercial service, will trigger a variety of facility requirements including CFR 14 Part 139, Airport Certification Requirements. These development initiatives are discussed in more detail in Chapters 7 and 8, *Facility Requirements* and *Development Plans*.

Should the forecasts prove conservative, proposed developments that will be recommended as a result of the demand/capacity analysis should be advanced in schedule. Likewise, if traffic growth materializes at a slower rate than forecast, deferral of expansion would be prudent.

FACILITY REQUIREMENTS

Sebring Regional Airport

7

7.1 GENERAL

This chapter of the Master Plan Update identifies the facility requirements necessary to meet projected demand at Sebring Regional Airport (SEF), as documented in Chapters 5, *Projection of Aviation Demand*, and 6, *Demand Capacity Analysis*. Before conceptual planning can commence, it is important that the facility requirements necessary to accommodate demand be identified. This information will serve as a basis for alternative development for future expansion and phasing concepts based upon anticipated forecast activity levels.

7.2 AIRPORT REFERENCE CODE

The Federal Aviation Administration (FAA) classifies criteria applicable to the design of airfield and airport components for a specific airport type. Using the Airport Reference Code (ARC) and Design (Critical) Aircraft, the FAA determines specific design standards as set forth in FAA AC 150/5300-13, *Airport Design*.

7.2.1 Airport Role

SEF is currently designated as a general aviation (GA) airport primarily serving recreational flyers, corporate activity generally associated with the Sebring Raceway and Industrial Park, medical emergency service helicopter operations (AeroMed II), and military operations associated with the Department of Defense (DOD) refueling contract. However, according to both the National Plan of Integrated Airport Systems (NPIAS), 2000-2013, and the Continuing Florida Aviation System Plan, SEF should be re-categorized as a transport (TR) and commercial service airport in the near future based upon overall aviation demand and its centralized location within the State.

7.2.2 Airport Reference Code (ARC)

The purpose of the ARC is to size airport facilities according to the performance and dimensions of the most demanding (critical) aircraft regularly using the field. The ARC is based on the approach speed (approach category) and wingspan (design group) of the design aircraft.

7.2.2.1 Aircraft Approach Category

The aircraft approach category is an operational characteristic relating to the approach speed of an aircraft. Approach categories are based on a factor of 1.3 times aircraft stall speed in landing configuration at maximum landing weight. Approach categories are represented by a letter designation, as depicted in the following list:

Aircraft Approach Categories

Category A:	Speed less than 91 knots.
Category B:	Speed 91 knots or more, but less than 121 knots.
Category C:	Speed 121 knots or more, but less than 141 knots.
Category D:	Speed 141 knots or more, but less than 166 knots.
Category E:	Speed 166 knots or more.

7.2.2.2 Airplane Design Group

Airplane design group is a physical characteristic defined by an aircraft's wingspan. While approach speeds only affect runway design, wingspan affects the design of taxiways, taxilanes, and aprons. A Roman numeral, as described below, depicts the airplane design group.

Airplane Design Group

Group I:	Up to, but not including, 49 ft.
Group II:	49 ft up to, but not including, 79 ft.
Group III:	79 ft up to, but not including, 118 ft.
Group IV:	118 ft up to, but not including, 171 ft.
Group V:	171 ft up to, but not including, 214 ft.
Group VI:	214 ft up to, but not including, 262 ft.

Once this is determined, the ARC dictates the majority of the design criteria for the airside facilities. These design criteria include:

- Runway and taxiway separation
- Runway and taxiway dimensions, strength, and configuration
- Safety zones and safety area dimensions
- Obstacle clearance standards

7.2.2.3 Existing Airport Reference Code

According to the 1994 Sebring Regional Airport Master Plan Update and associated 1993 Airport Layout Plan, design standards and planning criteria were based upon the Gulfstream IV (defined in AC150/5300-13 as D-II). As a result, the airfield requirements were designed to accommodate a critical aircraft equivalent to aircraft group category D-II.

This means that runways, hangars, taxiways, taxi lanes, apron, and other facilities were built for aircraft in this category, including a number of larger business jet aircraft and military aircraft. Most GA aircraft fall within the A and B categories, while most corporate, commercial, and military transport aircraft fall into the C and D categories.

Depending upon aircraft use, initiation of commercial service, and/or various infrastructure improvements at SEF, the ARC is expected to change in the near future. It is important to note that the ARC is used to set basic size and strength factors to be considered for the design of airport pavement and facilities. The ARC, however, does not constitute a categorical limitation on aircraft size, and larger and/or faster aircraft may use the Airport.

The decision to use an airfield is based upon weather, aircraft load, and performance. The FAA places the responsibility for this decision solely on the pilot-in-command (PIC) of a particular aircraft. Thus, SEF can accommodate larger or faster aircraft under given conditions as determined safe by the operator. However, it is important to note that larger aircraft have greater negative impact on runway, taxiway, and apron pavements. Also, aircraft with larger wingspans require wider runways, taxiways, and safety areas. larger and faster aircraft begin to utilize SEF more often, the preservation of safety will become even more important. In fact, special safety requirements would become necessary in the existing airfield conditions.

7.2.3 Critical Aircraft

Determining the critical aircraft is instrumental in developing an airport's design criteria and determining the ARC. The critical aircraft of an airport is based primarily on the aircraft with the highest approach speed and longest wingspan making substantial use of the airport on a regular basis. FAA Order 5090.3B*, Field Formation of the NPIAS,* defines substantial use as 500 or more annual itinerant aircraft operations or scheduled commercial service.

Today, aircraft typically using SEF include a wide range of basic training, experimental, business single- and twin-engine piston, turboprop twins and jets, and turbine-driven helicopters, as reflected in the forecasts of aviation activity shown in Chapter 5. The FAA defines the most demanding aircraft in terms of the greatest runway requirement (based upon aircraft approach speed) and pavement and building separation requirements related to wingspan (required wingtip clearances). A final criterion is that the aircraft must be in regular service (operations) at the Airport. An operation is either a takeoff or landing. For planning purposes, the number of takeoffs is assumed to equal the number of landings.

Based upon the most current fleet mix data obtained from the Sebring Airport Authority (SAA) and Sebring Flight Center for the years ending 2000 and 2001, the C-130, Hercules, represents the critical design aircraft. **Table 7-1** tabulates dimensions and performance characteristics of typical aircraft in the existing fleet at SEF. This tabulation is not comprehensive, but rather lists typical aircraft in the fleet utilizing the airfield. The aircraft are listed in ascending order from least to most demanding.

7.2.3.1 Determination of Critical Aircraft

Existing

By applying the criteria discussed above to SEF's current fleet mix, it was noted that aircraft with the highest approach speeds and longest wingspans belong to the turboprop and turbojet aircraft group. Therefore, based upon that criteria, the Lockheed Martin, C-130 Hercules, represents the most demanding aircraft currently utilizing SEF's facilities on a regular basis. The C-130 is designated as a C-IV under the Aircraft Design Group criteria. Thus, design and planning criteria should meet the requirements of Group C-IV aircraft.

Table 7-1. Existing Aircraft

Aircraft Model (Approach Speed – knots)	Wing-span (ft-in)	Length (ft–in)	Maximum Takeoff Reqmt. (ft)	Maximum Landing Reqmt. (ft)	Approximate Approach Speed (knots)	Aircraft Category
Single-Engine (Piston)						
Cessna 150	32.7	23.8	735	445	55	A-I
Mooney Ranger	36.1	24.8	1,395	1,550	72	A-I
Piper Arrow	35.4	24.7	1,610	1,400	54.7	A-I
Cirrus Design SR-20	35.2	26	1,960	2,040	65.17	A-I
Multi-Engine (Piston)						
Piper Seminole	38.6	27.6	2,200	1,490	54.7	A-I
Beech Baron	37.8	29.8	2,300	2,450	74.7	A-I
Rotorcraft						
Bell Jet Ranger	39	---	---	---	---	---
Bell Long Ranger	45	---	---	---	---	---
Bell 222	57.3	---	---	---	---	---
AH-64 Apache	58.1	---	---	---	---	---
Turboprop						
Beech King Air B200	54.5	43.8	2,579	2,845	103.4	B-II
Douglas DC-3	95	64.5	6,850	4,720	36.6	A-III
Lockheed C130 (Hercules)	***132.6***	***106.1***	***4,700***	***2,550***	***130.0***	***C-IV***
Turbofan						
Cessna CitationJet	46.8	42.6	3,080	2,750	98	B-II
Beech Jet 400A	43.5	48.4	4,169	2,960	121.7	C-I
Learjet 25	35.6	47.6	4,000	3,100	137	C-I
Dassault Falcon Jet 900C	63.4	66.3	4,935	3,520	106.0	B-II
Gulfstream III	77.8	83.1	5,110	3,180	136	C-II

Source: Sebring Flight Center, Sebring Airport Authority, Sebring Regional Airport Fleet Mix, 2001, Aviation Week and Space Technology Sourcebook, 1999, and AC 150/5300-13-7, Airport Design, 2001.
Note: Approach speed is approximately 24.8% of normal cruising speed.
1 MPH equals .8689758 knots

Future

As discussed in Chapters 5, *Projection of Aviation Demand*, and 6, *Demand Capacity Analysis*, it is anticipated that use of the Airport by Corporate-type aircraft is likely to increase. Corporate aircraft range in size from multi-engine piston aircraft to regional jets. Typical business aircraft include: the Gates Learjet 60 (L-60), Gulfstream IV/V (G-IV/V), Boeing Business Jet (BBJ), Falcon 2000, Challenger 604, Airbus Corporate Jet, and ERJ 140.

In addition, demand for commercial airline service is growing. Potential stimuli include the Florida Department of Transportation's (FDOT) evaluation to develop a roadway system that will connect Highlands County with the Florida Turnpike System and Interstate 4 as well as the potential for SEF to become a High Speed Rail Terminus point. As a result, it is anticipated that these initiatives as well as visitor and local demand will spur the initiation of commercial service. In addition to potential commercial service, SEF may also attract heavy air cargo operators since SEF is home to an Industrial Park, International Raceway, and future commerce park as well as being designated as a Foreign Trade Zone. **Table 7-2**, Future Critical Aircraft, lists potential aircraft associated with each of these types of activities.

It is anticipated that during wet or extremely hot weather conditions that the minimum takeoff length field requirement will increase by approximately 200 ft or more due to safety concerns. Based upon this analysis, SEF's airside facilities should be planned and designed initially for Category D-IV and then D-V group aircraft.

7.3 AIRFIELD REQUIREMENTS

Once airfield capacity and demand, in terms of both aircraft group category and activity, have been identified, specific facility requirements necessary to enhance capacity must be determined. The following sections will identify necessary improvements to various facilities and equipment on the airfield, in order to correct any existing aircraft demand capacity problems, and increase overall capacity to meet the projected demand and overall forecast level of aircraft activity.

7.3.1 Future Airfield Facility Design Requirements

In order to meet the facility demands of both existing and future critical aircraft groups, SEF must meet FAA design standards as defined in FAA AC 150/5300-13, *Airport Design*. As a result, a number of infrastructure improvements need to be planned and developed, as shown in **Tables 7-3 through 7-19**, in order to meet the requirements of the existing and anticipated, critical aircraft group categories: B-I, B-II, D-IV and D-V. Each of these aircraft categories relates to a specific type of operation: i.e., general aviation, corporate, and commercial/heavy cargo, respectively. As a result, the following infrastructure development is recommended to meet existing and anticipated demand as noted in Chapter 6, *Demand Capacity Analysis*.

Table 7-2. Future Critical Aircraft

Aircraft Model (Approach Speed – knots)	Wingspan (ft-in)	Length (ft-in)	Maximum Takeoff Reqmt. (ft)	Maximum Landing Reqmt. (ft)	Approximate Approach Speed (knots)	Aircraft Category
Fractional Ownership						
Falcon 2000	63.4	66.3	5,440	3,125	109	B-II
Challenger 604	64.3	68.4	5,700	2,775	117	B-II
Airbus Corporate Jet	111.8	111	6,300	4,700	156	D-III
ERJ 140	65.8	98	6,463	4,900	118	B-II
Business/GA						
Cessna CitationJet	46.8	42.6	3,080	2,750	98	B-II
Learjet 60	43.8	58.7	5,450	3,190	130	D-I
Gulfstream IV	77.8	88.3	5,450	3,190	149	D-II
Boeing Business Jet	112.6	110.3	5,450	3,600	116	B-III
Commercial						
Long Haul						
B-747-200C	195.7	231.9	10,900	6,950	~159	D-V
A300-600	147.1	177.5	7,200	4,950	135	C-IV
A-310-300	144.1	153.2	7,400	4,950	125	C-IV
A330-200	197.8	193.6	8,200	5,200	~141	D-V
Short Haul						
B-727-200	108	153.2	10,000	5,000	138	C-III
B737-200C	93	100.2	8,970	4,580	137	C-III
A-320-200	111.9	123.3	7,050	4,800	~135	C-III
MD-88	107.8	147.9	6,650	5,400	~143	D-III
Commercial Jet Freight Fleet						
Medium Narrow Body						
B757-200	124.8	155.3	7,800	5,060	~135	C-IV
DC-8-50	142.4	150.9	10,000	5,400	137	C-IV
Medium Widebody						
A310-300F	144.0	153.1	7,400	4,950	~135	C-IV
B767-300	156.2	180.5	8,900	5,400	130	C-IV
DC-10-10	155.2	182.4	9,810	5,820	136	C-IV
Large Widebody						
B747-200	195.5	232.0	10,900	6,950	152	D-V
B747-400	212.9	232.0	9,800	7,150	154	D-V
MD-11	170.0	201.5	10,000	7,600	155	D-IV

Source: Aviation Week and Space Technology Sourcebook, 1999, Aircraft Manufacturer Specifications Manuals, and AC 150/5300-13-7, Airport Design, 2001.
Note: Approach speed is approximately 24.8% of normal cruising speed.
1 MPH equals .8689758 knots

Table 7-3. Future Runway Planning and Design Criteria

Runway Designation	Existing Runway Design Criteria	Future Runway Design Criteria	Future Design Aircraft
Runway 18-36	D-II	D-IV	C-130, Hercules, and Airbus Corporate Jet
Runway 14-32	B-II	B-II	Cessna CitationJet
Turf GA Runway	N/A	B-I	'P-51 Mustang'
Commercial Runway	N/A	D-V	A330, B-747, etc

Source: SAA, 2002, and PBS&J, 2002

The primary factors affected by the planning criteria are the clearances from runways and taxiways to parked aircraft, buildings and other potential obstacles, as well as aircraft operational facility dimensions. The recommended runway lengths were tabulated based upon information obtained from specific aircraft specification manuals and FAA AC 150/5300-13, *Aircraft Design Index*.

The critical aircraft group category designates the airfield design criteria, i.e., runway length and width, taxiway separation, safety area, etc. Currently, the most demanding aircraft using SEF's facilities are the Gulfstream III business jet, Learjet 35/36, and the C-130 Hercules military transport. However, in the near future, it is anticipated that SEF will transition from a GA Airport to a commercial service airport. Therefore, it is likely that the ARC will change from a D-II to a D-V aircraft category in order to meet the demands of anticipated commercial and cargo service.

7.3.1.1 Facility Design Criteria

Airfield improvements are developed according to the established ARC for the Airport, and then for each particular runway. Due to changes in design aircraft, the existing facility design criteria, ARC D-II, is expected to change to an ARC D-V.

Runway Requirements

Currently, SEF can accommodate 100 percent of small airplanes (less than 12,500 lb maximum gross takeoff weight), which require a runway length of approximately 3,500 feet. Runway length criterion is based upon the maximum runway length needed, on a hot and/or wet day, for a fully loaded aircraft to take off. However, in order to accommodate 100 percent of the corporate and regional jet aircraft market, a runway length requirement of approximately 6,700 ft is recommended to meet the minimum takeoff requirements for approach category D aircraft (aircraft greater than 60,000 lb maximum gross takeoff weight). Corporate and regional jet users are considered the most likely users of Runway 18-36. Therefore, a provision for an extension of 1,476 feet on Runway 18-36, for a total runway length of 6,700 feet, should be planned in order to safely accommodate D-IV aircraft.

Existing conditions at SEF do not meet all of the criteria of runway and taxiway design standards for Category D-IV aircraft (see **Table 7-4**). The current length of Runway 18-36 is 5,224 feet. Also, because of previous military use, the existing pavement width is 300 feet wide. However, only 100 feet of the width is designated or utilized for the runway. Current FAA standards, based upon Federal Aviation Regulation (FAR) AC 150-5300-13 *Airport Design* Change 7, require a runway to be marked 150 feet wide in order to meet the current D-IV ARC rating.

Currently, Runway 14-32 is 5,000 x 300 feet, with a 650 ft displaced threshold, and easily meets the current B-II ARC rating. Its width of 300 feet is considered non-standard for a civilian runway configuration. However, Runway 14-32 is likely to remain designated as a GA runway. Since high-speed corporate and regional jets are likely to use Runway 18-36, Runway 14-32 is expected to accommodate the existing general aviation fleet at SEF. The northern ramp at the threshold of Runway 14 is prime real estate for the development of new T-hangars. It is important to seek commercial opportunities, as well as preserve safety in this area. Shortening Runway 14-32 at the north end would allow for both of these suggestions by eliminating a runway crossing zone and opening up the north ramp. As a result, it will become necessary to add length to the south end of the Runway 14-32. It is necessary to maintain approximately 3,500 ft, to accommodate the anticipated critical aircraft, the CitationJet, which is designated as a B-II. Additional runway length is not needed on 14-32 since it easily accommodates most current and future GA aircraft, as long as 3,500 ft is maintained.

As discussed in Chapter 6*, Demand Capacity Analysis,* a number of antique aircraft, WWI and WWII War Birds, are either based at SEF or visit frequently. War Bird pilots have stated that paved runways tend to put undue stress on their aircraft. Therefore, in an effort to meet demand and isolate the Warbirds and other antique aircraft from typical GA aircraft, a 3,000 ft GA Turf Runway at SEF is recommended. This runway should be designed to accommodate special experimental and antique aircraft, and is suggested that the design category be a B-I. Aircraft of this type do not have high approach speeds, nor long wingspans. Therefore, using the design criteria for a B-I aircraft is expected to easily accommodate these aircraft with a minimum cost to the Airport.

As discussed in Chapter 6, commercial and cargo aircraft at SEF will require runway field lengths of greater than 7,000 feet. Due to constraints associated with military airspace, land acquisition, noise, roadway and railroad alignment, etc., the existing Runway 18-36 runway field length cannot expanded to more than 6,700 feet. Therefore, in order to accommodate commercial demand, a provision should be made to design a commercial runway to accommodate Category D-V aircraft. Thus, based upon the field length requirements shown in **Table 7-2**, Future Critical Aircraft, an initial length of 8,500 feet is recommended with a potential expansion to 10,000 feet, if demand warrants. A potential benefit associated with the initial 8,500 ft runway field length is that it meets United States Military Airport Field Length criteria for high speed, military aircraft. Thus, with the addition of the new runway in conjunction with the Department of Defense (DOD) Hot Fuel Contract, it is anticipated that military operations at SEF will increase.

Table 7-4. Proposed Runway Improvements

Project	Aircraft Category	2003-2006	2006-2011	2011-2021
Extend RW 18-36	D-IV	X		
Shorten RW 14-32 to 2,100’	B-II		X	
Lengthen RW 14-32 to 3,500’	B-II		X	
Construct 3,500’ turf RW	B-I	X		
Construct new 8,500’ RW	D-V		X	
Expand 8,500’ RW to 10,000’	D-V			X

Source: PBS&J, 2002

Taxiway Requirements

The type and location of taxiways in relation to the runway system has a significant impact on the capacity of the airfield. Adequate taxiway entrances and exits, in conjunction with full-length parallel taxiways, provide the highest level of obtainable capacity to the runway system. It is important to ensure that adequate taxiways are available for each of the runways discussed previously.

The current taxiway configuration at SEF is less than optimal. Currently, there are only three taxiways, A-4, A-3, and A-2, which connect the airside apron to Runway 18-36. However, a full-length, parallel taxiway, designated as Taxiway A, is being built between the existing airside apron and Runway 18-36. Aircraft using Runway 14-32 are either required to use taxiways located at either end of the runway cross Runway 18-36 to access Taxiway A-3. In addition, aircraft planning to use Runway 32 must either cross Runway 18-36 and back taxi on 14-32.

Taxiway widths and fillet design are less than adequate for existing runways 18-36 and 14-32. Of most concern is the width and fillet design of Taxiway A, which is currently being extended to run parallel to Runway 18-36. The current taxiway configuration at SEF requires aircraft to taxi to either end of the runway or to taxi on Runway 18-36 in order to access Runway 14-32. However, the proposed turf runway could provide an additional access to Runway 14-32 if designed parallel to the existing 14-32.

In addition, in order to provide the greatest operational capacity for the commercial service runway, it is recommended to be equipped with two full-length parallel taxiway systems. Improvements to the current taxiway system are recommended in order to provide adequate separation (400 ft) and use of the taxiways by B-I, B-II, D-IV and D-V aircraft.

There are existing and proposed geometrical design standards for Runways 18-36 and 14-32, as well as for the future turf and commercial runways. These design standards will provide additional facility planning requirements for facilities located in and around the runways and taxiways. The design standards for both the existing runways and proposed runways are shown in **Tables 7-5, 7-6, 7-7, and 7-8.**

Table 7-5. Geometric Design Standards for Runway 18-36

Standards	ARC D-II	Existing Dimensions	Future ARC D-IV
Runway width	100	100	150
Runway shoulder width	10	100	25
Runway blast pad width	120	120	200
Runway blast pad length	150	150	200
Runway safety area width	500	500	500
Runway safety area length beyond runway end	1,000	1,000	1,000
Runway obstacle free zone width	400	400	400
Runway obstacle free zone length beyond runway end	200	200	200
Runway object free area width	800	800	800
Runway object free area length beyond runway end	1,000	1,000	1,000
Runway Centerline to Parallel Taxiway	300	400	400
Taxiway width	35	35 to 75	75
Taxiway shoulder width	25	10 to 30	25
Taxiway safety area width	171	79 to 214	171
Taxiway object free area width	259	131 to 320	259

Source: Sebring Regional Airport Layout Plan, 1998, and FAA AC 150/5300-13: Airport Design
Note: All measurements are in feet

Table 7-6. Geometric Design Standards for Runway 14-32

Standards	ARC B-II	Existing Dimensions	Future ARC B-II
Runway width	100	300	300
Runway shoulder width	10	10	10
Runway blast pad width	95	95	95
Runway blast pad length	150	150	150
Runway safety area width	150	150	150
Runway safety area length beyond runway end	300	700 (Rwy 14) 600 (Rwy 32)	700 (Rwy 14) 600 (Rwy 32)
Runway obstacle free zone width	250	250	250
Runway obstacle free zone length beyond runway end	200	200	200
Runway object free area width	500	500	500
Runway object free area length beyond runway end	300	300	300
Runway Centerline to Parallel Taxiway	240	NA	240
Taxiway width	35	29 to 75	29 to 75
Taxiway shoulder width	10	10 to 30	10 to 30
Taxiway safety area width	79	79 to 214	79 to 214
Taxiway object free area width	131	130.6	130.6

Source: Sebring Regional Airport ALP 1998 and FAA AC 150/5300 Airport Design
Note: All measurements are in feet

Table 7-7. Geometric Design Standards for Future Turf Runway

Standards	Future ARC B-I
Runway width	75
Runway shoulder width	10
Runway blast pad width	80
Runway blast pad length	100
Runway safety area width	120
Runway safety area length beyond runway end	240
Runway obstacle free zone width	250
Runway obstacle free zone length beyond runway end	200
Runway object free area width	400
Runway object free area length beyond runway end	240
Runway Centerline to Parallel Taxiway	225
Taxiway width	25
Taxiway shoulder width	10
Taxiway safety area width	49
Taxiway object free area width	89

Source: Sebring Regional Airport ALP 1998 and FAA AC 150/5300 Airport Design
Note: All measurements are in feet

Table 7-8. Geometric Design Standards for Future Commercial Runway

Geometrical Standards	Future ARC D-V
Runway width	150
Runway shoulder width	35
Runway blast pad width	220
Runway blast pad length	400
Runway safety area width	500
Runway safety area length beyond runway end	1000
Runway obstacle free zone width	400
Runway obstacle free zone length beyond runway end	200
Runway object free area width	800
Runway object free area length beyond runway end	1000
Runway Centerline to Parallel Taxiway	400
Taxiway width	75
Taxiway shoulder width	35
Taxiway safety area width	214
Taxiway object free area width	320

Source: Sebring Regional Airport Layout Plan, 1998, and FAA AC 150/5300-13: Airport Design
Note: All measurements are in feet

Apron Requirements

The existing aircraft parking aprons at SEF meet the required FAA standards for both D-IV and D-V ARC designations. The current separation from Runway 18-36 centerline to the aircraft parking apron is 525 feet. The separation from Taxiway A centerline to the aircraft parking apron is 300 feet. The future location of Taxiway A (construction already in progress) in this area will maintain a minimum separation from taxiway centerline to apron edge of approximately 200 feet. As shown in **Table 7-9,** the minimum distance required from the Runway 18-36 centerline to apron parking is 500 feet. The minimum taxiway centerline to apron edge (fixed or moveable object) separation is 129.5 feet. Therefore, separation distances meet or exceed FAA standards and thus allow area for apron expansion.

Existing and recommended separation distances for runways and taxiways on the airfield for both existing and proposed runways are described in **Tables 7-9, 7-10, 7-11, and 7-12.**

Table 7-9. Separation Standards for Runway 18-36

Separation Standards	ARC D-II	Existing Dimensions	Future ARC D-IV
Centerline to hold line	250	200	250
Centerline to parallel taxiway/taxilane	300	239.4	300
Centerline to aircraft parking area	400	400	400
Runway centerline to helicopter touchdown pad	500	500+	500
Taxiway centerline to parallel taxiway/taxilane centerline	105	104.8	215
Taxiway centerline to fixed or movable object	65.5	65.3	129.5
Taxilane centerline to parallel taxilane centerline	97	96.9	198
Taxilane centerline to fixed or movable object	57.5	57.4	112.5

Source: FAA AC 150/5300-13: Airport Design; FAA AC 150/5340-1, Standards for Airport Markings; FAA AC 150-5390-2, Helicopter Design; and Sebring Regional Airport ALP
Note: All measurements are in feet

Table 7-10. Separation Standards for Runway 14-32

Separation Standards	**ARC B-II**	**Existing Dimensions**	**Future ARC B-II**
Centerline to hold line	125	125	125
Centerline to parallel taxiway/taxilane	240	164.4	240
Centerline to aircraft parking area	250	250	250
Runway centerline to helicopter touchdown pad	500	500+	500
Taxiway centerline to parallel taxiway/taxilane centerline	105	104.8	105
Taxiway centerline to fixed or movable object	65.5	65.3	65.5
Taxilane centerline to parallel taxilane centerline	97	96.9	97
Taxilane centerline to fixed or movable object	57.5	57.4	57.5

Source: FAA AC 150/5300-13: Airport Design; FAA AC 150/5340-1, Standards for Airport Markings; FAA AC 150-5390-2, Helicopter Design
Note: All measurements are in feet

Table 7-11. Separation Standards for Future Turf Runway

Separation Standards	Future ARC B-I
Centerline to hold line	125
Centerline to parallel taxiway/taxilane	225
Centerline to aircraft parking area	200
Runway centerline to helicopter touchdown pad	500
Taxiway centerline to parallel taxiway/taxilane centerline	69
Taxiway centerline to fixed or movable object	44.5
Taxilane centerline to parallel taxilane centerline	64
Taxilane centerline to fixed or movable object	39.5

Source: FAA AC 150/5300-13: Airport Design; FAA AC 150/5340-1, Standards for Airport Markings; FAA AC 150-5390-2, Helicopter Design; and Sebring Regional Airport ALP
Note: All measurements are in feet

Table 7-12. Separation Standards for Future Commercial Runway

Separation Standards	Future ARC D-V
Centerline to hold line	300
Centerline to parallel taxiway/taxilane	300
Centerline to aircraft parking area	400
Runway centerline to helicopter touchdown pad	500
Taxiway centerline to parallel taxiway/taxilane centerline	267
Taxiway centerline to fixed or movable object	160
Taxilane centerline to parallel taxilane centerline	245
Taxilane centerline to fixed or movable object	138

Source: FAA AC 150/5300-13: Airport Design; FAA AC 150/5340-1, Standards for Airport Markings; FAA AC 150-5390-2, Helicopter Design; and Sebring Regional Airport ALP
Note: All measurements are in feet

7.3.1.2 Design Visibility Minimums

Approach visibility minimums are dependent upon the designated runway approach category, visual, non-precision and precision. The type of approach and associated visibility minimums affect key airport safety standards governing operational pavement separations, runway protection zone (RPZ) dimensions, and safety area standards.

In its current 2002 configuration, SEF has an approach visibility minimum of 1 3/4-mile and ceiling of 640 feet for non-precision global positioning system (GPS) approaches to Runway 36. The GPS circling approach requires a slightly higher ceiling of 720 feet and 2-mile horizontal visibility. Runways 18, 14, and 32 are visual runways with standard visual flight rule (VFR) visibility minimums of 3 miles horizontally and a 1,000 foot ceiling.

In the immediate future, however, it is recommended that Runway 36 be remarked as a precision approach runway. Installation of an Instrument Landing System (ILS) and associated equipment on Runway 36 will allow aircraft to utilize SEF during inclement weather conditions as well as allow for greater runway use flexibility. Installation of a Category I ILS approach will allow aircraft to have an approach visibility minimum of one-mile horizontal visibility. In addition, Runway 18 will be remarked to allow for limited non-precision approach procedures to occur from the north of the field, while Runways 14 and 32 will remain visual only.

Future runway approach categories are described in **Table 7-13.**

Table 7-13. Runway Approach Categories

Runways	Approach Category	Design Visibility Minimums
Runway 18	Non-precision instrument	Not lower than 1-mile
Runway 36	Precision instrument (Cat I)	Not lower than ¾ -mile
Runway 14	Visual	Not lower than 1-mile
Runway 32	Visual	Not lower than 1-mile
Proposed GA runway	Visual	Not lower than 1-mile
Proposed commercial runway	Precision instrument (Cat I)	Not lower than ¾ -mile

Source: PBS&J, 2002

Runway Protection Zone (RPZ) Dimensions

The standards governing the geometry of the runway are also dependent on the visibility minimums and the ARC classification. These standards affect the orientation and geometry of aircraft parking areas and placement of related facilities. The existing and recommended standards for all runway improvements at SEF are listed in **Table 7-14**.

The standards governing the geometry of the runway are also dependent on the visibility minimums and th airport reference code classification.

In addition, desirable visibility minimums affect the size of the RPZ. It is of critical importance for the Airport to protect these approaches through an aggressive program of land acquisition or aviation easements. Protection of the approaches is a vital safety concern to the public.

Table 7-14. Future Runway Protection Zone Parameters

Runway Protection Zone Dimensions:	ARC B-I	ARC B-II	ARC D-IV	ARC D-V
RW 36 approach (precision)				
Inner width			1,000	
Outer width			1,510	
Length			1,700	
RW 18 approach (non-precision)				
Inner width			500	
Outer width			1,010	
Length			1,700	
Commercial runway (precision)				
Inner width				1000
Outer width				1,510
Length				1,700
RW 14 approach (visual)				
Inner width		500		
Outer width		700		
Length		1,000		
RW 32 approach (visual)				
Inner width		500		
Outer width		700		
Length		1,000		
Turf runway (visual)				
Inner width	500			
Outer width	700			
Length	1,000			

Source: FAA AC 150/5300-13: Airport Design
Note: All measurements are in feet

7.3.2 Far Part 77 Surfaces and Approach Requirements

Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, is the regulation that "establishes standards for determining obstructions to navigable airspace." The obstructions are determined primarily by superimposing the Part 77 "imaginary surfaces" over the airport and vicinity. Any object which penetrates these surfaces is considered an obstruction to air navigation.

FAR Part 77 requires that certain runway imaginary surfaces be established and identified and meet certain obstruction clearance requirements as follows:

- **Primary Surface** – The surface longitudinally centered on a runway extending along the RPZ width and 200 feet beyond each end of the runway.
- **Horizontal Surface** – A horizontal plane located 150 feet above the established airport elevation. The perimeter of this surface is developed swinging arcs of specified radii from the center of each runway's primary surface end and connecting the adjacent arcs with lines tangent to these arcs.
- **Transitional Surface** - Extends upward and outward at right angles to the runway centerline extending at a ratio of 7 to 1 from the sides of the primary surface and from the sides of the approach surface. The transitional surface clearances may dictate runway/building separation depending upon the type of runway and/or aircraft using the airport as opposed to lateral clearance criteria established in FAA AC 150/5300-13.
- **Conical Surface** – Extends outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a total horizontal distance of 4,000 feet.
- **Approach Surface** – Longitudinally centered on the extended runway centerline extending outward and upward from each end of the primary surface. It is located at each end of the runway and based on the type of available or planned approach.
- **Runway Protection Zone** – Defines a trapezoidal portion of the runway approach surface, normally beginning 200 feet from the runway end and symmetrical about the runway. The RPZ size is dependent on the type of approach. It is desirable that all property beneath a RPZ be owned, or controlled through easement, by the airport, in order to insure obstruction infringement.

Dimensions of the "imaginary surfaces" are derived from the type of approach and the type of aircraft operating at the Airport. Runway 36 at SEF is a non-precision approach runway with visibility minimums of 1 ¾ mile. Runways 18, 14, and 32 are visual approach runways. Federal regulations require that Part 77 surfaces of the most demanding approach be applied to the entire runway. Therefore, Runway 18-36 must be designed in conjunction with the imaginary surfaces associated with the non-precision approach to Runway 36. The existing requirements of the Part 77 surfaces for both runways at SEF are shown in **Figure 7-1** and **Table 7-15**. Existing Part 77 obstructions are shown in **Table 7-16,** while **Table 7-17** depicts future imaginary surfaces**.**

Figure 7-1. FAR Part 77 Imaginary Surfaces

Table 7-15. Existing Imaginary Surfaces

FAR Part 77 Imaginary Surface	Existing Non-Precision Approach (Runway 18-36)	Visual Approach Only (Runway 14-32)
PRIMARY SURFACE		
Width	500'	500'
Length beyond runway ends	200'	200'
APPROACH SURFACE		
Initial (inner) width	500'	500'
Outer width	3,500'	1,500'
Horizontal distance	10,000'	5,000'
Slope	34:1	20:1

Source: FAR Part 77 Objects Affecting Navigable Airspace

Table 7-16. Future Imaginary Surfaces

FAR Part 77 Imaginary Surface	Future Precision Approach	Future Non-Precision Approach	Visual Approach Only
PRIMARY SURFACE			
Width	1,000’	500’	500’
Length beyond runway ends	200’	200’	200’
APPROACH SURFACE			
Initial (inner) width	1,000’	500’	500’
Outer width	16,000’	3,500’	1,500’
Horizontal distance	40,000’ + 10,000’	10,000’	5,000’
Slope	40:1 + 50:1	34:1	20:1

Source: FAR Part 77 Objects Affecting Navigable Airspace

Table 7-17. Part 77 Existing Obstruction Data

Obstruction Data	Runway 14	Runway 32	Runway 18	Runway 36
Part 77 Category	Visual	Visual	Visual	Non-Precision
Displaced threshold	660	---	---	---
Controlling obstruction	Railroad	Fence	---	Fence
Height above runway	23	4	---	4
Distance from runway end	486	366	---	414
Obstruction clearance slope	12:1	41:1	50:1	50:1

Source: Sebring Regional Airport Master Record, 2002

7.3.2.1 Pavement Determination

The design aircraft wingspan and approach speed typically affects runway and taxiway design. However, other factors may also affect pavement design requirements, such as landing gear configuration, gross takeoff weight, weather conditions, etc. Pavement strength is based upon the criteria of the design aircraft, wingspan and approach speed, as well as landing gear configuration (i.e., single wheel, dual wheel, etc.), and the known or forecast number of operations of aircraft with the heaviest maximum gross takeoff weight.

The dual tandem wheel (DTW), 155,000 lb Hercules C-130 is the existing design aircraft at SEF. However, the runway and main taxiway pavement strengths at SEF are not adequate to accommodate the load of this aircraft. Runway 18-36 is rated for 85,000 lb DTW load. This is approximately 55 percent of the maximum takeoff weight for the C-130. Additionally, the Boeing Business Jet 1, which is the anticipated future design aircraft, has a DTW load of 171,000 lb.

Therefore, based upon inventory data, and a review of Airport records, the condition of airfield pavements has been determined, and necessary improvements identified. Utilizing this information, **Table 7-18** shows the existing airfield pavement that will require replacement and/or maintenance within the first ten years of this study. As mentioned, Runway 18-36 is only rated for 85,000 lb DTW load. Therefore, improvements to the runway load bearing capabilities are necessary as shown in **Table 7-18**.

Table 7-18. Airfield Pavement Requirements

Pavement Area	Existing Condition	Required Action	Proposed Timeframe
Runway 18-36	Good	Overlay/strengthening/ extension	2002-2004
Runway 14-32	Very Poor	Overlay/reconstruction	2006-2009
Runway 4-22	Closed	Closed, abandoned and partially demolished	1999
Taxiway A	Good	Expand/overlay	2002-2004
Taxiway A-1	Excellent	New	2002
Taxiway A-2	Good	Reconstructed	2002
Taxiway A-3	Good	Expand/overlay	2003
Taxiway A-4	Very Poor	Overlay/reconstruction	2003
Taxiways to T-Hangars	Excellent	Overlay	2010
Taxiway B-1	Very Poor	Overlay	2004
Taxiway B-2	Very Poor	Overlay	2005
Taxiway B-3	Very Poor	Overlay	2004
Taxiway B-4	Very Poor to Fail	Overlay/reconstruction	2004
Apron	Very Poor	Overlay/reconstruction	2004-2005
Perimeter between RW ends 18 & 22*	Poor	Closed and abandoned	2000
Perimeter between RW ends 22 & 32*	Poor	Closed and abandoned	2002
Perimeter taxiway between RW 36 and 32*	Poor	Closed and abandoned	2002

** Denotes pavement sections that were not included in the 1998 PCI Inspection, thus existing condition based upon physical observation only.*
Source: Florida Airport Pavement Evaluation, Sebring Regional Airport, Eckrose/Green Associates Inc. 1998 and PBS&J. 2002

7.3.2.2 Navigational Aid (NAVAID) Requirements

En route NAVAIDS are established to maintain accurate en route air navigation via ground based transmission facilities and on board receiving instruments. SEF's en route NAVAIDS currently located on the airfield includes PAPIs, MIRL, and runway markings. Additionally, an offsite VORTAC located at nearby LaBelle provides radial and distance measuring information to military and civilian pilots. Furthermore, there is a published GPS non-precision approach to Runway 36.

Additional navigational aid facilities, and specific instrument approaches and procedures, may be acquired and implemented at Sebring Regional Airport to increase capacity and ensure safety during instrument landing system conditions.

Precision approach path indicators (PAPI) currently exist on the primary Runway 18-36. At the time of this writing, runway end identifier lights (REILs) were in the process of being installed on Runway 18-36. It is recommended that some type of generic visual glide slope indicator (GVGI), such as the PAPI and runway end identifier lights (REILs), be provided for all visual or non-precision approaches to the Airport.

The available instrument approaches and NAVAIDS at an airport have a measurable impact on overall airfield capacity, especially when considering instrument flight rules (IFR) hourly capacity. As discussed in Chapter 6, SEF is located within a Military Operating Area (MOA) and adjacent to restricted areas associated with the MacDill Auxiliary Airfield. As a result, future instrument approach procedures to SEF may be limited. However, additional NAVAID facilities, and specific instrument approaches and procedures, may be acquired and implemented at SEF to increase capacity and ensure safety during IFR conditions.

Based on a review of the existing NAVAIDS at the Airport, and the anticipated demand as shown in Chapters 5 and 6, specific improvements to the existing NAVAID and approach system at SEF have been identified. It is recommended that both Runway 36 and at least one end of the proposed new runway be equipped with an instrument landing system (ILS). Depending upon the orientation and separation of these two runways, it could be possible to provide dual ILS capabilities. This may effectively separate lighter GA aircraft from commercial and/or military operations. Thus, IFR hourly and general airfield capacity would be increased, and the ability to provide future separate GA and commercial terminal buildings and overall operations would be protected. **Table 7-19** shows the NAVAID requirements, according to runway, necessary to increase Airport capacity and ensure operational safety during IFR conditions. These requirements have been deemed necessary to complement the proposed runway and taxiway improvements previously discussed.

Table 7-19. NAVAID Requirements

Runway	Existing NAVAIDS	Proposed NAVAIDS
Extended RW 18	PAPI-4/REILs	GPS/PAPI-4/REILs
Extended RW 36	GPS/ PAPI-4/REILs	PAPI-4/Category I ILS/Localizer/GPS/MALSR/ REILs
Shortened RW 14	None	MIRL/GPS/PAPI-4
Extended RW 32	None	MIRL/GPS/PAPI-4
Future turf runway	N/A	MIRL/GPS
Future commercial RW	N/A	PAPI-4/Category I ILS/localizer/GPS/MALSR/ REILs

Source: Sebring Regional Airport, Airport Layout Plan, and PBS&J, 2002
Note: PAPI-4 – 4-box precision approach path indicator
MALSR – medium intensity approach lighting system with runway alignment indicator lights

The above-mentioned additions and relocations are based on operational demands, and, therefore, will be eligible for federal and state funding.

7.3.3 Airfield Lighting, Signage, and Pavement Markings

7.3.3.1 Airfield Lighting

Existing runway lighting at SEF consists of the following systems:

- MIRL Runway 18-36
- Medium Intensity Taxiway Lighting (MITL) are located on connector Taxiways A-2, A-3, and B-3
- Runway threshold lighting on Runway 18-36

Future improvements to the airfield lighting systems at SEF should include:

- High intensity runway lighting (HIRL) system on Runway 18-36
- Pilot controlled, medium intensity runway lighting (MIRL) system on Runways 14-32 and 14U-32U
- HIRL system on the proposed commercial runway
- MALSRs in conjunction with a Category I ILS on both Runway 36 and the proposed commercial runway
- REILs on Runways 14-32 and 14U-32U
- MITL systems on all associated taxiways

Additionally, overhead lighting should be provided, at a minimum, on the commercial terminal aprons, to ensure safe operations and security of the apron area. Overhead lighting is also recommended for the GA apron areas.

7.3.3.2 Airfield Signage

Based on inventory data, there is little existing airfield signage at SEF. Therefore, additional signage and improvements to existing signage should be considered in conjunction with all future airfield projects. Projects that are recommended in this study, and would require signage updates, include: new runway construction, runway extensions, taxiway extensions and/or construction, and terminal apron expansion. Signage, in accordance with FAA guidelines, should be incorporated into the design and construction of each project.

7.3.3.3 Pavement Markings

The runway markings at SEF should be appropriately relocated to coincide with completion of the proposed runway extensions, taxiway extensions, and any necessary improvements to the apron area. Visual runway and taxiway markings should be included in the design and construction of new runways and taxiways.

7.3.4 Airfield Requirements for Commercial Airport Certification

In order to provide commercial service for aircraft with more than 19 seats, an airport must be certified under CFR 49, Part 139, *Airport Certification Manual*. This manual outlines the physical, procedural, and policies necessary for an airport to provide commercial service. A partial list of requirements is shown following:

- Airport Fencing
- Designated Airport ARFF Facilities and equipment
- Lighted Wind Cone
- Airport Beacon
- Segmented Circle
- Airfield Signage

7.3.5 Summary of Airfield Requirements and Future Capacity

In determining the facility requirements necessary to correct inadequate facilities, and increase the airfield capacity of SEF to accommodate the forecast demand, the following airfield requirements were identified:

- Extend, widen, and mark Runway 18-36 to 6,700 feet long by 150 feet wide, and overlay existing runway to accommodate takeoff and landing of military heavy corporate aircraft, and commercial regional jet aircraft.
- Shorten north end, lengthen south end, and mark Runway 14-32 to 3,500 feet long by 100 feet wide, and overlay.
- Construct 3,000 x 75 ft parallel turf runway to 14-32.
- Construct new commercial runway, initially 8,500 x 150, with potential expansion to 10,000 x 150 feet.
- Extend parallel Taxiway A to full length of Runway 18-36 and include entrance/exit taxiways at the west end of the runway.
- Construct full length parallel taxiway on east side of Runway 18-36 and include several entrance/exit taxiways.
- Construct two parallel taxiways on either side of the new commercial runway and include 6 to 8 entrance/exit taxiways.
- Install equipment necessary, and obtain a Category I ILS approach, Localizer approach, GPS approach, and medium intensity approach lighting system with runway alignment indicator lights (MALSR) for new runway.
- Install Category I ILS on Runway 36, and install REILs equipment on Runway 18.

7.4 TERMINAL AREA REQUIREMENTS

This section will identify specific requirements of the terminal facilities necessary to meet the projected passenger activity levels as well as identify general criteria for a potential commercial terminal facility. Individual terminal area facilities are examined in terms of their general spatial requirements to accommodate the future forecast passenger and aircraft activity levels. Alteration of these facilities may be necessary to meet specific forecast levels.

Currently, only one terminal building exists at SEF, the Sebring Airside Center, which was designed to meet both the needs of its current GA customers and to accommodate future small commercial aircraft operations. Designated areas for passenger baggage claim, airline ticket sales, and car rental facilities are located within the existing Airside Center. In addition to the Sebring Flight Center, the local FBO, SAA offices, and Sherianne's Runway Café, an additional four commercial leasehold spaces currently occupy the Airside Service Center.

However, anticipated commercial development at SEF will require a designated commercial service terminal building. As a result, maintaining the existing airside service center facilities while planning for future development of a commercial terminal facility will be addressed to facilitate the potential for air charter or commercial service operations at SEF.

Usage of the existing SEF terminal facility, can be divided into independent activities, which also require spatial analysis to accommodate peak-hour activities and determine facility requirements. These include: a pilot lounge, a flight planning area, Airport management and operations, public restrooms, and concessions.

7.4.1 Methodology

An airport's ability to successfully respond to change often hinges on the proper design of the terminal area. Since every airport is unique, planners must consider every component of the terminal and support areas to ensure that all elements are adequate to meet the imposed demand. In addition to future growth, peak travel periods impose the most severe demand and overall strain on the capacity of terminal facilities. Therefore, if an airport is to provide an acceptable level of service, facilities must be planned to cope with above average traffic flows that are typically caused by these periodic fluctuations in demand. At SEF, these peaks occur in the form of lunchtime traffic to Sherrianne's Runway Café and special events hosted by the Sebring International Raceway.

One method of planning for peak periods involves utilizing peak hour passenger volume, developed from the average day of the peak month baseline. Unlike annual enplanements, which are only a relative indicator of airport size, peak hour statistics more accurately describe demand based on specific user patterns. The peak hour element identifies the number of enplaned, deplaned, or total passengers boarding or disembarking from aircraft in an elapsed hour of the average day of the peak month. Peak hour data is not the absolute peak activity to occur, nor the total number of persons occupying the terminal at any one time. Rather, peak hour data provides design level of activity highly correlated to daily-enplaned passenger activity. Additionally, the number of persons in the terminal during peak periods, including visitors and employees, is also directly related to peak-hour passengers, whose volumes are generally considered the standard, by which terminal facilities are sized. Peak hour information for SEF was presented in Chapter 5, Projection of Aviation Demand.

Every airport has its own distinct peaking characteristics, due to a number of factors. Once the peaking factors have been identified, as developed in the forecasts in Chapter 5, an analysis and comparison of existing capacity with existing and projected peak demand can be made. This will result in identifying terminal facilities that will likely need capacity enhancing improvements and expansion.

Additionally, every effort must be made to provide a simplified and unobstructed flow of vehicles, passengers, aircraft, etc., in and about the terminal building and support areas. The primary terminal functions and ancillary activities should be located with respect to the functional flow design. Examples of critical flow functions in relation to terminal area layout and design, as suggested by the FAA, are illustrated in **Figure 7-2**.

The sources for terminal planning guidance include the FAA, International Air Transport Association (IATA), Transportation Research Board (TRB), and the International Civil Aviation Organization (ICAO). Some of the documents utilized in the terminal demand/capacity analysis include *FAA AC 150/5360-13 Planning and Design for Airport Terminal Facilities*, *FAA AC 150/5360-9 Planning and Design of Airport Terminal Facilities at Non-hub Locations*, and *IATA Airport Terminal Reference Manual*. The guidelines presented in these documents, in conjunction with the knowledge and expertise of the consultant, have been used to determine the demand and associated requirements for the designated planning period of this study.

7.4.2 Existing Terminal Building

The Sebring Airside Center currently accommodates commercial retail space, public restrooms, a lounge, fixed base operator (FBO) space, an information desk, and Airport administration space. However, the facility is also equipped to handle future necessities, such as airline ticket sales, a passenger waiting area, and car rental counters. The existing domestic terminal building was completed in 2000, and has a total of approximately 18,450 sq ft. It has been determined that approximately 150 sq ft per peak hour passenger, which includes space for visitors and employees, will provide sufficient space for the previously mentioned activities. The projected requirements for the gross domestic terminal area, based on the forecast passengers and peak hour passenger factors, are shown in **Table 7-20**.

Table 7-20. Gross Terminal Requirements

	2000	2001	2006	2011	2016	2021
Peak hour pilot/passengers	105	112	135	151	166	182
Existing terminal building area (sq ft)	18,450	18,450	18,450	18,450	18,450	18,450
Gross terminal building area requirements (sq ft)	15,767	16,790	20,309	22,711	24,954	27,254
Surplus/(Deficiency)	**2,683**	**1,660**	**(1,859)**	**(4,261)**	**(6,504)**	**(8,804)**

Source: PBS&J, 2002

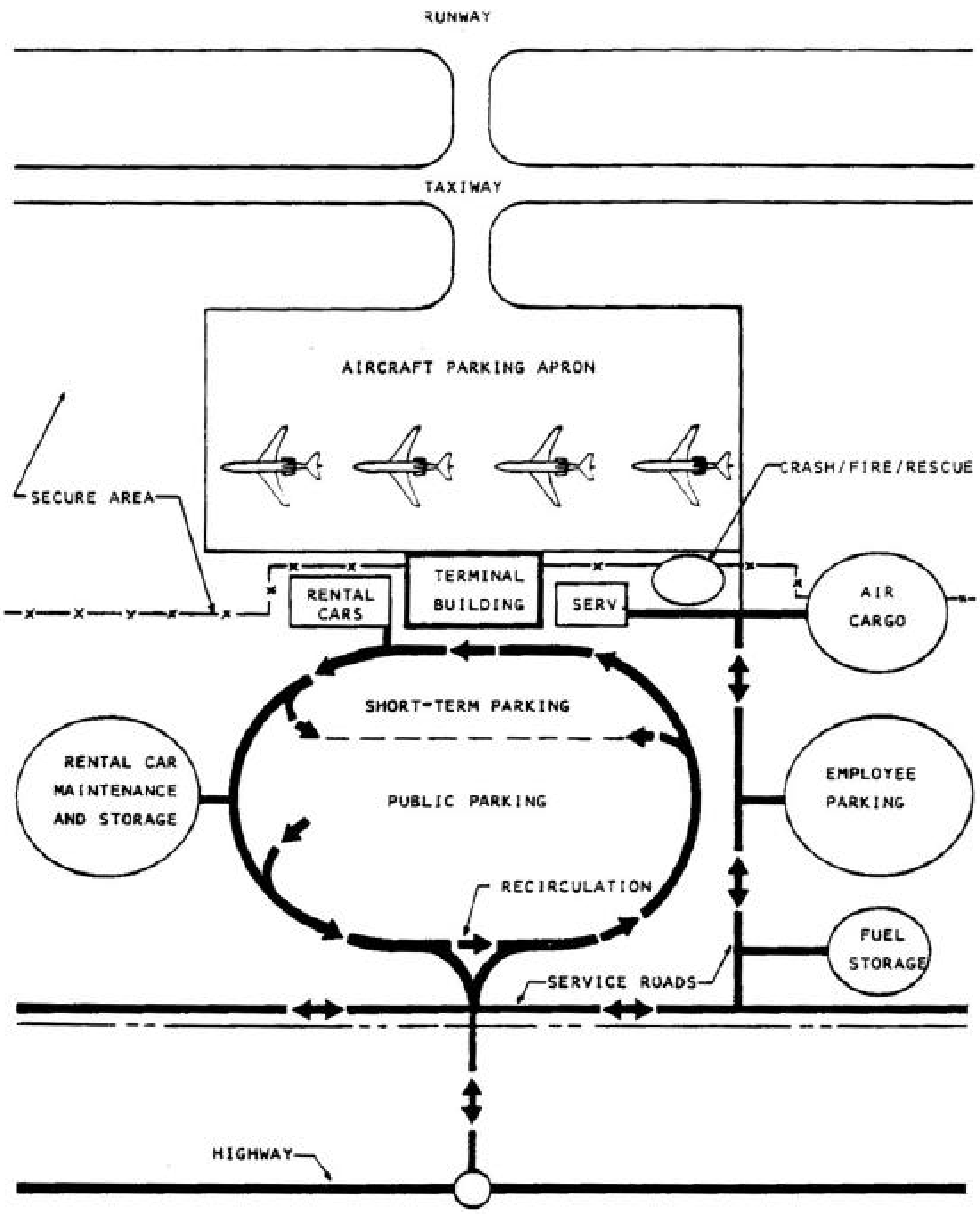
As shown in **Table 7-20**, the existing terminal building is sufficient to meet the demand forecast in Chapter 5, until 2006. However, if commercial service begins in the near future, demand would increase while capacity remains the same. Therefore, expansion to the existing Airside Center or development of a commercial terminal facility would be required during the planning period to accommodate commercial service demand.

Within the terminal building, independent amenities exist, which require individual spatial analysis to accommodate the peak hour activity. Utilizing the general sizing requirement discussed previously, a break down of the existing terminal space compared to the forecast demand follows.

7.4.2.1 Concessions

A wide variety of concessions are typically located within commercial terminal buildings, but not necessarily in GA terminal facilities. However, SEF is an exception to the rule. The Sebring Airside Center hosts a gift shop, aviation accessory store, renowned restaurant, waiting lounge, flight planning center/communication room, pilot rest area, special event area, multi-purpose room, and public restrooms and telephones. The following sections overview the facility requirements for domestic concessions provided by SEF.

Figure 7-2. Typical Terminal Site Relationship for Non-Hub Airports



Source: FAA AC 150/5360-9 Planning and Design of Airport Terminal Facilities at Non-hub Locations

Food Services

There is currently one restaurant in the main terminal facility at SEF. Sherrianne's Runway Café has approximately 91 seats and equates to a combined area of approximately 3,000 sq ft. Typical sizing for restaurant facilities is determined by usage factors (average daily transactions divided by average day/peak month enplanements), and turnovers (average daily users/transactions divided by the number of available seats). Average daily use factors for an airport the size of SEF are usually between 15 and 20 percent. However, because the quality atmosphere, service, and menu attract numerous non-aviation related users in addition to pilots and passengers, the usage factor for the Café is approximately 271 percent. Typically, the desired turnover rate is between 10 and 15 people average per seat per day. The Café at SEF has a turnover rate of approximately 5 persons per seat per day. Area requirements per seat are estimated between 35 and 40 sq ft to accommodate for food preparation, kitchen, movement areas, and employee stations. **Table 7-21** shows the area requirements based upon this information, for the sizing of the restaurant and lounge areas. According to this analysis, the restaurant is in need of expansion to meet the existing demand.

Table 7-21. Restaurant Area Requirements

	2000	**2001**	**2006**	**2011**	**2016**	**2021**
Average daily enplanements	185	201	241	270	297	324
Average daily users	500	543	653	731	803	877
Daily turnover rate (persons/seat)	5.49	5.49	5.49	5.49	5.49	5.49
Existing seats	91	91	91	91	91	91
Required seats*	91	99	119	133	146	160
Surplus/(Deficiency)	**0**	**(8)**	**(28)**	**(42)**	**(55)**	**(69)**
Existing restaurant area (sq ft)	3,000	3,000	3,000	3,000	3,000	3,000
Required restaurant area	3,640	3,955	4,753	5,318	5,846	6,385
Surplus/(Deficiency)	**(640)**	**(955)**	**(1,753)**	**(2,318)**	**(2,846)**	**(3,385)**

Source: PBS&J, 2002.
Note: Does not consider initiation of commercial service.

News and Gift Shops

Currently, four commercial leaseholds, surrounding the main terminal corridor, are located within the Sebring Airside Center. Recommended sizing for gift shops and other commercial leaseholds in terminal buildings, based upon FAA guidelines, is 600 to 700 sq. ft. per million annual enplanements, with a minimum size of 150 sq ft. **Table 7-22** shows the space requirements for a retail establishment at SEF based upon an existing leaseholder.

Table 7-22. Retail Shop Requirements

	2000	2001	2006	2011	2016	2021
Annual enplanements	67,422	73,256	88,033	98,506	108,275	118,270
Existing retail area (sq ft)	500	500	500	500	500	500
Required retail area	150	150	150	150	150	150
Surplus/(Deficiency)	**350**	**350**	**350**	**350**	**350**	**350**

Source: PBS&J, 2002

Telephones

Standard industry planning for public telephones suggests 100 to 110 sq ft per one million enplanements. However, due to the widespread use of cellular telephones by the traveling public, this factor has been reduced by 30 percent. Areas with public telephones should be located in proximity to the ticket lobby, baggage claim area, or restaurant facilities. Typically, each telephone requires approximately 9 sq ft. Based on the sizing criteria above, **Table 7-23** shows the estimated public telephone requirements for the domestic terminal at SEF. The public telephone facilities are adequate in number, size, and location for the duration of the planning period.

Table 7-23. Public Telephone Requirements

	2000	2001	2006	2011	2016	2021
Annual enplanements	67,422	73,256	88,033	98,506	108,275	118,270
Existing public telephones	2	2	2	2	2	2
Required public telephones	1	1	1	1	1	1
Surplus/(Deficiency)	**1**	**1**	**1**	**1**	**1**	**1**
Existing telephone area (sq ft)	20	20	20	20	20	20
Required telephone area	9	9	9	9	9	9
Surplus/(Deficiency)	**11**	**11**	**11**	**11**	**11**	**11**

Source: PBS&J, 2002

7.4.2.2 Restrooms

Restroom space allowances within airports vary extensively. Not only must public restrooms be sized for anticipated peak-hour building occupancies, but they must also encompass applicable local, state, and federal codes, including the Americans with Disabilities Act. Currently, the women's and men's restrooms total approximately 700 and 500 sq ft in area, respectively. Restroom facilities should be at locations convenient to the departure area, ticket lobby, restaurant facilities, or baggage claim areas. At most terminal buildings, the main restroom facilities can be grouped in one centralized location, typically near the public lobby area. Additionally, private toilet facilities are sometimes provided in conjunction with operational and administrative facilities in non-public-use areas. Standard planning requirements for public restrooms recommend 1,500 to 1,800 sq ft per 500 peak-hour passengers. **Table 7-24** shows the required space for public restrooms. With over 1,200 sq ft of public restroom space, SEF facilities are more than adequate to meet demand of the peak hour activity.

Table 7-24. Public Restroom Requirements

	2000	**2001**	**2006**	**2011**	**2016**	**2021**
Peak hour pilots/passengers	105	112	135	151	166	182
Existing restroom area (sq ft)	1,200	1,200	1,200	1,200	1,200	1,200
Required restroom area	315	336	406	454	499	545
Surplus/(Deficiency)	**885**	**864**	**794**	**746**	**701**	**655**

Source: PBS&J, 2002

7.4.2.3 Airport Authority and Management Facilities

Airport management facilities vary according to the size of the staff and type of operations performed. Thus, requirements for administrative space must be matched to individual airports. Currently, the SAA occupies offices in the northernmost portion of the terminal building. The total office area, including conference and reception space, totals approximately 6,400 sq ft. It is assumed that demand for administrative space will increase as the SAA staff grows. However, the current management facilities are only 80 percent occupied. Therefore, the SAA actually has room to grow for several years. The existing administration space should be sufficient for the duration of the planning period.

7.4.2.4 Terminal Circulation, Mechanical, and Maintenance Space

In addition to identifying the size requirements of the major functions of the terminal, space for less obvious functions must be identified and planned. Circulation space will be required to connect the major functions, such as hallways and other needs. The amount of circulation space required for the gross terminal area varies from approximately 20 to 30 percent, depending upon the layout, size, and degree of centralization. For planning purposes, a factor of 25 percent is used. Therefore, an area of approximately 2,925 sq ft is required by 2006, 3,650 sq ft by 2010, and 4,050 sq ft by 2021 for circulation areas based on peak hour projections. For the existing terminal building (18,450 sq ft), approximately 4,613 sq ft should be designated as circulation areas.

For building mechanical systems such as heating, ventilation, air conditioning, electrical, and telephone equipment, the requirement is approximately 15 percent of the total gross terminal area. In addition to mechanical system space, building columns, walls, etc., should occupy approximately 5 percent of gross terminal requirements. Finally, space for maintenance, janitorial supplies, and security office space is required. This space will vary depending upon the type of maintenance and storage facilities available in other buildings owned by the SAA. As a minimum for preliminary planning, 5 percent of total gross terminal area will be used at SEF. However, information from Chapter 2 shows that there is a separate facility for Airport maintenance and storage located in the industrial park. The previous percentages determined for building requirements will be held constant throughout the planning period because no major changes are foreseen at this time. **Table 7-25** indicates the space requirements for circulation, mechanical, and maintenance needs, based upon gross terminal area requirements of the peak hour GA passengers. As stated earlier, the existing Sebring Airside Center is sufficient to meet existing demand, but must be increased as enplanements increase and terminal expansion occurs throughout the planning period.

Table 7-25. Terminal Circulation, Mechanical, and Maintenance Space Requirements

	2000	2001	2006	2011	2016	2021
Gross terminal space requirements (sq ft)	15,767	16,790	20,309	22,711	24,954	27,254
General circulation	3,942	4,198	5,077	5,678	6,239	6,814
Building mechanical	2,365	2,519	3,046	3,407	3,743	4,088
Building columns/walls	788	840	1,015	1,136	1,248	1,363
Maintenance facilities and security offices	788	840	1,015	1,136	1,248	1,363
Total circulation, mechanical, and maintenance	**7,883**	**8,395**	**10,154**	**11,356**	**12,477**	**13,627**

Source: PBS&J, 2002

7.4.3 Future Commercial Terminal Facility

The existing Airside Center was designed to accommodate limited commercial air service operations at SEF. However, at the time of this writing, efforts have been underway to obtain both commercial scheduled and charter air carrier service at SEF. If anticipated demand and infrastructure improvements are made, then it is likely that SEF will require a specific stand-alone commercial facility to be located near the proposed 10,000 ft commercial service runway. Therefore, a long-term provision for planning and development of a commercial terminal building is necessary. To this end, as suggested by FAA Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*, a standard of 150 sq ft per peak hour passenger is recommended. Thus, by utilizing the forecast peak hour passengers drawn from expected commercial service operations and passengers based upon expected commercial aircraft usage as discussed in Chapter 6, *Demand Capacity Requirements*, it is estimated that the commercial terminal will need to be, at a minimum, approximately 122,400 sq ft by 2021 as shown in **Table 7-26,** Commercial Terminal Space Requirements.

Table 7-26. Commercial Terminal Space Requirements

	2000	2001	2006	2011	2016	2021
Peak Hour Passengers*	0	0	0	250	446	816
Annual Enplanements	0	0	0	5,587	9,994	29,462
Gross Terminal Space**	**0**	**0**	**0**	**37,440**	**66,960**	**122,400**
Concessions/Food	0	0	0	1,872	3,348	6,120
Retail Areas	0	0	0	600	600	600
Telephone	0	0	0	60	60	60
Restrooms	0	0	0	899	1,607	2,938
Airport Management Facilities	0	0	0	1,498	2,678	4,896
Airline Offices	0	0	0	1,385	2,478	4,529
Counter Space	0	0	0	386	690	1,261
Other	0	0	0	1,273	2,277	4,162
Terminal Circulation	0	0	0	9,360	16,740	30,600
Mechanical	0	0	0	7,488	13,392	24,480
Maintenance	0	0	0	1,872	3,348	6,120

Source: PBS&J, 2002
*Note: *Based upon anticipated peak hour passengers with 60% passenger load factor*
*** Based upon FAA requirement of 150 sq ft per peak hour passenger*

7.5 LANDSIDE REQUIREMENTS

This section identifies the facility requirements necessary for the various on-Airport landside facilities to meet the projected demand, as presented in Chapter 6. The landside facilities that will be discussed in this section include Airport access and terminal roads, automobile parking, Airport industrial park, GA areas, and land use and acquisition.

7.5.1 Ground Access and Terminal Roads

Ground access and terminal roadways serve passengers, employees, visitors, and anyone who travels to and from the Airport. The roadway system must be able to accommodate peak levels of activity, without creating excessive or unwarranted delay. The Airport ground access system consists of primary access roads, terminal access roads, terminal frontage road, terminal curb frontage, and Airport service roads.

7.5.1.1 Primary Access Roads

In a practical manner, it is necessary to focus attention on a small subset of the road network providing access to the Airport. Although many roads may support the Airport infrastructure indirectly, it is unnecessary to improve roads that only host a small percentage of Airport traffic. On the contrary, improving an airport's primary access roads is worthy of much time and attention and should be considered a central goal. It is ideal for primary access roads to be well marked, clearly visible, easy to navigate, and free from obstruction and congestion.

Primary access to SEF is provided in two locations. The main entrance, by way of Kenilworth Boulevard and Airport Road, actually splits, providing access to the industrial park via Webster Turn Drive and the main Airport facilities via Haywood Taylor Boulevard. The south entrance, adjacent to the Sebring International Raceway, travels along the Raceway's southern boundary continuing to the eastern edge of the aircraft operating area (AOA). The south entrance eventually connects with the Davis Property.

There are major issues associated with each of the primary access points at SEF. The main entrance is a two-lane road that also serves as the entrance road for the Sebring International Raceway. At certain times throughout the average day, and especially during special events, the main entrance to the Airport is plagued by congestion. At times, one of the lanes is even blocked off to filter traffic into the raceway. This is not only annoying to Airport employees and tenants, but also to Airport and industrial park visitors. Improvements to this intersection should include additional lanes, realignment, and repaving. It is also necessary to maintain appropriate signage for travelers to navigate with ease.

The south access point serves as more of a perimeter road, than a main entrance. The road was originally constructed to prevent Airport neighbors from entering the AOA. The road does not completely surround the Airport, but could still serve as an excellent perimeter service road for Airport administration and maintenance vehicles if fencing were installed in the future.

Additional access routes and roadway improvements will be necessary if development of the east side of the Airport is completed. Current roadway access into this area is extremely limited, and is primarily associated with local two lane routes used for residential traffic.

Industrial and commerce park traffic as well as commercial park traffic will require capacity enhancements to existing roadways and development of additional airport roads. As part of Airport development, both a northern and southern access roadway system should be considered. As part of the roadway improvements, adequate signage along major roadway arteries as well as local routes should be improved in order to attract business as well as facilitate locating the Airport. Anticipated future development of the Airport will likely include development and realignment of the south access road as well as new development of a new, north access road. This will be discussed in more detail in Chapter 8, Development Plans.

7.5.1.2 Terminal Access Roads

Terminal access roads connect the primary Airport access roads with the terminal buildings and parking facilities. The terminal access road should be designed to allow smooth channeling of traffic into the appropriate lanes, for safe and unobstructed access to the terminal curbs, parking lots, and other public facilities. Traffic circulation should be one-way in a counterclockwise direction for convenience of right-side passenger loading and unloading. Recirculation of vehicles to the passenger terminal should be permitted, by providing a recirculation road that includes ingress and egress lanes for the primary access road. Where necessary, traffic streams should be separated at an early stage, with appropriate signage, to avoid congestion and assure lower traffic volume on the terminal frontage roads.

FAA AC 150/5360-13, Planning and Design for Airport Terminal Facilities, recommends that terminal area access roads should accommodate 900 to 1,200 vehicles per lane per hour, with a minimum of two 12-foot lanes. Additionally, recirculation roads should accommodate approximately 600 vehicles per hour per lane, with standard lane widths of 12 feet each. The existing terminal access road at SEF, Haywood Taylor Boulevard, has one lane in each direction, and provides the recommended level of vehicular capacity.

A proposed extension of the Terminal Access Road from the terminal to an intersection point of the South Access Road is currently being evaluated. This will provide a loop around the Sebring International Raceway and access to the new commerce park. If commercial service is initiated, future expansion to the terminal access road will become necessary to meet the demand. Typically, minimum terminal access roads include a four-lane road with bi-directional traffic.

7.5.1.3 Terminal Frontage Road and Curb Frontage

The terminal frontage road is that section of the terminal access road directly in front of the terminal building. This section of roadway directs vehicular traffic to the front of the terminal building. The number of traffic lanes typically increases in this section of the terminal access roadway, to allow for vehicles stopping at the enplaning and deplaning terminal curbs, vehicular maneuvering, and sufficient travel lanes for through traffic. The terminal frontage road is a critical element in maintaining vehicular flow with minimum congestion as part of the overall terminal access roadway system.

Although SEF is currently without scheduled commercial service, the Airport has sufficient space to accommodate future air traffic. The terminal frontage includes two lanes of traffic, one through lane and one right-side loading/unloading lane. The frontage road offers drivers recirculation with little complication. In addition, the curb frontage allots space for approximately 10 to 12 mid-size vehicles. However, as demand increases the need for expansion should be monitored and assessed.

7.5.1.4 Service Roads

Service roadways can be categorized as general-use or restricted-use roads. General use roads allow for the delivery of goods and services in the terminal area. Restricted access roads are restricted to Airport vehicles only (i.e., Airport management, fire, police, etc.), and serve areas of the airfield where public vehicles are not allowed due to safety and/or security reasons. SEF has no designated service roadways. As previously mentioned, the south access road would be an ideal candidate for a restricted-use service road. However, since there is no security fencing currently installed at the Airport, the road can be and is accessed by the public. Designation of Airport service roads, in conjunction with adding security fencing, is favored. As the improvements proposed in this chapter are implemented, the need for adequate service roads will become more apparent. Planning and design of additional service roads should be completed to fulfill safety and security requirements and assist Airport officials in day-to-day operations.

7.5.2 Automobile Parking

Automobile parking facilities accommodate pilots, passengers, visitors, and employees. Based upon site visits and tenant surveys, the existing parking areas at SEF currently have a total of approximately 214 parking spaces that are comprised of public, semi-private, and employee parking. Parking is free of charge to all Airport users.

Table 7-27. Existing Automobile Parking

	Number Of Spaces				Square Footage			
Area	**Public**	**Private**	**Employee**	**Total**	**Public**	**Private**	**Employee**	**Total**
Terminal	70				33,429			
			10				5,571	
Corporate		35			21,593			
Tullius		20				6,058		
Leza		40				11,200		
		12				4,041		
SAA			12				2,700	
Lockwood		10			2,500			
JB/Carter		5			1,600			
TOTAL	**70**	**122**	**22**	**214**	**33,429**	**46,992**	**8,271**	**88,692**

Source: SAA, Site Visits and Tenant Surveys, 2002

The following sections will identify the future requirements for these parking areas.

7.5.2.1 GA Terminal Public Parking Requirements

Airport automobile parking requirements are directly dependent on the existing and predicted peak hour GA operations. At SEF in 2000, there were approximately 30 peak-hour operations recorded. Fifty percent of the peak hour is attributed to local traffic, while 50 percent is attributed to itinerant traffic. General planning guidelines suggest that for every local GA operation, approximately .9 passengers are expected, and for every itinerant GA operation, approximately three passengers are expected. Therefore, the total peak hour GA pilots and passengers for 2000 are equal to 105 and are estimated to reach 182 by 2021.

This study assumes that for every GA passenger approximately 1.3 parking spaces are required. However, for SEF, it is also important to consider the amount of visitors, which are attracted to Sherrianne's Runway Café for lunch and special events hosted by the Sebring International Raceway. The required number of public parking spaces was increased by 30 percent to account for this adjustment. Exercising these considerations, it is estimated that approximately 115 public parking spaces are necessary to meet the existing demand. Based upon this information, the existing public parking available is inadequate to meet demand for the base year. **Table 7-28** illustrates this analysis, based upon FAA guidelines, through the 20+-year planning period.

Table 7-28. Public Automobile Parking Requirements

	2000	2001	2006	2011	2016	2021
Peak hour GA operations	35	37	44	50	54	59
Peak hour local	16	16	19	21	23	25
Peak hour itinerant	19	21	25	28	31	33
Peak hour GA pilots/passengers	105	113	135	151	166	182
Peak hour local	30	30	36	40	44	48
Peak hour itinerant	75	83	99	111	122	133
Required GA auto parking spaces	136	146	176	197	216	236
Existing GA auto parking spaces	192	192	192	192	192	192
Required adjusted GA auto parking spaces*	177	190	229	256	281	307
Surplus/(Deficiency)	**15**	**2**	**(37)**	**(64)**	**(89)**	**(115)**
Existing GA auto parking area	80,421	80,421	80,421	80,421	80,421	80,421
Required GA auto parking area	70,957	76,101	91,524	102,353	112,461	122,827
Surplus/(Deficiency)	**9,464**	**4,320**	**(11,103)**	**(21,932)**	**(32,040)**	**(42,406)**

Source: PBS&J, 2002
*Note: * Adjusted requirements include 30% increase to accommodate for lunchtime traffic from industrial park, raceway, and local community and special events hosted by the Sebring International Raceway.*

There are several items worthy of mention pertaining to SEF's public automobile parking. It is important to mention that **Table 7-28** does not account for condition, access, or convenience of the parking facilities. SEF T-hangars have no designated parking areas. However, a number of users park their automobiles in the hangar facilities, which was not accounted for in this analysis. Yet, with the introduction of new security regulations at both commercial and GA airports around the country, automobile parking within the airside area will likely be unacceptable.

Therefore, it is suggested that additional parking facilities should be planned to meet the potential demand associated with these and other potential changes, which may occur throughout the planning period. Possible improvements will be recommended in Chapter 8, Development Plans, of this Master Plan.

7.5.2.2 Commercial Terminal Parking Requirements

As with GA parking, commercial parking facilities will be needed in the vicinity of the proposed commercial terminal building. As a result, the planning factor used in this section for commercial terminal parking requirements is based upon the suggested rations found in the *FAA Aviation Demand and Airport Facility Requirement Forecasts for Medium Air Transportation Hubs* in conjunction with the estimated peak hour passenger requirements as discussed earlier in this chapter.

Rental car company facilities are often located within a commercial terminal buildings designated baggage claim area. These companies often have ready/return spaces located within walking distance of the commercial terminal facility. A planning factor of one space per 6,000 passengers was used to determine potential rental car parking requirements based upon the commercial passenger forecast shown in **Table 7-26**. Therefore, it is likely that 10+ ready/return spaces will be required by the end of the planning period, 2021. Thus, using a 35.5 sq yd per space factor, it was determined that approximately 355 sq yd of pavement will be required by 2021 to accommodate this demand.

However, this is only a planning guideline and demand for rental car services depends upon the local market as well as varies considerably per season. Potential demand for rental car services may be even greater than predicted due to potential demand associated with the industrial park/commerce park users, visitors to Sebring International Raceway, and local business, etc. Therefore, rental car demand and associated parking requirements may need to be reviewed in the future to ensure adequate capacity.

Public parking demand associated with commercial activity should also be planned in conjunction with the potential commercial terminal facility. Similar to the rental car parking calculations, public parking for the commercial terminal is developed using a ratio of one parking space for every 400 passengers and 44 sq yd per parking space. This is based primarily on the assumption that SEF will be an origin and destination airport and will likely require more public parking facilities. Thus, using the estimate of passengers as contained in **Table 7-26**, approximately 147 parking spaces and 6,468 sq yd of pavement area will be required by 2021 to accommodate anticipated public parking demand.

7.5.2.3 Employee Parking Requirements

Currently, the main employee parking areas are located at the terminal building and consist of approximately 22 parking spaces and 8,300 sq ft. The spaces are paved, but do not have access control devices to limit parking to only Airport employees. It is generally accepted that for every 100,000 enplanements, approximately 40 employee parking spaces are required. Therefore, calculations suggest that approximately 27 employee parking spaces are necessary for the base year, expected to increase to approximately 47 by 2021. This parking deficiency is depicted in **Table 7-29,** Employee Automobile Parking Requirements. Chapter 8 - Development Plans will also provide suggestions for improvement of employee automobile parking.

Table 7-29. Employee Automobile Parking Requirements

	2000	2001	2006	2011	2016	2021
Total annual enplanements	67,422	73,256	88,033	98,506	108,275	118,270
Existing employee parking capacity (No.)	22	22	22	22	22	22
Employee parking required (No.)	27	29	35	39	43	47
Deficiency	**(5)**	**(7)**	**(13)**	**(17)**	**(21)**	**(25)**
Existing employee parking area (sq ft)	8,271	8,271	8,271	8,271	8,271	8,271
Employee parking area required (sq ft)	10,788	11,721	14,085	15,761	17,324	18,923
Deficiency	**(2,517)**	**(3,450)**	**(5,814)**	**(7,490)**	**(9,053)**	**(10,652)**

Source: FAA AC 150/5360-13 Planning and Design Guidelines for Airport Terminal Facilities and PBS&J 2002

Again, if significant commercial service develops at SEF, employee-parking requirements will also increase dramatically. Using the methodology described earlier, it is anticipated that an additional 12 employee spaces will be required, which is approximately 4,800 sq ft.

7.5.3 Airport Industrial Park

The Sebring Regional Airport Industrial Park is a significant revenue source for both the Airport and Highlands County.. Therefore, SEF Airport Management, as well as local business owners, has aggressively pushed compatible development. Unique to SEF is the fact that it is not only a Foreign Trade Zone (FTZ), FTZ 215, but that it has initiated a Community Redevelopment Agency (CRA) to provide incentives to businesses.

According to a survey conducted by the International Trade Commission, the presence of an FTZ was found to provide a significant incentive in plant site location decisions due to cost savings and improved inventory control. Through the use of FTZs, U.S.-based production is placed on more equal footing with production in a foreign country, and FTZs have had a significant impact in retaining U.S. production and employment as well as stimulating new activity.

In addition, the SAA provides an incentive program to businesses locating to the Sebring Airport and Industrial Park. In 1996, Sebring Regional Airport and Industrial Park property was designated as a Florida Community Redevelopment Area giving the SAA and its Community Redevelopment Agency (CRA) the ability to provide financing assistance and other incentives to businesses leasing land and building facilities on the Airport and Industrial Park property. Financing incentives available include:

- Offsetting or deferring lease payments through the use of the SAA's CRA's Tax Increment Trust Fund

- Loans to assist in financing site improvements, parking lot construction, and special infrastructure needs.

Sebring Regional Airport and Industrial Park is the only combined GA facility and industrial park in Florida offering these incentives.

As discussed in Chapter 5, the Sebring Regional Airport and Industrial Park's current footprint is approximately 1,700 acres. A total of 1,200 acres are currently available, with approximately 570 acres of developable property located within the Airport Industrial Park. Parcels available range in size from one acre to 600 acres. In order to attract tenant business to the industrial park and encourage development of the remaining land area, a number of items are suggested. If possible, the Airport should develop a comprehensive development plan that identifies business segments, locations, and minimum standards for construction and maintenance within the industrial park. It is important to identify available parcels by number, acreage, utilities, and lease/buy costs, for proposals and financial analysis by prospective tenants. These requirements should be completed in the short- to mid-term of the planning period, to allow proper marketing and development of the Airport Industrial Park.

Refining the industrial park at SEF is an ongoing process. Although, many antiquated buildings and structures have been removed and relocated, there are still many that need overhaul. Several buildings along Hairpin Drive are dilapidated and should be demolished. Clearing unusable buildings and structures will open areas for development of new facilities.

Also, construction of roadway, utility, and drainage infrastructure is necessary to create value and attract potential tenants to the industrial park. (See Master Drainage Study located in Appendix D.) At SEF, ground access to the industrial park is often altered by events hosted by the Sebring International Raceway and by the poor condition of access and internal roadways. Pavement overlays, repainting, and additional lanes are necessary to ensure adequate infrastructure as discussed in the ground access section of this chapter. There is also a need for adequate parking for employee automobiles and for oversized transport vehicles within the park.

7.5.4 General Aviation (GA) Areas

Currently, GA activities at SEF include flight training, recreational flying, aircraft maintenance, med-evac, military, and corporate operations. The facilities associated with these operations include, aircraft storage buildings, aircraft apron areas for hangars and tie-downs, and fuel storage facilities.

7.5.4.1 Aircraft Storage Buildings

As discussed in Chapter 6, six T-hangar buildings (52 units), and seven conventional hangars currently exist at SEF, and store approximately 88 percent of the total based aircraft at the Airport. Based on data obtained in the inventory portion of the Master Plan, it is estimated that the conventional hangars accommodate on average two aircraft per hangar. Therefore, T-hangars accommodate approximately 70 percent of all stored aircraft, while the conventional hangars provide storage for the remaining 18 percent.

Based on the demand/capacity analysis, storage for 88 percent of the Airport's based aircraft is required throughout the planning period, and will be divided among T-hangars and conventional hangars. Thus, considering the existing conditions, including both t-hangars and commercial hangars being built at the time of this writing, **Table 7-30** shows the T-hangar and conventional hangar requirements over the planning period.

Table 7-30. Aircraft Storage Facility Requirements

	2000	**2001**	**2006**	**2011**	**2016**	**2021**
Forecast based aircraft	84	84	88	94	99	105
Total aircraft requiring storage	74	74	77	83	87	92
Existing conventional hangars	7	7	15	15	15	15
Conventional hangars required	7	7	8	8	9	9
Surplus/(Deficiency)	**0**	**0**	**7**	**7**	**6**	**6**
Existing T-hangar units	52	52	62	62	62	62
T-hangar units required	52	52	54	58	61	65
Surplus/(Deficiency)	**0**	**0**	**8**	**4**	**1**	**(3)**

Source: PBS&J 2002

It should be noted that these numbers reflect information presented by the aviation activity forecast, but do not reflect the demand defined by the number of people on the SEF waiting list for hangar space. The numbers also neglect to represent the addition of larger, more sophisticated aircraft, which typically accompany commercial and corporate activities. It should also be noted that although corporate hangars do not currently exist at SEF, corporate hangars could be used to meet the storage hangar requirements. However, consideration must be given to the number and size of aircraft stored in each hangar in order to provide adequate storage facilities. Currently, there is one hangar structure that is used as a warehouse by a non-aviation tenant.

7.5.4.2 Conventional Hangar Apron

It is necessary for an airport to provide sufficient conventional hangar apron space for parking and maneuvering of aircraft around the hangar facility. It is important to mention that apron areas at SEF are not officially designated as conventional or tie-down. The FAA recommends that conventional hangar apron area should equal the amount of storage space located within the hangar itself. Currently, SEF hosts approximately 118,800 sq ft (13,199 sq yd) of conventional hangar space and 200,000 sq ft (22,222 sq yd) of conventional hangar apron. As hangar needs are expected to increase, so is the need for more conventional apron area. The average size of the existing conventional hangars at SEF is 15,000 sq ft. By utilizing FAA guidance, and applying an average of

15,000 sq ft to each conventional hangar required, **Table 7-31** shows the total amount of conventional hangar apron space required over the planning period.

Table 7-31. Conventional Hangar Apron Requirements

	2000	2001	2006	2011	2016	2021
Existing conventional hangars	7	7	15	15	15	15
Existing conventional hangar apron (sq ft)	200,000	200,000	200,000	200,000	200,000	200,000
Conventional hangars required	7	7	8	8	9	9
Conventional hangar apron required (sq ft)	118,800	118,800	13,800	13,800	28,800	43,800
Surplus/(Deficiency)	**81,200**	**81,200**	**186,200**	**186,200**	**171,200**	**156,200**

Source: PBS&J 2002

The calculations show current conventional apron areas are adequate to meet demand throughout the course of the planning period. However, it is important to remember that these calculations only consider raw numbers. Location and condition of the apron space is not factored into this equation. Site visits to SEF revealed inadequacies in the pavement condition and access to apron from some hangar facilities. Improvements will be suggested in the following chapter.

7.5.4.3 Aircraft Tie-Down Apron

Since 88 percent of based aircraft are estimated to require hangar space, tie-downs should be planned to accommodate 12 percent of all based aircraft, and one-half of the busy-hour itinerant aircraft. The existing GA aircraft tie-down apron space available at SEF is approximately 1,062,400 sq ft (118,044 sq yd). Sizing criteria for tie-down positions vary according to aircraft size, including space for circulation and fueling. FAA AC 150/5300-13 indicates that planning for 2,700 sq ft (300 sq yd) for each based aircraft and 3,250 sq ft (360 sq yd) for each busy itinerant aircraft will provide sufficient space for a mix of GA aircraft types.

It is important to mention that SEF does not officially designate apron areas for conventional, based aircraft tie-down, or transient tie-down apron. Much of the apron included in the tie-down totals is underutilized. In fact, only 40 tie-down spaces are installed at SEF. It is also important to note that condition, access, and location of the apron in vicinity to hangar facilities is not included in this analysis. However, suggestions for improving utilization of the apron facilities are provided in Chapter 6-Demand Capacity Analysis. **Table 7-32** illustrates the surplus of tie-down apron space at SEF.

Table 7-32. Tie-Down Apron Requirements

	2000	2001	2006	2011	2016	2021
Existing based aircraft tie-down apron	531,200	531,200	531,200	531,200	531,200	531,200
Forecast based aircraft requiring tie-down	10	10	11	11	12	13
Based aircraft apron requirements (sq ft)	27,216	27,216	28,512	30,456	32,076	34,020
Surplus/(Deficiency)	**503,984**	**503,984**	**502,688**	**500,744**	**499,124**	**497,180**
Existing itinerant tie-down apron (sq ft)	531,200	531,200	531,200	531,200	531,200	531,200
Busy hour itinerant aircraft	9	10	12	14	15	17
Total itinerant tie-down apron required (sq ft)	30,636	33,540	40,233	45,080	49,593	54,188
Surplus/(Deficiency)	**500,564**	**497,660**	**490,967**	**486,120**	**481,607**	**477,012**
Total existing tie-down apron (sq ft)	1,062,400	1,062,400	1,062,400	1,062,400	1,062,400	1,062,400
Total required tie-down apron (sq ft)	57,852	60,756	68,745	75,536	81,669	88,208
Surplus/(Deficiency)	**1,004,548**	**1,001,644**	**993,655**	**986,864**	**980,731**	**974,192**

Source: PBS&J, 2002

7.5.4.4 Helicopter Tie-Down Analysis

The SAA has allotted approximately 14,844 sq ft for helicopter operations at SEF, specifically for use by Aero-Med II. Although the space for this operation is adequate, the location and condition of the facility is inadequate. The current helipad consists of an unpaved surface with no markings or signage. A doublewide trailer serves as the administration building and crew quarters. In addition, the facility is in close vicinity of the Airport fuel farm. It is favored to construct a new helipad at a relocated venue to provide more adequate facilities, to meet the needs of the Airport and its valuable tenants, and to promote safety and efficiency at SEF.

7.5.5 Aircraft Fuel Storage

The SAA owns and operates the fuel farm at SEF, which provides 100LL Avgas and Jet A fuel. Avgas equipment includes one 10,000-gallon aboveground tank and one 750-gallon truck. Jet A equipment includes one 10,000-gallon aboveground tank, one 1,200-gallon trucks, and three 5,000-gallon trucks. However, some of these trucks are currently posted for sale. By comparing the demand illustrated in Chapter 5 of this plan to the existing capacity, it is obvious that the fuel farm is adequate to meet Avgas demand in the early stages of the planning period, but by 2006 additional capacity may be necessary. However, there is an existing need for additional Jet A storage at SEF that is forecasted to exceed 18,000 gallons by 2021, if additional facilities are not purchased.

Table 7-33 shows the requirements for fuel storage equipment for Avgas and Jet A fuel. It is important to mention that the SAA is currently considering the addition of self-fueling facilities at SEF. However, if new tanks are not added, the requirements for both types of fuel will increase, while capacity will remain stagnant.

Table 7-33. Fuel Storage Requirements

	2000	**2001**	**2006**	**2011**	**2016**	**2021**
Existing 100LL capacity (gallons)	10,750	10,750	10,750	10,750	10,750	10,750
Forecast peak 100LL requirements	8,811	9,314	11,144	12,352	14,903	14,548
Surplus/(Deficiency)	**1,939**	**1,436**	**(394)**	**(1,602)**	**(4,153)**	**(3,798)**
Existing Jet A capacity (gallons)	26,200	26,200	26,200	26,200	26,200	26,200
Forecast peak Jet A requirements*	28,735	29,801	33,942	37,328	40,842	44,751
Surplus/(Deficiency)	**(2,535)**	**(3,601)**	**(7,742)**	**(11,128)**	**(14,642)**	**(18,551)**

Source: PBS&J, 2002

*Note: * includes both GA and Military Jet A demand.*
Peak Monthly Avgas and Jet A-GA requirements are based upon 58.1 percent increase over the average monthly demand.
Peak Monthly Jet A-Military requirements are based upon 31.0 percent increase over the average monthly demand for Avgas and Jet A-GA.

Existing fuel storage conditions are adequate to accommodate estimated demand for 100LL Avgas until 2006. By 2021, approximately 4,000 gallons of additional capacity will be necessary. An incremental need for more Jet A fuel storage equipment is visible at the present time. To meet demand for the 20-year planning period, it is necessary to add approximately 18,551 gallons of Jet A capacity to the fuel farm. Any combination of aboveground tanks and trucks will be sufficient to meet these requirements. Addition of fuel trucks for both fuel types may be necessary, if any of the existing fleet is sold.

Based on site visits and tenant interviews, in addition to aviation fuel, there is a vast interest in purchasing automobile fuel at SEF. Offering automobile fuel is favored for a variety of reasons. Many experimental aircraft utilize regular unleaded fuel as opposed to Avgas or Jet A. Thus, experimental aircraft pilots and aviation mechanics need this type of service. Providing automobile fuel provides convenience to Airport tenants, patrons, and service vehicles. In addition, this is a potential market for the SAA to incorporate into the existing fuel sales revenue mix.

7.5.6 Airport Rescue and Firefighting

The DeSoto City Volunteer Fire Department (DVFD) provides aircraft rescue and fire fighting (ARFF) services to the Airport, with back-up service provided by the City of Sebring Fire Department.

It is recommended that SEF obtain and maintain ARFF equipment and shall be listed as Index Category C. The index C category is determined by the five (5) daily departures of an air carrier aircraft that is at least 126 feet but less than 159 feet in length. ARFF equipment appropriate to this index will be provided during all carrier operations with over 30 passenger seats, unless otherwise reduced in accordance with Federal Aviation Regulations (FAR) Part 139.319. The Airport ARFF Department has the capability to increase to Index D and E within 12 hours notice to operations area.

Currently, the Airport does not have scheduled commercial service, and therefore, is not required to have Part 139 certification. As a result, ARFF services located on the Airport are not required. However, should SEF obtain commercial service, than it is likely that ARFF services should be located on the airfield. Facility improvements to meet the increased activity would consist of an ARFF building to house emergency vehicles, supplies, and at least two rapid intervention ARFF vehicles.

7.5.7 Airport Security and Fencing

Currently, there are no FAA or Transportation Security Administration (TSA) security guidelines in place for GA airports. However, based upon recommendations from NBAA and AOPA, the AAAE General Aviation Airports Security Task Force recommended:

- GA Airports should prepare a comprehensive airport security plan, which would be subject to periodic review and approval by the TSA.
- GA Airports should be required to install adequate outdoor area lighting to help improve the security of (a) aircraft parking and hangar areas, (b) fuel storage areas, and (c) access points to aircraft operations area (AOA).
- Criminal record background checks should be required on all airport, FBO and airport tenant employees with access to the AOA. Criteria similar to that used in FAR 107 should be developed to determine what offenses would disqualify individuals from being granted such access.
- GA Airports should install security fencing to help prevent unauthorized access to AOA, fuel facilities and other sensitive areas.
- GA Airports should be required to install signage around the AOA, fuel facilities and other sensitive areas to deter unauthorized entry.

In addition, it is recommended that four different categories for a federal security program at GA airports be established based upon the criteria of the airport's location, runway length and number of based aircraft. In the case of SEF, it currently falls under Security Category 3. A Category 3 airport is defined as "an airport located outside of Class B airspace with a runway length of 4,000 feet or greater, and/or more than 50 based aircraft" (Draft: *General Aviation Airport Security Task Force Recommendations*, Pg 6).

Since SEF has limited fencing in and around the AOA and other critical areas, improved airport perimeter access security is highly recommended. Even though SEF is not certified to accept commercial service operations via CFR 49 Part 139, fencing is recommended due to a variety of safety concerns associated with runway incursions, obstacle clearance, wildlife hazards, facility protection, etc. In order to protect the integrity of the Airport Operating Area (AOA), it is recommended that fencing of approximately six feet in height topped with three strands of barbed wire be installed around the existing airside and fuel farm facilities. Access to the airside secure areas should be limited to those who are or are being escorted by someone who is authorized by SAA to have access to the AOA. In addition, access to the AOA via Sherrianne's Runway Café should be prohibited.

Fencing of the AOA and Fuel Farm facilities is anticipated to require approximately 75,000 linear feet of fencing, and at least fourteen to seventeen vehicle gates. Appropriate gate apparatus will need to be installed, and all future airside property acquired by the Airport should also be fenced. Maintenance access to the fence should be provided by a perimeter access road located within the property line. Any additional buildings or parking areas constructed on the Airport should have adequate security lighting.

7.5.8 Land Acquisition

Airport property currently consists of over 1,770 acres that are designated for various uses. As new runway construction, runway extensions, and other facility improvements begin, additional lands will need to be acquired. Land acquisition will be necessary to gain compliance with FAA directives, and avoid the development of incompatible land uses in the vicinity of SEF. The land acquired under the incompatible land use category will help prevent the development of residential and other incompatible land uses on existing vacant land in the vicinity of SEF.

A total of 2,700+ acres have been identified as necessary land acquisition over the planning period. The list below illustrates the projects requiring land acquisition, and the land area required.

Table 7-34. Proposed Land Acquisition

Project	Necessary Land Acquisition
Runway 18-36 extension and Runway 32R extension	~80 acres
Rail Line Relocation	~603
Construction of Runway 14U-32U	None
Construction of Runway 14L-32R	~1,000 acres
Aviation Mixed Use Development	~803 acres
SAA rail spur relocation	~40 acres
South access road relocation and Buffer	~159 acres
Incompatible land use	~200 acres
Total	~2,885 acres

Source: PBS&J, 2002

7.6 SUMMARY

This section has identified the general facility requirements necessary to meet the 20+-year unconstrained aviation demand. Prior to the actual physical layout of these facilities, refinement of specific facilities must be accomplished in order to enable the Airport and Industrial Park to be developed in a coherent, logical, and safe manner. The facility requirements are based upon anticipated demand and forecast aviation activity. Additional facility requirements will become necessary if SEF becomes a commercial service Airport. If this happens, additional requirements will need to be implemented.

A summary of facility requirements has been compiled in **Table 7-35**.

Table 7-35. Summary of Facility Requirements

		Planning Stage Requirements		
Item	**Existing**	**2006**	**2011**	**2021**
Airside Facilities				
Runway 18-36:				
Length/width	5,224' x 100'	7,000' x 150'	NC	NC
Strength	30,000 SG 50,000 DG 85,000 DT	75,000 SG 150,000 DG 300,000 DT	NC	NC
Approach aids:				
RW 18	PAPI-4/MIRL/REILs	PAPI-4/HIRL	NC	NC
RW 36	GPS/PAPI-4/MIRL/REILs	PAPI-4/ ILS/GPS/ MALSR/HIRL	NC	NC
Runway 14-32:				
Length/width	4,351' x 300'	3,500 x 100'	NC	NC
Strength	30,000 SG	30,000 SG 60,000 DG 100,000 DT	NC	NC
Approach aids:				
RW 14		MIRL/REILs/GPS /PAPI-4	NC	NC
RW 32		MIRL/REILs/GPS /PAPI-4	NC	NC
Proposed Turf Runway:				
Length/width		3,000' x 75'	NC	NC
Approach aids		MIRL/REILs/ GPS	NC	NC
Proposed Runway:				
Length/width	NA	6,000 x 150'	8,500 x 150'	10,000' x 150'
Strength	NA	100,000 DG 300,000 DT	NC	NC
Approach aids	NA	PAPI-4/REILs ILS/GPS/ MALSR/HIRL	NC	NC
Taxiway System:				
Twy A	~2,000' x 50'	7,000' x 50'	NC	NC
Twy A-1	100' x 50'	NC	NC	NC
Twy A-2	100' x 75'	NC	NC	NC
Twy A-3	480' x 39'	NC	NC	NC
Twy A-4	480' x 39'	NC	NC	NC
Twy B-1	1,620' x 100'	NC	NC	NC
Twy B-2	700' x 100'	NC	NC	NC
Twy B-3	1,620' x 100'	Closed	NC	NC
Twy B-4	1,300' x 100'	Closed	NC	NC
Runway 18-36		Full Parallel (West Side)		

Table 7-35 (Continued). Summary of Facility Requirements

Item	Existing	Planning Stage Requirements 2006	2011	2021
Runway 14-32				Full Parallel (East Side)
Proposed runway			Full Parallel (West Side)	Full Parallel (West Side)
Taxiway visual aids		MITL	NC	NC
Landside Facilities				
Aircraft apron area:				
Tie-down	1,062,400	1,062,400	1,062,400	1,062,400
Conventional	200,000	200,000	200,000	200,000
Total apron	**1,262,400**	**1,262,400**	**1,262,400**	**1,262,400**
Aircraft Hangars:				
T-hangar Units	62*	54	58	65
Corporate hangars	0	2	4	8
Conventional/ Commercial hangars (units)	15*	8	8	9
Fuel storage:				
Fuel tanks	2	3	4	4
Fuel trucks	5	5	3	4
Self serve	0	1	1	1
Terminal building:				
GA terminal space (sq ft)	18,450	20,309	22,711	27,254
Commercial terminal (sq ft)	0	0	37,440	122,000
Automobile parking:				
Public/Private spaces - GA	192	229	403	454
Employee spaces	22	35	45	59
Rental spaces	0	5	5	10
Total parking area (sq ft)	88,692	106,196	180,075	206,652
ARFF facility:				
ARFF building (sq ft)	NA	3,000	4,500	4,500
ARFF vehicle	NA	1	2	3
Security Fencing		30,000 LF	60,000 LF	75,000 LF
Perimeter Road at 12 ft wide		20,000 LF	45,000 LF	65,000 LF
Land acquisition:				
Additional acquisitions	NA	2,070 Acres	1,640 Acres	NC
Total property	**1,770 Acres**	**3,015 Acres**	**4,655 Acres**	**4,655 Acres**

Source: PBS&J, 2002
*Note: NC means No Change; NC means Not Applicable; *Includes facilities under construction at the time of this writing.*

DEVELOPMENT PLANS

Sebring Regional Airport

8

8.1 GENERAL

The primary objective of this chapter is to identify an overall development plan for Sebring Regional Airport (SEF) that will meet the Airport's long-term aviation needs. Now that airside and landside facility requirements have been identified that will satisfy expected demand, the next step in the master planning process is to evaluate potential ways in which these facilities can be provided. This chapter applies the facility needs as shown in Chapter 7, to various Airport development alternatives. Since the combination of possible alternatives is limitless, intuitive judgment was applied to those alternatives that have the greatest potential for implementation. These choices will provide the underlying rationale for the preferred recommendation. Implementation of the selected alternatives will be defined in subsequent chapters.

In general, three major functional areas were considered in identifying the development alternatives. These include airside (runways, taxiways, and navigational aids [NAVAIDS]), land use and land acquisition, and landside facilities (building areas and surface access).

In order for SEF to accommodate the level of aviation activity forecast for the ensuing 20-year planning period, certain airside and landside facilities will require improvement or expansion. Each development alternative relates to the operational requirements of the Airport, the users, and community needs for service and facilities. As a result, airport development concepts will be divided into the following sections:

In order for SEF to accommodate the level of aviation activity forecast for the ensuing twenty-year planning period, certain airside and landside facilities will require improvement or expansion.

- Airfield Development
- Land Use and Land Acquisition
- Landside Facilities – Building Areas
- Landside Facilities – Surface Access

All areas were examined, both individually and collectively, to ensure the orderly evolution of a final master plan concept that is functional, efficient, cost effective, and compatible with the environment.

8.1.1 Airfield Development

Airfield facilities are, by their very nature, a focal point of an airport complex. Because of their role, and the fact that they physically dominate a great deal of an airport's property, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. In particular, the runway system requires the greatest commitment of land area and is often the greatest influence on the identification and development of other airport facilities.

Furthermore, the runway and taxiway system directly affects the efficiency of aircraft movements, both on the ground and in the surrounding airspace. The runway and taxiway system also limits the ability of an airport to handle certain aircraft, which directly affects the types of air service an airport can offer or accommodate. Finally, the efficiency of aircraft movement is affected by local approach and departure procedures, which are influenced by local restrictions associated with noise, airspace congestion, and other considerations.

SEF is an important regional general aviation (GA) airport, attracting a variety of users as a result of its unique facilities and events, such as the 12-Hours of Sebring; Chateau Elan Spa; and Sherrianne's Restaurant, the local restaurant on the Airport. On a typical day, corporate jet aircraft, helicopters, and single and multi-engine piston GA aircraft mingle on the airfield. However, due to existing runway takeoff length limitations, which are acerbated during wet, hot or humid weather conditions that require additional takeoff length, larger corporate and fractional ownership aircraft use the Airport infrequently.

The airfield's current configuration of two open runways has accommodated air traffic levels reasonably well, to date. However, increases in GA traffic as well as the potential for commercial passenger traffic will likely strain airport capacity and limit the ability of the Airport to efficiently handle both the anticipated rise in traffic and the change in fleet mix.

To address these issues, it will be necessary to expand the overall capacity of the airfield to address operational and aircraft group capacity demand. This will entail extensions and the potential construction of runways, in addition to associated taxiways, to aid in accommodating the expected increase in traffic as well as the aircraft fleet mix anticipated to use the Airport in both the short- and long-term.

8.1.2 Land Use and Land Acquisition

The objective of the Land Use and Land Acquisition Analysis is to evaluate the impacts that the alternative airfield and landside improvements will have on the use of land within the Airport boundary, on contiguous parcels and on the community as a whole.

In addition to land required for airside use, the Sebring Airport Authority (SAA) can support a wide variety of discretionary uses on the Airport including: Airport related commercial service businesses, aviation related business, aviation/aerospace manufacturers, non-aviation industrial/commercial users, and low density uses in the approach and transition areas. Each of these areas is described in the following sections.

8.1.3 Landside Facilities – Building Areas

All landside facilities, particularly building areas, are ideally developed to be in balance with the airfield/airspace facilities. At SEF, these areas include:

- Terminal facilities
- GA and related aeronautical development areas
- Commerce park

The focus of this section is to evaluate those building areas directly related to supporting aviation activity. Non-aviation buildings on-Airport were evaluated in a cursory manner, merely considering location, function, and future utility, and compatibility with aviation operations.

Building area alternatives were conceptualized with the goal of developing a facilities development plan that exhibits the following characteristics:

- **Flexibility**: A plan that is demand-responsive, and can adjust over time to changes in quantifiable demands as well as changes in the nature of demands.
- **Vision**: A plan that addresses probable future aviation trends and technologies, as well as trends in other transportation arenas.
- **Definition**: A plan that sets a sure course of action, and is clearly supported and realistic.
- **Order**: A plan that views each part of the landside system as an interrelated part of the whole Airport – and of a global and regional transportation system.
- **Balance**: A plan that can extend the landside to its required fullest extent while maintaining balance with the capacity of the fully expanded airside.
- **Convenience**: A plan that enables the SAA and its tenants to achieve a high level of public service.
- **Stability**: A plan that properly guides small increments of growth and modification that the SAA and its tenants may need over time.
- **Economic Soundness**: A plan that enables the SAA and its tenants to prosper over the years.
- **Suitability**: A plan that meets the needs of the tenants and its users.

Table 8-1 presents a cursory summary of estimated building area facility requirements derived from the previous chapter. These requirements are presented in terms of Planning Activity Levels (PALs), which emphasize that it is future increases in activity that “trigger” the requirement for expanding or upgrading major facilities at the Airport, not time-dependent forecasts. These requirements were used as the basis for the formulation and evaluation of alternative building area concepts. Therefore, actual activity levels may vary from the estimated time frames of occurrence outlined in this report. These requirements are based on analysis of facilities at SEF and comparisons with other major US airports that currently accommodate activity levels equivalent to the future levels projected for the Airport.

Considering the seemingly endless range of possibilities for building areas, broad alternatives were first developed in their long-range configuration to a limited extent of detail, to understand their potential and reasonableness. These concepts were then narrowed according to their ability to meet the characteristics described previously, and resulted in a number of alternatives for the landside areas.

8.1.4 Landside Facilities – Surface Access

To provide adequate levels of service to accommodate all Airport users, the SAA has been working with Highland’s County and the Florida Department of Transportation (FDOT) to ensure adequate vehicular capacity on the primary surface access roads and to reduce overall traffic congestion. Projects underway or in planning are discussed in the following alternative development sections. Further coordination with appropriate local and state officials will likely be required in order to continue to provide the most appropriate and effective means of ensuring adequate ground access to the Airport.

Table 8-1. Summary of Building Area Facility Requirements Based Upon Existing Operational Capacity Demand

Planning Activity Levels (Demand)				
	Existing 2000	**PAL 1 2006**	**PAL 2 2011**	**PAL 3 2021**
Activity				
Annual enplanements	67,421	88,033	98,506	118,270
Aircraft operations				
General aviation	66,210	84,464	94,343	113,096
Military	1,000	1,000	1,000	1,000
Total operations	67,210	85,464	95,343	114,096
Requirements				
Terminal complex				
Terminal building (sq ft)	18,450	20,309	22,711	27,254
Curbside (lin ft)*	120	120	120	120
Parking spaces				
*Public***	192	229	256	307
Rental car	0	0	0	0
Employee	22	35	39	47
Total parking spaces	214	264	295	354
General aviation				
T-hangars	62*	54	58	65
Conventional hangars	15*	8	8	9
Conventional hangar apron (sq ft)	200,000	133,800	133,800	163,800
GA tie-down apron (sq ft)	1,062,400	68,745	81,669	88,208

Source: PBS&J, 2002 and SAA, 2002
*Note: * Includes 10 T-Hangar and Commercial Hangar Units currently under design at time of this writing.*
Based upon Forecast Information and GA Facility Requirements

8.2 DEVELOPMENT CONSIDERATIONS

Prior to determining the ultimate alternatives, various airside, land use and land acquisition, and landside requirements were identified in Chapter 7, *Facility Requirements*. The evaluation criteria for each of these requirements may vary with each particular functional area. In general, similar criteria were used to measure the effectiveness and the feasibility of the various growth options available. Criteria used for the alternatives review and evaluation process can be grouped into four general categories. These include:

1. **Operational** – Any selected development alternative should be capable of meeting the Airport's facility needs for the planning period. Further, preferred options should resolve any existing or future deficiencies as they relate to Federal Aviation Administration (FAA) design and safety criteria.
2. **Environmental** – Airport growth and expansion has the potential to impact the Airport's environs. Therefore, the selected plan should seek to minimize environmental impacts in the areas outside the Airport's boundaries. Proposed alternatives should also seek to obtain a reasonable balance between expansion needs and off-site acquisition and relocation needs. The preferred development plan should also recognize sensitive environmental features that may be impacted, and thus, evaluated herein.
3. **Cost** – Some alternatives may result in excessive costs as a result of expansive construction, acquisition, or other development requirements. In order for a preferred alternative to best serve the Airport and the community, it must satisfy development needs at a reasonable cost.
4. **Feasibility** – The selected alternatives should be capable of being implemented. Therefore, they must be acceptable to the FAA, FDOT, city government, Highlands County and the community served by the Airport. The preferred development options should proceed along a path that supports the area's long-term economic development and diversification objectives.

These evaluation criteria will address economic, operational, environmental, and other important issues which are crucial to making strategic long-range planning decisions. The following sections will use these criteria in evaluating those alternatives which best meet the Airport's long-term planning goals and development needs.

The SAA is solely responsible for producing enough revenues to allow the Airport to continue to operate. To meet this goal, the SAA has developed various revenue producing uses such as an industrial park, special event facilities, and other non-aviation revenue sources.

Potential alternatives for SEF consist of the following:

- Alternative I – No Build/Limited Development
- Alternative II – Constrained Development
- Alternative III – Unconstrained Development

The first alternative investigates the options and possible repercussions of limited demand based future development. In Alternative I, projects underway would be completed and the existing facilities preserved, but future developments to the Airport would be limited to those necessary to meet limited demand and resolve operational capacity issues.

Alternative II investigates the options available if future development is based upon modernization of existing facilities, safety and security related improvements, and minimal facility expansion. Such future development will be confined to existing airport leaseholds and will not encompass the acquisition of any new property. Maximizing existing land and alternative land uses of existing leaseholds will be required.

Alternative III investigates the possibilities available with an unconstrained approach to future development at SEF. This alterative would consider not only existing leasehold property but the acquisition of additional adjacent property as well. It will include all constrained development as well as provide for Airport expansion in order to meet both existing and future demand associated with SEF becoming a commercial service facility.

Each alternative will be identified and discussed in the context of potential airside configuration; potential land use and acquisition; and proposed landside facilities, buildings, and surface access, in order to obtain an reliable recommendation for future development.

8.3 ALTERNATIVE I - NO BUILD/LIMITED DEVELOPMENT

While any evaluation of alternatives can also include a "no action" alternative, this would effectively reduce the quality of services being provided, and potentially affect the Sebring area's ability to accrue additional economic growth. In general, the viability of the Airport as an economic generator for the Highlands County Metropolitan Area as well as surrounding counties would be stifled by such a development approach.

This alternative would limit the future development at SEF to the existing airfield configuration and those projects necessary to meet forecast demand, including those that are underway at the time of this writing, such as rehabilitation and extension of Taxiway A. Additional development, with the exception of privately funded projects, would be limited over the 20-year planning period to those projects needed to meet demand.

This alternative would limit the future development at SEF to the existing airfield configuration and those projects necessary to meet forecast demand, including those that are underway at the time of this writing, such as rehabilitation and extension of Taxiway A.

Thus, the existing Airport facilities would be maintained at their current level until development is absolutely necessary. Proposed development under Alternative I is shown in **Table 8-2,** Alternative I Phasing, and **Figure 8-1,** Alternative I – No Build/Limited Development.

8.3.1 GA Airport Security Recommendations

In the aftermath of the September 11, 2001 attacks, airport security came under intense scrutiny. Historically, GA airports have not been high-security facilities, and the federal government has not, to date, regulated GA airport security as it has done to commercial service airports. However, the main terrorist threat against GA and GA airports is the possible theft or hijacking of aircraft for use as potential terrorist weapons.

Although no official ruling concerning GA airport security has been made at the time of this writing, various organizations (i.e., National Business Aviation Association (NBAA), Aircraft Owners and Pilots Association (AOPA), American Association of Airport Executives (AAAE), Airport Council International – North America (ACI-NA), etc.) have been working with the FAA and Transportation Security Administration (TSA) to develop a list of recommendations. As a result, the AAAE General Aviation Airport Security Task Force convened to develop a list of potential security guidelines. These include:

- For security purposes, four different categories for a federal security program at GA airports should be established based upon the airport's location, runway length, and number of based aircraft. Thus, based upon this criteria, SEF is designated as a Category 3 Airport, which is defined as an "airport located outside Class B airspace with a runway length of 4,000 feet or greater, and/or more than 50 based aircraft".

- All four categories of GA airports should prepare a comprehensive airport security plan, which would be subject to periodic review and approval by the TSA.
- All four categories of GA airport should be required to install adequate outdoor area lighting to help improve the security of (a) aircraft parking and hangar areas, (b) fuel storage areas, and (c) access points to the aircraft operations area.
- Criminal record background checks should be required on all airport, fixed base operator (FBO) and airport tenant employees with access to the aircraft operations area (AOA). Criteria similar to that used in FAR Part 107 should be developed to determine what offenses would disqualify individuals from being granted access.
- All GA airports should install security fencing to help prevent unauthorized access to the aircraft operations area, fuel facilities, and other sensitive areas.
- All GA airports should be required to install signage around the AOA, fuel facilities, and other sensitive areas to deter unauthorized entry.

However, it is important to note that under the current rules, security-related expenses at GA airports are not usually eligible for funding under the Airport Improvement Program (AIP). Therefore, the ability of the large majority of GA airports to implement the various recommendations will be contingent upon the provision of extensive financial assistance from federal, state, and local governments.

Table 8-2. Alternative I Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
Expand employee parking	Close Hairpin Drive	Obtain 5,000 gallon Jet A tank
Rehabilitation of Runway 18-36		
Obtain 2,000 gal Jet A Truck		
Construct, mark, and light parallel taxiway (Taxiway A) to Runway 18-36		
Build joint use ARFF and MedEvac facilities		
Obtain 1 ARFF rapid response vehicles		
Build roadway extension into Spring Lake		
Haywood Taylor Blvd extension		
Building 60 Roof Repairs		
Install Security Fencing and Gates		
Widen and Reconstruct Webster Turn Blvd		
Expand Boeing Avenue		

Source: PBS&J, 2002
Note: ARFF – aircraft rescue and fire fighting
MedEvac – medical evacuation operation

Under Alternative I, the Airport would continue to be restricted to smaller GA aircraft and lack sufficient capacity for the larger corporate (i.e., Boeing Business Jet), cargo and commercial activity. This alternative will fail to meet the previously discussed development evaluation criteria and the overall goal of the Airport to become a commercial service facility. In general, the viability of the Airport as an economic generator for the City of Sebring and surrounding counties would be stifled by such a development approach.

Figure 8-1. Alternative I - No Build/Limited Development
(Use ALP and Aerial)

8.4 ALTERNATIVE II – CONSTRAINED DEVELOPMENT

Alternative Two retains all future Airport development to the existing Airport leaseholds while maximizing available land use.

Alternative II retains all future Airport development to the existing Airport leaseholds while maximizing available land use. This approach seeks to utilize available but underdeveloped land areas to increase the generation of revenues in order to make the Airport more profitable.

Alternative II is designed to meet the forecast demand presented in Chapters 5 and 6, and utilize additional development to increase revenue sources for the Airport. In order to meet the anticipated demand/capacity, and thus, achieve increased revenue, the Airport Reference Code (ARC) of Runway 18-36 should be changed from a D-II to D-IV, thereby changing the design aircraft and the separation and design standards at the Airport. This change is necessary in order to capitalize on corporate aircraft and limited commercial and military aircraft usage. Alternative II would ensure that GA activity would no longer be limited by inadequate facility infrastructure. The following sections outline the development proposed in Alternative II. Additionally, phasing of the proposed projects included in Alternative II is shown in **Table 8-3**. The overall development can be seen in **Figure 8-2,** Alternative II - Constrained Development.

Table 8-3 outlines the proposed projects and timeframe for development at SEF under Alternative II, Constrained Development. This alternative limits the majority of development to the existing property. Any additional land acquisition is associated with runway safety and protection areas as required by the FAA.

8.4.1 Airside Configuration

The airfield's current configuration of two runways has, to date, accommodated air traffic levels reasonably well. However, potential development of commercial operations and increased military operations, combined with continued high levels of GA operations, will put a strain on Airport capacity and limit the ability of the Airport to efficiently handle the anticipated rise in traffic.

To address these issues, it will be necessary to expand the operational capacity of the airfield to effectively accommodate anticipated increases in traffic, as well as the aircraft mix projected to use the Airport. Under Alternative II, this entails extending Runway 18-36, shortening and lengthening Runway 14-32, and constructing GA Utility Runway 14U-32U, in conjunction with associated taxiway development.

8.4.1.1 Runways

Since SEF was originally designed as a military training base, its airfield configuration consists of three runways formed in a triangular pattern. Currently, however, only Runways 18-36 and 14-32 are active. Runway 4-22 is closed and partially demolished. Runway 18-36 is designated as the primary runway and is marked for a non-precision instrument approach. It is approximately 5,224 x 100 feet, and is equipped with medium intensity runway lights (MIRL) and a non-precision approach on Runway 36. Runway 14-32 is designated as the crosswind runway. It is currently 5,000 x 300 feet, with a 650 ft displaced threshold, and is designated as a visual runway only.

Table 8-3. Alternative II Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Planning	
Environmental Assessment for Runway 18-36 Extension	Design GPS/Non-precision approach to Runway 14-32	
Land Acquisition for Runway 18.	Design GPS/Non-precision approach to Runway 14U-32U	
Perform ATCT Site Selection Study	Obtain Part 139, Airport Certification	
Phase III Drainage		
Design GPS/Non-precision approach to Runway 18		
Design Terminal Expansion		
Environmental Assessment for Runway 18-36		
Design Extension for Runway 18-36		
	Airside	
Extend and Widen Runway 18-36 to 7000' x 150'	Design/Construct Taxiway B (parallel to 18-36 on East Side) and associated stub taxiways	
Pavement Rehabilitation of Runway 18-36 (150,000 lb DG and 300,000 lb DTW)	Shorten, rehabilitate and lengthen Runway 14-32 to 3500 x 100 ft.	
Mark (Precision) and Light (HIRL) Runway 18-36	Install pilot controlled MIRL on Runway 14-32	
Design and grade Runway 14U-32U	Install pilot controlled MIRL on Runway 14U-32U	
Extend, widen and light Taxiway A	Install REILs and PAPI-4 on Runway 14-32	
Install MALSR and Localizer on Runway 36	Install REILs and PAPI-4 on Runway 14U-32U	
Mark displaced threshold on Runway 36	Design/Construct connector taxiways between Rwys 14-32 and 14U-32U	
	Design/construct turnoff to Twy B from Rwy 14-32	
	Construct connector taxiways between Rwys 36, 32 and 32U as well as Twy B.	

Table 8-3 (Continued). Alternative II Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Terminal Area	
Expand Public Parking Area	Expand Air Service Terminal Building	West Apron Expansion
Relocate Aero-Med facilities	Realign and expand Terminal Access Road	
Relocate/Replace existing Fuel Farm	Construct Rental Car Parking	
	Expand Employee Parking	
	Expand, Rehabilitate and Widen Haywood Taylor Blvd.	
	Expand Public Parking Area	
	Northwest GA	
Access Taxiways	Design/construct one eight-unit T-hangar facility	T-Hangar Construction
Rehabilitate, mark and Expand West Apron		
Design/construct one conventional hangar		
Design/construct three corporate hangars		
Design/Construct one, eight-unit T-Hangar facility		
Install Self-Service Octane 88 facility		
	South GA	
Design/Construct Public Emergency Facility (i.e., ARFF and MedEvac Units)	Design/Construct one conventional hangar	Design/construct four additional corporate hangars
Expand, rehabilitate, relocate and extend South Airport Access Road	Design/construct four corporate hangars	Install additional fuel farm facility equipped with ten 10,000 gal. Jet A tanks
Install Roadway Signage	Apron Rehabilitation on the West side	
Construct access road to Spring Lake community	Fuel Farm development	
Purchase one rapid response vehicles for ARFF station	Install additional fuel farm facility equipped with ten 10,000 gal Jet A tanks	

Table 8-3 (Continued). Alternative II Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Industrial Park	
Relocate SAA Railroad Spur	Expand and realign Airport Road	Expand Industrial Park
Fill Pond 200 at the existing end for Runway 18	Install additional signage	
Expand and reconstruct Webster Turn Drive	Install additional utilities	
Expand Boeing Avenue	Expand Industrial Park	
Expand Ulmann Drive	Close Hairpin Drive	
	Commerce Park	
New Commerce Park – Phase I	New Commerce Park – Phase II	
Install and mark apron	Fuel Storage Expansion	
Install Fuel Farm Facilities	Sell old and obtain new fuel trucks	
	Airfield	
Relocate CSX Railroad Line	Relocate/Construct New ATCT	
Install Security/Perimeter Fencing		
Install Security Perimeter Road		

Source: PBS&J, 2002
Note: ATCT – air traffic control tower
GPS – global positioning system
HIRL – high intensity runway lights
PAPI – precision approach path indicator
MALSR – medium intensity approach lighting system with runway alignment indicator lights

Figure 8-2. Alternative II - Constrained Development

Based upon both existing and anticipated demand at SEF, it was determined that high performance corporate aircraft, regional jet as well as existing military operations, would either begin or continue to use SEF's facilities if adequate runway and taxiway facilities were made available. Based upon the fleet mix analysis as well as demand discussed in Chapters 5 and 6, it is recommended that an extension to Runway 18-36 be planned for the near future. An extension will allow more demanding aircraft, such as the Embraer 145, Learjet 45, Gulfstream V, etc., to use SEF's facilities on a more regular basis. This is anticipated to result in a change of ARC for SEF from a D-II to a D-IV, which is based upon a critical aircraft combination of the Airbus Corporate Jet (D-III) and Lockheed Martin C-130 Hercules transport aircraft (C-IV).

Extend Runway 18-36

Based upon information obtained from the SAA, Sebring Flight Service Center, and the demand and facility needs evaluations performed in Chapters 6 and 7, SEF can accommodate the majority of GA aircraft on its existing runway field length with the exception of high performance corporate and regional jet aircraft. Both categories of aircraft are used not only by private users, but fractional ownership companies, such as FlexJet. At its current field length, these aircraft may be (and historically have been) subject to payload limitations, depending upon weather conditions, or have opted not to use the Airport at all due to limited takeoff field lengths.

Therefore, in order to meet both existing and forecast fleet mix demand as well as allow for the potential for regional air transport operations, it will be necessary to extend and widen Runway 18-36 to 7,000 x 150 ft. In addition, the runway's load bearing weight capabilities should be increased to 75,000 lb single wheel load (SWL), 150,000 lb dual wheel load (DWL), and 300,000 lb dual tandem wheel (DTW) load. This will accommodate the demand for increased takeoff field length during times of poor weather for both existing and anticipated corporate and air transport aircraft.

Based upon both the forecasts, discussed in Chapter 5, and demand, discussed in Chapter 6, use of Runway 18-36 by large corporate aircraft such as the Gulfstream IV and V and Learjet 35 are expected to not only continue but to increase throughout the 20-year planning period. In addition, use of typical fractional ownership aircraft, i.e., Airbus Corporate Jet, Embraer 145, etc., and the potential for air transport service justifies the increase in runway field length to 7,000 x 150 ft in order to safely and efficiently meet the needs of the new fleet mix.

As part of the development, Runway 36 will be upgraded to a Category I precision approach and Runway 18 to a non-precision approach. Therefore, the following changes in NAVAIDS, runway lighting, and markings will occur as shown in **Table 8-4**.

Table 8-4. Runway 18-36 Future Development

	Runway 18	**Runway 36**
Approach Category	Non-Precision	Precision
NAVAIDS	GPS	ILS, GPS
Visual Aids	PAPI-4	PAPI-4, MALSR
Markings	Precision	Precision
Lighting	HIRL	HIRL
Approach Slope	34:1	40:1/50:1

Source: PBS&J, 2002
Note: GPS – global positioning system
PAPI-4 – 4-box precision approach path indicator
HIRL –high intensity runway lights
ILS – instrument landing system
MALSR – medium intensity approach lighting system with runway alignment indicator lights

Shorten And Lengthen Runway 14-32

Runway 14-32 is approximately 5000 x 300 ft with a 650 ft displaced threshold. It is anticipated that with a change in fleet mix at SEF, especially the increased use of Runway 18-36 by high performance corporate and regional jet aircraft, airfield capacity would be negatively affected if the current runway-crossing configuration were maintained. Rather it is suggested that Runway 14-32 be shortened and narrowed as well as resurfaced in order to obtain a total length of 3,500 x 100 ft in order to avoid crossing Runway 18-36. However, in order to avoid crossing Runway 18-36 as well as obtain the required runway length of 3,500 ft, Runway 14-32 will need to be extended to the south. Therefore, larger aircraft could use Runway 18-36 without causing extensive delays to GA aircraft and vice versa. The proposed field length for 14-32 will allow aircraft, such as a Cessna Citation Jet, and experimental aircraft, such as the proposed SATS aircraft, to use 14-32 with ease. In addition, wind coverage is not considered a limiting factor to operations on Runway 14-32, and, therefore, will not affect overall Airport capacity.

By having a non-crossing runway configuration, it is anticipated that SEF's annual service volume (ASV) would increase from 150,701 to approximately 270,000 (*based upon FAA AC 150/5060-5, Demand Capacity Analysis, Pg. 2-10, diagram 14*).

However, during rehabilitation of Runway 18-36, the type and number of aircraft that could be accommodated at the Airport would be restricted, further reducing aircraft capacity, as all GA traffic would need to be diverted to Runway 14-32. As a result, the extension of Runway 18-36 should be performed before the recommended shortening of Runway 14-32. This will allow only limited delays in capacity, with the exception of during times of inclement (instrument flight rules - IFR) weather conditions. Once the recommended runway development is completed, it is anticipated that both visual and instrument flight rules (VFR and IFR) airfield capacity will increase significantly.

Even though Runway 14-32 is designed primarily for GA aircraft, it will still likely accommodate some high performance turboprop and limited turbojet aircraft and will, therefore, require pavement rehabilitation to meet this demand. Currently, use of the existing Runway 14-32 is limited since it is not equipped with a runway lighting system or approach aids. In order to increase the overall capacity of the Airport, the following lighting, markings, and approach aids are recommended and shown in **Table 8-5**.

Table 8-5. Runway 14-32 Future Development

	Runway 14	**Runway 32**
Approach Category	Non-Precision*	Non-Precision*
NAVAIDS	GPS	GPS
Visual Aids	REILs, PAPI-4	PAPI-4, REILs
Markings	Non-Precision	Non-Precision
Lighting	MIRL	MIRL
Approach Slope	34:1	34:1

Source: PBS&J, 2002.

Construct New GA Runway, 14U-32U

Recreational GA operations represent more than 98 percent of SEF's total operations with military operations representing less than 2 percent. Sport, vintage 'Warbird', and experimental aircraft enthusiasts who utilize the Airport regularly perform a significant portion of those GA operations. According to the forecast information in Chapter 5, it is anticipated that GA aircraft use will continue to increase. Furthermore, the use of experimental aircraft is expected to increase throughout the planning period. Therefore, since GA activity, especially experimental operations, is forecast to continue growing, these operations will remain a major contributing factor to Airport operations.

Thus, based upon comments by these users, construction of a turf runway parallel to existing Runway 14-32 is recommended to meet both the existing and forecast demand. Turf runways, according to vintage aircraft enthusiasts, produce less "wear and tear" on the aircraft. This runway would be equipped with visual NAVAIDS, including runway end identification lights (REILs) and medium intensity runway lights (MIRLs), which will be controlled by pilot radio. This will not only allow pilots to use the runway at night, but to choose to utilize the paved 14-32 or the turf utility runway. Furthermore, since no on-airfield equipment is required, a global positioning system (GPS) approach should be designed for Runway 14R-32L and the turf runway.

The proposed turf (utility) runway should be marked as 14U-32U. The recommended dimensions for this runway are 3,000 x 75 feet. It is anticipated that in the future the runway may serve as a taxilane to the paved Runway 14-32, if needed; therefore, a separation of 400 ft is recommended. The recommended development for Runway 14U-32U is described in **Table 8-6**.

Table 8-6. Runway 14U-32U Future Development

	Runway 14U	Runway 32U
Approach category	Visual/Non-Precision*	Visual/Non-Precision*
NAVAIDS	GPS	GPS
Visual aids	REILs	REILs
Markings	Visual/Basic	Visual/Basic
Lighting	MIRL	MIRL
Approach slope	20:1	20:1

Source: PBS&J, 2002
*Note: *Primary use is for visual aircraft only. However, if aircraft is equipped with GPS equipment, then may perform non-precision approach to this runway.*

Demolish Runway 4-22

The abandoned Runway 4-22 is closed and partially demolished. The existing base and sub-base for this runway could be reused as sub-base for future taxiways, as was done for the existing Taxiway A extension.

8.4.1.2 Taxiway System Improvements

To ensure that adequate taxiways are available for each of the runway improvements discussed previously, and to provide the highest level of obtainable capacity to the runway system, adequate taxiway entrances and exits, and full-length parallel taxiways would be constructed as follows:

- Construct a new parallel Taxiway B on the east side of Runway 18-36 and include six connector taxiways. Several of these connectors will connect with the planned Commerce Park Complex.
- Extend and widen parallel Taxiway A to 7,000 x 75 feet on the west side of Runway 18-36 and add two additional connector taxiways.
- Construct a new parallel Taxiway C on the west side of Runway 14-32 and include three connector taxiways. These connectors will connect with the planned Commerce Park Complex.
- Remove closed taxiways along the east side of the Airport property (i.e., B-3 and B-4).
- Construct a connector taxiway from Runways 14U-32U to proposed parallel Taxiway B.
- Construct turn-off for aircraft on Runway 14-32 to access parallel taxiway B.
- Construct holding connector taxiways at ends of Runway 18 and 32 to allow aircraft to prepare for departure in areas that are not disruptive to other departing aircraft and to improve the overall airfield operating efficiency.
- Construct and strengthen taxiways and connectors associated with Runway 18-36 to accommodate heavier aircraft.
- Equip all taxiways with medium intensity taxiway lights (MITLs).

When completed, these improvements will provide appropriate access to and from all runways, ensuring enhanced operational safety, capacity, and airfield efficiency.

Runway and taxiway improvements are graphically depicted in **Figure 8-2,** Alternative II - Constrained Development.

8.4.1.3 Aprons

The rehabilitation of the existing terminal apron should be accomplished to extend the useful life of the existing apron pavement. Based upon the facility assessment performed in Chapter 7, there is an excess of available apron space for both conventional and tie-down aircraft requirements. However, much of this pavement is in poor condition; and therefore, rehabilitation is critical. In addition, in conjunction with development of the proposed Airport Commerce Park Complex, to be discussed in more detail in later sections, it is recommended that approximately 1000+ sq yd of apron space be constructed around the perimeter of the proposed development and adjacent to Taxiway B, Runway 14-32, and former Runway 4-22. Proposed aircraft apron requirements are shown in **Table 8-7**.

Table 8-7. Aircraft Apron Requirements

Apron Facility	Existing Apron Area (sq yd)	Future Apron Area (sq yd)
Total aircraft tie-down	13,200	13,200
Based aircraft	6,600	6,600
Transient aircraft	6,600	6,600
Conventional hangar apron	23,997.6*	23,997.6
Commerce park apron	NA	1,000
Total apron facilities	**48,620**	**49,620**

Source: PBS&J, 2002 SEF Inventory
*Note: * Includes additional 1,777.6 sq yd of apron space associated with 8 unit commercial hangar development in 2002-2003.*

8.4.1.4 Air Traffic Control Tower

The existing ‘open air’ air traffic control tower (ATCT) dates back to World War II, and is currently located on the landside portion of the Airport, northwest of the Sebring Airside Center (see **Figure 8-2**). The ATCT was recently renovated through an Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) grant. An ISTEA grant provides Federal grant monies for the enhancement of transportation facilities. Presently, the ATCT is occupied by FAA Air Traffic Controllers only during the 12 hours of Sebring and other major sporting events.

Since development at SEF is designed to meet the demand of high performance corporate aircraft as well as potential commercial air transport service, it is likely that relocation and/or construction of a new ATCT facility is needed. It is recommended that an independent ATCT site selection study be undertaken in coordination with the FAA to determine the most appropriate location for the relocated ATCT.

As an initial suggestion, a potential site for the new tower has been identified in the east midfield development area, east of Runway 18-36 in the open triangle area north of the anticipated commerce park development. The new site is positioned in a more secure location, and would provide superior and unobstructed line of sight to all major approach and ground operation surfaces, with minimal shadowing. It is recommended that the cab floor height be located at a minimum of 60 feet above ground level (AGL). The suggested site is depicted in **Figure 8-2,** Alternative II - Constrained Development.

8.4.2 Environmental Assessment

A complete environmental assessment (EA) will be required for the extension of Runway 18-36 and potentially for the extension of Runway 32. An EA for construction of the Turf Runway, 14U-32U, is deemed unnecessary. Each EA must be completed before design and construction begins. Additionally, initial improvements should begin within the first five years of the Master Plan, as a result of increased demand.

8.4.3 Regional Airspace and Approach Procedures

Airspace in and around SEF is unique since it is located within the Lake Place Military Operating Area, which is associated with the MacDill Air Force Base Auxiliary Airport and Avon Park Bombing Range. As a result, SEF's operations are somewhat constrained due to the proximity of various restricted and warning areas associated with military operations.

As discussed in Chapter 2, *Existing Airport Facilities, Statistic,s and Environment*, controlled airspace directly associated with SEF includes Class E, which is depicted on the Miami Sectional Aeronautical Chart, November 2002, by the graduated magenta band surrounding the Airport, and Special Use Areas (SUAs), which includes restricted and warning areas as well as military operating areas (MOAs), and are depicted by red and blue outlines. The Class E Airspace surrounding SEF has its floor 700 ft above the surface. Class E Airspace allows aircraft to transition to or from the MOA into the airport control zone.

Within warning areas, while multiple use of the airspace is not prohibited, avoidance is advised during time of military training use. Joint use by military and civilian traffic of MOAs is also allowed. However, pilots flying in MOAs are responsible for employing "see and avoid" standards of flight safety.

MOAs associated with the Avon Park Bombing Range and MacDill AFB Auxiliary Airport (AGR) operations limit SEF's airspace operations. The restricted areas, as indicated in **Figure 8-3,** Runway 36 Terminal Instrument Approach Procedures, designate those areas that are continuously in effect and limit where aircraft can operate. As indicated, most of the areas restrict civilian aircraft to fly below 14,000 ft mean sea level (MSL). The MOA is considerably larger than the restricted areas and is in effect intermittently during daylight hours Monday through Friday, and occasionally on weekends, but does allow aircraft to fly lower than 7,000 ft on a limited basis. (23)

Restricted airspace (RA) to the northeast of SEF, though not entirely prohibited to flight activity, contains areas in which unauthorized incursion is not only illegal, but also extremely dangerous. Restricted areas are identified on aeronautical sectional charts by a defined area marked with the letter "R," followed by a number. Altitudes and times differ for each restricted area. These areas generally contain operations that do not mix well with aircraft, such as artillery firing, guided missiles, or aerial gunnery. Permission to fly in restricted areas can be given by ATCT. **Table 8-8** lists specific RAs and MOAs in the region surrounding SEF.

Table 8-8. Sebring Regional Airspace

RESTRICTED AREAS			
Number	**Usage Altitude**	**Usage Time**	**Controlling Agency**
R-2901A	To 14,000’	Continuous	ZMA CNTR
R-2901B	14,000’ to FL 180	Continuous	ZMA CNTR
R-2901C	To 14,000’	Continuous	ZMA CNTR
R-2901D	500’ to 4,000’ East of 81 21’ 00” W; 1,000’ AGL to 4,000’ West of 81 21’ 00” West	Continuous	ZMA CNTR
R-2901E	1,000” to 4,000’	Continuous	ZMA CNTR
R-2901F	4,000’ to 5,000’	Continuous	ZMA CNTR
R-2901G	To 5,000’	Continuous	ZMA CNTR
R-2901H	1,000’ to 4,000’	Continuous	ZMA CNTR
R-2901I	1,500’ to 4,000’	Continuous	ZMA CNTR
MILITARY OPERATIONS AREAS			
Name	**Usage Altitude**	**Usage Time**	**Controlling Agency**
Avon North	5,000’	Intermittent daylight hours: contact FSS	ZMA CNTR
Avon East	500’ AGL to But not including 14,000’	Intermittent daylight hours Mon-Fri	ZMA CNTR
Avon South	4,000’	Daylight hours Mon – Fri	ZMA CNTR
Basinger	500’ AGL to 5,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR
Lake Placid	7,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR
Lake Placid North	15,000’	Intermittent daylight hours; contact FSS	ZMA CNTR
Marian	500’ AGL to 5,000’	Intermittent daylight hours Mon-Fri occasionally Sat & Sun.; contact nearest FSS	ZMA CNTR

Source: Department of Transportation, U.S. Terminal Procedures Southeast, Volume 3 of 4, November 1, 2001
Note: ZMA Center: Miami Air Route Traffic Control Center.
FSS: Flight Service Station

8.4.3.1 Terminal Instrument Approach Procedures

As part of the overall development plan at SEF, it is recommended that Runway 36 be equipped with a Category I ILS thereby allowing aircraft to perform precision approaches into the Airport. This will allow pilots greater flexibility during inclement weather conditions. However, due to the proximity of special use airspace in and around SEF, it was necessary to develop potential terminal instrument approach procedures (TERPS) for Runway 36.

TERPS consist of both approach and missed approach procedures, see **Figure 8-3**, Runway 36 Terminal Instrument Approach Procedures. The approach procedure consists of an initial, intermediate, and final approach path. Using en route NAVAIDS, aircraft can line up with the center of the runway prior to runway visual contact. Designated altitudes and waypoints associated with the approach are published in the FAA Approach Charts. See **Table 8-9**, Runway 36 Terminal Instrument Approach Procedures, for dimensions, approximate altitudes, and approach slope.

Since a designated restricted area is located due north of Runway 18-36, it was necessary to determine the impact of the precision approach procedures in relation to the military use airspace. Thus, a generalized TERPs approach was developed to determine if there could be any conflicts associated with Runway 18-36 approach and departure procedures.

TERPs consist of two sections, an approach and missed approach. The approach section consists of three pieces: initial, intermediate, and final, which are associated with specific altitudes, lengths, widths, and approach slopes. The missed approach section includes section one, which is centered around the runway and section two, allowing aircraft to exit or re-enter the approach traffic pattern.

As shown in **Figure 8-3**, a straight-line approach, 180 degree left turn missed approach, and straight missed approach were analyzed to determine if any potential conflicts could occur between military and civilian operations.

Missed Approach Procedure is based upon typical straight missed approach. Altitude calculations are based upon 250 ft/NM descent gradient for initial approach, 150 ft/NM descent gradient for intermediate approach, 318 ft/NM descent gradient for final approach, and 318 ft/NM climb for the missed approach segment.

Table 8-9. Runway 36 Terminal Instrument Approach Procedures

Approach Segment	Segment Length	Segment Width on either side of Runway Centerline			Estimated Beginning Minimum Altitudes In Feet
		Primary (NM)	**Secondary (ft)**		
Initial Approach (NM)	16.22	2	6076.12		8,147
Intermediate Approach (NM)	8.83	1	2,500		4,092
		W (ft)	**X (ft)**	**Y (ft)**	
Final Approach (ft)	50,000	2,200	3,876	2,500	2,768
Minimum Straight Course Distance (ft)	12,759.84	852.15	1,198	1,705	819
Decision Height (1) (ft)	1,460	445.46	835.478	1,190.92	151
Final Approach End Widths (ft)	---	400	300	300	----
Clear Zone (ft)	200	1000			
Touchdown Crossing Threshold (ft)	0	NA	NA	NA	75
Estimated Rwy. End Elevation (ft)					58
Straight- Missed Approach (1)		**Primary Width (NM)**	**Secondary Width (NM)**		**Approximate Beginning Altitude (ft)**
Segment 1 (NM)	1.5	1	NA		151
Segment 2 (NM)	13.5	4	2		628
Turning Missed Approach (2)		**Primary Width (NM)**	**Secondary Width (NM)**		**Approximate Beginning Altitude (ft)**
Segment 1A (ft)	1,460	0.13	NA		151
Segment 1B (ft)	7,654	1	NA		227
Segment 1C (NM)	1.5	0.42	NA		151
Segment 2 (NM)	13.5	4	2		628

Figure 8-3. Runway 36 Terminal Instrument Approach Procedures

As a result of this analysis, limited interaction occurs between civilian and military operations. Therefore, a precision approach is recommended for Runway 36 since it will allow greater flexibility to the Airport user and increase safety.

8.4.4 Land Use and Land Acquisition

The objective of the land use analysis is to evaluate the impacts of the proposed alternative airfield and landside improvements associated with Alternative II on the use of land within the Airport's property, contiguous parcels and the community as a whole.

Furthermore, in addition to aviation related services, SEF can and does support a wide variety of discretionary uses on the Airport, including: Airport related commercial service businesses, aviation related services, aviation manufacturers, non-aviation manufacturers, non-aviation commercial/industrial use, etc. Each of these areas is described in the following sections.

8.4.4.1 Airport Operations

As part of the development process, additional easements will be needed to comply with FAA directives as well as avoid potential incompatible land use in the vicinity of SEF. Potential easements associated with the proposed development require the following:

- Runway 18-36 extension to the north, including runway safety areas (RSAs) and runway protection zones (RPZs).
- Runway 32 extension to the southeast, including RSA and RPZ.
- Construction of Runway 14U-32U, including RSA and RPZ.
- Any areas identified as incompatible land use.

Since Alternative II does not include acquisition of land, the Airport must negotiate with the owners and operators of the property to mitigate any possible incompatible existing or future land use or obstructions. Although the physical runway facilities for Runway 18-36, 14-32, and 14U-32U remain within the existing property line, easements are required to meet FAA RSA/RPZ requirements.

If an agreement cannot be reached, then the Airport must either purchase the property or limit development so that the RSA and RPZ fall within the existing Airport property line. Such constraints could limit both GA and commercial service operations at SEF, and limit land available for both aviation and non-aviation use.

8.4.4.2 Airfield Security and Fencing

As discussed in Alternative I, SEF is designated as a Security Category 3 Airport since it has runways longer than 4,000 ft and is not located near a major metropolitan area. As such, the Airport must consider the implementation of new security equipment and procedures based upon the recommendations of the AAAE General Aviation Airports Security Task Force. Perimeter security and fencing of key areas, i.e., AOA, fuel farm, ATCT, etc. will be needed in order to limit uncontrolled access to these critical areas. Security and maintenance access should be provided through perimeter roads located inside and along the fence line. Furthermore, any additional buildings or parking areas constructed on Airport property should have adequate security fencing, gates, and lighting.

If future scheduled commercial service is obtained, a comprehensive security program would be required in accordance with TSA 1540-1545 regulations and CFR 49 Part 139, Airport Certification. These regulations will, at a minimum, require the complete fencing of the airfield perimeter and use of controlled access points to secure the airfield and prevent uncontrolled access.

8.4.4.3 Fuel Storage

From fuel flowage forecasts derived in Chapter 5, Projection of Aviation Demand, it was determined that 360,751 gallons of Jet A and 110,420 gallons of AvGas would be needed by 2021 to meet total anticipated GA and military operations.

Currently, the existing fuel farm, which consists of two 10,000-gallon tanks, is located to the southwest of the existing Airside Service Center. It is recommended that the fuel farm be expanded and relocated to the northwest of Runway 18-36 and expanded to 40,000 sq ft in order to accommodate a total of four fuel tanks.

In addition to increases in fuel storage capacity, fuel delivery is also expected to increase. This is primarily due to the increase in expected jet operating procedures. To meet this demand, four fuel trucks (approximately 19,200 gallons) are required.

Provisions for a self-serve fueling area for small GA aircraft, located to the north of the field, adjacent to the former Runway 14 threshold, should be considered. By allowing small based and itinerant aircraft users to perform self-fueling operations, the number of AvGas carrying fuel trucks will be reduced, allowing existing trucks to service larger itinerant aircraft.

Potential fuel flowage capacity requirements associated with commercial service operations were not determined within the forecast of potential operations shown in Chapter 5, *Forecast Operations*. However, based upon the analysis discussed in Chapter 6, Demand Capacity Analysis, and Chapter 7, Facility Requirements, for anticipated aircraft use, it is anticipated that over two million gallons of Jet A fuel would be needed to meet commercial demand for the year 2021 (see **Table 8-10**). In order to meet this anticipated demand, additional facilities, tanks and trucks, will be needed and, thus, added to the recommended levels discussed earlier. An analysis of the monthly-recommended fuel requirements is shown in **Table 8-11**. It is important to note that the number of tanks required will be affected by the overall tank capacity. For this analysis, a standard tank size of 10,000 gallons was used.

Based upon peak monthly demand discussed in Chapter 6, *Demand/Capacity Analysis*, the following fuel demand for 2021 was determined:

Table 8-10. Fuel Demand, 2021

Fuel	Peak Month Demand (gallons)	Long-Term Planning Requirements (gallons)*
AvGas – GA	**14,548**	**23,277**
Jet A:		
Jet A – GA/military	44,751	71,602
Jet A- commercial	192,000	307,200
Total Jet A demand	**236,751**	**378,802**
MoGas	**8,000**	**12,800**

Source: PBS&J, 2002
*Note: * Long-term planning requirements is based upon a 60% increase in demand*

Table 8-11. Peak Month Anticipated Fuel Storage Requirements for 2021

			Future Usage					
Type	**Existing**		**GA***			**Regional Commercial[2]**		
	Number	*Amount (gallons)*	*Peak Mth Demand*	*Number*	*Amount (gallons)*	*Peak Mth Demand*	*Number*	*Amount (gallons)*
Tanks:								
AvGas	1	10,000	14,548	1	10,000	NA	NA	NA
Jet A	1	10,000	44,751	4	40,000	192,000	19	190,000
MoGas/88 Octane	0	0	8,000	1	10,000	NA	NA	NA
Trucks*:								
AvGas	1	750	1,455	2	1,500	NA	NA	NA
Jet A	4	16,200	4,475	1	5,000	19,200	4	20,000

Source: PBS&J, 2002
**Note: GA Fuel Demand is based upon peak month forecasts shown in Chapter 6, Demand/Capacity Analysis*
*Commercial Fuel Demand is based upon two commercial aircraft (used ERJ 140) utilizing the Airport at least twice per week with fuel capacity of 12,000 gallons. Thus, peak month equals (4*12,000 gallons)*4.*
The number of fuel tanks was based upon total peak month fuel demand divided by 10,000- gallon tanks
Truck demand is based upon 10% of total tank demand
The number of trucks required is based upon 750 gallon and 5,000 gallon capacity truck for AvGas and Jet A, respectively.

Based upon this analysis, if weekly commercial service is established, approximately 192,000 gallons of Jet A fuel will be required to meet the anticipated peak month demand, which equates to approximately $366,720 per month ($1.91 per gallon x 192,000 gallons). Revenue associated with GA piston and experimental aircraft operations are also expected to increase, providing the Airport with a significant source of funding.

8.4.4.4 Airport Commerce Park

Development of the planned Airport Commerce Park is to be located in the southeast portion of the existing airfield property line between Runways 18-36 and 14-32. The Airport Commerce Park is anticipated to attract both aviation and non-aviation related business.

It is anticipated that with the resurgence of GA aircraft manufacturing, the Airport Commerce Park may be an ideal location for an aircraft manufacturing plant. Typically, these types of companies will locate in areas with an aviation-oriented labor base. Many manufacturers of specialized parts or components do not require on-airport locations, but their aviation orientation makes them ideal candidates for Airport Commerce Park tenants.

The Airport commerce park also offers location advantages for commercial businesses that neither support nor depend upon Airport operations, such as motels, restaurants, car rental agencies, service stations, and small executive offices that provide services and facilities to travelers. The extension and realignment of the South Access road, to be discussed in more detail in a later section, will offer a variety of development options to the Airport.

The initial design concept for the commerce park consists of aviation related businesses requiring direct access to the airfield to be placed on the perimeter of the commerce park area. Aviation and non-aviation businesses that do not require direct access to the airfield would be located within the commerce park area.

8.4.4.5 Industrial Park

The Airport Industrial Park at SEF provides the SAA with another source of revenue. The industrial park, which is located on the northwest portion of the existing Airport leasehold, may be accessed via Airport Blvd., State Road 623, or State Road 98. Current industrial park businesses primarily consist of non-aviation manufacturing tenants, such as Hancor, Lin-Pac Plastics, and Lesco, Inc. These tenants currently import and export raw material via large cargo trucks and/or rail.

Additional proposed industrial development areas include the 13 acre parcel located between Carter Aviation, Taxiway A and the proposed Haywood Taylor Boulevard extension. This parcel would allow excellent airside access to the airfield and would likely be developed for an aircraft manufacturer or maintenance facility. Furthermore, a new standalone, high-end park to be located within the industrial park complex is being planned, which will create a new product not presently found in Highlands County

The existing Airport leasehold is designated as a Foreign Trade Zone (FTZ), which allows businesses, especially those involved in manufacturing, to benefit from various tax breaks and waivers, thus, allowing companies located at SEF to become more competitive in the world market. This competitive advantage is anticipated to drive demand for both raw and manufactured goods, and therefore driving the use of heavy air cargo operators.

Development associated with potential air cargo and foreign trade zone operations will require the expansion of the existing Airport Industrial Park facilities. Currently, several old buildings are slated for demolition, which will provide room for additional development. Roadway access, which will be discussed in more detail in later sections, is crucial for continued development within the Industrial Park. Expansion and realignment of key surface roads and rail facilities, will provide SEF with significant opportunities for development as well as additional revenue sources. See **Figure 8-2,** Alternative II - Constrained Development, for development recommendations.

8.4.4.6 Corporate, Military, and Light General Aviation Areas

Currently, GA activity at Sebring is confined primarily to the north, south, and east of the Sebring Airside Center. The extension of Runway 18-36 will likely attract larger corporate aircraft, thus causing demand for not only fuel, but storage facilities as well. Shortening Runway 14-32 on the north end will allow increased development on the northwest side of Runway 18-36, which will allow for increased storage capacity.

Development of the turf runway (14U-32U) and Runway 14-32 will also encourage GA development within the proposed commerce park as well as on the southeast section of Runway 14U-32U. This southeast section would be designated for light aircraft GA development, which may include T-hangars, small conventional hangars, FBO facilities, etc.

Military fueling is currently performed on the apron located in front of the Sebring Airside Center. A designated area, preferably close to the relocated fuel farm, is recommended. It is anticipated that military operations will remain steady over the course of the 20-year planning period.

Access to the existing north-side apron, currently home to the T-Hangar complex, can be obtained via Airport road. South-side access to the GA facilities can be obtained via the South Access Road. This access road is currently used as an access road/driveway to the Davis Property.

The proposed land use areas are illustrated in **Figure 8-4,** Proposed Land Use.

8.4.4.7 Low Density Uses for Approach/Transition Zones

Many airports have been successful in developing low-density recreational facilities in approach/departure zones. Golf courses are frequently regarded as a good use in these areas, although clubhouses should not be located within the RPZ. Ball fields may be developed adjacent to the RPZ; however, care must be exercised in order to avoid potential placement of large concentrations of persons within the RPZ.

Caution should also be exercised before planning recreational facilities, even on an interim basis, in areas reserved for future aeronautical development. The required relocation of such facilities may require special environmental approvals.

When considering potential land uses within high noise zones, consideration should be given to the land use guidelines included in the FAA recommended Airport Noise Compatibility Program, which specifies the level of noise reduction that should be included in structures, local zoning, and general compatibility of various types of land uses. The proposed land use areas are illustrated in **Figure 8-4,** Proposed Land Use.

8.4.5 Landside Facilities – Buildings

As mentioned earlier, landside facilities, particularly building areas, are designed to balance airfield facility needs. In the case of SEF, these areas of development include:

- Terminal facilities
- GA and related aeronautical development areas
- Commerce park

The focus is to evaluate building areas that may directly relate to supporting aviation activity at SEF. Non-aviation buildings on-Airport were evaluated in a cursory manner.

8.4.5.1 Terminal Facility

The terminal area as indicated on **Figure 8-5,** Terminal Development, represents constrained development. In this alternative, the expansion of the existing terminal building, as justified in Chapter 7, would be implemented. Expansion would include rental car, taxi staging, and sufficient public and employee parking to meet expected demand through the year 2021. The relocation of such facilities as the fuel farm and Aero-Med facilities would be implemented to allow renovation and expansion of the existing Sebring Airside Center. Expansion of the existing common landside parking facility and development of the land parcel adjacent to the Sebring Airside Center will provide parking facilities for existing and future aviation service clients as well as potential rental car facilities.

Figure 8-4. Proposed Land Use

Figure 8-5. Terminal Development

Automobile Parking

In order to accommodate anticipated automobile parking requirements associated with both GA and commercial aviation development at SEF, an additional 93 parking spaces and 3,792 sq yd of pavement will be needed by the end of 2021. This is based upon forecasts shown in Chapter 5, Projection of Aviation Demand, and the facility requirements discussed in Chapter 7, Facility Requirements. As shown in **Table 8-12**, based upon anticipated corporate and commercial demand for rental car services, ten rental car ready/return spaces will be required by the year 2021. This equates to a total of approximately 355 sq yd of paved area.

In addition to rental car parking, public parking for anticipated commercial activity will be necessary if commercial service is instituted at SEF. Therefore, based upon the anticipated aircraft usage and enplanement forecast discussed in Chapter 6, Demand Capacity Analysis and Chapter 7, Facility Requirements, an additional 30 parking spaces, approximately 1,332 sq yd of pavement area, will be required by 2021 to accommodate the total commercial parking demand. Therefore, Alternative II proposes a total terminal parking area expansion of 3,792 sq yd to meet demand.

Table 8-12. Airport Parking Demand

	Existing Parking Spaces	Existing Pavement Area (sq yd)	Future Parking Spaces	Future Pavement Area (sq yd)
GA Public Parking- Terminal	70	3,714	50	2,506
Visitor Parking	NA*	NA	48	2,131
Employee Parking	22	919	47	2,103
Commercial Service Parking	NA	NA	30	1,332
Rental Car Parking	NA	NA	10	355
Private Parking	122	5,221	122	5,221
Total	214	9,855	307	13,647

Source: PBS&J, 2002
Note: Existing Visitor Parking is included in GA Public Parking.

8.4.5.2 General Aviation and Related Aeronautical Development Areas

Hangars

The Airport's hangar facilities are currently operating at 100 percent capacity. Design and construction of an additional Ten T-hangar unit and 8 commercial hangar units were underway at the time of this writing, but will not entirely meet forecast demand; and therefore, additional hangars are needed. An additional 12 T-hangar units and eight corporate hangars are planned under Alternative II development.

Six corporate hangars are to be located to the southeast of Runway 18-36, with the remainder located near the Airport terminal facilities. The 74 T-hangar units will share access with both the conventional and corporate hangars to the northwest of Runway 18-36 along the former end of Runway 14-32.

While this development exceeds the capacity requirements based on forecasts determined in Chapter 5, Alternative II not only seeks to maximize the utilization of land areas within the existing leasehold, and increase Airport revenue generation, but also to provide opportunity for additional growth. Demand for T-hangars in the state of Florida exceeds the ability of the FDOT and airports alike to meet that demand. Therefore, if SEF were to construct T-hangars beyond those forecast, it will likely attract new-based aircraft tenants.

Existing and future aircraft storage facilities associated with Alternative II development is shown in **Table 8-13**.

Table 8-13. Hangar Facilities

Hangar Facilities	Existing Hangars	Future Hangars
Conventional hangar	15	9
Corporate hangar	0	8
T-hangar	62	74

Existing Hangars include facilities under construction
Source: PBS&J, 2002

Public Emergency Facilities

Currently, the DeSoto City Volunteer Fire Department (DVFD) provides fire-fighting services, with back-up service provided by the City of Sebring Fire Department. Plans are underway to establish a fire station at SEF in order to provide service to both the Airport and surrounding communities.

Aero-Med II, a Level I Trauma Unit specializing in air transport, has been based at SEF for several years. Aero-Med's current facilities are located just south of the Sebring Airside Service Center, and include two singlewide trailers and a helipad for the BK117-B Euro copter.

It is recommended that a joint use facility be developed for the Aircraft Rescue and Fire Fighting (ARFF) and Aero-Med II, allowing for consolidated rescue services while providing for future development at the Airport.

Currently, the Airport does not have any scheduled commercial service operations. Therefore, ARFF services at the Airport are not required. However, in order for SEF to receive commercial service operations of 30 passenger seats or greater, it will need to have a designated Airport ARFF facility.

It is suggested, however, that SAA designate and equip at least one fire fighting rapid response vehicle for Airport use only. However, if significant commercial service is instituted at SEF, then it is likely that both additional equipment and facilities will be required to meet the demand.

The proposed location of the ARFF and Aero-Med facility is shown in **Figure 8-6,** Public Emergency Facilities.

8.4.5.3 Airport Commerce Park

The proposed Airport Commerce Park is designed as a mixed use of aviation and non-aviation related development areas and will be located on the east side of the Airport, south of the junction formed between Runway 18-36 and Runway 14-32. Since this area is totally undeveloped, it will allow a unique opportunity for additional commercial development. Further, since Runway 18-36 is being designed to meet the needs of the heavier GA/corporate aircraft and limited commercial service operations, and Runway 14-32 and 14U-32U are being designed to handle smaller GA aircraft, the Commerce Park would be a prime location for a potential FBO, maintenance, and/or avionics operation.

Access to both of these runways will be obtained via surrounding aprons and taxiways. Development of additional corporate and light GA operations in this area will allow the Airport to meet forecast demand for GA facilities.

By utilizing otherwise vacant space for both aviation and non-aviation related uses, the Airport will be able to increase potential revenues through additional revenue diversification and additional land leases. However, full utility and drainage infrastructure for this area will be required. This will include, but is not limited to, water and sewer lines, electric power, telephone, and curb and gutter roadways with associated drainage points.

The Airport Commerce Park development concept is illustrated in **Figure 8-7**, Airport Commerce Park Development.

8.4.6 Landside Facilities – Surface Access

To provide adequate levels of service to accommodate all Airport users, the SAA has been working with Highlands County to ensure adequate vehicular capacity on the primary surface access roads, and reduce overall traffic congestion. Recommended and existing projects associated with landside development are discussed in more detail in later sections. Further coordination with the appropriate local and state officials will likely be required in order to continue to provide the most appropriate and effective means of ensuring adequate ground access to the Airport.

Figure 8-6. Public Emergency Facilities

Figure 8-7. Airport Commerce Park Development

8.4.6.1 Roadway Access

Additional access routes and roadway improvements will be required in conjunction with the proposed development on the east side of the Airport. Roads in this area are rural two lane routes primarily used by residential and agricultural traffic. Industrial and commercial traffic associated with both aviation and non-aviation development will require capacity enhancements to these roadways, construction of extensions to existing roads, and potential new roads and general infrastructure. Proposed Roadway Alignments associated with Alternative II development are shown in **Figure 8-8,** Proposed Roadway Developments.

Kenilworth Road and Airport Road

As previously mentioned in Chapter 6, the main entrance to the Airport facilities is via the intersection of Kenilworth Boulevard and Airport Road. However, the existing geometry is not able to handle the expected capacity as discussed in Chapter 5. Therefore, the intersection will be redesigned and reconfigured. Airport Road, off of the State Road 98 intersection, has already been redesigned to meet the anticipated demand. Construction of Airport Road and associated roadways within the airport property are expected to begin in 2003.

Presently, the SAA only owns the property to the northwest of Airport Road. However, in order to allow continued development, acquisition of additional property along the southeast is recommended.

See **Figure 8-8** for proposed roadway development.

Webster Turn Drive

The existing Webster Turn Drive is located within the industrial park on the west side of SEF. Access is via State Route 623 and Airport Road. The existing roadway provides access into the Airport Industrial Park. The intent of this development is to reconstruct and widen Webster Turn Drive in order allow for continued use by heavy cargo trucks.

See **Figure 8-8** for proposed roadway development.

Figure 8-8 Proposed Roadway Development

South Access Road

The existing South Access Road is a two-lane roadway, which was designed to not only serve the southern portion of the Airport and recommended development, but to provide access to the Davis Property. The previous Master Plan recommended that the South Access Road remain intact in order to serve the Airport, proposed Commerce Park development, and the Davis Family. Currently, the South Access Road is being relocated and realigned to the south and is defined as an existing right-of-way associated with the Sebring International Raceway leasehold expansion.

However, based upon the proposed extension of Runway 18-36 and Runway 14-32 and development of Runway 14U-32U, it is recommended that the existing South Access Roadway be expanded and relocated even further south to run along the south edge of the current Airport property line. This realignment will address safety issues associated with Runway 36 and 32 expansions. In addition, this will provide supplemental land for development as well as needed separation between the Runway 18-36 facilities and public roadways. A buffer zone and curb and gutter design are recommended in order to mitigate potential noise associated with the roadway, Sebring International Raceway, and Airport operations.

The South Access Road will also become the main entrance for the southern portion of the Airfield. Four connecting roadways are proposed:

- Haywood Taylor Blvd. extension
- Commerce park entrance road
- Two proposed ARFF controlled access roads to Spring Lake Community from the south access road

These extensions will provide additional and efficient access to the Airport property, needed separation between airside facilities, as well as an efficient access to the Spring Lake Community for primarily public emergency services.

As part of the development plan, the South Access Road should be expanded to a four lane highway in order to facilitate access to the south and east side of the Airport. In addition, a buffer zone is recommended between the South Access Road and the community in order to limit noise associated with Airport and raceway operations. This could include land acquisition south of the southern Airport boundary, which includes eight-resident and vacant lots.

With the extension of Haywood Taylor Blvd., which will connect to the South Access Road, access capacity to both the Raceway and the Airport itself will be improved. In addition, the South Access Road will provide the main access point to the proposed commerce park development. As part of the commerce park development plan, a proposed 150-foot roadway right-of-way is planned.

Furthermore, as part of the Airport Fire and Rescue Development, two additional controlled access connector roadways for redundancy should be built which will connect the Airport to the housing community located to the south of its current property line. This will allow the community to be provided effective fire fighting services. See **Figure 8-8** for proposed roadway developments.

Haywood Taylor Boulevard Extension

The Haywood Taylor Boulevard extension would provide an additional access point to the main Airport facilities as well as the Sebring Raceway. The existing roadway currently terminates in the vicinity of the Sebring Airside Terminal Building.

However, based upon the proposed development as well as input from the raceway, a 2000-plus foot extension is recommended to tie the existing roadway to the proposed realigned South Access Road. It is recommended that this roadway be expanded to four-lanes with designated turning lanes into both the raceway and airside terminal facilities in order to increase capacity and efficiency of this roadway. In addition, this extension will also allow the ARFF to have quick response access to the airfield and surrounding facilities. See **Figure 8-8** for proposed roadway development.

8.4.6.2 Roadway/Airport Signage

Clear and understandable signage along primary access roads is necessary for Airport development. Directing individuals to the Airport is extremely important to the success of airport businesses. Currently Airport signage along State Road 27 and 98 is minimal. Therefore, signage improvements and/or installation along these routes are recommended.

In addition, the signage along Airport Road is difficult to understand. Therefore, additional and improved signage is recommended both along the Airport access road and on the Airport property itself.

8.5 ALTERNATIVE III – UNCONSTRAINED DEVELOPMENT

Alternative Three expands upon the development discussed in Alternative Two, and includes unconstrained development of all Airport property and the acquisition of all required land area in and around SEF.

Alternative III expands upon the development discussed in Alternative II, and includes unconstrained development of all Airport property and the acquisition of all required land area in and around SEF. This alternative will not only provide for all the Airport's land requirements for the foreseeable future, but will also provide the necessary development and facility improvements to meet or exceed the forecast demand presented in Chapters 5 and 6. The following sections outline the development proposed in Alternative III. Phasing of projects associated with Alternative III is shown in **Table 8-14**, and overall development is graphically represented in **Figure 8-9**.

Table 8-14. Alternative III Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Land Acquisition	
Acquire 2,000 acres for associated development	Acquire 885 acres for associated development	
	Planning	
Environmental assessment for Runway 18-36 extension	Design GPS/non-precision approach to Runway 14R-32L	
Perform ATCT site selection study	Design GPS/non-precision approach to Runway 14U-32U	
Perform drainage study	Obtain Part 139, Airport Certification	
Design GPS/non-precision approach to Runway 18	Environmental Assessment for Runway 14L-32R	
Design terminal expansion	Design Runway 14L-32R	
	Design Commercial Terminal Facilities	
	Airside	
Extend and widen Runway 18-36 to 7,000' x 150'	Design/construct Taxiway B (parallel to 18-36 on east side) and associated stub taxiways	Expand Runway 14L-32R to 10,000 ft
Pavement rehabilitation of Runway 18-36 (150,000 lb DG and 300,000 lb DTW)	Shorten, rehabilitate, and lengthen Runway 14-32 to 3,500 x 100 ft	Design and build apron area on the east side of Runway 14L-32R
Mark (precision) and light (HIRL) Runway 18-36	Install pilot controlled MIRL on Runway 14-32	Develop cargo apron
Close Taxiways B-3 and B-4	Install pilot controlled MIRL on Runway 14U-32U	Design/construct cargo buildings
Design and grade Runway 14U-32U	Install REILs and PAPI-4 on Runway 14R-32L	Design/construct heavy maintenance facilities
		Design/construct Special Use Apron associated primarily with Military operations

Table 8-14 (Continued). Alternative III Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airside (Con't)	
Extend, widen, and light Taxiway A	Install REILs and PAPI-4 on Runway 14U-32U	Design/construct access taxiways
Widen, light, and mark Taxiways A-1, A-2, A-3 and A-4 to 74'	Install runway and taxiway signage	Expand utilities
Install two additional stub taxiways to from Taxiway A to Runway 18-36	Design/construct connector taxiways between Runways 14-32 and 14U-32U	Install runway and taxiway signage
Install MALSR and Localizer on Runway 36	Design/construct turnoff to Taxiway B from Runway 14-32	
Mark displaced threshold on Runway 36	Construct connector taxiways between Runways 36, 32, and 32U, as well as Taxiway B	
Obtain easement areas for commercial runway	Design/construct 8,500' x 150' commercial runway	
Design and install utility lines to east side of airfield	Design/construct 8,500' x 75' parallel east and west taxiways with six stub taxiways each	
Install runway hold signs, incursion lighting, and stop bars on Runway 18-36	Mark (precision) and light (HIRL) commercial runway	
	Install localizer, MALSR, and PAPI-4 on Runway 14L-32R	
	Mark and light parallel taxiways	
	Design/construct 5,300' x 75' midfield taxiway	
	Mark and light midfield taxiway	
	Install runway hold signs, incursion lighting, and stop bars on Runway 14L-32R	

Table 8-14 (Continued). Alternative III Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	GA Terminal Area	
Expand, rehabilitate, and widen Haywood Taylor Blvd	Expand air service terminal building	
Expand public parking area	Realign and expand terminal access road	West Apron expansion
Relocate Aero-Med II facilities	Construct rental car parking	Expand public parking
Relocate fuel farm	Expand employee parking	
Design/construct two conventional hangars	Expand public parking area	
	Commercial Terminal Area	
Design commercial terminal facilities	Construct commercial terminal building (~122,000 sq ft)	Expand public parking
	Construct terminal access road, including curbside areas	Expand rental car parking
	Construct employee parking area	
	Construct public parking area	
	Construct rental car parking area	
	Design/construct commercial apron area	
	Install utilities	
	Construct TSA building requirements	

Table 8-14 (Continued). Alternative III Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Midfield GA	
	Design/construct roadway from Arbuckle Creek Road to Airport	Construct heavy maintenance facilities
	Design/construct heavy commercial apron areas	Construct heavy cargo facilities
	Construct fuel farm (~ 70 Jet A tanks)	Designate military fueling area
		Design/construct 2 conventional hangars
		Design/construct 3 corporate hangars
		Design/construct 2 corporate hangars
		Expand fuel farm (~ 40 Jet A tanks))
	Northwest GA	
Install self-service Octane 88 facility	T-hangar construction	
Rehabilitate, mark, and expand West Apron	Close Hairpin Drive	

Table 8-14 (Continued). Alternative III Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	South GA	
Design/construct public emergency facility (i.e., ARFF and MedEvac units)	Design/construct one conventional hangar	Design/construct four additional corporate hangars
Expand, rehabilitate, relocate and extend south Airport access road	Design/construct four corporate hangars	Install additional fuel farm facility
Install roadway signage	Apron rehabilitation on the west side	
Construct Two access roads to Spring Lake community	Fuel farm development on west side of Runway 18-36 (1 AvGas and 4 Jet A)	
Purchase one rapid response vehicles for ARFF station	Construct two, eight unit T-hangars	
Construct two, eight unit T-hangars		
	Industrial Park	
Relocate SAA rail spur	Expand and realign Airport Road	Expand industrial park
Fill pond at the existing end for Runway 18	Install additional signage	
Expand and rehabilitate Webster Turn Drive	Install additional utilities	
Expand and Extend Ulmann Drive	Expand industrial park	
Expand Boeing Avenue		
Close Hairpin Turn Drive		
	Commerce Park	
Phase I Commerce Park Development	Phase II Commerce Park Development	
Install associated signage	Fuel storage expansion	
Install and mark apron	Sell old and obtain new fuel trucks	
Install fuel farm facilities	Design/construct six corporate hangars	

Table 8-14 (Continued). Alternative III Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airfield	
	Relocate/construct new ATCT	Expand north and south access roads
	Purchase three rapid response vehicles	Design/construct high-speed rail station
	Install security/perimeter fencing	
	Install security perimeter road	
	Design/construct second ARFF facility	
	Develop north terminal access road	
	Install security fencing around SIDA	

Source: PBS&J, 2002
Note: SIDA: Security Identification Display Area

Figure 8-9. Alternative III – Unconstrained Development

8.5.1 Airside Development

Airside development at SEF is critical to meet both existing and anticipated demand for the 20-year planning period. Since Airfield facilities are critical to Airport development, the following runway configurations are recommended for Alternative III:

- Rehabilitate and Lengthen Runway 18-36
- Shorten and Lengthen Runway 14-32
- Construct GA/Utility Runway
- Construct Commercial Service Runway

As discussed, the current airfield configuration accommodates existing air traffic levels. However, in recent years, increased use of the Airport by high performance corporate aircraft has exposed the need for new and expanded airfield facilities to accommodate these types of aircraft. As discussed in Chapter 6, *Demand/Capacity Analysis*, aircraft category demand will fuel airfield development. Furthermore, demand for air transport service and potential cargo operations associated with industrial and commerce park development and Sebring International Raceway operations, suggests that construction of a commercial service runway is needed in the near future. Therefore, it will be necessary to expand the operational capacity of the airfield to effectively accommodate anticipated increases in traffic, as well as potential aircraft mix anticipated to use the Airport.

8.5.1.1 Runways

As discussed, SEF currently has two active runways, Runway 18-36, the primary runway, and Runway 14-32, the crosswind runway. Based upon existing and anticipated demand discussed in Alternative II, development recommendations included:

- Extending Runway 18-36
- Shortening Runway 14 and lengthening Runway 32
- Constructing 14U-32U

However, the recommended extension of Runway 18-36 to 7,000 ft will only meet part of the commercial air transport demand. Yet, due to noise, airspace, environmental, land acquisition, and other limiting factors, Runway 18-36 cannot be extended past this length. As shown in Chapter 6, *Demand Capacity Analysis*, heavy air transport and cargo operations require a runway length of almost 10,000 ft. As a result of this anticipated demand, a commercial runway configuration of 10,000 x 150 ft is recommended.

Table 8-15. Proposed Runway Development Criteria

	Runways							
Criteria	**18-36**		**14R-32L**		**14U-32U**		**14L-32R**	
Length	7,000		3,500		3,000		10,000	
Width	150		100		200		150	
ARC	D-IV		B-II		B-I		D-V	
Approach	Non-precision	Precision	Visual	Visual	Visual	Visual	Precision	Precision
NAVAIDS	GPS	ILS	GPS	GPS	GPS	GPS	GPS/ ILS	GPS/ MALSR/ILS
Visual aids	PAPI-4	PAPI-4, MALSR	REILs, PAPI-4	REILs, PAPI-4	REILs, Papi-4	REILs, PAPI-4	REILs, PAPI-4, MALSR	REILs, PAPI-4, MALSR
Markings	Precision		Visual		Visual		Precision	
Lighting	HIRL		MIRL		MIRL		HIRL	
Slope	34:1	40:1/50:1	20:1	20:1	20:1	20:1	40:1/50:1	40:1/50:1

Source: PBS&J, 2002

Construction Of Commercial Runway

As part of the commercial air transport market demand as well as potential heavy air cargo demand associated with trans-Atlantic operations, construction of a 10,000 x 150 ft commercial runway is recommended. This runway will be designed and equipped to accommodate D-V aircraft.

Associated runway development criteria under this alternative development plan are shown in **Table 8-15 and Figure 8-9**, Alternative III - Unconstrained Development.

8.5.1.2 Taxiways

Recommended Taxiway development for Alternative III includes all of the taxiway improvements recommended for Alternative II as well as the following:

- Construct parallel Taxiway D, to be located to the west side of Runway 14L-32R, designed to handle heavy air transport aircraft with six entrance and exit taxiways.
- Construct parallel Taxiway E, to the east side of Runway 14R-32L, designed to accommodate heavy air transport traffic, and equipped with six entrance and exit taxiways.
- Construct 5,300 x 75 ft perpendicular Taxiway F, to connect the midfield area and provide access for aircraft to use either Runway 18-36 or 14L-32R.

All taxiways will be equipped with MITL. See **Figure 8-9**, Alternative III - Unconstrained Development, for a graphical depiction of the airfield facilities.

8.5.1.3 Aprons

In addition to the rehabilitation of the existing Airport apron and development discussed in Alternative II, it is anticipated that an additional 200+ acres of apron will be required to support anticipated commercial service operations and ancillary development. Proposed commercial apron will be designed to accommodate heavy commercial and cargo aircraft usage. Apron pavement sections associated with airport development will be designed in accordance with the apron's potential users.

It is anticipated that full apron development associated with Runway 14L-32R, the commercial terminal building, ATCT, ARFF/MedEvac, and heavy maintenance and cargo facilities will occur over 10+ years. See **Figure 8-9,** Alternative III - Unconstrained Development, for a description of the proposed apron areas.

8.5.1.4 Air Traffic Control Tower

Construction of a new air traffic control (ATC) facility is required based upon proposed airfield development. As a result, it is recommended that an independent ATCT site selection study be undertaken in coordination with the FAA to determine the most appropriate location for the tower.

Based upon the initial development design considerations, a potential site for the new tower has been identified within the new midfield area between Runways 14U-32U and 14R-32L. This location is positioned in a more secure area and is located at the approximate center of the Airport property area. This site is anticipated to provide superior views of the Airport at its ultimate 20-year build-out. The site also appears to provide excellent and unobstructed line-of-site to all major approach and ground operations surfaces. It is recommended that the cab floor height will be based off of a line of site study. However, for cost estimate purposes, a minimum 100 ft agl is used. The suggested site is depicted in **Figure 8-9,** Alternative III - Unconstrained Development.

8.5.2 Environmental Assessment

A complete environmental assessment (EA) will be required for the extension of Runway 18-36 and the construction of Runway 14L-32R. Each EA must be completed before design and construction begins. Additionally, initial improvements should begin within the first five years of the Master Plan, as a reactive measure to increased demand, and should include the extension of Runway 18-36.

8.5.3 Airspace and Approach Procedures

The FAA has designated four types of airspace above the U.S.: controlled, SUA, other, and uncontrolled airspace. Controlled airspace is categorized into five separate classes: Class A, B, C, D, and E. These classes identify airspace that is controlled, airspace supporting airport operations, and designated airways affording en route transit from place to place. The classes also dictate pilot qualification requirements, rules of flight that must be followed, and the type of equipment necessary to operate within that airspace. SUA is designated as airspace within which flight activities are conducted that require confinement of participating aircraft, or place operating limitations on non-participating aircraft.

In the case of SEF, the Airport is currently surrounded by both SUA and Class E airspace. Since SEF is located within the Lake Placid MOA, approach and departure procedures to and from SEF must be coordinated with Miami Air Route Traffic Control Center (ZMA CNTR) to avoid conflicts with high-speed military aircraft.

However, based upon the planned development, SEF's airspace will be classified as Class D. Class D airspace (referred to as the airport traffic area) for airports with ATCTs, which normally extends from the surface to 2,500 ft above an airport's established elevation (charted in MSL), and includes control zones and airport traffic areas. Thus, aircraft operating under IFR conditions in the en route phase of flight must contact Miami Air Route Traffic Control Center (ARTCC) when operating within the area. In addition, aircraft exiting or entering the 10 nautical mile radius of SEF will need to contact the ATCT on field for approach, departure, and ground control instructions.

With both commercial and GA infrastructure development, it is likely that GA and commercial activity will increase in keeping with the airfield development. Therefore, coordination with on-airport ATC is crucial in order to avoid potential operational conflicts.

8.5.3.1 Terminal Instrument Approach Procedures

Due to the proximity of special use airspace associated with military operations in and around SEF, instrument approach procedures associated with the development of Runway 14L-32R were developed to determine if there were any potential conflicts. Following the TERPs requirements designated in FAA Order 8260.3B and 8260.36A, Category I ILS approach and missed approach procedures were developed for Runway 14L-32R. Using en route NAVAIDS, existing flight paths, and standard TERPs procedures, the following approach patterns for Runway 14L and 32R were developed. See **Figure 8-10**, Runway 32R Straight Line Approach and Missed Approach Procedures.

The expected distances, coordinates, and likely altitudes for both approach and missed approach procedures on either end of Runway 14L-32R (see **Tables 8-16 through 8-19**) were also determined based upon the formulas designated in FAR Order 8360.36A for Cat I Instrument Procedures. The missed approach procedure is based upon typical straight missed approach. Altitude calculations are based upon 250 ft/NM descent gradient for initial approach, 150 ft/NM descent gradient for intermediate approach, 318 ft/NM descent gradient for final approach, and 318 ft/NM climb for missed approach segment.

Table 8-16. Runway 32R Straight Line Approach and Missed Approach Procedures Aircraft Category D-V

Approach Segment	Segment Length	Segment Width on either side of Runway Centerline			Minimum Beginning Altitudes* (ft)
		Primary (NM)	Secondary (ft)		
Initial Approach (NM)	22.9	2	1		9,542
Intermediate Approach (NM)	7	1	2,500		3,817
		W	**X**	**Y**	
Final Approach (Ft)	50,000	2200	3876.115	2500	2,767
Minimum Straight Course Distance (Ft)	12,760	859	2,072	2,933	818
Decision Height (Ft.)	3,038	509	1,027	1,460	309
Final Approach End Widths (Ft)		400	300	300	
Clear Zone (Ft)	200	1000	NA	NA	150
Touchdown Threshold (Ft)	0	NA	NA	NA	75
Straight Missed Approach (1)	**Segment Length (NM)**	**Primary (NM)**	**Secondary (NM)**		**Estimated Beginning Altitude**
Segment 1	1.5	0.13	NA		309
Segment 2	13.5	4	2		786
Turning Missed Approach (2)	**Segment Length (NM)**	**Primary (NM)**	**Secondary (NM)**		**Estimated Beginning Altitude**
Segment 1A	0.50	0.51	NA		309
Segment 1B	1.00	0.13	NA		468
Segment 1C	1.5	0.51	NA		309
Segment 2	13.5	4	2		786

Source: PBS&J, 2002

Figure 8-10. Runway 32R Straight Line Approach and Missed Approach Procedures

Table 8-17. Runway 32R Turning Approach and Missed Approach Procedures Aircraft Category D-V

Approach Segment	Segment Length	Segment Width on either side of Runway Centerline			Minimum Beginning Altitudes* (ft)
		Primary (NM)	Secondary (ft)		
Initial Approach (NM)	22.9	2	6,076		9,542
Intermediate Approach (NM)	7	1	2,500		3,817
		W	X	Y	
Final Approach (ft)	50,000	2,200	6,076	8,576	2,767
Final Approach Turn Radius (NM)	1.4				
Final Approach Turn (ft)	37,240	1,741	4,704	6,643	2,099
Minimum Straight Course Distance (ft)	12,760	859	2,072	2,933	818
Decision Height (ft)	3,038	509	1,027	1,460	309
Final Approach End Widths (ft)		400	300	300	
Clear Zone (ft)	200	1000	NA	NA	150
Touchdown Threshold (ft)	0	NA	NA	NA	75
Straight Missed Approach (1)	**Segment Length (NM)**	**Primary (NM)**	**Secondary (NM)**		**Estimated Beginning Altitude (ft)**
Segment 1	1.5	0.13	NA		309
Segment 2	13.5	4	2		786
Turning Missed Approach (2)	**Segment Length (NM)**	**Primary (NM)**	**Secondary (NM)**		**Estimated Beginning Altitude (ft)**
Segment 1A	0.47	0.51	NA		309
Segment 1B	1.03	0.13	NA		458
Segment 1C	1.5	0.51	NA		309
Segment 2	13.5	4	2		786

Source: PBS&J, 2002

Figure 8-11. Runway 32R 60° Turning Approach and Missed Approach Procedures

Table 8-18. Runway 14L Straight Line Approach and Missed Approach Procedures Aircraft Category D-V

Approach Segment	Segment Length	Segment Width on Either Side of Runway Centerline			Minimum Beginning Altitudes* (ft)
		Primary (NM)	Secondary (ft)		
Initial Approach (NM)	16.1	2	1		7,954
Intermediate Approach (NM)	7.75	1	2,500		3,929
		W	X	Y	
Final Approach (ft)	50,000	2200	3876.115	2500	2,767
Minimum Straight Course Distance (ft)	12,760	859	2,072	2,933	818
Decision Height (ft)	3,038	509	1,027	1,460	309
Final Approach End Widths (ft)		400	300	300	
Clear Zone (ft)	200	1000	NA	NA	150
Touchdown Threshold (ft)	0	NA	NA	NA	75
Straight Missed Approach (1)	**Segment Length (NM)**	**Primary (NM)**	**Secondary (NM)**		**Estimated Beginning Altitude**
Segment 1	1.5	0.13	NA		309
Segment 2	13.5	4	2		786
Turning Missed Approach (2)	**Segment Length (NM)**	**Primary (NM)**	**Secondary (NM)**		**Estimated Beginning Altitude**
Segment 1A	0.47	0.51	NA		309
Segment 1B	1.03	0.13	NA		458
Segment 1C	1.5	0.51	NA		309
Segment 2	13.5	4	2		786

Source: PBS&J, 2002

Figure 8-12. Runway 14L Straight Line Approach and Missed Approach Procedures

Table 8-19. Runway 14L Turning Approach and Missed Approach Procedures Aircraft Category D-V

Approach Segment	Segment Length	Segment Width on either side of Runway Centerline			Minimum Beginning Altitudes* (ft)
		Primary (NM)	Secondary (ft)		
Initial Approach (NM)	6	2	6,076		5,581
Intermediate Approach (NM)	7	1	2,500		4,129
		W	X	Y	
Final Approach (ft)	57,009	2,452	6,830	9,638	3,134
Final Approach Turn Radius (NM)	1.4				
Final Approach Turn (ft)	44,249	1,993	5,458	7,705	2,466
Minimum Straight Course Distance (ft)	12,760	859	2,072	2,933	818
Decision Height (ft)	3,038	509	1,027	1,460	309
Final Approach End Widths (ft)		400	300	300	
Clear Zone (ft)	200	1000	NA	NA	150
Touchdown Threshold (ft)	0	NA	NA	NA	75
Straight Missed Approach (1)	**Segment Length (NM)**	**Primary (NM)**	**Secondary (NM)**		**Estimated Beginning Altitude (ft)**
Segment 1	1.5	0.13	NA		309
Segment 2	13.5	4	2		786
Turning Missed Approach (2)	**Segment Length (NM)**	**Primary (NM)**	**Secondary (NM)**		**Estimated Beginning Altitude (ft)**
Segment 1A	0.47	0.51	NA		309
Segment 1B	1.03	0.13	NA		458
Segment 1C	1.5	0.51	NA		309
Segment 2	13.5	4	2		786

Source: PBS&J, 2002

Figure 8-13. Runway 14L 60° Turning Approach and Missed Approach Procedures

Based upon this analysis, a curved approach and straight or curved missed approach procedure will allow the most flexibility to aircraft using Runway 14L. The configuration of the Runway was designed to allow aircraft using Runway 14L-32R to avoid infiltrating the military restricted areas located to the north and east of SEF. Again, a straight missed approach from the North will only limit aircraft attempting to re-enter the terminal traffic pattern rather quickly. However, the turning missed approach will allow Aircraft to obtain a higher altitude in less time as well as quickly reenter the traffic pattern.

8.5.4 Land Use and Land Acquisition

The purpose of the land use and land acquisition analysis is to evaluate the potential impacts associated with the Alternative III airfield and landside improvements. These improvements are expected to impact not only land within the Airport's boundary, but contiguous parcels and the community as well.

As in Alternative II, the extensions of Runways 18-36 and 32L and construction of Runway 14U-32U, together with other Alternative III facility improvements will require the acquisition of additional land area. The land area will be necessary to maintain compliance with FAA directives and avoid incompatible land uses in the vicinity of SEF. A total of approximately 2,885 acres has been identified as necessary land acquisition over the planning period for Alternative III. Specific development and land acquisition requirements are shown in **Table 8-20**, Land Acquisition Requirements, **and Figure 8-14,** Land Acquisition and Development.

Table 8-20. Land Acquisition Requirements

Proposed Development	Necessary Land Acquisition
Runway 18-36 extension and Runway 32R extension	~80 acres
Rail Line Relocation	~603 acres
Construction of Runway 14U-32U	None
Mixed Use Aviation Development	~803 acres
Construction of Runway 14L-32R	1,000 acres
SAA rail spur relocation	~40 acres
South access road relocation and Buffer	~159 acres
Incompatible land use	~200 acres
Total	~2885 acres

Source: PBS&J, 2002

In addition to the land use analysis described in Alternative II, the following areas will be described in more detail in the following sections.

- Airport related commercial service businesses
- Aviation related business
- Aviation manufacturing
- Non-aviation commercial use

Figure 8-14. Land Acquisition and Development

8.5.4.1 Airport Operations

As part of the airfield development process, additional land area will need to be acquired not only to provide room for development but also to maintain compliance with FAA directives and avoid incompatible land use in the vicinity of SEF. The majority of land to be acquired consists of pasture, farmland, and land currently zoned as residential. Acreage necessary for acquisition is broken down as follows:

- Runway 18-36 extension to the north and south, including RSA and RPZ.
- Runway 32L extension to the southeast, including RSA and RPZ.
- Construction of Runway 14U-32U to the southeast, including RSA and RPZ.
- Construction of Runway 14L-32R for entire length of runway, the RSA, and RPZ.
- Commercial Service Development to the east of existing property line.
- Areas identified as incompatible land use.

Acquisitions of land for Airport development and runway expansion would ensure that both expansion and development of GA and commercial service operations would no longer be limited by inadequate facilities. The purpose of which is to make the Airport more attractive to operators of large passenger and cargo aircraft, which are currently utilized elsewhere. The establishment of future Airport development on the east side of both the current and future airfield will maximize use of available lands while providing increased Airport protection and generation of revenue.

Land use and zoning patterns required for airfield expansion will offer new opportunities for both aviation and non-aviation development on adjacent and contiguous parcels. In addition, construction of Runway 14L-32R and 14U-32U provides a significant track of land between the two runways that would be ideal for commercial aviation development. Furthermore, with construction of Runway 14U-32U and the improvements to Runways 18-36 and 14R-32L, GA development will be positively affected.

8.5.4.2 Airport Industrial Park

As discussed in Alternative II, the Airport Industrial Park located on the west side of the Airport, see **Figure 8-15**, Airport Industrial Park, consists primarily of non-aviation related tenants. However, these large manufacturing tenants, as well as the Sebring International Raceway, may be the impetus for the development of heavy cargo handling demand. The planned roadway enhancements and rail access will likely offer new opportunities to the tenants and provide an additional revenue source from the Airport.

The industrial park has played a significant role in providing a location for non-aviation businesses while providing a considerable source of revenue to the Airport. These firms generally do not require access to the airfield, but some do however, require access to Highway 98 and to the SAA rail spur. These businesses are important not only the fiscal health of the Airport itself, but to Highlands County as well. Firms located within the Airport Industrial Park property may benefit from various opportunities available for businesses located within FTZ.

8.5.4.3 Corporate and Light General Aviation Areas

As mentioned earlier, there are two potential development sites for corporate and light GA development (see **Figure 8-16**, Corporate and Light GA Development). Due to airspace, noise, wind, and other restrictions, there is a large distance (approximately 5,300 ft) between Runway 14U-32U and Runway 14L-32R. This large separation lends itself to development of a two-in-one airport design. Runways 18-36, 14R-32L, and 14U-32U were designed to accommodate corporate and GA operations. Therefore, it is recommended that these operations remain to the west side of the airfield property in order to limit potential interaction with heavy commercial or cargo aircraft operations, which could lead to potential operational capacity delays.

At this time, corporate and GA aircraft parking is located on the west side of Runway 18-36 on both the north and south aprons. GA activity has been accommodated by the Sebring Airside Center and Sebring Flight Service Center, the local FBOs. Facilities that could be designated for smaller and lighter GA aircraft may be located on the parcel of land between Runway 14R-32L and 14U-32U. Additional T-hangar development is dependent upon not only existing GA demand but future GA demand potential associated with potential demand associated with hangar home communities.

Larger corporate and GA operations are anticipated to remain, with the exception of some potential aviation businesses located within the commerce park, on the west side of Runway 18-36. Development in this area would include corporate and conventional hangars as well as additional apron and other aircraft parking areas.

Access to the existing westside area can be obtained via Airport Blvd or through the Haywood Taylor extension via the South Access Road. New eastside GA development also would be easily accessed by the Southern Access Road extension to the Airfield midfield.

Figure 8-15. Airport Industrial Park

Figure 8-16. Corporate and Light GA Development

8.5.4.4 Cargo/Potential Heavy Maintenance

With the development of heavy cargo and commercial passenger service, cargo warehouse facilities and associated infrastructure will be needed to meet the anticipated demand. Furthermore, this demand is likely to stimulate the development of heavy maintenance facilities. As a result, development of both heavy cargo and maintenance facilities is recommended for the Northwest side of Runway 14L-32R in order to mitigate the interaction between commercial passenger traffic and heavy truck traffic associated with these facilities. Infrastructure requirements will include taxiway access, ramp area, hangar and warehouse facilities, roadway and potential rail access.

The recommended sites are shown on **Figure 8-17**, Air Cargo, Heavy Maintenance, Military, and Special Use.

8.5.4.5 Military and Special Use

As previously discussed, MacDill Air Force Base Auxiliary Field is located approximately 12 miles northeast of SEF and eight miles northeast of Avon Park. The field is located within the Avon Park Air Force Bombing Range, and is home to the 1st Combat Support Group Tactical Command (SPT GP TAC).

Use of SEF by military aircraft, primarily helicopters and C-130 aircraft, is significant due to the fact that SAA staff are one of only two civilian groups in the Country trained to “hot fuel” military helicopters.

The SAA has a long-term agreement with the United States Department of Defense (US DOD) and with Avon Park Air Force Range to provide fuel at a variable rate, based upon Defense Energy Support Center (DESC) requirements.

It is anticipated that with the construction of the new 10,000 sq ft runway that military operations on the airfield will increase. Furthermore, it is anticipated that there will also be an increase in fixed wing military aircraft usage. However, due to the proximity of the MacDill Air Force Base, it is highly unlikely that military operations will be based at SEF.

Still apron area with access to fuel facilities should be designed to accommodate the anticipated usage by military aircraft and helicopters. It is likely that this area will be located somewhere near Runway 14L-32R, preferably on the west side of the runway, adjacent to air cargo and heavy maintenance facilities, in order to take advantage of the anticipated runway length of 10,000 sq ft. This area will be developed to withstand the anticipated weight of the aircraft as well as the separation standards needed for both normal and “hot fueling” operations. The recommended military and special use area is highlighted in **Figure 8-17**, Air Cargo, Heavy Maintenance, Military, and Special Use.

Figure 8-17. Air Cargo, Heavy Maintenance, Military, and Special Use

8.5.4.6 Non-Aviation/Commercial/Light Industrial

SEF currently provides the region with several specialized operations: GA services, medical air support, and sites and support services for the development of the commercial/industrial sector. While all but the last of these functions are directly dependent on the ability of SEF to provide facilities that meet their respective need, economic development is not specifically dependent upon the operational capabilities of the Airport.

While proximity or access to Airport services may be desirable for some industrial firms, most of the potential tenants may not have an aviation connection. Instead, the Airport may provide a site and support services as an alternative location within the overall availability of properties that are zoned and master-planned for commercial/industrial uses in the area. In that sense, the Airport sites compete with other locations that are developed by private firms, individuals, non-profit foundations, and other municipal agencies.

Many commercial/industrial/retail uses that develop on Airport property are Airport-related (e.g. hotels, car rental companies, or service stations), but do not necessarily need to be located on Airport property. They do so based upon the availability of sites, convenience, and other market considerations.

As much as practical, the non-aviation properties that develop on Airport property should be developed in ways that enhance the air operations and support those functions that are directly dependent upon Airport services. This may include temporary uses for properties that are scheduled for future runways, taxiways, and terminal or other aviation facilities, to assure they are available for Airport development when the need arises.

8.5.4.7 Mixed Use

While the SAA should give priority consideration in its real estate policy to firms that are aviation oriented, it should not preclude using available properties to attract other industrial/commercial activities. Creating strong business activities near the Airport will create beneficial economic effects and a favorable business climate for the potential attraction of aviation-related companies.

In order to maintain flexibility while taking advantage of opportunities that arise from fluctuations or evolution in market demand, areas adjacent to the existing industrial park and commerce park areas will be designated as areas reserved for mixed-use development. That is, these areas will be available not only for aviation-related development, but also for non-aviation office, industrial, or retail use, depending on the demands of the market. This approach maximizes opportunities for utilization of land in this area to make the Airport a viable location for a variety of industries and businesses.

8.5.4.8 Low Density Uses for Approach/Transition Zones

There is a small area that will lie within the approach/transition zone, for future Runway 14L-32R, which is not suitable for most industrial or commercial uses because of height limits or obstacle-free zone criteria. This area falls within the runway protection zone (RPZ) and approach zone at the Runway 32R end.

Many airports have been successful in developing low-density recreational facilities in approach/departure zones. Golf courses are frequently regarded as a good use in these areas, although clubhouses should not be located inside the RPZ. Ball fields may be developed outside of the RPZ, although caution needs to be used when placing similar facilities in approaches in order to avoid potential placement of large concentrations of persons within the RPZ.

Caution should also be exercised before planning recreational facilities, even on an interim basis, in areas reserved for future aeronautical development. The required relocation of such facilities may require special environmental approvals.

When considering potential land uses within high noise zones, consideration should be given to the land use guidelines included with the Airport's approved Noise Compatibility Program, which specifies the level of noise reduction which should be included in structures, local zoning, and the general compatibility of various types of land uses. See **Figure 8-14**, Land Acquisition and Development.

8.5.5 Landside Development – Building Areas

As mentioned earlier, landside facilities, particularly building areas, are designed to balance airfield facility needs. In the case of Alternative III, these areas of development include:

- Terminal Facilities
  - GA Terminal Facilities
  - Commercial Terminal Facilities
- GA and Related Aeronautical Development Areas
- Commerce Park

The focus is to evaluate building areas that may directly relate to supporting aviation activity at SEF. Non-aviation buildings on-Airport were evaluated in a cursory manner.

8.5.5.1 Terminal Buildings

The passenger terminal complex includes the terminal building, airline aircraft parking aprons, roadway circulation, public parking, and support facilities.

The objectives behind formulation of the terminal complex alternatives are to ensure the balanced, timely development of passenger terminal facilities, aircraft parking positions, curbside and roadway improvements, and public parking. In addition to these overall planning objectives, the following specific criteria have been established:

- Minimizing passenger-walking distance.
- Providing convenient passenger loading and unloading.
- Providing an equal level of service and access to all terminals from the parking areas.
- Maintaining operational flexibility.
- Permitting future expansion facilities with minimal disruption of Airport operations, in accordance with planning activity level estimates.

Sebring Airside Center – GA Terminal Building

The existing Sebring Airside Center at SEF is located on the west side of the Airport, and was designed to meet the demands of its GA customers as well as future small commercial aircraft operations. It is approximately 18,450 sq ft, and includes designated areas for passenger baggage claim, airline ticket sales, and car rental facilities. In addition, the local FBO, Sebring Flight Service Center; SAA Offices; Sherianne's Runway Café; and four additional retail tenants rent space within the Sebring Airside Center.

Based upon forecast peak GA operations through the year 2021, as shown in Chapter 7, *Facility Requirements*, it is shown that the Airside Center does not meet the anticipated demand. By the year 2021, it is anticipated that 27,254 sq ft of GA terminal space will be required to meet demand. This is an increase of almost 9,000 sq ft.

In addition, the need for expansion of GA terminal facilities becomes more pressing if a 60 percent increase in peak hour pilot and passenger demand, as well as an additional local peak hour demand occurs. Based upon this increase, GA terminal facilities in 2021 should equal 44,007, a 25,000+ sq ft increase over the existing Airside Center to meet unconstrained demand. This anticipated increase in both pilot and passenger usage is based upon expected increases in the number and overall size of GA aircraft usage. Therefore, passenger load values, especially associated with corporate and charter aircraft operations, are expected to increase. Furthermore, a significant portion of the expected Airside Center expansion will be associated with the local restaurant, Sherrianne's Runway Café, in order to meet both existing and anticipated demand.

Anticipated constrained and unconstrained terminal facility area demand for the Sebring Air Service Center is described below in **Table 8-21**, GA Terminal Facility Gross Area Demand, and shown in **Figure 8-5**, Terminal Development.

Table 8-21. GA Terminal Facility Gross Area Demand

Year	Existing	Constrained	Unconstrained*
2000	18,450	15,767	25,627
2006	18,450	20,309	32,894
2011	18,450	22,711	36,738
2021	18, 450	27,254	44,007

Source: PBS&J, 2002
*Note: * Unconstrained Forecast is based upon 60% increase in both GA Peak Pilot/Passenger Traffic and an additional 400 sq ft for local community demand. ((Peak Hour Pilot/Pax Demand * 1.60)+4 = Unconstrained Demand.)*

Furthermore, based upon the proposed development, the Airside Center will primarily accommodate GA operations (i.e., corporate, some military, GA, etc.). Therefore, additional facilities will need to be developed in order to meet anticipated demand, such as rental car, taxi staging and sufficient public and employee parking to meet the anticipated demand.

As mentioned in Alternative II, relocation of the fuel farm and Aero-Med facilities are necessary to provide room for Airside Center facility expansion. Expansion of the existing common landside parking facility to serve existing and future aviation service clients as well as development of the current parcel of land adjacent to the terminal facility will allow for development of public, rental and employee parking facilities.

Commercial Terminal Building

As previously discussed in Chapters 6 and 7, efforts to obtain airline service were underway at the time of this writing and are expected to continue. Therefore, a provision for a commercial terminal facility is warranted. Since it is desirable to separate GA operations from commercial service operations, Alternative III proposes construction of a new terminal facility to the west of the proposed commercial runway, 14L-32R, in the new midfield area. The new terminal building would be constructed midway along Runway 14L-32R, south of the air cargo, heavy maintenance and commercial hangar facilities. This will provide efficient access to the primary runway and adequate terminal apron for commercial activity. Additionally, based upon forecast information shown in Chapter 6 and recommended capacity enhancements shown in Chapter 7, a total building area of approximately 122,400 sq ft is recommended.

Table 8-22. Commercial Terminal Facility Requirements

	2000	**2001**	**2006**	**2011**	**2016**	**2021**
Peak Hour Passengers*	0	0	0	250	446	816
Annual Enplanements	0	0	0	5,587	9,994	29,462
Gross Terminal Space**	**0**	**0**	**0**	**37,440**	**66,960**	**122,400**
Concessions/Food	0	0	0	1,872	3,348	6,120
Retail Areas	0	0	0	600	600	600
Telephone	0	0	0	60	60	60
Restrooms	0	0	0	899	1,607	2,938
Airport Management Facilities	0	0	0	1,498	2,678	4,896
Airline Offices	0	0	0	1,385	2,478	4,529
Counter Space	0	0	0	386	690	1,261
Other	0	0	0	1,273	2,277	4,162
Terminal Circulation	0	0	0	9,360	16,740	30,600
Mechanical	0	0	0	7,488	13,392	24,480
Maintenance	0	0	0	1,872	3,348	6,120

Source: PBS&J, 2002
*Note: * Based upon anticipated peak hour passengers and 60% load factor*
*** Based upon FAA requirement of 150 sq ft per peak hour passenger*

See **Figure 8-18**, Commercial Terminal Facility.

Figure 8-18. Commercial Terminal Facility

In addition to the commercial terminal, maintenance and public emergency facilities will be required. Alternative III proposes that maintenance and public emergency facilities be located within the Midfield Area just south of the proposed Taxiway F (Midfield Taxiway) adjacent to the Commercial Service Terminal Building.

Automobile Parking

Based upon the anticipated demand associated with both commercial and GA passenger enplanements, it is anticipated that approximately 314 parking spaces, approximately 13,479 sq yd of pavement, will need to be designated for automobile parking development.

Commercial passenger development at SEF, based upon the analysis shown in Chapter 7, Facility Requirements, and anticipated commercial passengers shown in Chapter 6, Demand Capacity Analysis, is estimated to be 58,924 passengers. The estimated passenger enplanements are based upon a 60 percent load factor for an A310-300, 220 passenger capacity, and B737-200C, 120-passenger capacity, and 720 combined total yearly operations. Therefore, anticipated public parking requirements associated with the commercial terminal building were determined to be approximately 147 spaces, based upon the FAA terminal planning criteria of one parking space for every 400 passengers. In addition, rental car demand associated with commercial passenger operations at SEF was based upon the criteria of one rental car requirement for every 6,000 passengers. Therefore, rental car demand in the vicinity of the commercial terminal facilities is 10 parking spaces (58,924 passengers/6,000 passengers).

Alternative III seeks to separate the GA facilities from the commercial facilities and construct a new commercial terminal facility on the east side of the Airfield. Therefore, all terminal-parking requirements will be met by the proposed parking area located on the east side of the Airport adjacent to the proposed commercial terminal facility.

In addition, due to various infrastructure improvements proposed in this alternative, it is likely that GA passenger traffic will also increase. This is primarily due to increased use of the Airport by larger aircraft with higher overall load factors. GA peak hour demand is based upon an anticipated 60 percent increase in passenger enplanements for the year 2021. Using this formula, 307 public parking spaces will be required in the vicinity of the Airside Center and in the designated GA areas. Additionally, it is anticipated, as discussed in Alternative II, that minimum rental car facilities will be required. Anticipated rental car demand based upon GA passenger demand was estimated at five cars.

Additional parking facilities will also need to be developed or expanded to meet the demand associated with increased operations and passenger enplanements. **Table 8-23** describes in detail the parking requirements associated with the anticipated GA and commercial service operations.

Table 8-23. Alternative III Parking Requirements for Year 2021

	GA		Commercial		Total	
Parking Areas	**Parking Spaces**	**Pavement Area (sq yd)**	**Parking Spaces**	**Pavement Area (sq yd)**	**Parking Spaces**	**Pavement Area (sq yd)**
Employee	47	2,103	12	524	59	2,626
Public/Private	307	13,634	147	6,547	454	20,181
Rental Car	5	177.5	10	349	15	526
TOTAL	**359**	**15,914**	**169**	**7,420**	**528**	**23,333**

Source: PBS&J, 2002
*Note: *GA Public Parking Requirements are based upon anticipated 60% increase in Peak Hour Pilot/Passenger demand as well as an additional 30% increase associated with Local Parking Demand*
** Commercial Parking requirements are based upon anticipated commercial demand as discussed in Chapters 6 and 7.*

8.5.5.2 Air Cargo/Heavy Maintenance Facilities

The amount of truck and delivery van traffic that can be generated from an air cargo complex is an important consideration, as is the ability to expand apron and sorting facilities. Since the critical design aircraft are generally larger than other commercial aircraft in the fleet, consideration must be given to the greater wingspans and tail heights, which ideally push the facilities farther away from the runways and taxiways. A dedicated cargo facility, that would include several large cargo warehouses proposed on the west side of Runway 14L-32R, would have direct airside access to Taxiway D. The area provides a good location from the standpoint of proximity to the airfield, separation from the passenger terminal complex, and access to the SAA rail spur and Ulmann Drive, northern access route.

A proposed layout for the air cargo area is depicted in **Figure 8-17**, Air Cargo, Heavy Maintenance, and Special Use Development. This layout provides for the development of traditional air cargo sortation and storage facilities, apron, and future expansion potential. It appears that the concept would work effectively to meet air cargo demands, as well as provide an attractive area for potential future cargo tenants.

New taxiway, ramp area, hangar, and warehouse facilities should be constructed on the northeast side of the airfield, as part of the cargo development in order to serve future air cargo and heavy maintenance demands.

8.5.5.3 General Aviation and Related Aeronautical Development Areas

Development areas at SEF associated with GA and other related development consists of: aircraft storage facilities, fuel farms, fire and rescue facilities, and Airport Commerce Park. These facilities will be discussed in detail in the following sections.

Hangars

Alternative III maximizes development on the west side of the Airport for GA hangars. In doing so, the capacity requirements derived from the forecasts in Chapter 5 are met and additional 60 percent capacity is provided to increase aviation related lease revenue. Total hangar development includes an additional 41 T-hangar units and 13 corporate hangars. Two 14-unit T-hangar facilities will be located at the existing T-hangar area to the northwest of Runway 18-36; the remainder will be constructed in the open area surrounding runways 14R-32L and 14U-32U. This is expected to meet the anticipated demand associated with a potential hangar home community at the Airport.

Six corporate hangars are proposed to be located within the new commerce park facility, while the remainder are expected to be scattered along the east and west side of Runway 14L-32R and along midfield Taxiway F.

Associated apron and taxiway connections will be rehabilitated or constructed in order to simplify access to the airside facilities. Future aircraft storage facilities are shown in **Table 8-24**, GA Hangar Development for 2021, and shown in **Figure 8-16**, Corporate and Light GA Development.

Table 8-24. GA Hangar Development for 2021

Hangar Type	Existing Facilities	Recommended Facilities*
Conventional	15	15
T-hangar	62	103
Corporate	0	13
Total hangars	**77**	**131**

Source: PBS&J, 2002
*Note: * Recommended Facilities is based upon 60% increase in forecast hangar demand*

Public Emergency Facilities

The DVFD currently provides fire-fighting services at the Airport, with back-up service provided by the City of Sebring Fire Department. Plans are underway to establish a fire station at SEF in order to provide service to both the Airport and the surrounding communities.

In order to provide coverage for both the Airport and the local community, a potential location for the ARFF station could be at the south side of the Airport along the proposed Haywood Taylor Blvd. extension. This extension, along with other proposed roadway developments, would allow fire rescue to service the communities located to the south of the existing and proposed Airport leaseholds.

However, as part of the commercial service development as required by CFR 49 Part 135, SEF will need to have an additional designated ARFF on the field that will cover the Airport only. This facility should be equipped with enough rapid response vehicles and fire fighting solution to cover a Class D category aircraft.

Also based at SEF is Aero-Med II, a Level I Trauma Unit specializing in air transport. Aero-Med's current facilities are located just south of the Sebring Airside Center, and include two singlewide trailers and a helipad for the BK117-B Eurocopter.

It is recommended that a joint-use facility be developed for the ARFF and Aero-Med II. This combined facility will allow consolidated rescue services while providing future development on the Airport. As a result, it is recommended that an independent site selection study be undertaken in coordination with the FAA and Airport management to determine the most appropriate location for the ARFF facility.

Based upon the initial development design considerations, a potential site for the new ARFF/Aero-Med facility has been identified within the new midfield area between Runways 14U-32U and 14L-32R along the midfield taxiway. This location should allow the ARFF station full coverage of the Airport facilities.

The two proposed locations for the ARFF and Aero-Med facility are shown in **Figure 8-19**, On Airfield Public Emergency Facilities - Midfield, and **Figure 8-6,** Public Emergency Facilities.

Fuel Farm

From the anticipated peak month fuel flowage requirements as shown in **Table 8-25**, the following fuel demand is anticipated for the year 2021:

- AvGas – approximately 23,277gallons (176,673 gal for 2021)
- Jet A - approximately 1,687,552 gallons (19,968,601 gal for 2021)
- MoGas- approximately 12,800 gallons (153,600 gal for 2021)

Table 8-25. Peak Month Anticipated Fuel Storage Requirements for 2021

			Future Usage					
Type	**Existing**		**GA***			**Commercial***		
	Number	*Amount (gallons)*	*Peak Mth Demand*	*Number*	*Amount (gallons)*	*Peak Mth Demand*	*Number*	*Amount (gallons)*
Tanks:								
AvGas	1	10,000	23,277	2	20,000	0	0	0
Jet A	1	10,000	71,602	7	70,000	1,615,950	162	1,620,000
MoGas/88 Octane	0	0	12,800	1	10,000	0	0	0
Trucks:								
AvGas	1	750	2,328	3	2,250	0	0	0
Jet A	4	16,200	7,160	1	5,000	161,595	32	160,000

Source: PBS&J, 2002
Notes: GA Peak Month Demand is based upon 60% increase in forecast fuel demand
*Commercial Peak Month Demand is based upon regional jet demand (shown in Alternative II) and 11 A310-300 operations and 11 B737-200C operations. Thus, (11*119,050 gallons) + (11*10,440 gallons) + (192,000 gallons)*
10,000 gallons was used as standard for fuel tanks
Truck demand is based upon 10 percent of total Peak Month tank demand
AvGas truck capacity is 750 gallons
Jet A truck capacity is 5,000 gallons

Figure 8-19. On Airfield Public Emergency Facilities – Midfield

Relocation of existing fuel farm and development of additional fuel farms at various points around the airfield is imperative to meet anticipated fuel demand for the year 2021, as described previously.

The current location of the existing fuel farm is inadequate to meet short-term GA demand and is prohibitive to development of the Airside Service Center. Therefore, at least four fuel facilities of various sizes should be placed around the Airfield in order to meet the proposed demand.

Provisions for a self-serve fueling area to provide AvGas and possibly MoGas for small GA and experimental aircraft should be considered. Placement of the self-fueling facility is recommended near the T-hangar complex and the former Runway 14 threshold. Self-fueling is anticipated to reduce the demand for AvGas fuel trucks by allowing small based and itinerant aircraft to perform “self-fueling” operations. This will limit the number of required AvGas trucks and allow the existing fuel trucks to service larger itinerant aircraft. The fuel farm will be located on a secure area and should be surrounded by additional fencing and signage. Fuel trucks can access the facility via Haywood Taylor Blvd.

Another combined AvGas and Jet A fuel farm facility should be developed on the west side of the Airport in order to meet the demand from regional jet and GA jet and piston operations. This potential fuel farm is recommended to be located near the southern portion of Runway 18-36 near the existing aircraft maintenance areas. This will allow the fuel farm to be located within a secure area, provide ease of access to both aircraft and fuel trucks via the South Access Road and the Haywood Taylor Blvd. extension. This farm should consist of at least four tanks, one tank designated for AvGas and three tanks designated for Jet A fuel. The approximate fuel capacity of this fuel farm is recommended to be 5,000 gallons of AvGas and 30,000 gallons of Jet A, requiring an approximate area of 5,000 sq yd.

With the proposed midfield and east side development of the Airport, demand for Jet A fuel will be significant. Therefore, it is recommended that two fuel farms be developed, with one in the midfield area and the other along the east side of Runway 14L-32R. This will provide coverage for the expected commercial passenger, cargo, and increased military operations associated with the east side development. It is estimated that with development of facilities at SEF that military fuel demand will increase by approximately 60 percent over the forecast fuel demand for the year 2021. This is likely since the proposed commercial runway will be capable of accommodating all anticipated aircraft used by the military as well as the SEF’s on-going contract with the DOD.

It is anticipated that peak monthly military fuel demand will equate to approximately 21,000 gallons of Jet A fuel. Fueling facilities for military operations should be located near the designated apron area for military operations on the east side of Runway 14L-32R.

Commercial fuel flow demand for the peak month was based upon both regional, medium narrow-body, and medium wide-body anticipated peak monthly operations. Based upon anticipated demand discussed in Chapters 6 and 7, it is likely that 16 regional jet, 22 narrow-body jet, and 22 medium-wide-body jet operations will occur in the peak month for the year 2021. Using this estimate of anticipated operations and aircraft fuel requirements, anticipated peak month commercial fuel demand was estimated to be 1,615,950 gallons.

In addition to increased storage capacity, fuel delivery is also expected to increase. This is mostly due to the forecast increase in jet operations and the large fuel requirements associated with these aircraft. To meet this demand as well as the fuel demand associated with military operations, additional fuel trucks will also likely be required. Storage facilities for MoGas or automotive gasoline may also be considered to facilitate not only the operation of fuel trucks and other Airport vehicles but also to meet the experimental aircraft fuel demand.

Potential fuel farm locations associated with this development are shown in **Figure 8-9**, Alternative III - Unconstrained Development.

8.5.5.4 Commerce Park

As discussed in Alternative II, the proposed Airport Commerce Park is to be located between the juncture of Runway 14R-32L and Runway 18-36 on the southeast portion of the current Airport leasehold. The Commerce Park will consist of mixed-use aviation and non-aviation businesses. Access to Runways 32L and 36 will be via the perimeter apron and taxiways.

A diagram of the proposed parcels and development is shown in **Figure 8-14,** Land Acquisition and Development.

8.5.6 Landside Facilities – Surface Access

Surface access will be critical to the development of SEF. Both roadway and rail access development from the north and south to the existing infrastructure and proposed midfield and west side development areas will be necessary to provide access to the proposed commercial terminal infrastructure, as well as heavy maintenance and cargo facilities.

8.5.6.1 Roadway Access

Primary access to SEF is provided in two locations. The main entrance, by way of Kenilworth Blvd. and Airport Road, provides access to the Industrial Park via Webster Turn Blvd. and the main Airport facilities via Haywood Taylor Blvd. In addition, the south entrance, referred to as the Southern Access Road, runs along the Sebring International Raceway's southern boundary, continuing to the eastern edge of the Air Operating Area (AOA), and finally connecting with the Davis Property.

Proposed extensions and expansions of existing roadways as well as potential development of new access points will need to be done in conjunction with FDOT since existing highways in and around SEF may need to be expanded in order to handle the anticipated influx of traffic. Further discussion with FDOT will be needed to develop an appropriate traffic system to meet the anticipated demands associated with this Airport development plan. **Figure 8-20**, Proposed Roadway Alignments, shows the potential access points to both the GA and commercial development areas.

Figure 8-20. Proposed Roadway Alignments

North Access

As previously discussed, there are major issues associated with each of the primary access points into the Airport. The main entrance is a two-lane road that also serves as the major access point for the Sebring International Raceway, Airport Industrial Park, and GA facilities. At various times during an average day, the main entrance is hampered by significant congestion associated with Airport, industrial park, and raceway users. Congestion and delays are especially high during the 12 Hours of Sebring and other special events. Suggested entrance road improvements include additional lanes, realignment, traffic signals, and repaving.

Currently, primary access into the Airport is via Highway 98 or State Road 623. Airport Road, which runs along the west side of the Airport property line, provides the main access into the Airport property. Airport Road splits near the entrance of the industrial park into Webster Turn Blvd, which runs through the industrial park to the north, and continues east and south to become Haywood Taylor Blvd, which is the main circulation point to the west side of the Airport and Sebring Air Service Building.

In order to accommodate the anticipated increase in vehicular traffic associated with the Airport, Industrial Park and Raceway, it is recommended that Airport Road, Webster Turn Drive, Ulmann Drive and Haywood Taylor Blvd be expanded to bi-directional, multiple lane highways. A roadway expansion to at least three bi-directional lanes with designated turning lanes and appropriate traffic signals is recommended in order to limit congestion associated with aviation and non-aviation operations.

In addition, as mentioned in Alternative II, expansion and extension of Ulmann Drive to the northeast is recommended in order to provide a northern access point to the midfield areas.

A proposed northern access from the northeast via Arbuckle Creek Road could provide additional circulation capacity to the Midfield Area and proposed commercial service, heavy cargo, and maintenance developments.

Coordination with FDOT will be required in order to provide appropriate access to the Airport facilities. Proposed northern access roadway alignments are shown on **Figure 8-20**, Proposed Roadway Alignments.

South Access

Currently, the South Access Road serves primarily as a perimeter road. The road was originally designed to prevent Airport neighbors from entering the AOA in order to get to their property on the east side of the Airport. This roadway does not completely surround the Airport, but does provide an access point to potential east side development.

However, as part of the Sebring International Raceway leasehold expansion, the South Access Road is being relocated and realigned to the south and is defined as an existing right-of-way. Yet, based upon the proposed extension of Runway 18-36 and Runway 14R-32L and development of Runway 14U-32U, it is recommended that the existing South Access Roadway be expanded and relocated even further south to run along the south edge of the current Airport property line. This realignment will address safety issues associated with Runway 36 and 32 expansions. In addition, this will provide supplemental land for development as well as needed separation between the Runway 18-36 facilities and public roadways. A buffer zone and curb and gutter design are recommended in order to mitigate potential noise associated with the roadway, Sebring International Raceway, and Airport operations.

The South Access Road will also become the main entrance for the southern portion of the Airfield. Four connecting roadways are proposed:

- Haywood Taylor Blvd. Extension
- Commerce Park Entrance Road
- Two proposed ARFF controlled access roads to Spring Lake Community from the South Access Road

These extensions will provide additional and efficient access to the Airport property, needed separation between airside facilities, as well as an efficient access to the Spring Lake Community for primarily public emergency services.

In order to accommodate potential vehicular demand associated with GA, commercial and commerce park development, it is recommended that the South Access Road be expanded to a six-lane, bi-directional roadway with designated turn lanes and traffic signals. The roadway should be extended eastward, running parallel to Interstate 98. The South Access Road will be designed to provide vehicular access to the existing west side GA development area via Haywood Taylor Blvd Extension, the proposed Airport Commerce Park via a perpendicular access road, the Midfield and Commercial Terminal Facilities via a Terminal Access Road. As part of this development and expansion, appropriate curb and ditch ponding requirements will need to be developed.

In addition, a buffer zone is recommended between the South Access Road and the community in order to limit noise associated with Airport and raceway operations. This could include land acquisition south of the south airport property boundary, which includes eight-resident and vacant lots.

With the extension of Haywood Taylor Blvd., which will connect to the South Access Road, access capacity to both the Raceway and the Airport itself will be improved. In addition, the South Access Road will provide the main access point to the proposed commerce park development. As part of the commerce park development plan, a proposed 150-foot roadway right-of-way is planned.

Furthermore, as part of the Airport Fire and Rescue Development, two additional controlled access connector roadways for redundancy should be built which will connect the Airport to the housing community located to the south of its current property line. This will allow the community to be provided effective fire fighting services. See **Figure 8-20** for proposed roadway alignments.

Internal Access Road/Perimeter Roadway

Service roadways can be categorized as either general use or restricted use roadways. General use roadways allow for the delivery of goods and services to the terminal area. Whereas, restricted access roads are restricted to Airport vehicles only (Airport operations, police, fire, etc.), and serve areas where public access is not allowed due to safety and/or security requirements.

Currently, SEF does not have any designated service roadways. As part of the commercial development plan discussed in this alternative, designated service roads should be constructed in conjunction with appropriate security fencing. Perimeter fencing of the AOA and Security Identification Display Area (SIDA) areas is necessary to promote a safe and secure airport. Appropriate security fencing and security/safety procedures must be in place before SEF will be allowed to provide commercial service operations.

The main service road will be located within the AOA and run parallel to the Airport perimeter fence. Additional roadways to significant infrastructure, such as maintenance facilities, SIDA, ATCT, ARFF/MedEvac facilities, etc., will be designed to provide maximum access to these facilities.

In addition, the service roads are designed to provide the efficient movement of vehicles on the airfield in case of emergency. Adequate markings and only designated vehicles will be allowed to use this roadway, and all drivers will be required to take a driver training course.

See **Figure 8-20,** Proposed Roadway Alignments**,** for proposed internal access roadway alignment.

Terminal Access/Circulation Road

Terminal access roads connect the primary Airport access roads with terminal facilities. The terminal access road should be designed to allow for the smooth channeling of traffic into appropriate lanes, for safe and unobstructed access to terminal curbs, parking lots, and other facilities. In order to avoid congestion and assure lower traffic volume on the terminal frontage roads, traffic streams should be separated as early as possible.

The terminal frontage road is that section of the terminal access road located directly in front of the terminal building for the purpose of arrival and departure traffic. The number of traffic lanes typically increases in the sections located directly in front of the main terminal facility to allow for vehicles stopping at the enplaning and deplaning terminal curbs, vehicular maneuvering, and sufficient travel lanes for through traffic. This roadway is critical in promoting the flow of traffic in and around the Airport terminal building.

The existing and proposed alignments of the terminal access roads for both the Airside Service Center and the proposed commercial terminal facilities are critical to the overall development at the Airport. See **Figure 8-20,** Proposed Roadway Alignments, for proposed terminal access and circulation road alignments.

Sebring Airside Center Terminal Access and Curb Frontage

The existing terminal access road at SEF is Haywood Taylor Blvd, a two-lane roadway, which provides access to the Airside Service Center. The current roadway meets the FAA capacity criteria of 900 to 1,200 vehicles per hour per lane, but its current alignment is inadequate to meet the needs of the Airport's tenants. As a result, an extension and expansion of the existing Haywood Taylor Blvd, as described in Alternative II, is recommended. This consists of a four lane bi-directional roadway with counter clockwise vehicular flow around the front of the Sebring Airside Center. In addition, a proposed southward extension of approximately 2,000+, feet in order to connect with the Southern Access Road, is recommended. This will allow vehicular circulation from both the north and south sides of the Airport.

However, capacity demand is anticipated to be less than that described in Alternative II since the Airside Center circulation road will generally accommodate GA operations, Airside Center visitor traffic, and the Sebring International Raceway traffic. Coordination with the Sebring International Raceway is recommended since potential development at the Raceway will have a significant impact upon the proposed roadway development.

Terminal frontage space associated with enplaning and deplaning passengers is less critical for designated GA terminal facilities. However, it is recommended that the terminal frontage road be expanded from two to three lanes in order to offer a through lane, lane for parking facilities, and a right-side loading/unloading lane. Existing curb frontage space can accommodate up to 12 mid-size vehicles. Dependent upon the overall growth in GA passengers and operations, expansion of the terminal curb frontage is expected to be minimal.

Commercial Terminal/Midfield Access and Curb Frontage

Using the guidelines described in FAA AC 150/5360-13, Planning and Design for Airport Terminal Facilities, terminal area access roads should accommodate 900 to 1,200 vehicles per lane per hour, with a minimum of two 12-foot lanes. Additionally, re-circulation roads should accommodate approximately 600 vehicles per hour per lane, with standard widths of 12 feet each.

In the case of the SEF Commercial Terminal Building, the terminal circulation roadway will be aligned to follow the face of the terminal building. The terminal circulation roadway will provide departure and arrival terminal curb frontage on the east side. This roadway will consist of four lanes, the first for arrival and departure curb front parking, the second for parking, and the third and fourth for flow-through traffic. It is suggested that the Terminal Circulation Road form a loop in order to reunite with either the proposed south or north entrance roads.

Illustrated in **Figure 8-20**, Proposed Roadway Alignments, the terminal circulation roadway system will include separate roadway access point to the midfield development area as well as parking facilities.

8.5.6.2 Roadway/Airport Signage

As described in Alternative II, clear and understandable signage along primary access roads is necessary for Airport development. Directing individuals to the Airport is extremely important to the success of airport businesses. Currently Airport signage along State Road 27 and 98 is minimal. Therefore, signage improvements and/or installation along these routes are recommended.

In addition, the signage along Airport Road is difficult to understand. Therefore, additional and improved signage is recommended both along the Airport access road and on the Airport property itself.

Implementation of on-Airport signage to direct visitors to the Sebring International Raceway, Airport Industrial Park, Airport Commerce Park, and GA and commercial aviation facilities is needed. In addition, main entrance signs should be placed at the junction of Airport Road and the South and North Access Roads.

8.5.6.3 Railroad Access

The main CSX rail line runs north of the existing Airport property, and is used primarily for the transport of cargo. The Authority's rail spur, which runs off the main line, is located within the Airport Industrial Park. Since it is anticipated that the industrial park tenants, to some extent, will be the motivation for heavy air cargo service, it is likely that cargo rail usage at SEF will increase. As a result, the effective transportation of goods on the Airport property will become critical. Therefore, an additional rail spur in the vicinity of the air cargo facilities on the east side of the Airport is recommended.

As part of the FDOT High-Speed Rail Initiative, consideration is being given to the development of a high-speed rail station in or on the vicinity of SEF. This passenger rail line would allow the City of Sebring and Highlands County to be connected to South and Central Florida economic centers. Consideration for using the existing CSX Rail Corridor is currently being considered.

In addition, the existing SAA rail spur provides transportation for raw goods and products to and from the Airport Industrial Park. It is anticipated that with the development of airfreight cargo facilities, use of the spur will increase since it provides a low-cost and efficient method for the transference of goods in and around the State of Florida.

See **Figure 8-21**, Proposed Rail Spur Realignment and Rail Station, for proposed rail alignment and railroad terminus station.

Figure 8-21. Proposed Rail Spur Realignment and Rail Station

8.6 EVALUATION OF ALTERNATIVES

The Airport development plans described previously outline the necessary development and facility improvements to not only meet forecast demand as presented in Chapter 5, but to ultimately ensure competitiveness and financial viability for the Airport and provide both the Airport and surrounding community with the greatest benefits considering the goals of the SAA.

The process utilized in assessing airside and landside development alternatives involved an analysis of long-term requirements and growth potential. Current and future Airport design standards were reflected in the analysis of runway and taxiway needs, with special consideration given to FAA required RSAs. As design standards are further modified, revisions to the plan may be needed, which may affect future development options.

As any good long-range planning tool, the final master-planning concept should remain flexible to unique issues and opportunities that may be presented to the Airport. Furthermore, changes in market conditions and aircraft demand may dictate the acceleration or delay of projects.

In order to determine the best course of action for SAA to take with regards to future development, Alternatives One, Two, and Three were each evaluated based upon the following general criteria:

- **Operational** – Does the selected development alternative meet the Airport's facility needs for the planning period as well as resolve any existing or future deficiencies as they relate to FAA design and safety criteria?
- **Environmental** – Does potential Airport growth and expansions significantly impact the Airport's environs? Does the plan seek to minimize environmental impacts in the areas outside the Airport's boundaries as well provide a reasonable balance between expansion needs and off-site acquisition and relocation needs while recognizing potentially sensitive environmental issues?
- **Cost** – Does the plan include excessive costs associated with expansive construction, acquisition, or other development requirements?
- **Feasibility** – Is the selected alternative capable of being implemented? Also, is the plan acceptable to the FAA, FDOT, city government, Highlands County and the community served by the Airport? The preferred development option should proceed along a path that supports the area's long-term economic development and diversification objectives.

Therefore, based upon this criteria, an objective scale of 1 to 5, with one being the lowest and five the highest, was used to evaluate the each of the proposed alternatives. This is shown in **Table 8-27.**

Table 8-26. Evaluation of Alternatives

Operational Criteria	Alternative I	Alternative II	Alternative III
Operational	1	3	5
Environmental	5	4	4
Cost	5	3	3
Feasibility	2	5	5
Total	**13**	**15**	**17**

Source: PBS&J, 2002

8.7 RECOMMENDED ALTERNATIVE

Alternative Three is the preferred development alternative. This program outlines the necessary development and facility improvements to not only meet the forecast demand presented in Chapter 5, but also meets the community demand for commercial service.

Alternative III is the preferred development alternative. This program outlines the necessary development and facility improvements to not only meet the forecast demand presented in Chapter 5, but also meets the community demand for commercial service. This alternative was evaluated in the context of the previously discussed development criteria as follows:

- **Operational** – Alternative III will meet or exceed the identified Airport needs through the year 2021. This alternative will not only correct existing operational restrictions at the Airport, but also proposes improvements to avoid future deficiencies and expand operations. The development proposed in Alternative III will enhance the safety, security, and efficiency of the Airport to a greater degree than that discussed in Alternative I and II.
- **Environmental** – Although Alternative III has the highest degree of potential environmental impacts, these impacts are mitigated due to the type and previous use of acquired land. Further discussion of potential environmental impacts and mitigation efforts will be analyzed in Chapter 9, Environmental Evaluation.
- **Cost** – The development costs associated with Alternative III can be offset through proper phasing, grants, and tenant agreements. Furthermore, Alternative III will diversify the Airport's revenue sources and increase potential revenue sources as compared to the other two alternatives discussed. This will prove beneficial to the Airport's Economic position as well as provide greater economic rewards to both the City of Sebring and Highlands County.
- **Feasibility** – Alternative III supports the overall goal of the Sebring Airport Authority, Highlands County, FDOT, and the FAA to promote aviation and economic growth. Additionally, this alternative will meet the needs of Sebring as a community. Furthermore, full implementation of the development program contained in Alternative III is possible with proper phasing and financial planning.

Table 8-27. Recommended Alternative Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Land Acquisition	
Acquire 2,000 acres for associated development	Acquire 885 acres for associated development	
	Planning	
Environmental assessment for Runway 18-36 extension	Design GPS/non-precision approach to Runway 14R-32L	
Perform ATCT site selection study	Design GPS/non-precision approach to Runway 14U-32U	
Perform drainage study	Obtain Part 139, Airport Certification	
Design GPS/non-precision approach to Runway 18	Environmental Assessment for Runway 14L-32R	
Design terminal expansion	Design Runway 14L-32R	
	Design Commercial Terminal Facilities	
	Airside	
Extend and widen Runway 18-36 to 7,000' x 150'	Design/construct Taxiway B (parallel to 18-36 on east side) and associated stub taxiways	Expand Runway 14L-32R to 10,000 ft
Pavement rehabilitation of Runway 18-36 (150,000 lb DG and 300,000 lb DTW)	Shorten, rehabilitate, and lengthen Runway 14-32 to 3,500 x 100 ft	Design and build apron area on the east side of Runway 14L-32R
Mark (precision) and light (HIRL) Runway 18-36	Install pilot controlled MIRL on Runway 14-32	Develop cargo apron
Close Taxiways B-3 and B-4	Install pilot controlled MIRL on Runway 14U-32U	Design/construct cargo buildings
Design and grade Runway 14U-32U	Install REILs and PAPI-4 on Runway 14R-32L	Design/construct heavy maintenance facilities
		Design/construct Special Use Apron associated primarily with Military operations

Table 8-27 (Continued). Recommended Alternative Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airside (Con't)	
Extend, widen, and light Taxiway A	Install REILs and PAPI-4 on Runway 14U-32U	Design/construct access taxiways
Widen, light, and mark Taxiways A-1, A-2, A-3 and A-4 to 74'	Install runway and taxiway signage	Expand utilities
Install two additional stub taxiways to from Taxiway A to Runway 18-36	Design/construct connector taxiways between Runways 14-32 and 14U-32U	Install runway and taxiway signage
Install MALSR and Localizer on Runway 36	Design/construct turnoff to Taxiway B from Runway 14-32	
Mark displaced threshold on Runway 36	Construct connector taxiways between Runways 36, 32, and 32U, as well as Taxiway B	
Obtain easement areas for commercial runway	Design/construct 8,500' x 150' commercial runway	
Design and install utility lines to east side of airfield	Design/construct 8,500' x 75' parallel east and west taxiways with six stub taxiways each	
Install runway hold signs, incursion lighting, and stop bars on Runway 18-36	Mark (precision) and light (HIRL) commercial runway	
	Install localizer, MALSR, and PAPI-4 on Runway 14L-32R	
	Mark and light parallel taxiways	
	Design/construct 5,300' x 75' midfield taxiway	
	Mark and light midfield taxiway	
	Install runway hold signs, incursion lighting, and stop bars on Runway 14L-32R	

Table 8-27 (Continued). Recommended Alternative Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	GA Terminal Area	
Expand, rehabilitate, and widen Haywood Taylor Blvd	Expand air service terminal building	
Expand public parking area	Realign and expand terminal access road	West Apron expansion
Relocate Aero-Med II facilities	Construct rental car parking	Expand public parking
Relocate fuel farm	Expand employee parking	
Design/construct two conventional hangars	Expand public parking area	
	Commercial Terminal Area	
Design commercial terminal facilities	Construct commercial terminal building (~122,000 sq ft)	Expand public parking
	Construct terminal access road, including curbside areas	Expand rental car parking
	Construct employee parking area	
	Construct public parking area	
	Construct rental car parking area	
	Install utilities	
	Design/construct commercial apron area	
	Construct TSA building requirements	

Table 8-27 (Continued). Recommended Alternative Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Midfield GA	
	Design/construct roadway from Arbuckle Creek Road to Airport	Construct heavy maintenance facilities
	Design/construct heavy commercial apron areas	Construct heavy cargo facilities
	Construct fuel farm (~ 70 Jet A tanks)	Designate military fueling area
	Construct 5,000 sq ft maintenance storage building	Design/construct 2 conventional hangars
		Design/construct 3 corporate hangars
		Design/construct 2 corporate hangars
		Expand fuel farm (~ 40 Jet A tanks)
	Northwest GA	
Install self-service Octane 88 facility	T-hangar construction	
Rehabilitate, mark, and expand West Apron	Close Hairpin Drive	

Table 8-27 (Continued). Recommended Alternative Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	South GA	
Design/construct public emergency facility (i.e., ARFF and MedEvac units)	Design/construct one conventional hangar	Design/construct four additional corporate hangars
Expand, rehabilitate, relocate and extend south Airport access road	Design/construct four corporate hangars	Install additional fuel farm facility
Install roadway signage	Apron rehabilitation on the west side	
Construct Two access roads to Spring Lake community	Fuel farm development on west side of Runway 18-36 (1 AvGas and 4 Jet A)	
Purchase two rapid response vehicles for ARFF station	Construct two, eight unit T-hangars	
Construct two, eight unit T-hangars		
	Industrial Park	
Relocate SAA rail spur	Expand and realign Airport Road	Expand industrial park
Fill pond at the existing end for Runway 18	Install additional signage	
Expand and rehabilitate Webster Turn Drive	Install additional utilities	
Expand and Extend Ulmann Drive	Expand industrial park	
Expand Boeing Avenue		
	Commerce Park	
Phase I Commerce Park Development	Phase II Commerce Park Development	
Install associated signage	Fuel storage expansion	
Install and mark apron	Sell old and obtain new fuel trucks	
Install fuel farm facilities	Design/construct six corporate hangars	

Table 8-27 (Continued). Recommended Alternative Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airfield	
	Relocate/construct new ATCT	Expand north and south access roads
	Purchase three rapid response vehicles	Design/construct high-speed rail station
	Install security/perimeter fencing	
	Install security perimeter road	
	Design/construct second ARFF facility	
	Develop north terminal access road	
	Install security fencing around SIDA	

*Source: PBS&J, 2002**Source: PBS&J, 2002*

Alternative III will provide the Airport and surrounding community with the greatest overall benefits, increased business, commercial service, increased revenue, etc, and will meet the goals of the SAA. A detailed review of the projects, including an estimate of construction costs and phasing associated with Alternative III will be discussed in Chapters 10 and 11.

The remaining portions of the Master Plan will be directed toward the preparation and phasing of a detailed implementation program as well as an evaluation of funding options currently available to the SAA. A detailed review of projects, including construction costs and phasing is discussed in Chapters 9 and 10.

ENVIRONMENTAL OVERVIEW

Sebring Regional Airport

9

9.1 BACKGROUND

One of the goals of this Master plan is to provide viable solutions to any major environmental issues that affect the development of the Airport. The purpose of this chapter in particular is to provide a complete overview of the existing environmental conditions at the Sebring Regional Airport (SEF). This chapter is not intended to serve as a formal Environmental Assessment (EA), as defined by *FAA Order 5050.4A Airport Environmental Handbook*. However, the chapter is organized in accordance with guidelines set forth by the order and should be used as a base should an EA be requested in the future.

The order mandates that airports address potential impacts to 20 specific categories. The 20 categories to be discussed in the following sections include:

- Airport noise
- Compatible land use
- Social impacts
- Induced socio-economic impacts
- Air quality
- Water quality
- Department of Transportation Act, Section 4(f)
- Historic, architectural, archeological, and cultural resources
- Biotic communities
- Endangered and threatened species
- Wetlands
- Floodplains
- Coastal zone management program
- Coastal barriers
- Wild and scenic rivers
- Farmland
- Energy supply and natural resources
- Light emissions
- Solid waste impact
- Construction impacts

For the purpose of this overview, these environmental categories will only be addressed as they apply specifically to SEF or will otherwise be noted as not applicable. This environmental overview highlights those potential environmental impacts that may require a more detailed analysis in a formal EA for the preferred development alternative.

9.2 AIRPORT NOISE

Noise is the most apparent impact that an airport has on the environment, with the majority of complaints received from nearby residents; and therefore, necessitates the majority of mitigation efforts. The FAA recommends the average day-night sound level

(DNL) in decibel values, the national standard for measuring airport noise. The FAA has determined that a sound level of 65 DNL or less is compatible with most residential land uses. Therefore, noise levels greater than this measurement should be contained within the Airport property lines to the greatest extent possible. In areas around the Airport where noise levels exceed 65 DNL, other methods of mitigation, such as land acquisition, zoning requirements, and the purchase of easements, may be utilized as possible remedies for incompatible land use.

The noise analysis conducted in this Master Plan utilizes the FAA Integrated Noise Model (INM) Version 6.0c software. In order to establish a national standard for comparing noise impacts, INM analysis of airport noise levels is required by the FAA. However, the noise analysis completed in this Master Plan does not constitute a CFR Part 150 Noise Study.

9.2.1 Major Assumptions

9.2.1.1 Existing/Future Development Scenarios

Two cases were modeled. The base case contours reflect the Airport fleet mix and activity levels, as they exist in the year 2000. The future case contours reflect changes in the noise footprint as influenced by an increase in annual operations and new airfield development. Other significant changes between the existing and future scenarios include the transition to use of FAR Part 36 Stage III aircraft in the corporate jet segment of the fleet mix. Also assumed is an extension of Runway 18-36, realignment of the existing Runway 14-32, construction of a parallel turf runway (Runway 14U-32U), and construction of a paved 10,000 foot parallel runway (Runway 14L-32R) to the east of existing Runway 14-32. The following identifies the runway dimensions, as input into the INM model, for the year 2021.

- Runway 18-36 – 7,000 ft x 150 ft
- Runway 14R-32L – 3,500 ft x 100 ft
- New Parallel Turf Runway 14U-32U – 3,000 ft x 75 ft
- New Parallel Paved Runway 14L-32R – 10,000 ft x 150 ft

The future scenario assumes aviation activity will be accommodated with the full build-out scenario (preferred alternative) of the development plans discussed in Chapter 8.

9.2.1.2 Day/Night Operations

The INM computer program computes the impact of night operations by multiplying their perceived sound intensity level by a factor of 10. The FAA, for the purposes of noise modeling, defines night operations as those that take place between the hours of 10 p.m. and 7 a.m. Most traffic at SEF flies during the daytime hours. However, a percentage of operations can reasonably be assumed to take place at night. The day/night split was calculated from historical usage percentages. Night operations are assumed to remain the same across the planning period for all categories of operations. The percentages are listed, for the existing and future cases, in **Table 9-1**.

Table 9-1. Percentage of Total Night Operations

Aircraft Category	Existing Operations (2000)	Future Operations (2021)
General aviation	3.5	3.5
Helicopter	1.1	1.1
Military	0.0	0.0
Domestic air carrier	0.0	0.0
International air carrier	0.0	0.0

Note: The Integrated Noise Model has no separate capability to model helicopter operations. Standard practice for helicopter operations assumes a noise footprint similar to light twin GA aircraft for piston helicopters and twin turboprops for small turbine driven helicopters.
Source: Sebring Regional Airport and PBS&J, 2002

9.2.2 Runway Utilization

The ultimate and final choice of runway usage is a pilot decision, depending primarily upon prevailing winds, with aircraft generally taking off and landing into the wind. Other considerations include the type or size of aircraft and suitability of the runway for certain types of operations. Small aircraft operations are more sensitive to crosswind conditions than are heavier aircraft. Additionally, runway utilization may vary for itinerant and local traffic, with itinerant traffic using primary runways and local traffic distributed among all available runways. The existing runway use percentages are presented in **Table 9-2.**

Table 9-2. Existing Aircraft Runway Utilizations

Runway	Air Carrier (%)	Military (%)	Itinerant General Aviation (%)	Local General Aviation (%)
18	0	20	20	20
36	0	65	65	65
14	0	10	10	10
32	0	5	5	5

Source: Sebring Regional Airport and PBS&J, 2002

The noise analysis distributes air traffic on the Airport's runways according to these percentages, taking into account the aircraft type and the type of operation, as noted above. However, these percentages will be modified in the future (2021) case as airfield improvements allow air carrier and other large aircraft to utilize the Airport.

9.2.3 Flight Tracks and Air Traffic Distribution

Improvements in the FAA INM Version 6.0c over the earlier versions allows a more precise modeling of flight tracks and the appropriate distribution of the types of activity along these tracks. In the past, typical noise contours assumed all traffic operated on straight-in and straight-out flight procedures.

By contrast, the noise contours resulting from the updated analysis in this report include standard traffic patterns for small and large aircraft, and allocate training and visual flight rules (VFR) traffic to standard VFR pattern approaches, as appropriate. Operations of larger turboprop and small corporate jet aircraft are modeled straight in, as appropriate, for the existing global positioning system (GPS) approach. All departures, with the exception of training traffic on touch-and-go flight tracks, are modeled as straight-out. Such departures may be modified to comply with changes in Airport operations procedures or land-use considerations as deemed necessary.

The resulting noise contours reflect the following flight track and air traffic distribution assumptions:

- Traffic pattern altitudes are Federal Aviation Administration (FAA)/INM standard for SEF.
- Light general aviation (GA) twins and singles perform standard VFR pattern entry approaches, or follow the touch-and-go circuit.
- Turboprops and small corporate jets, as appropriate, perform straight-in approaches/departures.
- Stage lengths (or distance to be traveled) affect aircraft weight and the power required for departure, and therefore, the amount of noise generated for take-off and climb-out maneuvers.
- The helicopter fleet dominates turbine-driven rotorcraft.
- FAA standard approach/departure procedures for all aircraft types, as modeled by INM default parameters, were applied.
- All aircraft types present at the Airport were modeled according to standard INM aircraft contained within INM databases or INM aircraft-equivalents.

9.2.4 Existing Activity Levels and Fleet Mix (2000 Base Case)

9.2.4.1 Day/Night Distribution by Aircraft Category

Modeling of the noise exposure contours requires that known average annual traffic be separated by aircraft category, type of operation, and the time that the operation takes place. **Table 9-3** categorizes operations, based on the existing level of activity as estimated by forecasts of aviation activity in Chapter 5 of this report.

Table 9-3. Existing Aircraft Operations and Fleet Mix

Type of Service	Aircraft Type (INM Aircraft)	2000 Annual Operations
General aviation	Single-piston (GASEPV)	48,009
	Twin-piston (BEC58P)	6,812
	Jet (LEAR 35)	2,319
	Total:	**57,140**
Helicopter	Jet Ranger	1,200
	Bell 222	619
	Apache (military)	500
	Total:	**2,319**
Military	C-130 (C130)	500
	Total:	**500**
Experimental & other	Single engine (GASEPF)	8,791
	Total:	**8,791**

Source: Sebring Regional Airport and PBS&J, 2002

9.2.4.2 Average Daily Operations by Stage Length

The information in **Table 9-3** is then further subdivided to estimate daily operations. The stage length (or distance the aircraft plans to fly on the departure leg) is added, since aircraft weight, including fuel and cargo, affects aircraft power requirements on takeoff. The FAA INM program applies the following codes to stage lengths:

- Stage Length 1: 0 to 500 nautical miles.
- Stage Length 2: 500 to 1,000 nautical miles.
- Stage Length 3: 1,000 to 1,500 nautical miles.
- Stage Length 4: 1,500 to 2,500 nautical miles.
- Stage Length 5: 2,500 to 3,500 nautical miles.
- Stage Length 6: Greater than 3,500 nautical miles.

The above information for SEF's operations is displayed in **Table 9-4**, below.

Table 9-4. Percent Existing Aircraft Departures by Stage Length

	Stage Length (percent aircraft departures)					
Type Aircraft	**1**	**2**	**3**	**4**	**5**	**6**
GA - single piston	100	--	--	--	--	--
GA - twin piston	100	--	--	--	--	--
GA – jet	75	25	--	--	--	--
Military	100	--	--	--	--	--

Source: Sebring Regional Airport and PBS&J, 2002

9.2.4.3 Distribution of Traffic by Flight Tracks

The final step in the analysis involved distributing the derived average daily operations on a series of flight tracks to and from each runway. The flight tracks discussed earlier were used in this process. Since aircraft do not follow single flight tracks in the sky, the INM software utilizes a system of spreading flight operations into corridors to replicate the actual paths of aircraft. Air traffic in the preceding table was distributed along the flight tracks as appropriate for each type of operation and aircraft type in accordance with the assumptions outlined in the preceding subsections.

9.2.5 Existing Noise Contours

The noise contours resulting from the aggregated inputs and assumptions detailed in the preceding sections were processed to reveal the average annual noise exposure levels (65, 70, and 75 DNL). This output is represented in the contours shown in **Figure 9-1**. The 65 DNL contour represents the threshold sound exposure level beyond which certain land uses are not compatible with airport operations.

In the existing (2000) case, the 65 DNL contour does not extend beyond the Airport property line. FAA guidelines define incompatible land uses in sound exposures areas above 65 DNL. These include residential uses, schools, hospitals, theaters or other uses that may attract large concentrations of people. The majority of off-Airport areas near

SEF are designated as vacant, commercial, and/or agricultural land use. Thus, no current incompatible land uses currently exist near the Airport; however, as the Airport continues to grow and aircraft operations increase, incompatible land uses may become evident.

The FAA recommends that airports acquire a property interest, such as easements or outright ownership of such property. Zoning controls can also be effective, but are subject to change by other interests whose goals may not be the same as those of the Airport management.

9.2.6 Future Aircraft Activity Levels and Fleet Mix

Future sound exposure levels at SEF are influenced by several key changes to the existing case. These include the following topics.

9.2.6.1 Operations Growth

Significant growth is projected for aviation activity at SEF over the 20+-year planning period. Operations in 2021 are forecast to be approximately 59 percent over existing (year 2000) activity levels. Much of the growth is projected in jet aircraft activity, as well as significant growth in helicopter and experimental aircraft activity. The increased jet operations can be expected to have the most significant effect on sound exposure levels in areas on and near the Airport.

9.2.6.2 Facilities Improvements

The year 2021 scenario assumes full build-out of the preferred development alternative, which includes a runway extension to Runway 18-36, and the new parallel Runways 14U-32U and 14L-32R, east of the existing Runway 14-32, as described previously. The airfield improvements are programmed in response to projected growth in commercial and cargo aircraft activity that is forecast over the planning period. Additionally, the airfield improvements will allow SEF to increase overall Airport capacity and accommodate the forecast level of demand.

9.2.6.3 Fleet Mix

In order to estimate the future sound exposure levels, the existing (2000) case was modified to reflect the increased operations in each aircraft type as projected by the forecasts of aviation activity. In addition, certain representative aircraft types in the corporate fleet mix were replaced with new-generation aircraft that are compliant with the more stringent FAR Part 36 Stage III noise emission standards. Though there is no timetable for GA/corporate aircraft compliance at the time of this analysis, it is estimated that such requirements will begin in the mid- to long-term phases of the planning period. Additionally, large commercial aircraft, such as the Airbus 330 and Boeing 747, were added with minimal operations (500 annually), as proposed for the new 10,000-foot parallel runway 14L-32R. The 2021 aircraft fleet mix and associated operations are presented in **Table 9-5**.

Figure 9-1. Existing Noise Contours (2000) and Land Use

Table 9-5. Future Aircraft Operations and Fleet Mix (2021)

Type of Service	Aircraft Type (INM Aircraft)	2021 Annual Operations
General aviation	Single-piston (GASEPV)	75,460
	Twin-piston (BEC58P)	9,951
	Jet - stage 3 (GIV)	6,893
	Total:	**92,304**
Helicopter	Jet Ranger	2,521
	Bell 222	799
	Apache (military)	500
	Total:	**3,820**
Military	C-130 (C130)	500
	Total:	**500**
Experimental & other	Single engine (GASEPF)	14,041
	Total:	**14,041**
Air carrier	A330-300	500
	Total:	**500**

Source: Sebring Regional Airport and PBS&J, 2002

9.2.6.4 Average Daily Operations

As in the existing (2000) case, the average annual operations were subdivided to obtain average daily operations by aircraft category, distribution of traffic by runway, and departure stage lengths. The percentage of aircraft departures presented in **Table 9-4** was modified slightly to reflect the increase in aircraft activity and destinations, as well as the addition of large commercial and/or cargo aircraft. As in the existing case, the number of takeoffs (departures) is assumed to equal the number of landings (arrivals). **Table 9-6** presents departure stage lengths by aircraft type.

Table 9-6. Percent Future Aircraft Departures by Stage Length

	Stage Length (percent aircraft departures)					
Type Aircraft	**1**	**2**	**3**	**4**	**5**	**6**
GA - single piston	100	--	--	--	--	--
GA - twin piston	90	10	--	--	--	--
GA – jet	75	25	--	--	--	--
Military	100	--	--	--	--	--
Air carrier/cargo	--	--	75	25	--	--

Source: Sebring Regional Airport and PBS&J, 2002

9.2.7 Future Noise Contours

The INM computer program produced sound exposure level contours by processing the modifications to the existing case scenario, including growth in aircraft activity, changes to the fleet mix, and new runway construction. The resulting future-case contours are illustrated in **Figure 9-2**.

The future noise contours (2021) continue to remain within the proposed airport property line included in the full build out alternative. Most noteworthy of the future noise contours is a decrease in the size of the 70 and 75 DNL contours, and thus, the highest sound exposure levels on and near the airfield. The total decrease in size can be attributed to the reassignment of aircraft to the new and realigned runways that are included in the full build out for 2021. This allows the airfield to accommodate a larger number of aircraft operations over a greater number of runway configurations and land area, thereby reducing the concentration of noise in specific areas and decreasing the overall aggregate noise that is currently experienced on and off the airfield.

Although the 70 and 75 DNL noise contours decrease with the reassignment of aircraft activity as described previously, the lower levels of noise exposure, specifically 60 and 65 DNL contours, increase. Additionally, if GA operations increase beyond what is forecast, or if commercial aviation activity increases more rapidly than projected, all noise contours (60 DNL through 75 DNL) will expand in direct proportion and create a much larger noise footprint than currently shown for the year 2021. Thus, the noise contours at SEF will ultimately increase in size as the number of runways and capability of the existing runways increases in conjunction with increased aircraft activity and size.

9.2.8 Conclusions

Table 9-7 documents an increase in size of the 60 and 65 DNL noise contours and decrease in the size of the 70 and 75 DNL noise contours for the future (2021) case scenario. The increase in the 60 and 65 DNL levels amounts to approximately 22 and 20 percent respectively, while the decrease in the 70 and 75 levels amounts to approximately 75 and 99 percent, respectively, of the area covered by the contours in the existing (2000) case.

Table 9-7. Comparison of Noise Contour Areas

Contour	Existing (2000)	Future (2021)	Expansion/Reduction (+/-)
60 DNL	0.69 sq mi	0.88 sq mi	+ 0.19
65 DNL	0.36 sq mi	0.47 sq mi	+ 0.11
70 DNL	0.32 sq mi	0.13 sq mi	- 0.19
75 DNL	0.02 sq mi	0.00 sq mi	-0.02

Source: PBS&J, 2002

Figure 9-2. Future Noise Contours (2021) and Land Use

As shown in **Figure 9-2**, the future noise contours remain contained within the Airport property line. Additionally, the 70 and 75 DNL contours are reduced significantly under the proposed airfield configuration. The future airfield configuration allows the total aircraft activity to be spread out over a larger area and additional runway use configurations, thus minimizing the concentration of noise in specific areas. However, a "tail" of the 60 DNL contour extends north and south off the departure ends of Runway 18-36. This is likely due to the high level of corporate jet activity that is projected for this runway. Though, the 60 DNL contour is below the threshold set by the FAA for incompatible land use (65 DNL and above) this contour illustrates areas where increased aircraft operations or aircraft activity above that which is forecast in this Master Plan will likely push the 65 DNL contour. Therefore, land use controls such as acquisition and/or easements should be considered in these areas.

Additionally, land use controls and avigation easements may be considered in conjunction with the proposed parallel air carrier/cargo runway (14L-32R). Though forecast operations are low enough to maintain an extremely low sound exposure level through 2021, any increase above that which is projected could rapidly increase the noise contours associated with this runway.

Coordination with federal, state, and local officials should be completed in conjunction with the proposed development at SEF in order to minimize adverse noise impacts and ensure compatible land use within the vicinity of the Airport.

9.3 COMPATIBLE LAND USE

Another objective of this overview and the master planning process is to ensure compatibility of land use between SEF and the surrounding community. During the planning phase, compatibility issues such as development on- and off-Airport, increased aircraft operations, and/or changes in aircraft type operating at SEF could arise.

9.3.1 Highlands County

Land in the vicinity of SEF is owned by Highlands County. Land areas to the northwest, north, and northeast of Airport property are currently zoned for agriculture under Florida Land Use (FLUE) Policy 1.3.E.1. Land areas to the southeast and south are currently designated for regional impact development under FLUE Policy 1.3.E.12. Small land areas to the southwest of Airport property are zoned industrial use under FLUE Policy 1.3.E.10. Airport property is currently zoned for public use under FLUE Policy 1.3.E.5.

9.4 SOCIAL IMPACTS

There are a number of potential social implications to consider when evaluating the environmental impacts of airport development. Impacts must be considered if the following conditions apply:

- Relocation of business and/or residence
- Alteration of surface transportation patterns
- Division or disruption of established communities
- Disruption of orderly planned development
- Creation of an appreciable change in employment.

If any relocation of commercial or residential properties is required, compensation shall be made under the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, as amended by the Surface Transportation and Uniform Relocation Act of 1987 and its implementing regulations (49 CFR Part 24).

If potentially impacted properties cannot be acquired through a land acquisition program prior to the start of each specific project, the guidelines set forth in these regulating documents must be followed to mitigate impacts on the affected residences. Additionally, any areas with concentrated populations of people belonging to a single race, national origin, or low income bracket must be identified and evaluated under the requirements of Environmental Justice to ensure that they are not receiving a disproportionate share of adverse environmental impacts (e.g., high levels of noise exposure) in relation to other areas in the vicinity of the Airport.

The following is a discussion of each of these potential impact categories in relation to the proposed development.

9.4.1 Relocation of Residences or Businesses

The proposed development contained in the preferred alternative has limited potential impact on residential properties in the vicinity of SEF. However, as part of the realignment and expansion of the South Access Road, it is recommended that the Authority acquire several residential properties and vacant lots located to the South of the existing Airport property line. This will allow a sound and light buffer to be constructed between the Airport and Sebring International Raceway and the residential properties located within the Spring Lake development. In addition, based upon the proposed extension of Runway 18-36, there may be limited impacts on businesses located in the Industrial Park as well as to the owners of the Sod Farm to the north of the Airfield.

These locations must be acquired according to the guidelines of the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, as discussed above, to mitigate impacts associated with the proposed development. Additionally, further analysis to identify the extent and total number of properties affected must be completed in the environmental studies associated with each development project.

9.4.2 Alteration of Surface Transportation Patterns

Implementation of the proposed development option will result in various improvements to the Airport's entrance roads as well as relocation and realignment of the SAA railroad spur. At the time of this writing, Airport Road, off of State Road 98, was being redesigned to meet the anticipated demand associated with Airport development. Furthermore, as part of the Sebring International Raceway leasehold expansion to the south, the South Access Road relocation was designated a defined right-of-way in 2002.

Implementation of the proposed development option will result in various improvements to the Airport's entrance roads as well as relocation and realignment of the SAA railroad spur.

However, a variety of other access road improvements were discussed in Chapter 8. Therefore, the following upgrades to the surface roadways around the Airport are recommended:

- Realign the South Access Road to the south, along the current south Airport property line, while expanding the road to a six-lane, bi-directional roadway.

- Expand and extend Haywood Taylor Blvd to connect with the South Access Road.
- Expand and Realign Airport Blvd to a six-lane, bi-directional highway.
- Expand Webster Turn Blvd to a four lane, bi-directional roadway
- Expand and extend Allman Drive to provide access to the Midfield Area from the Northwest.
- Develop an additional roadway access to both the midfield development area and heavy cargo and maintenance area on the east side of the Airport via Arbuckle Creek Road.
- Construct a two lane, bi-directional Commerce Park Access Road.
- Develop Commercial Terminal Roadway to a six-lane, bi-directional roadway (primarily an extension of the South Access Road).
- Develop a two-lane, bi-directional traffic lane to the south via the South Access Road to provide access to the Spring Lake development area.

A variety of surface access development is recommended as part of the preferred development in order to accommodate the anticipated vehicular traffic that will be using these roadways. The new roadway alignments will improve access in and around the Airport and are not anticipated to disrupt any residential or business activity.

In addition to roadway expansion and realignment, the existing CSX rail corridor and spur, located within the Airport Industrial Park, will need to be realigned further north in order to avoid conflicts with the proposed extension to Runway 18-36 and the 10,000 ft commercial runway. Also, the CSX railroad corridor will be expanded to allow for the development of high-speed passenger rail service to the Airport. Development of a proposed rail terminal station is recommended to be located on the existing rail line to the East of the Airport property.

9.4.3 Division or Disruption of Established Communities

The proposed development will require the acquisition of both residential and non-residential property. However, the acquisition of these properties will not result in the division of any established community.

9.4.4 Disruption of Orderly, Planned Development

It is anticipated that the proposed development scenario will not interfere with any local planned developments.

9.4.5 Appreciable Change in Employment

Short-term or temporary increases in employment will be realized as a result of construction of the proposed facilities. With development of both the industrial and commerce parks, as well as the anticipated midfield and east side commercial services development, substantial increases in employment in both Highlands County and the City of Sebring are anticipated.

9.4.6 Environmental Justice

Currently, Airport development and operations do not inflict social impacts on any areas with concentrated populations of people belonging to a single race, national origin, or low-income bracket. Therefore, no specific analysis is necessary at this time. However, plans for future development may warrant further analysis.

9.5 INDUCED SOCIO-ECONOMIC IMPACTS

For major airport development proposals, there is the potential for induced or secondary impacts on surrounding communities. These impacts are usually associated with large-scale development projects, but will not normally be significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts. An airport is determined to have significant socio-economic impact if it affects the following:

- Trends in population movement and growth
- Public service demands
- Business and economic activity

The following is a discussion of each of these potential socioeconomic impacts with regard to the proposed development.

9.5.1 Trends in Population Movement and Growth

Land uses surrounding SEF consist of a combination of residential, agricultural and open space lands. Most new residential construction in the airport area is occurring to the south of the Airport. Due to the fact that the proposed development is anticipated to take place almost entirely on Airport property, and on agricultural property purchased for such development (i.e., Davis Property and the Sod Farm, located to the north of the existing airfield), implementation of the proposed development will not have a significant impact on local trends in population movement and growth.

9.5.2 Public Service Demands

The proposed development at SEF is expected to generate a significant increase in demand for public services such as the provision for public utilities (water, sewer, electric, trash disposal, etc), transportation services (public transportation and road access) and public services (police and fire protection), which would overtax the existing service capabilities.

It is assumed that there will be significant impact to public service demands as a result of implementation of the proposed development, and therefore, coordination with local public works departments to ensure capacity is critical.

9.5.3 Business and Economic Activity

The proposed development is not expected to significantly affect the economic development of Highlands County. However, as the landside and industrial park development continues to grow and attract more users to the Airport, there could be an increase in economic activity for the local economy. There will be a short-term increase in local employment while the facilities are being constructed, and significant long-term increases in local revenues primarily from the midfield and east airside development areas.

Airport development on this scale is likely to occur at SEF within the long-term of this study, and impacts that may be associated with such development will need to be analyzed. An EA, which is required for each major development project, will study the possible impacts of each major proposed development and describe in detail the possible induced socio-economic impacts that may be expected.

Currently, Airport development and operations do not impact these areas of concern. However, plans for future development may warrant further analysis.

9.6 AIR QUALITY

The Environmental Protection Agency (EPA) is responsible for implementation and enforcement of the guidelines established by the Federal Clean Air Act and updated amendments to regulate air quality. The Clean Air Act Amendments of 1977 prohibit federal agencies from providing financial assistance, issuing license, permit or approval, or generally supporting any activity not in conformance to the State Implementation Plan (SIP). The purpose of the SIP is to demonstrate the state's intention to comply with federal air quality standards. To protect public health, standards of air pollutants are quantified by National Ambient Air Quality Standards (AAQS). The SIP applies to those areas of the state of Florida that are considered to be non-attainment areas for pollutants regulated through the primary and secondary AAQS. The SEF area, Highlands County, is considered to be an attainment area; therefore, the SIP does not apply and its provisions are not enforced in the Airport area.

It is the role of the FAA to ensure that all Federal airport actions, such as financial awards and grants, conform to the SIP for controlling air pollution impacts. Since the state of Florida does not have Indirect Source Review (ISR) requirements, compliance with state and federal guidelines is accomplished by reviewing the Airport's forecast for aviation activities.

For GA airports, according to the Airport Environmental Handbook (FAA Order 5050.4A), Chapter 5, if projected operations are less than 180,000 annually and projected passengers are less than 1.3 million annually, then no air quality analysis is necessary. Twenty-year projections for SEF show approximately 114,096 annual operations and approximately 236,540 annual passengers for 2021 (based upon Chapter 5, Forecasts). Therefore, no air quality analysis is required.

As a whole, air quality at SEF and Highlands County is compliant with state and federal legislation. However, as initiated by the Airport Act of 1982, an air quality certification from the State of Florida is required prior to any construction to ensure that state and federal air quality standards will be maintained throughout the course of the project.

9.7 WATER QUALITY

Water quality at SEF is regulated by federal and state legislation. The Federal Water Pollution Control Act, as amended by the Clean Water Act, requires the Sebring Airport Authority (SAA) to establish water control standards, control discharges into surface and subsurface waters, develop waste treatment management plans and practices, and issue permits for discharges and for dredged or filled materials into surface waters. The Fish and Wildlife Service Coordination Act requires consultation with the U.S. Fish and Wildlife Service and appropriate state agencies when any alteration and/or impounding of water resources is expected. Additionally, the Federal National Pollution Discharge Elimination System (NPDES) provides regulations that govern the quality of stormwater discharged into the water resources of the U.S.

Permitting requirements for construction that exceed five acres are specified by NPDES and are administered by the Florida Department of Environmental Protection (FDEP). Coordination with both the FDEP and the appropriate Florida Water Management District is necessary to ensure water quality at SEF meets current standards. However, NPDES permits will be required for the proposed development. Additionally, the Airport drainage system and plans for expansion of this system will be discussed further in the master drainage plan being completed in conjunction with this document.

9.8 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F)

Section 4(f) of the Department of Transportation Act prohibits the Secretary of the Interior from approving any program or project that requires use of any publicly owned land from a public park, recreation area, wildlife/waterfowl refuge, or historic site, unless the following conditions apply. First, the Secretary may approve the program or project if there is no feasible and prudent alternative to the use of such land. Second, the Secretary may approve the program or project if it includes all possible planning to minimize harm resulting from the use. While the Secretary of the Interior serves as the primary enforcer for this legislation, assistance may be received from the U.S. Fish and Wildlife Service and the Army Corps of Engineers.

The proposed development will take place on existing and contiguous agricultural property purchased for this development. Since no known section 4(f) lands have been identified in the immediate vicinity of the Airport, development is not expected to impact any of the above-mentioned lands.

9.9 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

The National Historic Preservation Act of 1966 and the Archeological and Historic Preservation Act of 1974 provide protection against development impacts that would disrupt the historical, architectural, archeological, or cultural qualities of the property. Based upon information received from the Florida Department of State and the County Department of Historical Resources, no sites of historical, archaeological, architectural, or cultural significance are located on or near the Airport property. Therefore, it can be concluded that implementation of the proposed Airport development program will have no impact on any such sites.

9.10 BIOTIC COMMUNITIES

The Fish and Wildlife Coordination Act (48 Statute 401 as amended; 16 USC et seq.) takes into consideration the possible impacts that airport development projects may have on the surrounding habitat and wildlife. Section Two of this Act requires consultation with the U.S. Fish and Wildlife Service, the U.S. Department of the Interior, and the state agencies that regulate wildlife and water resources. In the case of water resources, this would particularly apply to such instances where proposed development by any public or private agency would result in modification of the flow and/or shape or watershed of any stream or body of water. Under this act, the U.S. Fish and Wildlife Service has authority to provide comments and recommendations concerning vegetation and wildlife resources, and the State Department of Fish and Wildlife may provide comments and recommendations if deemed necessary.

The Airport lands, including the lands to be acquired as part of the proposed development, can be characterized as a series of generalized vegetative communities. Many of these communities have been disturbed from their natural state for several decades by Airport or related facilities development, agricultural activity, or other human intervention. The character of vegetative communities is significant because the varying classes of vegetative cover provide habitat for wildlife, some of which are identified as species of note or of special concern by the relevant ecological legislation. Soil types, comparative elevation, and drainage characteristics in turn help determine the wetland or upland characteristics, and thereby, the type of dominant vegetation and subsequent habitat provided.

A site survey that can be used to assess specific vegetative community types on-site, and the possible presence of threatened and endangered species, should be completed during the EA process for each project. It is recommended that a species-specific survey methodology be utilized over the entire Airport property to ascertain the definitive presence, population density, and location of all threatened and endangered species of interest.

As recommended in the previous Master Plan document, an investigation of biotic communities in and around SEF was performed as part of the Stormwater Drainage study. This information is contained in the text as well as in Appendix D. In addition, a Bird Study associated with the State of the Art landfill located within five nautical miles of the Airport is currently being conducted.

9.11 ENDANGERED OR THREATENED SPECIES

The Endangered Species Act of 1973 requires each federal agency to ensure that actions authorized, funded, or carried out by that agency not jeopardize continued existence of any endangered or threatened species, or result in destruction or adverse modification of any endangered or threatened species' habitat. Section seven of the Act states that federal agencies must review their actions, if those actions will affect a listed species or its habitat they must consult with the U.S. Fish and Wildlife Service. The State Department of Fish and Wildlife has the responsibility of identifying, listing, and protecting endangered and/or threatened species.

During the consultation process, the U.S. Fish and Wildlife Service will determine the significance of potential impacts and methods to mitigate and/or eliminate them so that the involved agency's project may be completed. Prior to the commencement of any development activity, it is recommended that a detailed, site-specific, and species-oriented survey be performed in order to establish actual populations of listed species, and thereby, determine what type and degree of mitigation may be required.

According to the U.S. Fish and Wildlife and a review of the Florida Natural Areas Inventory (FNAI), the special concern, threatened, and endangered species, under Federal Law, found to occur in Highlands County are listed in **Table 9-8**. Of the species of animal and plant life listed, those listed in **Table 9-9** have been observed on Airport property.

Additional species may be present on the Airport, but have not been observed. A detailed flora and fauna review will be necessary for each major development project in order to identify the specific types and numbers of threatened and endangered species present on Airport property and any associated mitigation measures necessary. Any possible impact to these species or any other, caused by the implementation of the proposed development projects, should be assessed prior to construction.

9.12 WETLANDS

The two important federal laws regulating wetlands are the River and Harbors Act (RHA) of 1899, and the Clean Water Act (CWA). The focus of the RHA is protection of water navigation, while the focus of the CWA is prevention of water pollution. Additionally, the North American Wetlands Conservation Act of 1989 assigns preservation responsibilities to all federal agencies whose jurisdiction may involve the management or disposal of lands and waters under their control. The U.S. Army Corps of Engineers and EPA have very broad definitions of navigable waterways and may encompass any wetland contiguous with waters of the U.S. Other agencies with non-regulatory responsibilities to create or protect wetlands include the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Soil Conservation Service.

A portion of the Airport site consists of limited spermatic wetlands. The off-site property to the northwest and northeast have wetlands drained primarily by Arbuckle Creek, which serves as a major drainage corridor to Lake Istokopa located approximately two miles to the south.

A Stormwater Master Plan was conducted concurrently with the development of this Master Plan Update (See Appendix D). A limited number of areas on and off the existing airport property have been identified. These areas do not include existing and potential stormwater drainage areas that may also be classified as wetland areas, but will not be impacted by the proposed development. Potential wetland impacts associated with the proposed development are expected to be minimal. But, further review of possible wetland impacts on or in the vicinity of the Airport will be conducted during the EA process for each proposed development project.

9.12.1 Airport Soil Types

Review of the Highlands County Soil Conservation Service Maps for the Airport area indicate that the majority of the existing and future Airport property consists of five soils, all classified as sand, with nearly level, and poor to moderately drained soils formed from marine deposits. These soils are typical along the lower slopes of the upland ridge. Urban land soil classification consists of a mixture of soil types resulting from disturbing and mixing of existing soils during the construction of the original military base.

9.12.2 Permitting and Approvals

It will first be necessary to obtain the required permits and approvals from the various jurisdictional state regulatory agencies and local municipalities before any of the proposed development projects can be implemented.

Environmental permitting (drainage) is primarily conducted under the jurisdiction of the Florida Department of Environmental Regulation. Additionally, permits may also have to be obtained from Southwest Florida Water Management District (SFWMD), Army Corps of Engineers (ACOE), and the EPA, as well as Highlands County.

Impacts to ditches that do provide quality treatment will require a minimal 1 to 1 compensatory mitigation. As an example, a vegetative ditch that was designed, permitted, and constructed to provide stormwater quality treatment prior to discharge off site, will need to be relocated and designed/constructed to provide the same amount of water quality treatment as was provided prior to relocation. If runoff from additional impervious areas is added to the ditch, the ditch must be designed, permitted, and constructed to provide quality treatment for the additional runoffs.

At the time of this writing, the Sebring Airport Authority submitted an application to the South Florida Water Management District for the Sebring Airport Conceptual Stormwater Master Plan, Permit Number 28-00459-P (see Appendix C). The Application was a request for an Environmental Resource Permit to authorize Conceptual Approval of a surface water management system to serve 2,141 acres of commercial/industrial development. The South Florida Water Management District staff recommended approval of the application with conditions.

According to the permit application, runoff from developed and undeveloped lands are primarily routed to dry detention ponds prior to discharging into on-site existing ditches or other wetlands before ultimately discharging into Lake Istokpoga. A system of dry ponds was proposed primarily due to FAA requirements to minimize bird attractions and to provide a system, which would not have a pre-treatment requirement.

Table 9-8. Endangered or Threatened Species

Common Name	Scientific Name	Federal Classification Status
Animal:		
American Alligator	Alligator mississippiensis	Special Concern
Animal:		
Eastern Indigo Snake	Drymarchon corais couperi	Threatened
Blue-tailed Mole Skink	Eumeces egregious lividus	Threatened
Sand Skink	Neoseps reynoldsi	Threatened
Florida Scrub Jay	Aphelocoma coerulescens	Threatened
Crested Caracara	Caracara plancus	Threatened
Bald Eagle	Haliaeetus leucocephalus	Threatened
Plant:		
Florida Bonamia	Banamia grandiflora	Threatened
Pigeon Wing	Clitoria fragrans	Threatened
Scrub Buckwheat	Eriogonum longifolium var gnaphalifolium	Threatened
Paper-like Nailwort	Paronychia chartacea ssp chartacea	Threatened
Animal:		
Florida Grasshopper Sparrow	Ammodramus savannarum floridanus	Endangered
Peregrine Falcon	Falco peregrinus	Endangered
Wood Stork	Mycteria americana	Endangered
Red-cockaded Woodpecker	Picoides borealis	Endangered
Florida Panther	Felis concolor coryi	Endangered
Plant:		
Pygmy Fringe Tree	Chionanthus pygmaeus	Endangered
Short-leaved Rosemary	Conradina brevifolia	Endangered
Avon Park Rabbit Bells	Crotalaria avonensis	Endangered
Garrett’s Scrub Balm	Dicerandra christmanii	Endangered
Scrub Mint	Dicerandra frutescens	Endangered
Wedge-leaved button snakeroot	Eryngium cuneifolium	Endangered
Highlands Scrub Hypericum	Hypericum cumulicola	Endangered
Florida Blazing Star	Liatris ohlingerae	Endangered
Britton’s Beargrass	Nolina brittoniana	Endangered
Lewton’s polygala	Polygala lewtonii	Endangered
Hairy Jointweed	Polygonella basiramia	Endangered
Small’s Jointweed	Polygonella myriophylla	Endangered
Scrub Plum	Prunus geniculata	Endangered
Chaffseed	Schwalbea americana	Endangered
Carter’s warea	Warea carteri	Endangered
Scrub ziziphus	Ziziphus celata	Endangered
Perforate Reindeer Lichen	Cladonia perforata	Endangered

Source: Florida Natural Areas Inventory for Highland County (www.fnai.org)

Table 9.9. Rare and Endangered Plants and Animals Potentially Occurring on Sebring Regional Airport

PLANTS	
Scientific Name	**Common Name**
Andropogon arctatus	Pine-woods bluestem
Aristida rhizomophora	Florida three-awned grass
Coelorachis tuberculosa	Piedmont jointgrass
Drosera intermedia	Spoon-leaved sundew
Hartwrightia floridana	Hartwrightia
Hypericum edisonianum	Edison's ascyrum
Justicia crassifolia	Thick-leaved water-willow
Lilium catesbaei	Southern red lily
Panicum abscissum	Cutthroat grass
Platanthera integra	Yellow fringeless orchid
Zephyranthes simpsonii	Rain lily
REPTILES AND AMPHIBIANS	
Scientific Name	**Common Name**
Rana capito	Gopher frog
Alligator mississippiensis	American alligator
Crotalus adamanteus	Eastern diamondback rattlesnake
Drymarcheon corais couperi	Eastern indigo snake
Gopherus polyphemus	Gopher tortoise
Pituophis melanoleucus mugitus	Florida pine snake
BIRDS	
Scientific Name	**Common Name**
Accipiter cooperii	Cooper's hawk
Ammodramus savannarum floridanus	Florida grasshopper sparrow
Aramus guarauna	Limpkin
Ardea alba	Great egret
Buteo brachyurus	Short-tailed hawk
Caracara plancus	Crested caracara
Egretta caerulea	Little blue heron
E. thula	Snowy egret
E. Tricolor	Tricolored heron
Falco sparverius paulus	Southeastern American kestral
Grus canadensis pratensis	Florida sandhill crane
Ixobrychus exilis	Least bittern
Mycteria americana	Wood stork
Nyctanassa violacea	Yellow-crowned night heron
Nycticorax nycticorax	Black-crowned night heron
Pandion haliaetus	Osprey
Picoides villosus	Hairy woodpecker
Plegadis falcinellus	Glossy ibis
Speotyto cunicularia floridana	Florida burrowing owl

Table 9.9 (Continued). Rare and Endangered Plants and Animals Potentially Occurring on Sebring Regional Airport

MAMMALS	
Scientific Name	**Common Name**
Mustela frenata peninsulae	Florida long-tailed weasel
Neofiber alleni	Round-tailed muskrat
Sciurus niger shermani	Sherman's fox squirrel

Source: Florida Natural Area Inventory List for habitats occurring on Sebring Airport

9.13 FLOODPLAINS

Floodplains typically include low, flat areas adjoining inland and coastal waters, especially those areas subject to at least a one percent chance of flooding during any given year. Floodplains are federally defined in Executive Order 11988, Floodplain Management. The Federal Emergency Management Agency (FEMA) has produced Flood Insurance Rate Maps for communities participating in the National Flood Insurance Program. Detailed maps illustrate the 100- and 500-year base flood elevations. Descriptions of zones include:

- Zone A-areas of 100-year flood
- Zone B-areas between limits of 100- and 500-year flood
- Zone C-areas of minimal flooding

The Flood Insurance Rate Map of Highlands County, Florida indicates that SEF is at an approximate elevation of 63 and is not within any base floodplain. Thus, no areas within the 100- or 500-year floodplain are expected to be impacted by the proposed development.

9.14 COASTAL ZONE MANAGEMENT

The National Oceanic and Atmospheric Administration (NOAA) has developed procedures for determining consistency with approved coastal zone management programs in *14 CFR Part 930*. The sections most relevant to airport actions are subpart D, Consistency for Activities Requiring a Federal License or Permit, and subpart F, Consistency for Federal Assistance to State and Local Governments. The Coastal Zone Management Act requires all federal projects located within applicable coastal zone areas to comply with management guidelines established in the Coastal Zone Management Program.

Highlands County is not considered a coastal county per se, and is not contiguous with any coastal waters that would be subject to high water. Therefore, the County is not expected to fall under the jurisdiction of the coastal management program. However, since the entire state of Florida is considered a coastal zone, a coastal zone consistency determination may be required for specific projects.

9.15 COASTAL BARRIERS

The Coastal Barriers Act of 1982, with few exceptions, prohibits federal financial assistance for development within the Coastal Barrier Resources System (CBRS). The

CBRS consists of undeveloped coastal barriers along the Atlantic and Gulf coasts. Maps identifying the CBRS are available for inspection in the offices of the U.S. Fish and Wildlife Service.

Highlands County is not considered a coastal county per se, and is not contiguous with any coastal waters that would be subject to high water. The county is located near the geographic center of the Florida peninsula and not within any of the coastal barrier areas designated by the CBRS. Therefore, the county is not expected to fall under the jurisdiction of the coastal management program. However, since the entire state of Florida is considered a coastal zone, a coastal zone consistency determination may be required for specific projects.

9.16 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act preserves certain rivers with outstanding natural, cultural, and recreational characteristics. These areas are eligible to be afforded protection under the act if they are free-flowing and possess remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Under the provisions of this act, federal agencies cannot assist by loan, grant, license, or otherwise, the construction of any water resources project that would have direct and adverse impacts on river values. In fact, the act restricts development within 1,000 feet of identified wild and scenic rivers. The U.S. Park Service administers river segments under this legislation.

The Florida Department of Natural Resources is the state agency charged with oversight of the wild and scenic rivers in the state. According to the National List of Inventory Rivers, there are only two rivers in Florida designated as wild and scenic; the Loxahatchchee River located in Palm Beach County and the Wekiva River located in Seminole County.

No rivers for the National Inventory of Wild and Scenic Rivers or Florida Outstanding Waters are within the areas of the proposed development. Therefore, it can be concluded that the proposed development will not impact any rivers designated as wild and scenic.

9.17 PRIME, UNIQUE, AND STATE SIGNIFICANT FARMLAND

The Farmland Protection Policy Act (FPPA) authorizes the Department of Agriculture (USDA) to develop criteria for identifying the effects of federal programs on the conversion of farmland to nonagricultural uses. The guidelines apply to federal activities or responsibilities that involve undertaking, financing, or assisting construction or improvement projects, or acquiring, managing, or disposing of federal lands and facilities.

Prime farmland is defined as land best suited for producing food, feed, forage, fiber, and oilseed crops. This land has the quality, growing season, and moisture supply necessary to produce sustained crop yields with minimal energy and economic input. If farmland is to be converted to a non-agricultural use by a federally funded project, consultation with the U.S. Department of Agriculture Soil Conservation Service is necessary to determine whether the farmland is classified as “prime” or “unique”. If it is, the FPPA requires rating the farmland conversion impacts based upon length of time farmed, amounts of farmland remaining in that area, level of local farm support services, and the level of urban land in the area. In addition, state or local significant farmland is, “other than prime or unique farmland, that is of statewide or local importance for the production of food, feed, fiber, forage, or oilseed crops, as determined by the appropriate state or local government agency.” (24)

All proposed development identified will be contained within the existing and future Airport property. As a result, no prime or unique farmland is to be converted to other uses either directly or indirectly through induced development.

9.18 ENERGY SUPPLY AND NATURAL RESOURCES

Energy supply and natural resources may be affected by increased development at SEF. Changes in demand for electrical power will occur due to increased electrical requirements associated with airfield lighting, navigational equipment, terminal development, and tenant facilities and business operations. Proper planning with the appropriate city and county officials will limit and/or eliminate any possible negative impacts associated with increased energy demands.

With concern to the potential impact upon natural resources in and around the Airport, it appears that the proposed development will affect no natural resources of a unique nature or in short supply. However, as part of the development process, an EA will be performed for each major project; and therefore, impact upon natural resources will be considered and evaluated.

9.19 LIGHT EMISSIONS

Standards do not exist for light emission impacts on residential areas. However, measures can and should be taken to mitigate the effect of airport light emissions upon incompatible areas within the vicinity of the Airport. Buffer zones consisting of vegetation or earthen berms should be constructed to shield residential areas. Likewise, non-airport light emissions must be prevented from creating misleading and/or dangerous situations for aircraft operating at or in the immediate vicinity of SEF. This can be accomplished through the use of zoning and land-use planning as well as local ordinances to limit incompatible development in and around the Airport.

The proposed development will result in lighting improvements associated with both airside and landside development projects. Therefore, effective measures should be initiated as part of the development plan to limit the potential impacts of the Airport on residential property to the south and the effects of potential residential development on the Airport.

9.20 SOLID WASTE IMPACT

Laws that control solid waste management include the Resource Conservation and Recovery Act and FAA Order 5200.5A. The Resource Conservation and Recovery Act provides for safe disposal of discarded materials, regulates hazardous waste, promotes recycling, and establishes criteria for sanitary landfills. FAA Order 5200.5A provides guidance concerning establishment, elimination or monitoring of landfills, open dumps, or waste disposal facilities on or near airports. Under this order, waste disposal sites within 10,000 feet of any runway end used by turbine powered aircraft, are considered incompatible with airport operations. However, the State Department of Environmental Protection has primary responsibility for regulating landfills and overseeing programs associated with solid waste.

An increase in solid waste is expected during the periods of construction and upon completion of the proposed commerce park, commercial terminal, cargo, maintenance, and various GA facilities. These facilities will likely increase the production of solid waste and solid waste disposal at the Airport. However, coordination with state and local officials should be completed as part of the development plan in order to ensure that adequate capacity for the increase in solid waste disposal exists and is readily available to support the new facilities.

Disposal of solid waste from the SEF area and fixed base operator (FBO) facilities is currently handled on a contractual basis and picked up biweekly. There are two landfill sites in Highlands County, owned and operated by the County Public Works department. A review, including a bird study, was conducted in order to determine if there is or will be potential bird hazards along the approach and departure path of runways as a result of the landfill sites.

Results of this research, and consultation with local officials, indicate that bird hazards associated with the landfills are minimal. The DeSoto City Landfill is located approximately three to four nautical miles southwest of the Airport property. The Highlands County Solid Wastewater Management facility is located less than 1.5 nautical miles to the northeast of the existing terminal building. Therefore, due to its proximity to the Airfield, a bird hazard potential study was conducted to determine if there is a significant wildlife hazard to the Airport's operations (i.e., aircraft approaches and departures).

Based upon the research conducted, it can be concluded that implementation of the proposed development will not significantly alter the type, quantity, collection techniques, or disposal methods of solid waste at the Airport. Furthermore, bird hazards associated with the location and type of airfield developments is minimal. A wildlife study is being done concurrently with the Airport Master Plan Update. As such, according to the Bird Study, since the Highland County Solid Waste Management Center is designated as a "clean facility", it does not appear to attract significant flocks of birds.

9.21 HAZARDOUS WASTE IMPACTS

The potential to create or require the handling of hazardous waste must be evaluated when determining the impacts associated with Airport development. Though none of the proposed development projects contained in this document are anticipated to create or require the handling of hazardous materials, certain existing areas on the Airport may have potential hazardous waste impacts on future development.

Although none of the proposed development projects contained in this document are anticipated to create or require the handling of hazardous materials, certain areas on the Airport may have potential hazardous waste impacts in the future.

Since many of the buildings located on the Airport property were constructed more than 30 years ago, asbestos may exist in the form of floor tile, insulation, or pipe. Prior to the demolition of any structures, a certified asbestos consultant/contractor should be retained to survey the structures and inventory any findings of asbestos materials. Removal and disposal activities should be conducted according to the following federal regulations:

- 40 CFR 763.120: EPA Worker Protection Rule
- 29 CFR 1926.58: OSHA Asbestos Standard for the Construction Industry
- 29 CFR 1910.1001: OSHA Asbestos Standard for General Industry

If any dumpsites are discovered or rediscovered during demolition or construction of facilities, a certified consultant/contractor should be retained to assess the sites for hazardous materials. Any hazardous materials found should be disposed of in accordance with applicable federal and state regulations.

9.22 CONSTRUCTION IMPACTS

During periods of development, extensive construction activities may occur. Construction activities may include, but are not limited to, earthmoving activities, delivery of equipment and materials, and removal of debris associated with runways and taxiways. The potential for impacts to off-Airport communities in the vicinity of the Airport is greatest during the initial stages of development. These impacts may consist of increased traffic on local roads, noise, mud, dust, and other effects associated with the activity of heavy construction vehicles. All possible impacts related to development projects are minor and temporary. Nevertheless, the SAA will exercise best practices to contain and minimize the impact of construction during building phases of projects proposed in the development plan.

During ground clearing operations and runway, taxiway, apron, and terminal construction, potential temporary impacts such as dust, noise, and soil erosion shall be limited through the engineering specification and contractor implementation of temporary environmental controls.

Specific reference shall be made, within the engineering plans and specifications prepared for the projects, that will incorporate the items contained in FAA AC 150/5370-10, Item P-156, *Temporary Air and Water Pollution, Soil Erosion and Siltation Control*. Temporary pollution controls should include but are not limited to such items as:

- Limiting work activities to normal business hours when possible
- No open burning
- Wetting of active equipment work areas
- Covering of all trucks hauling loose materials
- Seeding of inactive work areas with fast growing grasses
- Placement of hay bales and silt fences in sloped work areas
- Disposal of construction debris in properly licensed landfills

All environmental construction controls required by the FAA, the Florida Department of Environmental Regulation, the South Florida Water Management District (SWFMD), the ACOE, Highlands County, and the Florida Department of Transportation shall be incorporated by reference in the construction plans, specifications, and permits that will be obtained for the project.

By implementing the above-listed pollution controls during the construction of the proposed development, construction impacts should be limited.

9.23 CUMULATIVE IMPACTS

National Environmental Policy Act (NEPA) requires the evaluation of the environmental consequences, including secondary and cumulative impacts, of all federal actions. Secondary impacts are defined as those that are “caused by an action and are later in time or farther removed in distance but are reasonably foreseeable” (40 CFR 1508.8). Cumulative impacts are broadly defined as those that “result from the incremental impacts of an action when added to other past and reasonably foreseeable future actions” (40 CFR 1508.7).

The overall and total development plan included in the preferred alternative, as presented in the preceding pages of this document, will likely result in some level of future secondary and cumulative impacts as Airport capacity, operations, and overall activity increases. Such impacts are likely to include, but may not be limited to, areas such as local transportation routes and traffic volumes, land use and community growth, industrial and commercial business activity, and overall demand for public services. Additionally, disruptions to area residences and businesses from periodic construction associated with Airport development is anticipated. Coordination with state and local officials will be necessary during each project to ensure any future secondary and/or cumulative impacts are identified and adequate public facilities and services are planned to meet the long-term needs of the Airport and local community.

9.24 SUMMARY

This chapter serves as a cursory review of the potential for environmental impacts that may be associated with the proposed Airport development. Further environmental studies, such as an EA or Environmental Impact Statement (EIS), will be necessary for some of the proposed development discussed within this Master Plan, as required by NEPA. Project specific impacts and any necessary mitigation measures will be determined and identified in these environmental documents.

AIRPORT LAYOUT PLAN SET

Sebring Regional Airport

10

10.1 GENERAL

Airport plan sets consist of several drawings which graphically depict the locations of existing and planned airfield and landside facilities in addition to pertinent ancillary information such as property lines, set-back lines, and approach slopes with obstructions denoted. The airport plan set for Sebring Regional Airport (SEF) presents, in graphic format, the proposed development of the Airport to meet forecast aviation demand and the overall goals of SEF and the Sebring Airport Authority (SAA). The complete set of plans include the following:

- Cover Sheet
- Existing Facilities Drawing
- Airport Layout Plan (ALP)
- Terminal Area Plan
- Approach and Runway Protection Zone Plans
- Part 77 Airspace Surfaces
- Existing and Future Land Use and Noise Contours
- Exhibit ‘A’ Property Map

This chapter will present the drawings with a brief discussion of each. The ALP set is provided in conjunction with this report document and has been prepared according to the design requirements set forth in this document, the Federal Aviation Administration (FAA) Advisory Circulars (FAA AC 150/5300-13 Change 7, *Airport Design,* Appendix X and FAA AC 150/5070-6A, *Airport Master Plans*, as well as FAR Part 77, *Obstructions to Air Navigation*), and Florida Department of Transportation (FDOT) *Guidebook for Airport Master Planning*.

10.2 COVER SHEET

The cover sheet (**Figure 10-1**) serves as an introduction to the ALP set. It includes the name of the Airport, the FDOT Working Project Identification (WPI) number, location map, vicinity map, and an index of drawings.

10.3 AIRPORT LAYOUT PLAN

Two of the main components of the Airport Master Plan Set are the existing and future Airport Layout Plans (ALPs). The future ALP is the primary planning document for the Airport and is a graphic representation, to scale, of existing and proposed Airport facilities, their location, dimensional and clearance data, and the overall infrastructure of the Airport, including runways, taxiways, and aprons. It also includes information on the Airport’s location, existing and future runways, meteorological conditions, and other pertinent data. FAA and FDOT officials refer to the ALP when considering grant applications for development assistance and off-airport development within the vicinity of the Airport.

10.3.1 Existing Facilities

Included in the SEF plan set is a copy of the existing airport layout drawing (ALP) shown in **Figure 10-2**, which is a graphic representation, to scale, of the Airport in its current configuration (year 2000). The drawing shows all existing Airport facilities, their location, pertinent dimensions and clearance information, and the runway and taxiway infrastructure.

10.3.2 Future Facilities

The future ALP drawing for SEF, shown in **Figure 10-3**, is a graphic representation of the recommended infrastructure development as discussed in Chapter 8 and **Table 10-1**, Staged Development Plans, through the year ending 2021. The ALP was developed in accordance with the design criteria and guidelines contained in FAA Advisory Circular 150/5300-13, Change 7, *Airport Design*, and the *FDOT Guidebook for Airport Master Plans*. The information and analysis presented in Chapter 7, "Facility Design Criteria," of the FDOT guidebook discusses in detail the design requirements that pertain to SEF and have been incorporated into the ALP. The ALP highlights several recommended areas for future development: the Commerce Park, Northwest GA, Midfield, ground access and GA and commercial terminal areas.

FAA and FDOT officials refer to the ALP when considering grant applications for development assistance and off-airport development within the vicinity of the Airport.

Commerce Park Development

The proposed commerce park development, as shown on the ALP sheet (**Figure 10-3**) is located to the south of the intersection between Runway 18-36 and Runway 14R-32L. This design includes roadways, proposed lots, aircraft apron, and other services necessary to attract aviation and non-aviation tenants that are compatible with current Airport development.

Northwest GA Development

The future ALP identifies both the existing and proposed aviation facilities on the west side of the airfield. Development to the north and west of Runway 18-36 on the former threshold of Runway 14 includes proposed structures, roadway access, and apron. Also included is the existing and proposed GA storage and other structures located to the north of the existing Sebring Airside Center.

Midfield Development

The midfield development area, located between Runway 18-36 and proposed runway 14L-32R, consists of several smaller contiguous parcels which are recommended for several potential GA uses, such as aircraft storage, maintenance, cargo, etc. As part of this development, a graphical representation of roadways, utility development, signage, and other services necessary to attract both aviation and non-aviation development is shown in the future ALP sheet, **Figure 10-3**.

Figure 10-1. Cover Sheet

Figure 10-2. Existing Facilities Drawing

Figure 10-3. Airport Layout Plan

Table 10-1. Staged Development Plans

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Land Acquisition	
Acquire 2,665 acres for associated development	Acquire 220 acres for associated development	
	Planning	
Environmental assessment for Runway 18-36 extension	Design GPS/non-precision approach to Runway 14R-32L	
Land Acquisition for Runway 18	Design GPS/non-precision approach to Runway 14U-32U	
Perform ATCT site selection study	Obtain Part 139, Airport certification	
Perform drainage study	Environmental Assessment for Runway 14L-32R	
Design GPS/non-precision approach to Runway 18	Design Runway 14L-32R	
Design terminal expansion	Design commercial terminal facilities	
	Airside	
Extend and widen Runway 18-36 to 7,000’ x 150’	Design/construct Taxiway B (parallel to 18-36 on east side) and associated stub taxiways	Expand Runway 14L-32R to 10,000 ft
Pavement rehabilitation of Runway 18-36 (150,000 lb DG and 300,000 lb DTW)	Shorten, rehabilitate, and lengthen Runway 14-32 to 3,500 x 100 ft	Design and build apron area on the east side of Runway 14L-32R
Mark (precision) and light (HIRL) Runway 18-36	Install pilot controlled MIRL on Runway 14-32	Develop cargo apron
Close Taxiways B-3 and B-4	Install pilot controlled MIRL on Runway 14U-32U	Design/construct cargo buildings
Design and grade Runway 14U-32U	Install REILs and PAPI-4 on Runway 14R-32L	Design/construct heavy maintenance facilities
		Design/construct Special Use Apron associated primarily with military operations

Table 10-1 (Continued). Staged Development Plans

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airside (Con't)	
Extend, widen, and light Taxiway A	Install REILs and PAPI-4 on Runway 14U-32U	Design/construct access taxiways
Widen, light, and mark Taxiways A-1, A-2, A-3, and A-4 to 74'	Install runway and taxiway signage	Expand utilities
Install two additional stub taxiways to from Taxiway A to Runway 18-36	Design/construct connector taxiways between Runways 14-32 and 14U-32U	Install runway and taxiway signage
Install MALSR and Localizer on Runway 36	Design/construct turnoff to Taxiway B from Runway 14-32	
Mark displaced threshold on Runway 36	Construct connector taxiways between Runways 36, 32, and 32U, as well as Taxiway B	
Design and install utility lines to east side of airfield	Design/construct 8,500' x 150' commercial runway	
Install runway hold signs, incursion lighting, and stop bars on Runway 18-36	Design/construct 8,500' x 75' parallel east and west taxiways with six stub taxiways each	
	Mark (precision) and light (HIRL) commercial runway	
	Install localizer, MALSR, and PAPI-4 on Runway 14L-32R	
	Mark and light parallel taxiways	
	Design/construct 5,300' x 75' midfield taxiway	
	Mark and light midfield taxiway	Install runway hold signs, incursion lighting, and stop bars on Runway 14L-32R

Table 10-1 (Continued). Staged Development Plans

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	GA Terminal Area	
Expand, rehabilitate, and widen Haywood Taylor Blvd	Expand air service terminal building	
Expand public parking area	Realign and expand terminal access road	West Apron expansion
Relocate Aero-Med II facilities	Construct rental car parking	Expand public parking
Relocate fuel farm	Expand employee parking	
Design/construct two conventional hangars	Expand public parking area	
	Commercial Terminal Area	
Design commercial terminal facilities	Construct commercial terminal building (~122,000 sq ft)	Expand public parking
Install utilities	Construct terminal access road, including curbside areas	Expand rental car parking
	Construct employee parking area	
	Construct public parking area	
	Construct rental car parking area	
	Design/construct commercial apron area	
	Construct TSA building requirements	

Table 10-1 (Continued). Staged Development Plans

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Midfield GA	
	Design/construct roadway from Arbuckle Creek Road to Airport	Construct heavy maintenance facilities
	Design/construct heavy commercial apron areas	Construct heavy cargo facilities
	Construct fuel farm (~ 70 Jet A tanks)	Designate military fueling area
		Design/construct 2 conventional hangars
		Design/construct 3 corporate hangars
		Design/construct 2 corporate hangars
		Expand fuel farm (~ 40 Jet A tanks or equivalent))
	Northwest GA	
Construct access taxiways	T-hangar construction	
Rehabilitate, mark, and expand West Apron	Close Hairpin Drive	
Design/construct one conventional hangar		
Design/construct three corporate hangars		
Design/construct one, 14-unit T-hangar facility		
Construct fuel farm with AvGas tanks		
Install self-service Octane 88 facility		

Table 10-1 (Continued). Staged Development Plans

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	South GA	
Design/construct public emergency facility (i.e., ARFF and MedEvac units)	Design/construct one conventional hangar	Design/construct four additional corporate hangars
Expand, rehabilitate, relocate and extend south Airport access road	Design/construct four corporate hangars	Install additional fuel farm facility
Install roadway signage	Apron rehabilitation on the west side	
Construct two access roads to Spring Lake community	Fuel farm development on west side of Runway 18-36 (1 AvGas and 4 Jet A)	
Purchase one rapid response vehicles for ARFF station	Construct two, eight unit T-hangars	
Construct two, eight unit T-hangars		
	Industrial Park	
Relocate SAA rail spur	Expand and realign Airport Road	Expand industrial park
Fill pond at the existing end for Runway 18	Install additional signage	
Expand and rehabilitate Webster Turn Drive	Install additional utilities	
Expand and Extend Ulmann Drive	Expand industrial park	
Expand Boeing Avenue		
Close Hairpin Turn Drive		
	Commerce Park	
Phase I Commerce Park Development	Phase II Commerce Park Development	
Install associated signage	Fuel storage expansion	
Install and mark apron	Sell old and obtain new fuel trucks	
Design/construct three corporate hangars	Design/construct three corporate hangars	
Install fuel farm facilities		

Table 10-1 (Continued). Staged Development Plans

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airfield	
Install security/perimeter fencing	Relocate/construct new ATCT	Expand north and south access roads
Install security perimeter road	Purchase three rapid response vehicles	Design/construct high-speed rail station
	Design/construct second ARFF facility	Install remainder of security/perimeter fencing
	Develop north terminal access road	Install remainder of perimeter road
	Install security fencing around SIDA	

Source: PBS&J, 2002
Note: ATCT – air traffic control tower
GPS – global positioning system
DG – dual gear
DTW – dual tandem wheel
HIRL – high intensity runway lights
MIRL – medium intensity runway lights
REILs – runway end identification lights
PAPI-4 – 4-box precision approach path indicator
MALSR – medium intensity approach lighting system with runway alignment indicator lights
MedEvac – medical evacuation operation
TSA – taxiway safety area
ARFF – aircraft rescue and fire fighting
SIDA – security information display area

Ground Access

Ground access and resulting land uses are depicted on the ALP, **Figure 10-3**. The ALP sheet identifies the proposed realignment and expansion of the South Access Road to the south to ensure placement outside the runway safety area (RSA) for the newly extended runways 36 and 32L. The ALP also depicts the expansion and extension of Airport Blvd, Haywood Taylor Blvd, and Webster Turn Blvd. Tentative development of a northern access road via Arbuckle Creek Road to the north of the acquired Airport property is also shown.

In addition to surface roads, expansion and realignment of the existing SAA railroad spur and CSX rail corridor is recommended in order to avoid conflicts with Runway 14L-32R and allow for development of high-speed passenger rail service at the Airport.

Terminal Area Plans

Included on the future ALP sheet, **Figure 10-3**, is the existing and recommended terminal area development for both the Airside Service Center and the Commercial Terminal Facilities. Terminal infrastructure development at SEF will occur along both the existing Sebring Airside Center as well as the proposed commercial terminal area adjacent to Runway 14L-32R. The Sebring Airside Center expansion and associated development is shown in more detail on the General Aviation Terminal Area Plan,

Figure 10-4, while the proposed commercial development is shown in **Figure 10-5**, Commercial Terminal Area Plan. Both terminal area plans highlight the respective terminal facilities, including the terminal building, aircraft parking apron, automobile parking, rental car and ready/return parking as well as any other facilities located in and around the existing or proposed terminal areas.

The General Aviation Terminal Area Plan zooms in on the existing GA Sebring Airside Center, which is located to the west of Runway 18-36. This plan includes the recommended expansion of the Sebring Airside Center to the south in order to accommodate increased corporate and GA traffic growth, as well as expansion of terminal parking, terminal curb, roadway access, and realignment of Terminal Access Road.

Commercial facilities, shown in **Figure 10-5**, Commercial Terminal Area Plan, are located within the midfield development area and include the proposed commercial terminal building, aircraft and automobile parking areas, as well as roadway access alignment and terminal curb design.

Figure 10-4. General Aviation Terminal Area Plan

Figure 10-5. Commercial Terminal Area Plan

10.4 APPROACH AND RUNWAY PROTECTION ZONE PLANS

The Approach and Runway Protection Zone drawings show both plan and profile views for each runway protection zone (RPZ) and associated approaches as shown on the ALP. The purpose of these plans is to locate and document existing objects, which represent obstructions to navigable airspace, as well as the existing and proposed approach slopes for each runway. Additionally, the drawing shows the proposed runway extensions and the ground profile along the extended centerline beyond each runway end. The approach and runway protection zone plans for all runways are shown in **Figures 10-6 and 10-7**.

10.5 PART 77 AIRSPACE SURFACES

Federal Aviation Regulation (FAR) Part 77, "Objects Affecting Navigable Airspace," prescribes airspace standards, which establish criteria for evaluating navigable airspace. Airport imaginary surfaces are established relative to the Airport and runways. The size of each imaginary surface is based on the runway category with respect to the existing and proposed visual, non-precision, or precision approaches for that runway. The slope and dimensions of the respective approach surfaces are determined by the most demanding, existing or proposed, approach for each runway. The imaginary surfaces definitions include:

- **Primary Surface** – A rectangular area symmetrically located about the runway centerline and extending a distance of 200 feet beyond each runway threshold. Its elevation is the same as that of the runway.
- **Horizontal Surface** – An oval shaped, flat area situated 150 feet above the published Airport elevation. Using a 10,000-foot arc, which is centered 200 feet beyond each runway end, then connecting the arcs with a line tangent to those arcs determines its dimensions. The horizontal surface elevation for SEF is 213 feet above mean sea level (AMSL).
- **Conical Surface** – A sloping area whose inner perimeter conforms to the shape of the horizontal surface. It extends outward for a distance of 4,000 feet measured horizontally, and slopes upward at 20:1. SEF's conical surface extends upward to an elevation of 413 feet AMSL.
- **Transitional Surface** – There are three different transitional surfaces. The first is off the sides of the primary surface, the second is off the sides of the approach surface, and the last is outside the conical surface and pertains to precision runways only. All transitional surfaces have slopes of 7:1 that are measured perpendicular to the runway centerline.
- **Approach Surface** – This surface begins at the ends of the primary surface and slopes upward at a predetermined ratio while at the same time flaring out horizontally. The width and elevation of the inner ends conform to that of the primary surface, while the slope, length, and outer width are determined by the runway service category and existing or proposed instrument approach procedures.

Existing objects, which penetrate above Part 77 surfaces, are tabulated on the drawings. The table contains data on the object elevation, elevation of the imaginary surface, and any action necessary to mitigate the penetration. **Figures 10-8 and 10-9,** show all Part 77 area surfaces for the Airport.

Figure 10-6. Runway 14L/32R and 14R/32L Inner Portion of the Approach Surface Drawing

Figure 10-7. Runway 18/36 and 14U/32U Inner Portion of the Approach Surface Drawing

Figure 10-8. FAR Part 77 Airport Airspace Drawing (Approach Vicinity View)

Figure 10-9. FAR Part 77 Airport Airspace Drawing (Approach Surface Views)

10.6 LAND USE AND NOISE CONTOURS

Figure 10-10, Existing Land Use and Noise Contours Plan (2001), and **Figure 10-11**, Future Land Use and Noise Contours (2021), depict existing land use and noise contours for the years 2001 and 2021, respectively. Both the existing and future land use drawings illustrate land use both on and off Airport property. On both sheets, noise contours for 2001 and 2021, as shown in Chapter 9, Environmental Overview, have been superimposed onto each respective land use drawing in order to provide local authorities guidance and to help ensure aviation compatible zoning is maintained in the future.

10.7 AIRPORT PROPERTY MAP

The Airport Property Map presents the Airport property line and a history of Airport land purchases and acquisitions. Bearings and approximate distances from cardinal points define the Airport property line. The types of property acquisitions or transactions are presented in tables on the Exhibit “A” Data Sheet and include the date of each property acquisition and the federal project number where applicable. Aviation easements, to be acquired in perpetuity, are also indicated. The Exhibit “A” Property Map and Data Sheet for SEF are shown in **Figure 10-12**.

Figure 10-10. Existing Land Use and Noise Contours (2001)

Figure 10-11. Future Land Use and Noise Contours (2021)

Figure 10-12. Exhibit 'A' Property Map

COST ESTIMATES, CONSTRUCTION PHASING, AND CAPITAL IMPROVEMENT PROGRAM

11

Sebring Regional Airport

The preceding chapters, including the Facility Requirements and Development Plans, identified the types of projects needed for Sebring Regional Airport (SEF) to meet the anticipated demand associated with commercial service development. As discussed in Chapter 8, *Development Plans*, Alternative III was selected as the preferred development option due to its ability to meet the existing demands and goals of the Sebring Airport Authority (SAA). Therefore, the projects included in this alternative will be considered as part of the Airport capital improvement program (CIP) for the 20-year (2001-2021) planning period.

The projects included in this alternative will be considered as part of the Airport capital improvement program (CIP) for the 20-year (2001-2021) planning period.

The CIP includes projects, which represent the Airport's needs, such as continuing maintenance, improvement of facilities to comply with federal and state aviation regulations, and additional facilities to keep pace with increasing demand for aviation services. Additionally, the proposed facilities reflect changes in the economic conditions as well as reflect SAA's primary goal of having the Airport be an economic generator for future development in Highlands County. As part of the development process, project phasing, as discussed in previous chapters, is included in the CIP in order to manage the costs associated with these development projects.

11.1 CONSTRUCTION PHASING

This section applies a general schedule to the proposed Airport development projects. The schedule represents a prioritized Airport development plan to meet federal and state regulatory issues, increases in aviation demand, and/or economic development concerns. Projects that appear in the first phase are of greatest importance and have the least tolerance for delay. Additionally, some projects included in an early phase may be a prerequisite for other planned improvements in the long-term phase. The 20+-year planning period is divided into three phases as follows:

- Phase I: Short-Term (0 to 5 years), 2001 - 2006
- Phase II: Mid-Term (6 to 10 years), 2007-2011
- Phase III: Long-Term (11 to 20 years), 2012-2021

Therefore, the phasing of individual projects should undergo periodic review to determine the need for changes based upon variations in forecast demand, available funding, economic conditions, and/or other factors that influence airport development. It should be noted that other projects not foreseen in this report may be identified in the future and would likely necessitate changes in the phasing of projects and overall CIP. Phasing for the projects included in the preferred development option as well as projects already denoted in the SEF CIP for the years 2002-2008 are shown in **Table 11-1**.

Table 11-1. Twenty-Plus-Year Construction Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	JACIP (2002-2008)	
Rehab Runway 18-36	Wastewater design and construction of Southside Unit III development	
Construct, mark, and light Parallel Taxiway – Phase III	Construction Runway 14L-32R, associated taxiways and aprons	
Construct, mark, and light Parallel Taxiway, Phase IV	Rail extension to land acquisition	
Design, permit, and construct corporate aviation area	Phase I construction R/W 14L-32R and associated taxiways and aprons	
Design/construct new fuel farm	Phase III land acquisition for land use compatibility	
Security enhancements	Water improvements, Southside Unit III development	
Environmental assessment 18-36 extension	Runway 14L-32R, associated taxiways and aprons- Phase II	
Wireless broadband infrastructure project	Water and wastewater improvements, design, future aviation development northeast	
GIS project	Design and construct taxiway	
Construct/expand terminal facilities		
Access road to commercial aviation development		
Design/construct phase II of the master drainage plan		
Land acquisition, phase I, 1,000 acres		
Design/construction of Runway 18-36 extension		
Design/construct new ARFF building		
Security fencing - plan, design and construct		
Water and wastewater improvements, design, and construction of southeast development area		
T- and commercial hangars (20 T-hangars)		
Environmental assessment for Runway 14L-32R (formerly 9-27)		
Airfield drainage		

Table 11-1 (Continued). Twenty-Plus-Year Construction Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	JACIP (2002-2008) (Con't)	
Land acquisition/mapping/site assessments		
Master drainage plan Phase III (design and construct)		
Commercial hangar		
Airport loop road (2.5 miles)		
Commercial aviation facility		
Building 60 roof repairs		
Airport zoning project		
Phase II land acquisition for land use compatibility		
	Land Acquisition	
Acquire 2,000 acres for associated development	Acquire 885 acres for associated development	
	Planning	
Environmental assessment for Runway 18-36 extension	Design GPS/non-precision approach to Runway 14R-32L	
Perform ATCT site selection study	Design GPS/non-precision approach to Runway 14U-32U	
Perform drainage study	Obtain Part 139, Airport Certification	
Design GPS/non-precision approach to Runway 18	Environmental Assessment for Runway 14L-32R	
Design terminal expansion	Design Runway 14L-32R	
	Design Commercial Terminal Facilities	
	Airside	
Extend and widen Runway 18-36 to 7,000' x 150'	Design/construct Taxiway B (parallel to 18-36 on east side) and associated stub taxiways	Expand Runway 14L-32R to 10,000 ft
Pavement rehabilitation of Runway 18-36 (150,000 lb DG and 300,000 lb DTW)	Shorten, rehabilitate, and lengthen Runway 14-32 to 3,500 x 100 ft	Design and build apron area on the east side of Runway 14L-32R

Table 11-1 (Continued). Twenty-Plus-Year Construction Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airside (Con't)	
Mark (precision) and light (HIRL) Runway 18-36	Install pilot controlled MIRL on Runway 14-32	Develop cargo apron
Close Taxiways B-3 and B-4	Install pilot controlled MIRL on Runway 14U-32U	Design/construct cargo buildings
Design and grade Runway 14U-32U	Install REILs and PAPI-4 on Runway 14R-32L	Design/construct heavy maintenance facilities
Extend, widen, and light Taxiway A	Install REILs and PAPI-4 on Runway 14U-32U	Design/construct access taxiways
Widen, light, and mark Taxiways A-1, A-2, A-3 and A-4 to 74'	Install runway and taxiway signage	Expand utilities to East Apron Area
Install two additional stub taxiways to from Taxiway A to Runway 18-36	Design/construct connector taxiways between Runways 14-32 and 14U-32U	Install runway and taxiway signage
Install MALSR and Localizer on Runway 36	Design/construct turnoff to Taxiway B from Runway 14-32	Design/construct Maintenance Apron
Mark displaced threshold on Runway 36	Construct connector taxiways between Runways 36, 32, and 32U, as well as Taxiway B	
Acquire land for commercial runway	Design/construct 8,500' x 150' commercial runway	
Design and install utility lines to east side of airfield	Design/construct 8,500' x 75' parallel east and west taxiways with six stub taxiways each	
Install runway hold signs, incursion lighting, and stop bars on Runway 18-36	Mark (precision) and light (HIRL) commercial runway	
Designate and Light portion of Apron as Emergency Staging Area	Install localizer, MALSR, and PAPI-4 on Runway 14L-32R	
	Mark and light parallel taxiways	
	Design/construct 5,300' x 75' midfield taxiway	

Table 11-1 (Continued). Twenty-Plus-Year Construction Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airside (Con't)	
	Mark and light midfield taxiway	
	Install runway hold signs, incursion lighting, and stop bars on Runway 14L-32R	
	GA Terminal Area	
Expand, rehabilitate, and widen Haywood Taylor Blvd	Expand air service terminal building	
Relocate Aero-Med II facilities	Realign and expand terminal access road	West Apron expansion
Relocate fuel farm	Construct rental car parking	Expand public parking
Design/construct two conventional hangars	Expand employee parking	
Acquire Emergency Generator	Expand public parking area	
	Commercial Terminal Area	
	Construct commercial terminal building	Expand public parking
	Construct terminal access road, including curbside areas	Expand rental car parking
	Construct employee parking area	Expand Commercial Terminal Building
	Construct public parking area	
	Construct rental car parking area	
	Install utilities	
	Design/construct commercial apron area	
	Construct TSA building requirements	

Table 11-1 (Continued). Twenty-Plus-Year Construction Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Midfield GA	
	Design/construct roadway from Arbuckle Creek Road to Airport	Construct heavy maintenance facilities
	Design/construct heavy commercial apron areas	Construct heavy cargo facilities
	Construct fuel farm (~ 70 Jet A tanks)	Designate military fueling area
	Construct 5,000 sq ft maintenance storage building	Design/construct 2 conventional hangars
		Design/construct 3 corporate hangars
		Design/construct 2 corporate hangars
		Expand fuel farm (~ 40 Jet A tanks)
	Northwest GA	
Install self-service Octane 88 facility	T-hangar construction	
Rehabilitate, mark, and expand West Apron	Close Hairpin Drive	

Table 11-1 (Continued). Twenty-Plus-Year Construction Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	South GA	
Design/construct public emergency facility (i.e., ARFF and MedEvac units)	Design/construct one conventional hangar	Design/construct four additional corporate hangars
Expand, rehabilitate, relocate and extend south Airport access road	Design/construct four corporate hangars	Install additional fuel farm facility
Install roadway signage	Apron rehabilitation on the west side	
Construct Two access roads to Spring Lake community	Fuel farm development on west side of Runway 18-36 (1 AvGas and 4 Jet A)	
Purchase two rapid response vehicles for ARFF station	Construct two, eight unit T-hangars	
Construct two, eight unit T-hangars		
	Industrial Park	
Relocate SAA rail spur	Expand and realign Airport Road	Expand industrial park
Fill pond at the existing end for Runway 18	Install additional signage	
Expand and rehabilitate Webster Turn Drive	Install additional utilities	
Expand and Extend Ulmann Drive	Expand industrial park	
Expand Boeing Avenue		
	Commerce Park	
Phase I Commerce Park Development	Phase II Commerce Park Development	
Install associated signage	Fuel storage expansion	
Install and mark apron	Sell old and obtain new fuel trucks	
Install fuel farm facilities	Design/construct six corporate hangars	

Table 11-1 (Continued). Twenty-Plus-Year Construction Phasing

Phase I (2001-2006)	Phase II (2007-2011)	Phase III (2012-2021)
	Airfield	
	Relocate/construct new ATCT	Expand north and south access roads
	Purchase three rapid response vehicles	Design/construct high-speed rail station
	Install security/perimeter fencing	
	Install security perimeter road	
	Design/construct second ARFF facility	
	Develop north terminal access road	
	Install security fencing around SIDA	

Source: PBS&J, 2002 and SEF JACIP 2002-2008
Note: JACIP – joint automated capital improvement program
GIS – geographic information system
ARFF – aircraft rescue and fire fighting
GPS – global positioning system
ATCT – air traffic control tower
DG – dual gear
DTW – dual tandem wheel
HIRL – high intensity runway lights
MIRL – medium intensity runway lights
REILs – runway end identification lights
PAPI-4 – 4-box precision approach path indicator
MALSR- medium intensity approach lighting system with runway alignment indicator lights
MedEvac – medical evacuation operation
TSA – taxiway safety area
SIDA – security identification display area

11.2 COST ESTIMATE

In order to determine the approximate funding for the planning period, it was necessary to identify both the potential development costs associated with the preferred development option and the existing joint automated capital improvement program (JACIP) projects. These costs are based upon unit prices and include a 25 percent contingency fee. Cost estimates are based upon unadjusted 2002 dollars and are calculated for order-of-magnitude purposes only. Actual construction costs will vary based upon inflation, variations in labor, changes in materials and construction cost as well as other unforeseeable economic factors. Furthermore, federal and state grant assistance can also vary from year to year. Therefore, review of the development costs and overall CIP should be undertaken as economic conditions warrant.

Table 11-2. Preferred Alternative – Cost Estimate Phase I: Short-Term Improvements (2001-2006)

Table 11-3. Preferred Alternative – Cost Estimate Phase II: Intermediate-Term Improvements (2007-2011)

Table 11-4. Preferred Alternative – Cost Estimate Phase III: Long-Term Improvements (2012-2021)

11.3 CAPITAL IMPROVEMENT PROGRAM

The objective of this section is to outline the CIP for SEF for the next 20 years and provide a brief description of the projects included. Special attention has been placed upon the first five years, Phase I, of the CIP. These projects have been identified as the most critical to the Airport in terms of correcting substandard facilities and attracting new business to the Airport. On the following pages, projects are identified and denoted in each phase of the Airport's CIP. Additionally, a graphic representation of the airfield has been included after each phase of the CIP, **Figures 11-1, 11-2, and 11-3**. The complete 20+-year development is shown in **Figure 11-4**.

The projects that are part of the first five years of the CIP, Phase I, are considered to be the most critical in terms of correcting substandard facilities and attracting new business to the Airport.

Table 11-5. Capital Improvement Program Phase I (2001-2006)

Year	Project Description and Title	Estimated Total Cost
2002	Rehab Runway 18-36	$ 350,000
	This project entails crack repair, asphalt surface refurbishment, and re-marking of Runway 18-36. After crack repair, a Thermoplastic Coal Tar Emulsion Slurry Seal will be spread. After refurbishment is complete the entire runway will be repainted with non-precision markings	
2002	Construct, Mark & Light Parallel Taxiway – Phase III	$ 948,350
	This project entails construction of the middle section of Full-length Parallel Taxiway Alpha. Work includes: constructing 50' x 1600' of new pavement, installing taxiway lighting and placement of new airfield signage. Connecting Twy A3 will be reconstructed as well.	
	Subtotal for 2002	**$ 1,298,350**
2003	Construct, Mark & Light Parallel Taxiway, Phase IV	$ 875,000
	This project entails construction of the northern section of Full-length parallel Taxiway Alpha, and includes constructing 50' x 1100' of new pavement, installing taxiway lighting, and placement of new airfield signage.	
2003	Design, Permit and Construct Corporate Aviation Area	$ 300,000
	This project will update and improve the area between or recent phase of T-hangars to the West, and the relocated Control Tower to the East. The site will be permitted; demolition performed as required, access road, parking, lighting and signage constructed/installed.	
2003	Design/Construct and Relocate Fuel Farm	$ 400,000
	As identified is the existing and future master plan, the fuel farm has be designated for relocation, the appropriate new location will be identified in the new Master Plan project. Project will also include a self-service fuel island as identified in the past MPU	
2003	Security Enhancements	$ 750,000
	To comply with pending GA security requirements forthcoming from FAA/TSA.	
2003	Environmental Assessment 18-36 Extension	$ 200,000
	The project will access the environmental impact relating to the extension of Runway 18-36 and Taxiway Alpha	

Table 11-5 (Continued). Capital Improvement Program Phase I (2001-2006)

2003	Wireless Broadband Infrastructure Project	$ 300,000
	To provide infrastructure for implementation of affordable, easy access to broadband internet capability for Airport Authority and its tenants	
2003	GIS Project	$ 418,700
	The benefits of a GIS application at SEF will be recognized by all levels of management and the operating units within the SAA organization	
2003	Construct/Expand Terminal Facilities	$ 142,500
	Expand existing Air Service Center	
2003	Perform ATCT Site Selection Study	$ 75,000
	The planned development will require an active ATCT; therefore, a site selection study is needed to determine the best location for the ATCT.	
2003	Design GPS/Non-precision approach to Runway 18	$ 20,000
	This involves a study done in conjunction with the FAA Airways Office in Atlanta to develop a published non-precision approach to Runway 18.	
2003	Design/Grade Runway 14U-32U	$ 1,666,667
	This project involves the preparation and design of the Turf/Utility Runway parallel to the existing Runway 14L-32R.	
2003	Relocate MED-EVAC Facilities	$ 30,000
	As part of the Terminal development plan, AeroMed Facilities will be relocated to the new ARFF facility along the South portion of the Airport.	
2003	Rehabilitate, mark and Expand West Apron	$ 67,333
	As part of SAA's development plan to expand service at the Airport, rehabilitation and expansion of the existing apron facilities becomes critical.	
2003	Fill Pond at the existing end for Runway 18	$ 5,000
	This project involves the removal and grading of pond 222 which is currently located on the North side of Runway 18; thereby providing room for future runway expansion	

Table 11-5 (Continued). Capital Improvement Program Phase I (2001-2006)

2003	Relocate SAA Rail spur	$	11,880,000
	Relocation of the SAA Rail Spur farther North coincides with the planned North Apron GA development as well as the extension of Runway 18-36 and associated taxiways.		
2003	Building 60 Roof Repairs - Phase I	$	567,868
	Design and Rehabilitate Building 60		
2003	Install Emergency Generator	$	20,000
	Install Emergency Generator in or near GA terminal building to provide electricity for airfield lighting and navigation during times of emergencies		
	Subtotal for 2003	**$**	**17,718,068**
2004	Access Road to Commercial Aviation Area	$	625,000
	As identified in the 1994 Master Plan, the project will provide landside access to a planned commercial aviation development that will support many types of general and commercial aviation uses.		
2004	Commerce Park Taxiway	$	1,275,000
	Will provide aviation access to new Commerce Park at SEF. The Commerce Park will provide both airside and landside development areas.		
2004	Phase II Master Drainage Plan (Commerce Park)	$	650,000
	The project will include the permit modification, design and construction of a new stormwater system in support of the new commerce park located between runways 36 and 32. The park will have airfield access and drainage and conveyance will be for a dry stormwater system.		
2004	Land Acquisition - Phase I	$	3,000,000
	This includes the 1000+ acres required to meet development.		
2004	Extension of Runway 18-36	$	1,500,000
	This project includes the construction of a 1776-foot extension to the northern end of Runway 18-36 as well as widening the entire runway from 100 to 150 feet.		
2004	ARFF Building	$	2,000,000
	Construct ARFF building to meet Part 139 goal and to attract air carrier service.		
2004	Security Fencing	$	465,000
	This project will provide compliance with present and future airfield security and safety regulations.		

Table 11-5 (Continued). Capital Improvement Program Phase I (2001-2006)

2004	Light Runway 18-36	$ 20,000,000
	This project includes upgrading the existing lighting on Runway 18-36 to a High Intensity Runway Lighting System (HIRL) in conjunction with the ILS as required by FAA Advisory Circular 150/5300-13.	
2004	Mark Runway 18-36	$ 1,050,000
	This project includes upgrading the runway markings on Runway 18/36 to precision instrument markings in conjunction with the ILS as required by FAA Advisory Circular 150/5340-1H, Standards for Airport Markings.	
2004	Extend and Widen Taxiway A	$ 2,500,000
	Extend and widen Taxiway A to 7,000 ft to match the extension of Runway 18-36. In addition, widen Taxiway A to meet FAA taxiway design requirements as denoted in FAA Advisory Circular 150/5300-13.	
2004	Light Taxiway A	$ 280,000
	This project includes the installation of Medium Intensity Taxiway Lighting (MITL) on the entire length of Taxiway A	
2004	Mark Taxiway A	$ 525,000
	This project includes all necessary markings to meet the requirements for design group D-IV aircraft.	
2004	Overlay Taxiway A	$ 725,556
	This project involves the strengthening of the existing taxiway pavement to meet the requirements of existing and future aircraft demand.	
2004	Widen Taxiways A-2 through A-4	$ 1,275,000
	This project involves widening the existing stub taxiways from 35' to 75' to meet FAA Advisory 150/5300-13 for Category D-IV aircraft.	
2004	Rehabilitate Twys A-2 through A-4	$ 1,083,333
	This project includes the rehabilitation and strengthening of existing taxiway pavement to accommodate the weight of the design group aircraft.	
2004	Light Taxiways A-1 through A-4	$ 80,000
	This project includes the installation of Medium Intensity Taxiway Lighting (MITL) on the entire length of all stub taxiways A-1 through A-4	
2004	Mark Taxiways A-1 through A-4	$ 150,000
	This project includes all necessary markings to meet the requirements for design group D-IV aircraft.	
2004	Design/construct two conventional hangars	$ 1,300,000
	This project involves the construction of two, 10,000 ft (100' x 100') conventional/commercial hangars in the vicinity of the GA terminal Area, and includes associated apron and automobile parking.	

Table 11-5 (Continued). Capital Improvement Program Phase I (2001-2006)

2004	Purchase one rapid response vehicles for ARFF station	$	300,000
	This project involves the purchase of one rapid response vehicle for the new Public Emergency/ARFF facilities in order to provide adequate coverage for Spring Lake, SEF and the Industrial Park.		
2004	Expand and extend Ulmann Drive	$	1,980,000
	As part of the northern GA development, Ulmann drive will be expanded to a four land, bi-directional roadway and extended into the North GA development area.		
2004	Expand and rehabilitate Webster Turn Drive	$	900,000
	Webster Turn Drive is the main access point to the Industrial Park; therefore, this project will expand the roadway to a four-land bi-directional roadway paved to meet the demands of heavy industrial traffic.		
2004	Phase I Commerce Park Development - 2 mile Roadway	$	3,960,000
	This project includes the design/construction of an approximately 2-mile roadway into the Commerce Park, which will connect to the South Access Road.		
2004	Install two additional stub taxiways to Runway 18-36	$	9,875,000
	As part of the Runway Extension, two additional stub taxiways will be constructed to provide access to Taxiway A.		
2004	Apron Emergency Lighting (40,000 sq ft)	$	16,000
	Install emergency lighting on a 40,000 SF section of existing apron to provide an emergency staging area		
	Subtotal for 2004	**$**	**55,514,889**
2005	2.5 miles Airport Loop Road	$	3,437,000
	Expansion of the Airport Loop Road by 2.5 miles, thereby completing the roadway circulation system required for the raceway and new commerce park.		
2005	Land Acquisition and New Runway Study	$	520,000
	This EA will provide a road map for compliance with all state and federal mandates, as well as local issues such as noise and land use.		

Table 11-5 (Continued). Capital Improvement Program Phase I (2001-2006)

2005	Phase III Master Drainage-North 18/36	$ 440,000
	Project includes the expansion of the Phase I master system to support the continued growth identified in the Master Plan Update. Project will include the recapture of pond 200 by filling to enable the expansion of t-hangars and commercial hangars.	
2005	Water/Wastewater Improvement associated with Commerce Park	$ 2,200,000
	Located southeast of the Sebring International Raceway is approximately 100 acres of potential development area that the SAA has planned for a Commerce Park and light industrial development. Based upon the water and wastewater demands from the existing industrial park, it is projected that possible water and wastewater system needs would be in the range of 30,000 gallons per day for water and 25,000 gallons per day for wastewater.	
2005	Commercial Hangar	$ 1,200,000
	Design and Construct new commercial hangar	
2005	EA New Runway (14L-32R)	$ 435,000
	Based upon the justification of a new runway for noise mitigation and airfield capacity, undertake the necessary planning studies associated with a new runway.	
2005	Airfield Drainage Upgrades	$ 400,000
	The Airport has successfully implemented two phases of hangar development, which are full and providing revenue while increasing the number of based aircraft. The project would also construct a self-service plane wash and vacuum facility that would be integrated into the complex.	
2005	20 T-Hangar Development	$ 1,250,000
	The Airport has successfully implemented two phases of hangar development, which are full and providing revenue while increasing the number of based aircraft. The project would also construct a self-service plane wash and vacuum facility that would be integrated into the complex.	
2005	Mark Displaced Threshold	$ 14,500
	Due to the location of residential property to the south of Runway 36, a 870 ft displaced threshold will be marked on the runway 36 end.	

Table 11-5 (Continued). Capital Improvement Program Phase I (2001-2006)

2005	Install Rwy Hold Signs, incursion lighting & stop bars on Rwy 36	$ 340,000
	This project includes the installation of various signage, lighting and other markings necessary to meet safety standards as denoted in FAA Advisory Circular 150/5300-13	
2005	Develop Rental Car Facilities	$ 21,900
	This project involves the design/construction of rental car parking facilities adjacent to the existing Airside Service Center.	
2005	Install Roadway Signage	$ 200,000
	As part of the South GA development and associated Commerce Park development, associated Roadway Signage along Airport Road and the South Access Road will be implemented.	
2005	Construct two controlled access roads to Spring Lake community	$ 45,000
	Two controlled access roadways connecting the South Access Road and the Spring Lake Community will be designed and constructed to meet both the community and airport firefighting needs.	
2005	Close Hairpin Turn Drive	$ 10,000
	As part of the industrial park and airport roadway realignment, Hairpin Turn Drive will be closed.	
2005	Rehabilitate Boeing Avenue	$ 300,000
	As part of the expansion and extension of Boeing Avenue to a four-lane, bi-directional roadway, it will connect the industrial park (Webster Turn Blvd) to Airport Road.	
2005	Install associated signage	$ 250,000
	As part of the roadway realignments and extension of the South Access Road and Commerce Park, signage needs to be implemented.	
2005	Install and mark apron	$ 7,316,400
	Design/install and mark apron within the Commerce Park facilities adjacent to Runways 18-36 and 14-32	
2005	Phase I Commerce Park Development - Fuel Farm	$ 150,000
	Install three, 10,000-gallon fuel tanks within the Commerce Park for corporate aircraft and maintenance use.	
2005	RWY 18-36 ILS, GPS, Localizer and MALSR	$ 2,000,000
	This project includes the installation of equipment associated with a precision approach to Runway 36 and non-precision approach to Runway 18.	
	Subtotal for 2005	**$ 20,529,800**

Table 11-5 (Continued). Capital Improvement Program Phase I (2001-2006)

2006	Land Acquisition (Davis Property)	$	2,500,000
	This project would assist in acquiring property directly northeast and contiguous to SEF's current boundaries. This property is under a binding option to SAA.		
2006	Airport Zoning Study	$	150,000
	Undertake an aggressive zoning and land use planning that will include updating the current ordinance to meet state requirements and address local issues.		
2006	Building 60 Roof Repairs	$	100,000
	Replace existing roof on Building 60		
2006	Commercial Hangar Development	$	400,000
	Commercial aviation development		
2006	Land Acquisition (South of South Access Road)	$	1,435,000
	This project will allow the acquisition of a number of lots directly south and contiguous to SEF's boundaries. This purchase would provide a buffer between the Airport and the residential communities in the area.		
2006	Construct two, eight unit T-Hangars	$	800,000
	As part of the Midfield Development, two eight unit T-Hangars will be constructed to meet aircraft storage demands.		
	Subtotal for 2006	**$**	**5,385,000**
	Phase I Construction Total	**$**	**100,446,107**
	Phase I Fees	$	21,363,507
	Phase I Development Total	**$**	**121,809,614**

Figure 11-1. Phase I Development (2001-2006)

Table 11-6. **Capital Improvement Program Phase II (2007-2011)**

Year	Project Description and Title	Estimated Cost
2007	Construct Commercial Runway, Taxiways and Apron - Phase I	$ 10,000,000.00
	Design and implementation of new commercial runway, taxiways and aprons.	
2007	Airport Land Acquisition (20 Acres Reimbursement)	$ 83,222.00
	Airport land acquisition for reimbursement for property purchased along Airport Road (20 acres) per JPA.	
2007	Rail Spur extension to Expanded Industrial Park	$ 1,500,000.00
	Rail extension to land acquisition to increase marketability to new area of industrial park.	
2007	Wastewater Design/Construction - South Side Expansion	$ 3,400,000.00
	Based on planned development and water and wastewater demands from the existing industrial park, it is projected that possible water and wastewater needs would be in the range of 100,000 gpd for water and 90,000 for wastewater. Implementation of the planned development will necessitate expansion of the wastewater treatment and effluent disposal system. The existing wastewater plant was planned to be doubled in capacity from the existing 90,000 gpd to 180,000 gpd.	
2007	Phase III Land Acquisition for land use compatibility	$ 1,435,000.00
	The acquisition of an additional 1,000 acres of property adjacent to the Airport for future development and noise abatement	
2007	Water Improvements - South Side Expansion	$ 2,100,000.00
	This project includes rehabilitation of the potable water distribution associated with the 200-acre development area to the south of the Sebring International Raceway.	
2007	Design GPS/Non-precision Approach (Rwy 14R/32L)	$ 30,000.00
	This involves a study done in conjunction with the FAA Airways Office in Atlanta to develop a published non-precision approach to Runway 14R-32L	
2007	Design GPS/Non-precision Approach (Rwy 14U/32U)	$ 30,000.00
	This involves a study done in conjunction with the FAA Airways Office in Atlanta to develop a published non-precision approach to Runway 14U/32U.	
2007	Extend Runway 14-32 by 1200 ft	$ 1,333,333.33
	Extend Runway 32 end by 1200 ft in order to meet the 3500' length requirement for the critical aircraft.	

Table 11-6 (Continued). Capital Improvement Program Phase II (2007-2011)

2007	Shorten Runway 14 by 2700 ft	$	4,500,000.00
	Shorten Runway 14 by 2700' in order to avoid crossing Runway 18-36, and thereby limit potential runway incursions.		
2007	Rehabilitate remaining 14-32	$	638,888.89
	This project entails crack repair, asphalt surface refurbishment, and remarking of Runway 14R-32L. After crack repair, a Thermoplastic Coal Tar Emulsion Slurry Seal will be spread. The runway will then be remarked with non-precision markings		
2007	T-Hangar Construction (14 unit each)	$	800,000.00
	Construct two 14 unit T-Hangar facility including access taxiway and all necessary marking and utility relocation/installation		
2007	Design/Construct one conventional hangar	$	260,000.00
	Construction of one 10,000 SF (100' x 100') conventional hangar, including associated apron and auto parking.		
2007	Expand and realign Airport Road	$	4,125,000.00
	Expand and realign Airport Road to a six lane, bi-directional Roadway with associated signage and traffic signals.		
	Subtotal for 2007	**$**	**30,235,444.22**
2008	Water/Wastewater Improvement associated with Industrial Park	$	8,600,000.00
	Development of the 1,000 acres parcel to the east of the existing airport property line. Based on the configuration of water and wastewater demands from the existing industrial park, it is projected that up to 600 acres of developable acres would be available and water and wastewater system needs could be 300,000 gpd and 270,000 gpd, respectively. Due to present location of existing water and wastewater infrastructure, it is likely that an independent water and wastewater system will be required.		
2008	Construct Commercial Runway, Taxiways and Apron - Phase II	$	20,000,000.00
	Phase II development of commercial runway and associated infrastructure		

Table 11-6 (Continued). Capital Improvement Program Phase II (2007-2011)

2008	Install pilot controlled MIRL on Runway 14U-32U	$	150,000.00
	This project involves the installation of radio-controlled Medium Intensity Runway Lighting (MIRL)_ on Runway 14U-32U to avoid potential visual confusion with Runway 14R-32L.		
2008	Install pilot controlled MIRL on Runway 14R-32L	$	175,000.00
	This project involves the installation of radio-controlled Medium Intensity Runway Lighting (MIRL)_ on Runway 14R-32L to avoid potential visual confusion with Runway 14U-32U.		
2008	Install REILs on Runway 14R-32L	$	50,000.00
	This project involves the installation of Pilot Controlled Runway End Indicator Lights on the Threshold of either end of Runway 14R/32L		
2008	Insert PAPI-4 on Runway 14R-32L	$	50,000.00
	This project involves the purchase and installation of Precision Approach Path Indicator Lights on both ends of Runway 14R-32L.		
2008	Construct Rental Car Parking	$	17,750.00
	Construct 355 SY of designated Rental Car Parking lot in the vicinity of the Airside Service Center to serve GA users. This project includes all lighting, signage and markings required.		
2008	Construct Fuel Farm (~ 70 Jet A Tanks)	$	3,500,000.00
	This project includes the installation of 70 (or equivalent), 10,000 gallon Jet A, above ground fuel storage tanks and all necessary piping and equipment to make a full and complete operating system		
2008	Install additional utilities	$	1,300,000.00
	This project involves the expansion and installation of utilities to the commerce park area		
2008	Sell old and obtain new fuel trucks	$	600,000.00
	This involves the sale of several older fuel trucks that SEF currently owns. Three, 5000-gallon state-of-the-art fuel trucks will replace the existing trucks.		
2008	Design/Construct connector taxiways between Rwys 14R-32L and 14U-32U	$	888,888.89
	Construct 35 ft connector taxiways between Runways 14R-32L and 14U-32U to provide access to GA Apron Area		
	Subtotal for 2008	**$**	**35,331,638.89**

Table 11-6 (Continued). Capital Improvement Program Phase II (2007-2011)

2009	Install MITL on Taxiway B and 4 stub taxiways	$	292,000.00
	Install MITL on Taxiway B and associated Taxiways as recommended in FAA Advisory 150/5300-13		
2009	Mark Taxiway B and four stub taxiways	$	547,500.00
	Mark Taxiway B and associated Taxiways as recommended in FAA Advisory 150/5300-13		
2009	Construct Commercial Runway, Taxiways and Apron - Phase III	$	1,275,000.00
	Implementation of new runway and facilities		
2009	Install REILs and PAPI-4 on Runway 14U-32U	$	150,000.00
	This project involves installing Runway End Indicator Lights (REILs) and Precision Approach Path Indicator Lights, which are pilot controlled, on either end of Runway 14U-32U.		
2009	Design/Construct Roadway from Arbuckle Creek Road to Airport (5 miles)	$	9,900,000.00
	This project will be done in conjunction with the FDOT and will involve the development and construction of the north airport access road. The North Airport Access Road will be designed to be a four-lane, bi-directional roadway connecting Arbuckle Creek Road to the north end of the Airport, thereby providing access to the Midfield and East side development.		
2009	Design/construct heavy commercial apron areas	$	11,111.11
	Design and Construct 111 SY heavy commercial apron area primarily for use by heavy cargo or military aircraft within the north midfield development area.		
2009	Design/construct four corporate hangars	$	520,000.00
	Construct four, 6400 SF corporate hangar structures including 1000 SY associate apron each and 500 SY automobile parking facilities each.		
2009	Construct two, eight unit T-Hangars	$	400,000.00
	Construct Two, eight unit T-Hangar buildings including access taxiway and all necessary markings and utility relocation or installation		
2009	Install additional signage	$	150,000.00
	Install additional roadway signage associated with Industrial Park development and roadway expansions and realignments.		
2009	Expand and Extend South Access Road (5 miles)	$	9,900,000.00
	Expand South Access Road in order to provide access to planned commercial development		

Table 11-6 (Continued). Capital Improvement Program Phase II (2007-2011)

2009	Install Security Perimeter Road	$	7,500,000.00
	Install initial, 20,000 LF, section of the Airport perimeter road.		
2009	Install Utilities	$	1,060,000.00
	Begin phase I of utility expansion and installation in the Midfield and East Airport area as part of commercial development		
2009	Design/construct three Corporate Hangars	$	3,880,500.00
	Within the Commerce Park, design/construct three 6,400 SF corporate hangars to meet existing and anticipated aircraft storage demand.		
2009	Land Acquisition for Development	$	2,595,000.00
	Acquire an additional 865 acres north of the Davis Property to accommodate commercial development		
2009	Obtain Part 139, Airport Certification.	$	80,000.00
	This project includes developing an Airport Emergency Plan and Security Plan and meeting the requirements necessary to obtain Airport Certification for Commercial Aircraft Operations.		
2009	Relocate/Construct New ATCT	$	3,000,000.00
	Construction of new state-of-the-art ATCT facility designed with the cab floor height approximately 100 ft above ground level (AGL)		
2009	Expand Public Parking Area	$	283,200.00
	Expand public parking facilities adjacent to the existing Air Service Center by approximately 5,664 SY		
2009	Design/Construct second ARFF Facility	$	2,000,000.00
	The project includes the construction of a 4,200 SF ARFF and Med-Evac facility to meet Airport Emergency Service needs as designated under FAR Part 139.		
2009	Design/Construct Taxiway B (parallel to 18-36 on East Side) and associated stub taxiways (Phase I)	$	4,833,333.33
	This project entails construction of a parallel taxiway serving future aviation related development on the southeastern side of Runway 18-36. This work includes constructing 15,000 SY of new pavement, installing taxiway lighting, and placement of new airfield signage.		
2009	Design/construct 5,300 x 75' midfield taxiway	$	4,416,666.67
	This project includes the construction of a 5,300 x 75 foot midfield taxiway, which will allow access to both the east and west side of the airfield.		

Table 11-6 (Continued). Capital Improvement Program Phase II (2007-2011)

2009	Fuel Farm development on west side of Rwy 18-36 (1 AvGas and 4 Jet A)	$	225,000.00
	Construct/install one, 5000 gallon and 4, 10000 gallon above ground fuel tanks on the west side of runway, and includes all necessary piping and equipment to make a full and functional fuel farm facility.		
	Subtotal for 2009	**$**	**53,019,311.11**
2010	Expand Air Service Terminal Building	$	2,200,000.00
	This project involves the expansion of the existing Air Service Center by approximately 8,000 SF and includes all associated utilities, signage and markings.		
2010	Implementation of New Commercial Runway	$	1,800,000.00
	Development of commercial runway 14L-32R and associated development.		
2010	Realign and expand Terminal Access Road	$	45,000.00
	This project, as part of the realignment and expansion of the Haywood Taylor Blvd., will expand the Terminal Frontage Road of the Air Service Center from two to three lanes in order to provide easier flow through of traffic. Terminal curb frontage is expected to increase by only 40+ feet based upon expected demand.		
2010	Expand Employee Parking	$	83,000.00
	Expand employee parking in the vicinity of the Air Service Center by approximately 1,666 SY in order to accommodate employee-parking demand.		
2010	Construct Commercial Terminal Building (~66,960 SF)	$	16,740,000.00
	This project includes the design and construction of a ~66,000+ SF commercial terminal facility adjacent to proposed Runway 14L-32R on the East side of the Midfield Development Area.		
2010	Construct Terminal Access Road, including Curbside areas (4-miles)	$	7,920,000.00
	This project involves the construction of an approximate 4-mile terminal access road that connects with the existing South Access Road to provide access to the Commercial Terminal Facilities. In addition, the terminal frontage road will consist of three lanes in order to facilitate the flow of traffic in and around the terminal building.		

Table 11-6 (Continued). Capital Improvement Program Phase II (2007-2011)

2010	Design/Construct Commercial Apron Area	$	333,300.00
	This project includes the construction of a 4,444 SY commercial terminal apron. All necessary markings, lightings, and utility installation/construction are included in this project.		
2010	Expand Industrial Park	$	39,000.00
	As part of the airport's overall development, demand for industrial park parcels is expected to increase. Therefore, it is recommended that SAA expand the Industrial Park by 13 acres to meet demand.		
2010	Phase II Commerce Park Development	$	8,000,000.00
	This portion of the development includes the expansion of the roadway, utilities, signage, markings, etc throughout the rest of the Commerce Park property to meet anticipated demand for facilities.		
	Subtotal for 2010	**$**	**37,160,300.00**
2011	Construct Employee Parking Area	$	88,000.00
	This project entails the development of 1,760 SY of employee parking facilities on the east side of the airfield, adjacent to the Commercial Terminal Facilities. This project includes all necessary lighting, signage and markings		
2011	Construct Public Parking Area	$	297,000.00
	This project entails the development of 5,940 SY of public parking facilities on the east side of the airfield, adjacent to the Commercial Terminal Facilities. This project includes all necessary lighting, signage and markings		
2011	Construct Rental Car Parking Area	$	35,500.00
	This project entails the development of 710 SY of rental car facilities on the east side of the airfield, adjacent to the Commercial Terminal Facilities. This project includes all necessary lighting, signage and markings		
2011	Construct TSA Building Requirements	$	1,200,000.00
	As per the new security requirements as designated by TSA 49 CFR 1540-1542, the Transportation Security Administration requires 6,000 SF of office space for their personnel within the commercial terminal or within the general vicinity.		
2011	Fuel Storage Expansion (5, 10,000 Gal)	$	250,000.00
	This project includes the installation of five, 10,000 gallon Jet A, above ground fuel storage tanks and all necessary piping and equipment to make a full and complete operating system		

Table 11-6 (Continued). Capital Improvement Program Phase II (2007-2011)

2011	Design/construct three Corporate Hangars	$ 1,950,000.00
	Design and construct three additional corporate hangars within the Commerce Park, and include approximately 3000 SY of adjacent apron space and 1500 SY of public parking space.	
2011	Expand Security Fence to 60,000 LF	$ 7,500,000.00
	This project involves the expansion of the 8 foot security fence another 15,000 Linear Feet around the airfield facilities.	
2011	Expand Perimeter Road	$ 9,375,000.00
	Expand the Perimeter Road to allow access to the midfield development area.	
2011	Purchase two rapid response vehicles	$ 600,000.00
	This project includes the purchase of two rapid response vehicles to meet the fire-fighting requirements as designated under FAR Part 139.	
	Subtotal for 2011	**$ 21,295,500.00**
	Total Phase II Construction Costs	**$ 177,042,194.22**
	Total Phase II Fees	$ 38,054,691.67
	Phase II Total Development Costs	**$ 215,096,885.89**

Figure 11-2. Phase II Development (2007-2011)

Table 11-7. Capital Improvement Program Phase III (2012-2021)

Year	Project Description and Title	Estimated Cost
2012	Expand utilities (~2 miles)	$ 2,112,000.00
	Expand existing utilities (water, sewer, gas, electric) an additional two miles to allow development on the east and west side of Runway 14L-32R.	
2012	Construct Heavy Maintenance Facilities	$ 13,500,000.00
	Construction of a 90,000 SF (300 x 300) heavy maintenance facility, and 90,000 SY of apron and 5000 SY of auto parking space. This project also includes all associated utility installation on the North Midfield Apron Area.	
2012	Design/Construct 5 Corporate Hangars	$ 650,000.00
	Construct five additional 6,400 SF (80 x 80) corporate hangars including 1000 SY apron and 50 SY of auto parking in the South GA development area. The project includes all marking and utilities relocation/installation.	
2012	Design/Construct 2 Conventional Hangars	$ 520,000.00
	Construct two additional 10,000 SF Conventional Hangars within the Midfield Area, including associated apron and auto parking requirements.	
2012	Expand Security Fence to 75,000 LF	$ 3,750,000.00
	Expand the security fencing an additional 15,000 LF to completely encompass the airfield.	
	Subtotal for 2012	**$ 20,532,000.00**
2013	Develop Heavy Maintenance Apron	$ 1,000,000.00
	Develop 10,000 SY Heavy Maintenance Apron on the North Midfield portion along Taxiway D and Taxiway F.	
2013	Expand Fuel Farm (~ 40 Jet A Tanks))	$ 2,000,000.00
	This project includes expanding the existing Midfield Fuel Farm by 40, 10,000-gallon tanks (or equivalent0. All necessary piping, lighting, marking and other equipment to make a full and complete operating system are included.	
	Subtotal for 2013	**$ 3,000,000.00**

Table 11-7 (Continued). Capital Improvement Program Phase III (2012-2021)

2014	Designate Military fueling area	$	750,000.00
	Construct a 10000 SY Apron area with a load bearing weight greater than 350,000 DTW to meet the demand of anticipated heavy military aircraft. This apron area will be located near the fuel tanks designated for military fueling and will be separated from commercial operations to facilitate "hot fueling" procedures		
2014	Expand Perimeter Road to 65,000 LF	$	7,500,000.00
	Expand the existing perimeter road by an additional 20,000 LF to allow complete access to all airfield facilities		
	Subtotal for 2014	**$**	**8,250,000.00**
2015	West Apron Expansion	$	10,000.00
	Expand the west apron in the vicinity of the existing GA Airside Service Center by 100 SY to meet increased GA and corporate demand.		
2015	Expand Commercial Terminal to 122,000	$	13,760,000.00
	Expand existing Commercial Terminal Facility by 55,040 SF to accommodate associated commercial passenger demand.		
2015	Construct Heavy Cargo Facilities	$	13,500,000.00
	Construction of a 90,000 SF (300 x 300) heavy cargo facility, including attached warehouse, and 10000 SY of apron and 5000 SY of auto parking space. This project includes all associated utility installation on the west side of Runway 14L-32R.		
2015	Purchase One Rapid Response Vehicle	$	300,000.00
	Purchase an additional ARFF rapid response vehicle meet the demand of increased operations		
	Subtotal for 2015	**$**	**27,570,000.00**
2016	Expand Runway 14L-32R to 10,000 ft.	$	2,500,000.00
	This project includes a 1,500-foot extension of the northern end of Runway 14L-32R. This extension includes all drainage and utility installation.		
2016	Expand Taxiways D and E to 10,000 ft.	$	5,000,000.00
	As part of Runway development expand parallel taxiways D and E.		

Table 11-7 (Continued). Capital Improvement Program Phase III (2012-2021)

2016	Design/construct 4 (75 x 50 ft) access taxiways	$	41,666.67
	Design and Construct four additional stub taxiways between Taxiways E and D and Runway 14L-32R		
2016	Install HIRL on Remaining 1500 Ft of Rwy 14L-32R	$	60,000.00
	Install High Intensity Runway Lights and associated equipment on remainder of 14L-32R		
2016	Install MITL on Taxiway D, E and stub taxiways	$	128,000.00
	Install Medium Intensity Taxiway Lights on extensions of Twys D and E and new stub taxiways.		
2016	Develop Cargo Apron	$	1,000,000.00
	This project includes the development of a 10000 SY heavy cargo apron adjacent to Taxiway F and D on the west side of Runway 14L-32R. All necessary markings, lighting and utility installation and/or construction is included in this project.		
2016	Install Runway and Taxiway signage	$	340,000.00
	Install new and/or relocate existing airfield signage along runways and taxiways to meet FAA standards and design aircraft separation minimums		
2016	Install additional fuel farm facility (2 AvGas and 2 Jet A)	$	150,000.00
	Install two additional 5,000 AvGas and two, 10,000 gallon Jet A above ground tanks within the South GA fuel farm. All necessary piping and equipment to make a full, flexible and complete operating system are included.		
	Subtotal for 2016	**$**	**9,219,666.67**
2017	Design/construct high-speed rail station	$	3,600,000.00
	Design and Construct 36,000 SF rail station to accommodate high-speed rail operations at the Airport. This project will include installation of all utilities (water, sewer, electric and gas).		
2017	Construct Public Parking in vicinity of Rail Station	$	222,222.22
	As part of the high-speed rail development, a 4,444 SY public parking area will be developed adjacent to the rail terminal. All markings, lighting and signage will be included in this project.		
	Subtotal for 2017	**$**	**3,822,222.22**

Table 11-7 (Continued). Capital Improvement Program Phase III (2012-2021)

2018	Expand Rental Car Parking (~10 spaces)	$	19,444.44
	This project involves the expansion of Rental Car facilities in the vicinity of the Commercial Terminal Facilities by approximately 389 SY, and includes all necessary lighting, signage and markings.		
2018	Construct Fuel Farm (~ 30 Jet A Tanks)	$	1,500,000.00
	Construction of three, 10,000 gallon, above ground fuel tanks within the south GA fuel farm, and includes all necessary piping and equipment to make a full and complete operating system.		
2018	Design/construct four additional corporate hangars	$	520,000.00
	Design and Construct four, 6400 sf, corporate hangars within the South GA area to meet demand. Apron, auto parking and utility installation are included.		
	Subtotal for 2018	**$**	**2,039,444.44**
2019	Expand Public Parking (~50 spaces)	$	111,111.11
	This project involves the expansion of public parking facilities in the Midfield and commercial terminal area by approximately 2,222 SY. This project includes all necessary lighting, signage and markings.		
2019	Expand North and South Access Roads	$	4,125,000.00
	This project involves the expansion of both the north and south main access roads to six lane, bi-directional roadways in order to accommodate expected demand associated with development.		
	Subtotal for 2019	**$**	**4,236,111.11**
2020	Expand Public Parking (~30 Spaces)	$	66,666.67
	Expand Public Parking in the vicinity of the Airside Service Center to meet anticipated demand. Approximately 1,333 SY of pavement will be needed and all necessary lighting, signage and markings are included.		
2020	Expand Industrial Park	$	9,000.00
	Obtain an additional 3 acres of land North of the existing industrial park for continued development.		
	Subtotal for 2020	**$**	**75,666.67**

Table 11-7 (Continued). Capital Improvement Program Phase III (2012-2021)

2021	Design and Build Apron area on the East side of Runway 14L-32R (600 SY)	$	60,000.00
	Design/Build 600 SY apron, including all utilities and markings, on the east side of Runway 14L-32R to meet future development needs.		
	Subtotal for 2021	**$**	**60,000.00**
	Total Construction Costs	**$**	**78,805,111.11**
	Total Fees	$	23,641,533.33
	Total Development Cost - Phase III	**$**	**102,446,644.44**

Figure 11-3. Phase III Development (2012-2021)

Figure 11-4. Complete Phased Development

FINANCIAL FEASIBILITY

Sebring Regional Airport

12

12.1 INTRODUCTION AND PURPOSE

The Financial Feasibility Analysis is used to analyze Sebring Regional Airport's (SEF) historical and projected revenue and expenditures while determining whether it is financially viable to implement the Airport master plan's capital development program (CDP) as a commercial non-subsidized airport. The objective of this updated financial analysis is twofold:

- Estimate the capital and operating costs for the various components that comprise the capital improvement program.
- Determine if it is feasible for the Airport to generate sufficient revenues to repay capital and operating costs.

In order to achieve these objectives, several subtasks were performed:

- Projections of potential operating revenues
- Comparison of operating revenues/capital and operating costs
- Identification of funding shortfalls
- Identification of potential additional funding sources
- Feasibility/cash flow analysis

12.2 SEBRING REGIONAL AIRPORT - INDEPENDENT OPERATING ENTITY

SEF is administered by the Sebring Airport Authority (SAA) established by act of the Florida Legislature on August 1, 1967 and amended by House Bill Number 1086 on June 19, 1989. The SAA was created for the purpose of planning, developing, and maintaining a comprehensive airport and industrial complex, and constitutes a public instrumentality. A seven-member board governs the SAA and its operations consist of leasing industrial properties and supervising Airport and utility operations.

The SAA operates as a single enterprise fund under the fund accounting framework of governmental accounting and is exempt from federal income taxes. Within this framework, an enterprise fund accounts for operations in a manner similar to private business enterprises where the intent of the governing body is that costs (expenses including depreciation) of providing goods and services to the general public on a continuing basis be financed or recovered primarily through user charges. The enterprise fund is accounted for on a cost of services or "capital maintenance" measurement focus. This means all assets and liabilities (whether current or non-current) associated with its activity are included on its balance sheet. Reported fund equity (net total assets) is segregated into contributed capital and retained earnings components.

12.2.1 Foreign Trade Zone

A significant incentive for business development at SEF is attributed to the Foreign Trade Zone (FTZ). The FTZ Board, Chaired by the U.S. Department of Commerce, authorized FTZ status on July 26, 1997 to the SAA. The Zone, designated by the FTZ Board as FTZ Number 215, not only assists in economic development of SEF and its associated industrial park tenants, but businesses throughout Highlands County as well. SEF became the 16th FTZ in Florida.

A survey, conducted by the International Trade Commission, found that the presence of an FTZ was the fourth most identifiable factor in plant site location decisions. According to the U.S. Department of Commerce, FTZs have been found to provide customers cost savings and improved inventory control. Through the use of FTZs, U.S. based production is placed on more equal footing with production in a foreign country. In addition, FTZs have a significant impact in retaining U.S. production and employment as well as stimulating new activity.

12.2.2 Community Redevelopment Agency

The Sebring Regional Airport and Industrial Park Community Redevelopment Agency (CRA) was established by county ordinance on December 17, 1996. It is a legally separate entity from the SAA, but since SAA's board of directors also serves as the CRA's board, it is reported as a blended component unit.

The SAA makes available the State of Florida's Community Redevelopment incentives program to businesses locating at SEF and the industrial park. In 1996, SEF and industrial park property was designated a Florida CRA. This designation enables SEF the ability to provide financing assistance and other incentives to businesses leasing land and building facilities on the Airport and industrial park property. Financial assistance for companies choosing to locate facilities at the Airport can make a significant difference to a company's bottom line. These incentives can include offsetting or deferring lease payments through the use of the Authority's CRA's Tax Increment Trust Fund and loans to assist in financing site improvements, parking lot construction, and special infrastructure needs.

In 1997, two Airport tenants, LESCO Inc. and Hancor, Inc., were assisted by the CRA in the financing of their improvements. Sebring Regional Airport and Industrial Park is the only combined general aviation (GA) facility and industrial park in Florida offering these incentives. (25)

In addition, the CRA provides an additional revenue source to the both Highland County and the Airport through tax revenues on developed land and facilities located within the Airport and Industrial Park property line. This revenue is used not only to provide assistance to businesses locating their operations on the Airport and industrial park property, but also for future Airport and industrial development. The current program allows the CRA to collect taxes on developed land at a rate of 85 percent and buildings and other facilities at a rate of 95 percent.

12.3 PROJECT DEVELOPMENT COST VS. POTENTIAL REVENUES

Based on the full build-out scenario as depicted on the Airport Layout Plan (ALP), the development costs for the preferred development option in current dollars (2002) are summarized in **Table 12-1**. These costs are based upon current (2002) unit prices and include a 10 percent contingency fee. The cost estimates are based upon unadjusted 2002 dollars and are calculated for order-of-magnitude purposes only. Actual construction costs will vary based upon variations in labor, materials, and construction costs, inflation, and other unforeseeable economic factors.

Table 12-1. Summary of Costs Estimates – Full Build-Out 2002 Dollars

Development Period	Total	Federal	State	Local	Private Funding
Short–Term (2001– 2006)	$121,809,614	$74,966,318	$32,564,968	$13,410,902	$867,425
Medium – Term (2007 – 2011)	$215,096,886	$105,112,743	$84,278,107	$23,952,694	$1,753,343
Long-Term (2012 – 2021)	$102,446,644	$49,095,150	$31,256,514	$2,914,781	$19,180,200
Total Development Costs	**$439,353,144**	**$229,174,211**	**$148,099,590**	**$40,278,376**	**$21,800,968**

Source: PBS&J, 2002
Note: Includes JACIP costs

The detailed 20-year capital improvement program cost estimates, by short- (2001-2006), medium- (2007-2011), and long-term (2012-2021) development phases, are depicted in Chapter 11, **Tables 11-5 through 11-7**, respectively. The cost estimates include land acquisitions, planning, construction, engineering, and total development costs. **Tables 11-5 through 11-7** depict projected eligibility costs based upon current federal and state eligibility criteria only, and do not represent a commitment for funding by the respective funding sources. **In addition, it is important to note that projects will be managed as local funds become available rather than adhering to a strict timeline.**

12.3.1 Historical Airport Financial Statements

Prior to 1993, SEF operated at a net loss. However, as a result of both a change of management and the transfer of the Sebring International Raceway from an internal management to a tenant type relationship, SEF was able to operate at a net gain. This allowed SAA management to focus on developing the Airport and Industrial Park into a major economic generator for Sebring and Highlands County.

As part of this development strategy, Management established a surplus account for future required funds and procedures to insure compliance with the FDOT grant agreement that requires grantees to have sufficient funds to pay for the portion of the project not covered by FDOT grant. The surplus fund was initially based upon the following three major financial commitments:

- Interlocal agreement
- Debt refinancing
- Military funding

In May 1993, the City of Sebring, Highlands County, and the SAA entered into an interlocal agreement to assist the SAA in funding construction, reconstruction and improvements to key public facilities. The agreement, which committed $1,335,000 over five years, provided the Airport the ability to obtain matching fund grants. As a result, significant development in and around the Airport has been achieved.

Further, in order to achieve the SAA's goal of becoming self-reliant, debt refinancing became critical. Therefore, under the new management, the SAA refinanced all debts in February of 1992 with a commitment toward retiring the debt service. This debt consolidation accomplished a 57.5 percent reduction in debt service.

In 1994, the SAA entered into an agreement with the Department of Defense (DOD) to provide "hot fueling" to military aircraft. This direct billing agreement to fuel military aircraft has resulted in fuel flowage fees averaging $500,000 to $1,000,000 annually. This has provided a positive cash flow to the Airport, thus, limiting operating losses after depreciation.

SEF's revenue and expenditure sources for the years 1992 through 2000 are discussed in more detail in the following sections. It is important to note that prior to 2000, SAA's Statements of Revenue and Expenses reported a net loss based upon existing Government Auditing Standards issued by the Comptroller General of the United States. This, however, was misleading since it did not take into account SAA's additional funding sources.

However, as of the year 2000, Government Auditing Standards were changed to allow Contributions not previously recorded to be included in the Airport's Statements of Revenue and Expenses. Applying these auditing standards to previously reported financial statements, revealed a cumulative net surplus through the year 2000. Furthermore, in 2001, the Authority changed its accounting estimates relating to depreciation, which resulted in a net income increase of $514,749.

12.3.1.1 Revenue Sources

SEF collects revenues from a variety of sources. These sources include Airport revenues and federal, state, and local (city/county) commitments. Airport revenues consist of income generated from the following activities:

- Land and building leases
- Hangar rental
- Fixed base operation
- Special events/test track rental
- Water and sewer fee
- Fire protection fee
- Miscellaneous revenue (interest, etc.)

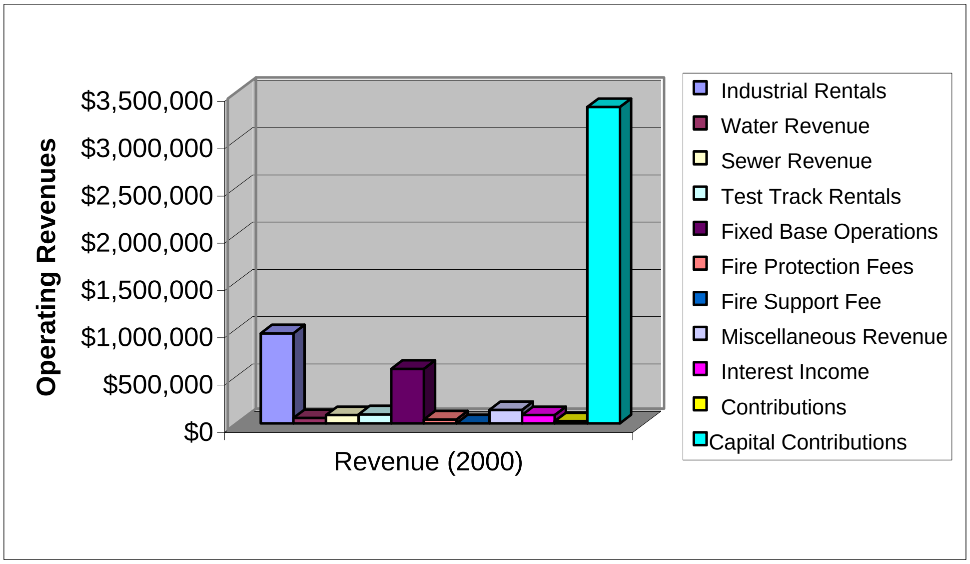
Table 12-2 provides the basis of income from the Airport's various revenue sources as reported by SAA, *Airport Funds, Actual Revenues, 2000*.

As shown in **Table 12-3**, aviation related revenues (i.e., fixed base operations) account for approximately 30 percent, whereas industrial rental revenues account for approximately 49 percent of total operating revenues for the period of 1999-2000. **Table 12-2** shows a detailed listing of revenue sources and depicts percentage of revenue by source and percent of total revenues for FY 2000. **Table 12-3** and **Figure 12-1** demonstrate that the Airport is not reliant on any one source of revenue. However, revenue associated with non-aviation related sources outweighs revenue associated with aviation related sources. Therefore, emphasis should be placed in attracting both aviation and non-aviation users in order to provide a more equitable split between aviation and non-aviation related resources.

Table 12-2. Detailed Revenue Categories for 2000

Type of Revenue	Revenue Source	Revenue (2000)	Percent of Total Revenue
Operating	Industrial Rentals	$951,851	49%
	Water Revenue	$55,801	3%
	Sewer Revenue	$86,289	4%
	Test Track Rentals	$95,291	5%
	Fixed Base Operations	$576,783	30%
	Fire Protection Fees	$40,776	2%
	Fire Support Fee	$0	0%
	Miscellaneous Revenue	$141,940	7%
	Total Operating Revenue	**$1,948,731**	**100%**
Non-Operating	Interest Income	$86,710	3%
	Contributions	$23,034	1%
	Capital Contributions	$3,345,691	97%
	Grant Revenue	$0	0%
	Insurance Claim Proceeds	$0	0%
	Gain on Sale of Investments	$0	0%
	Total Non-operating Revenue	**$3,455,435**	**100%**
	Total Revenues	**$5,404,166**	

Figure 12-1. Revenue Sources



Source: SAA, Airport Funds, Actual Revenues, 2000

Airport Leases

The SAA leases various types of industrial buildings and land with terms ranging from month-to-month to 45-year agreements. All of the SAA's leases are classified as operating leases. Substantially all of the SAA's investments in land, buildings, and racetrack improvements are bound by/or are held for lease as of September 30, 2000.

Table 12-3. Revenue Sources

Revenue Source	1992	1993	1994	1995	1996	1997	1998	1999	2000
Operating Revenue:									
Industrial Rentals	$697,456	$677,715	$698,152	$703,511	$754,630	$894,652	$877,759	$908,771	$951,851
Water Revenue	$12,558	$20,585	$22,501	$18,103	$23,982	$37,444	$47,273	$55,414	$55,801
Sewer Revenue	$33,802	$24,671	$23,986	$27,388	$39,423	$50,750	$55,932	$68,786	$86,289
Test Track rentals	$34,392	$45,840	$47,734	$46,494	$55,521	$74,396	$77,209	$88,320	$95,291
Fixed Base Operations	$98,213	$157,389	$416,130	$445,750	$297,834	$312,173	$324,789	$349,366	$576,783
Fire Protection Fees	$27,128	$24,768	$28,282	$25,562	$29,011	$37,268	$36,436	$37,671	$40,776
Fire Support Fee	$26,300	$7,950	$9,504	$9,000	$8,850	$9,500	$7,850	$4,700	$0
Miscellaneous Revenue	$5,613	$4,809	$7,157	$20,111	$14,129	$83,803	$47,030	$54,105	$141,940
Total Operating Revenue	**$935,462**	**$963,727**	**$1,253,446**	**$1,295,919**	**$1,223,380**	**$1,499,986**	**$1,474,278**	**$1,567,133**	**$1,948,731**
Total Non-Operating Revenue									
Interest Income	$603	$3,215	$3,244	$3,607	$714	$32,013	$45,871	$56,328	$86,710
Contributions	$0	$0	$0	$0	$0	$52,997	$70,260	$29,500	$23,034
Capital Contributions - Grants and Others	**No Data**	$544,617	$694,308	$2,501,954	$1,051,895	$3,116,815	$1,796,621	$1,401,247	$3,345,691
Grant Revenue	**$0**	$0	$0	$0	$0	$0	$116,358		
Interest Expense	($50,521)	($49,411)	($45,809)	($37,314)	($27,997)	($53,391)	($76,623)	($91,663)	($122,486)
Insurance Claim Proceeds	$0	$14,486	$0	$0	$0	$0			
Gain (Loss) on disposal of assets	$0	$0	($66,189)	$0	$0	($2,129)	$26,168	($1,348)	($45,344)
Gain on Sale of Investments	$1,829	$0	$0	$0	$0	$0	$0	$2,500	$0
Miscellaneous Expense	$0	$0	$0	$0	$0	$0	($1,558)	($12,335)	($7,376)
Total Non-operating Income	**($48,089)**	**$512,907**	**$585,554**	**$2,468,247**	**$1,024,612**	**$3,146,305**	**$1,977,097**	**$1,384,229**	**$3,280,229**
Total Revenue	**$887,373**	**$1,476,634**	**$1,839,000**	**$3,764,166**	**$2,247,992**	**$4,646,291**	**$3,451,375**	**$2,951,362**	**$5,228,960**

Source: Annual financial statements and auditor's report

Table 12-4 is a schedule of future rent revenue minimums from non-cancelable operating leases as of September 30, 2000.

Table 12-4. Operating Leases

Year Ending September 30,	Amount
2001	$901,822
2002	$556,536
2003	$551,286
Total Minimum Future Rentals	**$2,009,644**

Source: Sebring Airport Authority financial statements and auditors report, September 30, 2000

Furthermore, a material part of the SAA's rent revenue is dependent upon three major customers. Total rent approximations are found in **Table 12-5**.

Table 12-5. Major Customers

Percentage of Total Rent Revenue	2000	1999
LESCO, Inc.	44%	43%
Sebring International Raceway, Inc.	33%	29%
Lin Pac, Inc.	11%	13%
Total	**88%**	**85%**

Source: Sebring Airport Authority financial statements and auditors report, September 30, 2000

Cash Flow Contributions

Cash flow information refers to the in-flow and outflow of cash assets. For the purposes of the Statement of Cash Flows, the SAA considers all highly liquid investments (including restricted assets) with maturity of three months or less when purchased to be cash equivalents. In the case of the SAA, cash assets are usually associated with interest earnings or payments. However, during 1999, the SAA received a non-cash donation in the form of common stock in the amount of $29,250. The stock donations were recorded at fair market value at the date of donation.

Deposits and Investments

Cash and cash equivalents consist of restricted and unrestricted funds. Restricted funds represent proceeds from interlocal agreements, funds received at the end of the year to cover payables related to various grant projects, and lease deposits. Cash and cash equivalents as of September 30, 2000 and 1999 are recorded in **Table 12-6**.

Table 12-6. Cash and Cash Equivalents

Deposit/Investment	2000	1999
Unrestricted cash	$ 293,777	$ 289,643
Restricted cash		
Design build project	$ 877,081	
Waste/potable water project	$ 708,727	$ 751,951
Other projects	$ 49,506	$ 75,261
Community redevelopment agency	$ 22,788	$ 8,005
Lease deposits	$ 8,792	$ 10,842
Total cash and cash equivalents	**$ 1,960,671**	**$ 1,135,702**
Classified as:		
Petty cash and demand deposits	$ 105,755	$ 146,330
Local government surplus trust funds	$ 1,854,916	$ 989,372
Total	**$ 1,960,671**	**$ 1,135,702**

Source: Sebring Airport Authority financial statements and auditors report, September 30, 2000

Aggregate bank balances on September 30, 2000 and 1999 were $1,960,671 and $1,135,702, respectively. The SAA's cash and time deposits are entirely covered by federal depository insurance and are subject to collateral requirements pursuant to *Section 280.07, Florida Statutes*.

Property and Equipment

A portion of the Airport's revenues is associated with fixed assets, which consists of property and equipment. Property and equipment purchased or acquired is carried at historical cost. Donated or contributed assets are recorded at estimated fair value or actual cost, if known. Additions, improvements, and capital outlays that significantly extend the useful life of an asset are capitalized, in addition to public domain ("infrastructure") fixed assets like roads, curbs, runways, and waste/potable water systems. Other costs incurred for repairs and maintenance are expended as incurred.

Prior to October 1, 2001, the estimated fixed asset depreciation schedule was based upon a straight-line depreciation on all assets over estimated useful lives as shown in **Table 12-7.**

Table 12-7. Fixed Asset Depreciation Schedule

Fixed Asset	Years
Buildings	40
Infrastructure	25-40
Improvements	15-30
Vehicles	5-15
Equipment	3-10

Source: Sebring Airport Authority financial statements and auditors report, September 30, 2000

However, in 2001, the Authority changed its accounting estimates relating to depreciation. The estimated service lives for buildings, wastewater facilities and wastewater infrastructure were increased from the previous lives of 15 to 30 years to new lives of 40 years. Further, railroad spur lives were increased from 20 years to 25 years, road lives were increased from 15 years to 20 years and roof repair lives were increased from a range of 10 to 15 years to 20 years. Sebring Management believes that the new lives are a more accurate reflection of actual useful lives, and, as a result of the change, 2001 net income increased by $514,749. (Sebring Airport Authority, 2001 and 2002 Financial Statements).

Property and equipment on September 30, 2000 and 1999 is summarized in **Table 12-8**.

Table 12-8. Fixed Assets

Assets	2000	1999
Land, buildings, and infrastructure	$ 22,598,212	$ 15,961,515
Vehicles and tractors	$ 96,621	$ 369,777
Machinery and equipment	$ 289,810	$ 273,581
Office furniture, fixtures, and equipment	$ 357,901	$ 103,731
Race track improvements	$ 1,475,111	$ 1,522,170
Total	$ 24,817,655	$ 18,230,774
Less: accumulated depreciation	$ 7,900,183	$ 7,256,552
Net property and equipment	$ 16,917,472	$ 10,974,222
Construction in progress*	$ 87,609	$ 1,298,311
Total	$ 17,005,081	$ 12,272,533

Source: Sebring Airport Authority financial statements and auditors report, September 30, 2000

Construction in progress is composed of the elements in Table 12-9.

Table 12-9. Construction in Progress

Project	Authorization	Commitment	Expended to September 30, 2000	1999
Sebring Custom Tanning	$ -	$ -	$ -	$ 517,301
LESCO Expansion	$ 95,000	$ 89,892	$ 5,108	$ 5,108
Building 60 rehabilitation	$ -	$ -	$ -	$ 17,641
Entrance Road CR 523 to US 98	$ 1,028,166	$ 1,027,563	$ 603	$ 603
LESCO rail spur	$ -	$ -	$ -	$ 278,940
Potable water system improvement	$ 655,900	$ 574,002	$ 81,898	$ 43
General aviation terminal building	$ -	$ -	$ -	$ 362,442
Hancor road/rail	$ -	$ -	$ -	$ 37,548
T-hangar access/parking	$ -	$ -	$ -	$ 18,940
T-hangar phase II	$ -	$ -	$ -	$ 59,745
Total	**$ 1,779,066**	**$ 1,691,457**	**$ 87,609**	**$ 1,298,311**

Source: Sebring Airport Authority financial statements and auditors report, September 30, 2000 and 1999

Operating Subsidies and Grants

Operating subsidies and grants that finance current operations are recorded as non-operating revenue when earned. Contributions and grants from federal, state, and local sources received prior to October 1, 2000, for the purpose of purchasing or constructing capital assets, were recorded as contributed capital. Depreciation on such assets is charged back against contributed equity.

Contributed Capital

Contributed Capital represents capital contributions from other governmental agencies and customers.

Cash and Cash Equivalents

Cash and cash equivalents consist of unrestricted and restricted funds. Restricted funds represent (1) proceeds from interlocal agreements, (2) funds received at the end of the year to cover payables related to various grant projects, and (3) lease deposits.

12.3.1.2 Expenses

Historic expenses are classified for the purpose of this summary as personnel and operating expenses in the form of contractual services, professional services, and general operating expenses. Personnel expenses are those expenses associated with full and part-time Airport employees, which include salaries, taxes, and benefits. Operating expenses include utilities, supplies, maintenance, insurance, and other miscellaneous expenses associated with the operations of SEF.

Table 12-10 shows the Airport's expenses from 1992-2000.

Pension Plan

All full-time and part-time employees working in a regularly established position for the SAA are participants in the Florida Retirement System, a defined plan authorized by *Chapter 112, Florida Statutes*, which is controlled by the State Legislature and administered by the State of Florida, Department of Management Services, Division of Retirement. The system is a cost-sharing, multiple-employer public employee retirement system. The plan covers a total of approximately 592,000 full-time employees of various governmental units within the State of Florida.

The SAA has no responsibility to the system other than to make periodic payments required by the Florida statutes. The Florida Division of Retirement issues a publicly available financial report that includes financial statements and required supplemental information.

Participating employer contributions are based upon statewide rates established by the State of Florida. The SAA's contributions during fiscal years 2000, 1999, and 1998, were $39,368, $51,923, and $56,120, respectively, equal to the actuarially determined contribution requirements for each year. The SAA has determined, in accordance with GASB Statement No. 27, that there was no pension liability before or at transition.

Long-Term Debt

Long-term debt as of September 30, 2000, and 1999 consisted of the following, depicted in **Table 12-11**.

Table 12-10. 1992-2000 Expenses

Expense Source	1992	1993	1994	1995	1996	1997	1998	1999	2000
Personal Services	$252,695	$239,181	$351,259	$432,215	$473,325	$375,323	$435,385	$468,928	$504,451
Contractual Services	$1,818	$18,702	$20,577	$14,893	$38,639	$59,970	$142,185	$142,465	$238,571
Professional Services	$33,053	$68,499	$103,891	$111,239	$107,073	$150,697	$270,370	$151,157	$206,865
General Operating	$430,794	$446,413	$502,340	$632,326	$547,065	$589,688	$623,948	$623,310	$887,158
Total Operating Expenses	**$718,360**	**$772,795**	**$978,067**	**$1,190,673**	**$1,166,102**	**$1,175,678**	**$1,471,888**	**$1,385,860**	**$1,837,045**
Other									
Interest Expense	$ (50,521)	$ (49,411)	$ (45,809)	$ (37,314)	$ (27,997)	$ (53,391)	$ (76,623)	$ (91,663)	$ (122,486)
Loss on disposal of property	$ -	$ -	$ (66,189)	$ -	$ -	$ (2,129)	$ -	$ (1,348)	$ (45,344)
Miscellaneous Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ (1,558)	$ (12,335)	$ (7,376)
Total Other Expenses	**$ (50,521)**	**$ (49,411)**	**$ (111,998)**	**$ (37,314)**	**$ (27,997)**	**$ (55,520)**	**$ (78,181)**	**$(105,346)**	**$ (175,206)**
Total Expenses before depreciation	$768,881	$822,206	$1,090,065	$1,227,987	$1,194,099	$1,231,198	$1,550,069	$1,491,206	$2,012,251
Depreciation	$(415,750)	$ (396,975)	$ (435,405)	$ (510,128)	$(569,248)	$ (556,824)	$(772,557)	$(893,565)	$(1,009,275)
Total Expenditures	**$1,184,631**	**$1,219,181**	**$1,525,470**	**$1,738,115**	**$1,763,347**	**$1,788,022**	**$2,322,626**	**$2,384,771**	**$3,021,526**

Source: Sebring Airport Authority financial statements and auditors report, 1992 through 2000

Table 12-11. Long-Term Debt

	2000	1999
Revenue Notes, Draw No. B-1-1, payable to Florida Local Government Finance Commission, collateralized by certain grant funds and incremental tax revenues from the Community Redevelopment Agency	$3,000,000	$ -
Revenue certificate payable – Bank of America	257,044	286,763
Sebring Airport Authority Water and Sewer Bonds, Series 1997A, payable to U.S. Department of Agriculture, Rural Utilities Service	911,100	920,200
Sebring Airport Authority Water and Sewer Bonds, Series 1997B, payable to U.S. Department of Agriculture, Rural Utilities Service	365,100	368,700
Note payable to State of Florida, Office of Tourism, Trade and Economic Development	165,663	172,270
Interest free note payable to Haywood O. Taylor	24,251	30,718
Total	4,723,158	1,778,651
Less current portion	1,577,931	49,015
Long-term portion	**$3,145,227**	**$1,729,636**

Source: Sebring Airport Authority financial statements and auditors report, September 30, 2000

Maturities of long-term debt as of September 30, 2000, are as follows in **Table 12-12**.

Table 12-12. Long Term Debt Maturity

Year Ending September 30,	Amount
2001	$1,577,931
2002	246,245
2003	21,927
2004	47,097
2005	1,497,872
Thereafter	1,332,086
Total	**$4,723,158**

Source: Sebring Airport Authority financial statements and auditors report, September 30, 2000

1992-2000 Historical Financial Analysis

During the period cited, 1992 through 2000, SEF has maintained a yearly net gain. Revenues have continued to offset expenses primarily due to FBO and industrial tenant leases, as well as various sources of capital contributions. In addition, throughout the eight years, all aviation indicators increased, including annual aircraft operations (1.6 percent), average annual fuel sold (3.0 percent), and fuel revenues (4.0 percent), and revenues associated with the industrial park and Sebring International Raceway also increased.

Tables 12-13 and 12-14 and **Figure 12-2** depict the historical analysis of key aviation indicators, revenues, expenditures, and profits and losses for the period 1992 through 2000.

12.3.1.3 Projected Revenue Forecast Analysis (2001-2021)

Revenues the Airport generates now and in the future will continue to come primarily from commissions on services provided, hangar and building rental fees, land leases, and fuel sales. Additional revenues can be achieved through the implementation of landing fees on aircraft over 75,000 lb gross landing weight (GLW), terminal fees, automobile parking fees, and potential passenger facility charges (PFCs) when airline service is initiated. However, the greatest opportunity to generate significant revenues to implement the recommended development will be associated with the use of undeveloped and underutilized land areas within the existing Airport property as well as contiguous property currently in negotiation. The success of the Airport to qualify for bonding and attaining financial sustainability rests with the successful marketing and development of the industrial park, commerce park, and GA and commercial aviation services. In addition, capital contributions have historically represented more than 60% of total revenues. Therefore, projected capital contributions through the year 2021 represent approximately 60% of total estimated development costs. These contributions include: line item appropriations (EDA), public private partnerships, bonding, lines of credit, various Interlocal Agreements, and private funding sources

In addition, a significant source of revenue is obtained through the CRA program and its associated interest. However, at the time of this writing, the County had expressed its desire to dismantle this program in 2005 when its charter is up for renewal. As a result, an analysis of projected revenues was performed with and without CRA funding in order to determine the ability of the Airport to fund its capital improvement program without this funding.

Table 12-15 and **Figure 12-3** project revenue and expenditures for the selected development with the assistance of CRA Funding. **Table 12-16** and **Figure 12-4** demonstrate the anticipated revenue and expenditures likely to occur with the planned development without the assistance of CRA Funding.

Table 12-13. Statement of Expenditures Years 1992-2000

Expense Source	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Personal services	$252,695	$239,181	$351,259	$432,215	$473,325	$375,323	$435,385	$468,928	$504,451
Contractual services	$1,818	$18,702	$20,577	$14,893	$38,639	$59,970	$142,185	$142,465	$238,571
Professional services	$33,053	$68,499	$103,891	$111,239	$107,073	$150,697	$270,370	$151,157	$206,865
General operating	$430,794	$446,413	$502,340	$632,326	$547,065	$589,688	$623,948	$623,310	$887,158
Total Operating Expenses	**$718,360**	**$772,795**	**$978,067**	**$1,190,673**	**$1,166,102**	**$1,175,678**	**$1,471,888**	**$1,385,860**	**$1,837,045**
Depreciation	$ (415,750)	$ (396,975)	$ (435,405)	$ (510,128)	$(569,248)	$ (556,824)	$ (772,557)	$(893,565)	$(1,009,275)
Net Operating Expenditures	**$1,134,110**	**$1,169,770**	**$1,413,472**	**$1,700,801**	**$1,735,350**	**$1,732,502**	**$2,244,445**	**$2,279,425**	**$2,846,320**

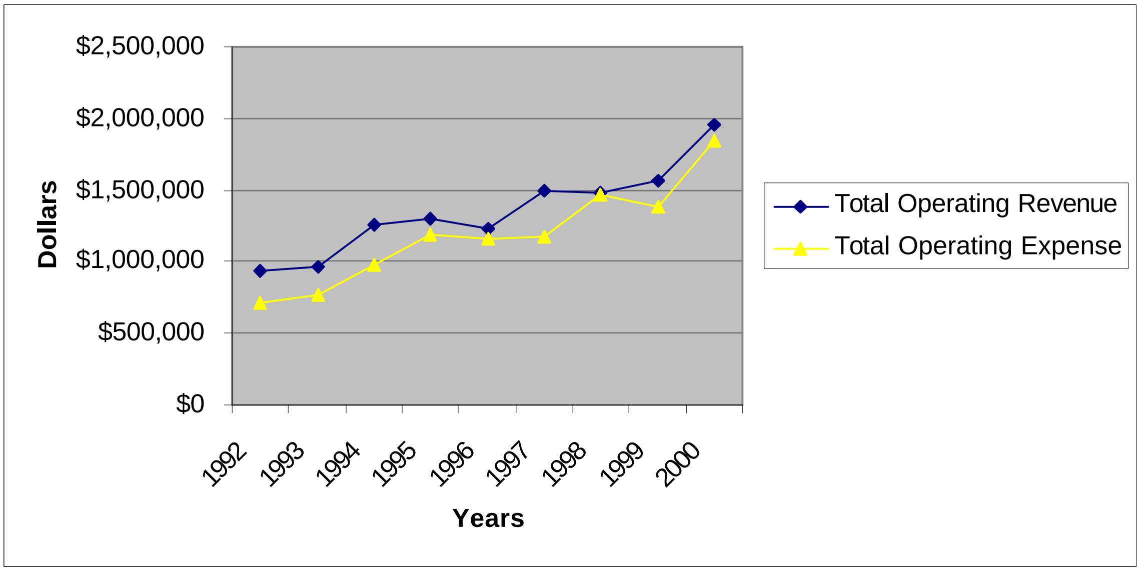
Source: SAA Financial Statements and Auditor's Report (1992-2001) and PBS&J, 2002

Table 12-14. Historical Analysis of Airport Revenues and Expenses

Type Revenue	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total Operating Revenue	$935,462	$963,727	$1,253,446	$1,295,919	$1,223,380	$1,499,986	$1,474,278	$1,567,133	$1,948,731
Total Operating Expense	$718,360	$772,795	$978,067	$1,190,673	$1,166,102	$1,175,678	$1,471,888	$1,385,860	$1,837,045
Operating Income Before Depreciation	$217,102	$190,932	$275,379	$105,246	$57,278	$324,308	$2,390	$181,273	$111,686
Depreciation	($415,750)	($396,975)	($435,405)	($510,128)	($569,248)	($556,824)	($772,557)	($893,565)	($1,009,275)
Net Operating Gain (Loss)	($198,648)	($206,043)	($160,026)	($404,882)	($511,970)	($232,516)	($770,167)	($712,292)	($897,589)
Ratio of Operating Revenues to Operating Expenditures	**1.30**	**1.25**	**1.28**	**1.09**	**1.05**	**1.28**	**1.00**	**1.13**	**1.06**
Total Non-operating Revenue (Expense)	($48,089)	$512,907	$585,554	$2,468,247	$1,024,612	$3,146,305	$1,977,097	$1,384,229	$3,280,229
Annual Net Income (Loss)	**($246,737)**	**$306,864**	**$425,528**	**$2,063,365**	**$512,642**	**$2,913,789**	**$1,206,930**	**$671,937**	**$2,382,640**
Cumulative Net Income (Loss)	**$3,031,516**	**$3,338,380**	**$3,763,908**	**$5,827,273**	**$6,339,915**	**$9,253,704**	**$10,460,634**	**$11,132,571**	**$13,515,211**

Source: SAA Financial Statements and Auditor's Report (1992-2001) and PBS&J, 2002

Figure 12-2. Historical Analysis of Airport Revenues and Expenses



Based upon the recommended future development, projection of each revenue source was conducted. Aviation leases and rents are predicted to increase as the Airport develops the northeast GA area, south (commerce park), midfield, and industrial park. Assuming land acquisition and development begin in 2003, it is assumed that 10 percent of the land areas will be acquired and leased. It is also assumed that by 2015 all land areas will be acquired and approximately 80 percent leased throughout the planning period. Therefore, based upon the current land lease rate of $0.20 per square foot and an average 70 percent occupancy of the commerce park, north GA aviation area, midfield, as well as the existing leaseholds, potential annual revenues of all land leaseholds could exceed $1-million by 2021. A similar revenue projection was performed for industrial buildings and hangar revenue, which currently make up approximately 50 percent of SEF's total revenue, resulting in lease revenues, which are anticipated to exceed $11-million annually.

Fuel sales associated with GA, commercial, and military aircraft were based upon anticipated operations and historic 2000 fuel charges. Fuel flowage fees represent a significant revenue source at SEF. Therefore, based upon existing and forecast future fuel flowage demand, it was determined that fuel sales, on the whole, could exceed $41 million by the year 2021.

Terminal revenue projections associated with the airside service center and the proposed commercial terminal complex are based upon the square footage of the facility times the existing and future cost per square foot. Currently, the Sebring Airside Center rental rate per square foot is $4.00. In the case of the commercial terminal facility, a rate of $3.00 per square foot was used based upon similarly sized airports in the state. Therefore, by applying the square foot rates to the respective terminals as they increase in area, annual terminal revenues, for both the Airside Service Center and Commercial Terminal Facility, could exceed $245,000 by 2021, with only a 70 percent occupancy rate.

Potential airfield revenues are derived primarily from landing fees. Assuming a direct correlation between Airfield revenues and commercial operations (i.e., landings), potential airfield revenues could exceed $32,000 by 2021, since it is anticipated that significant commercial service will not begin until approximately 2014 or later.

Revenues derived from automobile parking are considered another potential source of significant revenue. Parking fees can typically represent one of the largest revenue generators at commercial service airports. The projection analysis was conducted based upon existing and future space requirements as well as an average public parking rate for commercial airports of similar size to SEF. Therefore, based upon a factor of one parking space turnover rate per space per day, 60 percent occupancy rate, and an average parking rate of $2.50 per day, parking revenues could exceed $245,000 by 2021.

Other revenues (i.e., utilities) forecasts were simple straight-line projections based upon historic (1992 through 2000) revenues. It is anticipated, however, that other revenues will exceed $32 million or $19 million with or without CRA Funding, respectively, by the year 2021.

Depreciation projection was based upon an historic average percentage of 35 percent of depreciation to total annual revenues with and without CRA funding before depreciation. Maintaining this percentage throughout the forecast period, depreciation will increase from $1,009,275 in 2000 to approximately $30 million with CRA funding, or $26 million without CRA funding for the year ending 2021.

Total operating expenses, with the exception of anticipated development costs, were developed based upon an historic rate of growth between the years 1997 and 2000. In addition, remaining expenses were based upon an historical average of the associated expense compared to total operating expenditures, which was then applied throughout the planning period. As a result, total expenditures with and without CRA Funding revenue for the year 2021 were approximately $39 million and $34 million, respectively.

Table 12-15. Projection of Airport Revenues and Expenses With Community Redevelopment Agency Revenue

	Year	Aircraft Operations	Airport Revenues	Airport Expenditures	Ratio Rev/Exp	Non-operating Rev/Exp	Annual Profit (Loss)	Cumulative Profit (Loss)
	1997	36,500	$1,499,986	$1,175,678	1.28	$3,178,318	$2,861,999	$9,201,914
	1998	61,700	$1,474,278	$1,471,888	1.00	$2,022,968	$1,205,771	$10,459,475
Historical	1999	64,113	$1,567,133	$1,385,860	1.13	$1,440,557	$674,160	$11,134,794
	2000	67,210	$1,948,731	$1,837,045	1.06	$3,366,939	$2,327,410	$13,459,981
	2001	74,659	$1,863,875	$1,683,173	1.11	$639,146	$93,752	$13,608,963
	2006	138,042	$3,916,363	$4,316,691	0.91	$2,673,297	$1,409,630	$13,910,544
Forecast	2011*	154,365	$10,855,302	$5,105,628	2.13	$3,623,889	$8,352,438	$31,457,168
	2016	169,312	$24,301,328	$5,890,452	4.13	$5,232,379	$22,465,165	$114,991,760
	2021	185,074	$63,874,070	$8,013,960	7.97	$10,152,336	$64,409,655	$352,388,318

Source: SAA Financial Statements and Auditors Report and PBS&J, 2003
*Note: * Commercial Service begins*

Figure 12-3. Projection of Airport Revenues and Expenses With Community Redevelopment Agency Revenue

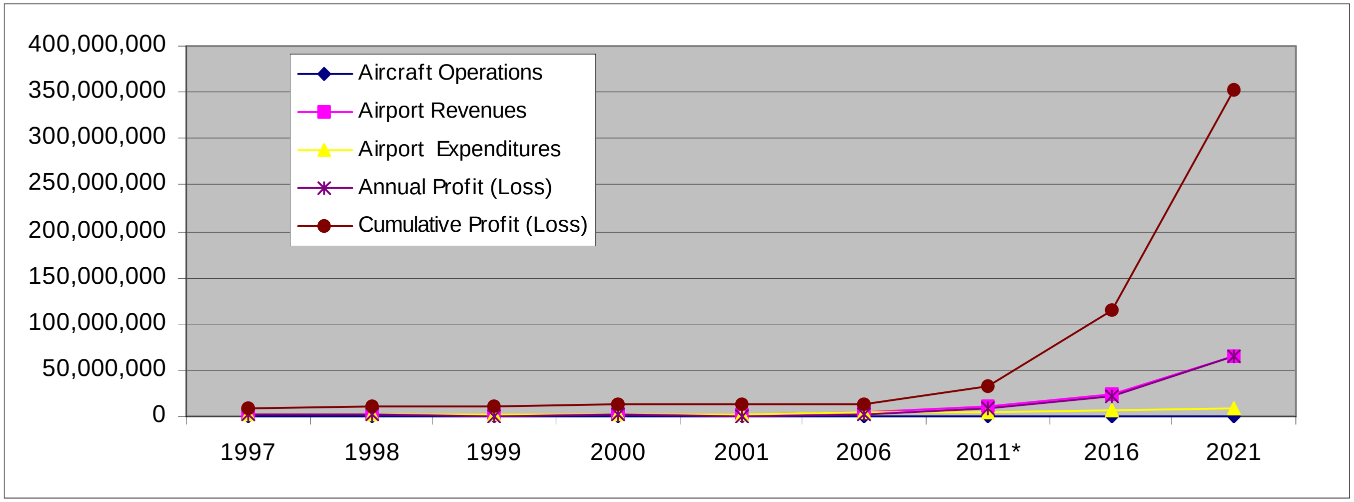
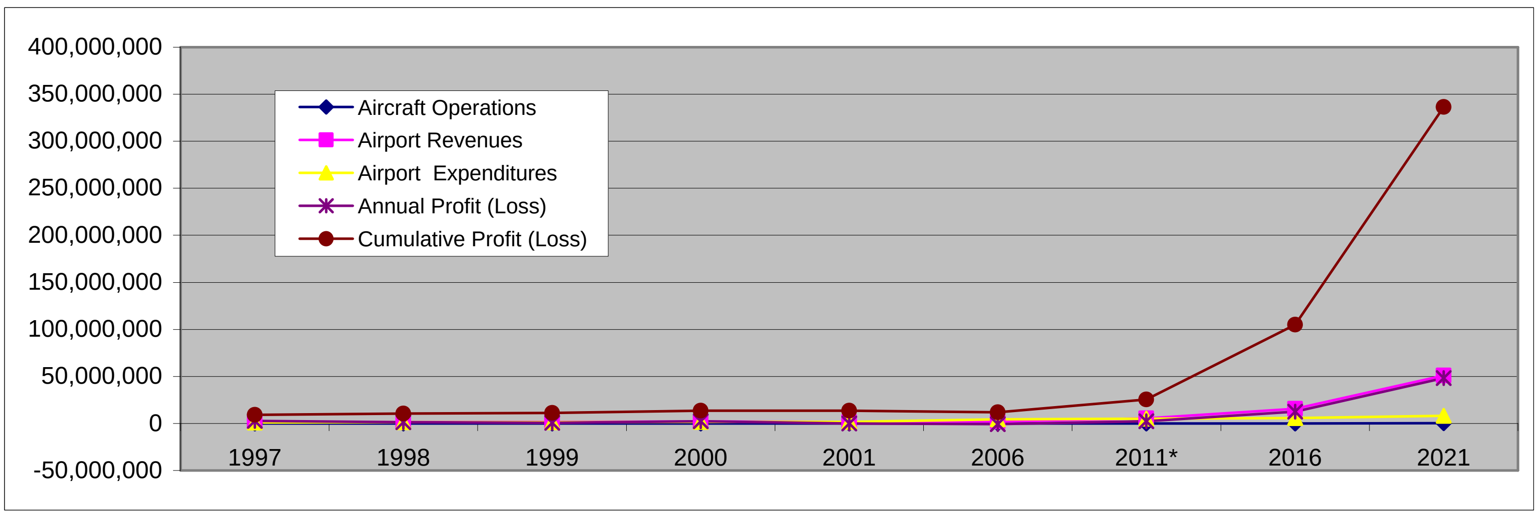


Table 12-16. Projection of Airport Revenues and Expenditures Without Community Redevelopment Agency Revenue

	Year	Aircraft Operations	Airport Revenues	Airport Expenditures	Ratio Rev/Exp	Non-operating Rev/Exp.	Annual Profit (Loss)	Cumulative Profit (Loss)
Historical	1997	36,500	$ 1,499,986	$ 1,175,678	1.28	$ 3,178,318	$ 2,861,999	$ 9,201,914
	1998	61,700	$ 1,474,278	$ 1,471,888	1.00	$ 2,022,968	$ 1,205,771	$ 10,459,475
	1999	64,113	$ 1,567,133	$ 1,385,860	1.13	$ 1,440,557	$ 674,160	$ 11,134,794
	2000	67,210	$ 1,948,731	$ 1,837,045	1.06	$ 3,366,939	$ 2,327,410	$ 13,459,981
Forecast	2001	74,659	$ 1,863,875	$ 1,683,173	1.11	$ 639,146	$ 93,752	$ 13,608,963
	2006	138,042	$ 2,014,170	$ 4,316,691	0.47	$ 2,477,479	$ (688,380.90)	$ 11,812,533
	2011*	154,365	$ 5,399,313	$ 5,105,628	1.06	$ 3,081,124	$ 2,353,684	$ 25,458,414
	2016	169,312	$ 15,480,596	$ 5,890,452	2.63	$ 4,017,312	$ 12,429,367	$ 104,955,961
	2021	185,074	$ 50,922,935	$ 8,013,960	6.35	$ 6,958,633	$ 48,264,816	$ 336,243,479

Source: SAA Financial Statements and Auditors Report and PBS&J, 2003
*Note: * Commercial Service begins*

Figure 12-4. Projection of Airport Revenues and Expenditures Without Community Redevelopment Agency Revenue



12.4 OTHER REVENUE SOURCES

Federal Financial Assistance

The Airport receives airport development funding from two primary sources: the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT). The FAA, through the Airport Improvement Program (AIP), funds GA airports by two means: GA entitlement and AIP discretionary funds. The Airport has typically received AIP discretionary funding for federally eligible projects, usually reserved for construction or reconstruction of runways and taxiways, non-exclusive use aprons, navigational aids, federal air traffic control towers, passenger terminal buildings (non-revenue areas only), primary airport access roads, and land acquisition. Most eligible FAA project costs are eligible up to 90 percent, with the remaining 10 percent typically shared evenly between the FDOT and the Airport. The 1999 reauthorization of the AIP legislation (AIR 21) set aside funding specifically reserved for GA airports.

GA entitlement funding offers eligible airports opportunity to receive up to $150,000 dollars per year for eligible FAA projects. Currently, SEF is not eligible for FAA GA entitlement funding. Should the Airport attract commercial passenger and cargo service, it may become eligible for AIP Entitlement and Cargo Entitlement funding in the future.

SEF is eligible for up to 90 percent of FAA project costs.

Should the Airport obtain scheduled passenger service, not only will the Airport become eligible for AIP entitlement (funding formula is based upon the number of annual passengers in excess of 10,000 per year), but SEF will become eligible to impose PFCs. The FAA allows for entitlement airports to issue PFCs of $1.00 up to $4.50 on each enplaned passenger leaving the Airport. PFC funds remain at the Airport and can be used for FAA eligible development projects at the Airport.

In addition, several federal assistance-funding programs (other than FAA) are available to Airports. These include the following:

- Economic Development Assistance Grants (EDA) managed by the U.S. Department of Commerce – offers grants to finance industrial park development.
- Rural Economic Development Grants, managed by and issued thorough the U.S. Department of Agriculture (USDA) – offers grants to finance industrial park development, infrastructure development, road and railroad development, etc.
- Transportation Act for the 21st Century (TEA-21) – airport is eligible for access road development and intermodal-related projects.

To date, the SAA received federal assistance through direct programs, which is reflected in the Schedule of Expenditures of Federal Awards (**Table 12-17**). Under Office of Management and Budget (OMB) Circular A-133, a major program is defined as a program whose federal expenditures during the applicable year exceed the larger of $300,000 or 3 percent of such total expenditures.

Table 12-17. Schedule of Expenditures of Federal Awards

2000		1999	
Federal Award Number	**Award Amount**	**Federal Award Number**	**Award Amount**
FAA:		***FAA:***	
06-98-A-80064	$575,557	06-97-A-80056	$46,557
US Dept of Agriculture		06-98-A-80064	$549,000
09-028-0591173009	$2,007,500	***US Dept of Agriculture***	
09-028-0591173009-05	$395,000	09-028-0591173009	$2,007,500
		09-028-0591173009-05	$395,000
Total Federal Awards	**$2,978,057**	*Loans:*	
		09-028-0591173009	$928,800
		09-028-0591173009	$372,200
		Total Federal Awards	**$4,299,057**

State Financial Assistance

FDOT funding is available for FDOT eligible projects, and can be utilized to match FAA grants. FDOT eligibility criteria is much broader than FAA's, including funding of hangars, GA terminal buildings, parking lots, and projects referred to as economic development projects (i.e., industrial or commerce parks). Since SEF is classified as a GA Airport, it is eligible for up to 80 percent funding on most FDOT projects that are not supported by federal dollars. When federal dollars are available, FDOT provides one half of the matching share, typically 5 percent.

The Joint Automated Capital Improvement Program (JACIP) is a cooperative funding program utilized by the FAA and FDOT for coordination of annual funding and programming of Florida airport projects. Funding from FDOT is dependent upon the Airport 's inclusion of proposed near-term projects within the FDOT five-year work program and the JACIP.

To date, the SAA has received state assistance through direct programs, which is reflected in the Schedule of State Financial Assistance (**Table 12-18**). *Section 216.349, Florida Statutes*, imposes audit requirements on recipients of grants and aids appropriations from state agencies. The grants and aids appropriations referred to in the act are those designated as "grants and aids" in a Florida appropriations act. Those grant funds designated as "grants and aids" in a Florida appropriations act are reflected in the accompanying Schedule of State Financial Assistance for fiscal year ended September 30, 2000.

Table 12-18. Schedule of State Financial Assistance

2000		1999	
DOT Award Number	**Award Amount**	**DOT Award Number**	**Award Amount**
AC842-1822509-09000-3853	$488,717	***DOT:***	
AE584-1822519-09900-3805	$327,950	1122527	$600,000
AF056-1822555-09000-3858	$20,000	AB854-1822487-09910-3811	$357,500
AF741-1822557-09000-3859	$125,000	AC842-1822509-09000-3853	$200,000
AF757-1822574-09000-3861	$3,211,969	AE587-1822519-09900-3805	$327,950
AE651-1822575-09900-3806	$34,255	AF056-1822555-09000-3858	$20,000
1822577	$301,526	AF741-1822557-09000-3859	$125,000
AF594-1822578-09000-3862	$43,100	AF757-1822574-09000-3861	$2,495,600
AH837-1822571	$92,585	AE651-1822575-09900-3806	$34,255
Office of Tourism, Trade, etc:		1822577	$172,500
96/9728A	$728,330	AF594-1822578-09000-3862	$43,100
97/9828B	$358,971	AG961	$52,500
		AH837-1822571	$87,500
Total State Awards	$5,732,403	***Office of Tourism, Trade, etc:***	
		94/9528A	$232,995
		96/9728A	$728,330
		97/9828B	$358,971
		Total State Awards	$5,836,201

Local Share

The Airport and the SAA will need to match the federal and state grants that will be necessary to develop the proposed master plan development program. The most likely funding mechanism would be through the issuance of bonds. Airports typically secure general airport revenue bonds (GARB), which are secured by the airport's future revenues. Based on the financial analysis of the Proposed Development Plan, the Airport's revenue generating potential is significant and likely sufficient to finance the issuance of debt and the associated debt service.

12.5 SUMMARY

The Airport is advised to seek professional financial advice on bonding requirements and opportunities.

Revenues the Airport generates now and in the future will come primarily from commissions on services provided, hangar and building rental fees, and land leases. Additional revenues can come from landing fees on the aircraft over 75,000 pounds GLW, terminal fees, and PFCs when airline services are instated. The undeveloped and underutilizes land areas on the Airport represent the greatest opportunity to significantly generate the necessary revenues to implement the master plan development program. The success of the Airport to qualify for bonding and attain financial sustainability rests with the successful marketing and development of the industrial park.

JOINT AUTOMATED CAPITAL IMPROVEMENT PLAN (JACIP)

13

Sebring Regional Airport

This section includes the Airport's annually mandated Joint Automated Capital Improvement Plan (JACIP) for the years 2002-2008 as required by the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT). It is the JACIP process that coordinates the programming and funding of airport projects statewide by the FAA and FDOT for the next five years. The updated JACIP contained herein reflects projects that were identified and prioritized by Sebring Airport Authority (SAA) without the benefit of this fully completed Master Plan document. Therefore, the priority of development identified in the JACIP does not exactly reflect what is contained within this Master Plan document for fiscal year 2002. However, the subsequent years (2003-2007) emulates the Master Plan's development program, with few exceptions. Future annual updates to the JACIP can be adjusted to resolve any differences between the fiscal year 2002 JACIP and the 2000-2021 Airport Master Plan Update's recommended development schedule.

The development program discussed in Chapter 11, Construction Phasing and Capital Improvement Plan, and Chapter 12, Financial Feasibility, illustrates the development necessary for the Airport to meet its goal of becoming financially independent. The Master Plan's recommended development program provides a balance between the need for increased revenues against the cost of development. Thus, the Master Plan's development program presents a strategy for the Airport to follow to increase revenues in a timely manner by developing the large available land areas on-airport for leasing opportunities, while minimizing, to the extent possible, the high costs of development.

The following pages represent the project reports printed from the JACIP program as updated in November 2002.

Table 13-1. JACIP

Year	Project	Description	Amount
2002	Rehabilitation 18-36	This project entails crack repair, asphalt surface refurbishment, and re-marking of Runway 18-36. After crack repair, a Thermoplastic Coal Tar Emulsion Slurry Seal will be spread. After refurbishment is complete the entire runway will be repainted with non-precision markings.	$ 350,000
2002	Phase III, Construction of Taxiway A	This project entails construction of the middle section of Full-Length Parallel Taxiway Alpha. Work includes: constructing 50' x 1600' of new pavement, installing taxiway lighting, and placement of new airfield signage. Connecting Twy A3 will be reconstructed as well.	$ 948,350
2003	Security Enhancements per 9/11	To comply with pending GA security requirements forthcoming from FAA/TSA.	$ 750,000
2003	Phase IV, Construction of Taxiway A	This project entails construction of the northern section of Full-length parallel Taxiway Alpha, and includes constructing 50' x 1100' of new pavement, installing taxiway lighting, and placement of new airfield signage.	$ 875,000
2003	EA Extension 18/36	The project will access the environmental impact relating to the extension of Runway 18-36 and Taxiway Alpha.	$ 200,000
2003	Corporate Aviation Area	This project will update and improve the area between or recent phase of T-hangars to the west, and the relocated control tower to the east. The site will be permitted; demolition performed as required; and access road, parking, lighting, and signage constructed/installed.	$ 300,000

Table 13-1 (Continued). JACIP

2003	Wireless Broadband Infrastructure	To provide infrastructure for implementation of affordable, easy access to broadband internet capability for the SAA and Airport tenants.	$ 300,000
2003	Implement GIS	The benefits of a GIS application at SEF will be recognized by all levels of management and the operating units within the SAA organization.	$ 418,700
2003	Relocate Fuel Farm	As identified is the existing and future master plan, the fuel farm has be designated for relocation, the appropriate new location will be identified in the new master plan project. Project will also include a self-service fuel island as identified in the past MPU.	$ 400,000
2003	Construct New GA Terminal Building	Expand existing Sebring Airside Center.	$ 142,500
2003	Master Plan Update		$ 67,250
2003	Design and Rehabilitation of Building 60		$ 567,868
2004	Extension of Runway 18-36	This project includes the construction of a 1,776-foot extension to the northern end of Runway 18-36, as well as widening the entire runway from 100 to 150 feet.	$ 1,500,000
2004	Commerce Park Taxiway	This project will provide aviation access to new commerce park at SEF. The commerce park will provide both airside and landside development areas.	$ 1,275,000
2004	1,000 Acre Land Acquisition	The SAA has an option on adjacent land allowing for expansion of the airfield to allow for larger aircraft usage and mitigate noise.	$ 3,000,000
2004	Phase II Master Drainage Plan (Commerce Park)	This project will include the permit modification, design, and construction of a new stormwater system in support of the new commerce park located between Runways 36 and 32. The park will have airfield access and drainage and conveyance will be for a dry stormwater system.	$ 650,000

Table 13-1 (Continued). JACIP

2004	ARFF Building	Construct ARFF building to meet Part 139 goal and to attract air carrier service.	$ 2,000,000
2004	Access Road to Commercial Aviation Area	As identified in the 1994 Master Plan, the project will provide landside access to a planned commercial aviation development that will support many types of general and commercial aviation uses.	$ 625,000
2004	Security Fencing	This project will provide compliance with present and future airfield security and safety regulations.	$ 465,000
2005	2.5 miles Airport Loop Road	This project involves expanding the Airport Loop Road by 2.5 miles, thereby completing the roadway circulation system required for the raceway and new commerce park.	$ 3,437,000
2005	Land Acquisition and New Runway Study	This EA will provide a road map for compliance with all state and federal mandates, as well as local issues such as noise and land use.	$ 520,000
2005	Phase III Master Drainage-North 18/36	This project includes the expansion of the Phase I master system to support the continued growth identified in the Master Plan Update. The project will include the recapture of pond 200 by filling, to enable the expansion of T-hangars and commercial hangars.	$ 440,000
2005	Water/Wastewater Improvement Associated with Commerce Park	Located southeast of the Sebring International Raceway is approximately 100 acres of potential development area on which the SAA has planned a commerce park and light industrial development. Based upon the water and wastewater demands from the existing industrial park, it is projected that possible water and wastewater system needs would be in the range of 30,000 gallons per day for water and 25,000 gallons per day for wastewater.	$ 2,200,000
2005	Commercial Hangar	Design and construct new commercial hangar.	$ 1,200,000

Table 13-1 (Continued). JACIP

2005	EA New Runway (14L-32R)	Based upon the justification of a new runway for noise mitigation and airfield capacity, this project will undertake the necessary planning studies associated with a new runway.	$ 435,000
2005	Airfield Drainage Upgrades	Given the age of the drainage pipes, this project is for an evaluation of the existing Airport storm sewer drainage system from the airside portion of the Airport to their respective outfall locations.	$ 400,000
2005	20 T-Hangar Development	The Airport has successfully implemented two phases of hangar development, which are full and providing revenue while increasing the number of based aircraft. The project would also construct a self-service plane wash and vacuum facility that would be integrated into the complex.	$ 1,250,000
2006	Land Acquisition (Davis Property)	This project would assist in acquiring property directly northeast and contiguous to SEF's current boundaries. This property is under a binding option to the SAA.	$ 2,500,000
2006	Airport Zoning Study	This project will undertake an aggressive zoning and land use planning that will include updating the current ordinance to meet state requirements and address local issues.	$ 150,000
2006	Building 60 Roof Repairs	Replace existing roof on Building 60.	$ 100,000
2006	Commercial Hangar Development	Commercial aviation development.	$ 400,000
2006	Land Acquisition (South of South Access Road)	This project will allow the acquisition of a number of lots directly south and contiguous to SEF's boundaries. This purchase would provide a buffer between the Airport and the residential communities in the area.	$ 1,435,000

Table 13-1 (Continued). JACIP

2007	Construct Commercial Runway, Taxiways and Apron - Phase I	This project consists of design and implementation of new commercial runway, taxiways, and aprons.	$10,000,000
2007	Airport Land Acquisition (20 Acres Reimbursement)	Airport land acquisition for reimbursement for property purchased along Airport Road (20 acres) per JPA.	$ 83,222
2007	Rail Spur Extension to Expanded Industrial Park	Rail extension to land acquisition to increase marketability to new area of industrial park.	$ 1,500,000
2007	Construct Commercial Runway, Taxiways and Apron - Phase II	Phase II development of commercial runway and associated infrastructure.	$20,000,000
2007	Construct Commercial Runway, Taxiways and Apron - Phase III	Implementation of new runway and facilities.	$ 1,800,000
2007	Wastewater Design/Construction - South Side Expansion	Based on planned development and water and wastewater demands from the existing industrial park, it is projected that possible water and wastewater needs would be in the range of 100,000 gpd for water and 90,000 for wastewater. Implementation of the planned development will necessitate expansion of the wastewater treatment and effluent disposal system. The existing wastewater plant was planned to be doubled in capacity from the existing 90,000 gpd to 180,000 gpd.	$ 3,400,000
2007	Water Improvements - South Side Expansion	This project includes rehabilitation of the potable water distribution associated with the 200-acre development area to the south of the Sebring International Raceway.	$ 2,100,000

Table 13-1 (Continued). JACIP

2008	Design/Construct Taxiway East of Runway 18/36	This project entails construction of a parallel taxiway serving future aviation related development on the southeastern side of Runway 18-36. This work includes constructing 15,000 sq yd of new pavement, installing taxiway lighting, and placement of new airfield signage.	$ 1,275,000
2008	Water/Wastewater Improvement Associated with Industrial Park	Development of the 1,000 acres parcel to the east of the existing Airport property line. Based on the configuration of water and wastewater demands from the existing industrial park, it is projected that up to 600 acres of developable acres would be available and water and wastewater system needs could be 300,000 gpd and 270,000 gpd, respectively. Due to the present location of existing water and wastewater infrastructure, it is likely that an independent water and wastewater system will be required.	$ 8,600,000

Note: *GA – general aviation*
TSA – Transportation Security Administration
GIS – geographic information system
SEF – Sebring Regional Airport
MPU – Master Plan Update
ARFF – aircraft rescue and fire fighting
EA – environmental assessment
JPA – joint participation agreements
GPD – gallons per day

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APPENDIX A

In progress.