



IOWA AVIATION SYSTEM PLAN
AIRPORT SUMMARY REPORT
WATERLOO MUNICIPAL AIRPORT

Prepared for:

IOWA DEPARTMENT OF TRANSPORTATION
OFFICE OF AVIATION

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IOWA AVIATION SYSTEM PLAN - AIRPORT SUMMARY REPORT

This summary is intended to provide a general understanding of the specific information, findings and recommendations from the Iowa Aviation System Plan. An individual airport report was prepared for each public owned airport in Iowa.

INTRODUCTION

The Iowa Department of Transportation Office of Aviation, along with the System Plan Advisory Committee and consultant team, developed a strategic approach by which to identify and evaluate the needs of the Iowa aviation system within the period 2004 to 2024.

The Iowa aviation system is an integral component of the state's transportation network. The aviation system meets aviation and economic needs and links Iowa to the national transportation system. Aviation provides an important and efficient means of transportation for the movement of people and goods. The vision for the Iowa aviation system is to have safe, quality facilities and services that support transportation demands and meet economic development and quality of life needs in the state.

The primary goal of the system plan is to provide a framework that supports informed decisions related to planning and developing the Iowa aviation system. The objectives of this update of the Iowa Aviation System Plan are to:

- Identify and analyze aviation assets, including airspace, ground facilities and services, and needs of the state to assure that aviation performs its role in Iowa's economy and for its citizens.
- Provide continued guidance for development of a system of airports to meet the state's existing and future air transportation needs, projecting five, ten, and 20-year projects and giving guidance to meet needs.
- Build consensus among public policy makers, airport sponsors and users so that the plan's recommendations can be more readily accomplished.

Each airport was assigned to a functional classification. Facility and service objectives were developed for functional classifications. Based on existing facilities and services, recommendations were set forth for each airport.

SYSTEM GOALS

The following five goals and associated performance measures were identified and adopted to guide the Iowa aviation system development and establish the framework for the Iowa Aviation System Plan:

- **Development** – To provide an airport system that meets current and future customer needs.
- **Economic Support** – To promote an aviation system that sustains and enhances Iowa's economy.
- **Safety & Security** – To promote a safe and secure system of airports.
- **Accessibility** – To provide a system of airports that is accessible from both the ground and the air.
- **Education** – To support a system of airports that provides educational and career opportunities and promotes an understanding of the benefits of Iowa's air transportation system.

Performance Measure & Benchmark Summary	
<p>Performance Measure: Development</p> <p><i>Benchmarks</i></p> <ul style="list-style-type: none"> • Airports meeting aircraft storage objectives • Airports meeting aircraft parking objectives • Airports meeting auto parking objectives • Airports with Pavement Condition Index (PCI) rating of 70 or higher on primary runway • Airports with current master plan or Airport Layout Plan (ALP) • Airports included in a local comprehensive plan or with surrounding land use controls/zonings <p>Performance Measure: Economic Support</p> <p><i>Benchmarks</i></p> <ul style="list-style-type: none"> • Airports with jet fuel • Airports with a runway length of 5,500 feet or greater • Airports with rental car services • Airports with a courtesy car available • Airports with a 24-7 fueling (credit card or FBO) • Iowa employment within a 30-minute drive time of Commercial or Enhanced Service airport • Employment growth counties within 30-minute drive time of Commercial or Enhanced Service airport • Airports supporting air cargo • Airports with aircraft maintenance <p>Performance Measure: Safety and Security</p> <p><i>Benchmarks</i></p> <ul style="list-style-type: none"> • Airports with clear approaches to primary runway • Airports with wildlife management plans • Airports with emergency response plans • Airports with perimeter fencing • Airports with controlled access to airfield 	<p>Performance Measure: Accessibility</p> <p><i>Benchmarks</i></p> <ul style="list-style-type: none"> • Airports with precision approaches • Airports with any instrument approach • Airports with approach lighting system (ALS) • Airports with a precision approach and ALS • Iowa's Population within 30 minutes of any system airport • Iowa's population within 30 minutes of a Commercial or Enhanced Service airport • Iowa's population within 30 minutes of a General Service airport • Iowa's population within 30 minutes of an airport with a non-precision approach • Iowa's population within 30 minutes of an airport with a precision approach • Iowa's population within 30 minutes of an airport with onsite weather reporting equipment • Iowa's population within 60 minutes of an airport with one or more scheduled commercial airlines • Iowa's population within 120 minutes of an airport with two or more scheduled commercial airlines • Iowa's population within 120 minutes of an airport with two or more scheduled commercial airlines or 60 minutes of an airport with one or more scheduled commercial airlines <p>Performance Measure: Education</p> <p><i>Benchmarks</i></p> <ul style="list-style-type: none"> • Airports with on-site flight instruction • Aviation related training programs connected with local schools • Airports with public outreach/educational (following National Air Transportation Association (NATA,) National Business Aircraft Association (NBAA,) and Aircraft Owners and Pilots Association (AOPA) guidelines) programs, or hosting functions to bring the non-flying public to the airport

AIRPORT FUNCTIONAL ROLES

Airports within any transportation system contribute to meeting air transportation and economic needs in different ways and at varying levels. While each airport within a system contributes in some way, airports fill different roles. Because airports in the Iowa aviation system play different roles, their needs for facilities and services also vary accordingly.

With input from the Iowa DOT Office of Aviation and the System Plan Advisory Committee, each public owned airport in Iowa was assigned to one of five roles.

RECOMMENDED FUNCTIONAL AIRPORT ROLES

- **Commercial Service Airports** – these airports support some level of scheduled commercial airline service and they support a full range of general aviation aircraft to virtually all domestic and possibly some international destinations.
- **Enhanced Service Airports** – these airports support almost all general aviation aircraft, including most types of business jets; these airports generally serve as transportation centers and economic catalysts for the State.
Facility and service objectives: 5,500' x 100' runway, parallel taxiway, precision approach, approach lighting, AWOS/ASOS, covered aircraft storage, jet and aviation fuel, full service FBO, and ground transportation
- **General Service Airports** – these airports support most twin and single engine general aviation aircraft and may experience occasional use by business jets. These airports support regional and in-state air transportation needs and local economic development.
Facility and service objectives: 4,000' x 75' runway, partial parallel taxiway or turnarounds, non-precision approach, AWOS/ASOS, covered aircraft storage, jet and aviation fuel, limited service FBO, and ground transportation.
- **Basic Service Airports** – these airports support primarily single engine general aviation aircraft but may also sometimes accommodate smaller twin-engine general aviation aircraft. These airports support local air transportation, and special use aviation activities.
Facility and service objectives: 3,000' x 60' runway (paved), 2,500' runway (turf), exits as needed, visual approach, covered aircraft storage, and aviation fuel.
- **Basis Service II Airports** – These airports support local air transportation, special use aviation activities, and may duplicate services in the area.
No facility and service objectives are specified for these airports.

AIRPORT FACILITY AND SERVICE OBJECTIVE

Airport facility and service objectives were established for the functional roles. These objectives were developed with input from the Iowa DOT Office of Aviation and System Plan Advisory Committee. The facility and services objectives should not be considered a requirement or development standard. Current airport facilities and services were compared to the facility and service objectives. Where existing facilities and services do not meet or exceed the objectives, consideration may be given by the airport owner to develop future facility and services improvements. Development of some facilities would require local support and justification of need through development of an airport master plan or through the environmental documentation process.

No state or federal funding resources are guaranteed or committed by inclusion of specific facility and service improvements in this report.

Facility and service objectives for commercial service airports should, at minimum, equal those developed for enhanced service airports as well as recommendations set forth in a current Airport Master Plan.

Basic Service II airports should meet state minimum safety standards: Runway width 50', visual approach 20:1, wind indicator, and 24 hour public telephone. Additional facility and service objectives were not established for Basic Service II airports.

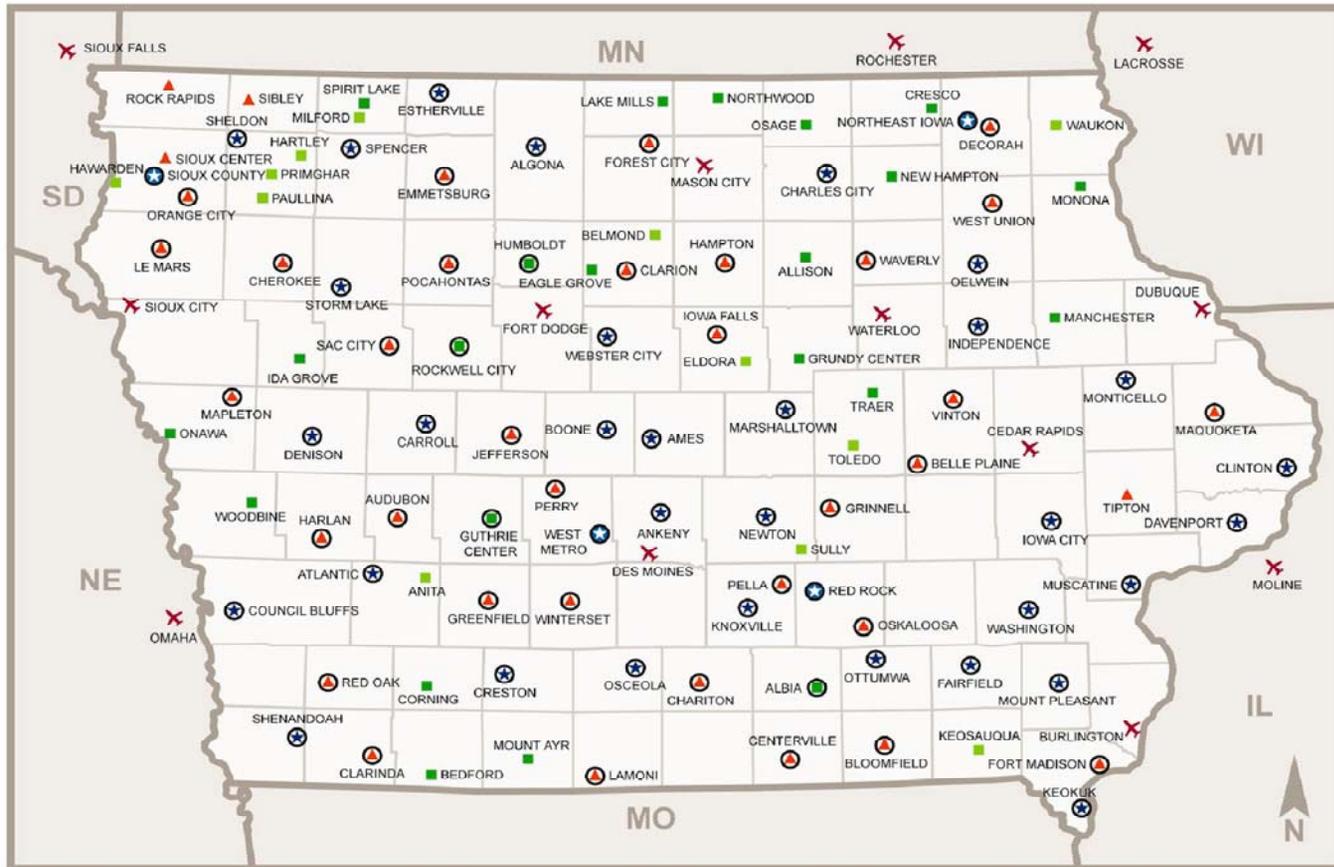
The following table sets forth the facility and service objectives for Enhanced Service, General Service, and Basic Service airports.

FACILITY AND SERVICE OBJECTIVES

	Enhanced Service Airports	General Service Airports	Basic Service Airports
Airport Reference Code (ARC)	C-II	B-II	B-I or Below
Runway Length (Primary)	Minimum 5,500 feet	Minimum Length 4,000 feet	3,000 feet Paved; 2500 feet Turf
Runway Width	100 feet	75 feet	60 feet Paved; 120 feet Turf
Taxiway	Full Parallel	Partial or Turnarounds	Exits as Needed
Approach	Precision	Non-Precision	Visual
Runway Lighting	MIRL/HIRL	MIRL	LIRL (Pilot Controlled)
Taxiway Lighting	MITL/HITL	LITL	Not An Objective
Weather Reporting	AWOS/ASOS	AWOS/ASOS	Not An Objective
Approach Aids	ALS	ALS	Not An Objective
Visual Guidance Slope Indicator (VGSI)	Both Runway Ends	Both Runway Ends	Not An Objective
Runway End Identifier Lights (REILS)	Both Runway Ends	Both Runway Ends	Not An Objective
Rotating Beacon	Rotating Beacon	Rotating Beacon	Not an Objective
Lighted Wind Indicator	Lighted Wind Indicator	Lighted Wind Indicator	Lighted Wind Indicator/Wind Sock
RCO Facilities	RCO Facilities	Not an Objective	Not an Objective
Other Pavement Strength	To Be Determined	To Be Determined	To Be Determined
Covered Storage	For 100% of Based Aircraft	100% of Based Aircraft	100% of Based Aircraft
Aircraft Apron	100% of Daily Transient	50% of Daily Transient	50% of Daily Transient
Terminal/Administration Bldg.	Yes	Not An Objective	Not An Objective
Auto Parking	Spaces equal to 100% of Based Aircraft (paved)	75% of Based Aircraft	50% of Based Aircraft
Fencing	Perimeter	Not An Objective	Not An Objective
Other	Building for Airport Maintenance Equipment	Not An Objective	Not An Objective
Fuel	100LL & Jet A - 24 Hour	100LL & Jet A 24 Hour (as needed)	100LL
FBO	Full Service - 24 Hour	Limited	Not An Objective
Ground Transportation	Rental Car, Taxi or Other	Courtesy Car/Off Site Rental Car	Not An Objective
Food Services	Vending	Vending	Not An Objective
Phone	Yes	Yes	Yes
Restroom	Yes	Yes	Yes
Pilot Lounge	Yes with Weather Reporting	Yes with Weather Reporting	Not An Objective
Security*	*	*	*
Snow Removal	Snow Removal	Snow Removal	Yes

*See the Iowa DOT Security Enhancement Guidelines.

Airports by System Role



- | | | |
|---------------------------------|-----------------------------|---------|
| ✕ Commercial Service Airports | ▲ General Service Airports | ○ NPIAS |
| ★ Enhanced Service Airports | ■ Basic Service Airports | |
| ★ New Enhanced Service Airports | ■ Basic Service II Airports | |

WATERLOO MUNICIPAL AIRPORT (ALO) INDIVIDUAL SUMMARY REPORT

The airport is owned and operated by the City of Waterloo through a seven-member airport advisory, appointed by the mayor, to make policy and capital improvement recommendations to the mayor and city council. The airport has an annual operating budget, not including debt service, of approximately \$900,000 and an annual capital budget that varies from \$500,000 to \$1.5 million.

The airport is classified in the National Plan of Integrated Airport Systems (NPIAS) as a non-hub primary airport and is identified in the Iowa System Plan as a Commercial Service airport. (A non-hub airport is one that enplanes more than 10,000 but less than 0.05 percent of the total U.S. passengers.) The airport is currently enplaning more than 33,000 passengers. The airport serves the general aviation community in northeast Iowa with 83 based aircraft. The airport is also a major base for the Iowa Army National Guard.

LOCATION MAP



The Waterloo Regional Airport is a 2,600-acre facility located within the corporate boundaries of the City of Waterloo, Iowa. The airport is located in the northwest corner of the City approximately 6 miles from the central business district. The airport is bordered on the west by the City of Cedar Falls along Leverssee Road. The north and northwest of the airport is bordered by agricultural while the areas south and southwest are primarily industrial and the area to the east is residential east of Wagner Road. Highway access to the airport is provided by way of U.S. Highway 218, Broadway Avenue and Airport Boulevard. (A rail line crosses Airport Boulevard and is detrimental to 24 hour unobstructed access to the passenger terminal building.) U.S. Highway 20, U.S. Highway 63, and U.S. Highway 218, Interstate 380 and State Highways 57 and 58 provide the highway network to serve regional airport traffic.

EXISTING FACILITIES

- **Runway Facilities**

The Waterloo Regional Airport supports three runway facilities. The primary runway is oriented northwest-southeast on 12/30 headings, is 8,400 feet in length, 150 feet in width and has a grooved asphalt surface. The runway has precision markings (i.e. runway designation, centerline, threshold, touchdown point, touchdown zone, side stripes, and aircraft holding positions), high intensity runway edge lights (HIRL) and is currently classified as Aircraft Approach Category D and Aircraft Design Group IV. The pavement is strength-rated at 75,000 pounds for single wheel gear (SWL), 90,000 pounds for dual wheel gear (DWL), and 150,000 pounds for dual tandem gear (DTWL). Both approaches to Runway 12/30 are supported with published global positioning system (GPS) approaches, very high frequency omni-directional range transmitter (VOR), a non-directional radio beacon (NDB), and Localizer (LOC). The approach for Runway 12 is classified as precision instrument Cat I approach. The runways navigational approach aids include an instrument landing system (ILS), medium approach lighting system with a runway alignment indicator light (MALSR), and a precision approach path indicators (PAPI's) allowing for runway minimums of 200 feet ceiling and 3/4 mile visibility. Runway 30 is equipped with a visual approach slope indicator (VASI-4), and a medium approach lighting system (MALS).

The secondary runway, 18/36 is 6,002 feet in length, 150 feet in width and serves the needs of all aircraft when winds are not favorable for use of the primary runway. The runway has non-precision markings, medium intensity runway edge lights (MIRL) and is constructed with a grooved asphalt surface and is strength rated at 75,000 pounds SWL, 90,000 pounds DWL, and 150,000 pounds DTWL. The approaches for both ends of Runway 17/35 have published global positioning system (GPS) approaches, a non-directional radio beacon (NDB), visual approach slope indicators (VASI), and runway end identifier lights (REIL's).

The remaining runway at the airport is crosswind Runway 6-24. It is 5,403 feet long, 150 feet in width and meets crosswind situations for light aircraft. Both approaches are non-precision approaches equipped with medium intensity runway edge lights (MIRL's), visual approach slope indicators (VASI's), and runway end identifier lights (REIL's).

Both primary runways are served by partial parallel taxiways with medium intensity taxiway lighting (MITL). Taxiway D parallels Runway 12-30 on the northwest end only with the first 2000 feet 75 foot wide and the remainder 50 feet wide. A short piece of Taxiway E parallels Runway 12-30 on the southeast end of

the runway and is 75 feet in width. Taxiway C is 50 feet in width running parallel to Runway 18-36 along the runways' north end. Airfield guidance signs are in place throughout the airport's runway and taxiway system.

In addition, other landing aids at the airport include a rotating beacon, light wind indicators, remote communications outlet (RCO), airport surveillance radar (ASR), UNICOM (a private radio communication service which provides air traffic, weather, and other advisories to pilots arriving and/or departing the airport) and an Automated Surface Observation System (ASOS).

- **Terminal Facilities**

Landside facilities at the Waterloo Regional Airport include the airline passenger terminal complex, general aviation facilities, aircraft rescue and fire fighting facility, an FAA air traffic control tower and airport maintenance facilities.

The existing airline passenger terminal complex is located on the south-central portion of the airport with vehicle access from a 4-lane divided, controlled access, facility, U.S. Highway 218 and a 2-lane airport road, Airport Boulevard, up to the terminal building. The terminal access road provides one-way traffic flow around the terminal building and parking lots. The front curb area of the terminal building is approximately 275 feet in length and can accommodate approximately 10 vehicles.

The current passenger terminal opened in 1948. That initial 6,800 square foot facility has been modified and expanded over the years and today provides 26,600 square feet of enclosed space on the ground floor. Major renovations were completed in 2004. The existing terminal building provides for airline ticketing, airline boarding, baggage claim, car rental, lounge, gift shop, and restaurant all on the main floor. Airport administration offices are located on the second floor along with two national weather service offices.

Departing passengers enter the terminal building from the curbside at ground level. Ticketing and bag checking takes place southwest section of the terminal on the ground level. There are two airline departure lounges with ground level boarding located along the north wall of the terminal. These departure lounges/gates are supported by one security check point. The first floor of the terminal building also contains business center, restaurant, lounge, arcade, space for four rental car counters, baggage claim, meeting rooms and restrooms. One bag claim device is available in the northeast corner of the terminal. Public telephone, newspaper/vending machines and various advertising concessions are located throughout the terminal and concourse areas.

Vehicle parking for the passenger terminal complex is across the airport terminal roadway, immediately south of passenger terminal building, in a surface parking lot with 410 spaces. A total of 60 spaces of the lot are used for short-term parking, 256 spaces for long-term parking, 70 spaces for car rental ready and return, and 24 spaces for employees.

The passenger terminal apron that provides for aircraft parking is a 16,000 square yard concrete apron and is located north of the passenger terminal building.

- **General Aviation Facilities**

General aviation facilities are facilities necessary for handling general aviation aircraft, passengers, and cargo while on the ground. General aviation facilities primarily consist of hangars for aircraft, aircraft parking apron and terminal facilities. General aviation terminal facilities provide space for passenger waiting, pilots' lounge and flight planning, concessions, management, storage, and various other needs.

Currently the airport has two fixed-base operator (FBO's) areas, one located just east of the passenger terminal building and the second located just west of the passenger terminal. The airport currently has 115,700 square feet of hangar space, including 30 individual T-hangars, to accommodate the 83 based aircraft. The airport also has approximately 54,000 square yards of apron for general aviation aircraft (19,000 square yard concrete apron located northeast of the passenger terminal, west of the air traffic control tower and 35,000 square yards of apron west of the passenger terminal), approximately 1,700 square feet of general aviation terminal facilities and 41 parking spaces to support the general aviation facilities.

- **Military**

The airport shares the use of the airfield with the Iowa Army National Guard-194th Air Cavalry. The Guard facilities are not on airport property but are located just east of the airport with access to the airport's runway/taxiway system just off of Taxiway A near the approach end of Runway 24. The unit operates 13 OH-58 helicopters from these facilities.

- **Fuel Facilities**

Aviation fuel is currently stored in a consolidated fuel farm southwest of the passenger terminal building. The existing aviation fuel farm consists of two above-ground 20,000 gallon tanks dedicated to jet fuel storage, two above-ground 12,000 gallon tanks for avgas storage and 1,000 gallons of storage for MOGAS.

- **Other Facilities**

The FAA owns and operates an air traffic control tower located on the southeast part of the airport, just east of the passenger terminal building. The airport owns and maintains a aircraft rescue and fire fighting (ARFF) facility located east of the air traffic control tower. The airport also has 12,000 square foot field maintenance facility located southwest of the passenger terminal building and immediately north of the consolidated fuel farm. These facilities are used for maintaining and storing airport maintenance equipment including tractors, snowblowers, snowplow, loaders, and various sizes of trucks.

- **Zoning**

At present, there are no airspace limitations that would adversely affect flight operations or otherwise restrict aircraft which could operate at the airport. Zoning in the vicinity of the airport is controlled by the City of Waterloo. The Waterloo Regional Airport Height and Hazard Zoning Regulations were established by the city to monitor the height of structures proposed for development within the various F.A.R. Part 77 airport height zones (horizontal, conical, approach, etc.)

EXISTING SERVICES

- **Commercial Services**

Currently nonstop scheduled commercial airline service is provided from the Waterloo Regional Airport as follows:

Waterloo Regional Airport – Waterloo

Carrier	Equipment	#Seats	Daily Departure	Non-stop Destination
Northwest Airlin	Canadair RJ	52	1	Minneapolis
Northwest Airlin	Saab 340	34	4	Minneapolis

January 2004

In 2003 the airport accommodated over 33,000 enplaning passengers, approximately 2.2% of the state's total enplaning passengers, with 5 daily departures. The airline services are provided from the passenger terminal building. Other major services provided from the passenger terminal include a food and beverage restaurant with adjacent lounge, a news and gift shop, rental car counters and offices.

- **General Aviation Services**

The airport is home to Livingston Aviation, a full service fixed base operator (FBO) providing aeronautical services to the general aviation public, Tim McClandless Inc., and Sweiter Aircraft Repair both operating as limited fixed base operators providing certain types of services to the general aviation public. Aeronautical services provided by Tim McClandless Inc. fuel sales, avionics, and aircraft sales while Sweiter Aircraft Repair provides repair aircraft. Livingston Aviation, operating from the west side of the airport, provides fuel sales aircraft maintenance, aircraft sales, FAR Part 135 air charter operations, and flight instruction. The FBO has it's own terminal facilities which includes pilot briefing room, restrooms, public telephones, conference rooms, offices, pilot lounge, public lounge, and vending machines. The FBO also offers on site courtesy vehicles and access to taxi and rental car services. Other off-site ground transportation is also available.

- **Other Government Services**

The airport has an FAA operated an air traffic control tower which provides services between 6:00 a.m. and 11:00 p.m. daily. Aircraft rescue and fire fighting (ARFF) services are provided by airport personnel and meet FAR Part 139 Index A requirements. (Index B can be provided upon request.) Security and law enforcement services are provided by the city police department.

WATERLOO REGIONAL AIRPORT (ALO)



Federal Role: Non-Hub Primary Airport
State Role: Commercial Service Airport

CURRENT AND FORECAST DEMAND

Based aircraft at the airport totaled 83 aircraft in 2003. Of those, there were 68 single engine piston, 3 multi-engine piston, six turbo-prop, three turbojet aircraft, and three helicopters. The number of based aircraft is forecast to increase to no fewer than 96 in 2022.

There were an estimated 43,088 total annual operations conducted in 2003. Of that total general aviation had 30,746 operations, commercial carriers had 8,852 operations, and the military had 3,490 operations. The total number of operations is expected to increase to 49,527 in 2022.

OPERATIONAL ACTIVITY

	<u>2003</u>	<u>2007</u>	<u>2012</u>	<u>2022</u>	<u>% change 2003-2022</u>
Based Aircraft	83	85	89	96	16%
Annual Operations	43,088	46,218	49,527	49,527	15%
Itinerant Operations	18,699	19,706	20,815	20,815	11%
Local Operations	12,047	13,138	13,876	13,876	15%
Commercial Operations	8,852	9,884	11,346	11,346	28%
Military Operations	3,490	3,490	3,490	3,490	0%

The based aircraft mix and aircraft operational mix are expected to change over the 20 year planning period. Reference may be made to Chapter Four of the 2004-2024 Iowa Aviation System Plan for additional forecast data regarding:

- Based aircraft mix
- Operational mix
- Annual Instrument Approaches
- Annual Instrument Operations

AIRPORT FACILITY AND SERVICE NEEDS

The Waterloo Regional Airport has been classified as a Commercial Service airport and should provide facilities and services commensurate with its system role.

OTHER DEVELOPMENT

Airport improvements anticipated in the future include:

- Maintain Runway 12-30 at 8,402 feet long, 150 feet wide
- Maintain Runway 18-36 as the eligible crosswind runway
- Maintain Runway 06-24 in service
- Maintain all existing airfield pavements
- Increase the amount of general aviation hangar space

- Increase the number of vehicle parking spaces to support general aviation
- Increase the size of the passenger/pilot facilities provided by FBO's
- Upgrade airport security system
- Replace and acquire capital equipment
- Install Cat. I approach with MALSR on Runway 30
- Install runway end lights on Runways 30, 18 & 36

OTHER RECOMMENDATIONS

Consideration is being given to expanding the number of Cat I runway approaches from the one today on Runway 12 to include a Cat I approach on Runway 30 as well. As based aircraft increase there are plans to add additional general aviation hangars.

OTHER DEVELOPMENT COSTS

<u>Description</u>	<u>Budget</u> <u>(FY05-FY08)</u>
Perimeter Fencing for Security and Wildlife Control	\$ 900,000
Replace ARFF equipment	\$ 450,000
Purchase Tappley Meter	\$ 7,000
Overlay Parking Lot	\$ 350,000
Reconstruct Taxiway A from Taxiway B to E	\$ 1,400,000
Rehabilitate Runway 18-36	\$ 290,000
Reconstruct Taxiway B from Taxiway B-1 to Runway 18-36	\$ 560,000
Reconstruct Taxiway E and part of Taxiway A	\$ 1,500,000
 Total	 \$ 5,487,000

The opinion of probable cost is based on 2003 unit pricing.

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