

General Description

The aerospace industry is one of the United States' most dominating segments in the economic environment. The industry's main customers are the military, commercial airlines, and general aviation. Aerospace parks house a variety of services including the design, development, manufacturing, repair/overhaul, production, and maintenance of:

- composite aircraft components and assemblies
- engine components and accessories
- commercial aircraft
- advanced alloy turbine engines
- rotary engines and accessories
- precision machining
- precision sheet metal fabrication of high strength metals and alloys
- spacecraft and payload design and integration
- sounding rocket and missile design and integration
- development of advanced strategic target systems
- military pilot training

Other functions of an aerospace park involve aircraft components, gliders, guided missiles, spacecraft, satellites, and various aspects of defense technology and avionics equipment. Sites range in size from 50 - 200 acres.

Market Analysis

According to the Aerospace Research Center, the domestic aerospace sales are projected to exceed \$150 billion this year. The industry also expects a boost from improvements in the macro economic environment and growth in exports. A significant potential for exports is the increase of maintenance and function of large commercial aircrafts for overseas airlines.

One extremely bright potential for an aerospace park is the maintenance, repair, and overhaul (MRO) segment. This \$40 billion segment is evolving rapidly, and is expected to grow by \$11 billion over the next 5 years. Aerospace MRO accounts for approximately 80% of industry revenues with aerospace training and services providing 20%. Revenues for MRO organizations are predicted to grow over 5% per year for the next 3 years.

Component manufacture also has strong potential for growth, particularly in the electronics and precision engineering areas. This can be maximized through carefully targeted marketing, improved linkages with prime contractors and government action to facilitate business-matching.

Some of the United States' most important and largest aerospace clusters are located in Oklahoma. Oklahoma offers incentives such as customized training for qualifying companies; and top ranked, state-of-the-art university and career skills training. More than 80 million people and some of the nation's fastest growing markets can be found within 500 miles of Oklahoma's borders.

Aerospace companies currently located in Oklahoma include American Airlines, Boeing Co. (with five Oklahoma facilities), The NORDAM Group, Honeywell, and three Air Force bases: Tinker, Vance and Altus. Tinker Air Force Base has contracts with Boeing, Northrop, Pratt & Whitney and Lockheed Martin and other companies for over \$5 billion in support and services.

Minimum Site Acreage

Aircraft maintenance is a large-scale operation requiring a sizable tract of land. The minimum land required is 50 developable acres.

Appropriate Topography

Site topography can be rolling or somewhat sloped from one side to the other. Individual parcels should generally be level with little or no elevation change and outside the 100-year FEMA flood plain designation.

Parcels ranging should not contain major elevation changes, "valleys," or "mountains." Topography has a direct influence on the up-front capital costs. Poor topography not only increases site preparation costs, but more importantly, can delay fast-track projects. Risk of cost overruns and potential construction delays due to poor topography can eliminate a site, or be a factor in choosing between two otherwise equal locations.

Utility Needs

Utility needs vary by industry. The following are examples of what may be required:

Electricity

- Kilowatt (kW) Demand: 2,000 kW
- Kilowatt Hour (kWh) Usage: 1.4 mil kWh / month
- Dual Feed Preferred

Natural Gas

- Usage: 4,000 mcf / month
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OK Site Certification Program Development Type Overview

Aerospace Park

Water

- Usage: Up to 500,000 gallons / day
- Municipal System Preferred

Sewer

- Flow: Up to 500,000 gallons/day
- Municipal System Preferred

Telecommunications

- Fiber optic preferred

Transportation Requirements

The site must have excellent truck and automobile access. A transportation system including both interstate and rail access is preferred. A developable site is required to be located adjacent to a commercial service airport with a 5,500 ft runway.

Labor / Workforce Needs

Obviously the level of employment within a site of this nature varies widely considering an employee to land ratio. At least 600 employees including drafters, engineers, machinists, mechanics, and aircraft technicians are involved in an aerospace facility. Near metropolitan areas the number of employees may be significantly higher because of the workforce density.

Semi-skilled and skilled workers are required for aerospace parks. Mechanics and aircraft technicians will be needed for any maintenance facility. Facilities near a four-year engineering university and/or a technical college is beneficial because of training programs may be utilized by the workforce.

The following table shows the typical occupations that may be found in an aerospace development site. The table compares 2004 Oklahoma mean hourly wages with 2004 national mean hourly wages. *Please refer to the Application Package for the detailed “Comparison of Wages” and “Description of Occupations” sections.*

Aerospace Park			
OCC Code	Title	Oklahoma	National
17-2011	Aerospace Engineers	\$33.45	\$33.97
17-2141	Mechanical Engineers	\$30.75	\$31.04
43-0000	Office and Administrative Support	\$ 17.25	\$17.34
47-2111	Electricians	\$17.96	\$21.58
49-3011	Aircraft Mechanics and Service Technicians	\$19.25	\$19.78

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Aerospace Park

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OCC Code	Title	Oklahoma	National
49-9043	Maintenance Workers, Machinery	\$16.21	\$16.40
49-9041	Machinery Mechanics	\$16.85	\$19.28
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	\$18.03	\$18.44
51-2022	Electrical and Electronic Assemblers	\$13.08	\$12.63
51-1011	First-Line Supervisors/Managers of Production and Operating Workers	\$24.78	\$26.37
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	\$17.21	\$18.02
53-7051	Industrial Truck and Tractor Operators	\$12.00	\$13.57

Proximity of Support Facilities

The industry is supported by a large number of small to medium sized aerospace suppliers including precision machine shops, tool and die makers, precision sheet metal fabricators, plating and coating operations, and electronics companies.

Proximity to technical training institutions is recommended, and a location adjacent to a major airfield is required. Support services could include but are not limited to local logistics and distribution industries and technical and trade institutions. Contractors that provide support for light industrial facilities or offices are advantageous. The type of contractor that will be required ultimately depends on operations in the park.

Site Development Barriers & Issues

The site should be broadly zoned allowing for a variety of uses.

Site Ownership vs. Lease

The property's original developer would most likely sell each parcel to individual businesses and corporations, who are then free to develop the property to suit specific needs. Often the developer will build a versatile industrial shell building that is then leased to and outfitted by small businesses.

Surrounding Land Use Issues

Due to concerns surrounding noise and truck traffic an aerospace site should not be built in a residential area. Proximity to other similar commerce sites, airports, or other centers of light industrial activity could lend an advantage in creating market synergy.

Other Criteria Critical to the Selection

Refer to project evaluation criteria (musts & wants) which follow.