

An Overview of Airport Land Use Compatibility Planning

Introduction

This chapter provides a high-level overview of airport land use compatibility planning and its relationship to community comprehensive planning. The intent is to give the reader a basic understanding of what is meant by “compatibility” in the context of airports and neighboring land uses. The material presented here sets the stage for the compatibility planning process outlined in Chapter 2.

In this chapter you will learn about:

- The different types of airports in Washington State.
- What types of development are incompatible with airports.
- How incompatible development can affect airports.
- How to deal with compatibility issues.



Incompatible land uses are one of the largest concerns affecting airports today. They cause tension between airports and their affected jurisdictions.

Airports in Washington State

Washington’s airports are part of the communities they serve and are integral parts of the state’s transportation system. Airports range in size from the busiest airline airports in the metropolitan areas to community airports serving businesses and other private aircraft to small landing strips in outlying locations. There are airports in virtually every county and in or near most cities and towns in the state. The state’s airports provide a wide range of services to pilots, passengers, and the general public.

The focus of this *Guidebook* is on Washington’s 138 public-use, general aviation airports and seaplane bases as state law is directed at protecting them from incompatible nearby land use development. However, many general aviation aircraft in the state are based at private-use airports. Indeed, there are more of these types of airports than there are public-use facilities. These private-use airports, though typically small, serve a significant supporting role to the state aviation system by cumulatively adding substantially to the system’s capacity and capabilities. Their protection from incompatible land uses, though not dictated by state law, warrants careful local consideration.

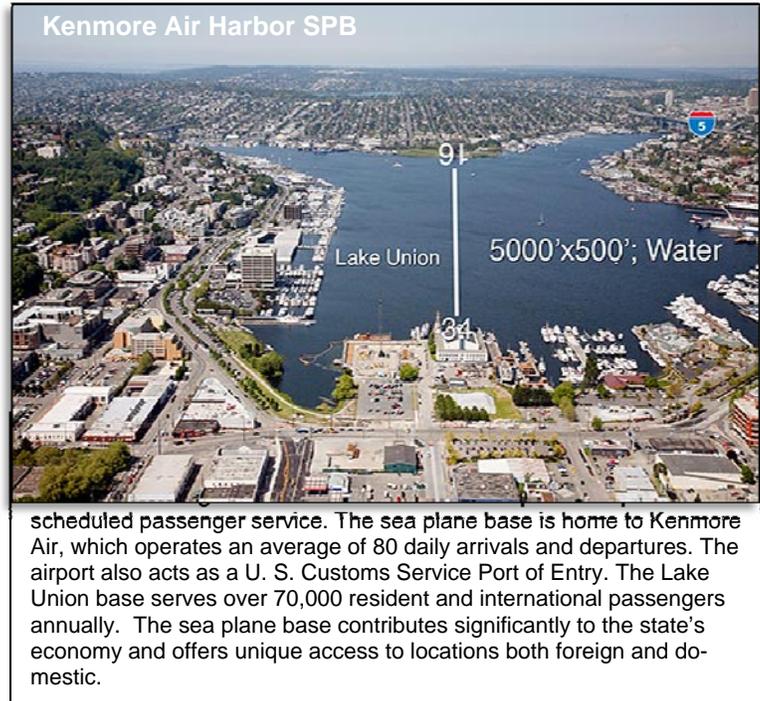
All airports that serve general aviation activity are considered “general aviation airports” under the Growth Management Act.



Economic Importance of Airports

Airports are valuable transportation assets and economic engines. They are crucial on a local, statewide, and national level as they efficiently move people and goods. Many businesses are dependent upon the fast and convenient links to places, people, and products that airports provide.

The magnitude of this impact is impressive: approximately 17 million passengers now land and take off from a Washington airport every year and more than 600,000 tons of air cargo pass through our state airports. According to a 2001 study, the aviation system contributes 170,000 jobs, \$4 billion in wages, and \$18.5 billion in sales output to the Washington economy each year.



WSDOT's 2001 economic study is in the process of being updated. Look for the newest data on the WSDOT Aviation website .
<http://www.wsdot.wa.gov/aviation/>

At the 2006 Washington State Governor's Economic Development Conference, transportation was identified as one of several proposed future growth strategies for Washington. Transportation, including air, rail, port and highway, was also described as critical to continued economic development and success of the state in the global economy. The governor's strategic economic plan stressed the importance of long-term planning for Washington's transportation needs and the continued development of its economic future.

These conclusions were again emphasized by the Washington State Aviation Planning Council in its July 2009 report. The Council recognized that:

"the importance of Washington's aviation system is even greater than the revenue, employment and sales data suggest. The State's aviation system is an essential function of its overall transportation system, which is the backbone of a vibrant and healthy economy"

Military Airports

While the focus of this *Guidebook* is on civilian airports, the importance of military air bases to nearby communities should not be overlooked. These facilities often are the primary economic generators of their communities. Maintenance of compatible land uses is a factor considered when decisions are made to continue, realign, or close a military base. **RCW 36.70A.530** Requires jurisdictions to notify the commander of the military installation of its intent to amend its comprehensive plan or development regulations that address lands adjacent to military installations to ensure those lands are protected from incompatible development.



 *Long-Term Air Transportation Study (LATS)*, Recommendations of the Washington State Aviation Planning Council, July 2009.
http://www.wsdot.wa.gov/NR/rdonlyres/6CAF7B7B-37B8-44D3-B259-AB020B1AD995/0/Council_Report_PRINT_070109_lowres.pdf

 Also see the General Aviation Manufacturers Association report *General Aviation's Contribution to the U.S. Economy* (May 2006) available at <http://www.nasao.org/>

Airport Types and Roles

Aviation is broadly classified under three categories: airline, general aviation, and military. Airlines provide scheduled commercial service for passengers or air cargo. Flying by private aircraft, both corporate and business, is considered general aviation. Airline and general aviation activity together comprise civil aviation. The third category, military, consists of flights by aircraft operated by the various branches of the U.S. military.

Airports can be divided into the same three categories. However, just because an airport is placed in a particular category, does not mean that it exclusively serves that type of aviation. For example, airports that offer commercial service are usually called airline airports, but most also serve general aviation and may have some military flights as well. Even some military airports in the country are joint-use, although most—including all the ones in Washington—are restricted solely to military aircraft.

In Washington, all civil airports accommodate general aviation and thus are deemed general aviation airports for the purposes of state law.

Even SEA-TAC has some general aviation, although most of its activity is airline. At all other airports in the state, including those that provide commercial service, the majority of the activity is general aviation.

General aviation airports serve many roles in support of a wide range of users including:

- Local companies whose aircraft are essential to their business travel.
- Businesses that provide aviation-related services at the airport to pilots and their aircraft.
- Specialized aviation businesses or functions such as aerial photography, agricultural applications, and transmission line inspection.



Copalis State Airport

is located on the beach in Grays Harbor County, Washington. It is the only airport in the US that is located on an ocean beach. Landing is only available during low tide when the sand is dark and damp: the dry sand is very soft and dangerous.



Felts Field

Located in Spokane, Felts Field has four runways – two hard surface (concrete and asphalt), one turf, and one water (on the Spokane River). Primarily a general aviation airport, Felts Field was the original site of the Washington Air National Guard. The terminal building, among others at the airport, are listed on the National Register of Historic Places.

- Flight instructors and students.
- Visiting pilots and their passengers traveling to the local community for business, personal, or recreational reasons.
- Sheriffs' and police departments' air patrol and support units.
- Local pilots who fly for personal or recreational purposes.

Airports and Disaster Relief

General aviation airports also provide a base for a variety of emergency functions that either cannot be accomplished with other transportation modes or that may be unavailable during times of emergency or following disasters.

- Emergency air medical transportation and evacuation.
- Firefighting operations.
- Search-and-rescue operations.
- Access to communities when ground transportation is disrupted.



Airports in Washington have played a significant role in post disaster response including: 1996's Chehalis- Centralia flood, 1980's Mt Saint Helens eruption, yearly forest fighting and search and rescue operations.

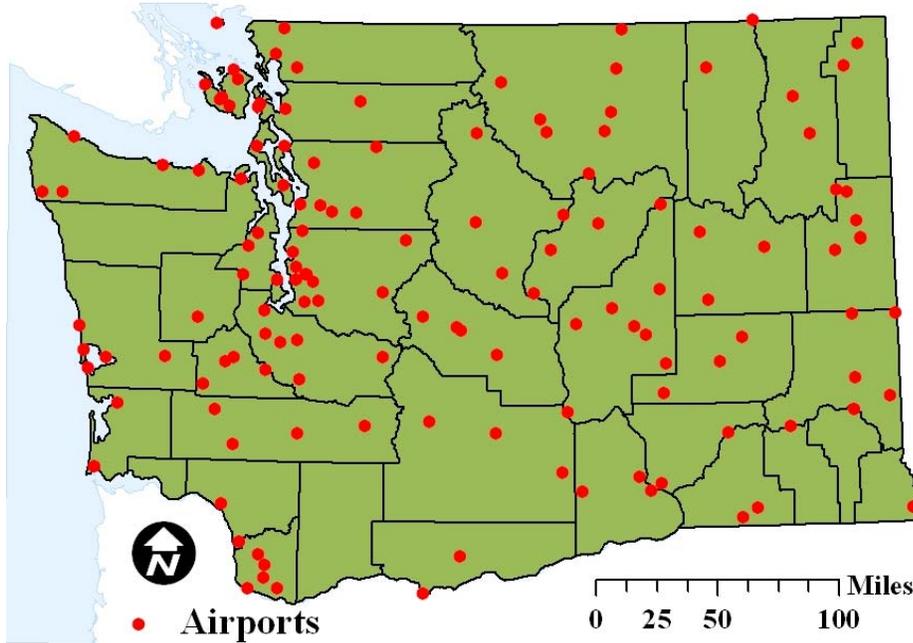
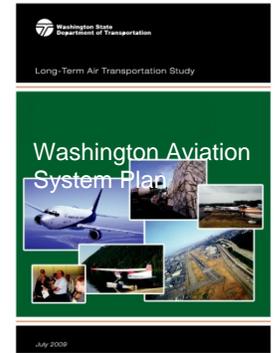
State and National Aviation Systems

Even though airports may appear as independent dots on a map, no airport would serve a transportation purpose if it were to function by itself. Each airport is part of a greater aviation system, just as individual roads are part of an extensive highway system. Both the state and federal governments have identified and classified the airports that have particular importance within the respective state and national aviation systems.

Washington Aviation System Plan

The *Washington Aviation System Plan* or WASP, encompasses public-use airports that have statewide significance. The 2009 WASP includes 138 airports, all of which are public-use facilities.

The WASP divides public-use airports into six classifications based upon the characteristics of the airport and geographic area it serves. The WASP classification of airports is used to help set airport improvement funding assistance consistent with the level of service provided.



The number of airports in each of the six classifications is shown in the following table.

Classification	No. of Airports	Description
Commercial Service	16	Accommodates at least 2,500 scheduled passenger enplanements per year for at least three years
Regional Service	19	Serves large or multiple communities all NPIAS Relievers; at least 40 based aircraft and 4,000-foot-long runway (some exceptions)
Community Service	23	Serves a community; at least 20 based aircraft; paved runway
Local Service	33	Serves a community; fewer than 20 based aircraft; paved runway
Rural Essential	38	Other land-based airports, including residential airparks
Seaplane Bases	9	Identified by FAA as a seaplane base, unless it is a commercial service airport
System Total	138	

An airport's sponsor's acceptance of federal or state grant funds obligates the sponsor to meeting certain grant assurances as described later in this chapter.

The high number of non-NPIAS airports in Washington has important funding implications because these airports are not eligible to receive federal grants for facility improvements and land use compatibility measures.

National Plan of Integrated Airport Systems

For planning purposes, the Federal Aviation Administration (FAA) identifies more than 3,000 airports that are considered to be nationally significant. This national system of airports is known as NPIAS, the *National Plan of Integrated Airport Systems*. The NPIAS is largely used to determine an airport's eligibility to obtain federal improvement grants under the Airport Improvement Program (AIP). It also includes estimates of the amount of AIP money needed to fund infrastructure development projects that will bring the NPIAS airports up to current design standards and add capacity to congested airports. The FAA is required to provide Congress with a five-year estimate of AIP eligible development every two years.

A copy of the NPIAS can be found at:

http://www.faa.gov/airports_airtraffic/airports/planning_capacity/npias/

Only civilian airports open to public use are included in the NPIAS and nearly all are publicly owned. Most airports that provide scheduled commercial airline service are listed, provided that they enplane at least 2,500 passengers per year. For a general aviation airport to be included, it normally must serve at least 10 based aircraft and be located more than 30 minutes ground travel time from another NPIAS airport. Another classification of general aviation airports in the NPIAS are reliever airports. These are high-capacity facilities in major metropolitan areas and are intended as alternatives to busy hub airports for general aviation use.

Less than half of the airports that WSDOT Aviation includes in the WASP because of their statewide significance are included in the NPIAS. Washington has 65 airports listed in the 2009-2013 NPIAS. Of these, 13 are airports that provide commercial airline service and the remainder, including five relievers, are strictly general aviation facilities. The high number of non-NPIAS airports in Washington has important funding implications because these airports are not eligible to receive federal grants for facility improvements and land use compatibility measures.

Who Operates Washington's Airports?

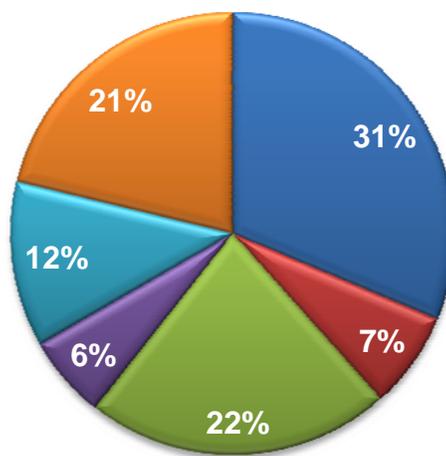
Of the 138 public-use airports in Washington, almost 80 percent are publicly owned, either by municipalities, including port and airport districts, or by the state. Several airports are owned by a combination of public entities. The state-owned airports are all small facilities, mostly providing service to recreational or remote areas. Most of the privately owned, public-use airports also are classified as rural essential or seaplane bases.

Policy decisions involving publicly owned airports in the state are typically made by elected officials of the entity owning the airport.

Day-to-day operations are generally administered by an airport manager. Larger airports usually have a full-time manager, frequently supported by other staff, while low-activity airports may have a volunteer manager, part-time contractor, or local official who serves as airport manager in addition to other roles in local government.

Funding to develop, maintain, and operate airports is derived from a variety of sources including user fees, revenues from land and facility leases and rents, local government funds, and federal and state grants. The proportion of funding coming from each of these sources varies from airport to airport. Larger airports are more likely to be self-supporting than the small ones with few aircraft or services. For those airports in NPIAS, a substantial proportion of development and major maintenance funding comes from the FAA grant program. State grants serve a similar function for the smaller NPIAS airports and others in the state airport system.

Public-use airports by ownership



- 43 City or Town
- 9 County
- 31 Port or Airport District
- 8 Multi-Agency
- 17 State
- 30 Private

State law authorizes formation of public port districts for the purpose of supporting economic development. Ports are quasi-governmental entities that may own land and often operate a variety of public infrastructure, including airports. There are 75 port districts in Washington State.

Airports and Surrounding Land Uses

What is Compatibility?

Airports unavoidably create negative impacts on their environs and almost every land use can potentially cause direct or indirect impacts on the way airports develop and operate.

This two-way character of airport land use compatibility is important to emphasize. Most people are familiar with the negatives associated with proximity to an airport: particularly such things as noise, vibration, odors, and accident risks. Fewer people understand the effect that adjacent land uses can have on airport activities. Development around an airport can have the direct consequences of creating obstructions to the airspace needed for aircraft to safely approach and depart the runway and reducing property available for

com·pat·i·ble

Capable of existing or performing in an harmonious, agreeable, or congenial combination with another or others.

understand the effect that adjacent land uses can have on airport activities. Development around an airport can have the direct consequences of creating obstructions to the airspace needed for aircraft to safely approach and depart the runway and reducing property available for operations and safety areas. Indirectly, incompatible development can lead to objections to the airports impacts and demands for limitations on the airport activity. Ultimately, incompatible development has the following consequences:

- Reduces transportation access.
- Reduces the value of public investment in airport infrastructure.
- Reduces opportunity for economic development.
- Reduces quality of life for people living in communities near airports.

Communities can address airport land use compatibility in a variety of ways based on the specific characteristics of an individual airport facility as well as numerous other factors that are unique to their area. Approaches that may work well in outlying communities may be impossible to achieve in urban locations. To determine the best approach for any particular airport and community, the types of land use interactions between the two must first be understood.

Types of Land Use Interactions between Airports and Communities

Airports and nearby communities interact in a variety of ways, both physical and economical. Economically, airports can be important attractors of business and income to a community as briefly noted at the beginning of this section. The physical interactions are the focus here, though, and particularly the interactions that occur between all types of airports and communities:

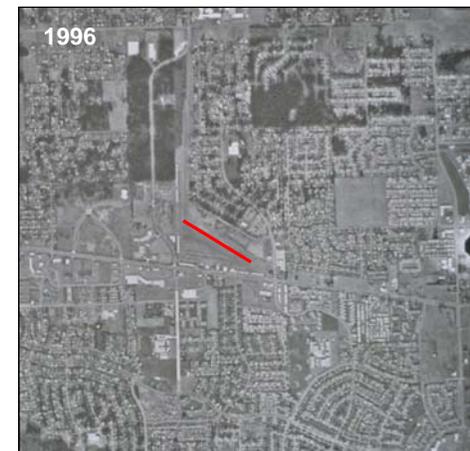
Noise addresses the areas of concentrated impacts that are most disruptive to land use activities.

The airport influence area is concerned with lesser noise levels that some people living near airports can nonetheless find to be annoying. The area is also impacted by light, vibration, fumes and low flying aircraft.

Airspace protection deals with aspects of land uses that can cause or contribute to aircraft accidents.

Safety is concerned with the consequences of accidents when they occur.

The four tables on the following pages further describe and illustrate each of these four compatibility concerns.



Evergreen Field
Vancouver, Washington

These photos show the spread of urban development around Evergreen Field in Vancouver, Washington. The airport closed in summer 2006 to make way for a mixed-use development including retail, office, and residential units after the original owner passed away and his heirs sold the land to developers.

Table 1-1 Noise

What to avoid around Airports

- Residential uses
- Schools and noise-sensitive outdoor uses
- Noise-sensitive indoor uses unless constructed with special features to reduce the noise to an acceptable level

How Airport Noise Affects Land Use

In the simplest terms, noise can be defined as unwanted sound. As such, noise is perhaps the most basic airport land use compatibility concern. Certainly, it is the most noticeable form of airport impact, especially when aircraft noise is disruptive to human activities. Noise affects land uses because it can be disruptive in several ways:

- Speech Interference. Prolonged loud noises can be created by an aircraft flying by, can overwhelm a normal voice level and make conversation difficult or impossible.
- Children's Learning. Research suggests that aviation noise can adversely affect the ability of children's learning abilities, including reading, speech, memory, and motivation. Speech interference is a likely underlying cause.
- Sleep Interference. Loud noise can cause people to shift to a lighter stage of sleep or even to awaken. Sensitivity can vary not only from person to person, but also is dependent on the nature of the noise (a baby crying might awaken a parent, while an equally loud automobile driving by might not). Near busy airports with night activity, aircraft noise can interfere with the sleep patterns of some people.
- Hearing Loss. Exposure to frequent, high-decibel noise events can cause people to suffer permanent loss of some of their hearing ability. At airports, this outcome could occur with people who work around the aircraft if they do not wear hearing protection. As for people living or working nearby, aircraft noise is very unlikely to cause hearing loss.
- Other Health Effects. Some evidence suggests that extremely high noise levels can affect health in ways other than hearing loss. The effects may be physical or mental. Aviation noise appears unlikely to have these health consequences, except maybe at the busiest airports.



Measuring the Impact

Noise can be measured in many different ways. The basic measure is the decibel (dB), usually adjusted for human hearing sensitivity and abbreviated dBA. The adjacent chart shows some common sound levels from a variety of sources. For sounds representing distinct single events, the chart indicates the typical maximum sound level reached during the event.

For compatibility planning purposes—particularly for setting compatibility policies to guide land use development—noise is usually measured in terms of cumulative noise level metrics. The metric used by the FAA in most states, including Washington, is the Day-Night Average Sound Level, abbreviated as DNL. For airports, DNL describes the average aircraft-related sound level in decibels to which any point near an airport is exposed over the course of an average day of the year. DNL values are typically depicted on a map as contour lines representing points of equal noise exposure. Because of people's heightened sensitivity to noise at night (defined as 10:00 p.m. to 7:00 a.m.), DNL counts each nighttime noise event as if it is 10 dB louder than it actually is.

A notable shortcoming of cumulative noise metrics such as DNL is that they are difficult to comprehend and do not evaluate the other effects within the airport influence area. While they take into account the maximum noise levels produced by individual events, they also consider the number of events. In effect, DNL is only an average noise level. Even though both cumulative and single-event aviation noise levels are measured in decibels, the decibel value for cumulative noise will always be lower than the single-event levels at any given location.

Think of cumulative noise metrics as being like the climate while single-event metrics are like the weather.

Many factors affect the apparent loudness of aircraft noise:

- **Aircraft Type.** The most obvious variable is the type of aircraft producing the noise. Not only does the loudness vary among different aircraft, so does the quality of the noise.
 - *Jet Aircraft.* Newer designs produce lower sound magnitudes and frequencies. Although improved, jets are still perceived as top noise-producers.
 - *Propeller-Driven Aircraft (turbine or piston).* Much of the noise is generated from the propeller itself. This sound is variable and depends upon the number of engines, rotation speed of the propellers, the number of blades for each propeller, and the type of engine.
 - *Helicopters.* Most notable for the modulating, impulsive sound sometimes called “blade slap” caused by the relatively slow-turning main rotor. This sound is most evident on low-speed descents and high-speed cruise, particularly as the helicopter is approaching the listener. It is also known to create vibration or rattle in structures.

 For more on helicopter noise, see the Helicopter Association International's *Fly Neighborly Guide* at <http://www.rotor.com/portals/12/Fly%202009.pdf>

- **Pilot Techniques.** One aircraft type can generate differing noise levels depending upon power settings, the propeller pitch (for aircraft with variable pitch) especially at high power settings, the angle of climb while on takeoff, and flap settings on the wings. Pilot familiarity with the airport and its surroundings also can affect noise impacts to the extent that overflight of noise-sensitive land uses can be avoided.
- **Topography, Structures, Vegetation.** Sound waves may bounce off nearby structures and steep terrain, thus making the noise louder. Conversely, these features can block the noise from aircraft while they are on the ground. Dense vegetation also can absorb sound as it travels along the ground.
- **Weather Conditions.** Low cloud cover may reflect sound back toward the ground and increase noise levels.
- **Ambient Noise Levels.** High background noise levels tend to mask or reduce the intrusiveness of individual noise events. The higher the ambient noise level, the less noticeable any individual noise will be.

Why Noise Compatibility Measures are Important

Airport noise compatibility measures are important primarily to minimize the exposure of people to the adverse effects of the noise. Indirectly, though, the reaction of people to airport noise can have negative consequences for airports. Among all airport impacts, noise is the most likely to cause people to seek constraints on the airport to reduce the impact. These desired constraints can be in the form of limits to where and when aircraft fly, opposition to airport expansion, or demands for airport closures.

Nuisance Noise

Experience has shown that noise-related concerns at airports do not stop at the boundary of the mapped noise contours. Individual noise events can be disruptive even where the cumulative noise levels are relatively low. Additionally, many people are sensitive to the frequent or random, but unusual presence of aircraft overhead even when the events are not loud enough to be highly disruptive. The latter reactions are often described as annoyance.

Table 1-2 The Airport Influence Area

What to Avoid in the Airport Influence Area?

- Residential uses
- Noise-sensitive uses
- New residential subdivisions, particularly if situated in otherwise quiet environments

How Airports and Aircraft Affect Land Use

Airport and aircraft impacts are significant compatibility factors and should be variables evaluated and addressed during the aviation land use compatibility planning process. Impacts include: noise under 65 DNL, vibration, fumes, light and low flying aircraft.

- Noise. Research shows that single noise events under 65 DNL have a more dramatic affect on land use compatibility than previously thought. One study demonstrated that the majority of noise complaints originate outside the 65 DNL noise contour threshold. This fact supports the assumption that fleet mix, event times and operational characteristics of the airport have more to do with compatibility planning than cumulative noise exposure.
- Light. Aviation related light may be perceived as excessive or obtrusive and can be a point of contention between neighbors. This industrial byproduct is most impactful in close proximity to the airport.
- Fumes. Although often hard to quantify aviation fumes and waste particles are a compatibility consideration that should be considered. Aviation and industrial fumes may be perceived as offensive odors by some. Waste particles, produced by normal aircraft operations, may affect the health of various individuals and some studies have made a correlation between long-term exposure to particulates and health impacts.
- Vibration. Many Aircraft can produce significant levels of vibration during the approach and departure phases of flight.
- Low flying aircraft. Aircraft in the flight catchment area are often a low altitude before they enter the approach and departure phases of flight. This can generate fear and anxiety in some individuals.



Measuring the Impact

No methodology exists with which to precisely define the extent of impacts within the airport influence area. For general aviation airports, though, the boundary can usually be drawn by taking into account where aircraft normally fly as they approach and depart the airport or engage in closed-circuit flight training activity. Vertically, the focus is typically on where aircraft are flying roughly at the traffic pattern altitude or lower.

Single-event noise is an important component of overflight impacts. Unlike the routine noise events that usually determine the noise impact area defined by DNL contours, it is often random, unusual noise events that generate the annoyance associated with overflight impacts. Occasional noise events that people believe to be unusual may be significant overflight impacts yet not be apparent in the noise impacts measured by DNL contours. Rapid changes in power settings, abnormally low-altitude flights, and actual or apparent aerobatic maneuvers, all can contribute to annoyance and cause complaints. Sudden high use of a normally little-used runway—as may occur because of wind conditions or repair work on another runway—also may be factors.

Why Airport Influence Measures are Important

Even though the direct effects of aircraft flights on people living and working near airports are less than in highly noise-impacted locations, the repercussions for airports can be even greater. People may believe that flights are unnecessary and thus demand that airports take action to prevent similar occurrences in the future. It is essential for communities to evaluate the types of operations that occur within their flight catchment area and make informed decisions.

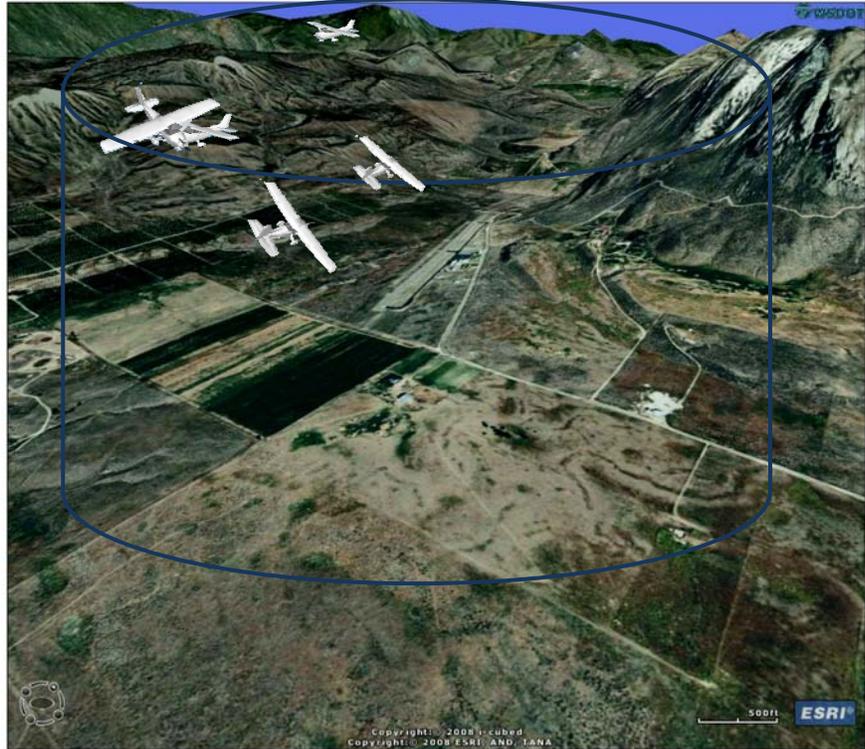


Table 1-3. Airspace Protection

What to Avoid around Airports?

- Tall buildings, antennas, cell phone towers, wind farms, trees, and other tall objects, particularly if located along the extended runway centerline or on high terrain
- Uses that attract birds such as water retention ponds, man-made lakes and septic lagoons
- Power plants and other facilities that generate steam or thermal plumes
- Uses that create smoke, dust, or glare
- Lighting that can be confused with airport lights
- Uses that can generate electronic interference with aircraft communications or navigation



How Airspace Protection Requirements Affect Land Use

Airspace protection requirements are designed to prevent land use features that can cause or contribute to an aircraft accident. Without restrictions on land uses adverse consequences for the airport and aircraft can occur. The primary restrictions are limits on the heights of structures, but other restrictions to prevent hazards to flight are also important.

Measuring the Impact

The navigable airspace around an airport is delineated in accordance with standards set forth in Federal Aviation Regulations (FAR), Part 77. The regulations define a set of imaginary surfaces in the air around an airport. Any object—including structures, trees, movable objects, and even the ground itself—that penetrates one of the airspace surfaces is considered to be an obstruction. FAR Part 77 is used as a device for notifying the FAA about proposed construction near an airport so that the agency can assess whether the object would be hazardous to flight (see discussion in Chapter 1).

For airports having instrument approach procedures, another set of airspace protection surfaces are defined by the U.S. Standard for Terminal Instrument Procedures, known as TERPS. These surfaces are used by the FAA to design instrument procedures. In most cases, TERPS surfaces are higher than those of FAR Part 77 and thus less restrictive on the heights of objects. However, TERPS surfaces may be critical in some locations, particularly if the approach course is not aligned with the runway centerline. The FAA publishes (and regularly updates) charts showing the approved instrument approach and departure procedures. These define where aircraft must fly in order to remain clear of obstructions in the vicinity of the airport. From a land use compatibility standpoint, the important thing to remember about TERPS is that any new object that penetrates one of the surfaces will require a modification to the instrument approach procedure, generally to increase the minimum cloud ceiling under which the procedure can be used.

Why Airspace Compatibility Measures are Important

The importance of airspace protection measures is clear: they serve to prevent creation of land use features that can cause aircraft accidents. They also are important because, when airspace obstructions and other land-use-related flight hazards exist, changes to the way an airport operates may be necessary. A particular consequence may be modifications to airport instrument approach procedures that reduce the usefulness of the procedures when weather and visibility conditions are poor.

Table 1-4. Safety

What to Avoid around Airports?

- Uses where there will be large numbers of people in a concentrated area
- Hospitals, schools, and other uses involving people having limited effective mobility
- Critical community infrastructure including power plants and emergency communications facilities
- Elimination of all level, open land areas that could be used for an emergency landing by a small aircraft



How Aircraft Accident Risks Affect Land Use

Safety is a concern in regards to land use planning because of the potential for injury to people or damage to property in the event of an aircraft accident beyond the runway. Also to be considered, at least for general aviation, are land use characteristics that can affect the chances of survival of the aircraft occupants.

Land uses are affected because of the need to keep people and critical facilities out of harm's way where the risks warrant these actions.

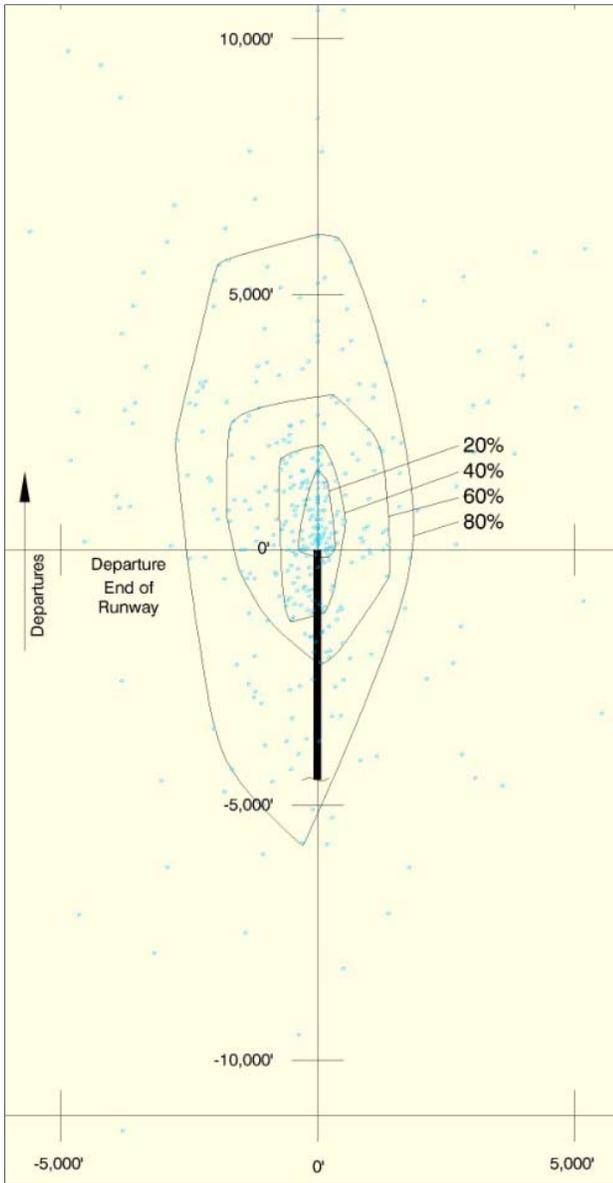
Measuring the Impact

Clearly, locations in the vicinity of an airport are exposed to a greater risk of being the site of an aircraft accident than is the case for more distant places. The difficulty lies in measuring the magnitude of the risk and then in determining an appropriate response. Further compounding the difficulty is that perception plays as much of a role as measurement in determining the response to the risk.

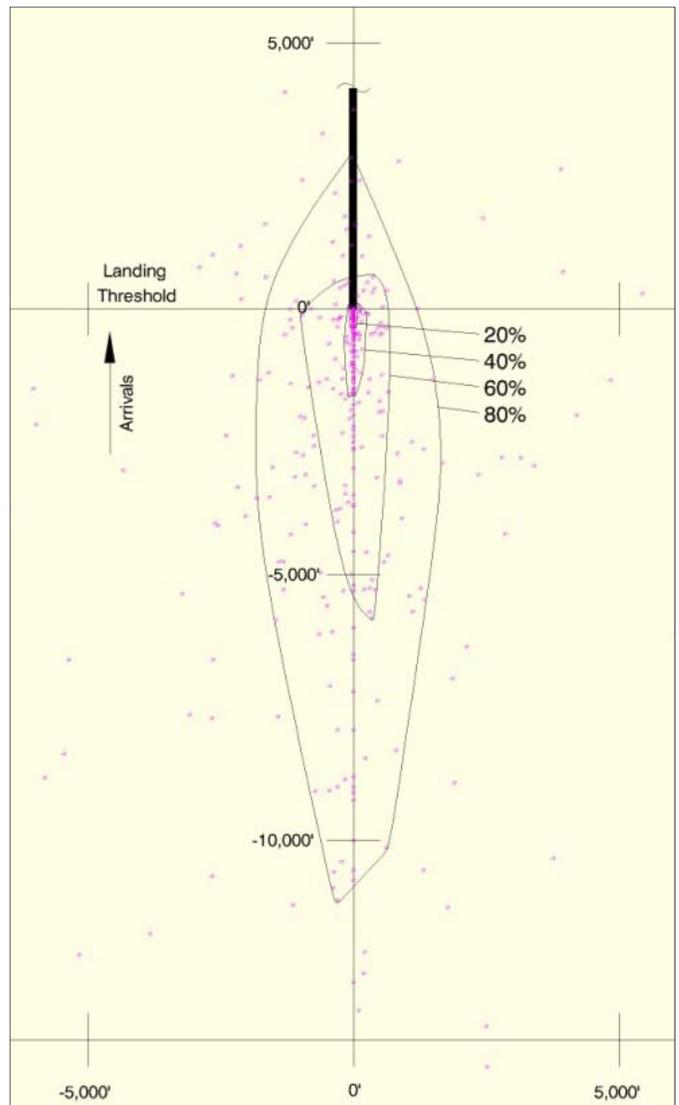
For land use compatibility planning purposes, the most important piece of information regarding aircraft accidents near airports is their spatial distribution. Where do accidents take place relative to the runway used or intended to be used? For this type of analysis to be meaningful, a large data set is essential. However, because aircraft accidents are infrequent occurrences, the number of events at any given airport is too small to be statistically meaningful. Data gathered from many airports is needed. The adjacent diagrams show a large sampling of where general aviation aircraft accidents have historically occurred near airports in the U.S. While repeat occurrence of an accident in the same location cannot be assumed, it is reasonable to predict that the broad cluster areas where accidents have occurred in the past reflect the same areas where accidents will likely occur in the future.

Why Aircraft Accident Compatibility Measures are Important

The risk of injury to people on the ground significantly increases in areas close to an airport's runway. Moreover, allowing development that puts more people in harm's way can only increase the risks. As with noise impacts, aircraft accidents can lead to public demands to restrict or close an airport.



General Aviation Accident Distribution Contours
Source: California Airport Land Use Planning Handbook (2002)



Encroachment of Incompatible Land Uses

Encroachment of incompatible land uses is a key factor contributing to constraints on expansion and restrictions on operations of airports in the U.S. In many cases, it can even lead to airport closures.

Why is encroachment occurring?

- Washington's population has doubled in the last 30 years.
- Urban areas are expanding and communities are pursuing denser development.
- Local land use authorities are either unaware of or not compliant with the requirements of Washington's Growth Management Act.
- Property adjacent to the airport may have services extended to it and be affordable due to its proximity to the aviation facility.
- Many airports are surrounded by flat, undeveloped land that is attractive for development because the land, in many cases, is served by utilities and other infrastructure.
- Communities underestimate the adverse impacts of incompatible land use development on airport operations.

Consequences of Incompatible Land Uses Near Airports

Consequences to the aviation system and its users:

- Delays and constraints to airport development, leading to limitations on system capacity
- Restrictions on aircraft operations, leading to system delays and travel time penalties
- Constraints to runway approach protection, leading to runway capacity constraints and safety risks
- Litigation and related costs
- Increased development costs
- Lost value of public investment
- Increased risk of aviation accidents caused by the presence of tall structures, visual obstructions, and wildlife attractants

Consequences to people who live near airports:

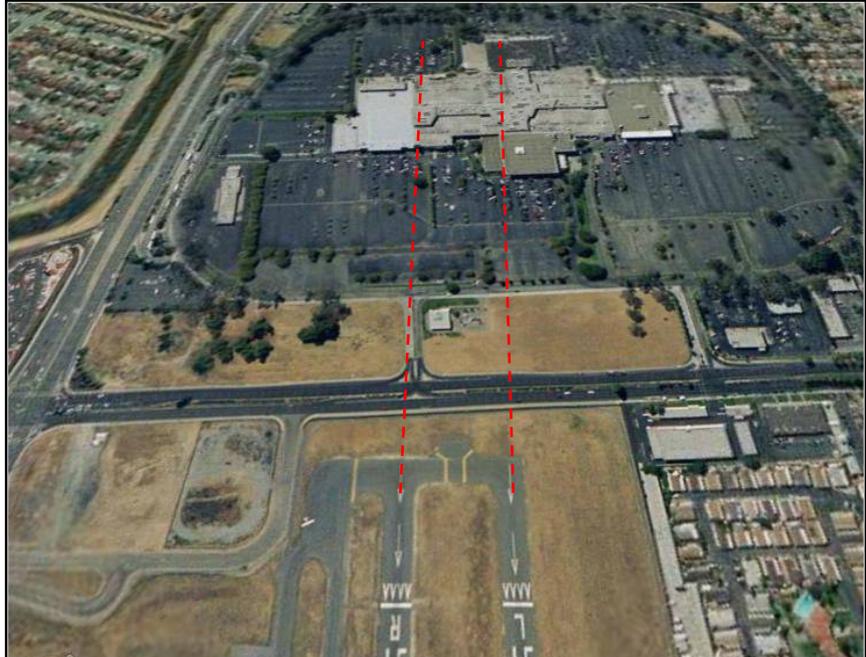
- Exposure to noise
- Exposure to emissions
- Exposure to aviation accident risk
- Decline in transportation access
- Consequences to concerned local and regional jurisdictions
- Local and regional economic impacts due to constraints on airport growth
- Irresolvable political disputes

What Land Use Types Pose Concerns?

Some types of compatibility conflicts between airports and land uses are obvious: houses and schools, for example, are generally incompatible near airports for reasons of both noise and safety. Others are not as readily recognized or understood: uses that concentrate people in locations where aircraft accident risks are greatest; tall structures that impinge upon airport airspace; or features that attract birds to areas where aircraft fly. Some examples of the obvious and not-so-obvious compatibility conflicts are listed in the table on the following page.

In general, to avoid compatibility conflicts, land uses closest to the ends of runways should ideally consist of open or agricultural land with relatively few buildings or people. In more urban areas where such uses are impractical, the best choices are commercial or industrial uses that are low-intensity (few people). Warehouses and storage facilities are preferable, but many light industrial uses and single-story offices can also be compatible. Farther away from the runway ends, higher-intensity uses including some types of retail become more acceptable.

Because of noise and impacts within the aviation catchment area, single-family residential uses are best kept away from anywhere that aircraft are regularly flying to reach or leave the airport. Often, multi-family residential can be a better option than single-family in locations where aircraft accident risks are low, but noise impacts are present.



High intensity uses along the extended runway centerline can pose a substantial risk. In this example a mall was constructed along the extended centerline for two parallel runways.

For additional discussion of compatibility conflicts, see Chapter 3.

Table 1-5. Compatibility Concerns Represented by Particular Land Uses

Land Use Type	Compatibility Concerns
Single-Family Residential	<ul style="list-style-type: none"> ▪ Noise can be disruptive in outdoor areas as well as indoors with open windows ▪ Aircraft overflight can be annoying, especially where ambient noise levels are low
Multi-Family Residential	<ul style="list-style-type: none"> ▪ Noise can be disruptive in outdoor areas as well as indoors with open windows, although less sensitive than for single-family residential ▪ High density presents concern for safety of residents in areas exposed to significant risk of aircraft accidents
Children's Schools	<ul style="list-style-type: none"> ▪ Noise can disrupt the learning environment ▪ Special concerns for safety of children in areas exposed to significant risk of aircraft accidents
Hospitals / Nursing Homes	<ul style="list-style-type: none"> ▪ Special concerns for safety of patients in areas exposed to significant risk of aircraft accidents
Retail Centers	<ul style="list-style-type: none"> ▪ Large numbers of people could be at risk from aircraft accidents ▪ Noise can be disruptive in outdoor spaces
Business Parks	<ul style="list-style-type: none"> ▪ Safety concerns for places with high-intensity uses ▪ Tall buildings can be airspace obstructions
Assembly Facilities	<ul style="list-style-type: none"> ▪ Large numbers of people could be at risk from aircraft accidents; outdoor stadiums have greatest exposure
Industrial Uses	<ul style="list-style-type: none"> ▪ Smoke, steam, and thermal plumes can be hazards to flight ▪ Tall structures can be airspace obstructions ▪ Possible release of hazardous materials if damaged during an accident
Agricultural Uses	<ul style="list-style-type: none"> ▪ Potential wildlife attractants as well as a source of dust and smoke
Water / Natural Areas	<ul style="list-style-type: none"> ▪ Potential wildlife attractants
Power Plants	<ul style="list-style-type: none"> ▪ Smoke, steam, and thermal plumes can be hazards to flight ▪ Tall structures can be airspace obstructions ▪ Potential disruption of service if damaged during an accident
Critical Community Infrastructure (emergency services and communications)	<ul style="list-style-type: none"> ▪ Potential disruption of service if damaged during an accident

Addressing the Land Use Compatibility Issue



First, it is important to recognize that the responsibility for airport land use compatibility does not rest just with WSDOT Aviation or any other single party. Many participants have a role to play in the process and a stake in its outcome.

The process can be thought of as puzzle with each participant as having a part of a puzzle—the planning effort is not complete without every piece. The responsibilities for preserving and enhancing airport land use compatibility rest at all levels of government as well as with the private sector. Each entity has its own distinct role to play.

While the respective responsibilities—and the limitations on authority—are largely defined by law local planning depends on participation from a diverse range of interests and stakeholders to define community needs and identify solutions. Participation is critically important for influencing outcomes; it is the nature of the planning process that interests that are not represented are often not addressed. Airport advocates wishing to preserve aviation facilities should ensure their place at the table so they can work cooperatively with other citizens and local leaders to educate them about the importance of air transportation for their community.

Legal Framework for Compatibility Planning

The legal tools needed to address airport land use compatibility issues are provided by a variety of state and federal laws, regulations, and legal decisions. Some of this framework sets mandatory requirements for airports or local land use entities; other pieces merely enable airport or local action, but are not mandatory.

Within Washington, three laws are particularly important to defining the relationship between airports and surrounding jurisdictions. These are:

- ♦ **Airport Zoning Act (RCW 14.12).** This act establishes definitions and criteria, and allows local jurisdictions to adopt zoning controls to protect critical airspace from buildings, structures, or other airspace obstructions. The law provides direction and guidance to cities and counties on how to manage airport hazards.
- ♦ **Planning Enabling Act (RCW Chapter 36.70).** Specifically, the section entitled “General Aviation Airports” (RCW 36.70.547) mandates that:



An extended listing of the laws and regulations, both federal and state, that apply to airport land use compatibility planning can be found in Appendix A of this Guidebook. Also included in the appendix is a summary of relevant Growth Management Hearings Board findings.

“Every county, city, and town in which there is located a general aviation airport that is operated for the benefit of the general public, whether publicly owned or privately owned public use, shall, through its comprehensive plan and development regulations, discourage the siting of incompatible uses adjacent to such general aviation airport.”

Plans may only be adopted following formal consultation with aviation stakeholders, including WSDOT Aviation. WSDOT Aviation is tasked with providing technical assistance to local agencies preparing plans and regulations consistent with this section.

Growth Management Act (RCW 36.70A).

Among other things, the act requires counties, cities, and towns to plan for essential public facilities within their jurisdictions (RCW 36.70A.200). These facilities are ones that are typically difficult to site. Airports are explicitly identified as an example. Others include: state education facilities, state or regional transportation facilities, state and local correctional facilities, solid waste handling facilities, and in-patient facilities including substance abuse facilities, mental health facilities, group homes, and secure community transition facilities. Counties and cities planning under GMA must have a process for identifying and siting essential public facilities. No local comprehensive plan or development regulation may preclude the siting of essential public facilities.

How is the formal consultation process different from the GMA’s public participation requirements (RCW 36.70A.035) and the 60-day notification requirements (RCW 36.70A.106) ?

The formal consultation process requirement is under a separate piece of legislation (RCW 36.70.547). Thus, the public participation and 60-day notification requirements for growth management actions are in addition to the formal consultation process. The purpose of this process is to provide jurisdictions with technical information that they may not be aware of before they proceed to draft legislation that may or may not address land use compatibility adjacent to airports.



Who is Responsible for Airport Land Use Compatibility?

Washington State Department of Transportation

WSDOT Aviation's responsibilities under the Growth Management Act are narrowly limited to airport compatibility concerns. The state agency having overall responsibility for overseeing implementation of the act is Growth Management Services (GMS), a unit of the Department of Commerce Local Government Division. GMS provides technical and financial resources to help local governments to undertake planning and other work essential to their compliance with provisions of the act. The Department of Commerce was created in 2009 from what had been the Department of Community, Trade and Economic Development (CTED).

The State of Washington has a lead role in promoting land use compatibility around the airports in the state. This role derives from the state's broad interest in all modes of transportation in recognition of the benefits that transportation brings the state and its citizens. The specific responsibility as the primary steward and advocate of the state's aviation interests is assigned to the Aviation Division of the Washington State Department of Transportation (WSDOT Aviation). WSDOT Aviation's role extends to advocating for promotion of safe air transportation, preservation of aviation facilities, provision of airport capacity to meet demand, and mitigation of environment impacts.



State law addressing airport hazards dates back to the mid 1940s. RCW 14.12 focuses on obstructions to airport airspace and gives counties and cities the power to adopt and enforce airport hazard zoning.

“It is hereby found that an airport hazard endangers the lives and property of users of the airport and of occupants of land in its vicinity, and also, if of the obstruction type, in effect reduces the size of the area available for the landing, taking-off and maneuvering of aircraft thus tending to destroy or impair the utility of the airport and the public investment therein.”

In conclusion to the *Long-Term Air Transportation Study (LATS)* in July 2009, the Washington State Aviation Planning Council recommended policies that clarify Washington's position and responsibility in relation to its local, regional, and federal aviation partners as the primary steward and advocate for protecting Washington State's aviation system interests.

“The challenge of meeting Washington's aviation capacity is shared between many entities including the FAA, local and regional agencies, airlines, and publicly and privately owned airports. The Council believes that the State needs to exercise a leadership role as the primary steward for a healthy and viability aviation system. In this role, it will provide the FAA with support to help it better manage the national aviation system and clarity about its funding priorities. The State will also provide policy direction and support local and regional agencies in fulfilling their distinct aviation roles.”

While not exclusively directed at airports or airport land use compatibility, broader legislative attention to land use planning matters took place with enactment of the Growth Management Act (RCW 36.70A) in 1990. The basic purposes of the act are to ensure a high quality of life by residents of the state through comprehensive planning in metropolitan areas and other areas experiencing growth and coordination among all levels of government. The act designates airports as one of several types of “Essential Public Facilities” and establishes a planning process required to be implemented by state and local agencies.

Legislation adopted in 1996 was aimed more specifically at airport land use compatibility. RCW 36.70.547 and other sections that refer to it (including 35.63.250, 35A.63.270, and 36.70A.510) requires towns,

cities, and counties to “discourage the siting of incompatible uses” adjacent to general aviation airports through adoption of comprehensive plan policies and development regulations. *Note that, in the context of this statute, all airports that serve general aviation, meaning all public-use airports in the state, are considered to be general aviation airports.* Formal consultation with WSDOT Aviation, together with airport owners and other stakeholders, is required before such plans and regulations may be adopted or amended. WSDOT Aviation is tasked with providing technical assistance to the communities to help them meet the requirements of the law. [See Appendix ___ for more details on the consultation process.]

The technical assistance includes establishing airport land use compatibility guidelines. WSDOT Aviation does not have regulatory authority over land use decisions and cannot mandate local adherence to the guidelines. Nevertheless, cases decided by the state's Growth Management Hearing Boards direct local government to “give substantial weight to WSDOT Aviation Division’s comments and concerns related to matters affecting safety at general aviation airports.” [See *Stephen Pruitt and Steven Van Cleve vs. Town of Eatonville*, heard by the Central Puget Sound Growth Management Hearings Board (CPSGMHB; Case No. 06-3-0016)]



More information about WSDOT Aviation is available at:

www.wsdot.wa.gov/aviation/

Federal Aviation Administration



The FAA plays a very focused role in airport land use compatibility planning. Its involvement stems from its primary areas of responsibility: the safe and efficient operation of airports and the national aviation system. In these matters, the FAA role is preeminent. Federal law preempts local regulations in the area of aircraft safety, navigable airspace, flight operations, and noise control.

Even in these fields, though, the FAA’s authority is directed primarily at the operators of airports and aircraft. The FAA has little ability to prevent the development of incompatible land uses near airports. The U.S. Constitution reserves to the states the authority over local land use matters. Thus, the FAA cannot dictate the decisions made by airports and local land use entities, it can only influence them—albeit sometimes very strongly. The two mechanisms by which the FAA most strongly influences local land use decisions are: through regulations designed to protect airport and en route airspace; and via its grant program.

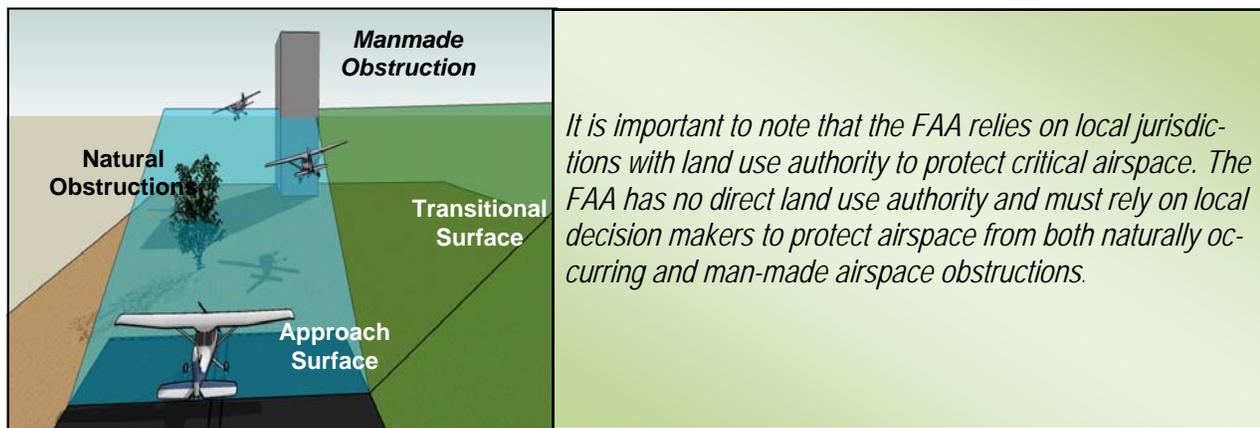
FAA Grant Program

As authorized under the Airport and Airway Improvement Act of 1982, the FAA’s grant program—the Airport Improvement Program (AIP)—provides the majority of funding for facility improvements and land acquisition for airports within the NPIAS. In exchange for receipt of grant funding, however, airports must promise to take steps, to the extent possible, to prevent creation of airspace hazards and incompatible land uses. The FAA can withhold funds from a grantee or require repayment of funds if the grant assurances are not met. The grant assurance language is quite general, but two particular assurances address the actions that the FAA expects the airport sponsor to take. The grant assurances say that the airport sponsor must agree that:



20. Hazard Removal and Mitigation. It will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting, or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

21. Compatible Land Use. It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.



 The full set of FAA grant assurances can be read online at:
http://www.faa.gov/airports/aip/grant_assurances/

Airspace Protection

The other way in which the FAA gets involved in local land use actions is with regard to protection of airport and en route airspace. However, beyond the obligation that the FAA puts on airports when they accept grant funds, the agency does not have the authority to prevent airspace hazards from being created. This is a local responsibility and is not mandatory. The FAA's function is to set the standards used to determine whether tall structures would adversely affect the airspace and, additionally, to evaluate individual proposals relative to these standards. The standards and the review process are both defined in Part 77 of the Federal Aviation Regulations (14 CFR Part 77).

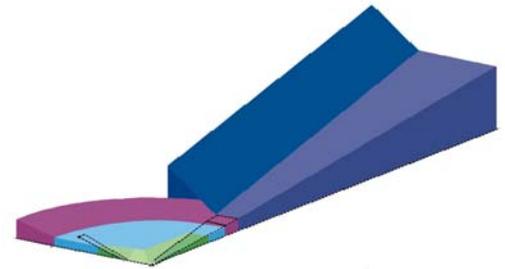
See Appendix D for additional description of the FAA Aeronautical Study process.

The one facet of the federal regulations that does create a mandatory local responsibility is the notification process. Part 77 requires that notification be submitted to the FAA before any tall structure is constructed or erected that could penetrate the airspace surfaces defined in the regulations. Certain other land use features or activities are also subject to the notification process (for example, uses involving electromagnetic radiation or laser lights). The notification responsibility rests with the project proponent, not the local government agency that has approval authority. Substantial fines can be levied for failure to comply with the notification requirements.

 See U.S. Code Title 49, Sections 44718, Structures Interfering with Air Commerce and 46301(a), Civil Penalties

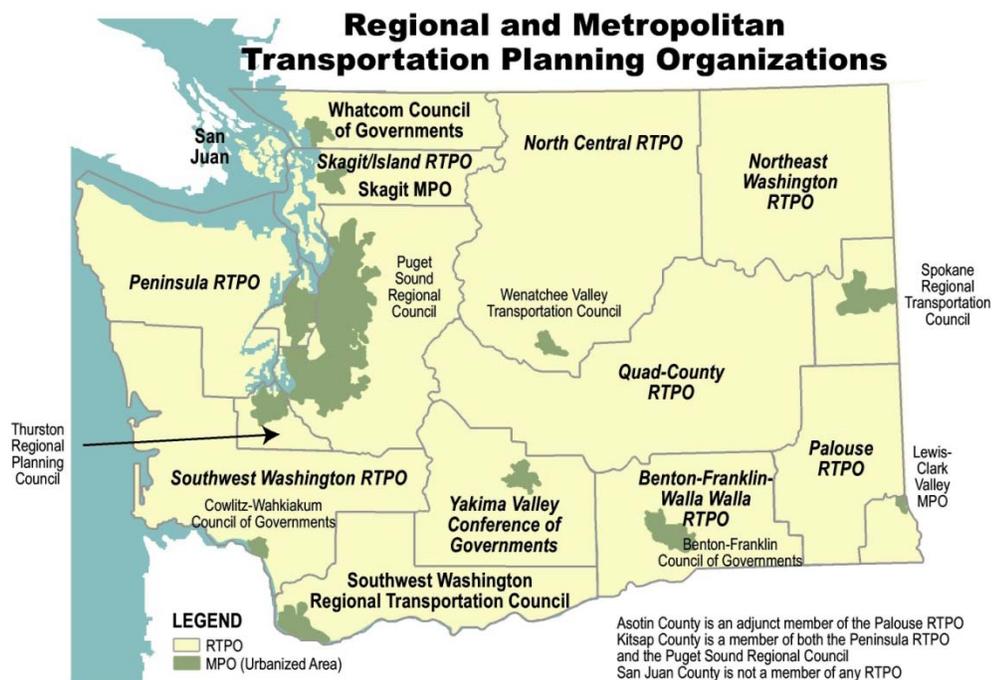
Upon receipt of the notification the FAA conducts an “Aeronautical Study” to assess whether the objects could be hazards to air navigation. Two aspects of Aeronautical Studies are important to emphasize. One is that they only address what might cause an accident; land uses and features that might put people on the ground at risk should an accident occur are not study topics. Second, is that local land use jurisdictions are not obligated to adhere to the FAA’s findings. The local jurisdiction could allow a structure to be created despite the FAA’s objections, though presumably it would take on a high degree of liability in doing so. Oppositely, the local jurisdiction could, based on its assessment of the myriad of other factors—both aeronautical and nonaeronautical—that affect local decision-making, deny a proposal even though the FAA said that it would not be a hazard to airspace.

[Click here for a diagram of the FAR Part 77 ‘Imaginary Airspace Surfaces’](#)



Regional Transportation Planning Organizations

Regional Transportation Planning Organizations (RTPOs) occupy a special niche in the overall spectrum of agencies having responsibilities for airport land use compatibility planning in Washington. As enabled by state law, RTPOs are voluntary associations of local governments within a county or contiguous counties. They were authorized as part of the 1990 Growth Management Act to ensure local and regional coordination of transportation plans. RTPO members include cities, counties, WSDOT, tribes, ports, transportation service providers, private employers and others. Among the duties taken on by



these organizations is review of local countywide planning policies and the transportation-related provisions in local comprehensive plans.

The level of involvement of RTPOs in airport land use compatibility planning varies from one organization to another. As the RTPO for the state's most populated area, the Puget Sound Regional Council (PSRC) specifically reviews airport compatible land use policies as part of its comprehensive plan review and certification process. The process requires cities and counties to report on actions taken to discourage the siting of incompatible land uses near airports. PSRC also offers technical assistance to local planners to assist them in identifying key airport land use compatibility issues and to help in developing policies and planning provisions to address those issues.



More information about Washington's Metropolitan Planning Organizations (MPOs) and RTPOs, including information about the review and certification process, is available at: www.wsdot.wa.gov/planning/Regional/

Local Government

To a great extent, the ultimate responsibility for airport land use compatibility rests with local government bodies: towns, cities, and counties. Although local plans, policies, and regulations must be consistent with state law and countywide planning policies, local government has discretion to determine how development occurs within the community. Also, the federal preemption doctrine does not affect the local government's ability to use its police powers, particularly land use controls, to anticipate, abate, mitigate and otherwise respond to other land use concerns provided they are reasonable and do not restrict airport operations.

The local government level is where day-to-day decisions are made on whether development proposals are compatible with airport activity. Airport compatibility issues may be addressed in a variety of local planning documents.

Countywide Planning Policies. Counties develop these policies in cooperation with their cities. The policies provide a common framework for local planning efforts within each county. Countywide planning policies address numerous issues, including: siting major public capital facilities; defining transportation strategies and facility needs; and facilitating joint planning. Basic airport land use compatibility goals and intergovernmental coordination mechanisms should be addressed.

Comprehensive Plans. Comprehensive plans guide land use development within towns, cities, and counties. They determine where development is or is not desirable and set the tone for the development size and intensity. The plans are the centerpiece of local planning and the starting point for the planning of individual projects. Development regulations—zoning, subdivision, and other controls—must be consistent with comprehensive plans. State agencies are required to comply with comprehensive plans and development regulations of jurisdictions planning under the GMA. Establishment of land use patterns to avoid compatibility conflicts with airports must be a consideration in preparation of these plans.



What is a Comprehensive Plan?

The comprehensive plan expresses a community's vision about itself and what it would like to become. The plan forms the policy framework from which all future community planning actions will be judged, and it is the starting point for any discussion regarding local land use. It enables the community to compare how it looks now with what it wants to look like in 20 years.

The comprehensive plan is developed cooperatively by elected officials, the planning commission, planning staff, and the public. Consultants are often engaged for all or part of the work effort. Elected public officials adopt the plan following a series of public hearings. The time range for the comprehensive plan is generally 20 years. Periodic updates every five to seven years are usually required. Comprehensive plans generally cover the following topic areas, or "elements":

Land Use	Economic Development
Housing	Parks and Recreation
Capital Facilities	Rural (county comprehensive plans only)
Utilities	Natural Resources
Transportation	

Adapted from *What is a Comprehensive Plan?* by David Martineau, Planning Director, City of Colville. Presented at the Spring 2006 meeting of the Washington State Community Airports Association (CAA). Wenatchee, WA.

Sub-Area Plans. These planning documents address a portion of a municipality. They address a smaller geographic area than the comprehensive plan, but often influence airports depending on their scope and approach. Limits on development in areas subject to airport impacts should be described.

Development Regulations/Zoning. These regulations are set by local jurisdictions to implement the comprehensive plan. They specify the types of activities that may take place in a given location and establish limits on the physical size and shape of the development. Specific limitations on the number of occupants, the heights and overall sizes of structures, and requirements for sound attenuation are appropriate elements of local zoning.

Environmental Review. This is a formal process for soliciting public comment on the effects of a particular development proposal or planning effort. The procedural and analysis requirements are set forth in the State Environmental Policy Act (SEPA). The SEPA process provides a way to identify possible environmental impacts that may result from governmental decisions. These decisions may be related to issuing permits for private projects, constructing public facilities, or adopting regulations, policies or plans. Information provided during the SEPA review process helps agency decision-makers, applicants, and the public understand how a proposal will affect the environment. This information can be used to change a proposal to reduce likely impacts, or to condition or deny a proposal when adverse environmental impacts are identified. As part of a SEPA document regarding development near airports, the compatibility of the proposed development with airport activities should be addressed.

Under the National Environmental Policy Act (NEPA), similar environmental review requirements are established at the federal level. NEPA comes into play with regard to actions by federal agencies including the provision of grants for airport improvements. Local land use actions are not subject to NEPA.



For additional information regarding SEPA and its process visit: <http://www.ecy.wa.gov/programs/sea/sepa/e-review.html>



Information about the NEPA process can be found at:
<http://www.epa.gov/compliance/basics/nepa.html>



For more information about the planning process in Washington State, see the Department of Commerce Short Course on Local Land Use Planning at: <http://www.commerce.wa.gov/site/395/default.aspx>

Airports

Airports are the only participants in the airport land use compatibility process that have the ability, although limited in many ways, to address the issue from two perspectives: through their long-range planning of future airport development and with actions affecting day-to-day operation of the airport.

Chief among actions in the first category are decisions regarding the configuration of the airport. Airports can decide whether to build or extend a runway, for example. They also can purchase property either to eliminate highly incompatible land uses or to prevent future incompatible development. Funding is typically the major limitation, however. Acquisition of property within runway protection zones is eligible for FAA grants.

An airport master plan is the primary mechanism by which airports determine the future direction of airport development. These development actions can have direct implications on the airport's impacts on nearby land uses. The master planning process also can affect airport impacts more indirectly by not seeking to attract types of aircraft that generate the greatest impacts. Airports, though, cannot exclude aircraft based on noise or safety and ultimately it is the pilot's decision as to whether the aircraft can safely operate at the airport.



Airport Master Plan and Airport Layout Plans

Two distinct, yet interrelated, types of plans used to guide airport development are the airport master plan (AMP) and airport layout plan (ALP).

An AMP is a comprehensive document intended to guide development on an airport. The planning period is normally 20 years. A typical AMP will contain most of the aviation-related information needed to prepare a land use compatibility plan. Almost all AMPs will contain:

- An inventory of airport facilities.
- Data on current and forecast activity levels.
- Assessment of future development needs and alternatives for meeting the needs.
- Text and drawings describing proposed improvements.

The AMP itself or an accompanying environmental document also will usually contain depictions of current and projected noise contours.

An ALP is a conceptual map depicting current and proposed airport features including runways, taxiways, navigational aids, buildings, aircraft parking areas, and other infrastructure. Airport property boundaries and the limits of required clear areas such as runway protection zones and runway object free areas are shown as well. Data tables (sometimes on a separate sheet) provide additional information about the airport runways, approaches, and other features, as well as the critical aircraft that the airport is designed to accommodate.

Additional drawing sheets typically will illustrate the airport airspace (FAR Part 77 surfaces), the runway approach surfaces and any obstructions to them, and details of the airport terminal or building area.

Even airports that do not have a current AMP may have a current ALP. ALPs are typically updated more regularly than AMPs. In addition to being listed in the NPIAS, to be eligible for FAA grant funds an airport must have a current ALP approved by the FAA. Completion of an ALP is also an eligibility requirement for WSDOT Aviation's grant program.

See FAA Advisory Circular 150/5070-6B, *Airport Master Plans*, to learn how the master plan process works, including how your airport can apply for federal funds when/if eligible.

In terms of day-to-day operations, airports can seek the cooperation of local pilots to identify noise sensitive areas and to help spread the word to avoid overflying these locations to the extent practical and safe. Airports also can work with the FAA to modi-

fy manner in which aircraft are flown at the airport. There are significant limitations as to what types of modifications are acceptable to the FAA, but changes to such things as traffic pattern locations, instrument approach procedures, and preferential runway designation may be open to consideration.

Airport Users

Airport users, especially pilots, have an informal but important role in airport land use compatibility matters. Foremost, when operating their aircraft, they should do so safely and in a manner that minimizes noise impacts on the land uses below. Individual pilots should encourage other pilots to do the same. Beyond these actions, airport users need to be engaged in planning for their airport and the surrounding community. Participating in public meetings and speaking out regarding compatibility concerns is essential.

Growth Management Act

Perhaps the most powerful airport land use compatibility planning tool available in Washington to airports, local government agencies, and other participants is provided by two sections of state law. The first, originally enacted in 1990, is the Growth Management Act (GMA). Among other things, GMA defines planning requirements for “essential public facilities” and designates airports as facilities of this type. Second, a 1996 law made land use compatibility a mandatory consideration in local planning. These statutory requirements are spelled out under Revised Code of Washington (RCW) Sections 36.7A.200 and 36.70.547, respectively.

Airports as Essential Public Facilities

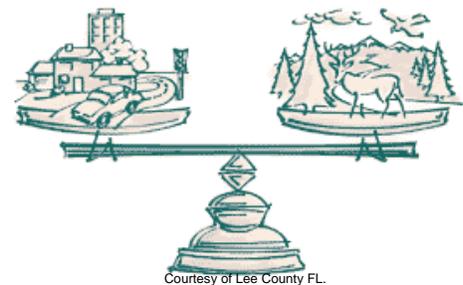
The GMA recognizes that while certain public facilities are needed by society, they often have real or perceived negative impacts on the surrounding communities. These real or perceived negative impacts often make them undesirable neighbors and thus increase the complexity and difficulty of siting new facilities or expanding existing ones. The GMA requires a process for identifying and siting these essential public facilities to be included in all local comprehensive plans. Additionally, the GMA prohibits local comprehensive plans or development regulations from explicitly precluding the siting of essential public facilities, although reasonable conditions and mitigation measures can be required.

By establishing the requirement for airport land use compatibility planning, the legislature implicitly recognized not only the societal benefits provided by air transportation, but also that merely providing for the siting of airports as essential public facilities was insufficient to the goal of protecting these facilities. Incompatible land uses in the airport environs have the potential to directly or indirectly impair the operation of airports.



Growth Management Hearings Boards

Another feature of the GMA is establishment of three Growth Management Hearings Boards: one for the eastern part of the state, one for the western part excluding the Puget Sound area, and the third for Puget Sound area counties. The GMA itself provides only basic guidance regarding comprehensive planning and the siting of essential public facilities. The hearings boards serve to render decisions on petitions that allege that either (1) a state agency, county, or city planning under comprehensive planning provisions of the Growth Management Act is not in compliance with the act, or (2) the official state population projections need adjustment.



Taking a Proactive Approach

The most effective strategy for promoting airport land use compatibility is a proactive approach. Moreover, effectiveness depends upon the participation of all the preceding stakeholders in the process.

A focus on individual development projects proposed in areas adjacent to aviation facilities is a time-consuming approach that does not provide assurance of airport protection. Once a project gets to this phase, and meets all pre-determined development requirements, it is generally too late to significantly affect the outcome because policy decisions about the types of development that will be permitted have already

been made. It may be possible to influence specific features of the development, but generally the question of whether or not a proposed use should be established at a particular site has already been decided.

Early consideration of airport land use compatibility therefore is critically important, especially given the dwindling land supply in metropolitan areas that contributes to development pressures. This is the point where airport advocates can be most effective in influencing development patterns near airports.

Being proactive provides multiple benefits.

Provides a base of support for the airport.

If the importance of its airport is not apparent to the community, then decisions involving compatibility are not likely to favor the airport. A proactive approach establishes a support base for the airport that can quickly be activated if airport compatibility is threatened.

Tackles problems before they start. Once specific development is proposed, stopping or modifying it is much more difficult than if local plans clearly indicate what uses are acceptable near the airport.

Provides predictability for the community. By knowing the ground rules as to what uses are compatible with the airport operations, the community's energies and development interests can be directed toward uses suited to the airport environs. Ad hoc decisions made on a case-by-case basis can be avoided.

Offers ability to make informed decisions. Often incompatible land uses are allowed to occur near airports simply because of a lack of awareness of the issues on the part of planners and decision makers. The process of establishing and implementing compatibility guidelines will at least ensure that consideration is given to the potential consequences of incompatibility.

Addresses on-going challenges cooperatively. Putting in place a mechanism for addressing compatibility matters on an on-going basis should enable better cooperation among the various stakeholders and potentially lead to consensus decisions. This mechanism might include, for example, the formation of a special committee to examine all aspects of potentially incompatible development proposals and report their findings to decision makers.

Relationship of Airport Master Plans to Comprehensive Plans

Ideally, an airport master plan would be developed concurrently with the comprehensive planning process for that community. This would maximize the ability to integrate the two plans and increase the likelihood of effective implementation. For a variety of reasons, however, a combined planning effort almost never happens. Often, the airport and surrounding land uses are not controlled by the same jurisdiction. Also, even when both are under the same entity, the two types of plans have different funding sources and require different specialized knowledge, thus dictating that they proceed independently.

Regardless of these circumstances, coordination between airport master plans and comprehensive plans is important. The airport master planning process should explicitly include a land use compatibility component, including identification of noise and other land use impacts. Conversely, when a comprehensive plan is being updated, and the affected airport master plan is old, a focused update of the plan can be included as part of the comprehensive plan. Re-examination of projected activity levels may be appropriate. Most important, though, is to incorporate land use compatibility measures into the planning of long-range development patterns in the community.

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