

Puget Sound Regional Council
Airport Compatible Land Use and Local Comprehensive Plans
Background and Guidelines for Local Agencies
July 15, 2004

This paper is intended to provide background information in support of the Regional Council's 2004 Comprehensive Plan Review of local plans with respect to airport compatible land use. This paper provides a brief summary of why the Regional Council is involved in the issue, background materials on the three major components of airport compatible land use (noise, height hazard, and safety), and a set of guidelines for local agencies to follow in addressing these issues in their comprehensive plans.

Mandate for PSRC's Interest and Involvement in Airport Compatible Land Use

There are three primary mandates for PSRC's interest and involvement in compatible land use planning:

1. **Resolution A-96-02** commits the Regional Council to the following: (a) preparing an initial review of land use plans for airport communities in areas within the 65 DNL noise contour; (b) annual review of comprehensive plan changes in these areas; and (c) annual reports to PSRC Executive Board. The initial review report was completed in February 1999, and the Regional Council has done annual reviews of plan changes as well as annual reviews of building permit activity since that time. Results of this work is reported to the PSRC Executive Board each year.
2. **RCW 47.80** (*Regional Transportation Planning Organizations*) instructs regional transportation planning organizations ("RTPOs") to prepare Regional Transportation Plans and authorizes RTPOs to review and certify that the transportation elements of comprehensive plans adopted by counties, cities, and towns within the region conform with state planning requirements and are consistent with the Regional Transportation Plan. This work is done as part of the Regional Council's ongoing Policy and Plan Review and Certification process (see also item 3 below).
3. In 1996 the State's **Growth Management Act (GMA)**¹ and **Planning Enabling Act**² were amended to protect public use general aviation airports from encroachment by incompatible land uses. These amendments are codified in RCW 36.70A.510 (General Aviation Airports) and RCW 36.70.547 (General Aviation Airports – Siting of incompatible uses). The new law requires cities and counties planning under GMA, through their local comprehensive plans and development regulations, to "discourage" the siting of incompatible land uses adjacent to such airports. Formal consultation with the aviation community is required, and all plans and regulations must be filed with the WSDOT Aviation Division. The Regional Council has interpreted its role under these new provisions of GMA as appropriately falling under our review and certification of local comprehensive plans. To implement this role, the Regional Council has incorporated airport compatible land use criteria into its plan review process, and regularly reviews plans against these criteria (for information visit our web site: <http://www.psrc.org/projects/planreview/index.htm>).

Airport Compatible Land Use Background

Noise and compatible land use. Aircraft noise and its affect on surrounding land use is perhaps the most contentious issue in aviation. The political and technical dimensions of airport noise have been studied exhaustively and documented in hundreds of plans, studies, environmental reports, and government regulations. The central issues in the discussion of airport noise and land use compatibility are: (1) what

¹ Chapter 36.70, Revised Code of Washington (RCW)

² Chapter 36.70A, Revised Code of Washington (RCW)

level of noise constitutes “significant” impact to surrounding communities, and (2) how does this noise affect different types of land uses? Both these issues have received considerable attention, particularly from the FAA. Recognizing that high levels of airport noise are generally not compatible with residential land uses, schools, hospitals, and other noise sensitive uses, the FAA has established criteria that outline the level of noise which is considered to be compatible with various types of land uses. These criteria are displayed in Table I below.

Planning for noise and land use compatibility around airports is primarily focused in two areas: (1) “remedial” programs (such as acquisition of noise-impacted properties and provision of noise insulation for existing and new structures inside noise contour areas); and (2) “preventive” programs (planning and zoning programs which prevent the construction of land uses that are incompatible with airport noise). Remedial programs are primarily used by airport sponsors and the FAA to address noise problems. Local land use planning agencies, however, are in a position to effectively develop and implement “preventive” approaches to avoid future land use development that is incompatible with airport activity.

The following excerpt was taken from a Notice of Proposed Rule Making (“NPRM”) appearing in the Federal Register on May 21, 1998 (Volume 63, Number 98).

Background

Aircraft noise is a serious problem for communities around airports. Federal, state and local governments have spent several billion dollars for the acquisition of land, soundproofing, changes in airport operations and airspace, and processing of complaints. The airline industry has expended billions more to acquire quieter aircraft that reduce noise exposure levels. Although this collective effort has resulted in significant progress, additional measures are needed to maintain current gains and prevent the development of new noncompatible land uses around airports.

The FAA has been actively engaged in measures to solve the problem of aircraft noise since the 1960's. Specifically, the FAA has issued regulations phasing out noisier airplanes. The noisiest Stage 1 airplanes were phased out of commercial operations in the United States by 1988. The current phaseout will eliminate large Stage 2 airplanes from operations in the contiguous United States by the year 2000. The FAA provides grants to airport operators willing to undertake noise abatement measures such as the purchase of land and soundproofing of residences.

Based on several studies, the FAA expects noise contours at most airports to continue to shrink for several years into the 21st century due to the elimination of noisier aircraft. After the completion of the Stage 2 phaseout by the year 2000, the FAA anticipates that these contours could begin to expand again at some airports primarily due to increases in operations. It is essential for local jurisdictions to plan ahead to maintain the land use compatibility already achieved near airports and to control land uses to prevent new noise-sensitive development within an agreed upon protection zone.

This statement points out the need for improved education, communication, and cooperative planning among airport sponsors, local governments, state and regional agencies, and the FAA to more effectively address these issues. The FAA has established guidelines and procedures to assist airport sponsors and local planning agencies conduct noise and land use compatibility planning efforts (see FAA Advisory Circular AC 150/5020-1, *Noise Control and Compatibility Planning for Airports*). For a more complete list of resources see the *Compatible Land Use Planning Resource Bibliography* on PSRC’s web page: <http://www.psrc.org/airbib.htm>. Copies of these resources are available at the Regional Council’s Information Center. To assist airports and communities plan for airport compatible land use, FAA has prepared the following guidelines (see Table 1 below), which identify the relative sensitivity of various land uses to airport noise. This information displays numerous land use categories, and for each category indicates whether that land use is considered to be compatible with various levels of noise (the metric FAA uses for this determination is DNL – average yearly day-night sound levels).

TABLE 1 - Land Use Compatibility* With Yearly Day-night Average Sound Levels (DNL)

Land use	Yearly day-night average sound level (DNL) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings,	Y	N(1)	N(1)	N	N	N
Mobile home parks.....	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking.....	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business, and professional.....	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment.	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction.	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports.....	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Part 150, App. A

14 CFR Ch. 1 (1-1-98 Edition)

This table was taken from FAA Advisory Circular AC 150/5020-1 "Noise Control and Compatibility Planning for Airports."

Numbers in parenthesis refer to notes.

*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

KEY TO TABLE 1

SLUCM = Standard Land Use Coding Manual.

Y (Yes) = Land Use and related structures compatible without restrictions.

N (No) = Land Use and related structures are not compatible and should be prohibited.

NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 = Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure

NOTES FOR TABLE 1

- (1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- (2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (5) Land use compatible provided special sound reinforcement systems are installed.
- (6) Residential buildings require an NLR of 25.
- (7) Residential buildings require an NLR of 30.
- (8) Residential buildings not permitted.

Height hazard / obstructions to navigable airspace (safety in the air). In addition to addressing airplane noise, communities surrounding airports can establish and maintain zoning and development regulations dealing with height hazard and obstructions. RCW 14.12 *Airport Zoning* declares the public interest in reducing airport hazards, and establishes the authority to implement “airport zoning” (see section 3. below). By limiting the height and location of structures and other obstructions to navigation in the vicinity of airports (buildings, towers, trees, etc.), these regulations can protect the safety of aircraft during takeoff and landing, and in the immediate vicinity of the airport. The Federal Aviation Administration (FAA) has developed regulations and standards for dealing with height hazard, obstructions, and objects affecting navigable airspace. Cities and counties wishing to establish programs dealing with these issues should refer to the FAA’s official guidelines: Code of Federal Regulations (“CFR”), Title 14, Part 77 (“Objects Affecting Navigable Airspace”) and FAA Advisory Circular AC 150/5190-4A, *A Model Zoning Ordinance to Limit Height of Objects Around Airports*. Part 77 defines a system of imaginary surfaces around airports through which no fixed object or structure (including trees) should penetrate. These imaginary surfaces are designed to protect the critical airspace around airports and allow for safe operation of aircraft. Public agencies or private developers proposing to construct structures or locate objects that would penetrate the Part 77 imaginary surfaces must notify the FAA using FAA Form 7460-1, “Notice of Proposed Construction or Alteration.” FAA review will then determine whether the object should be allowed, and if so, how it should be marked and/or lighted so it can be seen by pilots. Of course, the best approach to maintaining the safety of navigable airspace around airports is to prohibit the construction of tall structures, regulate their location in relation to the extended runway centerline, and/or strictly limit their height. With technical assistance from airport sponsors, State Aviation Division staff, and the FAA, local governments can develop regulations that address these issues, allowing for new development and providing for aviation safety.

Safety and potential risk/liability (safety on the ground/accident potential). While civilian U.S. airports have devoted significant effort and resources to addressing noise issues for decades, only recently have airport sponsors and land use planners begun actively addressing the issues of safety, risk potential, and liability. The issue centers on planning for the safety of people and structures on the ground, and is of primary concern immediately adjoining airport runways and under the approaches to runways (areas such as runway protection zones, object free areas, obstacle free zones, accident potential zones, and runway safety areas). The U.S. Department of Defense recognizes the need to actively plan for these potential safety risk zones in its *Air Installation Compatible Use Zones* (or “AICUZ”) program, which addresses noise compatibility issues and safety concerns around military airfields. The objective of the AICUZ program is to encourage compatible uses of public and private lands in the vicinity of military airfields through the local communities’ comprehensive planning process.

The military’s studies of historical aircraft accidents showed that most aircraft accidents happen on or near the extended runway centerline. Studies of aircraft accident patterns at U.S. civil airports (notably those done by the National Transportation Safety Board) have confirmed the military’s experience, and

provide the foundation for compatible land use planning in these “Accident Potential Zones” (APZs). Communities can reduce potential risk to life and property, and exposure to possible liability, by limiting the types of land uses and minimizing the number of structures and people allowed in known safety zones and accident potential zones around airports. The *Airport Land Use Planning Handbook*, prepared by California Department of Transportation (CalTrans) Division of Aeronautics in 2002 contains useful information for agencies interested in developing regulations or taking land use actions to reduce risk and potential liability associated with incompatible land uses adjoining airports. In addition, the Denver Regional Council of Governments has produced a summary document (“Airport Compatible Land Use Design Handbook”, May 15, 1998) which contains an excellent discussion of these issues and how local governments can address them. In addition, the WSDOT Aviation Division has prepared planning guidance materials to assist local planners address safety issues around public use airports. These guidelines are available at: <http://www.wsdot.wa.gov/Aviation/planning/AirportsLandUse.pdf>.

Guidelines for Addressing Airport Compatible Land Use in Comprehensive Plans

The following guidelines are intended to clarify the criteria contained in PSRC’s Policy and Plan Review process, and to provide local agency planners with concrete examples of the types of general information, policy language, and planning provisions they should include in their plans to address airport compatible land use. The Regional Council suggests comprehensive plans should include the following information:

1. List airports and provide the following background information:
 - Name and location of airport
 - Identify airport owner/operator, including whether public or private
 - Airport role and type of activity (commercial, reliever, general aviation, emergency, etc.)
 - Airport size (acres)
 - Number and length of runways
 - Number of aircraft based at the airport
 - Number of annual aircraft operations (take-offs and landings)
 - Passenger and cargo volumes (if applicable)
 - Major highways and transit serving the airport. Include existing facilities and planned improvements.
2. Include a Land Use Inventory for airport property and in areas adjacent to the airport:
 - Identify existing and planned land uses in the vicinity of the airport
 - Document residential density in the vicinity of the airport
 - Document places of public assembly (indoors and outdoors) in the vicinity of the airport (include schools, civic centers, theaters, stadia, malls, office buildings)
 - Document existing vacant land and contiguous open space, i.e. critical areas, passive use parks, etc. in the vicinity of the airport
3. If the airport is owned by the jurisdiction, the airport should be included in the capital facilities and transportation elements of the comprehensive plan.
4. The plan should designate the airport as an essential public facility (EPF), and should contain a process for siting essential public facilities, including airports, in conformance with RCW 36.70A.200.

5. The plan should include goals and policies that discourage the siting of incompatible uses near airports in conformance with RCW 36.70.547. In addition, the plan and implementing zoning code and development regulations should include provisions to protect airspace around the airport (use FAR Part 77 as a basis for technical regulations to protect airspace). Information and policy language should be placed as appropriate in the plan, including the land use element, transportation element, capital facilities element, etc. The plan should include a combination of policies and provisions that address height hazard, safety, and noise. Examples:
- Define the meaning of “incompatible land use and incompatible development” within the context of your local comprehensive plan, and develop policies and provisions to address those uses. Incompatible land uses may include height hazards, areas of public assembly/large concentrations of people, single family housing, multi-family or high-density residential, shopping centers, convention centers, hotel/motels, churches, schools, hospitals, daycare, senior citizen housing, manufacture/trailer parks, large concentrations of people, hazardous/explosive chemical, dust/smoke – air quality and other similar uses (see Table I above).
 - Identify the geographic areas of concern on and around the airport where airport noise, height hazard, and safety issues need to be addressed. Noise impacted areas can be defined using standard noise analysis which produces noise contour maps. Height hazard areas should be defined using information from the airport master plan and FAR Part 77 data. Safety areas can be defined using information from the airport master plan as well as information from the WSDOT Aviation Division at: <http://www.wsdot.wa.gov/Aviation/Planning/default.htm>. Additional resources can be found at the California Department of Transportation (CalTrans) Aeronautics Division at: <http://www.dot.ca.gov/hq/planning/aeronaut/htmlfile/index.php>.
 - Develop plan provisions to protect the airport from adjacent incompatible uses and/or activities that could impact the present and/or future use and expansion of airport facilities and operations. The Regional Council has prepared a bibliography of resources on airport compatible land use. This material can be reviewed at the Regional Council’s Information Center and is listed on the PSRC web site at: http://www.psrc.org/projects/air/compatible_landuse.htm. Examples of plan goals and policies, zoning code provisions, airport zoning overlay ordinances, development regulations, height hazard zone diagrams, and other data are available from the WSDOT Aviation Division at: <http://www.wsdot.wa.gov/Aviation/Planning/default.htm>
 - Coordinate the protection of the airport with adjoining jurisdictions by developing consistent plan policy and implementing regulations.
 - Where possible, preserve large open space tracts, resource lands and recreation areas in the vicinity of airports, especially along the extended runway centerline and in other areas within the airport accident safety zones. Examples of the size, shape, and location of these safety zones can be found in the WSDOT Aviation Division’s “Airports and Compatible Land Use – Volume I” handbook. An incentive based system can be used to encourage the development of significant, contiguous open space tracts while discouraging smaller tracts that do not provide functional open space needs for aircraft.
 - In the area around airports, real estate title/disclosure statements should be required. These documents disclose property is located adjacent to an airport and may experience low overhead flights, odor, vibrations, noise and other similar aviation impacts. This provision should be required for all new or substantial improvements to property in the airport vicinity.

- Discourage the siting of uses adjacent to airports that attract birds, create visual hazards, discharge any particulate matter in the air that could alter atmospheric conditions, emit transmissions that would interfere with aviation communications and/or instrument landing systems, or otherwise obstruct or conflict with aircraft patterns, or result in potential hazards to aviation.
 - Encourage the adoption of development regulations that protect the airport from height hazards by developing a Height Overlay District that will prohibit building or structure penetration or obstructions to the Federal Aviation Regulations (FAR) Part 77 “Imaginary Surfaces.”
 - Ensure the airport is preserved and allowed to expand to serve existing and future demand by incorporating the siting guidelines for essential public facilities as enumerated in the Growth Management Act. Recognize the airport as an essential public facility, and provide a process for the siting thereof.
6. The Regional Council has information on airport compatible land use on its web site at the following address: http://www.psrc.org/projects/air/compatible_landuse.htm. In addition, the Regional Council’s Policy and Plan Review Criteria can be found at the following site: <http://www.psrc.org/projects/planreview/index.htm>.
7. The WSDOT Aviation Division has many resources available on their website: www.wsdot.wa.gov/aviation. These resources include:
- Economic Impacts of Washington Airports: *Latest Findings – Airports Create Jobs and Money*.
 - Washington State Aviation System Plan Executive Summary
 - WSASP Airport Data Conditions Assessment Database: Information on the airport that includes owner and manager, length of runway, approach plate, obstructions, etc.
 - WAAS Implementation Planning
 - WSDOT Aviation Division - Land Use Compatibility Guidelines
 - Legislative Planning Diagram for Growth Management Act
 - Overview of FAR Part 77 “Imaginary Surfaces” -- Video
 - Model Ordinances
 - Washington State Aviation Policy

Additional Approaches to Addressing Airport Compatible Land Use in Local Comprehensive Plans, Zoning Codes, and Development Regulations

The following are additional suggested approaches which can be used by local agency planning staff in developing planning provisions to address airport compatible land use. They could be applied within the context of comprehensive plans, zoning codes, building codes, and other development regulations.

Noise

- In fully developed areas: focus on noise insulation, aviation easements, and/or acquisition/insulation/resale with easements
- In transitional areas: encourage phased redevelopment to compatible uses (this could include acquisition and redevelopment programs)

- In undeveloped areas: establish land use plans and zoning to avoid the development of incompatible uses (this could include acquisition and redevelopment programs)
- Incorporate aircraft noise contour information into comprehensive plan and zoning maps.
- Provide guidelines/standards/requirements in building and development codes re: noise insulation for incompatible uses inside noise contours. Match insulation needs with noise levels (achieve specified indoor levels, e.g., 45 dBA). Work with the airport sponsor and FAA to provide residents with information about noise insulation, aviation easements, purchase programs, and other noise abatement measures available to reduce the impacts of airport noise.
- Make noise exposure information available to developers, real estate agents, and the general public.
- Up-date comprehensive plan and zoning maps to provide for compatible land uses within airport noise contours. Coordinate with airport sponsor, FAA, the Regional Council, and the State DOT Aviation Division in planning for areas affected by airport noise.
- Consider property acquisition and redevelopment programs to implement land use plans.
- Coordinate with the airport sponsor, the FAA, the Regional Council, and the WSDOT Aviation Division in on-going efforts to address compatible land use issues.

Height Hazard, Obstructions, and Air Navigation Safety

- Incorporate airport's FAR Part 77 height limitations into the zoning code and related maps and establish "airport zoning" as provided under RCW 14.12.
- Create a local notification, review, and approval process for all communication towers (cellular phone, radio, TV, digital TV, etc.) which incorporates the airport's Part 77 surfaces, runway RPZs, and runway approaches. Use the FAA's 7460-1 (see above) process as a guide.
- Incorporate height hazard and air navigation safety review criteria into city review and approval process for development proposals and building permits. Develop a list of potential uses which would trigger reviews. Bring appropriate staff from State DOT Aviation Division, airport sponsor, FAA, or aviation consultants into the review process to insure adequate technical input. Consider the following in developing review criteria:
 - * Limits on use of radio transmissions and other electronic emissions that could affect aircraft communication and navigation during landing and takeoff.
 - * Limits on land uses (such as wetlands and sanitary landfills) that could attract birds.
 - * Limits on the use of lighting that could affect aircraft during landing and takeoff.
 - * Limits on land uses that could generate smoke, steam, dust, or other airborne material that could affect aircraft during landing and takeoff.
 - * Height limitations for all land uses, structures, and vegetation which fall under the provisions of FAR Part 77.
 - * Provisions for lighting and marking objects which fall under the provisions of FAR Part 77.

Safety and potential risk/liability (safety on the ground/accident potential)

- Identify and map the locations around airports where potential safety and liability risks exist. These include runway protection zones (“RPZs”) and approach transitional areas. This information can be obtained from the airport sponsor, the FAA, and the State DOT Aviation Division. In addition, safety and risk information can be obtained from sources located in the PSRC Airport Compatible Land Use Planning Resource Center or the *Compatible land Use Planning Resources Bibliography* on PSRC’s web page at the following address: <http://www.psrc.org/airbib.htm>. For more information see *Airports and Compatible Land Use – Volume I (1999)*, prepared by the WSDOT Aviation Division. This WSDOT publication is available in PSRC’s Information Center and on the WSDOT web site: <http://www.wsdot.wa.gov/Aviation/planning/AirportsLandUse.pdf>. See also the *Airport Land Use Planning Handbook (2002)*, prepared by the California Department of Transportation (CalTrans) Division of Aeronautics. This publication is available in PSRC’s Information Center and on the CalTrans web site at: <http://www.dot.ca.gov/hq/planning/aeronaut/htmlfile/landuse.php>.
- Hold meetings and workshops including local planners, commissioners, council members, and risk managers to discuss the relative risks and liability involved in approving plans, zoning ordinances and maps, and building permits for incompatible land uses in these areas. Contact organizations for municipal and county attorneys and the WSDOT Aviation Division to ask for technical and legal advice on these issues.