

# Appendix L: Land Use Compatibility Guidelines for Aircraft Noise

(revision of 2004 Transportation Policy Plan Appendix H)

# L

## Land Use Compatibility Guidelines for Airport and Heliport Noise

The regional, *Land Use Compatibility Guidelines for Aircraft Noise* have been prepared to assist communities in preventive and corrective mitigation efforts that focus on compatible land use. The compatibility guidelines are one of several aviation system elements to be addressed in the comprehensive plans and plan amendments of communities affected by aircraft and facility operational impacts. The Metropolitan Land Planning Act (MLPA), requires all local governmental units to prepare a comprehensive plan for submittal to the Metropolitan Council for review; updated plans are due December 2008. The following overall process and schedule applies:

- In 2003 the Council adopted the *Development Framework* chapter of the Metropolitan Development Guide (MDG).
- In 2008 the *Transportation Policy Plan* chapter of the MDG is updated and includes the revised land use compatibility guidelines for aircraft noise.
- In 2009, after adoption of the new *Transportation Policy Plan*, the Council transmits new *Systems Statements* to each metro community.
- Within nine months after receipt of the *Systems Statements* each community reviews its comprehensive plan and determines if a plan amendment is needed to ensure consistency with the MDG. If an amendment is needed the community prepares a plan amendment and submits it to the Council for review.
- Each community affected by aircraft noise and airport owner jointly prepare a noise program to reduce, prevent or mitigate aircraft noise impacts on land uses that are incompatible with the guidelines; both operational and land use measures should be evaluated. Communities should assess their noise impact areas and include a noise program in their 2018 comprehensive plan update.
- Owners/Operators of system airports should include their part of the noise program in preparation or update of each airports long-term comprehensive plan (LTCP). See Table L-1 for listing of noise affected airports and communities.
- Council reviews community plan submittal and approves, or requires a plan modification.
- Airport owner submits long-term comprehensive airport plan or plan update (LTCP), including noise mitigation program, for Council review and approval. A schedule for updates of LTCPs is included in the *Transportation Policy Plan*.

## Airport Noise

Both the airport and heliport sections of the land use compatibility guidelines assume:

- Federal and Manufactures programs for reduction of noise at its source (engines, airframes),
- Airport operational noise abatement measures/plan in place,
- Community comprehensive plans reflect compatible land use efforts occurring through land acquisition, “preventive” land use measures, or “corrective” land use measures,
- Availability of an approved noise policy map for the facility under consideration. The noise exposure maps identify where, geographically, the land use compatibility guidelines are to be applied.

### Preventive and Corrective Land Use Measures

Airport noise programs, and the application of land use compatibility guidelines for aircraft noise, are developed within the context of both local community comprehensive plans, and individual airport long-term comprehensive plans (LTCPs). Both the airport and community plans should be structured around an overall scheme of preventive and corrective measures. Table L-2 depicts the land use measures adopted as part of the MSP Part 150 noise compatibility program for 2007.

The status of noise programs at other system airports, in relation to the land use measures adopted at MSP, are also included to indicate the extent of the current noise control effort on a system-wide basis. Other land use measures may also need to be considered at the reliever airports. The level and extent of noise impacts vary widely between the airports and therefore not all land use measures may be appropriate or the level of emphasis may need to be different for neighborhoods within the same community.

<b>Airport</b>	<b>Community</b>
MSP International	Minneapolis, Bloomington, Richfield, Mendota Heights, Mendota, Eagan, Burnsville
St. Paul Downtown	St. Paul
Anoka County – Blaine	Blaine
Flying Cloud	Eden Prairie
Crystal	Crystal
Airlake	Eureka Twp., Lakeville
South St. Paul	So. St. Paul, Inver Grove Heights
Lake Elmo	Baytown, West Lakeland, Lake Elmo
<i>* As defined under MS 473.621, Sd. 6.</i>	

**Table L-2: Land Use Measures**

PREVENTIVE LAND USE MEASURES			CORRECTIVE LAND USE MEASURES		
	MSP International Airport Communities	Other Regional Airport Communities		MSP International Airport Communities	Other Regional Airport Communities
Amend local land use plans to bring them into conformance with regional land use compatibility guidelines for aircraft noise.	YES	YES	Acquire developed property		YES
Apply zoning performance standards.	YES	YES	<ul style="list-style-type: none"> <li>• within RPZs</li> <li>• within runway safety zones</li> <li>• within DNL 70.</li> </ul>	YES YES YES	YES FCM & STP Airports.
Establish a public information program.	[YES] Policy Plan, LTCP, EIS, CIP	[YES] Policy Plan, LTCP, EIS, CIP	Part –150 sound insulation program.	YES (MAC 5db criteria)	NO
Revise building code.	YES - MS 473.192 Builders Guide	YES - MS 473.192 Builders Guide	Property purchase guarantee.	NO (Not supported by communities)	NO
Fair property disclosure policy.	[YES] Usually applied by developer or builder.	[YES] Usually applied by developer or builder.	Creation of sound barriers		[YES] Proposed in the FCM & ANE LTCPs.
Dedication of aviation easements.	YES	YES	<ul style="list-style-type: none"> <li>• walls,</li> <li>• berms,</li> <li>• ground runup enclosures</li> </ul>	YES YES YES	
Transfer of development rights.	NO	NO			
Land banking (acquisition of undeveloped property)	NO	NO			

The compatibility guidelines indicate that some uses be “Discouraged”. Prior to applying the guidelines the comprehensive plan or plan amendment needs to assess what has been or can be done to discourage noise sensitive uses. This should be done when the overall preventive and corrective land use measures are being assessed as part of the overall comprehensive plan. The land use compatibility guidelines (contained in Table L-3) are defined and described below. All new land uses are categorized according to whether they are considered new/major redevelopment or new/in-fill/redevelopment.

The land uses are listed in table three as specific categories grouped to reflect similar general noise attenuation properties and what the normally associated indoor and outdoor use activities are. The listing is ranked from most to least sensitive uses in reference to the aircraft noise spectrum. In Table L-6 there is an additional breakdown of the land uses in each category based upon the acoustic properties of typical land uses by the standard land use coding manual (SLUCUM). For new single-family detached housing, that is discouraged but may be allowed by communities in zone 4 and the buffer zone, the Council has prepared a *Builders Guide* to assist in determining acoustic attenuation of the proposed new home.

**Table L-3: Land Use Compatibility Guidelines for Aircraft Noise**

Land Use Category	Compatibility with Aircraft Noise Levels										Type of Development
	New Development and Major Redevelopment					Infill Development and Reconstruction or Additions to Existing Structures					
	1 DNL 75+	2 DNL 74-70	3 DNL 69-65	4 DNL 64-60	Buffer Zone*	1 DNL 75+	2 DNL 74-70	3 DNL 69-65	4 DNL 64-60	Buffer Zone *	
Residential											
Single / Multiplex with Individual Entrance	INCO	INCO	INCO	INCO		COND	COND	COND	COND		
Multiplex / Apartment with Shared Entrance	INCO	INCO	COND	PROV		COND	COND	PROV	PROV		
Mobile Home	INCO	INCO	INCO	COND		COND	COND	COND	COND		
Educational, Medical, Schools, Churches, Hospitals, Nursing Homes	INCO	INCO	INCO	COND		COND	COND	COND	PROV		
Cultural / Entertainment/Recreational											
Indoor	COND	COND	COND	PROV		COND	COND	COND	PROV		
Outdoor	COND	COND	COND	COND		COND	COND	COND	COMP		
Office / Commercial/Retail	COND	PROV	PROV	COMP		COND	PROV	PROV	COMP		
Services											
Transportation-Passenger Facilities	COND	PROV	PROV	COMP		COND	PROV	PROV	COMP		
Transient Lodging	INCO	COND	PROV	PROV		COND	COND	PROV	PROV		
Other medical, Health & Educational Services	COND	PROV	PROV	COMP		COND	PROV	PROV	COMP		
Other Services	COND	PROV	PROV	COMP		COND	PROV	PROV	COMP		
Industrial/Communication / Utility	PROV	COMP	COMP	COMP		PROV	COMP	COMP	COMP		
Agriculture Land/Water Areas / Resource Extraction	COMP	COMP	COMP	COMP		COMP	COMP	COMP	COMP		

## New Development : Major Redevelopment - or - Infill/Reconstruction

- **“New Development”** - means a relatively large, undeveloped tract of land proposed for development. For example, a residential subdivision, industrial park, or shopping center.
- **“Major Redevelopment”** - means a relatively large parcel of land with old structures proposed for extensive rehabilitation or demolition and different uses. For example, demolition of an entire block of old office or hotel buildings for new housing, office, commercial uses; conversion of warehouse to office and commercial uses.
- **“Infill Development”** - pertains to an undeveloped parcel or parcels of land proposed for development, similar to or less noise-sensitive than the developed parcels surrounding it. For example, a new house on a vacant lot in a residential neighborhood, or a new industry on a vacant parcel in an established industrial area.
- **“Reconstruction or Additions to Existing Structures”** - pertains to replacing a structure destroyed by fire, age, etc., to accommodate the same use that existed before destruction, or expanding a structure to accommodate increased demand for existing use (for example, rebuilding and modernizing an old hotel, or adding a room to a house). Decks, patios and swimming pools are considered allowable uses in all cases.

**Table L-4: Structure Performance Standards\***

Land Use	Interior Sound Level **
Residential	45dBa
Educational/Medical	45dBa
Cultural/Entertainment/Recreational	50dBa ***
Office/Commercial/Retail	50dBa
Services	50dBa
Industrial/Communications/Utility	60dBa
Agricultural Land/Water Area/ Resource Extraction	60dBa

\* Do not apply to buildings, accessory buildings, or portions of buildings that are not normally occupied by people.  
 \*\* The federal DNL descriptor is used to delineate all the system airport noise policy zones.  
 \*\*\* Special attention is required for certain noise sensitive uses, for example, concert halls.

### Definition of Compatible Land Use

The four land use ratings in land use compatibility Table L-3 are explained as follows:

- **COMP - “Compatible”** - uses that are acoustically acceptable for both indoors and outdoors.
- **PROV - “Provisional”** - uses that should be discouraged if at all feasible; if allowed, must meet certain structural performance standards to be acceptable according to MS473.192 (metropolitan area Aircraft Noise Attenuation Act). Structures built after December 1983 shall be acoustically constructed so as to achieve the interior sound levels described in Table L-4. Each local governmental unit having land within the airport noise zones is responsible for implementing and enforcing the structure performance standards in its jurisdiction.
- **COND - “Conditional”** - uses that should be strongly discouraged; if allowed, must meet the structural performance standards, and requires a comprehensive plan amendment for review of the project under the factors described in Table L-5.
- **INCO - “Incompatible”** - Land uses that are not acceptable even if acoustical treatment were incorporated in the structure and outside uses restricted.

## Noise Policy Area

A noise policy area is defined for each system airport and includes - aircraft noise exposure zones; a [optional] buffer zone; and, the preventive and corrective land use measures that apply to that facility.

### *Noise Exposure Zones:*

- **Zone 1** - Occurs on and immediately adjacent to the airport property. Existing and projected noise intensity in the zone is severe and permanent. It is an area affected by frequent landings and takeoffs and subjected to aircraft noise greater than 75 DNL. Proximity of the airfield operating area, particularly runway thresholds, reduces the probability of relief resulting from changes in the operating characteristics of either the aircraft or the airport. Only new, non-sensitive, land uses should be considered - in addition to preventing future noise problems the severely noise-impacted areas should be fully evaluated to determine alternative land use strategies including eventual changes in existing land uses.
- **Zone 2** - Noise impacts are generally sustained, especially close to runway ends. Noise levels are in the 70 to 74 DNL range. Based upon proximity to the airfield the seriousness of the noise exposure routinely interferes with sleep and speech activity. The noise intensity in this area is generally serious and continuing. New development should be limited to uses that have been constructed to achieve certain exterior-to-interior noise attenuation and that discourage certain outdoor uses.
- **Zone 3** - Noise impacts can be categorized as sustaining. Noise levels are in the 65 to 69 DNL range. In addition to the intensity of the noise, location of buildings receiving the noise must also be fully considered. Aircraft and runway use operational changes can provide some relief for certain uses in this area. Residential development may be acceptable if it is located outside areas exposed to frequent landings and takeoffs, is constructed to achieve certain exterior-to-interior noise attenuation, and is restrictive as to outdoor use. Certain medical and educational facilities that involve permanent lodging and outdoor use should be discouraged.
- **Zone 4** - Defined as a transitional area where noise exposure might be considered moderate. Noise levels are in the 60-64DNL range. The area is considered transitional since potential changes in airport and aircraft operating procedures could lower or raise noise levels. Development in this area can benefit from insulation levels above typical new construction standards in Minnesota, but insulation cannot eliminate outdoor noise problems.
- **Noise Buffer Zones** - Additional area that can be protected at option of the affected community; generally, the buffer zone becomes an extension of noise zone 4. At MSP, a one-mile buffer zone beyond the DNL60 has been established to address the range of variability in noise impact, by allowing implementation of additional local noise mitigation efforts. A buffer zone, out to DNL 55, is optional at those reliever airports with noise policy areas outside the MUSA.

**Table L-5: Conditional Land Use Review Factors**

Land Use Review Factor	Residential:		Education / Medical	Cultural / Entertainment / Recreational		Office / Commercial / Retail	Services
	Single, Multiplex with Individual Entrance, Mobile Home,	Multiplex/ Apartment, with Shared Entrance	Schools, Churches, Hospitals, and Nursing Homes	Indoor	Outdoor		
<b>1. Indoor Sound level:</b> Proposed construction design will provide outdoor to indoor attenuation required by structure performance standard in Table 2.	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
<b>2. Location:</b> Located under major departure flight track used by jets.	Incompatible *	Compatible	Incompatible	Compatible	Compatible	Compatible	Compatible
<b>3. Location:</b> Located parallel to primary runway used by jets.	Incompatible	Incompatible	Incompatible	Incompatible	Incompatible	Incompatible	Depends upon proposed use.
<b>4. Location:</b> Located parallel to runway to be used for unshielded engine run-ups.	Incompatible	Compatible	Incompatible	Compatible	Probably Incompatible, depends upon proposed use.	Compatible	Compatible
<b>5. Planning Considerations:</b> Consistent with adjacent land use ambient noise; consistent with the overall comprehensive plan.	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
<b>6. Method of Disclosure:</b> Local government has adopted effective method to inform future occupants of aircraft noise exposure (notice in property deed, truth in housing, informational bulletin, and permit notice).	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible

\* Incompatible for new development: compatible for redevelopment & infill development if the municipality determines that Factor 5 is satisfied & Factors 1 & 6 will be enforced

**Table L-6: Typical Land Use by Standard Land Use Coding Manual Codes (SLUCM)**

TYPE OF LAND USE	CODE NUMBERS AND SPECIFIC USES	
<b>Residential</b>		
Single/Multiplex with Individual Entrance	11 11.11 11.12 11.13 11.21 11.22	Household units Single units - detached Single units - semi detached Single units - attached row Two units - side-by-side Two units - one above the other
Multiplex/Apartment with Shared Entrance	11.31 11.32 12 13 14	Apartments - walk-up Apartments - elevator Group quarters Residential hotels Mobile home parks or courts
<b>Educational Services</b>		
Educational and Medical, Schools, Churches, Nursing Homes	65.1 68 69.1 71	Hospital Nursing homes Religious activities Cultural activities (including churches)
<b>Cultural, Entertainment, Recreational</b>		
Indoor	72 72.1	Public assembly Auditoriums, concert halls
Outdoor	74 75 76	Recreational activities (golf courses, riding stables, water recreation) Resorts and group camps Parks
<b>Office, Commercial, Retail Services</b>		
	52 53 54 55 56 57 58 59	Retail trade - building materials, hardware and farm equipment Retail trade - general merchandise Retail trade - food Retail trade - automotive, marine craft, aircraft and accessories Retail trade - apparel and accessories Retail trade - furniture, home furnishings, and equipment Retail trade - eating and drinking establishments Other retail trade
<b>Other Medical, Health, Educational Services</b>		
	60 61 62 63 64 65 35	Services Finance, insurance and real estate services Personal services Business services Repair services Professional services Professional, scientific and controlling instruments; photographic and optical goods; watches and clocks manufacturing
<b>Transportation Passenger Facilities Transient Lodging</b>	40 15	Transportation, communication and utilities Transient lodging