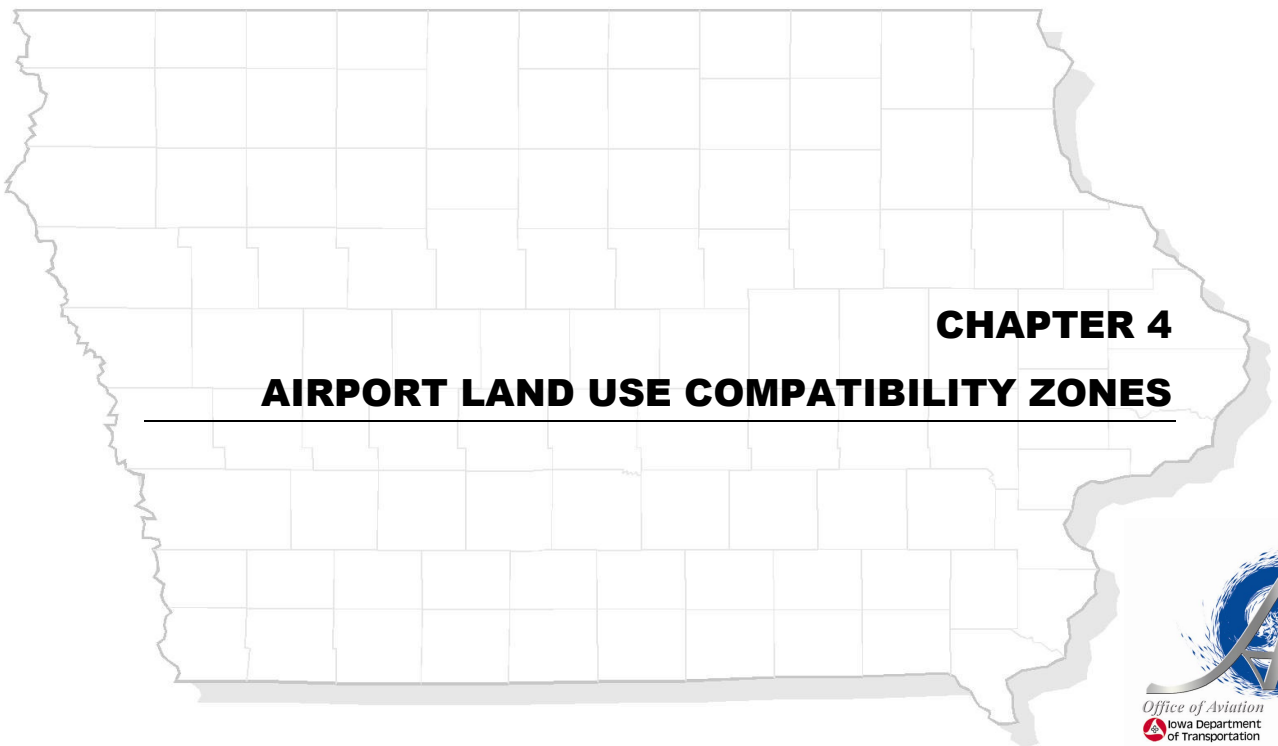




Iowa Airport Land Use Guidebook





Iowa Airport Land Use Guidebook

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Iowa Airport Land Use Guidebook

4.0 Land Use Compatibility Zones

It is critical to maintain safe operational environments both on airport property, as well as within communities surrounding local airports. As outlined in previous chapters, one of the primary factors in determining land use compatibility often relates to the proximity of a specific land use to an airport and more specifically the runways. Identification of zones that delineate specific geographic areas of interest is an important part of the land use planning process. It is necessary to define types of land uses that are not compatible, limited, or allowed within the designated geographic areas surrounding an airport. These land uses can then be incorporated into city or county comprehensive plans and/or airport zoning ordinances.

The land uses included in this document are not an inclusive list. They are intended to provide a general understanding of the types of land uses typically found in a community. If individual land use requests arise that are not included in the tables identified in this chapter, local communities should apply the general concepts outlined in this document to evaluate the requests for land use compatibility on a case-by-case basis. Some interpretation by individual municipalities may be necessary to fully address the needs within their community due to site specific needs. This chapter identifies recommended land use zoning districts and distinguishes compatible land use types within each zones district.

Compatible land uses within geographic areas of airports can be incorporated into comprehensive plans and zoning ordinances.



Iowa Airport Land Use Guidebook

4.1 Basis for Land Use Zones

Two primary sources of information were used to develop recommended zones for land use compatibility within Iowa:

Runway protection zones and FAR Part 77 surfaces are used as the basis for land use zones.

- Federal Aviation Administration (FAA) Advisory Circular (AC) 150-5300-13, Change 11, *Airport Design*, specifically Runway Protection Zones (RPZs)
- Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*, commonly known as the FAR Part 77 Surfaces

RPZs and Part 77 Surfaces are described in detail in Chapter 2. FAR Part 77 Surfaces and RPZs can be utilized to evaluate the concept of compatible land use and provide a multi-purpose tool with commonly recognized surfaces to address both height and land use concerns. Dimensional standards and descriptions of these surfaces are contained in the following section to define the basis for land use compatibility. Airport traffic patterns, while not used as a basis for the land use zoning districts, are important to understand as they relate to compatible land use within each zone.

4.1.a. Runway Protection Zones

RPZs are the areas at each end of the runway that have a critical need for protection from incompatible land uses. It is desirable to clear all objects from the RPZ, per the criteria noted in FAA AC 150/5300-13 Change 11, *Airport Design*, although some uses are permitted, provided they do not attract wildlife, are outside of the runway object free area (OFA), and do not interfere with navigational aids.



Iowa Airport Land Use Guidebook

Land uses specified in AC 150/5300-13 Change 11, *Airport Design*, which are prohibited from the RPZ areas include:

- Fuel storage facilities
- Residential structures (homes, condominiums, apartments, and manufactured housing parks)
- Places of public assembly (places of worship, schools, hospitals, office buildings, shopping centers, or other uses with similar concentrations of people)

If an airport does not own or control the entire RPZ where it has been determined to be impracticable to purchase the property, then the AC's RPZ land use standards should be consulted to determine the appropriate recommendation status for the portion not owned by the airport. If residential structures are currently located within an RPZ, the airport should attempt to fully acquire the property. However, if this option is impractical, the airport sponsor should consider the acquisition of an aviation easement to provide control over the RPZ area. Obtaining easements which are restrictive enough to limit building opportunities, as well as height, are often just as costly to procure as purchasing the property outright.

4.1.b. FAR Part 77 Surfaces

FAR Part 77 Surfaces provide a significant area around each airport already considered as part of the height review by the FAA. Although the FAA can determine if structures are obstructions to air navigation, the FAA is not authorized to regulate land use. Under FAR Part 77 Surfaces, an aeronautical study is undertaken by the FAA to determine if a structure is a hazard to air navigation. However, there is no specific authorization in any statute that permits the FAA to limit land use decisions. In fact, in every aeronautical study determination, the FAA acknowledges that state or local authorities control the appropriate use of property beneath an airport's airspace.

FAA reviews heights but local jurisdictions are responsible for regulating land use through zoning.



Iowa Airport Land Use Guidebook

The FAA evaluates height concerns for land uses within the following four surface areas used as a basis for compatibility. These surfaces are described in detail in Chapter 2.

RPZs and approach area are often the most critical area that must be protected from incompatible and uses.

- **Approach surface**

The approach surface is longitudinally centered on the extended runway centerline and extends outward and upward from the end of the runway primary surface. The approach slope of a runway is a ratio of 20:1, 34:1, or 50:1, depending on the approach type. The length of the approach surface varies from 5,000 to 50,000 feet and also depends upon the approach type.

- **Transitional surface**

The transitional surface extends outward and upward at right angles to the runway centerline and extends at a slope of seven feet horizontally for each one foot vertically (7:1) from the sides of the primary and approach surfaces. The transitional surfaces extend to the point at which they intercept the horizontal surface at a height of 150 feet above the established airport elevation.

- **Horizontal surface**

The horizontal surface is a horizontal plane located 150 feet above the established airport elevation and encompasses an area from the transitional surface to the conical surface. The perimeter is constructed by generating arcs from the center of each end of the primary surface and connecting the adjacent arcs by lines tangent to those arcs. The radius of the arc is 5,000 feet for all utility or visual runways and 10,000 feet for all other runways.

- **Conical surface**

The conical surface extends upward and outward from the periphery of the horizontal surface at a slope of 20 feet horizontally for every one foot vertically (20:1) for a horizontal distance of 4,000 feet.



Iowa Airport Land Use Guidebook

- **Departure surface**

In addition to the aforementioned surfaces, an additional surface to consider is the departure surface for runways with non-precision or precision runways instrument guidance. The departure surface is 1,000 feet to 10,000 feet depending on the type of instrument guidance and has a slope of 40 feet horizontally for every one foot vertically (40:1) for a distance of 6,466 feet. Objects, structures, or natural vegetation penetrating the departure surface may affect the departure procedures at an airport and therefore should be protected for each runway end.

4.2 State of Iowa Airport Overlay Zones

FAR Part 77 Surfaces and RPZs have been combined to create five airport overlay zones for airports in Iowa. These five specific zones create a comprehensive area focused on maintaining compatible land use around airports. The zones, which cover a three-mile radius from each runway end, should be evaluated for compatible land uses. The specific size for each zone depends upon the classification of the individual runways and the associated approaches, which provides a unique set of criteria for each airport. For example, a large commercial service airport with two instrument approaches will require a substantially larger approach zone and RPZ and will therefore have a greater area of land to be evaluated for compatibility. In comparison, a small general aviation airport with a single turf runway and a visual approach will have a much smaller set of zones based upon the size of the RPZ and the associated FAR Part 77 Surfaces. **Table 4-1** illustrates the five zones and their source of development. **Figure 4-1** shows how the zones are positioned near airports. **Appendix B** provides specific data for airports in Iowa that can be used to see how these zones apply to specific airports.

Five airport land use zones provide guidance on compatible land use near airports.



Iowa Airport Land Use Guidebook

Table 4-1 Land Use Overlay Zones

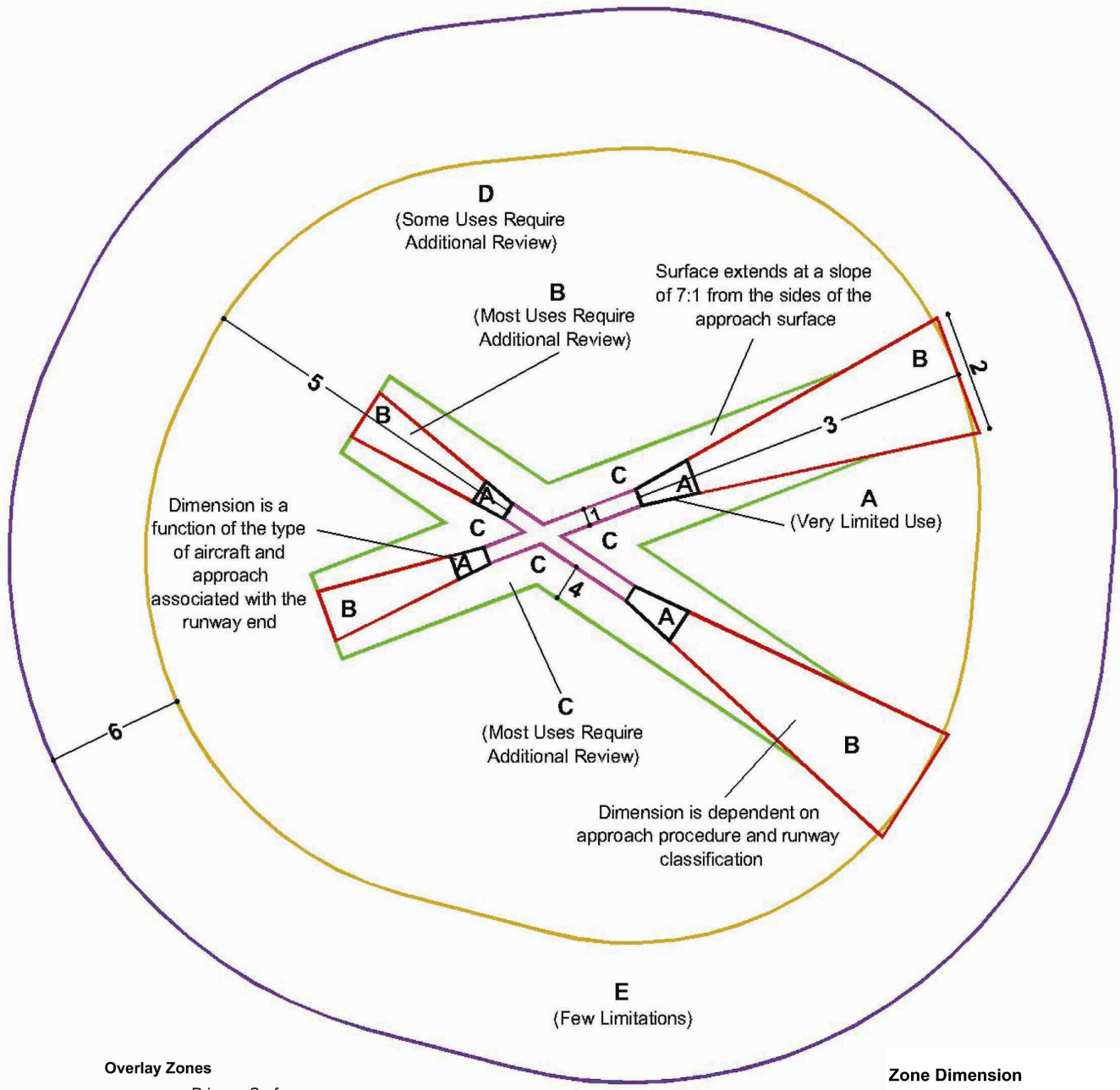
Zone	Description	Source
A	Runway protection zone (RPZ)	AC 150/5300-13 Change 11 <i>Airport Design</i>
B	Approach surface	FAR Part 77
C	Transitional surface	FAR Part 77
D	Horizontal surface	FAR Part 77
E	Conical surface	FAR Part 77

Each zone is discussed on the following pages to explain the function of that particular zone, the dimensions associated with the zone, and the various compatible land uses for the zone.



Iowa Airport Land Use Guidebook

Figure 4-1 Airport Overlay Zones A-E Diagram



- Overlay Zones**
- Primary Surface
 - A — Runway Protection Zone
 - B — Runway Approach Surface
 - C — Transitional Surface
 - D — Horizontal Surface
 - E — Conical Surface

- Zone Dimension**
- 1 — Primary Surface and Zone B Inner Width
 - 2 — Zone B End Width
 - 3 — Zone B Length
 - 4 — Zone C Width
 - 5 — Zone D Radius
 - 6 — Zone E Width

**See pages 9 and 10 for dimension information*

Source: Mead & Hunt



Iowa Airport Land Use Guidebook

4.2.a. Zone A – Runway Protection Zone (RPZ)

Zone A is intended to provide a clear area that is free of above ground obstructions and structures. This zone is closest to the individual runway ends. The dimensional standards for this zone are the same as those described in the *Airport Design* AC (AC 150/5300-13 Change 11) and are shown in **Table 4-2** and **Figure 4-2**, while **Figure 4-1** illustrates the relationship between Zone A and the other zones.

*Limited land uses
are allowed within
Zone A.*

Land uses within Zone A should be limited, where possible. Best management practices should be used when determining compatible land uses such as parking lots (with restrictions), roadways, and open spaces in proximity to an airport's environs. Many airports have residential structures within Zone A that should be removed when financially feasible. Construction of new structures should be prohibited, while existing structures and vegetation should be removed through the use of land acquisition and/or the purchase of avigation easements, when practical.



Iowa Airport Land Use Guidebook

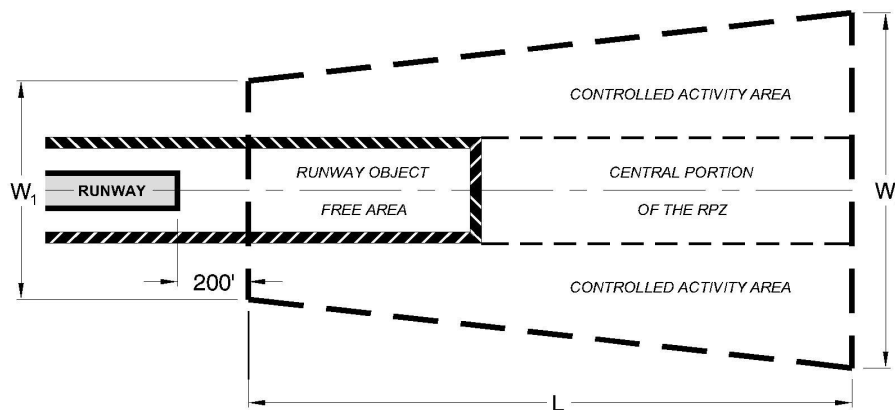
Table 4-2 Zone A – Dimensional Requirements

Approach Visibility Minimums ¹	Facilities Expected to Serve	Dimensions			
		Length L feet (meters)	Inner Width W ₁ feet (meters)	Outer Width W ₂ feet (meters)	RPZ acres
Visual and not lower than 1-Mile (1,600m)	Small aircraft exclusively	1,000 (300)	250 (75)	450 (135)	8.035
	Aircraft Approach Categories A & B	1,000 (300)	500 (150)	700 (210)	13.770
	Aircraft Approach Categories C & D	1,700 (510)	500 (150)	1,010 (303)	29.465
Not lower than ³ / ₄ -mile (1,200m)	All Aircraft	1,700 (510)	1,000 (300)	1,510 (453)	48.978
Lower than ³ / ₄ -mile (1,200 m)	All Aircraft	2,500 (750)	1,000 (300)	1,750 (525)	78.914

¹ The RPZ dimensional standards are for the runway end with the specified approach visibility minimums. The departure RPZ dimensional standards are equal to or less than the approach RPZ dimensional standards. When an RPZ begins other than 200 feet (60m) beyond the runway end, separate approach and departure RPZs should be provided. Refer to FAA AC 150/5300-13 Change 11, Appendix 14 for approach and departure RPZs.

Source: FAA AC 150/5300-13 Change 11, Airport Design Standards

Figure 4-2 Zone A - Runway Protection Zone (RPZ) Diagram



Source: FAA AC 150/5300-13 Change 11, Airport Design



Iowa Airport Land Use Guidebook

4.2.b. Zone B – Approach Surface

Zone B is a critical airport overlay zoning surface that reflects the approach and departure areas for each runway at an airport. The size of Zone B is predicated upon the type of approach (visual, non-precision, or precision) that a specific runway has and the type/size of aircraft utilizing the runway. **Table 4-3** and **Figure 4-1** illustrate the various sizes of Zone B based upon FAR Part 77 Surface dimensions. A portion of Zone B is overlain by Zone A because the approach surface and RPZ overlap the entire length of the RPZ. Consequently, the length of Zone B begins at the inner edge of the RPZ.

Land uses within Zone B require additional review to comply with land use guidelines.

Land uses allowed in Zone B typically require additional review to maintain compliance with land use guidelines that limit concentrations of people, wildlife attractants, visual obstructions, tall structures, and noise sensitive developments. For example, residential developments should be precluded from this area. However, some single family developments, if low in density, may be permitted with additional review by the local planning authority, should it be determined that the proposed development or land use not be inconsistent with the five primary areas of interest identified in Chapter 3 of this Guidebook.

Table 4-3 Airport Overlay Zones B-E Dimensional Standards

Dimensions shown in Figure 4-1	Item	Dimensional Standards (Feet)					
		Visual Runway		Non-Precision Instrument Runway			Precision Instrument Runway
				A	B		
		A	B		A	C	D
1	Primary surface width and Zone B inner width	250	500	500	500	1,000	1,000
2	Zone B end width	1,250	1,500	2,000	3,500	4,000	16,000
3	Zone B length	5,000	5,000	5,000	10,000	10,000	10,000*
4	Zone C width	1,050	1,050	1,050	1,050	1,050	1,050
5	Zone D radius	5,000	5,000	5,000	10,000	10,000	10,000
6	Zone E width	4,000	4,000	4,000	4,000	4,000	4,000

*Note: Dimensions for **Zone A** are found in **Table 4-2** of this document.*

* The length of Zone B for a precision instrument runway is 10,000 feet for the purposes of the land use zone. The FAR Part 77 surface which it is based upon extends for an additional 40,000 feet.

Source: Mead & Hunt, utilizing *FAR Part 77 Object Affecting Navigable Airspace data*

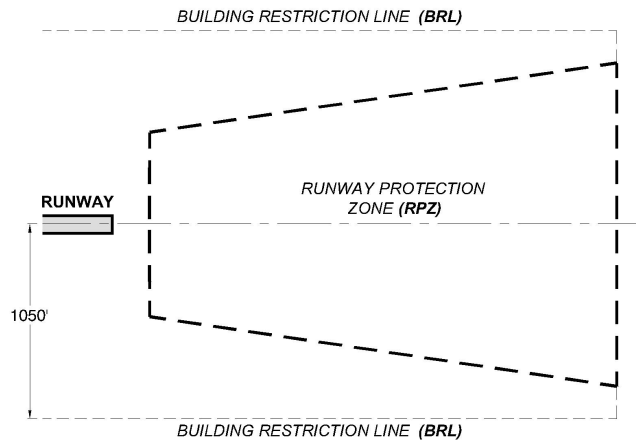


Iowa Airport Land Use Guidebook

4.2.c. Zone C – Transitional Surface

Zone C includes those areas that are parallel to the runway pavement and extend 1,050 feet from the edge of the primary surface paralleling the runway and extended runway centerline until they reach the end of Zone A at a 90 degree angle or extend to intersect with Zone B if the approach is for a precision instrument runway as shown in **Figure 4-3**. **Table 4-3** and **Figure 4-1** illustrate the specific dimensions for Zone C based upon various options for the primary surface that is predicated upon the type of approach and critical aircraft.

Figure 4-3 Building Restriction Line



Source: Mead & Hunt

The purpose of this zone is to provide an area, relatively free of obstructions, that are in closest proximity, laterally to the runway environs. This area is essentially a pocket of space between the runway and the area where a standard airport traffic pattern is located. Within this area consideration should be given to the potential for aircraft incidents such as engine out or aircraft stalls during approach or departure.

Zone C protects land uses along the sides of the runway.

Land uses allowed in Zone C should not congregate people, generate visual obstructions, attract wildlife hazards, or create tall structures. Noise sensitive developments should be discouraged as well because this area will experience engine-run-up noise and general operational noise from the aircraft during approach and departure.



Iowa Airport Land Use Guidebook

4.2.d. Zone D – Horizontal Surface

Zone D is typically elliptical in shape, depending upon the runway types and configurations at individual airports. **Table 4-3** and **Figure 4-1** illustrate the dimensions for Zone D.

Zone D should be clear of uses generating visual obstructions or wildlife attractants.

Zone D has a substantial number of aircraft over-flights within its boundary during approach or departure at an airport. This zone should be clear of all uses that may generate visual obstructions, wildlife attractants, or tall structures because aircraft typically operate at lower altitudes and slower air speeds in this area. If a pilot is distracted by visual obstructions, potential safety concerns can arise. Land uses that encourage congregations of people or involve development of tall structures should also be discouraged. Noise sensitive developments should also be limited. Due to the proximity to the runway end, Zone D areas are not likely impacted by a noise level above the 65 DNL that are FAA and Department of Housing and Urban Development (HUD) benchmarks. Consequently, the impact from noise in these areas is typically a perceived impact by persons on the ground in comparison to an actual impact that is defined as a higher noise level. Little can be done to mitigate noise impacts for the property owner; therefore, residential development or outdoor uses should be discouraged in Zone D.

4.2.e. Zone E – Conical Surface

Zone E is the outermost zone of the airport overlay zoning areas and has the least number of land use restriction considerations. The zone begins at the edge of the horizontal surface and is 4,000 feet in width paralleling the horizontal surface. **Table 4-3** and **Figure 4-1** contain dimensional information for Zone E.

Zone E is the outermost zone and has the least number of land use limitations.

This zone is intended to preclude the development of any land uses that may generate concerns related to significant height limitations, wildlife attractants, and visual obstructions. Concentrations of people and noise sensitive land uses should also be evaluated to ensure compatibility within the airport's environs. Many land uses within Zone E can be compatible with the airport. However, appropriate consideration should be given to evaluate uses that may pose a hazard related to the five primary areas of interest outlined in Chapter 3 of this Guidebook.



Iowa Airport Land Use Guidebook

4.3 Compatibility Assessment

The creation of airport overlay zones is followed by the designation of specific land uses and their compatibility relative to the each zone. The various land use designations discussed in Chapter 3 have been evaluated for compatibility within the five airport overlay zoning districts. However, when considering expansion or redevelopment of existing land uses within a specific zone, it should be reviewed to minimize the creation of any further inconsistencies with land use zoning classifications resulting in airport hazards. Utilization of the *Compatible Land Use Planning Checklist* is recommended as a guide for the evaluation of various areas of concern which may have mitigation potential. Issues which can be minimized through the use of mitigation tools, site plan adjustments, and application of best management practices include:

- Noise sensitivity related issues
- Safety related issues
 - High concentrations of people
 - Tall structures
 - Visual obstructions
 - Wildlife and bird attractants

Each of the land uses has been determined to either be generally compatible, not compatible, or require additional review to clearly assess the level of compatibility. These three designations are discussed to highlight the specifics of each classification, while **Tables 4-4** through **4-10** illustrate the specific designation by a particular land use category.



Iowa Airport Land Use Guidebook

4.3.a. Compatible Uses

The designation with the letter 'C' indicates that a land use is generally compatible within a particular zone. Compatible land uses are not foreseen to be hazardous to airport and aircraft operations and are reasonably safe for persons on the ground within proximity of an airport. Criteria for compatibility include:

- Will not attract congregations of people
- Will not exceed height standards
- Will not cause a visual distraction
- Will not cause a source of smoke/steam
- Will not cause an electrical, navigational, or radio interference
- Will not create wildlife and bird attractants
- Will not create large area of standing water
- Will not create storage of flammable substances or materials
- Will not create a pilot to have difficulties distinguishing the airport from the surroundings, such as street lights, billboards, signs, and linear roads and street lighting
- Will not exceed compatible DNL noise levels of 65 DNL or greater

For example, when agricultural crops are managed properly they can be a compatible land use near airport environs. However, harvest activities can attract wildlife and birds, which pose a temporary hazard in airport environs during that period of time. Consequently a Notice to Airmen (NOTAMs) should be issued by individual airports to inform pilots that there is a potential for wildlife and bird hazards during harvest time.



Iowa Airport Land Use Guidebook

4.3.b. Not Compatible Uses

Land uses considered not compatible are identified as '**NC**' within a specific zone. These land uses can endanger the health, safety, and welfare of those persons on the ground in proximity to an airport, as well as the aircraft, crew, and passengers. For example, multi-family residential structures should not be located on or near airport properties due to congregations of people, as well as the possible height concerns associated with tall structures, such as apartment buildings or condominiums.

4.3.c. Additional Review Required

The need for additional review is noted as '**AR**' and indicates that the land use may be permissible if certain conditions are met or applied. This designation builds in flexibility for planners, elected officials, and developers to allow for growth and development utilizing best management practices to provide compatible land uses within the jurisdictional boundary of the airport. This designation may allow a marginally accepted land use to be located within a specific zone after extensive review has been completed by planners and developers to identify the best site location, while accounting for the safe operations at the airport. For example, a manufacturing company may propose a plant within the vicinity of an airport and has acknowledged that the plant will produce smoke and steam.

Under the '**AR**' designation, the local community would have several options. First the planner may work with the developer to reduce potential impacts associated with the smoke/steam issue. This may be done by changing location, changing the height of the emission stacks, or even changing manufacturing techniques. If these actions result in appropriate measures to reduce incompatibility, the local community may approve the use. If this exercise can not limit the concern, the local community may determine the use is incompatible and deny the use. This sort of assessment should be done with an understanding that specific criteria, as outlined within the compatible designation, as well as best management practices to provide the basis for decision making.



Iowa Airport Land Use Guidebook

4.3.d. Airport Zone Chart Assessment

Zones A, B, and C are areas where aircraft fly at low speeds and altitudes, as part of the approach and departure phases of flight. It is critical that these areas remain free of obstructions and provide a safe environment for aircraft movement. To support safe aircraft operations, many land uses and activities should be prohibited within Zones A, B, and C.

Zones D and E generally require additional review for land uses, while other land uses are compatible in these areas. Areas of interest within these zones include structure height, visual obstructions, and wildlife attractants.

Tables 4-4 through **Table 4-10** provide a compatibility assessment for the land use classifications identified in Chapter 3. Not all land uses are identified, and each should be reviewed for applicability at individual airports.



Iowa Airport Land Use Guidebook

Table 4-4 Airport Zone Chart for Residential Activities

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Residential Activities					
Single-Family Uses (1 dwelling per lot)					
<i>Detached Single Family Dwelling</i> (i.e. farm dwelling, detached single family house, manufactured/modular/mobile homes if converted to real property and taxed)	NC	AR	NC	AR	C
<i>Detached Zero Lot Line Dwelling</i> (i.e. condominium)	NC	AR	NC	AR	C
<i>Attached Single Family Dwelling</i> (i.e. townhouses)	NC	AR	NC	AR	C
Two Family Uses (i.e. two principal dwelling units within one building on the same parcel)	NC	AR	NC	AR	C
Multi-Family Uses (i.e. three or more principal dwelling units within a single building on the same parcel, apartments such as condominium, elder, assisted living, townhouse-style)					
<i>Low-Rise</i> (1-3 Levels)	NC	NC	NC	AR	C
<i>Mid-Rise</i> (4-12 Levels)	NC	NC	NC	AR	C
<i>High-Rise</i> (13+ Levels)	NC	NC	NC	AR	C
Group Living Uses (i.e. assisted living, group care facilities, nursing and convalescent homes, independent group living)	NC	NC	NC	AR	C
Manufactured Housing Parks	NC	NC	NC	AR	C



Iowa Airport Land Use Guidebook

Table 4-5 Airport Zone Chart for Commercial Activities

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Commercial Activities					
Eating and Drinking Establishments (i.e. restaurants, cafes, coffee shops, fast food restaurants, bars, nightclubs, taverns, cocktail lounges)	NC	AR	AR	C	C
Quick Vehicle Servicing Uses (i.e. full-serve and mini-serve gas station, unattended card key service stations, car washes)	NC	AR	AR	C	C
Office Uses (i.e. business, government, professional, medical, or financial)					
<i>General Office</i> (i.e. professional offices, financial businesses, government offices)	NC	AR	AR	AR	C
<i>Low-Rise</i> (1-3 Levels)	NC	AR	AR	AR	C
<i>Mid-Rise</i> (4-12 Levels)	NC	NC	NC	AR	C
<i>High-Rise</i> (13+ Levels)	NC	NC	NC	AR	C
<i>Medical/Dental Office</i> (i.e. medical and dental clinics, chiropractic clinics, physical therapy clinics)	NC	AR	AR	AR	C
<i>Low-Rise</i> (1-3 Levels)	NC	AR	AR	AR	C
<i>Mid-Rise</i> (4-12 Levels)	NC	NC	NC	AR	C
<i>High-Rise</i> (13+ Levels)	NC	NC	NC	AR	C



Iowa Airport Land Use Guidebook

Table 4-5 Airport Zone Chart for Commercial Activities (Continued)

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Commercial Activities (Continued)					
Retail Uses (i.e. sale, lease, or rent of new or used products)					
<i>Sales-Oriented</i> (i.e. appliances, convenience stores, bakeries, electronics, furniture, garden supplies, gas stations, groceries, hardware, malls, strip malls, videos)	NC	AR	AR	AR	C
<i>Personal Service-Oriented</i> (i.e. retail service-banking establishments, laundromats/dry cleaning, quick printing services, beauty/tanning salons, funeral homes)	NC	AR	AR	AR	C
<i>Repair-Oriented</i> (i.e. consumer goods-electronics, office equipment, appliances)	NC	AR	AR	AR	C
<i>Hospitality-Oriented</i> (hotels, motels, convention centers, meeting halls, event facilities)	NC	NC	NC	AR	C
<i>Low-Rise</i> (1-3 Levels)	NC	AR	AR	AR	C
<i>Mid-Rise</i> (4-12 Levels)	NC	NC	NC	AR	C
<i>High-Rise</i> (13+ Levels)	NC	NC	NC	AR	C
<i>Outdoor Storage and Display-Oriented</i> (i.e. outdoor storage-lumber yards, vehicles sales, landscape material and nursery product sales, farm supply and equipment sales)	NC	AR	AR	AR	C
Surface Passenger Services (i.e. passenger terminals for buses, rail services, local taxi and limousine services)	NC	AR	AR	C	C
Vehicle Repair Uses (i.e. vehicle repair or service shops, alignment shops, tire sales)	NC	AR	AR	C	C



Iowa Airport Land Use Guidebook

Table 4-6 Airport Zone Chart for Industrial/Manufacturing Activities

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Industrial/Manufacturing Activities					
Industrial Service Uses (i.e. machine shops, tool repair, towing and vehicle storage, building supply yards, heating/plumbing/electrical contractors, exterminators, janitorial services, fuel oil distributors, solid fuel yards)	NC	AR	AR	AR	C
Manufacturing and Production Uses (i.e. manufacturing, processing, fabrication, packaging or assembly of goods)					
<i>Technical/Light Manufacturing</i> (i.e. electrical components, engineering, scientific and research, office, computer hardware/software, optical, pharmaceuticals, printing/photo facilities, publishing)	NC	AR	AR	AR	C
<i>General Manufacturing</i> (i.e. manufacturing, compounding, assembling or treatment of most articles, materials, or merchandise)	NC	AR	AR	AR	C
<i>* Heavy Manufacturing</i> (i.e. concrete and asphalt plants, meat packing plants, wet corn milling, manufacturing of animal feed, paper/paperboard mills, ethanol plants)	NC	NC	NC	AR	C
Mining and Extraction Uses	NC	NC	NC	AR	C
Salvage Operations (i.e. firms that collect, store, and dismantle damaged or discarded vehicles, machinery, appliances, and building material)	NC	C	NC	C	C

* Heavy Manufacturing typically has excessive smoke, dust, or hazardous waste.



Iowa Airport Land Use Guidebook

Table 4-6 Airport Zone Chart for Industrial/Manufacturing Activities (Continued)

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Industrial/Manufacturing Activities (Continued)					
Self-Service Storage Uses (i.e. mini-warehouses/storage facilities)	NC	C	AR	C	C
Warehouse and Freight Uses (i.e. major wholesale distribution centers, general freight storage, railroad switching yards, bus/rail car storage lots, parcel service, grain terminals)	NC	C	AR	C	C
Waste-Related Uses (i.e. recycling centers, sanitary landfills, waste transfer stations, composting, energy recovery plants, sanitary and water treatment facilities, sanitary collection/pumping facilities, hazardous waste collection sites)	NC	NC	NC	AR	AR
Wholesale Sales Uses (i.e. sale, lease, or rental of products to retailers for industrial, institutional, or commercial business users)	NC	AR	AR	AR	C

* Heavy Manufacturing typically has excessive smoke, dust, or hazardous waste.



Iowa Airport Land Use Guidebook

Table 4-7 Airport Zone Chart for Institutional Activities

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Institutional Activities					
Basic Utility Uses (i.e. utility substation facilities, electrical substations, water and sewer lift stations, water towers)	NC	AR	NC	AR	C
College and Universities (i.e. public or private colleges and universities, technical colleges, seminaries)	NC	NC	NC	AR	C
Community Service Uses (i.e. public, nonprofit, or charitable nature providing a local service to the people)					
<i>General Community Service</i> (i.e. libraries, museums, transit centers, park and ride facilities, senior/community/neighborhood centers, police and fire stations)	NC	AR	AR	AR	C
<i>Community Service-Shelter</i> (i.e. transient housing)	NC	AR	AR	AR	C
Daycare Uses (i.e. childcare centers, adult daycare, preschools after school programs)	NC	NC	NC	AR	C
Detention Facilities (i.e. prisons, jails, probation centers, juvenile detention homes, halfway houses)	NC	NC	NC	AR	C
Educational Facilities (i.e. public and private schools)					
<i>General Educational Facilities</i> (i.e. public and private elementary, middle, junior, and senior high schools including religious, boarding, military schools)	NC	NC	NC	AR	C
<i>Specialized Education Facilities</i> (i.e. specialized trade, business, or commercial courses, nondegree-granting schools)	NC	NC	NC	AR	C
Hospitals (i.e. hospitals, medical centers)	NC	NC	NC	AR	C
Religious Assembly Uses (i.e. churches, temples, synagogues, mosques, Masonic, eagles, moose, or elk lodges)	NC	NC	NC	AR	C



Iowa Airport Land Use Guidebook

Table 4-8 Airport Zone Chart for Infrastructure Activities

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Infrastructure Activities					
Communication Transmission Facility Uses (i.e. broadcast, wireless, point to point, emergency towers and antennae)	NC	NC	NC	AR	AR
Parking Uses (i.e. ground lots, parking structures)	AR	C	AR	C	C
Transportation Uses (i.e. highways, interstates, local and county roads)	AR	C	C	C	C
Utility Uses (i.e. solar power generation equipment, wind generators, wind farms)	NC	NC	NC	AR	AR



Iowa Airport Land Use Guidebook

Table 4-9 Airport Zone Chart for Agriculture and Open Space Activities

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Infrastructure Activities					
Agricultural Uses (i.e. commercial cultivation of plants, livestock production)					
<i>Plant-related</i> (i.e. crop farming, vegetable, fruit, and tree, wholesale plant nurseries)	AR	AR	AR	C	C
<i>Animal-related</i> (i.e. livestock operations, dairy farms, horse farms)	AR	AR	AR	C	C
<i>Resident-related</i> (i.e. single-family home, mobile home if converted to real property and taxed)	NC	AR	NC	AR	C
<i>Facility-related</i> (i.e. fuel bulk storage/pumping facility, grain elevator, livestock/seed/grain sales)	NC	NC	NC	AR	AR
Floodplains	AR	AR	AR	C	C
Water Bodies (i.e. open bodies containing water)					
<i>Man-made resources</i> (i.e. mining and extraction, water detention ponds, wetlands)	NC	AR	AR	AR	AR
<i>Naturally occurring</i> (i.e. lakes, ponds, prairie pot holes, rivers, streams, wetlands)	NC	AR	AR	C	C
Wildlife Preservation Areas (i.e. petting zoos, wildlife rehabilitation centers, zoos)	NC	NC	NC	AR	C



Iowa Airport Land Use Guidebook

Table 4-10 Airport Zone Chart for Parks and Recreation Activities

Iowa Airport Zone Chart					
<i>C = Compatible</i>		<i>AR = Additional Review Required</i>		<i>NC = Not Compatible</i>	
Land Uses	Zone A	Zone B	Zone C	Zone D	Zone E
Parks and Recreation Activities					
Commercial Recreational Uses (i.e. facilities used for physical exercise, recreation, or culture)					
<i>Outdoor</i> (i.e. campgrounds, tennis/swimming facilities, drive-in theaters, skating rinks, pavilions, amphitheaters)	NC	NC	NC	AR	C
<i>Indoor</i> (i.e. physical fitness centers, health clubs, bowling alleys, skating rinks, billiard halls, arcades, indoor theaters)	NC	AR	NC	AR	C
<i>Golf</i> (i.e. golf driving ranges, outdoor miniature golf, 9+ hole courses)	NC	AR	NC	C	C
Utility Uses (i.e. amusement/theme parks, fairgrounds, racetracks, sports arenas)	NC	NC	NC	AR	AR
Parks (i.e. aquatic, mini, private, sports, neighborhood, school, community)	NC	AR	NC	C	C
Casino	NC	NC	NC	AR	C



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