

5.21 Safety Zones (SA)

Safety zones are areas in which development should be more restrictive in terms of use and concentrations of people due to the higher risks to public safety. An issue to consider includes aircraft accident potential zones.

Military installations often engage in activities or contain facilities that require special consideration by local jurisdictions when evaluating compatibility due to public safety concerns. It is important to regulate land use near military airfields in order to minimize damage from potential aircraft accidents and to reduce air navigation hazards. To help mitigate potential issues, the Department of Defense (DoD) has delineated Clear Zones (CZ) and Accident Potential Zones (APZ) in the vicinity of airfield runways. APZs are usually divided into APZ I and APZ II. Each zone was developed based on the statistical review of aircraft accidents. Studies show that most mishaps occur on or near the runway, predominately along its extended centerline.

Key Terms

Area Operations Area (AOA). The Area Operations Area (AOA) is an area that encompasses the entire airport's approach or departure airspace including the circling space.

Accident Potential Zone I (APZ I). Accident Potential Zone I (APZ I) is an area beginning at the end of each clear zone (see definition) and continuing out to a length of 5,000 feet long by 3,000 feet wide. APZ I follows a curved shape to reflect the predominant flight tracks, and can even split to reflect differences in standard approaches / departures and closed pattern tracks. This area has a lower potential for accidents and therefore, has less restrictive development restrictions recommended.

Accident Potential Zone II (APZ II). Accident Potential Zone II (APZ II) is an area that begins at the end of each APZ I and extends an additional 7,000 feet long by 3,000 feet wide. This APZ can also be curved as the flight tracks are considered in the designation of this APZ. The accident potential is further reduced; thus some additional development types are allowed.

Bird / Wildlife Aircraft Strike Hazard (BASH). Bird / Wildlife Aircraft Strike Hazard (BASH) refers to the likely occurrence for a collision between an airborne animal (usually a bird) and a human-made vehicle, particularly aircraft.

BASH Relevancy Area. The BASH Relevancy Area is a 5-statute mile area from the airport operational area, including the runway. This area has been determined by the FAA as an area where BASH incidences are likely to occur due to the types of flying operations that occur near the airfield. Such operations are typically at slower speeds and lower altitudes making the conditions for BASH opportune.

Clear Zone (CZ). The Clear Zone (CZ) is the area that has the highest statistical potential of an aircraft incident (but again, a very low probability). As the name reflects, this area should be kept clear of all structures, including fences. The CZs at Keesler AFB begin at the end of each displaced threshold and measures 3,000 feet long and 3,000 feet wide, or 1,500 feet on each side of the runway center line.



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**Incompatible Uses in Clear Zones
and Accident Potential Zones**

Incompatible land uses in the Clear Zones and Accident Potential Zones create a safety concern.

Compatibility Assessment

The DoD has designated Safety Zones around military airfields comprising the CZ, APZ I, and APZ II that extend out from each end of a runway. Development is a concern in these areas because this is statistically where aircraft accidents have occurred in the past around military installations which is a risk assessment where accidents are more likely to occur due to aircraft flying at lower speeds and altitudes. The risk to people on the ground in the event of an aircraft accident is small; however, the consequences associated with these incidents are high. Because of this potential impact, the Air Force has identified recommended land uses within airfield safety zones as indicated in Table 5.21-1. The land uses are incorporated in Air Force Instruction (AFI) 32-7063, Air Installation Compatibility Use Zones (AICUZ) Program which defines land uses for studies. The land uses that are evaluated for compatibility in the AFI are based on the national Standard Land Use Coding Manual (SLUCM) developed by U.S. Department of Transportation (DoT) in 1977. Because the SLUCM does not contain an exhaustive list of land uses, an interpretation of land uses within the cities has been made based on similar characteristics to those within the SLUCM where necessary. For instance, SLUCM No. 58 Retail trade - eating and drinking establishments is the only land use that would apply to bars and restaurants, in the Vienna Zoning Ordinance.

Because the Clear Zone is the area of highest probability where an accident is likely to occur, only open space and agricultural uses (without structures) are recommended within the CZ. Due to the potential hazard to the public, an installation may sometimes either acquire property within the CZ or purchase

aviation easements on private property within the CZ to ensure the CZ is free from development.

The Accident Potential Zones (APZ I and II), located just at the ends of the CZ, have a lower safety risk potential due to their proximity to the runway. Though still considered a risk, land uses with restrictions are recommended in the APZs to protect the public safety.

The following is an assessment of land use compatibility in the areas for existing land use, future land use, and zoning for Vienna Township and Trumbull County, including Fowler Township, Howland Township, Bazetta Township and the City of Cortland. The assessment compares the existing land use as provided in Geographical Information System (GIS) from each of the jurisdictions; future land use as depicted in each jurisdiction’s Comprehensive Plan and provided in GIS; and zoning districts and their associated permitted land uses, zoning maps from the Zoning Ordinances, and GIS data provided by each jurisdiction, to the land use recommendations found in Air Force Instruction (AFI) 32-7063 Air Installations Compatible Use Zones Program.

This assessment determines which land uses within the jurisdictions are compatible, conditionally compatible, or incompatible with the Air Force recommendations. The discussion of each jurisdiction’s land use compatibility is based on the two runways, 14 / 32 and 5 / 23 each of which have safety zones at both ends of the runways, that are located at Youngstown-Warren Regional Airport and used by Youngstown ARS.

As discussed in Chapter 3, the FAA has also established runway protection zones (RPZs) that are applicable to the runways at Youngstown-Warren Regional Airport. The RPZs at the airport are all within the facility boundaries and do not extend off the property. Because the DoD CZs and APZs extend beyond the installation / facility boundaries, the discussion in this section focuses on the military safety zones only.

Table 5.21-1 Recommended Land Uses for Airfield Safety Zones

Land Use		Suggested Land Use Compatibility ¹			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
10	Residential				
11	Household units				
11.11	Single units: detached	N	N	Y ²	Maximum density of 2 Du/Ac
11.12	Single units: semi-detached	N	N	N	
11.13	Single units: attached row	N	N	N	
11.21	Two units: side-by-side	N	N	N	
11.22	Two units: one above the other	N	N	N	
11.31	Apartments: walk-up	N	N	N	
11.32	Apartment: elevator	N	N	N	
12	Group quarters	N	N	N	
13	Residential hotels	N	N	N	
14	Mobile home parks or courts	N	N	N	
15	Transient lodgings	N	N	N	
16	Other residential	N	N	N	
20	Manufacturing⁽³⁾				
21	Food and kindred products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
22	Textile mill products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
23	Apparel and other finished products; products made from fabrics, leather and similar materials; manufacturing	N	N	N	
24	Lumber and wood products (except furniture); manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
25	Furniture and fixtures; manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
26	Paper and allied products; manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II



Land Use		Suggested Land Use Compatibility ¹			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
27	Printing, publishing, and allied industries	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
28	Chemicals and allied products; manufacturing	N	N	N	
29	Petroleum refining and related industries	N	N	N	
30	Manufacturing⁽³⁾ (continued)				
31	Rubber and miscellaneous plastic products; manufacturing	N	N	N	
32	Stone, clay, and glass products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
33	Primary metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
34	Fabricated metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks	N	N	N	
39	Miscellaneous manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
40	Transportation, communication, and utilities^{3,4}				
41	Railroad, rapid rail transit, and street railway transportation	N	Y ⁶	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
42	Motor vehicle transportation	N	Y ⁶	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
43	Aircraft transportation	N	Y ⁶	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
44	Marine craft transportation	N	Y ⁶	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
45	Highway and street right-of-way	Y ⁵	Y ⁶	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
46	Automobile parking	N	Y ⁶	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II

Land Use		Suggested Land Use Compatibility ¹			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
47	Communication	N	Y ⁶	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48	Utilities ⁽⁷⁾	N	Y ⁶	Y ⁶	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48.5	Solid waste disposal (landfills, incinerators, etc.)	N	N	N	
49	Other transportation, communication, and utilities	N	Y ⁶	Y	See note 6 below
50	Trade				
51	Wholesale trade	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
52	Retail trade – building materials, hardware and farm equipment	N	Y	Y	See note 8 below
53	Retail trade – including discount clubs, home improvement stores, electronics superstores, etc.	N	N	Y	Maximum FAR 0.16 in APZ II
53.	Shopping centers-Neighborhood, Community, Regional, Super-regional ⁽⁹⁾	N	N	N	
54	Retail trade - food	N	N	Y	Maximum FAR 0.24 in APZ II
55	Retail trade – automotive, marine craft, aircraft, and accessories	N	Y	Y	Maximum FAR 0.14 in APZ I & 0.28 in APZ II
56	Retail trade – apparel and accessories	N	N	Y	Maximum FAR 0.28 in APZ II
57	Retail trade – furniture, home furnishings and equipment	N	N	Y	Maximum FAR 0.28 in APZ II
58	Retail trade – eating and drinking establishments	N	N	N	
59	Other retail trade	N	N	Y	Maximum FAR 0.16 in APZ II
60	Services¹⁰				
61	Finance, insurance and real estate services	N	N	Y	Maximum FAR 0.22 in APZ II
62	Personal services	N	N	Y	Office uses only. Maximum FAR 0.22 in APZ II
62.4	Cemeteries	N	Y ¹¹	Y ¹¹	

Land Use		Suggested Land Use Compatibility ¹			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
63	Business services (credit reporting; mail, stenographic, reproduction; advertising)	N	N	Y	Maximum FAR 0.22 in APZ II
63.7	Warehousing and storage services ⁽¹²⁾	N	Y	Y	Maximum FAR 1.0 in APZ I; 2.0 in APZ II
64	Repair services	N	Y	Y	Maximum FAR 0.11 in APZ I; 0.22 in APZ II
65	Professional services	N	N	Y	Maximum FAR 0.22 in APZ II
65.1	Hospitals, nursing homes	N	N	N	
65.1	Other medical facilities	N	N	N	
66	Contract construction services	N	Y	Y	Maximum FAR 0.11 in APZ I; 0.22 in APZ II
67	Government services	N	N	Y	Maximum FAR 0.24 in APZ II
68	Educational services	N	N	N	
68.1	Child care services, child development centers, and nurseries	N	N	N	
69	Miscellaneous services	N	N	Y	Maximum FAR 0.22 in APZ II
69.1	Religious activities (including places of worship)	N	N	N	
70	Cultural, entertainment and recreational				
71	Cultural activities	N	N	N	
71.2	Nature exhibits	N	Y ¹³	Y ¹³	
72	Public Assembly	N	N	N	
72.1	Auditoriums, concert halls	N	N	N	
72.11	Outdoor music shells, amphitheaters	N	N	N	
72.2	Outdoor sports arenas, spectator sports	N	N	N	
73	Amusements – fairgrounds, miniature golf, driving ranges; amusement parks, etc.	N	N	Y ²⁰	
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y ¹³	Y ¹³	Maximum FAR 0.11 in APZ I; 0.22 in APZ II

Land Use		Suggested Land Use Compatibility ¹			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
75	Resorts and group camps	N	N	N	
76	Parks	N	Y ¹³	Y ¹³	Maximum FAR 0.11 in APZ I; 0.22 in APZ II
79	Other cultural, entertainment and recreation	N	Y ¹¹	Y ¹¹	Maximum FAR 0.11 in APZ I; 0.22 in APZ II
80 Resource production and extraction					
81	Agriculture (except livestock)	Y ⁴	Y ¹⁴	Y ¹⁴	
81.5-81.7	Agriculture-Livestock farming, including grazing and feedlots	N	Y ¹⁴	Y ¹⁴	
82	Agriculture related activities	N	Y ¹⁵	Y ¹⁵	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives
83	Forestry activities(16)	N	Y	Y	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives
84	Fishing activities(17)	N ¹⁷	Y	Y	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives
85	Mining activities(18)	N	Y ¹⁸	Y ¹⁸	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives
89	Other resource production or extraction	N	Y	Y	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives

Land Use		Suggested Land Use Compatibility ¹			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
90	Other				
91	Undeveloped land	Y	Y	Y	
93	Water areas ¹⁹	N19	N19	N19	

Source: Air Force Instruction AFI 32-7063, Rev. December 2015

Key to Table:

SLUCM - Standard Land Use Coding Manual, US Department of Transportation.

Notes:

1. A “Yes”: (Y) or a “No” (N) designation for compatible land use is to be used only for general comparison. Within each, uses exist where further evaluation may be needed in each category as to whether it is clearly compatible, normally compatible, or not compatible due to the variation of the densities of people and structures. In order to assist air installations and local governments, general suggestions as to FARs are provided as a guide to density in some categories. In general, land use restrictions that limit occupants, including employees, of commercial, service, or industrial buildings or structures to 25 an acre in APZ I and 50 an acre in APZ II are considered to be low density. Outside events should normally be limited to assemblies of not more than 25 people an acre in APZ I and 50 people an acre in APZ II. Recommended FARs are calculated using standard parking generation rates for various land uses, vehicle occupancy rates, and desired density in APZ I and II. For APZ I, the formula is FAR = 25 people an acre / (Average Vehicle Occupancy x Average Parking Rate x (43560/1000)). The formula for APZ II is FAR = 50/ (Average Vehicle Occupancy x Average Parking Rate x (43560/1000)).
2. The suggested maximum density for detached single-family housing is two Du / Ac. In a planned unit development (PUD) of single-family detached units, where clustered housing development results in large open areas, this density could possibly be increased slightly provided the amount of surface area covered by structures does not exceed 20 percent of the PUD total area. PUD encourages clustered development that leaves large open areas.
3. Other factors to be considered: labor intensity, structural coverage, explosive characteristics, air pollution, electronic interference with aircraft, height of structures, and potential glare to pilots.
4. No structures (except airfield lighting and navigational aids necessary for the safe operation of the airfield when there are no other siting options), buildings, or above-ground utility and communications lines should normally be located in Clear Zone areas on or off the air installation. The Clear Zone is subject to the most severe restrictions.
5. Roads within the graded portion of the Clear Zone are prohibited. All roads within the Clear Zone are discouraged, but if required, they should not be wider than two lanes and the rights-of-way should be fenced (frangible) and not include sidewalks or bicycle trails. Nothing associated with these roads should violate obstacle clearance criteria.
6. No above ground passenger terminals and no above ground power transmission or distribution lines. Prohibited power lines include high-voltage transmission lines and distribution lines that provide power to cities, towns, or regional power for unincorporated areas.
7. Development of renewable energy resources, including solar and geothermal facilities and wind turbines, may impact military operations through hazards to flight or electromagnetic interference. Each new development should to be analyzed for compatibility issues on a case-by-case basis that considers both the proposal and potentially affected mission.
8. Within SLUCM Code 52, maximum FARs for lumberyards (SLUCM Code 521) are 0.20 in APZ-I and 0.40 in APZ-II; the maximum FARs for hardware, paint, and farm equipment stores, (SLUCM Code 525), are 0.12 in APZ I and 0.24 in APZ II.

9. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, or managed as a unit. Shopping center types include strip, neighborhood, community, regional, and super-regional facilities anchored by small businesses, a supermarket or drug store, discount retailer, department store, or several department stores, respectively.
10. Ancillary uses such as meeting places, auditoriums, etc. are not recommended.
11. No chapels or houses of worship are allowed within APZ I or APZ II.
12. Big box home improvement stores are not included as part of this category.
13. Facilities must be low intensity, and provide no playgrounds, etc. Facilities such as club houses, meeting places, auditoriums, large classes, etc., are not recommended.
14. Activities that attract concentrations of birds creating a hazard to aircraft operations should be excluded.
15. Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.
16. Lumber and timber products removed due to establishment, expansion, or maintenance of Clear Zone lands owned in fee will be disposed of in accordance with applicable DoD guidance.
17. Controlled hunting and fishing may be permitted for the purpose of wildlife management.
18. Surface mining operations that could create retention ponds that may attract waterfowl and present bird/wildlife aircraft strike hazards (BASH), or operations that produce dust or light emissions that could affect pilot vision are not compatible.
19. Naturally occurring water features (e.g., rivers, lakes, streams, wetlands) are pre-existing, nonconforming land uses. Naturally occurring water features that attract waterfowl present a potential BASH. Actions to expand naturally occurring water features or construction of new water features should not be encouraged. If construction of new features is necessary for storm water retention, such features should be designed so that they do not attract waterfowl.
20. Amusement centers, family entertainment centers or amusement parks designed or operated at a scale that could attract or result in concentrations of people, including employees and visitors, greater than 50 people per acre at any given time are incompatible in APZ II.

Vienna Township

Existing Land Use

Figure 5.21-1 shows the areas of Vienna Township that are conditionally compatible and incompatible existing land uses within the Youngstown ARS safety zones based on the Air Force land use recommendations. All four of the safety zones have land area in Vienna Township, although the northwest 14 / 23 safety zone only has a very small portion in the Township.

- Runway 14 / 23 southeast safety zones
- Runway 14 / 23 northwest safety zones
- Runway 5 / 32 northeast safety zones
- Runway 5 / 32 southwest safety zones

Table 5.21-2 shows the breakdown of acreage of existing land use within the safety zones with conditionally compatible acreages in black and incompatible acreages in red. In total, there are approximately 1,764 acres in the safety zones in Vienna Township, 315 acres of which are incompatible based on the Air Force land use recommendations. Included in the 315 acres of existing incompatible land use are 141 acres located in the clear zones. There are 171 acres of existing incompatible land use in APZ I and three acres of incompatible land use in APZ II.