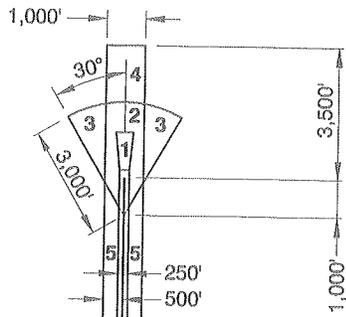


**Example 4:
General Aviation Runway with
Single-Sided Traffic Pattern**

Assumptions:

- No traffic pattern on right
- Length 4,000 to 5,999 feet
- Approach visibility minimums $\geq 3/4$ mile and < 1 mile
- Zone 1 = 1,000' x 1,510' x 1,700'



**Example 5:
Low-Activity General Aviation Runway**

Assumptions:

- Less than 2,000 takeoffs and landings per year at individual runway end.
- Length less than 4,000 feet
- Approach visibility minimums ≥ 1 mile or visual approach only
- Zone 1 = 250' x 450' x 1,000'

Legend

1. Runway Protection Zone
2. Inner Approach/Departure Zone
3. Inner Turning Zone
4. Outer Approach/Departure Zone
5. Sideline Zone
6. Traffic Pattern Zone

Notes:

- RPZ (Zone 1) size in each example is as indicated by FAA criteria for the approach type assumed. Adjustment may be necessary if the approach type differs.
- See Table 9A for factors to consider regarding other possible adjustments to these zones to reflect characteristics of a specific airport runway.
- See Tables 9B and 9C for guidance on compatibility criteria applicable with each zone.

These examples are intended to provide general guidance for establishment of airport safety compatibility zones. They do not represent California Department of Transportation standards or policy.

FIGURE 9K CONTINUED

Zone 1: Runway Protection Zone

Risk Factors / Runway Proximity

- Very high risk
- Runway protection zone as defined by FAA criteria
- For military airports, clear zones as defined by AICUZ criteria

Basic Compatibility Qualities

- Airport ownership of property encouraged
- Prohibit all new structures
- Prohibit residential land uses
- Avoid nonresidential uses except if very low intensity in character and confined to the sides and outer end of the area

Zone 2: Inner Approach/Departure Zone

Risk Factors / Runway Proximity

- Substantial risk: RPZs together with inner safety zones encompass 30% to 50% of near-airport aircraft accident sites (air carrier and general aviation)
- Zone extends beyond and, if RPZ is narrow, along sides of RPZ
- Encompasses areas overflowed at low altitudes — typically only 200 to 400 feet above runway elevation

Basic Compatibility Qualities

- Prohibit residential uses except on large, agricultural parcels
- Limit nonresidential uses to activities which attract few people (uses such as shopping centers, most eating establishments, theaters, meeting halls, multi-story office buildings, and labor-intensive manufacturing plants unacceptable)
- Prohibit children's schools, day care centers, hospitals, nursing homes
- Prohibit hazardous uses (e.g. aboveground bulk fuel storage)

Zone 3: Inner Turning Zone

Risk Factors / Runway Proximity

- Zone primarily applicable to general aviation airports
- Encompasses locations where aircraft are typically turning from the base to final approach legs of the standard traffic pattern and are descending from traffic pattern altitude
- Zone also includes the area where departing aircraft normally complete the transition from takeoff power and flap settings to a climb mode and have begun to turn to their en route heading

Basic Compatibility Qualities

- Limit residential uses to very low densities (if not deemed unacceptable because of noise)
- Avoid nonresidential uses having moderate or higher usage intensities (e.g., major shopping centers, fast food restaurants, theaters, meeting halls, buildings with more than three aboveground habitable floors are generally unacceptable)
- Prohibit children's schools, large day care centers, hospitals, nursing homes
- Avoid hazardous uses (e.g. aboveground bulk fuel storage)

TABLE 9B

Basic Safety Compatibility Qualities

Zone 4: Outer Approach/Departure Zone

Risk Factors / Runway Proximity

- Situated along extended runway centerline beyond Zone 3
- Approaching aircraft usually at less than traffic pattern altitude
- Particularly applicable for busy general aviation runways (because of elongated traffic pattern), runways with straight-in instrument approach procedures, and other runways where straight-in or straight-out flight paths are common
- Zone can be reduced in size or eliminated for runways with very-low activity levels

Basic Compatibility Qualities

- In undeveloped areas, limit residential uses to very low densities (if not deemed unacceptable because of noise); if alternative uses are impractical, allow higher densities as infill in urban areas
- Limit nonresidential uses as in Zone 3
- Prohibit children's schools, large day care centers, hospitals, nursing homes

Zone 5: Sideline Zone

Risk Factors / Runway Proximity

- Encompasses close-in area lateral to runways
- Area not normally overflowed; primary risk is with aircraft (especially twins) losing directional control on takeoff
- Area is on airport property at most airports

Basic Compatibility Qualities

- Avoid residential uses unless airport related (noise usually also a factor)
- Allow all common aviation-related activities provided that height-limit criteria are met
- Limit other nonresidential uses similarly to Zone 3, but with slightly higher usage intensities
- Prohibit children's schools, large day care centers, hospitals, nursing homes

Zone 6: Traffic Pattern Zone

Risk Factors / Runway Proximity

- Generally low likelihood of accident occurrence at most airports; risk concern primarily is with uses for which potential consequences are severe
- Zone includes all other portions of regular traffic patterns and pattern entry routes

Basic Compatibility Qualities

- Allow residential uses
- Allow most nonresidential uses; prohibit outdoor stadiums and similar uses with very high intensities
- Avoid children's schools, large day care centers, hospitals, nursing homes

Definitions

As used in this table, the follow meanings are intended:

- *Allow*: Use is acceptable
- *Limit*: Use is acceptable only if density/intensity restrictions are met
- *Avoid*: Use generally should not be permitted unless no feasible alternative is available
- *Prohibit*: Use should not be permitted under any circumstances
- *Children's Schools*: Through grade 12
- *Large Day Care Centers*: Commercial facilities as defined in accordance with state law; for the purposes here, family day care homes and noncommercial facilities ancillary to a place of business are generally allowed.
- *Aboveground Bulk Storage of Fuel*: Tank size greater than 6,000 gallons (this suggested criterion is based on Uniform Fire Code criteria which are more stringent for larger tank sizes)

TABLE 9B CONTINUED

MAXIMUM RESIDENTIAL DENSITY						
Safety Compatibility Zones ^a						
Current Setting	(1) Runway Protection Zone	(2) Inner Approach/ Departure Zone	(3) Inner Turning Zone	(4) Outer Approach/ Departure Zone	(5) Sideline Zone	(6) Traffic Pattern Zone
<i>Average number of dwelling units per gross acre</i>						
Rural Farmland / Open Space (Minimal Development)	0	Maintain current zoning if less than density criteria for rural / suburban setting				No limit
Rural / Suburban (Mostly to Partially Undeveloped)	0	1 d.u. per 10 – 20 ac.	1 d.u. per 2 – 5 ac.	1 d.u. per 2 – 5 ac.	1 d.u. per 1 – 2 ac.	No limit
Urban (Heavily Developed)	0	0	Allow infill at up to average of surrounding residential area ^b			No limit
<p>^a Clustering to preserve open land encouraged in all zones.</p> <p>^b See Chapter 3 for discussion of infill development criteria; infill is appropriate only if nonresidential uses are not feasible.</p>						
MAXIMUM NONRESIDENTIAL INTENSITY						
Safety Compatibility Zones						
Current Setting	(1) Runway Protection Zone	(2) Inner Approach/ Departure Zone	(3) Inner Turning Zone	(4) Outer Approach/ Departure Zone	(5) Sideline Zone	(6) Traffic Pattern Zone
<i>Average number of people per gross acre^a</i>						
Rural Farmland / Open Space (Minimal Development)	0 ^b	10 – 25	60 – 80	60 – 80	80 – 100	150
Rural / Suburban (Mostly to Partially Undeveloped)	0 ^b	25 – 40	60 – 80	60 – 80	80 – 100	150
Urban (Heavily Developed)	0 ^b	40 – 60	80 – 100	80 – 100	100 – 150	No limit ^c
<i>Multipliers for above numbers^d</i>						
Maximum Number of People per Single Acre	x 1.0	x 2.0	x 2.0	x 3.0	x 2.0	x 3.0
Bonus for Special Risk- Reduction Bldg. Design	x 1.0	x 1.5	x 2.0	x 2.0	x 2.0	x 2.0
<p>^a Also see Table 9B for guidelines regarding uses which should be prohibited regardless of usage intensity</p> <p>^b Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied.</p> <p>^c Large stadiums and similar uses should be prohibited.</p> <p>^d Multipliers are cumulative (e.g., maximum intensity per single acre in inner safety zone is 2.0 times the average intensity for the site, but with risk-reduction building design is 2.0 x 1.5 = 3.0 times the average intensity).</p>						

TABLE 9C

Safety Compatibility Criteria Guidelines

Land Use Densities and Intensities

APPENDIX A