

Appendix B

Ordinance



AIRPORT COMPATIBILITY GUIDELINES



**Compatibility Planning
Compatible Land Use Zoning
Hazard Zoning
For
Airports in Texas**

January 2003

**Texas Department of Transportation
Aviation Division**



Table of Contents

TABLE OF FIGURES	III
INTRODUCTION	1
CHAPTER 1: PLANNING FOR TOMORROW'S AVIATION NEEDS	3
<i>A Cloud on the Horizon.....</i>	<i>3</i>
<i>An Asset to the Community.....</i>	<i>4</i>
<i>Conflicts Produced by Growth.....</i>	<i>4</i>
<i>Prevention Preferable to Cure.....</i>	<i>4</i>
<i>The Airport Sponsor's Responsibility.....</i>	<i>6</i>
<i>The Airport Sponsor's Dilemma</i>	<i>6</i>
<i>Resolving the Dilemma</i>	<i>7</i>
<i>A Cooperative Effort.....</i>	<i>7</i>
CHAPTER 2: PLANNING THE AIRPORT ENVIRONMENT	9
<i>Options to Consider.....</i>	<i>9</i>
<i>Airport Compatible Development.....</i>	<i>9</i>
ASSESSING LAND USE COMPATIBILITY.....	10
<i>Height Limitations.....</i>	<i>10</i>
<i>Noise Exposure.....</i>	<i>12</i>
<i>Mapping Noise Exposure.....</i>	<i>13</i>
<i>Determining Land Use Compatibility.....</i>	<i>13</i>
PLANNING FOR AIRPORT COMPATIBILITY.....	16
<i>Airport Master Plans.....</i>	<i>16</i>
<i>Part 150 Compatibility Studies.....</i>	<i>17</i>
<i>DOD Compatibility Analysis.....</i>	<i>17</i>
IMPLEMENTING PLANS FOR AIRPORT/LAND USE COMPATIBILITY.....	18
<i>Measures to Reduce Noise Exposure.....</i>	<i>18</i>
<i>Actions to Forestall Incompatible Development.....</i>	<i>21</i>
<i>Compatible Land Use and Hazard Zoning Under the Airport Zoning Act.....</i>	<i>23</i>
<i>Planning - The Key to Compatible Uses</i>	<i>24</i>
CHAPTER 3: DEVELOPMENT OF AIRPORT ZONING.....	25
THE AIRPORT ZONING ACT	25
<i>When Is Airport Zoning Applicable.....</i>	<i>25</i>
<i>What Areas Are Eligible for Zoning.....</i>	<i>25</i>
<i>Participants in the Zoning Process.....</i>	<i>26</i>
PREPARATION OF AIRPORT COMPATIBLE LAND USE ZONING REGULATIONS	27
<i>Preparation of Airport Compatible Land Use Zoning Regulation Text.....</i>	<i>27</i>
<i>Prerequisites for Preparing the Airport Compatible Land Use Zoning Map.....</i>	<i>31</i>
<i>Preparation of the Airport Compatible Land Use Noise Exposure Map.....</i>	<i>31</i>
PREPARATION OF HAZARD ZONING REGULATIONS.....	32
<i>Necessity of Adopting an Airport Hazard Zoning Regulations.....</i>	<i>32</i>
<i>Basic Elements of Hazard Zoning.....</i>	<i>34</i>
<i>Preparation of Hazard Zoning Regulations Text</i>	<i>34</i>
<i>Prerequisites for Preparing the Hazard Zoning Map.....</i>	<i>35</i>
<i>Preparation of the Hazard Zoning Map.....</i>	<i>35</i>
<i>Runway Classifications.....</i>	<i>35</i>
<i>Types of Approaches.....</i>	<i>35</i>
<i>FAR Part 77 Imaginary Surfaces.....</i>	<i>36</i>
<i>Imaginary Surface Possible Combinations.....</i>	<i>38</i>
<i>Land Uses</i>	<i>38</i>
RELATIONSHIP BETWEEN AIRPORT COMPATIBLE LAND USE OR HAZARD ZONING AND COMPREHENSIVE ZONING.....	39
<i>Ordinance Conflicts.....</i>	<i>39</i>
<i>Limitations of the Airport Zoning Act.....</i>	<i>39</i>

ACTIVITIES NOT AUTHORIZED BY THE AIRPORT ZONING ACT	39
<i>Prohibitions vs. Restrictions</i>	39
<i>Existing Uses or Structures</i>	40
ASSISTANCE WITH THE PREPARATION OF AIRPORT ZONING REGULATIONS.....	40
CHAPTER 4: ADOPTION OF AIRPORT ZONING REGULATIONS.....	41
ADOPTING ZONING REGULATIONS.....	41
<i>Selection of the Appropriate Zoning Strategy</i>	41
<i>Implementation of the Selected Zoning Strategy</i>	42
<i>Procedural Steps</i>	42
<i>Airport Compatible Land Use Zoning Regulations</i>	45
<i>Hazard Zoning Regulations</i>	46
APPENDIX A	51
CHAPTER 241. MUNICIPAL AND COUNTY ZONING AUTHORITY AROUND AIRPORTS.....	51
SUBCHAPTER A. GENERAL PROVISIONS.....	51
SUBCHAPTER B. ADOPTION OF AIRPORT ZONING REGULATIONS	53
SUBCHAPTER C. ADMINISTRATIVE AGENCY AND BOARD OF ADJUSTMENT	57
SUBCHAPTER D. JUDICIAL REVIEW AND OTHER REMEDIES	59
SUBCHAPTER Z. MISCELLANEOUS PROVISIONS	60
APPENDIX B	62
AIRPORT COMPATIBLE LAND USE ZONING REGULATIONS	62
AIRPORT COMPATIBLE LAND USE ZONING REGULATIONS: TABLE 1	68
PROHIBITED OR REGULATED LAND USES.....	68
AIRPORT COMPATIBLE LAND USE ZONING MAP	69
APPENDIX C	70
AIRPORT HAZARD ZONING ORDINANCE	70
APPENDIX D - FORMS	1

Table of Figures

FIGURE 1-1. ENCROACHMENT AROUND AN URBAN AIRPORT	5
FIGURE 2-1: EXAMPLES OF COMPATIBLE LAND USES.....	10
FIGURE 2-2: TYPICAL IMAGINARY SURFACE HEIGHT LIMITATIONS, FAA PART 77.....	11
FIGURE 2-3: DECIBEL (DBA) LEVELS OF COMMON SOUNDS.....	12
FIGURE 2-4: EFFECTS OF NOISE ON PEOPLE IN AN URBAN RESIDENTIAL ENVIRONMENT	14
FIGURE 2-5: LAND USES NORMALLY COMPATIBLE WITH VARIOUS NOISE LEVELS.....	15
FIGURE 3-1: CONTROLLED COMPATIBLE LAND USE AREA.	26
FIGURE 3-2: NOISE CONTOURS – TYPICAL RELIEVER GA AIRPORT	28
FIGURE 3-3: COMPATIBLE LAND USE GUIDELINES.....	29
FIGURE 3-4: NOISE CONTOURS AND CONTROLLED AREA WITH AIRPORT OVERLAY ZONES.....	33
FIGURE 3-5: IMAGINARY SURFACES	37
FIGURE 3-6: IMAGINARY SURFACE TECHNICAL MATRIX.....	37
FIGURE 4-1: PROCEDURAL CHECKLIST FOR AIRPORT ZONING REGULATIONS ADOPTION.....	42
FIGURE 4-2: COMPARISON OF AREAS UNDER IMAGINARY SURFACES FOR EACH TYPE OF APPROACH – PLAN VIEWS.....	48
FIGURE 4-3: COMPARISON OF ACREAGE UNDER IMAGINARY SURFACES FOR EACH TYPE OF APPROACH*	49

INTRODUCTION

The Texas Department of Transportation (TxDOT) developed these guidelines as a reference source for elected officials, zoning board members, and city and county staff members responsible for assuring compatibility between an airport and the community it serves. While zoning may be the first thing considered, there are other measures that a community may take to enhance compatibility.

Officials are urged to review Chapters 1 and 2 of these guidelines before deciding which measures are best suited for their airport and community.

These guidelines are an update and revision of the first edition of “Airport Compatibility Guidelines” published by the Texas Department of Transportation, Division of Aviation, in 1992. That original document was modeled after and borrowed heavily from similar documents developed by agencies of two other States: the Wisconsin Department of Transportation, Division of Aeronautics, and the Oregon Department of Transportation. The Texas Department of Transportation, Aviation Division, continues to acknowledge these two organizations for portions of the information used herein.

CHAPTER 1: PLANNING FOR TOMORROW'S AVIATION NEEDS

Texans are people on the move, and more and more frequently they travel by air. The statistics are impressive. Nine percent of air travelers in the United States board at a Texas airport. Thirty-eight different airline companies serve the state with 26 Texas cities receiving commercial airline service. Airports in Texas annually enplane over 62 million passengers.

To meet this demand, Texas has approximately 400 unrestricted public-use airports, with 300 included in the state airport system plan. Ten million operations (takeoffs and landings) are made annually at these public-use airports.

Maintaining these facilities is a challenge to the many local governments and private organizations that own and operate airports. As if the current challenge were not sufficient, the demand for air services and the use of these facilities are projected to grow steadily. The Texas Airport System Plan forecasts that by the year 2012, boardings at Texas airports will have increased to 102 million passengers. Total operations will more than double during the same period.

A Cloud on the Horizon

The Texas Department of Transportation (TxDOT) Aviation Division is committed to encouraging and assisting airport sponsors with the continued development of a statewide airport system that can provide for this anticipated growth. Providing new airport facilities is vitally important, but even more important is the need to insure that existing facilities can be developed to their maximum feasible utility.

Unfortunately, the encroachment of incompatible land uses or tall structures that are incompatible with airport operations threaten the continued usefulness of many airports. The result of incompatible land use may be community opposition to increased levels of traffic or even current traffic volumes. The results of incompatible tall structures may be the raising of approach minimums or the loss of instrument approaches altogether. The problem of airport land use conflicts will become apparent in many more locations as both urban populations and the need for airport facilities continue to grow.

These guidelines have been developed to explain what can be done to create an environment compatible with airport uses. They are written to give the reader an understanding of compatibility issues as well as instructions for implementing compatibility plans.

- Chapter 1, the remainder of describes how airport land use conflicts have developed, why solutions to the problem are the responsibility of the airport sponsor, and what in general can be done to prevent conflicts.
- Chapter 2 describes what is involved in planning for an airport-compatible environment.
- Chapter 3 outlines the preparation of compatible land use and hazard zoning regulations to insure airport compatible development.
- Chapter 4 explains the procedures for adopting airport zoning.

An Asset to the Community

Airports have become increasingly important to the economy of the area they serve. While this has long been true for major urban areas, many smaller communities are finding that an airport is their open door to economic development. This is due in large part to the way in which many companies now do business. Rather than locating all of their facilities in one city, a company may establish branch offices throughout the country and use corporate aircraft to shuttle between the various sites.

In this way, even relatively small communities with a good general aviation airport are candidates for companies seeking to take advantage of the community's resources. In evaluating the community, prospective businesses often look at an airport as they do the community's other transportation services, schools, and utilities. Therefore, any airport can be an important and valuable asset to a community.

Conflicts Produced by Growth

Growth in the demand for aviation services coincided with the rapid growth of many urban areas. Land use conflicts were often the result. New high-rise buildings and communication towers protruding into an airport's airspace appeared on drawing boards and planning documents. Figure 1-1 illustrates how population growth and the demand for new housing can bring residential development to the doorstep of a once more remote airport.

Simultaneously, airports needed to expand to accommodate larger aircraft and more flights. Residents of areas exposed to the frequent overflights, especially by larger jet aircraft, found airport operations to be incompatible with their urban and suburban standard of living.

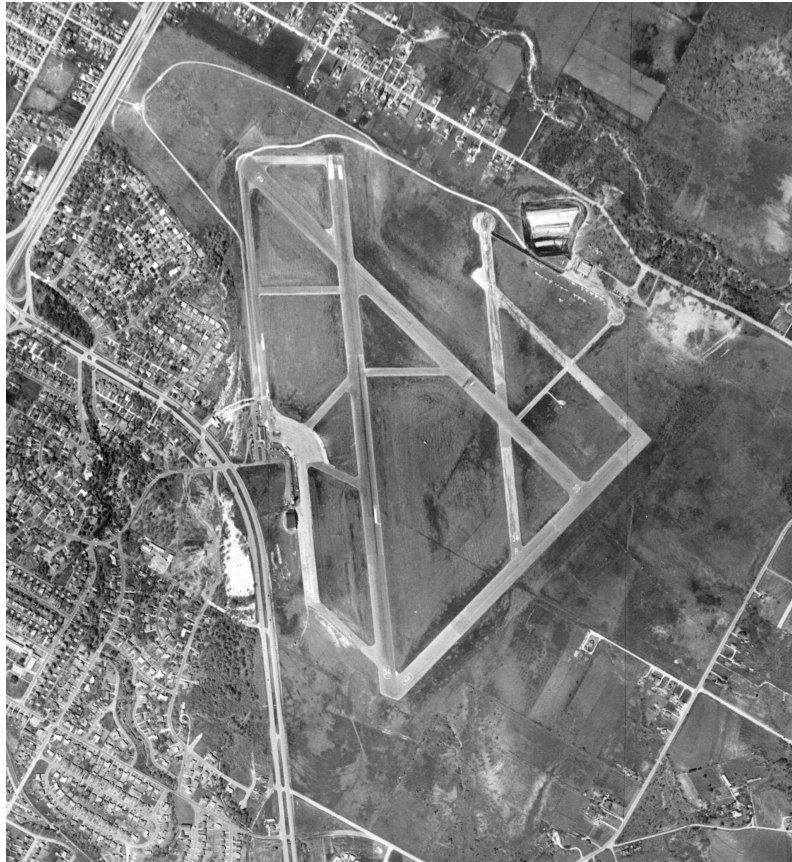
The initial response was to relocate the airport farther from the central city. However, with a few notable exceptions, the new airport sites were soon subject to encroachment by incompatible uses as development followed the airport. The process of relocation might have continued except that today there are few, if any, environmentally acceptable new sites for major airports. Acceptable sites are often located beyond reasonable access distances from the cities the airports are intended to serve. Even if suitable sites were readily available, many communities have found the multimillion-dollar cost investment required for a new airport to be prohibitive. Consequently, many major airports are affected today by incompatible development and must operate with certain restrictions to mitigate the impact of aircraft operations.

Though the more serious instances of airport land use conflicts are associated with larger air carrier airports, smaller facilities may have their own compatibility problems. The same increased use of business aircraft at general aviation airports that may offer economic opportunity may also introduce land use conflicts that previously were not apparent. Aircraft used by today's businesses do not generate so much noise as commercial transports, but in the quieter surroundings of smaller communities, their noise may be considered just as disruptive.

Prevention Preferable to Cure

Fortunately, many opportunities exist for Texas communities to forestall the development of incompatible uses around their airport. Suburbanization has not reached many airport sites serving general aviation. These guidelines will be most beneficial in these situations by recommending planning measures that can be implemented now to prevent what has happened at other locations.

Figure 1-1. Encroachment Around an Urban Airport



Without sufficient compatibility planning or enforceable zoning restrictions, the use of land surrounding this airport changed to a point that the airport was closed in 1999.

Hazard zoning should protect all airports, regardless of the airport's size. Apparently, our State Legislators also feel this is important because they have tied the requirement of hazard zoning to the State's airport grant program. In addition, any airport capable of serving jet transports, business jets, or large propeller aircraft, now or in the twenty-year planning period, should consider the compatible land use planning and zoning measures outlined herein.

Too frequently, airport sponsors have failed to plan for compatible development because land use conflicts are presently apparent. In certain cases, conflicts could have been prevented, but once conflicts develop, there is little that can be done to satisfactorily resolve them. The time to act is now, before incompatible land uses develop.

The Airport Sponsor's Responsibility

The responsibility for insuring the compatible development of the airport environment and preventing tall structures that negatively affect airports rests primarily on the airport sponsor for two reasons. The first and foremost reason is that decisions on how land is developed are made at the local level. State statutes give municipalities and counties the authority to regulate land development and tall structures near airports through planning and zoning. State agencies, such as the Texas Department of Transportation, can recommend appropriate controls to be used by local governments, but the responsibility and authority for implementing such controls lie squarely and solely with local governments.

The other reason compatibility planning is a local responsibility has to do with numerous legal decisions that have placed the liability for airport operations on the local airport sponsor. The noise produced by airport operations has been the basis of various lawsuits by nearby residents and the courts have generally held that the airport sponsor is the appropriate body to be sued. The U.S. Supreme Court, in *Griggs v. Allegheny County*, has ruled that when an airport sponsor had the ability to acquire property impacted by aircraft noise but failed to do so, the airport sponsor could be held liable for the diminution of property values.

The Airport Sponsor's Dilemma

Airport sponsors have responded to these rulings by attempting to limit the noise impact on surrounding areas by such measures as restricting the types of aircraft using the airport, noise standards for aircraft using the facility, and prohibitions (curfews) on nighttime use of the airport. In most cases, courts have found that these measures violate parts of the U.S. Constitution. The Federal Government's right and obligation to regulate the operation of aircraft in flight are frequently cited in striking down local attempts to limit noise. This means that the authority to regulate the flight of aircraft is under the jurisdiction of the Federal Government, not local governments. Courts have also found that bans on the use of airports by some types of aircraft, as well as some curfews, interfered with interstate commerce and were, therefore, illegal. Furthermore, the terms and conditions of various airport improvement grant contracts could prevent local governments from discriminating between different types of aircraft.

Airport sponsors find themselves in a judicial no-man's-land. On one side, courts have found them liable for the environmental impacts due to airport operation and, on the other side, have invalidated many of the actions airport sponsors have taken to limit those impacts. Avoiding confrontations between airport users and community residents is by far the most productive approach because once incompatible land uses develop, confrontation and legal challenges are

likely to follow with uncertain outcomes. Such confrontations can best be avoided by proper planning.

Resolving the Dilemma

The key to avoiding confrontation is, as previously suggested, advanced planning. Many of the existing conflicts are due to the absence of proper planning that considered the land use needs of an airport as part of a growing community. In some cases, airports may have been located outside of the jurisdictional limits of the community they serve. As the urban area population increased, extraterritorial airport sites came in contact with the urban growth which, without some sort of restrictions to protect the airport environment, could develop up to the boundary of the airport.

Recognizing the problem and the shortcomings of the standard community planning and zoning laws as they applied to airports, the Texas Legislature created and over the years enhanced the Texas Airport Zoning Act (AZA), Chapter 241 of the Texas Local Government Code. The AZA provides an effective tool for local governments to regulate the development of land and protect the airspace surrounding an airport.

A Cooperative Effort

As will be seen in the following chapter, the AZA is only one way to promote a compatible airport environment. Other ways, such as replacing the noisiest aircraft with quieter ones and voluntary actions on the part of aircraft pilots also can be beneficial.

A cooperative effort on the part of the airport sponsor, aircraft operators, the Federal Aviation Administration, and community residents is essential for compatibility planning to be successful. The effort admittedly may require compromise and some difficult decisions; however, the long term results should help insure an airport's continued service to the community.

CHAPTER 2: PLANNING THE AIRPORT ENVIRONMENT

This chapter describes what is involved in planning for an airport-compatible environment. Though you may be primarily interested in how to go about implementing airport compatible land use zoning or hazard zoning under the provisions of the Texas Airport Zoning Act (AZA), Chapter 241 of the Texas Local Government Code, **please read this chapter before turning to the chapters on zoning procedures. Zoning is only one of many actions that might be taken to develop airport compatible land uses.** It is important to understand when and where various actions would be appropriate.

Options to Consider

Each airport environment is unique, therefore, planning for compatible land use must be tailored specifically for each individual airport. Actions to achieve compatible development are not equally effective at all airports. Where the airport environment is already developed with many incompatible uses or structures, there are, quite frankly, few actions that can be taken to improve the situation significantly. On the other hand, where the land around an airport is largely undeveloped, there will be many opportunities for positive action.

The following explains how aircraft operations affect the land adjacent to an airport and the process for determining what land uses are compatible with these operations. The explanation is intended to give airport sponsors, airport operators, and adjacent landowners a basic understanding of airport compatible land use planning.

Airport Compatible Development

Airport compatible land uses are uses of adjacent properties that are not adversely affected by airport operations. Residential development is most sensitive to airport operations and is nearly always an incompatible land use if located close to an airport. Land uses where people congregate such as schools, churches, theaters, and hospitals also may be incompatible.

Some uses are incompatible because they actually represent a danger to aircraft using an airport. Examples of these include tall structures as well as commercial or industrial activities that generate bright lights, smoke, or electronic interference that may affect aircraft radios and navigation equipment. Landfills, which attract birds and other wildlife, can also be dangerous. The most serious hazards are tall structures that extend into the air around airports where aircraft are operating close to the ground.

There are many land uses that are considered to be compatible with an airport, as can be seen in Figure 2-1. These uses should be encouraged. It is important to understand that airport compatible development does not mean that land cannot be put to profitable use. Compatibility requirements may dictate that some parcels be developed less profitably, while other land that may have little development value may increase in value due to its proximity to an airport.

Figure 2-1: Examples of Compatible Land Uses

Airport Compatible Activities		Open Areas
Aerial survey companies	Convention centers *	Arboretum
Air cargo facilities	Gas stations	Botanical gardens
Air freight terminals	Hotels and motels *	Cemeteries
Aircraft manufacturing	Night clubs *	Farming and ranching
Aircraft repair facilities	Office buildings *	Game preserve
Aviation research and testing	Restaurants *	Golf courses
Aviation schools	Selected recreational activities	Landscape nurseries
Auto parking lots	Shopping centers *	Picnic areas
Auto storage areas	Taxi and bus terminals	Riding academies
Banks *	Trucking terminals	Sewage treatment facilities
Car rental agencies	Warehouse distribution centers	Water treatment facilities

* May require acoustical treatment

ASSESSING LAND USE COMPATIBILITY

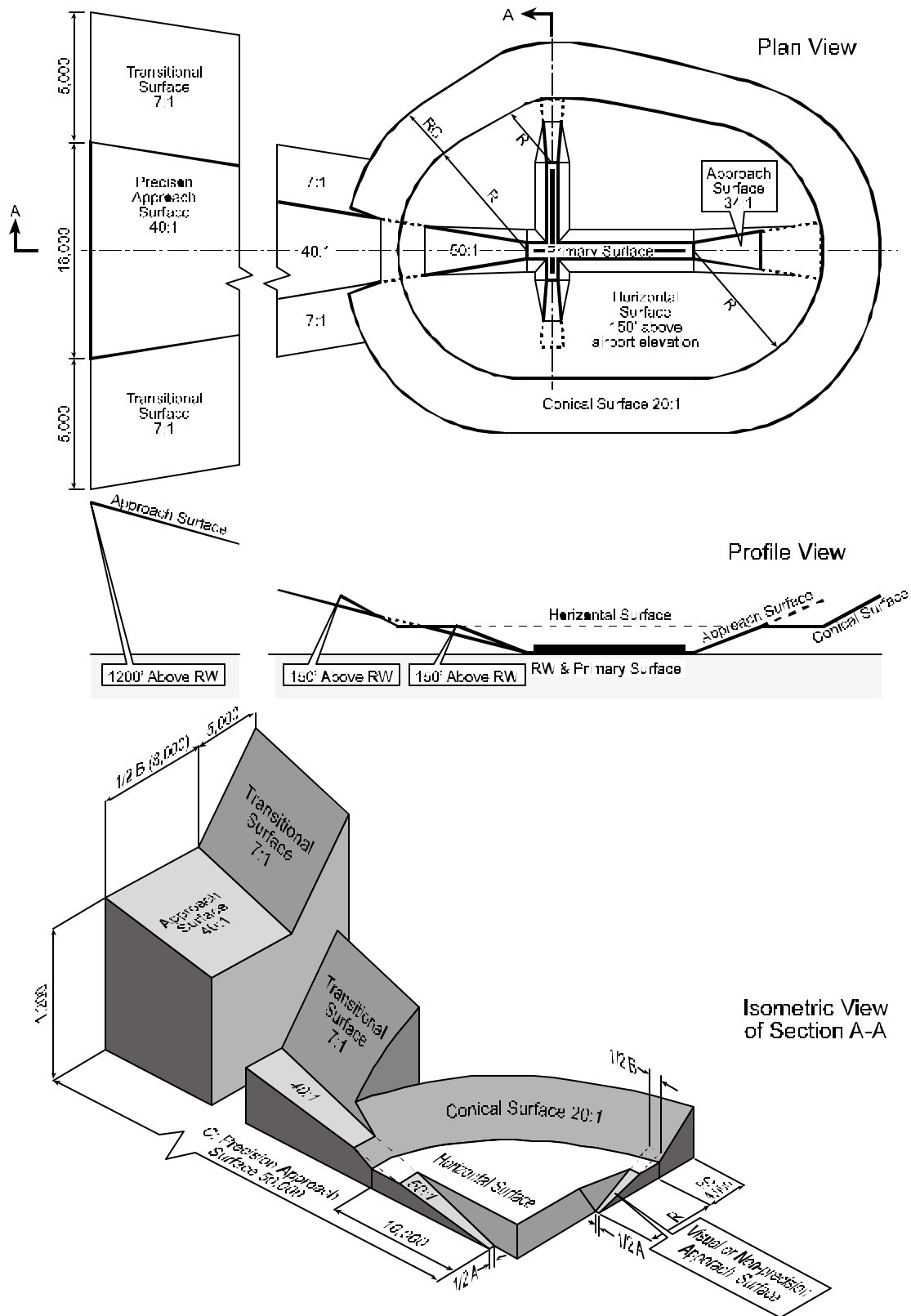
Two principal factors must be assessed to determine how a particular piece of land can be developed for airport compatible use: (1) the height limitations on structures and, (2) the level of airport noise to which the land is exposed. Both assessments require a technical analysis of the layout of the airport and the airport's operational characteristics. Chapters 3 and 4 discuss these assessments in some detail. However, a basic understanding of the factors is sufficient now.

Height Limitations

The majority of takeoffs and landings follow a path represented by the extended centerline of a runway. Approaching and departing aircraft normally enter or continue along this path from one to five miles from an airport. If aircraft always followed this path, limiting the heights of objects along that path would be the only solution necessary. However, variables such as the volume of air traffic, weather conditions, or instructions from an air traffic control tower often cause aircraft to deviate from this path. Aircraft may also circle an airport fairly close to the ground, particularly during bad weather, in preparation for landing at airports without an air traffic control tower.

The Federal Aviation Administration (FAA) has determined the maximum heights that structures in the vicinity of an airport may be before they are identified as obstructions to air navigation. These heights are contained in Federal Aviation Regulations (FAR) Part 77 and are discussed in more detail in Chapter 4. Figure 2-2 illustrates the basic concept.

Figure 2-2: Typical Imaginary Surface Height Limitations, FAA Part 77



Depiction shows an other-than-utility airport with instrument approach procedures to each runway end, and each procedure having one-mile minimum visibility minimums.

Structures obstructing any of the various Part 77 surfaces shown in Figure 2-2 may limit the airspace pilots normally expect to be clear. Those structures may also cause the published instrument approach procedures for an airport to be adjusted in order for a pilot to avoid those structures. Some states, including Texas, permit local governments to limit the height of structures around an airport by way of hazard zoning regulations.

Noise Exposure

Noise, by definition, is sound that is loud, unpleasant, unexpected, or undesired. The sound produced by aircraft becomes noise when it disturbs people. The best way to minimize the adverse impact of noise is to separate people from that noise.

Aircraft noise is greatest along the flight paths on which aircraft take off and land at airports. Ideally, these are the areas where noise-sensitive land uses should be excluded. Alternatively, restricting aircraft operations over these areas can also limit noise. To be able to predict the land area where aircraft operations may be a disturbance, we need to know: (1) the sound level at which a significant number of people can be expected to be disturbed, and (2) the areas exposed to that level of sound.

Precision instruments are used to measure and record sound levels. The instruments are often set to “hear” the way the human ear hears. Sound levels measured with an instrument calibrated for human hearing are expressed in units of A-weighted decibels (dBA), such as sound level of 60 dBA. The dBA scale is logarithmic which means that a sound level of 70 dBA will be perceived as twice as loud as a 60 dBA sound. Figure 2-3 identifies some common sounds and their relative loudness expressed in dBA.

Figure 2-3: Decibel (dBA) Levels of Common Sounds

Sound	Sound Level (dBA)*	Relative Loudness (Approx.)
Jet Plane, 100 feet	130	128
Rock Music, with amplifier	120	64
Thunder, danger of permanent hearing Loss	110	32
Power Mower; Boiler Shop	100	16
Orchestral Crescendo, 25 feet; Noisy Kitchen	90	8
Busy Street	80	4
Interior of Department Store	70	2
Ordinary Conversation, 3 feet	60	1
Quiet Automobile, at low speed	50	1/2
Average Office	40	1/4
City Residence	30	1/8
Quiet Country Residence	20	1/16
Rustle of Leaves	10	1/32
Threshold of Hearing	0	1/64

* U.S. Department of Housing and Urban Development Circular 1390.2

The sound created by the overflight of an aircraft can be measured in dBA at any point on the ground. Using known information about the type of airplane and its elevation, the sound level can also be calculated. Research has shown that while people may react to single noise event, the degree to which they are disturbed is related to the sound level exposure over a period of time. Therefore, a measure of dBA over time is needed.

The measure most frequently used to describe sound levels over a period of time is the “day-night average sound level” or DNL. DNL represents the average noise received at a given location during the time measured or the yearly average of dBAs integrated over 24 hour periods. For

flights occurring between 10 pm and 7 am, a 10 dBA penalty is added to the actual dBA value for each event because of the increased annoyance from overflights during the quieter periods when most people sleep. Noise exposure measured in DNL has been correlated with community disturbance in many studies. Plotting on a map the locations around the airport where DNL levels are high enough to cause annoyance can identify areas where residential development would be incompatible.

Mapping Noise Exposure

The measurement of noise events in the vicinity of an airport for a year would be time consuming and expensive. The FAA has developed a computer program to simulate the results of actual measurements. It is called the Integrated Noise Model (INM). Detailed field calibration studies have proven this program to be remarkably accurate. The program is maintained by the FAA and updated as frequently as necessary in order to reflect aircraft characteristics as the fleet evolves.

The INM computer program calculates the DNL levels associated with the type, frequency, and flight tracks of aircraft using an airport. Points having the same DNL can be connected to establish sound level exposure contours. These contours can then be used for land use compatibility planning, as illustrated in Figure 3-2. The program can also be used to estimate noise exposure for future airport conditions. For example, the expected changes in operations due to a new runway can be input into the computer program, which will produce contours for the new airport configuration. The contour map may then be used to plan for land uses that are compatible with the proposed airport improvement. Similarly, noise contours can be generated for alternative runway improvements to analyze which options would minimize the effect of aircraft operations on surrounding areas.

Determining Land Use Compatibility

There has been extensive research on community attitudes toward noise. Most of this research has been based on the number of complaints made by groups of residents exposed to similar noise levels. Other factors such as the audibility of normal speech, levels of annoyance, and general community attitudes have been included in the research.

Figure 2-4 summarizes the results of the research on the effects of noise on people in an urban residential environment. From this table, it becomes apparent that residents exposed to DNL levels in excess of 65 dBA will experience interference with normal levels of speech, complain more frequently, and consider noise to be a significant adverse aspect of the community environment. The effects of noise summarized in this table form the basis for the recommendation found in Federal guidelines that residential uses should be restricted within the 65 DNL contour.

Figure 2-4: Effects of Noise on People in an Urban Residential Environment

	Effects ▼					
Day-Night Average Sound Level (dBA) ▼	Hearing Loss ¹	Indoor Speech Interference ²	Outdoor Speech Interference ³	Annoyance ⁴	Average Community Reaction	General Community Attitude Towards Area
75 & above	May Begin to Occur	98%	0.5	37%	Very Severe	Noise is likely to be the most important of all adverse aspects of the community environment.
70	Will Not Likely Occur	99%	0.9	25%	Severe	Noise is one of the most important adverse aspects of the community environment.
65	Will Not Occur	100%	1.5	15%	Significant	Noise is one of the important aspects of the community environment.
60	Will Not Occur	100%	2.0	9%	Moderate to Slight	Noise may be considered an adverse aspect of the community environment.
55 & less	Will Not Occur	100%	3.5	4%	Moderate to Slight	Noise considered no more important than various other environmental factors

1. Qualitative Description
2. % Sentence Intelligibility
3. Distance in Meters for 95% Sentence Intelligibility
4. % of Population Highly Annoyed

Figure 2-5 lists land uses and the DNL levels at which those uses are compatible. The table has been reproduced from FAA Advisory Circular 150/5020-1 and constitutes FAA's recommended land uses normally compatible with various sound levels. This is an expanded version of the compatible land uses identified in Federal Aviation Regulations (FAR) Part 150. Below the 65 DNL level, all land uses are normally compatible. Above 65 DNL level, residences and places of public assembly are not compatible unless sound level reduction paraphernalia are installed. Most sound level reduction paraphernalia, whether installed during original construction or after the fact, are only effective in reducing noise exposure if windows are closed at all times. Because residents often open windows during mild weather, it is questionable whether residential buildings are compatible in areas above the 65 DNL exposure levels. Where possible, residential use should be prevented within the 65 DNL contour and **under no circumstances should residential uses other than sound-insulated transient lodging be permitted within the 75 DNL contour.**

Figure 2-5: Land Uses Normally Compatible with Various Noise Levels

Land Uses	Yearly Day-Night Average Sound Level (dBA)					
	<65	65-70	70-75	75-80	80-85	>85
Residential						
Residential, other than mobile homes and transient lodgings ¹	Y	N ²	N ²	N	N	N
Mobile home parks (14)	Y	N	N	N	N	N
Transient lodgings	Y	N ²	N ²	N ²	N	N
Public Use						
Schools, education services (68); hospitals, and nursing homes (65.13, 65.16)	Y	25	30	N	N	N
Churches, auditoriums, and concert halls (71, 72.1)	Y	25	30	N	N	N
Governmental Services	Y	Y	25	30	N	N
Transportation ³	Y	Y	Y ⁴	Y ⁵	Y ⁶	Y ⁶
Parking	Y	Y	Y ⁴	Y ⁵	Y ⁶	N
Commercial Use						
Offices, business, and professional ⁷	Y	Y	25	30	N	N
Wholesale and retail – building materials, hardware and farm equipment ⁸	Y	Y	Y ⁴	Y ⁵	Y ⁶	N
Retail trade – general ⁹	Y	Y	25	30	N	N
Utilities (48)	Y	Y	Y ⁴	Y ⁵	Y ⁶	N
Communication (47)	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general ¹⁰	Y	Y	Y ⁴	Y ⁵	Y ⁶	N
Photographic and optical – professional instruments, optical goods, watches (35)	Y	Y	25	30	N	N
Agriculture (except livestock) (84), Agricultural activities (82), Forestry activities (83)	Y	Y ¹²	Y ¹³	Y ¹⁴	Y ¹⁴	Y ¹⁴
Livestock farming and breeding (81.5 to 81.7)	Y	Y ¹²	Y ¹³	N	N	N
Mining and fishing, resource production and extraction (84, 85, and 89)	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports (72.2)	Y	Y ¹¹	Y ¹¹	N	N	N
Outdoor music shells, amphitheaters (72.11)	Y	N	N	N	N	N
Nature exhibits and zoos (71.2)	Y	Y	N	N	N	N
Amusement parks, resorts, and camps (73, 76, 72, 75, 70)	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation (74)	Y	Y	25	30	N	N

Key to Table

Number in ()	Standard Land Use Coding Manual (SLUCM)
Y (yes)	Land use and related structures compatible without restrictions
N (no)	Land use and related structures are not compatible and should be prohibited
25, 30, or 35	Land use and related structures generally compatible; measures to achieve Noise Level Reduction (NLR), outdoor to indoor, of 25, 30, or 35 must be incorporated into design and construction of structure.

Notes for Table

- Includes: Household units (11), Single units – detached (11.11), Single units – semidetached (11.12), Single units – attached row (11.13), Two units – side-by-side (11.21), Two units – one above the other (11.22), Apartments – walk up (11.31), Apartments – elevator (11.32), Group quarters (12), Residential hotels (13), and Other residential (19)
- Where the community determines that residential 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 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.

3. Includes Railroad, rapid rail transit and steel railway transportation (41), Motor vehicle transportation (42), Air craft transportation (44), Marine craft transport (44), and Highway and street right-of-way (45).
4. Compatible where measures to achieve NLR of 25 are 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. Compatible where measures to achieve NLR of 30 are 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.
6. Compatible where measures to achieve NLR of 35 are 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.
7. Includes Finance, insurance and real estate services (61), Personal services (62), Business services (63), Professional services (65), Other medical facilities (65.1), and Miscellaneous services (69).
8. Includes Wholesale trade (51), Retail trade – building materials, hardware and farm equipment (52), Repair services (64), and Contract construction services (66).
9. Includes Retail trade – general merchandise (53), Retail trade – food (54), Retail trade – automotive, marine craft, aircraft, and accessories (55), Retail trade – apparel and accessories (56), Retail trade – furniture, home furnishings and equipment (57), Retail trade – eating and drinking establishments (58), and Other retail trade (59).
10. Includes Food and kindred products – manufacturing (21), Textile mill products – manufacturing (22), Apparel and other finished products made from fabrics, leather, and similar materials – manufacturing (23), Lumber and wood products (except furniture) – manufacturing (24), Furniture and fixtures – manufacturing (25), Paper and allied products – manufacturing (26), Printing, publishing, and allied industries (27), Chemicals and allied products – manufacturing (28), Petroleum refining and related industries (29), Rubber and misc. plastic products – manufacturing (31), Stone, clay and glass products – manufacturing (32), Primary metal industries (33), Fabricated metal products – manufacturing (34), and Miscellaneous manufacturing (39).
11. Land use compatible provided special sound reinforcement systems are installed.
12. Prime use only, any residential buildings require an NLR of 25 to be compatible.
13. Prime use only, any residential buildings require an NLR of 30 to be compatible.
14. Prime use only, NLR for residential buildings not normally feasible, and such uses should be prohibited.

Source: U.S. Department of Transportation, Federal Aviation Administration, AC 150/5020-1, “Noise Control and Compatibility Planning for Airports”, August 5, 1983.

PLANNING FOR AIRPORT COMPATIBILITY

Information on height limitation and noise exposure can be put to use in a comprehensive review of land uses in the airport environs. This is especially true if a community that owns an airport, or in which an airport is located, is contemplating compatible land use zoning regulations based on noise data. It is important that all reasonable means of achieving land use compatibility be examined including those that provide restrictions on the use of the airport. Airport officials should participate in the planning process along with community leaders and local officials to ensure the airport’s interests are made known. Comprehensive community plans in the past have not always considered the relationship of an airport to neighboring land uses. It is vital that community planners incorporate the information developed in airport master plans and airport land use compatibility studies into comprehensive land use plan updates.

Airport Master Plans

The basic information needed for airport/land use compatibility planning can be provided through an airport master plan. A master plan includes a wealth of data on past and current airport operations as well as the socioeconomic characteristics of the region served by the airport. This data is used to forecast the level of activity at the airport for 5, 10, even 20 years in the future.

Airport improvements are then planned to meet the demand forecast for the airport and programmed as funds become available.

Airport master plan studies also include an analysis of the noise impact with noise contour maps, see Figure 3-2, showing the effects of different planning and development scenarios for the 5 and 20 year forecast periods. These contours are overlaid on a map of the community showing existing land uses. Existing as well as potential land use conflicts can be identified and various ways in which the airport operator, the airport sponsor, and community leaders may eliminate incompatible uses or prevent future incompatible uses from developing can be explored.

A master plan should also contain detailed plan and profile views of the approach surfaces as well as a plan view drawing of the complete FAR Part 77 imaginary surfaces pertinent to the airport similar to Figure 2-2. These drawings can be used to develop height restriction zoning regulations.

If the master plan contains well-prepared land use scenarios, the community has the primary information needed to initiate airport land use compatibility planning. The airport operator may use this information to plan actions that limit the noise made by the aircraft using the airport. These aviation controls can then be combined with the land use controls to produce a compatibility plan. A warning should be added here that for compatibility planning, the airport master plan must be current. If area population and aircraft operation forecasts appear to be out of date, the airport master plan data should not be used in the compatibility plan. Airport master plans more than five years old should be reviewed carefully.

Part 150 Compatibility Studies

The FAA has published guidelines for noise control and compatibility planning for airports. These planning studies are called “Part 150” studies in reference to Federal Aviation Regulations (FAR) Part 150 that authorizes them. Part 150 studies follow the same procedures for analyzing airport impacts as previously described master plan studies. However, where the emphasis of master planning is on the airport improvement program, the sole purpose of the Part 150 study is airport/land use compatibility. Therefore, the Part 150 study will be far more detailed in its analysis of noise abatement and compatibility planning measures.

Part 150 studies ideally are undertaken concurrently with, or shortly after, the completion of an airport master plan. This assures that the base data for forecasts is current and that improvement alternatives are evaluated with respect to their impact on the community. At airports where master plans are outdated, a modified master plan update should be undertaken prior to a Part 150 study. Acceptance by the FAA of the noise compatibility program qualifies the airport sponsor for consideration of Federal funding for noise abatement measures identified in the compatibility program. Abatement measures that could be funded include acoustical construction and land acquisition.

It is highly recommended that airport sponsors considering use of the AZA’s compatible land use zoning provisions pursue a Part 150 or similar study of noise abatement and compatibility planning measures. Federal funding is available to cover 90 percent of the cost of Part 150 studies for most airports. Information on Part 150 studies is available from the FAA or TxDOT.

DOD Compatibility Analysis

The Department of Defense has developed a compatibility analysis similar to the Part 150 study for military airports. It is referred to as an **Air Installation Compatible Use Zone Program** (AICUZ). The AICUZ study will contain noise maps similar to those contained in a master plan or

Part 150 study. The AZA permits cities and counties to zone around military installations and AICUZ noise exposure maps can be used for this purpose, if they are current. Communities should consider the AICUZ analysis during the development of community comprehensive land use plans where applicable. However, the primary responsibility for noise abatement at a military installation remains with the military. AICUZ plans also identify Accident Potential Zones (APZ) which extend along the runway centerline beginning 3000 feet from the end of the runway and extending out as far as 15,000 feet. Communities should consider APZs when planning land uses in the vicinity of military installations.

IMPLEMENTING PLANS FOR AIRPORT/LAND USE COMPATIBILITY

Once land uses compatible with airport operations have been identified, success in implementing a compatible land use plan will depend on the cooperation and support of all affected parties. This cooperation may best be achieved by including representatives of the affected parties in all phases of the plan's development. The affected parties would include political subdivision officials, airport operator, airport users (especially air carriers), and neighboring landowners and residents. All parties should reach general agreement that the compatibility plan is fair and represents the best that can be accomplished under the circumstances. It will not represent 100% of each participant's desires or needs, but will be a compromise of all parties.

There are limits to what can be achieved. For example, the airport operator cannot require pilots to make noise reducing maneuvers that might be considered unsafe or demand specific flight procedures in order to minimize noise impact. Courts have held that only the FAA can dictate what procedures aircraft must follow once airborne. An airport operator and the airport users may voluntarily agree on preferred operating procedures, but mandatory procedures require FAA actions.

The amount of control municipalities have over the land in the areas affected by the airport is similarly limited by state statutes. Political subdivisions may be authorized to enact zoning regulations, building codes, and condemnation, but these measures are subject to constitutional and judicial limitations on the public taking of private property and other requirements of due process.

Still, most of the actions that might be taken by political subdivisions fall under their police powers, which allow them significant authority to provide for the public health, safety, and general welfare. The validity of a political subdivision's police powers is strengthened when the State legislature specifically invokes the use of such power for a defined purpose. Such is the case of the AZA where the use of zoning has been specifically authorized by the legislature for compatible land use regulation and height limitation.

Land use compatibility planning procedures fall into two overall categories: measures to reduce noise exposure and actions to forestall incompatible development. Measures to reduce noise exposure may be undertaken by the aviation sector, i.e., the airport operator and the airport users. Actions to forestall the development of incompatible uses may be implemented by the political subdivisions representing the affected areas. The following sections briefly describe the measures to be considered in preparing compatibility plans.

Measures to Reduce Noise Exposure

Noise abatement measures that the airport operator and pilots may undertake include facility changes, changes in operational procedures, restrictions on operations, or other measures.

Facility Changes

Changes in the design of the airport facilities, most importantly runways, are one method of reducing off-airport noise impacts. Such changes are very expensive alternatives and may take several years to implement. There are many airports where design changes are not a practical remedy due to physical limitations on new construction. Where takeoffs and landings on a particular runway result in DNL levels incompatible with existing off-airport development, consideration can be given for the construction of a new runway from which overflights will avoid such development. However, since runways are oriented based on the prevailing wind direction, a new runway will likely require an orientation similar to the existing runway. If a new or replacement runway is to be constructed for the purpose of avoiding noise sensitive areas, the new runway would require significant lateral separation. This will limit where the new runway could be located because, without sufficient separation, the flight paths will likely continue to go over the same general areas or neighborhoods.

An alternative to the construction of a new runway for noise abatement is the redesign of a secondary runway to serve as the primary runway. This may involve lengthening and strengthening runway pavement and improving the landing aids. This alternative is viable only if the orientation of the secondary runway will permit its use a majority of the time based on the prevailing wind direction.

If new runway construction is not possible, the threshold of the existing runway can be moved to a point farther down the runway. That portion of the runway beyond the new threshold would then be removed or used as a clearway or stopway. By moving the threshold away from noise sensitive areas, aircraft will normally be at a higher altitude as they pass over those areas on both takeoff and landing. Thresholds can be moved only if the shortened runway remains long enough to support the aircraft using the airport. Runway length can be maintained if the runway is extended on the opposite end to compensate for the new threshold. Moving thresholds may not achieve significant levels of noise reduction but are generally less expensive to implement than the construction of a new runway.

Noise barriers in the form of earthen berms or concrete structures may reduce noise levels on nearby land at those locations on the airport where engine run-ups (engine tests before takeoff) occur. However, because such barriers cannot be located in the landing or takeoff areas, such barriers would have little or no effect on noise generated during takeoff or landing.

Changes in Operational Procedures

Changes in the way aircraft use an airport can also contribute to noise reductions over sensitive areas. For example, instead of the standard left turn upon final approach, special procedures can be enacted so that a pilot begins final landing procedures on the opposite side of the runway making a right turn to align with the runway. Nonstandard flight procedures can be suggested by the airport operator or airport sponsor but require approval of the FAA. Consultation with airport users is vital when considering implementation of nonstandard flight procedures for the purpose of noise abatement.

Large aircraft are generally less sensitive to wind direction than smaller airplanes. Under calm and low wind speed conditions, large aircraft can normally use any of the available runway ends. Airports can adopt preferential runway use plans in which specific aircraft are directed to use a certain runway or runway end during calm wind conditions. Such use could minimize noise impacts in sensitive areas off one end of the runway.

The paths that aircraft follow as they approach and depart an airport may also be modified somewhat to avoid noise sensitive areas. Especially on takeoff, when aircraft are loudest,

procedures can be developed for the aircraft to maneuver away from developed areas once clear of the airport. Large aircraft have less flexibility on landing because they descend on an extended glide slope. Minor modifications to the glide slope may be possible but will likely not increase the height of descending aircraft enough to provide significant noise reduction. Any deviations from the standard approach or departure procedures require FAA approval.

Engines are the primary source of airplane noise. Maximum noise is generated on takeoff. The rate at which airplanes climb can be adjusted somewhat to reduce noise. Airlines are usually receptive to adopting these procedures where necessary and several standard procedures for this purpose have been developed.

Airport operators may establish restrictions on engine run-ups without FAA approval. These restrictions could indicate where run-ups take place on the airport. Run-ups on engines being overhauled in maintenance facilities could be restricted to acoustically isolated structures and/or during daytime hours.

Restrictions on Operations

Restricting use of the airport for noise abatement purposes generally should be a last-resort measure. Shutting the door to the airport during certain times of the day (curfews) could inadvertently limit economic growth and development and will likely be contrary to the airport sponsor's State and Federal airport improvement grant obligations. There may be instances, however, when restrictions are necessary due to excessive noise levels and few alternatives for abatement procedures or compatible land use programs. For example, communities with more than one airport might establish a curfew for one facility without denying air access to the community as a whole. However, in cases challenged, courts have usually sided with airport users. Airport sponsors considering any type of curfew should consult closely with the airport users and the FAA.

Use restrictions can be used for noise abatement by limiting the noise level or the frequency of noise events. As stated above, DNL levels are partially a function of the number of operations. Therefore, it is possible to contain the area of noise exposure by establishing a limit on the number of operations. Use of the airport also can be limited to those aircraft meeting FAA noise standards, although most aircraft now meet these standards. A limit could also be considered on the maximum noise level generated by a single aircraft operation. Landing fees based on noise levels (noisier aircraft pay a higher fee) can be implemented. Landing fees are a small part of airline operating costs and an increase for noise exposure would not likely change aircraft operating procedures. Likewise, fees generated would likely not be sufficient to aid in noise abatement actions.

Other Measures

Relocating and closing an airport are other alternatives. These should only be considered in extreme cases where use and development of the airport are absolutely limited by uncorrectable, incompatible development. Relocating an airport is a very radical and expensive alternative and usually beyond a community's financial resources. Closing an airport altogether is likewise a radical maneuver and it too could actually become quite expensive for a community. Airport improvement grants from the FAA or the State as well as the deed of transfer for an airport given to community under the U.S. Government's surplus property program all contain terms and conditions requiring the airport sponsor to keep the airport open. If those terms and conditions are not met, the grant monies may need to be refunded or, under the surplus property agreement, the complete airport property may revert in ownership to the government.

Actions to Forestall Incompatible Development

Political subdivisions (a city or a county government) owning the airport or served by the airport must implement all of the measures to insure land use compatibility off the airport property because municipal zoning powers and eminent domain authority lie solely with political subdivisions. Therefore, it is important for the airport staff and planners to work closely with the planning, zoning, and code enforcement officials of the communities involved.

There are a wide variety of actions that can be taken to insure development around an airport is compatible with airport use. They include the acquisition of property, implementation of restrictive covenants, review of land development plats, condemnation procedures, subdivision regulations, establishment of building codes, consideration of capital improvements, and adoption of zoning regulations. Airport land use compatibility plans may recommend various combinations of these techniques. Again, it is important to emphasize that these measures are far more effective in preventing the development of incompatible uses than removing or mitigating existing uses. Once incompatible uses are in place, options for achieving compatibility are greatly reduced.

The following paragraphs describe the actions that may be considered in achieving land use compatibility. In all cases they should be taken judiciously and with careful planning. Though the legislature has given municipalities flexibility in their use of the police power to achieve orderly development of the community, there are limits to the measures that can be taken and how they are undertaken. It is highly recommended that your city or county attorney or other legal counsel be consulted when considering compatibility plans using the techniques described below.

Acquisition of Property

Property acquisition may include complete ownership of the land, the right to use the land or deny others from using the land for a certain purpose or length of time, and the right to cross through or over the property. Any one or all of these property interests might be acquired for compatibility planning purposes. Acquisition can be made through purchase, condemnation, or by grant. Public ownership of the property and all its rights is the best way to insure compatible development. Since few developed uses of land are compatible within the 75 DNL contour, it is recommended that property within in the 75 DNL contour be acquired.

Restrictive Covenants

Public ownership of land in the airport-affected area is the best way to insure compatible development; however, this technique can be expensive. A municipality may not have to retain actual ownership of property to achieve the compatibility desired. The property can be acquired then resold or leased with deed restrictions that prohibit incompatible use of the property.

Plat Review

Local regulations might require airport noise contour lines be drawn on any land use development plat map when it is reviewed. This would allow the reviewing authority to consider the proposed land uses of land near an airport and either disapprove the plat or require special acoustic paraphernalia before approval is issued. If approved, showing the airport noise contours on the plat would allow perspective buyers to determine whether their proposed development plans mesh with the noise exposure generated by the airport.

Condemnation

Eminent domain is the right of a governmental unit to acquire property needed for public use. One method of acquiring property for eminent domain is called condemnation. Condemnation may be used to acquire an easement as well as total rights to property.

Subdivision Regulations

The State legislature has given municipalities authority to regulate the manner in which land is subdivided and developed. Subdivision regulations may specify the way streets are laid out, how drainage should be handled, or they may require the developer to dedicate easements or land for public purposes. One such public easement could be the overflight of aircraft along with their associated noise. A subdivision ordinance also might restrict residential housing or require special acoustical construction within certain DNL contours.

The Cities of Irving and Grapevine have subdivision regulations that require the dedication of aviation easements. Both cities are next to the Dallas-Fort Worth International Airport and have some of their jurisdiction lying within the airport's 65 DNL contour. The aviation easement effectively protects the cities from lawsuits by people who move into the noise impacted areas.

Building Codes

Building codes are designed to insure the safe construction and reconstruction of buildings. Most cities adopt a standard building code. Codes adopted for local use can be modified to specify construction techniques to reduce internal noise levels. These techniques may be specified for structures within a 65 DNL contour. The application of a building code cannot be retroactive. Existing buildings would not be subject to the construction provisions of the code unless they were being substantially reconstructed.

Communities using building codes to insure compatible use near an airport should consider these drawbacks:

- a) There is no accepted "standard" building code for achieving noise reduction. Acoustical expertise is needed to determine the level of noise reduction that can be achieved by certain building construction methods. Many factors affect the level of sound that can be transmitted through the exterior of a building.
- b) Noise reduction achieved through building construction is effective only if windows are closed at all times. With the mild climate and attractiveness of outdoor activities during certain times of the year in Texas, using special construction to minimize interior sound levels is usually not a practical means for assuring airport noise compatibility.

Capital Improvements

The extension of public utilities such as water and sewer lines and streets into undeveloped areas normally proceeds the development of that property. If the land is within an area impacted by the airport, certain development may not be desirable from an airport compatible use perspective. This potential problem may be resolved by the installation of public utilities that support airport compatible development. For example, in an area within the 65 DNL contour, public utilities that only support airport compatible uses could be installed instead of utilities designed to support residential use. Airport officials should monitor capital improvement programs near the airport and notify officials of their concerns.

Zoning Regulations

Zoning gets its name from the practice of dividing a municipality into various zones with varying land uses permitted in each zone. Zoning schemes normally include residential, commercial, and industrial zones. In sophisticated zoning schemes these districts may be subdivided into far more specific districts. Within each zone, the regulation implementing the zoning scheme may specify such things as building size, lot size, the separation between buildings, and the number of residential units permitted per acre. The zoning may also identify some uses that are not normally permitted.

The authority to zone is based on police powers that permit communities to plan their development in a way that will promote public health, safety, and general welfare. The zoning scheme is one of the major means of implementing the municipality's comprehensive land use plan. Courts of law have held that zoning regulations that place reasonable restrictions on the use of property in order to implement a plan for orderly community development are lawful.

Zoning is a powerful tool in guiding compatible land use development. Since it restricts the way in which a property owner may use the land, zoning must be established with care.

Zoning became a common municipal practice several decades in the past and certain rules have developed to insure that the administration and enforcement of zoning is fair. Among the more important rules are the requirements that zoning be based on a reasonable plan for community development, permit the owner some economic use of his/her property, allow for the affected owner to participate in the zoning process, and allow property owners to have redress for unfavorable decisions. A caveat is that zoning (a use of the police power) cannot be a substitute for eminent domain (condemnation). This means that a municipality may not zone land that it wishes to acquire in such a manner that the property's value is deliberately diminished to the benefit of the community. This is called "inverse condemnation." When this issue has been raised in courts of law, the courts have generally supported the municipality if it was shown that the zoning in question was reasonably related to the community's police powers, even if some diminution of property value took place. The line between legitimate use of zoning and inverse condemnation is frequently very fine. Officials should be aware of this distinction when implementing airport compatible land use zoning regulations.

Zoning has other limitations that make it less than the ultimate technique to achieve airport compatible land use development. Zoning cannot be applied retroactively. When a new zoning regulation is enacted, existing nonconforming uses are "grandfathered." Therefore, zoning cannot create compatibility where incompatibility exists. Zoning regulations generally apply only to the jurisdiction that adopts the ordinance. Zoning regulations also can vary among municipalities in the way they are written. Some regulations are exclusive; meaning that in a commercial zone only commercial uses are permitted. Other regulations are cumulative; meaning a commercial zone permits commercial and "higher" uses. The general hierarchy of uses from high to low is residential, commercial, industrial, then agriculture. While commercial development is usually compatible with airport operations, one can see that commercial zoning would be ineffective if applied under a cumulative zoning ordinance that permitted residential uses in commercial zones. Cumulative zoning is generally out of date, but such regulations do exist.

Compatible Land Use and Hazard Zoning Under the Airport Zoning Act

The Texas Legislature has recognized the potential usefulness of zoning to protect airports from incompatible development that would tend to diminish the airport's usefulness. The Airport Zoning Act (AZA) enables municipalities to adopt airport compatible land use and hazard zoning regulations. Airport zoning is not based on the same authority as the comprehensive community zoning discussed above. Though both forms of zoning have much in common, airport zoning overcomes some of the limitations of comprehensive zoning as applied to airport compatible land use planning.

One of the principal differences between the two types of zoning is in airport zoning's use of overlay zones. An overlay zone may be superimposed on comprehensive zoning. The overlay method of zoning does not specify what land uses are permitted, only those that are not permitted. For example, the height limit specified in an overlay zone for hazard zoning would supersede height limits of comprehensive zoning for the same area unless the height restrictions in the

comprehensive zone were equal to or more restrictive than the limitations for the hazard zone. Similarly, a land use permitted by comprehensive zoning might be prohibited or restricted by a compatible land use zone. Where the overlay zone includes areas with no comprehensive zoning, the requirements of the overlay still apply and constitute the only land use restrictions. These overlay zones may be shown on zoning maps that are prepared for each airport in question and those maps may be attached to and become a part of the adopted compatible land use or hazard zoning regulations.

The AZA also differs from comprehensive zoning in that it can be extraterritorial and multi-jurisdictional. The AZA permits two or more political subdivisions in the vicinity of an airport to form a joint airport zoning board. Compatible land use or hazard zoning regulations adopted by a joint airport zoning board are then effective in each of the jurisdictions represented on the board. Cities of 45,000 or more population having an airport within their territorial limits may unilaterally adopt compatible land use or hazard zoning regulations, which are effective in all jurisdictions covered by the overlay zones.

The AZA does not identify specific standards that must be used in determining what constitutes incompatible land uses or airport hazards. However, it is generally accepted that contours based on varying levels of noise generated by an airport and the various imaginary surfaces established in the Federal Aviation Regulations (FAR) Part 77 are the preferred standards to be used in airport zoning. These different types of zoning are further covered in Chapters 3 and 4.

Planning - The Key to Compatible Uses

This chapter has provided an important overview of the conflicts that can develop between compatible and incompatible airport land uses and how those conflicts may be avoided by advanced planning through acquisition of property, property rights, and/or zoning. It was pointed out that acquisition of property and property rights are the best way to ensure compatible land uses near an airport, but in the real world, zoning may actually be the only practical choice.

The main drawback to zoning is that it can be amended as local officials find it necessary or politically expedient to do so or at the discretion of new officials after each election. Easements, deed restrictions, and covenants on the other hand cannot be changed quite so easily.

Once again, it is important to understand that the prevention of potential conflicts is a far more productive approach to airport compatible land use than attempting to resolve existing conflicts.

The remainder of this document contains more detailed information on the procedures to be followed in the preparation, adoption, and administration of airport compatible land use and hazard zoning. Model zoning regulations are included in Appendixes B and C.

CHAPTER 3: DEVELOPMENT OF AIRPORT ZONING

This chapter provides specific information on how to develop airport compatible land use or hazard zoning regulations under the provisions of the Airport Zoning Act (AZA), Chapter 241 of the Texas Local Government Code, and a discussion of the specific items to be included in each type of regulation. Note that airport compatible land use zoning under the AZA refers to the “...use of land adjacent to an airport that does not endanger the health, safety, or welfare of the owners, occupants, or users of the land because of the levels of noise or vibrations or the risk of personal injury or property damage created by the operations of the airport...” and airport hazard zoning refers to the regulation of “...a structure or object of natural growth that obstructs the air space required for the taking off, landing, and flight of aircraft...”.

In other words, airport compatible land use zoning protects adjacent property from the airport and hazard zoning protects the airport from adjacent properties.

The procedures for properly adopting airport compatible land use or hazard zoning regulations, other general contents not covered in this chapter, and the administration of zoning regulations are covered in Chapter 4 of these guidelines.

THE AIRPORT ZONING ACT

Successful implementation of airport zoning requires a clear understanding of the AZA. A copy is included in Appendix A. The following paragraphs should help clarify the applicability of the various sections of the AZA in adopting airport zoning regulations.

When Is Airport Zoning Applicable

Airport compatible land use zoning regulations or hazard zoning regulations may be adopted for airports or other areas used in the tracking or data acquisition of flights. Such areas may be owned by cities, towns, counties, the Federal Government, or the State of Texas or be privately owned and used in the interest of the public.

What Areas Are Eligible for Zoning

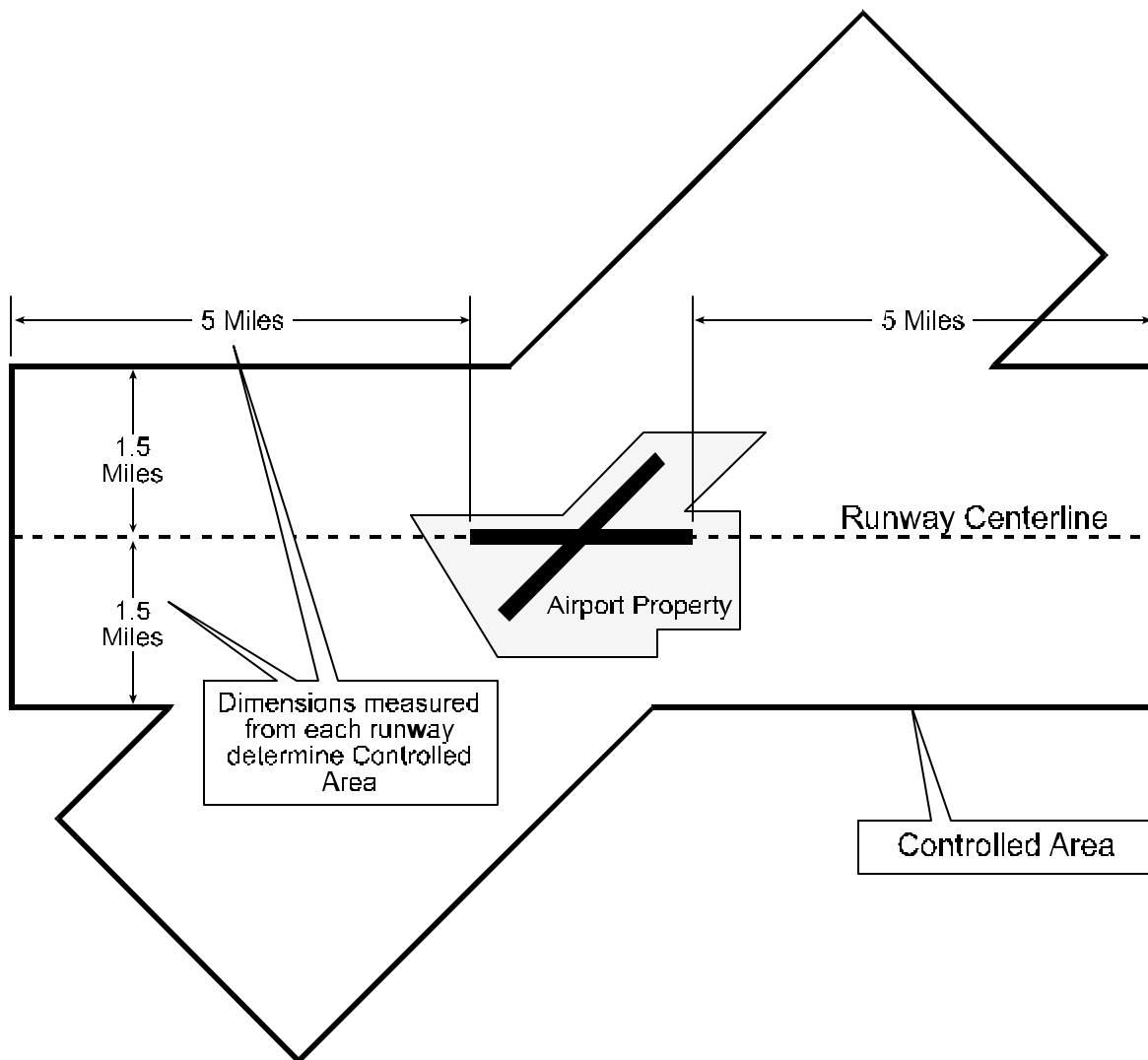
The area that can be zoned for airport compatible land uses is called the “controlled compatible land use area” and is applicable to any instrument or primary runway. An instrument runway is defined in the AZA as a runway of at least 3,200 feet in length for which there is an existing or planned standard instrument approach procedure. A primary runway is defined as a runway also at least 3,200 feet in length on which a majority of an airport’s operations take place. To be eligible for compatible land use zoning under the AZA, an instrument and/or primary runway must have or be planned to have a paved surface. These eligibility criteria can, and often do, apply to the same physical runway. Future runways may also be zoned if they are identified on an approved airport layout plan (ALP) or other planning document and meet the above eligibility criteria.

The controlled compatible land use area extends 5 miles beyond each end of an eligible runway and 1.5 miles on each side of the extended runway centerline. See Figure 3-1. These are the

maximum limits of the area that **can** be zoned, not necessarily the limits of the areas that **must** be zoned.

The areas that can be hazard zoned are not specifically defined in the AZA. However, it is generally accepted that the imaginary surfaces described in the applicable sections of Federal Aviation Regulations (FAR) Part 77 are the minimum areas that should be protected under a hazard zoning regulation.

Figure 3-1: Controlled compatible land use area.



For each instrument and primary runway, compatible land use zoning may be enacted within the controlled area and outside airport boundaries.

Participants in the Zoning Process

Airport compatible land use or hazard zoning regulations can certainly be expected to arouse the interest of various individuals and organizations, especially those directly affected by the zoning. These interested parties should be involved as much as possible in the zoning process. The

impetus for airport zoning will likely come from the airport sponsor; nevertheless, input and participation from airport staff, airport users, and adjacent landowners and/or tenants should be encouraged. Some of the participants may have little understanding of airport operations and will benefit from patient explanations by the airport staff. A cooperative effort among the all parties is essential.

The importance of involving the landowners and residents of the area to be zoned cannot be overemphasized. They need to understand why the zoning is necessary, what process is being used to assess noise impact and hazard areas, and how the zoning will affect their property. The support of property owners and residents will increase the likelihood that the zoning regulation will be adopted. Communication with these people should begin early in the process and continue on a regular basis.

PREPARATION OF AIRPORT COMPATIBLE LAND USE ZONING REGULATIONS

Airport compatible land use zoning regulations consist of the regulation text and a zoning map. The text describes the uses of land that are **not** permissible in the various overlay zones and the procedures for administering and enforcing the regulation. A model airport compatible land use zoning regulation is included in the Appendix B. The zoning map graphically shows the various overlay boundaries and is normally attached to and made part of the adopted regulations. Airport compatible land use zoning regulations may be incorporated into municipal zoning regulations or they may stand alone as independent regulations.

Preparation of Airport Compatible Land Use Zoning Regulation Text

Preface - The regulation must be preceded with acknowledgement of the enabling legislation (the AZA) and a “declaration of purpose.” The AZA specifically requires that the airport being zoned “fulfills an essential community purpose” and a statement declaring such is required.

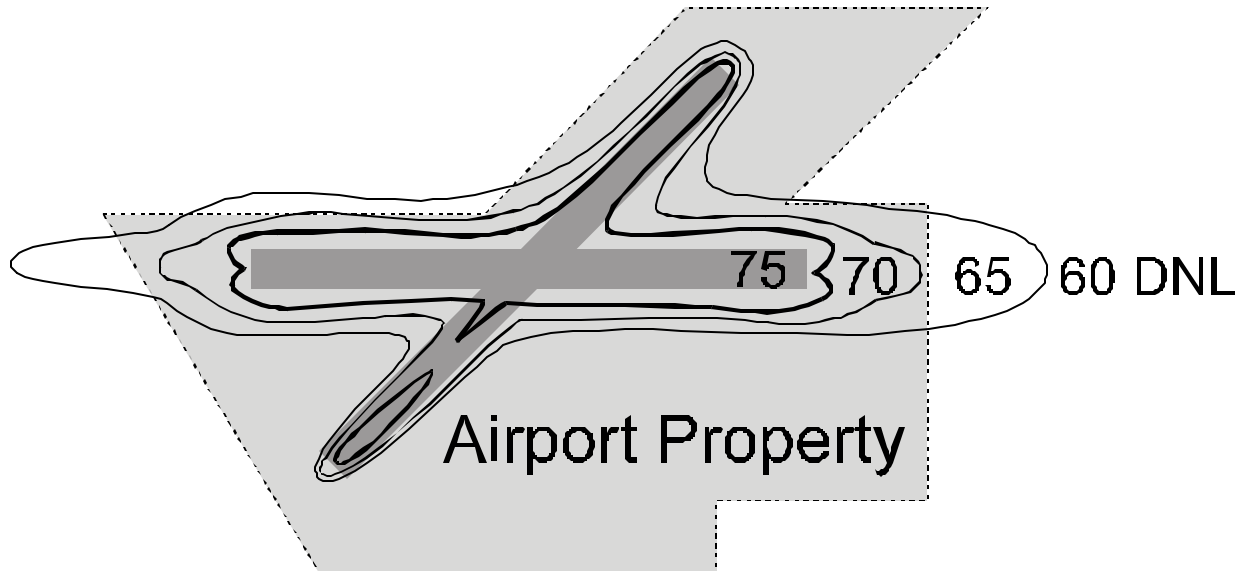
Controlled Compatible Land Use Areas - The zoning regulation should define the controlled compatible land use areas using the eligible runway(s) as reference points. The AZA does not specifically list how these areas may be regulated and it would seem unreasonable to include the whole 30+ square miles under one land use restriction. Areas closer to a runway are subject to higher levels of noise than those farther away. It is recommended that the areas be broken down into overlay zones based on each area’s exposure to noise. Airport overlay zones (AOZ) should be as follows:

- **Airport Overlay Zone 1 (AOZ-1):** that portion of the controlled compatible land use area outside the 65 DNL contour line.
- **Airport Overlay Zone 2 (AOZ-2):** that portion of the controlled compatible land use area between the 65 and 70 DNL contour lines.
- **Airport Overlay Zone 3 (AOZ-3):** that portion of the controlled compatible land use area between the 70 and 75 DNL contour lines.
- **Airport Overlay Zone 4 (AOZ-4):** that portion of the controlled compatible land use area between the 75 and 80 DNL contour lines.
- **Airport Overlay Zone 5 (AOZ-5):** that portion of the controlled compatible land use area between the 80 and 85 DNL contour lines.

- **Airport Overlay Zone 6 (AOZ-6):** that portion of the controlled compatible land use area inside the 85 DNL contour line.

Although six zones have been identified here, most regulations will contain fewer. At all but the busiest and noisiest airports, zones AOZ-5 and AOZ-6 will likely fall within a runway's primary surface where no structures of any type should be permitted and which should be completely within the airport property lines. The number of zones in the regulation should reflect the actual conditions at the airport being zoned. The model regulation in Appendix B and illustrated in Figure 3-1 contains only four overlay zones.

Figure 3-2: Noise Contours – typical reliever GA airport



Permitted Uses - Permitted uses in each AOZ are those allowed by any underlying comprehensive zoning, or lack of zoning, in effect for that zone, with the exception of those uses specifically prohibited by the airport compatible land use zoning regulations. The prohibited uses may be identified by incorporating a noise compatibility table based on Figure 2-5 in these regulations.

Residential use is not an appropriate use in AOZ-2 through AOZ-6, and should be restricted. Where such restriction is not feasible, a **noise level reduction (NLR)** of 25 dBA and 30 dBA through the installation of sound level reduction paraphernalia should be required for AOZ-2 and AOZ-3 respectively. Residential use in AOZ-4 through AOZ-6 would be a serious degradation of quality of life with any amount of NLR and it is strongly recommended such use be prohibited. Transient lodging is an acceptable use in AOZ-2 through AOZ-4 with NLRs of 25, 30, and 35 dBA respectively.

An airport compatible land use zoning regulation should contain or reference NLR measures that are considered appropriate for achieving the specified levels of noise reduction. The reference may be another regulation or be a part of the municipal building code. A community desiring to incorporate NLR measures in their building codes or in airport compatible land use zoning regulations should employ a qualified acoustical consultant to develop those measures.

Examples of the permitted uses and the NLRs for each overlay zone are shown in Figure 3-3. The table is for example purposes only. A qualified acoustical consultant should be employed to establish the standards for your community.

The remainder of the zoning regulation text is described in Chapter 4.

Figure 3-3: Compatible Land Use Guidelines

Sample Ordinance No. 1234, Appendix A
Airport Compatible Land Use Zoning
City of Y, Texas
Land Uses Prohibited in Designated Overlay Zones

N (No) Land uses and related structures prohibited.
 25, 30, 35 Measures to achieve noted levels of noise reduction shall be incorporated into designs and construction of structures as specified in Section 8(c) of the Building Code of the City of Y, Texas.
 (1) – (7) Refer to the accompanying notes for this figure.

	Airport Overlay Zones Sound level in DNL		
Land Use	AO-2 65-70 DNL	AO-3 70-75 DNL	AO-4 75-80 DNL
Residential			
Single units – detached	N	N	N
Single units – semi-detached	N	N	N
Single units – attached row	N	N	N
Two units – side-by-side	N	N	N
Two units – one above the other	N	N	N
Apartments – walk up	N	N	N
Apartments – elevator	N	N	N
Group quarters	N	N	N
Residential hotels	N	N	N
Other residential	N	N	N
Mobile home parks	N	N	N
Transient lodgings	25	30	35
Public Use			
Educational services	25	30	N
Hospitals, nursing homes	25	30	N
Cultural activities (including churches)	25	30	N
Auditoriums, concert halls	25	30	N
Governmental services	25	30	N
Transportation services		(2)	(3)
Parking		(2)	(3)

Commercial Use			
Finance, insurance, and real estate services		25	30
Personal services		25	30
Business services		25	30
Professional services		25	30
Other medical facilities		25	30
Miscellaneous services		25	30
Wholesale trade		(2)	(3)
Retail trade – bldg. Materials, hardware, farm equipment		(1)	(2)
Repair services		(1)	(2)
Contract construction services		(1)	(2)
Retail trade – general merchandise		25	30
Retail trade – food		25	30
Retail trade – auto, marine, aircraft and accessories		25	30
Retail trade – apparel and accessories		25	30
Retail trade – furniture, home furnishings, and equipment		25	30
Retail trade – eating/drinking establishments		25	30
Other retail		25	30
Utilities		(1)	(2)
Communication		25	30
Manufacturing and Production			
Food and kindred products – manufacturing		(1)	(2)
Textile mill products – manufacturing		(1)	(2)
Apparel and other finished products made from fabrics, leather and similar materials – manufacturing		(1)	(2)
Lumber and wood products – manufacturing		(1)	(2)
Furniture and fixtures – manufacturing		(1)	(2)
Paper and allied products – manufacturing		(1)	(2)
Printing, publishing and allied industries		(1)	(2)
Chemicals and allied products		(1)	(2)
Petroleum refining and related industries		(1)	(2)
Rubber and misc. plastics products – manufacturing		(1)	(2)
Stone, clay and glass products – manufacturing		(1)	(2)
Primary metal industries		(1)	(2)
Fabricated metal products		(1)	(2)
Miscellaneous manufacturing		(1)	(2)
Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks – manufacturing		25	30
Agriculture (except livestock)	(5)	(6)	(7)
Agriculture related activities	(5)	(6)	(7)
Forestry activities and related services	(5)	(6)	(7)
Livestock farming and breeding	(5)	(6)	(7)
Recreational			
Outdoor sports arenas and spectator sports	(4)	(4)	N
Outdoor music shells, amphitheaters	N	N	N
Nature exhibits and zoos		N	N
Amusements			N
Parks			N
Public assembly			N
Resorts and camps			N
Other cultural entertainment/recreation			N
Golf courses, riding stables, and water recreation		25	30

Notes:

1. Sound level reduction measures of 25 dB shall be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where normal noise level is low.
2. Sound level reduction measures of 30 dB shall be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where normal noise level is low.
3. Sound level reduction measures of 35 dB shall be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where normal noise level is low.
4. Permitted provided special sound reinforcement systems are installed.
5. Prime use only. Associated residential buildings require sound level reduction measures of 25 dB.
6. Prime use only. Associated residential buildings require sound level reduction measures of 30 dB.
7. Prime use only. Associated residential uses prohibited.

Prerequisites for Preparing the Airport Compatible Land Use Zoning Map

The AOZs should be shown on the airport compatible land use zoning map. These contours must be reasonable and technically accurate. A noise contour map prepared as part of an airport master plan may be used if it is up to date. If that data is not up to date, it can lead to improper identification of current or future overlay zones and should not be used. TxDOT recommends that a current airport land use compatibility study as outlined in Federal Aviation Regulations (FAR) Part 150 be undertaken before noise contours are used for airport compatible land use zoning.

Area population projections should be reviewed to assure they are consistent with current data and projections. Forecasts of air carrier enplanements and total operations should also be examined. If existing levels of enplanements, operations, and aircraft mix differ significantly from the master plan forecast, the differences should be reconciled. A good way of updating the parts of a master plan that are critical for noise exposure mapping is with a Part 150 study. That study would review existing forecasts and prepare new ones if necessary. The study would then develop a compatibility program that considers such things as reconfiguration of the airport facilities and noise abatement procedures along with possible land use restrictions.

Acceptance of the zoning can also be enhanced with a Part 150 study. The study allows those groups likely to be affected by an airport compatible land use zoning regulation to be involved in the planning process at an early date. Interested parties can see how the noise contours are developed and can provide input into the total compatibility program. To provide a solid political and legal basis for subsequent zoning, the governing body of the political subdivision owning the airport should formally accept the noise contours and compatibility plan prepared in the Part 150 study before adopting and implementing airport compatible land use zoning regulations based on that study.

Preparation of the Airport Compatible Land Use Noise Exposure Map

As explained in Chapter 2, noise contours may be prepared with a computer program called the Integrated Noise Model (INM) which makes calculations and draws contour lines. Consulting firms doing airport master plans and Part 150 studies have access to that program. It references a database containing the noise levels generated by most types of aircraft in use today. The user provides information on the characteristics of the airport being studied, such as altitude, mean temperature, runway configuration, type of aircraft, arrival and departure tracks and procedures, and the number of aircraft operations. The airport compatible land use noise exposure map

should be based on the present or forecasted level of operations that produces the largest (in terms of area covered) airport overlay zones.

The INM determines an aircraft's distance from points on the ground as it travels along its normal flight path. It then uses that data and the amount of noise generated by the aircraft to calculate the level of noise reaching any point on the ground. The noise from each aircraft operation is accumulated at each point on the ground. Noise exposure calculations can be displayed graphically with the use of an x-y coordinate grid. The runway configuration is first placed on the grid and points for which noise exposure is to be calculated are identified and plotted. Points on the grid with common noise exposure values are connected with a line creating a contour for that noise exposure level. Those contour lines are identified as the DNL contours. Generally, the INM user will generate 65, 70, and 75 DNL contours because these are the contours commonly used for zoning purposes. Additional contours may be generated if needed. The DNL contours are then overlaid on a base map showing the airport boundaries, the controlled compatible land use areas, and the boundaries of all political subdivisions in the area. Figure 3-4 illustrates how the noise contours might appear relative to the controlled compatible land use areas and airport boundaries. Note that the areas within the limits of the controlled compatible land use areas but outside the 65 DNL contour are identified as AOZ-1 and no specific land uses are prohibited for that zone. This is because those areas are outside the 65 DNL contour are determined not to be negatively affected by airport noise.

PREPARATION OF HAZARD ZONING REGULATIONS

Airport hazard zoning regulations also consist of the regulation text and a zoning map. The text describes the heights of objects and uses of land that are not permissible in the various overlay zones and the procedures for administering and enforcing the regulations. A model hazard zoning regulation is included in the Appendix C. The zoning map graphically shows the various overlay zone boundaries and is attached to and made part of the adopted regulations. Airport hazard zoning regulations may be incorporated into municipal zoning regulations or they may stand alone as independent regulations.

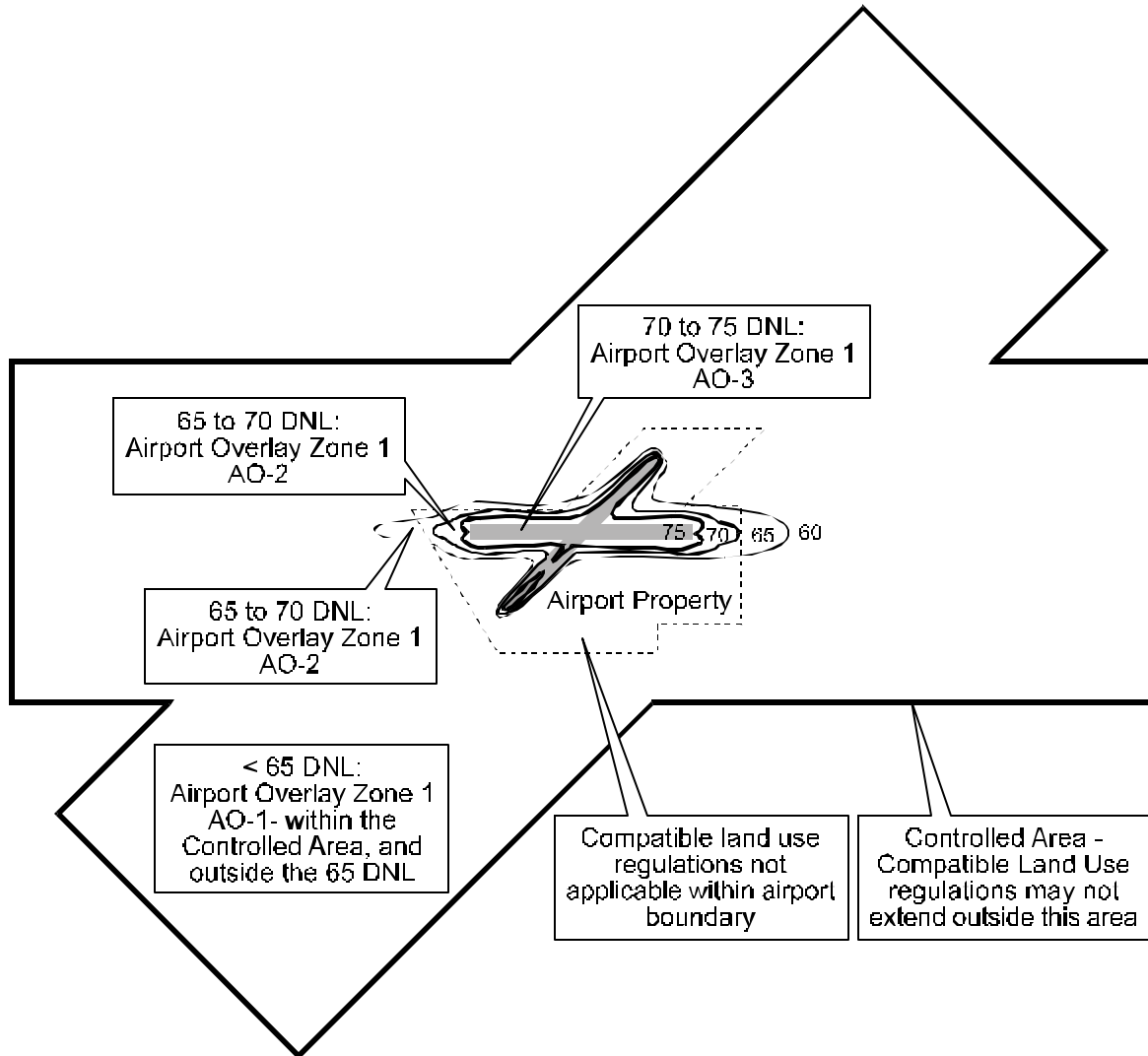
Necessity of Adopting an Airport Hazard Zoning Regulations

Aircraft, especially the larger and more sophisticated aircraft used in commercial aviation, travel cross-country using air routes similar to highways. The FAA has regulatory control of these air routes and does whatever is necessary to protect the safety of the persons using them. This same regulatory authority is not provided for ground based hazards near airports. To ensure the safety of air travelers, pilots, and persons from these ground based hazards, it is vitally necessary that the areas surrounding airports be kept free of obstructions and land uses that would be hazardous to these persons. There are only two ways this control can be effectively exercised: acquisition of property rights or zoning.

Although the FAA has authority to regulate the flight of aircraft, it has only limited authority to insure that areas surrounding airports are free of hazards. Under provisions of FAR Part 77, persons constructing or altering structures that would penetrate the various surfaces or slopes defined therein must notify the FAA. It is not the purpose of Part 77 nor is it within the authority of the FAA to regulate or prohibit these structures, but only require that proper notice be provided so appropriate actions may be taken to lessen the possibility of contact between an aircraft and those structures. By definition, an object that penetrates any of the Part 77 surfaces

or slopes is an obstruction and the FAA, through an airspace study, will determine whether that obstruction is a “hazard” or “no hazard” to air navigation.

Figure 3-4: Noise Contours and Controlled Area with Airport Overlay Zones



The FAA’s finding of hazard or no hazard is advisory in nature. A determination of a hazard by the FAA may place some implied or perceived liability on the structure’s owner, but the FAA cannot prohibit its construction. If a proposed communications tower requiring a Federal Communications Commission (FCC) license is determined to be a hazard to air navigation by the FAA, the FCC will normally deny the application for license. Again, this will not absolutely prevent the tower from being constructed, only that the FCC will not issue a license to broadcast. Frequently, a structure is granted a “no hazard” determination although it has some adverse effect on one or more existing approaches to an airport. In order to issue this no hazard determination, the FAA may change published criteria for the partially obstructed approach or, in extreme cases, cancel the instrument approach altogether.

Without regulatory authority at the Federal or State level of government, the responsibility for insuring that areas surrounding an airport are free from hazards is left to the local government. In

Texas, the AZA permits political subdivisions, municipalities or counties, to regulate the height of structures and use of land in the vicinity of an airport in order to protect the safety of the airport users as well as the public investment in the airport.

The procedures for adopting hazard zoning are identical to those for airport compatible land use zoning. If desired, and the circumstances permit, the two types of zoning can be combined in a single regulation. This section is devoted to explaining how and what is required to prepare a hazard zoning regulation. The information in this section is intended to provide a basic understanding of hazard zoning. TxDOT recommends that assistance be obtained from a qualified aviation consultant or the TxDOT staff before attempting to prepare a hazard zoning regulation.

Basic Elements of Hazard Zoning

The AZA does not dictate the areas that can be regulated by hazard zoning, but it is generally accepted that the imaginary surfaces defined in FAR Part 77.25 for civil airports, 77.28 for military airports, and 77.29 for heliports are the minimum areas that should be protected. To assure the most efficient use of the airport, as well as the safety of airport users, these surfaces should remain free of natural and man-made obstructions and incompatible uses of land. These surfaces are defined by a series of contiguous sloping and horizontal surfaces that establish a maximum height of any object. Land uses are further discussed in a later section of this chapter.

The size, slope, and elevation of the imaginary surfaces vary based on the classification of a runway and the type of existing or planned approaches for that runway. A single airport may have more than one type of runway and each end of a runway may have a separate classification. Figures 2-2 and 3-5 illustrate the imaginary surfaces for civil airports. For the purposes of these guidelines, only the imaginary surfaces pertinent to civil airports, which are found in FAR Part 77 Section 77.25, will be further discussed. The imaginary surfaces for military airports and heliports can be found in FAR Part 77 Sections 77.28 and 77.29.

Preparation of Hazard Zoning Regulations Text

Preface - The regulations must be prefaced with acknowledgement of the enabling legislation (the AZA) and a “declaration of purpose.” The AZA does not specifically require that a hazard zoning regulation state that the airport “fulfills an essential community purpose” as required for airport compatible land use zoning. However, it does require that the airport be “used in the interest of the public” and the zoning should include such an affirmation.

Airport Hazard Area - The regulation should define the airport hazard area, which by definition is an area of land or water on which an airport hazard could exist. An airport hazard is defined as a structure or object of natural growth that obstructs the airspace required for the taking off, landing, and flight of aircraft or that interferes with visual, radar, radio, or other systems for tracking, acquiring data relating to, monitoring, or controlling aircraft.

The hazard area is not defined other than as listed above, but it is generally accepted that the applicable imaginary surfaces included in FAR Part 77. These surfaces are further explained in detail below, and are depicted in Figures 2-2 and 3-5.

Permitted Heights of Objects or Uses of Land - The elevations of the applicable surfaces of FAR Part 77 are based on the particular airport in question. Zoning regulations would establish those minimum elevations as the elevations of the zoning surfaces. Any objects that were not

existing or under construction at the time the regulations were adopted and would penetrate any of those surfaces would be regulated by the zoning. Uses of land could also be regulated under hazard zoning regulations, but only as they would affect the safety of the users of the airport. Examples might include land uses that created bright, distracting, or confusing lights; smoke; or wildlife attractants. No other uses of land except those that would affect the safety of the users of the airport should be included. It is important to note that hazard zoning is not intended to negatively affect the “normal” use of surrounding property such as farming, ranching, industrial, recreational, or residential.

The remainder of the zoning regulation text is described in Chapter 4.

Prerequisites for Preparing the Hazard Zoning Map

The various surfaces on the zoning map are defined by the applicable sections of FAR Part 77. There are really no other prerequisites for preparing this map in contrast to those required for an airport compatible land use zoning map.

Preparation of the Hazard Zoning Map

The hazard zoning map is usually prepared over a base map comprised of USGS 7.5 minute quad maps. These maps are available from various sources in “raster” format. Raster images are basically computer-scanned images of a paper map. The raster images can then be inserted into a computer aided design (CAD) program and used as the base map. The various FAR Part 77 surfaces representative of the airport are then drawn over the base map with the CAD program.

Runway Classifications

Under FAR Part 77, runways are classified as either utility or other than utility, sometimes referred to as larger than utility. A utility runway is one constructed for and intended to be used by propeller driven aircraft with a maximum gross weight of 12,500 pounds or less. An other than utility runway would be a runway constructed for and intended to be used by any type of aircraft with a maximum gross weight of more than 12,500 pounds.

Types of Approaches

Runways are also categorized based on the type of approach available for the runway. The three approach types are:

Visual Approach - Has no provisions for use of navigational aids. A pilot circles the airport and has visual contact with the runway before landing. This category includes "circling" instrument approaches.

Non-Precision Instrument Approach - Has provisions for use of navigational aids for horizontal guidance allowing a "straight-in" instrument approach. This permits landings to be made in weather conditions of lower cloud ceilings and reduced visibility.

Precision Instrument Approach - Has provisions for use of navigational aids for vertical and horizontal guidance. This added capability permits landings to be made in weather conditions of very limited visibility and low ceilings.

FAR Part 77 Imaginary Surfaces

Once the runway classification and type of approach are determined, the dimensions of the imaginary surfaces can be identified. The various imaginary surfaces are defined below and shown in Figures 2-2 and 3-5.

Primary Surface - A primary surface is longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of the runway. When the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at the runway end. The width of the primary surface ranges from 250 feet for utility runways with visual approaches to 1000 feet for precision instrument runways. The width of the primary surface will be the width prescribed for the most precise existing or planned approach for either end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The primary surface should be free of any object or activity that does not have to be located there. Runway light fixtures are an example of objects that have to be located in the primary surface. Primary surfaces are normally completely within the boundaries of an airport and therefore under the direct control of the airport owner. Being under the direct control of the airport owner, these surfaces are usually not specifically listed in hazard zoning regulations.

Approach Surface - Approach surfaces are longitudinally centered on a runway centerline and extend outward and upward from either end of the primary surface. An approach surface is applied to each runway end based upon the most precise type of existing or planned approach for that runway end. The inner edge of the approach surface is the same width as the primary surface and expands uniformly to widths ranging from 1,250 feet to 16,000 feet depending on the runway classification and type of approach. Each approach surface extends for a horizontal distance varying from 5,000 feet to 50,000 feet with approach slopes ranging from 20:1 (20 feet horizontally for each 1 foot vertically) to 50:1, also depending on the runway classification and type of approach.

Transitional Surface - Transitional surfaces extend outward and upward at a slope of 7:1 from the edges of the primary surface and approach surfaces to the horizontal surface. For a precision approach surface that projects through and beyond the limits of the conical surface, a transitional surface also extends 5000 feet horizontally from the edges of those portions of the approach surface.

Horizontal Surface - The horizontal surface is a horizontal plane 150 feet above the established airport elevation that extends from the transitional surface to the conical surface. The perimeter is constructed by swinging arcs from the center of each end of the primary surface of each runway and then connecting the arcs with tangent lines. The radius of each arc is 5,000 feet for utility or visual runways and 10,000 feet for all others. The radii of the arcs at each runway end are the same and are determined by the higher value for either end of the runway.

Conical Surface - The conical surface extends outward and upward from the periphery of the horizontal surface at a slope of 20:1 for a horizontal distance of 4000 feet.

Figure 3-5: Imaginary surfaces

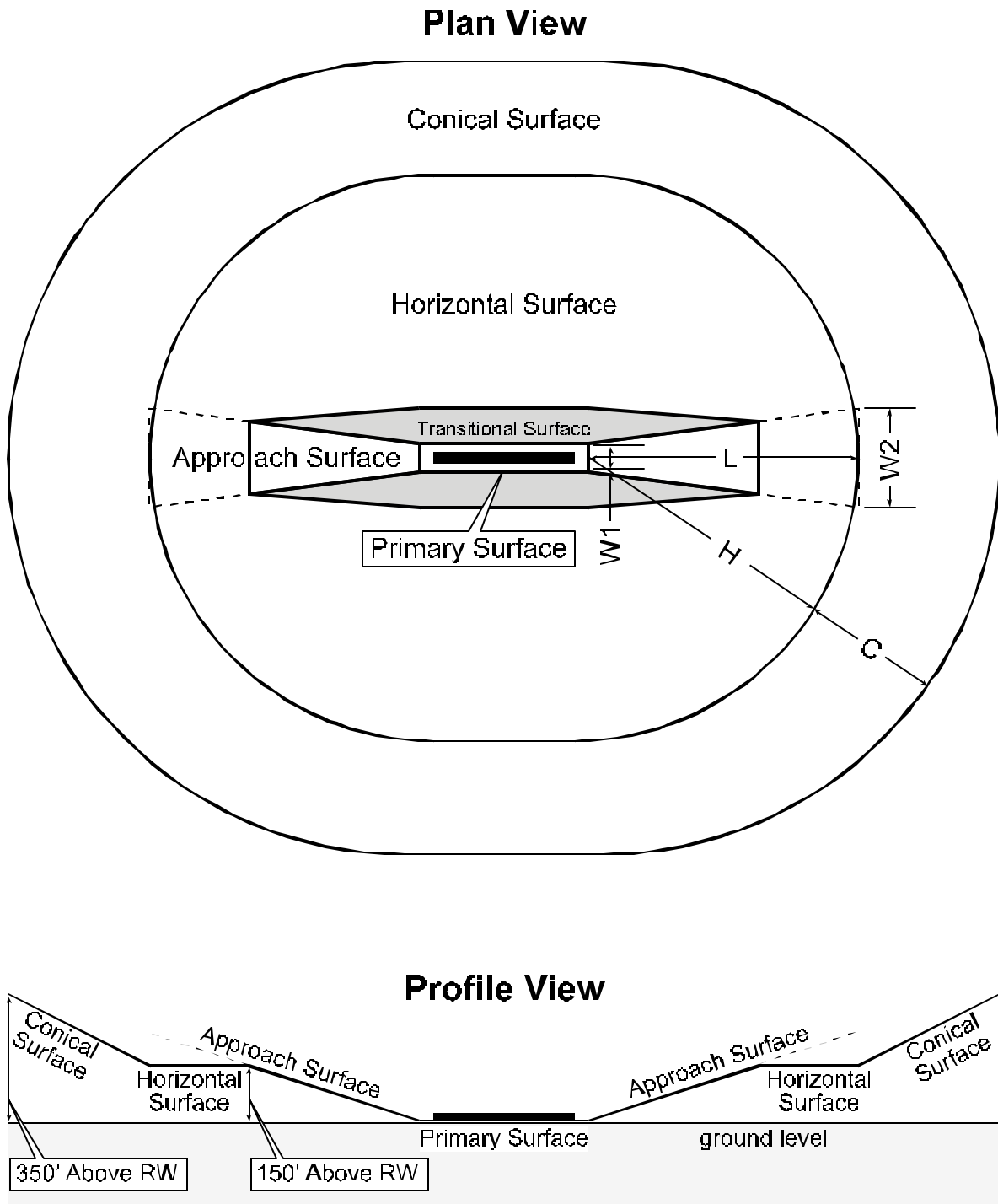


Figure 3-6: Imaginary Surface Technical Matrix

Imaginary Surface Possible Combinations

	End 1	End 2	Inner Width (W1)	Outer Width (W2)	Length (L)	Slope	Primary Surface (P)	Horizontal Surface (H)	Conical Surface (C)
U	V	V	250 250	1,250 1,250	5,000 5,000	20:1 20:1	250	5,000	4,000
U	V	NPI	500 500	1,250 2,000	5,000 5,000	20:1 20:1	500	5,000	4,000
U	NPI	NPI	500 500	2,000 2,000	5,000 5,000	20:1 20:1	500	5,000	4,000
OTU	V	V	500 500	1,500 1,500	5,000 5,000	20:1 20:1	500	10,000	4,000
OTU	V	NPI 1	500 500	1,500 3,500	5,000 10,000	20:1 34:1	500	10,000	4,000
OTU	V	NPI ¾	1,000 1,000	1,500 4,000	5,000 10,000	20:1 34:1	1000	10,000	4,000
OTU	V	P	1,000 1,000	1,500 16,000	5,000 50,000	20:1 40/50:1*	1000	10,000	4,000
OTU	NPI 1	NPI 1	500 500	3,500 3,500	10,000 10,000	34:1 34:1	500	10,000	4,000
OTU	NPI 1	NPI ¾	1,000 1,000	3,500 4,000	10,000 10,000	34:1 34:1	1000	10,000	4,000
OTU	NPI 1	P	1,000 1,000	3,500 16,000	10,000 50,000	34:1 40/50:1*	1000	10,000	4,000
OTU	NPI ¾	NPI ¾	1,000 1,000	4,000 4,000	10,000 10,000	34:1 34:1	1000	10,000	4,000
OTU	NPI ¾	P	1,000 1,000	4,000 16,000	10,000 50,000	34:1 40/50:1*	1000	10,000	4,000
OTU	P	P	1,000 1,000	16,000 16,000	50,000 50,000	40/50:1* 40/50:1*	1000	10,000	4,000

U = Utility runway, planes less than 12,500 pound gross weight.

OTU = Other-than-utility, planes greater than 12,500 pounds gross weight.

V = visual or Circling approaches

NPI 1 = Non-Precision Instrument procedure approaches with 1 mile minimum visibility

NPI ¾ = Non-Precision Instrument procedure approaches with ¾ mile minimum visibility

P = Precision Instrument procedure approaches (with horizontal and vertical guidance)

*40/50:1 slope = 50:1 – 1,000 x 4,000 x 10,000 feet, then 40:1 – 4,000 x 16,000 x 40,000 feet

Land Uses

In addition to regulating the heights of objects, the AZA permits regulation of land uses that would interfere with a pilot's ability to safely use the airport. Examples include land uses that generate bright lights or reflections, attract wildlife, create smoke, generate electrical interference, or otherwise affect the safety of an aircraft. Light directed upward can distract a pilot and hamper his/her ability to identify the airport at night. Street lights or lighting associated with uses such as restaurants and car dealerships may be mistaken for runway lights. The sun's reflection off some types of roofing and siding also can produce a distracting glare. Landfills attract birds and other wildlife. Smoke generated by industrial activities can limit visibility and obscure the visual sighting of a runway. Transmissions from nearby radio and television transmitters can interfere with airport communications and navigation equipment in the aircraft.

Provisions for regulating these uses should be included in the height hazard zoning regulation.

Relationship Between Airport Compatible Land Use or Hazard Zoning And Comprehensive Zoning

It is recommended that overlay zones be used to implement airport compatible land use and/or hazard zoning because this zoning technique can be very specific in listing the type of construction, heights of objects, or uses of land in each zone. Overlay zoning can also be very specific as to the conditions that must be met before a certain use is permitted in each zone, e.g. NLR or obstruction evaluation study. Furthermore, under the provisions of the AZA, each affected political subdivision would not necessarily have to amend its comprehensive zoning regulations to include airport compatibility measures. Under certain situations, the AZA also makes it possible for one political subdivision to effectively regulate land uses and heights of objects in other political subdivisions that are not able or not willing to adopt comprehensive zoning regulations favorable to the airport.

Ordinance Conflicts

Where there is no underlying comprehensive zoning, or where the uses of land or heights of objects prohibited by the AZA zoning regulation are also prohibited by the underlying comprehensive regulation, the regulations are consistent. However, where the underlying comprehensive zoning permits uses of land or heights of objects that are prohibited by AZA zoning regulations, the regulations are in conflict and airport compatible land use and hazard zoning regulations adopted under the provisions of the AZA would prevail. This prevailing authority is specifically included in the wording of the AZA.

Limitations of the Airport Zoning Act

The AZA does not authorize the “taking” of property. If adjacent property must be regulated to a point where the property owner could not enjoy the normal use of that property, the property or property rights should be acquired through other means.

The AZA does not to give the authority to mandate changes in pre-existing structures or uses of land that would normally be prohibited by the airport zoning. Those nonconforming uses may continue as they were at the time the zoning was adopted.

Activities Not Authorized by the Airport Zoning Act

Prohibitions vs. Restrictions

TxDOT recommends that where uses of land or heights of objects would be incompatible with aircraft noise or safety, they should be **prohibited** by a zoning regulation. There will be situations, nonetheless, where the absolute prohibition of certain uses of land or heights of objects will not be possible. This may be the case where extensive residential or tall structure development already exists within one or more of the airport overlay zones under consideration. It may not be possible under zoning to disallow development on a particular property where similar pre-existing uses or objects are located nearby. If these adjacent properties are similar in use and value to the properties being considered for zoning, it could be that the zoning would be considered as preventing the normal use of the property or the “taking” of property. As stated above, zoning should not prevent the normal use of property.

When it is not practical or possible to prohibit certain uses or structures, **restrictions** should be implemented to reduce the level of noise exposure or require tall structures to be marked and/or lighted. Those restrictions might require noise level reductions be added or the object in question be marked and/or lighted.

Existing Uses or Structures

As previously stated, the AZA does not provide for retroactive compliance with newly adopted standards, so existing nonstandard uses of land or tall structures would not be required to adhere to the newly adopted zoning. In those cases, other local actions could allow for or require certain noise level reduction actions or provide for the installation of marking and/or lighting.

Assistance with the Preparation of Airport Zoning Regulations

While most communities are familiar with the comprehensive zoning process, there are, as explained in this chapter, a number of features unique to airport compatible land use and hazard zoning under the AZA. Communities are encouraged to seek the assistance of a qualified aviation consultant or the Texas Department of Transportation Aviation Division before initiating these zoning processes.

The procedures for adoption and administration of zoning regulations are described in detail in Chapter 4. It is important that they be followed precisely and in conformity with municipal law. The guidance of legal counsel should be sought. Again, the TxDOT staff is available to provide assistance during any stage of the airport compatible land use or hazard zoning process.

CHAPTER 4: ADOPTION OF AIRPORT ZONING REGULATIONS

The Texas Airport Zoning Act (AZA), Chapter 241 of the Texas Local Government Code, enables a city, a county, or combinations of cities and/or counties to adopt, administer, and enforce airport zoning regulations.

As stated in a previously, airport compatible land use zoning may restrict the use of land surrounding an airport to uses that will not be adversely affected by the airport. Hazard zoning may restrict the uses of land or heights of objects to uses and heights so the airport is not adversely affected by the use of adjacent land. In other words, airport compatible land use zoning protects adjacent property and hazard zoning protects the airport.

Chapters 2 and 3 explain the necessity of compatible land use planning and airport compatible land use and hazard zoning. This chapter discusses the procedural steps necessary for airport zoning regulations to be properly adopted and what should be included in those regulations.

Under certain circumstances, a city may choose to accomplish airport zoning through the comprehensive zoning process. This would incorporate airport zoning into the city's overall zoning ordinances to ensure all zoning throughout the community is connected and consistent and that the airport zoning does not conflict with other zoning. However, this would not be absolutely required because the AZA provides that in cases of conflict between airport compatible land use zoning and other zoning, airport compatible land use zoning will control. And in cases of conflict between hazard zoning and other zoning, the more restrictive limitations shall control. A county normally has no other zoning authority except airport zoning, so the option of including all zoning in their comprehensive zoning would not be afforded to county governments.

Once an airport owner establishes that an airport needs to be zoned, whether it be airport compatible land use or hazard zoning, the owner should contact legal counsel, a qualified aviation consultant, or the TxDOT Aviation Division for assistance or advice in the preparation of the zoning procedural forms, the zoning regulations, and a zoning map. Assistance from the TxDOT Aviation Division is normally limited to airports currently included in the Capital Improvement Program (CIP). However, anytime that office will attempt to answer in a timely manner any questions pertaining to zoning.

Adopting Zoning Regulations

The required procedural steps to be taken under the AZA are basically the same whether the zoning pertains to airport compatible land use or hazard zoning. The following is a generic procedure that is applicable to either. However, the requirements and text of the actual zoning regulations are different and will be individually addressed.

Selection of the Appropriate Zoning Strategy

The adoption of zoning regulations must be accomplished by the legislative body of a city (city council) or county (county commissioners court) or by a joint airport zoning board (JAZB)

comprised of representatives of the cities and counties affected by the zoning. The appropriate zoning strategy will be one of the following:

1. When the zoning areas lie exclusively within a single city or county's political subdivision boundaries, the legislature body of that city or county regardless of population may act unilaterally as the airport zoning authority.
2. When the zoning areas extend beyond a single city or county's political subdivision boundaries, the adoption, administration, and enforcement of the zoning regulations may be accomplished as a coordinated effort of all jurisdictions involved. To assure this coordination, the AZA provides for the creation of a joint airport zoning board (JAZB).
3. When an airport is located within the boundaries of a city or county which has a population of more than 45,000 persons, that city or county may choose to act unilaterally in the adoption of the zoning although the areas affected by the zoning extend beyond its normal jurisdictional limits.

Implementation of the Selected Zoning Strategy

The AZA requires that when a city or county acts unilaterally in adopting airport zoning, they must appoint an Airport Zoning Commission (AZC) to recommend the boundaries of the various zones to be established and the regulations for those zones. In this situation, the AZC performs some of the duties that would otherwise be accomplished by the JAZB. Whether the zoning is accomplished unilaterally with the appointment of an AZC or by a JAZB without an AZC, the actions required to be done before the zoning regulations may be actually adopted are basically the same. The only differences are whether certain actions are done by the AZC or the JAZB and whether the actual zoning regulations are adopted by a city council or the county commissioners court or by the JAZB. Instead of listing each complete procedure separately, the details below will address the most common situations and actions taken when a JAZB is used. If information is needed about unilateral zoning by a single political subdivision, it is suggested you contact a qualified aviation consultant or the TxDOT Aviation Division.

Procedural Steps

Figure 4-1 contains a checklist of the procedural steps required to adopt airport zoning regulations. It is necessary that these procedures be followed precisely to comply with provisions of the AZA; otherwise, if challenged in court, noncompliance with the proper procedures could be sufficient reason for the courts to overturn the zoning regulations.

Figure 4-1: Procedural Checklist for Airport Zoning Regulations Adoption

Checklist of Procedural and Legal Actions required for the Adoption of an Airport Zoning Ordinance

Note: The following procedures assume that a Joint Airport Zoning Board (JAZB) will be created. If more than 2 political subdivisions are involved, steps 1 and 2 are repeated as necessary and the number of persons comprising the JAZB will be increased.

IMPORTANT: Do not deviate from the numerical order of procedural steps and assure no step is taken before the preceding step is finished.

1. City Ordinance creating a JAZB and appointing city's representatives to that board.
Date passed: _____

2. County Order creating a JAZB and appointing county's representative to that board.
Date passed: _____
3. Oaths of office administered to members of the JAZB.
Date administered: _____
4. Election of 5th member of the JAZB who shall serve as chairperson of that board.
Date elected: _____
5. Oath of office administered to chairperson of the JAZB
Date administered: _____
6. JAZB sets date of public hearing.
Date procedural form is signed: _____
7. Notice of public hearing published in local newspaper(s).
Date published: _____
Note: The above step should be repeated for each political subdivision affected by the zoning.
8. Proof of publication collected for each newspaper.
Date notarized: _____
Note: The above step should be repeated for each political subdivision affected by the zoning.
9. Notice of public hearing posted in city hall.
Date posted: _____
Note: The above step should be repeated for each city participating the zoning.
10. Notice of public hearing posted in county courthouse.
Date posted: _____
Note: The above step should be repeated for each county participating the zoning.
11. Conduct public hearing.
Date of public hearing: _____
12. Adopt zoning ordinance.
Date adopted: _____
13. Attorney's certification.
Date certified: _____
14. Adopted ordinance filed with County Clerk.
Date filed: _____
Note: The above step should be repeated for each county participating in the zoning.
15. Copy of procedural forms and adopted ordinance provided to each political subdivision participating in the zoning process.
Date copies provided: _____
Note: The above step should be repeated for each political subdivision participating in the zoning.

The following numbered paragraphs correspond to the procedural steps shown in Figure 4-1 plus offer a brief explanation:

- 1-2. Each political subdivision underlying the various areas to be zoned will appoint 2 members to a JAZB. These members should be carefully considered before appointment because they will be given the authority to represent their appointing authority in all

matters having to do with the zoning and will comprise the board that will actually adopt the zoning regulations. The members may be any persons whosoever; however, it is recommended that they not be members of the agencies that appointed the JAZB and they cannot be a member of the board of adjustment for airport zoning.

3. The appointed JAZB members will be issued an oath of office. The wording of the oath is prescribed by State law and should be repeated verbatim.
4. The JAZB will meet and elect an additional member who will act as the chairperson of the JAZB. Like the appointed members of the JAZB, the chairperson may be any person whosoever with the above noted exceptions.
5. The elected chairperson will be issued an oath of office. Again, the oath is prescribed by State law and should be repeated verbatim. The chairperson's oath is slightly different than the members because one oath is prescribed for appointed positions (members) and a different one for elected positions (chairperson).
6. The JAZB will set a date for a public hearing. The public hearing should be at a place and time normally accessible by members of the general public.
7. Notices of the public hearing will be published in the newspapers where the affected cities and counties normally publish public notices. The publications must be at least 15 days before the public hearing. The first day is considered to be the day after the papers are published and circulated. It is not necessary to include the notice in every edition of the papers for 15 days, only one time more than 15 days before the public hearing.
8. A proof of publication form for each newspaper publication is collected. These should be signed by an authority of the newspaper and notarized. An actual clipping of the published notice from each paper should be attached to each proof of publication.
- 9-10. Notices of the public hearing will be posted in the city halls and county courthouses of the affected cities and counties at least 3 days before the public hearing. Posting of notices is not actually listed in the AZA but conforms to municipal law that requires 3-day public notice any time that a public body meets.
11. The public hearing will be conducted by the JAZB. Any members of the public wishing to speak should be allowed to speak and may make pertinent statements either for or against the proposed zoning.
12. After the public hearing, the JAZB considers the statements made at the public hearing plus any other requirements to adopt the zoning such, as the terms and conditions of various airport improvement grant contracts. It then decides whether to adopt or not adopt the regulations. If not adopted, the procedures end. If adopted, the JAZB will proceed to step number 13.
13. A copy of each procedural form and the adopted zoning regulations are provided to an attorney for review. This is normally the city or county attorney. The attorney reviews the actions taken up to this point and, if deemed to have been done correctly, signs a form certifying that each procedural step was accomplished in accordance with applicable laws, ordinances, rules, and/or regulations and the adopted zoning regulations are binding and enforceable. If the zoning is associated with the requirements of an airport improvement grant contract from the State, the attorney also certifies the zoning regulations fulfill the requirements of the appropriate sections of the Texas Administrative Code.

14. Copies of the adopted regulations are provided to the county clerks of each affected county in order that the zoning regulations may be entered into the county records. This is done so various properties underlying the zoned areas will be properly “flagged” as being under a zoning regulation when a deed search is done.
15. Copies of each procedural form and the adopted zoning regulations are provided to each political subdivision that participated in the zoning for their records.

It is not necessary for each individual political subdivision that participated in the appointment of the JAZB to adopt or confirm the adopted zoning regulations, but if they desire to do so, it will not have any adverse effects on the zoning. The zoning regulations should carry the same legal weight whether adopted or confirmed by each individual political subdivision or not.

Airport Compatible Land Use Zoning Regulations

Airport compatible land use zoning regulations should contain the following:

1. A statement that the airport being zoned fulfills an essential community purpose.
2. An administrator of the zoning regulations. It is recommended that an office of the city or county owning the airport, such as the city manager or the commissioner's court, be appointed as the administrator of the zoning. It is recommended that the JAZB **not** be appointed as the administrator. This is because the members of the JAZB are appointed and elected by name. If one or more of those members moves from the area, is not able to serve, becomes deceased, or resigns, the JAZB may not be able to perform its assigned duties. On the other hand, there will always be an office of the city manager or the commissioner's court. The individuals serving may change, but the office or political body will continue.
3. The applicable areas included in the zoning. These areas are established in the AZA and must be identified and the restrictions to those areas established. The zoning regulations should not identify the types of uses that are permissible, but list the types of uses that are **not** permissible.
4. A statement defining and exempting nonconforming uses. Uses that are contrary to the requirements of the zoning but are existing before the adoption of the zoning regulations are considered to be “nonconforming.” The AZA does not give the authority to make the zoning restrictions retroactive.
5. A board of adjustment (BOA). A new BOA may be appointed or an existing zoning BOA of one of the political subdivisions participating in the zoning may be designated as the BOA for this zoning. It is recommended that an existing and ongoing BOA of the political subdivision that owns the airport be so appointed. This is because the BOA members have term limits of 2 years and if the JAZB appoints a new board of adjustment for the airport zoning, only that JAZB can appoint or reappoint members as the existing members’ terms expire. If the members of the JAZB move, are not able to serve, become deceased, or resign, only the political subdivisions that appointed the JAZB may replace those members. In order to simplify these potential problems, an existing and perpetuating BOA should be selected.
6. A procedure for issuing variances. A variance may be issued by the BOA and is required for any proposed land use that would otherwise be prohibited by the zoning. A variance may be issued if it is found that the requested use, which technically would be in

violation of the zoning, is determined not to be contrary to the public interest and in accordance with the spirit of the zoning regulations. In issuing a variance, the BOA may impose any reasonable condition that it considers necessary to accomplish the purposes of the AZA

7. An appeals process for persons aggrieved by the BOA. This will require involvement of the courts.
8. Penalties for violations. The AZA does not provide for the authority to levy fines, therefore, the zoning regulations can only set a fine amount. An actual sentence to pay a fine can only be at the discretion of the courts.

Hazard Zoning Regulations

Hazard zoning regulations should contain the following:

1. A statement that the airport being zoned is used in the interest of the public.
2. An administrator of the zoning regulations. It is recommended that an office of the city or county owning the airport, such as the city manager or the commissioner's court, be appointed as the administrator of the zoning. It is recommended that the JAZB **not** be appointed as the administrator. This is because the members of the JAZB are appointed and elected by name. If one or more of those members moves from the area, is not able to serve, becomes deceased, or resigns, the JAZB may not be able to perform its assigned duties. On the other hand, there will always be an office of the city manager or the commissioner's court. The individuals serving may change, but the office or political body will continue.
3. The applicable zones and the restrictions to each such zone. These are normally based on the applicable provisions of Federal Aviation Regulations (FAR) Part 77.
4. An excepted height limitation. This is a maximum height that objects could be and not be regulated by the zoning even if that height would obstruct any the zoning surfaces. By law, zoning cannot prevent the normal use of property or unreasonably take value from that property. The excepted height incorporated into most zoning regulations is 50 feet because the normal use of property surrounding most airports would be less than that amount. This 50 foot exception would allow the normal farming, ranching, housing, or recreational use of the surrounding properties to continue without interference from the airport zoning or decreasing the value of that property. However, abnormal uses such as tall antennas would be regulated. Certainly, airports in urban areas would require different excepted height limitations because restricting the heights of structures on one property when an adjacent property has an existing multi-story building could dramatically alter the normal use and value of that property.
5. Land use restrictions. As previously stated, hazard zoning may restrict the use of land underlying the zoned surfaces to uses that would not jeopardize the safety of the airport. Zoning could prevent or restrict uses such as landfills, which attract birds and other wildlife, activities that generate confusing lights, smoke, or electrical interference, or any other use that could jeopardize the safety of persons using the airport.
6. A statement defining and exempting nonconforming land uses, structures, or trees. Uses of land, structures, or trees that are contrary to the requirements of the zoning but are existing before the adoption of the zoning regulations are considered to be

“nonconforming.” The AZA does not give the authority to make the zoning restrictions retroactive.

7. A board of adjustment (BOA). A new BOA may be appointed or an existing zoning BOA of one of the political subdivisions participating in the zoning may be designated as the BOA for this zoning. It is recommended that an existing and ongoing BOA of the political subdivision that owns the airport be so appointed. This is because the BOA members have term limits of 2 years and if the JAZB appoints a new board of adjustment for the airport zoning, only that JAZB can appoint or reappoint members as the existing members’ terms expire. If the members of the JAZB move, are not able to serve, become deceased, or resign, only the political subdivisions that appointed the JAZB may replace those members. In order to simplify these potential problems, an existing and perpetuating BOA should be selected.
8. A procedure for issuing permits and variances. A permit may be issued by the administrator of the zoning regulations for any structure or tree that is taller than the excepted height limitation but would not obstruct a zoned surface. A permit should require the location and height of the structure in question be listed. The AZA states that a permit for a qualifying structure or tree “shall be issued.” The permit process therefore serves only as a method of gathering information about these objects and getting that information into the public record. Any structure or tree that exceeds the excepted height limitation and is located in the vicinity of an airport needs to be made known to the airport owner and the FAA. Published approach procedures could be affected. A variance is required before any structure, tree, or use of land that is normally prohibited by the zoning can be established. A variance may be issued by the BOA if it is found that the structure, tree, or use of land in question, which technically would be in violation of the zoning restrictions, is determined not to be contrary to the public interest and would be in accordance with the spirit of the zoning regulations. Confirmation from the FAA as to the effect on the airport would be required before a variance could be issued. In issuing a variance, the BOA may impose any reasonable condition that it considers necessary to accomplish the purposes of the AZA.
9. An appeals process for persons aggrieved by the BOA. This will require involvement of the courts.
10. Penalties for violations. The AZA does not provide for the authority to levy fines, therefore, the zoning regulations can only set a fine amount. An actual sentence to pay a fine can only be at the discretion of the courts.

The above lists and explains the procedural actions and the contents of zoning regulations for publicly owned airports. The AZA also provides that zoning may be adopted for privately owned airports. Even though privately owned airports are eligible to be zoned, only cities and counties have the authority to adopt zoning regulations or appoint a JAZB. Therefore, a privately owned airport must have a public sponsor. A community may zone any privately owned airport if that airport meets the “fulfills an essential community purpose” or the “used in the interest of the public” requirement and all other requirements of the AZA.

Figure 4-2: Comparison of areas under imaginary surfaces for each type of approach – plan views

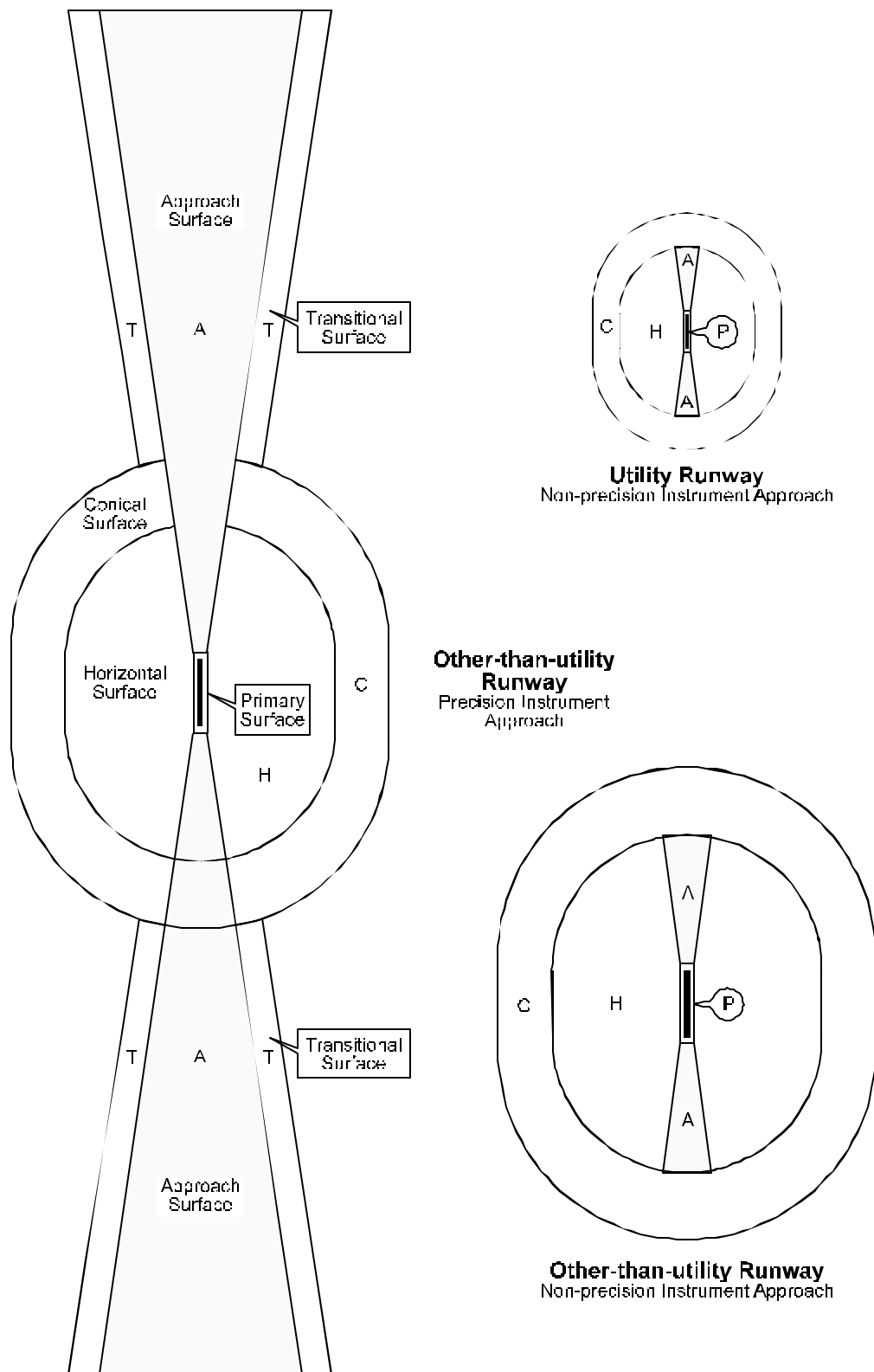


Figure 4-3: Comparison of acreage under imaginary surfaces for each type of approach*

Surface	Type	Utility Visual	Other than Utility NPI	Other than Utility Precision
A	Approach surfaces	200 acres	900 acres	19,500 acres
P	Primary surface	15	60	160
T	Transitional Surface**	300	500	17,000
H	Horizontal Surface	2,400	8,000	8,300
C	Conical Surface	4,700	7,800	8,100
	Total Area	7,635 acres	17,320 acres	53,210 acres

* Total excludes overlapping surfaces, assumes typical runway lengths, single runway.

**Not all transitional surfaces are depicted in Figure 4-2.

Source: Airport Compatibility Guidelines, Oregon Department of Transportation, 1981.

APPENDIX A

CHAPTER 241. MUNICIPAL AND COUNTY ZONING AUTHORITY AROUND AIRPORTS

SUBCHAPTER A. GENERAL PROVISIONS

§ 241.001. Short Title

This chapter may be cited as the Airport Zoning Act.
Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.002. Legislative Findings

The legislature finds that:

- (1) An airport hazard endangers the lives and property of users of the airport and of occupants of land in the vicinity of the airport;
- (2) An airport hazard that is an obstruction reduces the size of the area available for the landing, taking off, and maneuvering of aircraft, tending to destroy or impair the utility of the airport and the public investment in the airport;
- (3) The creation of an airport hazard is a public nuisance and an injury to the community served by the airport affected by the hazard;
- (4) It is necessary in the interest of the public health, public safety, and general welfare to prevent the creation of an airport hazard;
- (5) The creation of an airport hazard should be prevented, to the extent legally possible, by the exercise of the police power without compensation; and
- (6) The prevention of the creation of an airport hazard and the elimination, the removal, the alteration, the mitigation, or the marking and lighting of an airport hazard are public purposes for which a political subdivision may raise and spend public funds and acquire land or interests in land.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.003. Definitions

In this chapter:

- (1) “Airport” means an area of land or water, publicly or privately owned, designed and set aside for the landing and taking off of aircraft and used or to be used in the interest of the public for that purpose. The term includes an area with installations relating to flights, including installations, facilities, and bases of operations for tracking flights or acquiring data concerning flights.
- (2) “Airport hazard” means a structure or object of natural growth that obstructs the air space required for the taking off, landing, and flight of aircraft or that interferes with visual,

radar, radio, or other systems for tracking, acquiring data relating to, monitoring, or controlling aircraft.

- (3) “Airport hazard area” means an area of land or water on which an airport hazard could exist.
- (4) “Airport zoning regulation” means an airport hazard area zoning regulation and an airport compatible land use zoning regulation adopted under this chapter.
- (5) “Centerline” means a line extending through the midpoint of each end of a runway.
- (6) “Compatible land use” means a use of land adjacent to an airport that does not endanger the health, safety, or welfare of the owners, occupants, or users of the land because of levels of noise or vibrations or the risk of personal injury or property damage created by the operations of the airport, including the taking off and landing of aircraft.
- (7) “Controlled compatible land use area” means an area of land located outside airport boundaries and within a rectangle bounded by lines located no farther than 1-1/2 statute miles from the centerline of an instrument or primary runway and lines located no farther than five statute miles from each end of the paved surface of an instrument or primary runway.
- (8) “Instrument runway” means an existing or planned runway of at least 3,200 feet for which an instrument landing procedure published by a defense agency of the federal government or the Federal Aviation Administration exists or is planned.
- (9) “Obstruction” means a structure, growth, or other object, including a mobile object, that exceeds a limiting height established by federal regulations or by an airport hazard area zoning regulation.
- (10) “Political subdivision” means a municipality or county.
- (11) “Primary runway” means an existing or planned paved runway, as shown in the official airport layout plan (ALP) of the airport, of at least 3,200 feet on which a majority of the approaches to and departures from the airport occur.
- (12) “Runway” means a defined area of an airport prepared for the landing and taking off of aircraft along its length.
- (13) “Structure” means an object constructed or installed by one or more persons and includes a building, tower, smokestack, and overhead transmission line.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.004. Airport Used in Interest of Public

For the purposes of this chapter, an airport is used in the interest of the public if:

- (1) The owner of the airport, by contract, license, or otherwise, permits the airport to be used by the public to an extent that the airport fulfills an essential community purpose; or
- (2) The airport is used by the state or an agency of the state or by the United States for national defense purposes or for any federal program relating to flight.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.005. Adoption of Regulation Includes Amendment or Other Change

A reference in this chapter to the adoption of an airport zoning regulation includes the amendment, repeal, or other change of a regulation. A reference to the adoption of an airport zoning regulation also includes the amendment of an airport zoning regulation existing on the date the law codified by this chapter took effect, which was September 5, 1947.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

SUBCHAPTER B. ADOPTION OF AIRPORT ZONING REGULATIONS

§ 241.011. Airport Hazard Area Zoning Regulations

- (a) To prevent the creation of an airport hazard, a political subdivision in which an airport hazard area is located may adopt, administer, and enforce, under its police power, airport hazard area zoning regulations for the airport hazard area.
- (b) The airport hazard area zoning regulations may divide an airport hazard area into zones and for each zone:
 - (1) Specify the land uses permitted;
 - (2) Regulate the type of structures; and
 - (3) Restrict the height of structures and objects of natural growth to prevent the creation of an obstruction to flight operations or air navigation.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.012. Airport Compatible Land Use Zoning Regulations

- (a) A political subdivision may adopt, administer, and enforce, under its police power, airport compatible land use zoning regulations for the part of a controlled compatible land use area located within the political subdivision if the airport is:
 - (1) used in the interest of the public to the benefit of the political subdivision; or
 - (2) located within the political subdivision and owned or operated by a federal defense agency or by the state.
- (b) The political subdivision by ordinance or resolution may implement, in connection with airport compatible land use zoning regulations, any federal law or rules controlling the use of land located adjacent to or in the immediate vicinity of the airport.
- (c) The airport compatible land use zoning regulations must include a statement that the airport fulfills an essential community purpose.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.013. Extraterritorial Zoning in Political Subdivisions With Population of More Than 45,000

- (a) A political subdivision with a population of more than 45,000 in which an airport used in the interest of the public to the benefit of the political subdivision is located may adopt, administer, and enforce:
 - (1) Airport hazard area zoning regulations applicable to an airport hazard area relating to the airport and located outside the political subdivision; and
 - (2) Airport compatible land use zoning regulations applicable to a controlled compatible

land use area relating to the airport and located outside the political subdivision.

- (b) The political subdivision has the same power to adopt, administer, and enforce airport hazard area zoning regulations or airport compatible land use zoning regulations under this section as that given a political subdivision by Sections 241.011 and 241.012.
- (c) The airport hazard area zoning regulations or airport compatible land use zoning regulations must include a statement that the airport fulfills an essential community purpose.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987. Amended by Acts 1991, 72nd Leg., ch. 98, §§ 1, 2, eff. Aug. 26, 1991.

§ 241.014. Joint Airport Zoning Board

- (a) A political subdivision to whose benefit an airport is used in the interest of the public or in which an airport owned or operated by a defense agency of the federal government or the state is located may create a joint airport zoning board with another political subdivision in which an airport hazard area or a controlled compatible land use area relating to the airport is located. The political subdivisions must act by resolution or ordinance in creating the joint board.
- (b) The joint airport zoning board has the same power to adopt, administer, and enforce airport hazard area zoning regulations or airport compatible land use zoning regulations under this section as that given a political subdivision by Sections 241.011 and 241.012.
- (c) The joint airport zoning board must consist of two members appointed by each of the political subdivisions creating the board and, in addition, a chairman elected by a majority of the appointed members.
- (d) If an agency of the state owns and operates an airport located within an airport hazard area or controlled compatible land use area governed by a joint airport zoning board, the agency is entitled to have two members on the board.
- (e) The joint airport zoning board for an airport that is owned or operated by a defense agency of the federal government and that is closed by the federal government may provide that zoning regulations adopted by the board continue in effect until the fourth anniversary of the date the airport is closed.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 352, § 1, eff. May 27, 1997.

Amended by Acts 1999, 76th Leg., ch. 1176, § 1, eff. June 18, 1999.

§ 241.015. Incorporation of Airport Zoning Regulation Into Comprehensive Zoning Ordinance

A political subdivision may incorporate an airport zoning regulation in a comprehensive zoning ordinance and administer and enforce it in connection with the administration and enforcement of the comprehensive zoning ordinance if:

- (1) The two zoning regulations apply, in whole or in part, to the same area; and
- (2) The comprehensive zoning ordinance includes, among other matters, a regulation on the height of buildings.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.016. Airport Zoning Commission

- (a) Before an airport zoning regulation may be adopted, a political subdivision acting unilaterally under Section 241.013 must appoint an airport zoning commission. If the political subdivision has a planning commission or comprehensive zoning commission, that commission may be designated as the airport zoning commission.
- (b) The commission shall recommend the boundaries of the zones to be established and the regulations for these zones.
- (c) The commission shall make a preliminary report and hold public hearings on the report before submitting a final report.
- (d) Before the 15th day before the date of a hearing under Subsection (c), notice of the hearing shall be published in an official newspaper or a newspaper of general circulation in each political subdivision in which the airport hazard area or controlled compatible land use area to be zoned is located.
- (e) A joint airport zoning board created under Section 241.014 is not required to appoint a commission under this section.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987. Amended by Acts 1995, 74th Leg., ch. 697, § 1, eff. Sept. 1, 1995.

§ 241.017. Procedural Limitations Applying to Adoption of Zoning Regulations

- (a) The governing body of a political subdivision may not hold a public hearing or take other action concerning an airport zoning regulation until it receives the final report of the airport zoning commission.
- (b) An airport zoning regulation may not be adopted except by action of the governing body of the political subdivision or a joint airport zoning board after the political subdivision or joint airport zoning board holds a public hearing on the matter at which parties in interest and citizens have an opportunity to be heard.
- (c) Before the 15th day before the date of a hearing under Subsection (b), notice of the hearing must be published in an official newspaper or a newspaper of general circulation in each political subdivision in which the area to be zoned is located.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987. Amended by Acts 1995, 74th Leg., ch. 697, § 2, eff. Sept. 1, 1995.

§ 241.018. Reasonableness of Airport Zoning Regulations

- (a) An airport zoning regulation must be reasonable and may impose a requirement or restriction only if the requirement or restriction is reasonably necessary to achieve the purposes of this chapter.
- (b) In determining which airport zoning regulations to adopt, the governing body of a political subdivision or a joint airport zoning board shall consider, among other things:
 - (1) The character of the flying operations expected to be conducted at the airport;
 - (2) The nature of the terrain within the airport hazard area;
 - (3) The character of the neighborhood; and
 - (4) The current and possible uses of the property to be zoned.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.019. Nonconforming Uses and Structures

Except as provided by Section 241.035, airport zoning regulations may not require:

- (1) Changes in nonconforming land use existing on the date of the adoption of the regulations;
- (2) The removal, lowering, or other change of a structure that does not conform to the regulations on the date of their adoption, including all phases or elements of a multiphase structure, regardless of whether actual construction has commenced, that received a determination of no hazard by the Federal Aviation Administration under 14 C.F.R., Part 77, before the regulations were adopted;
- (3) The removal, lowering, or other change of an object of natural growth that does not conform to the regulations on the date of their adoption; or
- (4) Any other interference in the continuation of a use that does not conform to the regulations on the date of their adoption.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.020. Permits

- (a) Airport zoning regulations may require that a permit be obtained before:
 - (1) A new structure is constructed;
 - (2) An existing structure is substantially changed or repaired;
 - (3) A new use is established; or
 - (4) An existing use is substantially changed.
- (b) Airport zoning regulations must provide that a permit be obtained from the administrative agency authorized to administer and enforce the regulations before:
 - (1) A nonconforming structure may be replaced, rebuilt, or substantially changed or repaired; or
 - (2) A nonconforming object of natural growth may be replaced, substantially changed, allowed to grow higher, or replanted.
- (c) A permit may not allow:
 - (1) The establishment of an airport hazard;
 - (2) A nonconforming use to be made;
 - (3) A nonconforming structure or object of natural growth to become higher than it was at the time of the adoption of the airport zoning regulations relating to the structure or object of natural growth or at the time of the application for the permit; or
 - (4) A nonconforming structure, object of natural growth, or use to become a greater hazard to air navigation than it was at the time of the adoption of the airport zoning regulations relating to the structure, object of natural growth, or use or at the time of the application for the permit.
- (d) Except as provided by Subsection (c), an application for a permit shall be granted.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

SUBCHAPTER C. ADMINISTRATIVE AGENCY AND BOARD OF ADJUSTMENT

§ 241.031. Administrative Agency

- (a) Airport zoning regulations must provide for the administration and enforcement of the regulations by an administrative agency. The administrative agency may be:
 - (1) An agency created by the regulations;
 - (2) An existing official, board, or agency of the political subdivision adopting the regulations; or
 - (3) An existing official, board, or other agency of a political subdivision that participated in the creation of a joint airport zoning board adopting the regulations, if satisfactory to that political subdivision.
- (b) The administrative agency may not be the board of adjustment or include any member of the board.
- (c) The administrative agency shall hear and decide all applications for permits under Section 241.020.
- (d) The agency may not exercise any of the powers delegated to the board of adjustment.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.032. Board of Adjustment

- (a) Airport zoning regulations must provide for a board of adjustment.
- (b) If a zoning board of appeals or adjustment exists, it may be designated as the board of adjustment under this chapter.
- (c) If a zoning board of appeals or adjustment does not exist or is not designated as the board of adjustment under this chapter, a board of adjustment must be appointed. The board must consist of five members to be appointed for terms of two years. The appointing authority may remove a board member for cause on a written charge after a public hearing. A vacancy on the board shall be filled for the unexpired term.
- (d) The concurring vote of four members of the board is necessary to:
 - (1) Reverse an order, requirement, decision, or determination of the administrative agency;
 - (2) Decide in favor of an applicant on a matter on which the board is required to pass under an airport zoning regulation; or
 - (3) Make a variation in an airport zoning regulation.
- (e) The board shall adopt rules in accordance with the ordinance or resolution that created it.
- (f) Meetings of the board are held at the call of the chairman and at other times as determined by the board. The chairman or acting chairman may administer oaths and compel the attendance of witnesses. All hearings of the board shall be open to the public.
- (g) The board shall keep minutes of its proceedings that indicate the vote of each member on each question or the fact that a member is absent or fails to vote. The board shall keep

records of its examinations and other official actions. The minutes and records shall be filed immediately in the board's office and are public records.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.033. Authority of Board

The board of adjustment shall:

- (1) hear and decide an appeal, as provided by Section 241.036, from an order, requirement, decision, or determination made by the administrative agency in the enforcement of an airport zoning regulation;
- (2) hear and decide special exceptions to the terms of an airport zoning regulation when the regulation requires the board to do so; and
- (3) hear and decide specific variances under Section 241.034.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.034. Variances

- (a) A person who desires to erect or increase the height of a structure, permit the growth of an object of natural growth, or otherwise use property in violation of an airport zoning regulation, may apply to the board of adjustment for a variance from the regulation.
- (b) The board shall allow a variance from an airport zoning regulation if:
 - (1) A literal application or enforcement of the regulation would result in practical difficulty or unnecessary hardship; and
 - (2) The granting of the relief would:
 - (A) Result in substantial justice being done;
 - (B) Not be contrary to the public interest; and
 - (C) Be in accordance with the spirit of the regulation and this chapter.
- (c) The board may impose any reasonable conditions on the variance that it considers necessary to accomplish the purposes of this chapter.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.035. Hazard Marking and Lighting

If the administrative agency or board of adjustment considers it reasonable in the circumstances and advisable to accomplish the purposes of this chapter, the agency or board may require in a permit or a variance granted under this chapter that the owner of a structure or object of natural growth allow the political subdivision, at its own expense, to install, operate, and maintain on the structure or object of natural growth any markers and lights necessary to indicate to flyers the presence of an airport hazard.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.036. Appeal to Board

- (a) A decision of the administrative agency made in its administration of an airport zoning regulation may be appealed to the board of adjustment by:
 - (1) A person who is aggrieved by the decision;

- (2) A taxpayer who is affected by the decision; or
- (3) The governing body of a political subdivision or a joint airport zoning board that believes the decision is an improper application of the airport zoning regulation.
- (b) The appellant must file with the board and the administrative agency a notice of appeal specifying the grounds for the appeal. The appeal must be filed within a reasonable time as determined by the rules of the board. On receiving the notice, the administrative agency shall immediately transmit to the board all the papers constituting the record of the action that is appealed.
- (c) An appeal stays all proceedings in furtherance of the action that is appealed unless the administrative agency certifies in writing to the board facts supporting the agency's opinion that a stay would cause imminent peril to life or property. In that case, the proceedings may be stayed only by an order of the board, after notice to the administrative agency, if due cause is shown.
- (d) The board shall set a reasonable time for the appeal hearing and shall give public notice of the hearing and due notice to the parties in interest. A party may appear at the appeal hearing in person or by agent or attorney. The board shall decide the appeal within a reasonable time.
- (e) The board may reverse or affirm, in whole or in part, or modify the administrative agency's order, requirement, decision, or determination from which an appeal is taken and make the correct order, requirement, decision, or determination, and for that purpose the board has the same authority as the administrative agency.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

SUBCHAPTER D. JUDICIAL REVIEW AND OTHER REMEDIES

§ 241.041. Judicial Review of Board Decision

- (a) A person who is aggrieved or a taxpayer who is affected by a decision of a board of adjustment, or the governing body of a political subdivision or a joint airport zoning board that believes a decision of a board of adjustment is illegal, may present to a court of record a verified petition stating that the decision of the board of adjustment is illegal in whole or in part and specifying the grounds of the illegality. The petition must be presented within 10 days after the date the decision is filed in the board's office.
- (b) On the presentation of the petition, the court may grant a writ of certiorari directed to the board of adjustment to review the board's decision. Granting of the writ does not stay the proceedings on the decision under appeal, but on application and after notice to the board the court may grant a restraining order if due cause is shown.
- (c) The board's return must be verified and must concisely state any pertinent and material facts that show the grounds of the decision that is appealed. The board is not required to return the original documents on which the board acted but may return certified or sworn copies of the documents or parts of the documents as provided by the writ.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.042. Trial by Court

(a) The court, in an appeal from a decision of a board of adjustment as provided by Section 241.041, shall try and determine the case de novo on the basis of the facts adduced in the trial of the case in the court. The court shall independently rule on the facts and the law as in an ordinary civil suit.

(b) The court has exclusive jurisdiction to reverse or affirm, in whole or in part, or modify the decision that is appealed and, if necessary, may order further proceedings by the board.

(c) Costs may not be assessed against the board unless the court determines that the board acted with gross negligence, in bad faith, or with malice in making its decision.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.043. Effect of Holding of the Court

If the court holds that an airport zoning regulation, although generally reasonable, interferes with the use or enjoyment of a particular structure or parcel of land to such an extent that, or is so onerous in its application to a particular structure or parcel of land that, the application of the regulation constitutes a taking or deprivation of property in violation of the state or federal constitution, the holding does not affect the application of the regulation to any other structure or parcel of land.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.044. Additional Remedies

(a) A political subdivision or joint airport zoning board adopting airport zoning regulations may bring an action in a court of competent jurisdiction to prevent, restrain, correct, or abate a violation of:

(1) This chapter;

(2) An airport zoning regulation adopted by the political subdivision or board; or

(3) An order or ruling made in connection with the administration or enforcement of an airport zoning regulation adopted by the political subdivision or board.

(b) The court shall grant any relief, including an injunction which may be mandatory, as may be proper under all the facts and circumstances of the case to accomplish the purposes of this chapter and the regulations adopted and orders and rulings made under it.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

SUBCHAPTER Z. MISCELLANEOUS PROVISIONS

§ 241.901. Conflict of an Airport Hazard Area Zoning Regulation With Another Regulation

(a) If an airport hazard area zoning regulation conflicts with any other regulation applicable to the same area, the more stringent limitation or requirement controls.

(b) Subsection (a) applies to any conflict with respect to the height of a structure or object of natural growth or any other matter.

(c) Subsection (a) applies to any regulation that conflicts with an airport hazard area zoning regulation whether the regulation was adopted by the political subdivision that adopted the airport zoning regulation or by another political subdivision.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.902. Conflict of an Airport Compatible Land Use Zoning Regulation With Another Regulation

- (a) If an airport compatible land use zoning regulation conflicts with any other regulation applicable to the same area, the airport compatible land use zoning regulation controls.
- (b) Subsection (a) applies to any conflict with respect to the use of land or any other matter.
- (c) Subsection (a) applies to any regulation that conflicts with an airport compatible land use zoning regulation, whether the regulation was adopted by the political subdivision that adopted the airport compatible land use zoning regulation or by another political subdivision.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

§ 241.903. Acquisition of Air Rights or Other Property

- (a) A political subdivision may acquire from a person or other political subdivision an air right, aviation easement, or other estate or interest in property or in a nonconforming structure or use if:
 - (1) the acquisition is necessary to accomplish the purposes of this chapter;
 - (2) the property or nonconforming structure or use is located within the political subdivision, the political subdivision owns the airport, or the political subdivision is served by the airport; and
 - (A) the political subdivision desires to remove, lower, or terminate the nonconforming structure or use;
 - (B) airport zoning regulations are not sufficient to provide necessary approach protection because of constitutional limitations; or
 - (C) the acquisition of a property right is more advisable than an airport zoning regulation in providing necessary approach protection.
- (b) An acquisition under this section may be by purchase, grant, or condemnation in the manner provided by Subchapter B, Chapter 21, Property Code.

Acts 1987, 70th Leg., ch. 149, § 1, eff. Sept. 1, 1987.

APPENDIX B

AIRPORT COMPATIBLE LAND USE ZONING REGULATIONS

_____ Airport Compatible Land Use Zoning Regulations

Regulating and restricting the use of property in the vicinity of the _____ Airport, _____, Texas, by creating the appropriate overlay zones and establishing the boundaries thereof; providing for restrictions of such zones and the enforcement of such restrictions; defining certain terms used herein; referring to the _____ Airport Compatible Land Use Zoning Map prepared by _____, dated _____, and Table 1, Prohibited or Regulated Land Uses, both of which are incorporated in and made parts of these regulations; providing for a board of adjustment; and imposing penalties.

Whereas, these regulations are adopted pursuant to the authority conferred by the Airport Zoning Act, Texas Local Government Code, §§241.001 et seq.

Accordingly, it is declared that the City of _____ benefits from the use of the _____ Airport and the City Council of the City of (or: the Commissioners Court of the County of) _____, Texas, permits the _____ Airport to be used by the public to an extent that the **airport fulfills an essential community purpose**; therefore, the _____ Airport is used in the interest of the public.

Therefore, be it ordered by the _____ Joint Airport Zoning Board of the City Council of the City of _____, Texas, and the Commissioners Court of _____ County, Texas:

Section 1. Short Title

These regulations shall be known and may be cited as the “_____ **Airport Compatible Land Use Zoning Regulations.**”

Section 2. Definitions

As used in these regulations, unless the context otherwise requires:

- A. Administrative Agency** — The appropriate person or office of a political subdivision which is responsible for the administration and enforcement of the regulations prescribed herein. The administrative agency is set forth in Section 3 of these regulations.
- B. Airport** — The _____ Airport, _____, Texas; including the ultimate development of that facility.
- C. Board of Adjustment** — A board so designated by these regulations as provided in Texas Local Government Code, §241.032. Provisions for the board of adjustment are set forth in Section 7 of these regulations.
- D. Compatible Land Use** — Any use of land adjacent to or in the immediate vicinity of the airport that does not endanger the health, safety, and welfare of the owners, occupants, or users of the land because of levels of noise or vibrations or the risk of personal injury or

property damage created by the operations of the airport, including the taking off or landing of aircraft.

- E. Controlled Compatible Land Use Area** — An area of land located outside the boundaries of the _____ Airport and within a rectangle bounded by lines located no farther than 1½ statute miles from the centerline and lines no farther than 5 statute miles from each end of Runway _____.
- F. Instrument Runway** — An existing or planned paved runway of at least 3200 feet in length for which there is an existing or planned instrument landing procedure published by the Federal Aviation Administration or a defense agency of the Federal Government. Runway(s) _____ is(are) considered as an instrument runway(s) at the _____ Airport.
- G. DNL (Yearly Day-Night Average Sound Level)** — The 24-hour average sound level, in decibels, for the period from midnight to midnight obtained after the addition of 10 decibels for the periods between midnight and 7 AM and 10 PM and midnight (local time) as averaged over a span of 1 year. A mathematical definition of DNL may be found in Federal Aviation Regulations (FAR) Part 150, Section 150.201.
- H. Noise Level Reduction (NLR)** — The amount of reduction in noise for any given point as achieved through the incorporation of noise attenuation measures incorporated into the design and construction of buildings. These reductions may be incorporated during initial construction or as additional construction for existing buildings.
- I. Nonconforming Land Use** — Any use of land which is inconsistent with the provisions of these regulations and which is existing as of the effective date of these regulations.
- J. Person** — An individual, firm, partnership, corporation, company, association, joint stock association, or body politic and includes a trustee, receiver, assignee, administrator, executor, guardian, or other representative.
- K. Primary Runway** — An existing or paved runway of at least 3200 feet in length as shown on the official Airport Layout Plan for the airport and on which a majority of the approaches to and departures from the airport occur.
- L. Runway** — A defined area on the airport prepared for the landing and taking off of aircraft along its length. The zoned length of Runway _____ at the _____ Airport is _____ feet.

Section 3. Administrative Agency

It shall be the duty of the office of _____ to administer and enforce the regulations prescribed herein and is hereby designated as the administrative agency.

Section 4. Airport Overlay Zones

- A. Creation of Airport Overlay Zones (AOZ)** — In order to carry out the provisions of these regulations, there are hereby created and established certain Airport Overlay Zones for the purposes of regulating and developing uses of land within each zone that do not endanger the health, safety, and general welfare of the owners, occupants, or users of the land because of noise or vibrations or the risk of personal injury or property damage created by the operations of the airport, including the taking off and landing of aircraft. The controlled compatible land use area is hereby divided into 4 zones, shown on the _____ Airport Compatible Land Use Zoning Map dated _____,

which is attached to and made a part of these regulations. The AOZs are hereby established as follows:

Airport Overlay Zone 1 (AOZ-1): that portion of the controlled compatible land use area outside the 65 DNL contour line.

Airport Overlay Zone 2 (AOZ-2): that portion of the controlled compatible land use area between the 65 and 70 DNL contour lines.

Airport Overlay Zone 3 (AOZ-3): that portion of the controlled compatible land use area between the 70 and 75 DNL contour lines.

Airport Overlay Zone 4 (AOZ-4): that portion of the controlled compatible land use area between the 75 and 80 DNL contour lines.

- B. Permitted Uses** — All uses are permitted within each applicable AOZ that are permitted by other existing zoning ordinances except as prohibited or regulated by these zoning regulations. Where there is a conflict between the AOZ restrictions and other zoning ordinances or where there are no other existing zoning ordinances, the provisions of the AOZ shall prevail. Uses within the AOZs that are not permitted and uses that are hereby regulated are shown in the attached Table 1, Prohibited or Regulated Land Uses, which is attached to and made a part of these zoning regulations.

Section 5. Nonconforming Uses

The regulations prescribed herein shall not be construed as to require changes in the use of any land or other change or alteration of any structure not conforming to these regulations as of the effective date of these regulations or otherwise interfere with the continuance of any nonconforming use. Nothing contained herein shall be construed as to require any change in the construction, alteration, or intended use of any nonconforming structure, the construction of which was begun prior to the effective date of these regulations and is diligently prosecuted.

Section 6. Variances

Any person who desires to use his property in violation of any of the regulations contained herein may apply to the board of adjustment for a variance. Such variances may be allowed where it is duly found that a literal application or enforcement of these regulations will result in practical difficulty or unnecessary hardship and the granting of relief would result in substantial justice, not be contrary to the public interest, and be in accordance with the spirit of these regulations. Any variance granted may, at the discretion of the board of adjustment, impose **any reasonable conditions** as may be necessary to accomplish the purpose of these regulations.

Section 7. Board of Adjustment

- A.** The Board of Adjustment of _____ is hereby designated as the board of adjustment for the purposes of these regulations and shall have and exercise the following powers:
- (1) to hear and decide appeals from any order, requirement, decision, or determination made by the Administrative Agency in the administration or enforcement of these regulations;
 - (2) to hear and decide special exceptions to the terms of these regulations when the board is required to do so; and

(3) to hear and decide specific variances.

- B.** The board of adjustment shall be comprised of five (5) members and shall adopt rules for its governance and procedure in harmony with the provisions of these regulations. Meetings of the board of adjustment shall be held at the call of the chairman and at such times as the board of adjustment may determine. The chairman, or in his/her absence the acting chairman, may administer oaths and compel the attendance of witnesses. All hearings of the board of adjustment shall be public. The board of adjustment shall keep minutes of its proceedings showing the vote of each member upon each question or if any member is absent or fails to vote, indicating such fact and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of the board of adjustment or in the office _____. All such records shall be public records.
- C.** The board of adjustment shall make written findings of fact and conclusions of law stating the facts upon which it relied when making its legal conclusions in reversing, affirming, or modifying any order, requirement, decision, or determination which comes before it under the provisions of these regulations.
- D.** The concurring vote of four (4) members of the board of adjustment shall be necessary to reverse any order, requirement, decision, or determination of the administrative agency, to decide in favor of the applicant on any matter upon which it is required to pass under these regulations, or to effect any variance to these regulations.

Section 8. Appeals

- A.** Any person aggrieved or any taxpayer affected by a decision of the administrative agency made in the administration of these regulations may appeal to the board of adjustment if that person or taxpayer is of the opinion that a decision of the administrative agency is an improper application of these regulations. This same right of appeal is extended to the governing bodies of the City of _____, Texas, and _____ County, Texas, and to the _____ Joint Airport Zoning Board.
- B.** All appeals hereunder must be taken within a reasonable time as provided by the rules of the board of adjustment by filing a notice of appeal with the board of adjustment and the administrative agency specifying the grounds for the appeal. The administrative agency shall forthwith transmit to the board of adjustment all papers constituting the record upon which the action appealed was taken.
- C.** An appeal shall stay all proceedings in furtherance of the action appealed unless the administrative agency certifies in writing to the board of adjustment that by reason of the facts stated in the certificate, a stay would, in the opinion of the administrative agency, cause imminent peril to life or property. In such case, proceedings shall not be stayed except by order of the board of adjustment on notice to the administrative agency and on due cause shown.
- D.** The board of adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person, by agent, and/or by attorney.
- E.** The board of adjustment may reverse or affirm, in whole or in part, or modify the administrative agency's order, requirement, decision, or determination from which an appeal is taken and make the correct order, requirement, decision, or determination, and

for this purpose the board of adjustment has the same authority as the administrative agency.

Section 9. Judicial Review

Any person aggrieved or any taxpayer affected by a decision of the board of adjustment may present to a court of record a petition stating that the decision of the board of adjustment is illegal and specifying the grounds of the illegality. This same right of appeal is extended to the governing bodies of the City of _____, Texas, and _____ County, Texas, and to the _____ Joint Airport Zoning Board.

Section 10. Enforcement and Remedies

The governing bodies of the City of _____, Texas, or _____ County, Texas, or the _____ Joint Airport Zoning Board may institute in a court of competent jurisdiction an action to prevent, restrain, correct, or abate any violation of these regulations or of any order or ruling made in connection with their administration or enforcement including, but not limited to, an action for injunctive relief.

Section 11. Penalties

Each violation of these regulations or of any order or ruling promulgated hereunder shall constitute a misdemeanor and upon conviction shall be punishable by a **fine of not more than \$200** and each day a violation continues to exist shall constitute a separate offense.

Section 12. Conflicting Regulations

Where there exists a conflict between any of the regulations or limitations prescribed herein and any other regulation applicable to the same area, whether the conflict be with respect to the use of land, or any other matter, the more stringent limitation or requirement shall control.

Section 13. Severability

If any of the provisions of these regulations or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or application of these regulations which can be given effect without the invalid provision or application and to this end, the provisions of these regulations are declared to be severable.

Section 14. Adherence with State Laws

Any actions brought forth by any person or taxpayer as a result of the administration, enforcement, or the contesting these regulations will be in accordance with the provisions of Texas Local Government Code, §§241.001 and other applicable State laws.

Section 15. Effective Date

Whereas, the immediate operation of the provisions of these regulations is necessary for the preservation of the public health, safety, and general welfare, an **emergency** is hereby declared to exist and these regulations shall be in full force and effect from and after their adoption by the _____ Joint Airport Zoning Board.

Adopted by the _____ Joint Airport Zoning Board this ____ day of _____ 20____

Chairman, _____ Joint Airport Zoning Board

Member

Member

Member

Member

Attest: _____

City Secretary of the City of _____, Texas

AIRPORT COMPATIBLE LAND USE ZONING REGULATIONS: TABLE 1

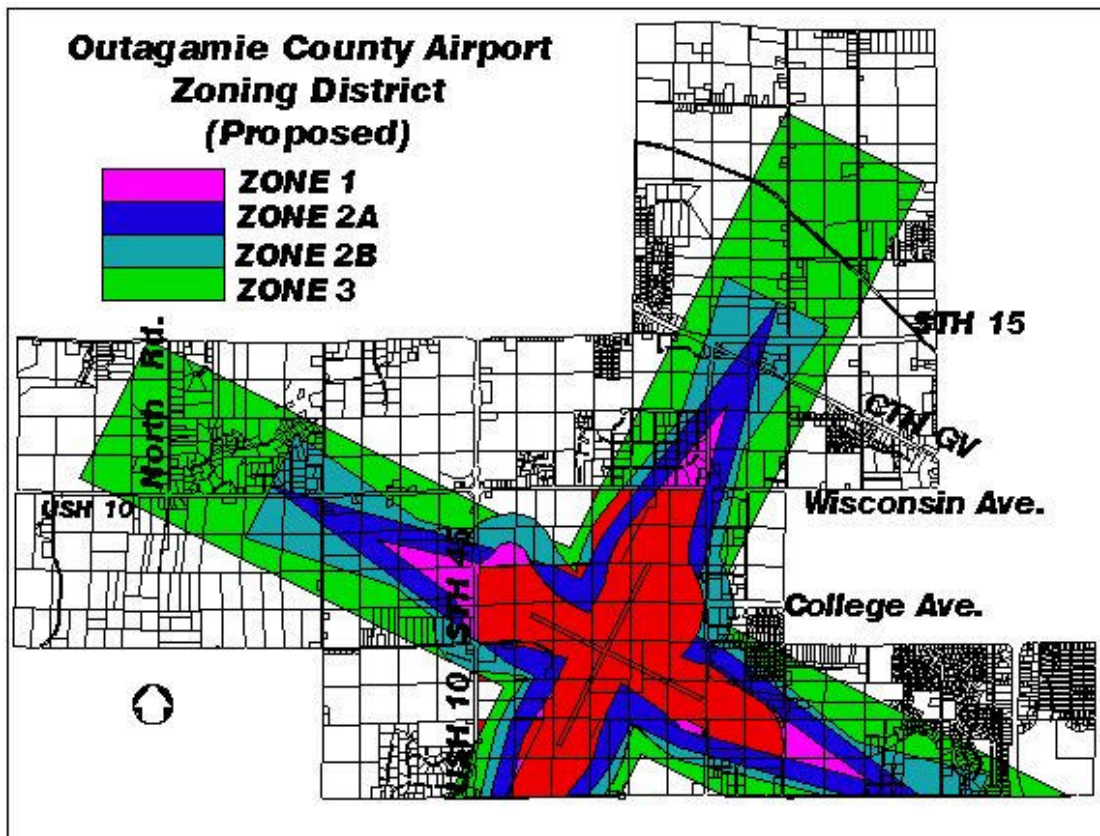
PROHIBITED OR REGULATED LAND USES

NOTE: This table should be created using FAA Advisory Circular 150/5020-1 as a guide and tailored to fit the particular needs of your community. It is highly recommended that a qualified acoustical expert be contacted for advice in the creation of this table.

Land Use	Airport Overlay Zones Sound Level in DNL		
	AO-2 65-70 DNL	AO-3 70-75 DNL	AO-4 75-80 DNL
Residential			
Single Units - detached	N	N	N
Single Units - semi-detached	N	N	N
Single Units - attached row	N	N	N
Two Units - side-by-side	N	N	N
Two Units - one above the other	N	N	N
Apartments - walk up	N	N	N
Apartments - elevator	N	N	N
Group Quarters	N	N	N
Residential Hotels	N	N	N
Other Residential	N	N	N
Mobile Home Parks	N	N	N
Transient Lodgings	25	30	35
Public Use			
Educational Services	25	30	N
Hospitals, Nursing Homes	25	30	N
Cultural Activities	25	30	N

Airport Compatible Land Use Zoning Map

NOTE: This map should be tailored to fit the particular needs of your community. If the City or County staff does not have the expertise to produce this map, it is recommended that a qualified aviation consultant be contacted.



APPENDIX C

AIRPORT HAZARD ZONING ORDINANCE

_____ Airport Hazard Zoning Regulations

Regulating and restricting the height of structures and objects of natural growth and otherwise regulating the use of property in the vicinity of the _____ Airport, _____, Texas, by creating the appropriate zones and establishing the boundaries thereof; providing for restrictions of such zones and the enforcement of such restrictions; defining certain terms used herein; referring to the _____ Airport Hazard Zoning Map prepared by _____, dated _____1, which is incorporated in and made a part of these regulations; providing for a board of adjustment; and imposing penalties.

Whereas, these regulations are adopted pursuant to the authority conferred by the Airport Zoning Act, Texas Local Government Code, §§241.001 et seq.

Whereas, the Legislature of the State of Texas finds that:

- an airport hazard endangers the lives and property of users of the airport and of occupants of land in the vicinity of the airport;
- an airport hazard that is an obstruction reduces the size of the area available for the landing, taking off, and maneuvering of aircraft, tending to destroy or impair the utility of the airport and the public investment in the airport;
- the creation of an airport hazard is a public nuisance and an injury to the community served by the airport affected by the hazard;
- it is necessary in the interest of the public health, public safety, and general welfare to prevent the creation of an airport hazard;
- the creation of an airport hazard should be prevented, to the extent legally possible, by the exercise of the police power without compensation; and
- the prevention of the creation of an airport hazard and the elimination, the removal, the alteration, the mitigation, or the marking and lighting of an airport hazard are public purposes for which a political subdivision may raise and spend public funds and acquire land or interests in land.

Accordingly, it is declared that the City of _____ benefits from the use of the _____ Airport and the City Council of the City of _____ permits the _____ Airport to be used by the public to an extent that the airport fulfills an essential community purpose; therefore, the _____ Airport is **used in the interest of the public**.

Therefore, be it ordered by the _____ Joint Airport Zoning Board of the City Council of the City of _____, Texas, and the Commissioners Court of _____ County, Texas:

Section 1. Short Title

These regulations shall be known and may be cited as the “_____ **Airport Hazard Zoning Regulations.**”

Section 2. Definitions

As used in these regulations, unless the context otherwise requires:

- A. Administrative Agency** — The appropriate person or office of a political subdivision which is responsible for the administration and enforcement of the regulations prescribed herein. The administrative agency is set forth in Section 3 of these regulations.
- B. Airport** — The _____ Airport, _____, Texas; including the ultimate development of that facility.
- C. Airport Elevation** — The established elevation of the highest point on the runway, either existing or planned, at the airport measured in feet above mean sea level (MSL). The airport elevation of the _____ Airport is _____ feet above mean sea level (MSL).
- D. Airport Hazard** — Any structure, tree, or use of land which obstructs the airspace required for the flight of aircraft or obstructs or interferes with the control, tracking, and/or data acquisition in the landing, takeoff, or flight at an airport or any installation or facility relating to flight, tracking, and/or data acquisition of the flight craft; is hazardous to, interferes with, or obstructs such landing, takeoff, or flight of aircraft; or is hazardous to or interferes with tracking and/or data acquisition pertaining to flight and flight vehicles.
- E. Approach Surface** — A surface longitudinally centered on the extended runway centerline, extending outward and upward from each end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section 5 of these regulations. In plan, the perimeter of the approach surface coincides with the perimeter of the approach zone.
- F. Approach, Conical, Horizontal, and Transitional Zones** — These zones are set forth in Section 4 of these regulations.
- G. Board of Adjustment** — A board so designated by these regulations as provided in Texas Local Government Code, §241.032. Provisions for the board of adjustment are set forth in Section 9 of these regulations.
- H. Conical Surface** — A surface extending outward and upward from the periphery of the horizontal surface at a slope of twenty (20) feet horizontally for each one (1) foot vertically for a horizontal distance of four-thousand (4,000) feet.
- I. Hazard to Air Navigation** — An obstruction or use of land determined to have a substantial adverse effect on the safe and efficient utilization of navigable airspace.
- J. Height** — For the purpose of determining the height limits in all zones set forth in these regulations and shown on the hazard zoning map, the datum shall be height above mean sea level (MSL) elevation as measured in feet.
- K. Horizontal Surface** — A horizontal plane one-hundred fifty (150) feet above the established airport elevation which in plan coincides with the perimeter of the horizontal zone.

- L. Nonconforming Use, Structure, or Tree** — Any structure, tree, or use of land which is inconsistent with the provisions of these regulations and which is existing as of the effective date of these regulations.
- M. Nonprecision Instrument Runway** — A runway having an existing instrument approach procedure utilizing air navigation facilities or other equipment that provides only horizontal guidance or area type navigation equipment. This also includes a runway for which a nonprecision instrument approach procedure has been approved or planned. Runway _____ is considered a nonprecision instrument runway.
- N. Obstruction** — Any structure, tree, or other object, including a mobile object, which exceeds a limiting height set forth in Section 5 of these regulations or is an airport hazard.
- O. Other than Utility Runway** — A runway designed for and intended to be used by propeller driven aircraft of more than twelve-thousand five-hundred (12,500) pounds maximum gross weight and jet powered aircraft. Runway _____ at the _____ Airport is considered an other than utility runway.
- P. Person** — An individual, firm, partnership, corporation, company, association, joint stock association, or body politic and includes a trustee, receiver, assignee, administrator, executor, guardian, or other representative.
- Q. Precision Instrument Runway** — A runway having an existing instrument approach procedure utilizing air navigation facilities or other equipment which provide both horizontal and vertical guidance. This also includes a runway for which a precision instrument approach procedure has been approved or planned. Runway _____ at the _____ Airport is considered a precision instrument runway.
- R. Primary Surface** — A _____ foot wide surface longitudinally centered on the runway extending the full length of the ultimate runway configuration plus two-hundred (200) feet beyond each ultimate end of the runway. The elevation of any point on the primary surface is the same as the nearest point on the existing or ultimate runway centerline.
- S. Runway** — A defined area on the airport prepared for the landing and taking off of aircraft along its length. The zoned length of Runway _____ at the _____ Airport is _____ feet.
- T. Structure** — An object, including a mobile object, constructed or installed by man including, but not limited to, buildings, towers, cranes, smokestacks, poles, earth formations, overhead power lines, and traverse ways. Traverse ways are considered to be the heights set forth in 14 C.F.R. Part 77.23.
- U. Transitional Surfaces** — Surfaces extending perpendicular to the runway centerline and the extended runway centerline outward from the edges of the primary surface and the approach surfaces at a slope of seven (7) feet horizontally for each one (1) foot vertically to where they intersect the horizontal surface. Transitional surfaces for those portions of the precision approach surface which extend through and beyond the limits of the conical surface extend at a slope of seven (7) feet horizontally for each one (1) foot vertically for a distance of five-thousand (5,000) feet measured horizontally from either edge of the approach surface and perpendicular to the extended runway centerline.
- V. Tree** — Any type of flora and an object of natural growth.

Section 3. Administrative Agency

It shall be the duty of the office of _____ to administer and enforce the regulations prescribed herein and is hereby designated as the administrative agency.

Section 4. Zones

In order to carry out the provisions of these regulations, there are hereby created and established certain zones which include all of the land lying beneath the approach surfaces, conical surface, horizontal surface, and transitional surfaces as they apply to the airport. Such surfaces are shown on the _____ Airport Hazard Zoning Map consisting of one (1) sheet, prepared by _____ and dated _____, which is hereby attached to these regulations and made a part hereof. An area located in more than one of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

- A. Approach Zones** — Approach zones are hereby established beneath the approach surfaces at each end of Runway _____ at the airport for an other than utility runway with _____ landings. The approach surface shall have an inner edge width of _____ feet, which coincides with the width of the primary surface, at a distance of two-hundred (200) feet beyond each runway end, widening thereafter uniformly to a width of _____ feet at a horizontal distance of _____ feet beyond the end of the primary surface. The centerline of the approach surface is the continuation of the centerline of the runway.
- B. Conical Zone** — A conical zone is hereby established beneath the conical surface at the airport which extends outward from the periphery of the horizontal surface for a horizontal distance of four-thousand (4,000) feet.
- C. Horizontal Zone** — A horizontal zone is hereby established beneath the horizontal surface at the airport which is a plane one-hundred fifty (150) feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of ten-thousand (10,000) feet radii from the center of each end of the primary surface and connecting the adjacent arcs by lines tangent to those arcs.
- D. Transitional Zones** — Transitional zones are hereby established beneath the transitional surfaces at the airport. Transitional surfaces, symmetrically located on either side of the runway, have variable widths as shown on the _____ Airport Hazard Zoning Map. Transitional surfaces extend outward perpendicular to the runway centerline and the extended runway centerline from the periphery of the primary surface and the approach surfaces to where they intersect the horizontal surface. Where the precision instrument runway approach surface projects through and beyond the conical surface, there are hereby established transitional zones beginning at the sides of and at the same elevation as the approach surface and extending for a horizontal distance of five-thousand (5,000) feet as measured perpendicular to the extended runway centerline.

Section 5. Height Limitations

Except as otherwise provided in Section 8 of these regulations, no structure shall be erected, altered, or replaced and no tree shall be allowed to grow in any zone created by these regulations to a height in excess of the applicable height limitations herein established for such zone except as provided in Paragraph E of this Section. Such applicable height limitations are hereby established for each of the zones in question as follows:

- A. Approach Zones — Slope one (1) foot in height for each _____ feet in horizontal distance beginning at the end of and at the same elevation as the primary surface and extending to a point _____ feet beyond the end of the primary surface.
- B. Conical Zone — Slopes one (1) foot in height for each twenty (20) feet in horizontal distance beginning at the periphery of the horizontal zone and at one-hundred fifty (150) feet above the airport elevation and extending to a height of three-hundred fifty (350) feet above the airport elevation, or to a height of _____ feet above mean sea level.
- C. Horizontal Zone — Established at one-hundred fifty (150) feet above the airport elevation, or at a height of _____ feet above mean sea level.
- D. Transitional Zones — Slope one (1) foot in height for each seven (7) feet in horizontal distance beginning at the sides of and at the same elevations as the primary surface and the approach surfaces.
- E. Excepted Height Limitation — *Nothing contained in these regulations shall be construed as prohibiting the growth, construction, or maintenance of any structure or tree to a height of up to fifty (50) feet above the surface of the land at its location.*

Section 6. Land Use Restrictions

Except as provided in Section 7 of these regulations, no use may be made of land or water within any zone established by these regulations in such a manner as to create electrical interference with navigational signals or radio communications between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create potential bird strike hazards, or otherwise in any way endanger or interfere with the landing, taking off, or maneuvering of aircraft intending to use the airport.

Section 7. Nonconforming Uses, Structures, and Trees

- A. **Nonconforming Uses** — Nothing contained in these regulations shall be construed as requiring changes in or interference with the continuance of any nonconforming use of land.
- B. **Nonconforming Structures** — Nothing contained in these regulations shall be construed as to require the removal, lowering, or other change to any existing nonconforming structure including all phases or elements of a multiphase structure the construction of which was begun prior to the effective date of these regulations and is diligently prosecuted.
- C. **Nonconforming Trees** — Nothing in these regulations shall be construed as to require the removal, lowering, or other change to any nonconforming tree. However, any nonconforming tree which grows to a greater height than it was as of the effective date of these regulations is subject to the provisions of these regulations as described in Section 5 herein above.

Section 8. Permits and Variances

- A. **Permits** — Any person who desires to replace, rebuild, substantially change, or repair a nonconforming structure or replace or replant a nonconforming tree must apply for and receive a permit, and **the permit shall be granted**. However, no permit shall be granted which would allow the establishment of an airport hazard or allow a nonconforming

structure or tree to exceed its original height or become a greater hazard to air navigation than it was at the time of the adoption of these regulations. Applications for permit shall be applied to and issued by the administrative agency.

- B. Variances** — Any person who desires to erect, substantially change, or increase the height of any structure or establish or allow the growth of any tree which would exceed the height limitations set forth in Section 5 of these regulations or change the use of property in such a way as to create a hazardous condition as described in Section 6 of these regulations must apply to the board of adjustment and receive a variance. The application for variance must be accompanied by a determination from the Federal Aviation Administration under 14 C.F.R. Part 77 as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is duly found that a literal application or enforcement of the regulations will result in practical difficulty or unnecessary hardship and the granting of relief would result in substantial justice, not be contrary to the public interest, and be in accordance with the spirit of these regulations.

C. Requirements and Reasonable Conditions

- (1) Any permit granted may, at the discretion of the administrative agency, impose a requirement to allow the installation and maintenance, at the expense of the administrative agency, of any markers or lights as may be necessary to indicate to flyers the presence of an airport hazard.
- (2) Any variance granted may, at the discretion of the board of adjustment, impose **any reasonable conditions** as may be necessary to accomplish the purpose of these regulations.

Section 9. Board of Adjustment

- A.** The Board of Adjustment of _____ is hereby designated as the board of adjustment for the purposes of these regulations and shall have and exercise the following powers:
- (1) to hear and decide appeals from any order, requirement, decision, or determination made by the Administrative Agency in the administration or enforcement of these regulations;
 - (2) to hear and decide special exceptions to the terms of these regulations when the board is required to do so; and
 - (3) to hear and decide specific variances.
- B.** The board of adjustment shall be comprised of five (5) members and shall adopt rules for its governance and procedure in harmony with the provisions of these regulations. Meetings of the board of adjustment shall be held at the call of the chairman and at such times as the board of adjustment may determine. The chairman, or in his/her absence the acting chairman, may administer oaths and compel the attendance of witnesses. All hearings of the board of adjustment shall be public. The board of adjustment shall keep minutes of its proceedings showing the vote of each member upon each question or if any member is absent or fails to vote, indicating such fact and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of the board of adjustment or in the office of _____. All such records shall be public records.

- C. The board of adjustment shall make written findings of fact and conclusions of law stating the facts upon which it relied when making its legal conclusions in reversing, affirming, or modifying any order, requirement, decision, or determination which comes before it under the provisions of these regulations.
- D. The concurring vote of four (4) members of the board of adjustment shall be necessary to reverse any order, requirement, decision, or determination of the administrative agency, to decide in favor of the applicant on any matter upon which it is required to pass under these regulations, or to effect any variance to these regulations.

Section 10. Appeals

- A. Any person aggrieved or any taxpayer affected by a decision of the administrative agency made in the administration of these regulations may appeal to the board of adjustment if that person or taxpayer is of the opinion that a decision of the administrative agency is an improper application of these regulations. This same right of appeal is extended to the governing bodies of the City of _____ and _____ County, Texas, and to the _____ Joint Airport Zoning Board.
- B. All appeals hereunder must be taken within a reasonable time as provided by the rules of the board of adjustment by filing a notice of appeal with the board of adjustment and the administrative agency specifying the grounds for the appeal. The administrative agency shall forthwith transmit to the board of adjustment all papers constituting the record upon which the action appealed was taken.
- C. An appeal shall stay all proceedings in furtherance of the action appealed unless the administrative agency certifies in writing to the board of adjustment that by reason of the facts stated in the certificate, a stay would, in the opinion of the administrative agency, cause imminent peril to life or property. In such case, proceedings shall not be stayed except by order of the board of adjustment on notice to the administrative agency and on due cause shown.
- D. The board of adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person, by agent, and/or by attorney.
- E. The board of adjustment may reverse or affirm, in whole or in part, or modify the administrative agency's order, requirement, decision, or determination from which an appeal is taken and make the correct order, requirement, decision, or determination, and for this purpose the board of adjustment has the same authority as the administrative agency.

Section 11. Judicial Review

Any person aggrieved or any taxpayer affected by a decision of the board of adjustment may present to a court of record a petition stating that the decision of the board of adjustment is illegal and specifying the grounds of the illegality as provided by and in accordance with the provisions of Texas Local Government Code, §241.041. This same right of appeal is extended to the governing bodies of the City of _____, Texas, and _____ County, Texas, and to the _____ Joint Airport Zoning Board.

Section 12. Enforcement and Remedies

The governing bodies of the City of _____, Texas, or _____ County, Texas, or the _____ Joint Airport Zoning Board may institute in a court of competent jurisdiction an action to prevent, restrain, correct, or abate any violation of these regulations or of any order or ruling made in connection with their administration or enforcement including, but not limited to, an action for injunctive relief.

Section 13. Penalties

Each violation of these regulations or of any order or ruling promulgated hereunder shall constitute a misdemeanor and upon conviction shall be punishable by a **fine of not more than \$200** and each day a violation continues to exist shall constitute a separate offense.

Section 14. Conflicting Regulations

Where there exists a conflict between any of the regulations or limitations prescribed herein and any other regulation applicable to the same area, whether the conflict be with respect to the height of structures or trees, the use of land, or any other matter, the more stringent limitation or requirement shall control.

Section 15. Severability

If any of the provisions of these regulations or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or application of these regulations which can be given effect without the invalid provision or application and to this end, the provisions of these regulations are declared to be severable.

Section 16. Adherence with State Laws

Any actions brought forth by any person or taxpayer as a result of the administration, enforcement, or the contesting these regulations will be in accordance with the provisions of Texas Local Government Code, §§241.001 et seq and other applicable State laws.

Section 17. Effective Date

Whereas, the immediate operation of the provisions of these regulations is necessary for the preservation of the public health, safety, and general welfare, an **emergency** is hereby declared to exist and these regulations shall be in full force and effect from and after their adoption by the _____ Joint Airport Zoning Board.

Adopted by the _____ Joint Airport Zoning Board this ____ day of _____ 20__.

Chairman, _____
Joint Airport Zoning Board

Member

Member

Member

Member

Attest: _____
City Secretary of the City of _____, Texas

Appendix D - Forms

Texas Department of Transportation

Aviation Division

Airport Hazard Zoning

The attached are procedural forms for enacting airport zoning regulations in accordance with the provisions of the Airport Zoning Act, Texas Local Government Code, §§241.001 et seq.

These forms were designed to utilize a City - County Joint Airport Zoning Board which can be created by cooperation between the City and County, in accordance with the provisions of the Airport Zoning Act, Texas Local Government Code, §241.014 for hazard zoning the airport, and the hazard areas appertaining to the airport extending beyond the city limits into the unincorporated areas the county.

Ordinance of the City Council of _____, Texas
Ordinance No. _____

An ordinance creating a joint airport zoning board and investing such joint airport zoning board with the powers such boards are authorized to exercise under the provisions of the Airport Zoning Act, Texas Local Government Code, §§241.001 et seq.

Be it Ordained by the City Council of Del Rio, Texas:

Section 1. Subject to like provisions being made by the Commissioners Court of _____ County, Texas, by proper order, duly promulgated and entered on their minutes, and as authorized by the provisions of the Airport Zoning Act, Texas Local Government Code, §§241.001 et seq., there is hereby created a joint airport zoning board, to be known as the City of _____ - _____ County Joint Airport Zoning Board, which board shall have the powers and exercise the duties set forth in Texas Local Government Code, §241.014.

Section 2. The City of _____ - _____ County Joint Airport Zoning Board shall be composed of five (5) members; two (2) members to be appointed by this city council and two (2) members to be appointed by the Commissioners Court of _____ County, Texas; the fifth (5th) member shall be elected by a majority of the members so appointed and said fifth (5th) member shall serve as Chairman of the City of _____ - _____ County Joint Airport Zoning Board.

Section 3. Exercising its rights as an appointing authority, the City Council of the City of _____, Texas, so chooses to hereby appoint members to a new joint airport zoning board. Therefore, (Print or type names) _____ and _____ are hereby appointed as this city's members on said City of _____ - _____ County Joint Airport Zoning Board and may continue to serve solely at the discretion of this city council.

Section 4. Whereas, the immediate operation of the provisions of this ordinance is necessary for the preservation of the public health, safety, and general welfare, an **emergency** is hereby declared to exist and this ordinance shall be in full force and effect from and after its passage by this city council and its reading and posting as required by law.

Enacted and passed this _____ day of _____, 20____, at a regular meeting of the City Council of _____, Texas, by the following vote:

_____ members voting **Aye**, and _____ members voting **Nay**.

Mayor of the City of _____, Texas

City Council Member

City Council Member

City Council Member

City Council Member

City Council Member

City Council Member

Attest: _____
City Secretary of the City of _____, Texas

Order of the Commissioners Court of _____ County, Texas

On this the _____ day of _____, 20____, there came on to be considered by the Commissioners Court of _____ County, Texas, at a regular term of such court, the matter of the creation of a joint airport zoning board to exercise the powers authorized such boards by the provisions of the Airport Zoning Act, Texas Local Government Code, §§241.001 et seq, to adopt and provide for the administration and enforcement of airport zoning regulations applicable to airport hazard areas in this county, and it further appearing to this court that the creating of such a joint airport zoning board is in the public interest of this county.

It is therefore ordered, subject to like provisions being made by the City Council of the City of _____, Texas, by proper ordinance, duly promulgated and entered on their minutes, and as authorized by the provisions of the Airport Zoning Act, Texas Local Government Code, §§241.001 et seq, there is hereby created a joint airport zoning board, to be known as the City of _____-_____ County Joint Airport Zoning Board, which board shall have the powers and exercise the duties set forth in Texas Local Government Code, §241.014.

It is further ordered, that the City of _____-_____ County Joint Airport Zoning Board shall be composed of five (5) members; two (2) members to be appointed by the City Council of the City of _____, Texas, and two (2) members to be appointed by this commissioners court; the fifth (5th) member shall be elected by a majority of the members so appointed and said fifth (5th) member shall serve as Chairman of the City of _____-_____ County Joint Airport Zoning Board.

Exercising its rights as an appointing authority, the Commissioners Court of _____ County, Texas, so chooses to hereby appoint members to a new joint airport zoning board.

Therefore, it is ordered that (print or type names) _____ and _____ are hereby appointed as this county's members on said City of _____-_____ County Joint Airport Zoning Board and may continue to serve solely at the discretion of this commissioners court.

Whereas, the immediate operation of the provisions of this order is necessary for the preservation of the public health, safety, and general welfare, an **emergency** is hereby declared to exist and this order shall be in full force and effect from and after its enactment by this commissioners court and reading and posting as required by law.

Passed by the Commissioners Court of _____ County, Texas, this _____ day of _____, 20____.

County Judge of _____ County, Texas

Commissioner, Precinct #1

Commissioner, Precinct #2

Commissioner, Precinct #3

Commissioner, Precinct #4

Attest: _____
County Clerk of _____ County, Texas

**City of _____-_____ County Joint Airport Zoning Board
Members' Oath of Office**

I do solemnly swear that I have not directly or indirectly paid, offered, or promised to pay, contributed, or promised to contribute any money, or valuable thing, or promised any public office or employment, as a reward to secure my appointment or confirmation thereof; and furthermore, I do solemnly swear that I will faithfully execute the duties of the office of Member of the City of _____-_____ County Joint Airport Zoning Board and will to the best of my ability preserve, protect, and defend the Constitution and the laws of the United States and of this State, **so help me God.**

Member

Member

Member

Member

Subscribed and sworn to before me this _____ day of _____, 20____.

City Secretary of the City of _____, Texas

I, _____, City Secretary of the City of _____, Texas, hereby certify that this is a true and correct copy of the oath of office of the above as executed before me.

City Secretary of the City of _____, Texas

**City of _____ - _____ County Joint Airport Zoning Board
Election of Chairman**

We the undersigned, majority of the representatives of the City Council of the City of _____, Texas, and the Commissioners Court of _____ County, Texas, having been heretofore duly appointed as Members of the City of _____ - _____ County Joint Airport Zoning Board by said bodies and having qualified as Members of such board by acceptance of such appointments and duly taking and subscribing the oath of office, do hereby, in regular and open meeting, elect (print or type name) _____ as an additional Member who will also serve as Chairman of such board, as authorized and provided by the Airport Zoning Act, Texas Local Government Code, §241.014 (c).

Such Chairman, after taking and subscribing to the constitutional and statutory oath of office, shall have and exercise all the duties and powers prescribed by law in such cases made and provided.

Dated this _____ day of _____, 20____.

Member

Member

Member

Member

Attest: _____
City Secretary of the City of _____, Texas

**City of _____-_____ County Joint Airport Zoning Board
Chairman's Oath of Office**

I do solemnly swear that I have not directly or indirectly paid, offered, promised to pay, contributed, or promised to contribute any money or thing of value, or promised any public office or employment for the giving or withholding of a vote at the election at which I was elected; furthermore, I do solemnly swear that I will faithfully execute the duties of the office of Chairman of the City of _____-_____ County Joint Airport Zoning Board, and will to the best of my ability preserve, protect, and defend the Constitution and laws of the United States and of this State, **so help me God.**

Chairman

Subscribed and sworn to before me this _____ day of _____, 20____.

City Secretary of the City of _____, Texas

I, _____, City Secretary of the City of _____, Texas, hereby certify that this is a true and correct copy of the oath of office of the above as executed before me.

City Secretary of the City of _____, Texas

Suggested Publication in the _____ *News-Herald*, _____, Texas

The State of Texas

City of _____

County of _____

Notice of a Hearing by the City of _____ - _____ County Joint Airport Zoning Board

Whereas, pursuant to the provisions of Texas Local Government Code, §241.017 (b) and (c), notice is hereby given that a public hearing will be held before the City of _____ - _____ County Joint Airport Zoning Board on the _____ day of _____, 20____, in the City Council Chambers at the City Hall in _____, Texas, at the hour of _____, for the purpose of hearing all parties in interest and citizens who desire to be heard concerning airport zoning regulations to be considered for adoption by the City of _____ - _____ County Joint Airport Zoning Board pertaining to airport hazard areas within the city limits of the City of _____ and within the unincorporated areas of _____ County, Texas.

Dated this _____ day of _____, 20____.

Chairman, City of _____ - _____ County
Joint Airport Zoning Board

“This notice should be published in a newspaper with a wide distribution throughout the City of _____, Texas, and _____ County, Texas, at least 15 days prior to the public hearing, the first day being the day after the notice is published.”

**City of _____-_____ County Joint Airport Zoning Board
Notice of a Public Hearing**

Whereas, it appears to the City of _____-_____ County Joint Airport Zoning Board that Texas Local Government Code, §241.017 (b), requires that the City of _____-_____ County Joint Airport Zoning Board to hold a public hearing, at which hearing, parties in interest and citizens shall have an opportunity to be heard regarding the airport zoning regulations proposed to be adopted.

Now therefore, pursuant to the provisions of Texas Local Government Code, §241.017 (b), notice is hereby given that a public hearing will be held before the City of _____-_____ County Joint Airport Zoning Board on the _____ day of _____, 20____, in the City Council Chambers at the City Hall in _____, Texas, at the hour of _____, for the purpose of hearing all parties in interest and citizens who desire to be heard concerning airport zoning regulations to be considered for adoption by the City of _____-_____ County Joint Airport Zoning Board pertaining to airport hazard areas within the city limits of the City of _____ and within the unincorporated areas of _____ County, Texas.

Dated this _____ day of _____, 20____.

Chairman, City of _____-_____ County
Joint Airport Zoning Board

Attest: _____
City Secretary of the City of _____, Texas

“Copies of this notice should be posted in the City Hall in _____, Texas, and in the County Courthouse in _____, Texas, at least 3 days prior to the public hearing; the first day being the day after both notices are posted.”

City of _____-_____ County Joint Airport Zoning Board

Proof of Publication of Notice of a Hearing

Before me, the undersigned authority, on this day personally appeared _____, known to me to be this person and being by me duly sworn, stated to me on his oath that the attached copy of printed notice is a true and correct copy of an original notice which was published in the issue of the newspaper known as the _____ *News-Herald*, _____, Texas, bearing as its date the _____ day of _____, 20____; that such newspaper was on such date and all during the preceding twelve (12) months prior to such date a newspaper of general circulation in the city and county in which the proceedings mentioned in such were, and still are, pending; that a copy of such notice as so published on such date is attached hereto; that such issue of such newspaper was so published for distribution throughout the City of _____, Texas, and _____ County, Texas; that the affiant is the publisher of such newspaper and knows that what is stated in this affidavit is true; and that such notice was published as provided in Texas Local Government Code, §241.017 (c), for the service of notice by publication.

Publisher

Subscribed and sworn to before me by the said (print or type Publisher's name)

_____, this _____ day of _____, 20____, to certify
which witness my hand and seal of office.

Notary Public for the State of Texas

“A clipping of the legal notice published in the newspaper
should be attached to this form.”

City of _____-_____ County Joint Airport Zoning Board
Adoption of the _____ International Airport Hazard Zoning Regulations

Whereas, the City of _____-_____ County Joint Airport Zoning Board did publish notice in the _____ *News-Herald*, _____, Texas, in the issue bearing as its date the _____ day of _____, 20____, and did post notices in the City Hall in _____, Texas, on the _____ day of _____, 20____, and in the _____ County Courthouse, _____, Texas, on the _____ day of _____, 20____, advising of a public hearing to be held before the City of _____-_____ County Joint Airport Zoning Board on the _____ day of _____, 20____, in the City Council Chambers at the City Hall in _____, Texas, at the hour of _____, for the purpose of hearing all parties in interest and citizens who desire to be heard concerning proposed airport zoning regulations; and

Whereas, the City of _____-_____ County Joint Airport Zoning Board assembled at the appointed place and time to hear all parties in interest desiring to be heard and considered all statements for and against airport zoning.

Now therefore, on a motion by _____ and seconded by _____, and by a majority vote of the City of _____-_____ County Joint Airport Zoning Board,

_____ members voting **Aye**, _____ members voting **Nay**,

It is therefore ordered by the City of _____-_____ County Joint Airport Zoning Board that the _____ International Airport Hazard Zoning Regulations be adopted.

It is further ordered by this board that _____, Attorney, review and certify the city ordinance adopted and county order enacted, board appointed and chairman elected, oaths of office administered, notices published and posted, public hearing conducted, and all legal actions completed in the adoption of the [insert Airport Name] Hazard Zoning Regulations were accomplished in accordance with the State statutes, rules, and regulations and local orders, ordinances, rules, and regulations; that the [insert Airport Name] Hazard Zoning Regulations adopted by the City of _____-_____ County Joint Airport Zoning Board contain provisions for injunctive relief according to the State Law of Texas and are in harmony and alike to a hazard zoning map prepared by the Texas Department of Transportation, Aviation Division, Austin, Texas, and dated September 28, 2001, as to the technical requirements of the various zones and heights as set out on such hazard zoning map, such map being made a part of the [insert Airport Name] Hazard Zoning Regulations; and that the adopted [insert Airport Name] Hazard Zoning Regulations are valid, binding and enforceable.

Signed this _____ day of _____, 20____.

Chairman, City of _____-_____ County
Joint Airport Zoning Board

Member

Member

Member

Member

Attest: _____
City Secretary of the City of _____, Texas

Attorney's Certificate

[insert Airport Name] Hazard Zoning Regulations

I, (print or type name) _____ hereby certify that I have examined the [insert Airport Name] Hazard Zoning Regulations adopted by the City of _____ - _____ County Joint Airport Zoning Board on the _____ day of _____, 20____, relating to [insert Airport Name], _____, Texas, and said regulations together with the city ordinance enacted and county order adopted, board appointed and chairman elected, oaths of office administered, notices published and posted, public hearing conducted, and other legal actions were accomplished in accordance with applicable state and local laws, orders, and ordinances and that in my opinion said regulations comply with the provisions set out in the Texas Administrative Code §30.210(d)(13) and §30.215 together with all state and local laws and are valid, binding, and enforceable.

Certified at _____, Texas, this _____ day of _____, 20____.

Attorney