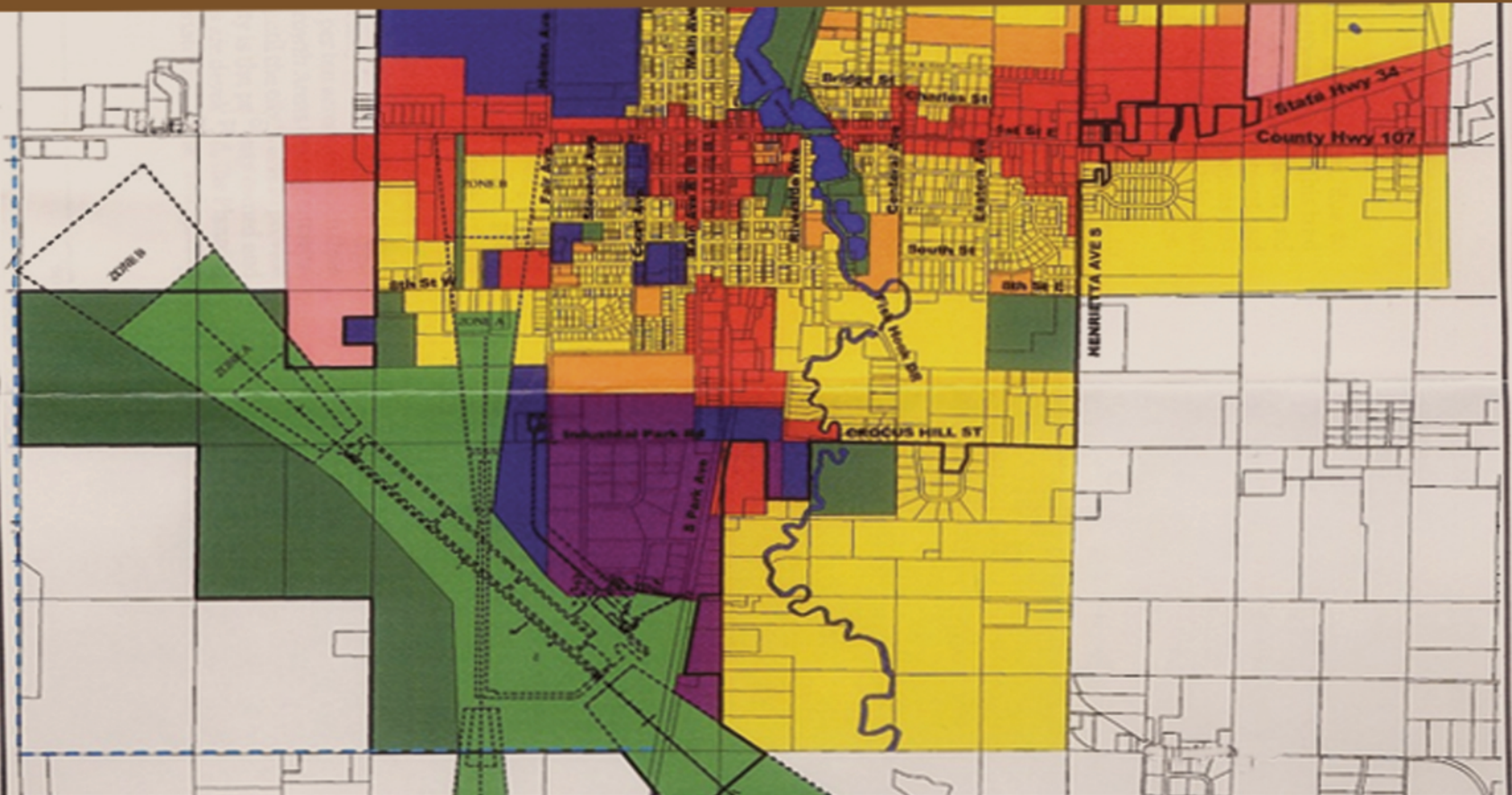




Airport Land Use *Compatibility Manual*







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MINNESOTA AIRPORT LAND USE COMPATIBILITY MANUAL

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chapter 1: introduction



Introduction¹

One of the perennial challenges facing modern airports is the encroachment of incompatible land uses. Such encroachments can be in the form of high-intensity uses like arenas or schools that are incompatible with airport operations in terms of safety because they attract large numbers of people. In other instances, structures like tall office buildings may be built too close to runways so that they impede aircraft operations. Of course, adjacent residents' noise concerns abound at the busiest urban airports, and are often a significant constraint on aviation operations. These are not problems unique to Minnesota airports.

This manual focuses on land uses that are incompatible with airport operations because of (1) the potential danger to people and property on the ground from airplane crashes, or (2) the potential danger to aircraft pilots and occupants from obstructions to flight. While noise concerns are rampant at many public airports, a significant body of data, analysis, and advice already exists regarding airport noise controls, which airport sponsors and affected local governments can readily access.² Instead, this manual focuses on these two land use safety compatibility concerns that local governments often underestimate in relation to the magnitude of potential risk.

Indeed, newspaper headlines of airplane accidents from around the globe grab the public's attention, and spark calls for better airport control to assure the public's safety. A NASAO-sponsored survey of public airports in 40 responding states, conducted in 2005-06 by the consulting firm Mead & Hunt, revealed that, on average, less than 5% of the national aviation system in those states is protected by airport safety zoning regulations 80-100% of the time. Yet the same survey revealed that issues of compatible land use constituted a "moderate and high concern" for 95% of the public airports surveyed.

CHAPTER 1 OVERVIEW

- Introduction
- The Importance of Aviation
- Defining the Threat – Incompatible Land Uses
- Who Should Use this Manual
- How the Manual Was Prepared
- How to Use This Manual

¹ If this chapter is read in full, we recognize its contents may overlap with other discussions presented in other chapters. We believe most users will read specific chapters of this manual as needed and, therefore, we feel it is better to include some discussions that may be repetitive. Where possible, however, we have eliminated duplicate text and included cross references.

² See Appendix 14 to this manual for resources to address airport noise and mitigation.



Yet, airport officials and all levels of government around the nation have grappled with these public safety issues and concerns for decades. They are particularly challenging because often the jurisdictions or agencies responsible for airport operations do not have direct authority over local land use decisions in the airport vicinity, which are the bailiwick of surrounding cities, towns, and counties. In making airport-related land use decisions, these local governments will understandably often consider economic development goals and legal issues, as well as airport compatibility considerations, in reviewing development proposals.

The Federal Aviation Authority (FAA) is heeding the calls and is currently undertaking several federal initiatives to more comprehensively address airport land use compatibility. One important initiative is an overhaul of the FAA Advisory Circular 150/5190-4A (“A Model Zoning Ordinance to Limit Heights of Objects around Airports”). Working collaboratively with the American Planning Association’s aviation transportation committee, the FAA intends to expand the scope of the circular and republish it as Advisory Circular 150/5190-4B, “Compatible Airspace and Land Use.” Work on the revised circular is continuing through 2006 and likely into 2007.

The Airport Cooperative Research Program, under the auspices of the national Transportation Research Board (TRB)³ and sponsored by the FAA, announced in February 2006 that it will grant \$500,000 to fund research to assess the impacts of incompatible land uses near airports. The objective of this research will be to define incompatible use and its limits, and develop tools that state and local governments can use to assess the current and future impacts that incompatible land uses will have on future airport expansion and ultimately the life of the airport. It is hoped that the TRB research project will produce a land use compatibility zoning model incorporating land use and third party risk that state and local governments can use as a basis for their ordinances.

For the State of Minnesota, the reason for this manual is very straightforward and simple—public airports are major economic generators for the state and its cities, towns, and counties. They represent huge investments of public funds and generate billions of dollars of economic activity while providing essential transportation links to the rest of the nation and world. They make possible critical

³ The TRB is a division of the National Research Council, which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance. The National Research Council is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The mission of the Transportation Research Board—one of six major divisions of the National Research Council—is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, the Board facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation.

public services like medical evacuations and search and rescue missions. As never before, however, Minnesota’s 136 public airports⁴ are under threat from incompatible land uses—residential and commercial development, and tall structures—being built too close to runways, cramping airport operations and creating serious safety problems for people on the ground as well as passengers in the air. Already, some public airports in the state are being forced to spend huge sums to buy encroaching land uses or to close and move operations to new sites at the cost of millions of dollars.

All of this development pressure is coming at a time when state aviation forecasts foresee airport demand in Minnesota growing at a steady pace both at commercial and general aviation facilities.

The State of Minnesota has protective legislation to prevent incompatible development around airports. Since 1943, airports in Minnesota have been required by state statute to enact safety zoning.⁵ In 1973, zoning was made a condition for receiving federal and state funding. Additionally, the Office of Aeronautics at the Minnesota State Department of Transportation publishes a model zoning ordinance to assist local governments and provides related technical assistance to the 136 publicly owned airports in the state. However, there is growing concern in the aviation industry that the state airport system will be slowly compromised and safety hazards magnified unless action is taken now to prevent additional incompatible development. This manual details the tools and strategies that local governments can use to turn the tide and protect these invaluable community assets.

The Importance of Aviation

Airports are the lynchpins of modern economies. In a world of free trade where business knows few borders, airports are widely recognized as key drivers of state and local economies. Increasingly across the nation, cities and towns without modern airports find it difficult to compete for entrepreneurial firms and for businesses in growing economic sectors. One study in Wisconsin found that in one recent 5-year period, 72 percent of new or expanded manufacturing businesses were located within 10 miles of a public airport.⁶

The nine major commercial airports in Minnesota play a particularly important role in the state economy. In 2004, the Minneapolis-St. Paul International (MSP) Airport alone provided service to 36.7 million passengers and handled 659.5 million pounds of air cargo (air freight, air express and air mail). This airport is currently responsible

AIRPORTS IN MINNESOTA PROVIDE:

- Employment for airport workers and airport related industry
- A base for recreational and corporate aircraft
- Charter transportation services
- A venue for other private businesses to provide services to the general aviation industry
- Corporate travel and business development opportunities
- Tourism industry development
- Fire and police protection
- Agricultural related support
- Pilot training
- Medical and emergency related transportation service

⁴ As of January 2006, the State of Minnesota had 136 publicly owned airports, 7 privately owned airports (open to public), and 18 seaplane bases.

⁵ The primary airport compatibility legislation can be found in Minnesota Statutes, Chapter 360.

⁶ Source: Wisconsin Airport Land Use Guidebook 2004 (WisDOT)



for bringing over 150,000 jobs to the Twin Cities region through direct, induced, and indirect means.⁷ See Table 1-1.

⁷ Source: “The Local and Regional Economic Impacts of the Minneapolis/St. Paul International Airport” Prepared for the Metropolitan Airports Commission (March, 2005) by John C. Martin Associates LLC.



TABLE 1-1: ECONOMIC ACTIVITY OF MINNEAPOLIS-ST. PAUL INTERNATIONAL AIRPORT

Impacts	Airport Generated	Visitor Industry	Total Impact
JOBS			
Direct	28,545	60,516	89,061
Induced	26,406	22,072	48,478
Indirect	11,264	4,573	15,837
TOTAL	66,125	87,161	153,376
PERSONAL INCOME			
Direct	\$1,456.3	\$988.2	\$2,444.5
Induced	\$2,197.7	\$788.4	\$2,986.1
Indirect	\$438.7	\$95.6	\$534.3
TOTAL	\$4,092.7	\$1,872.2	\$5,964.9
Average Income / Direct Employee	\$51,017.4	\$16,329.6	--
Business Revenue (millions)	\$7,039.5	\$3,649.2	\$10,688.7
Local Purchases (millions)	\$1,105.8	\$154.5	\$1,260.3
State and Local Taxes (millions)	\$429.7	\$196.6	\$626.3
Federal Government Aviation-Specific Taxes (millions)	\$391.4	NA	\$391.4

Source: "The Local and Regional Economic Impacts of the Minneapolis/St. Paul International Airport" John C. Martin Associates LLC (March, 2005)

There are six reliever airports situated in the vicinity of the Minneapolis-St. Paul International Airport that provide an alternative for private and corporate aircraft. These airports generate an additional \$255 million in economic activity and provide 2,258 jobs to the Twin Cities region.⁸ Through the use of such reliever airports, safety and efficiency can also be dramatically increased. See Table 1-2.

⁸ Source: "Metropolitan Airports Commission – Economic Impacts Analysis of the Reliever Airport System" prepared by Wilder Research (October, 2005).



TABLE 1-2: TOTAL ECONOMIC ACTIVITY OF MSP AIRPORT RELIEVER SYSTEM	
Airport	Total Economic Impact
Airlake Airport	\$3,354,219
Anoka County-Blaine Airport	\$35,128,556
Crystal Airport	\$19,272,617
Flying Cloud Airport	\$80,194,872
Lake Elmo Airport	\$4,296,084
St. Paul Downtown Airport	\$112,416,230
Total Reliever Airport System	\$254,662,578

*Source: "Metropolitan Airports Commission-Economic Impact Analysis of the Reliever Airport System"
Prepared for Metropolitan Airports Commission by Wilder Research (October, 2005)*

Enplanements at Minnesota’s largest airports have increased significantly during the last five years, and are expected to continue growing steadily over the next twenty years. As shown in Tables 1-3 and 1-4, enplanements at eight of Minnesota’s largest airports, but not including the Minneapolis-St. Paul airport, grew by a total of 66,000 between 1995 and 2000, equivalent to a healthy 1.8% average annual growth rate. Some airports, such as St. Cloud, Bemidji, and Brainerd airports, experienced significant growth well above the average for the eight combined greater Minnesota airports. See Table 1-4. St. Cloud airport witnessed an 11.9% increase from 1995 to 2000, while Bemidji saw a jump of 6.4% in enplanements over the same time period.

At the Minneapolis-St. Paul International Airport, enplanements increased from 12.7 million in 1995 to an estimated 18.5 million in 2005 – for an average annual growth rate of 3.9%.

TABLE 1-3: HISTORICAL AND FORECAST ENPLANEMENTS					
	1995	2005E*	2010	2015	2020
Bemidji	16,100	29,900	33,900	38,500	43,100
Brainerd	11,800	20,700	22,000	22,800	22,800
Duluth	119,200	155,800	182,500	201,300	210,000
Hibbing	13,100	11,600	11,700	11,700	11,700
International Falls	19,100	21,800	21,700	21,800	21,800
Rochester	156,500	143,200	153,600	159,300	164,000
St. Cloud	8,400	25,900	25,600	27,100	29,000
Thief River Falls	3,700	5,000	5,000	5,000	5,000
Total Greater Minnesota	348,000	414,000	456,000	487,500	514,000
Minneapolis-St. Paul	12,664,300	18,515,600	21,986,000	24,552,000	33,400,000
Total Minnesota	13,012,200	18,929,500	22,414,500	24,995,100	33,814,000
% Greater Minnesota	2.70%	2.20%	2.00%	2.00%	1.80%

**"E" means estimated*
*Source: Historical Enplanements: Individual Minnesota Airports - Greater Minnesota Forecasts: inc.
 Minneapolis-St. Paul Airport Forecasts: 2010 and 2015, Draft Environmental Assessment - MSP Expansion Project, Forecast. 2020 Forecast, FAA Terminal Area*

TABLE 1-4: COMPOUND ANNUAL GROWTH RATE

	1995-2005E*	2005-2010	2010-2015	2015-2025	2005-2025
	6.4%	2.5%	2.6%	2.2%	2.4%
	5.8%	1.2%	0.7%	0.1%	0.5%
	2.7%	3.2%	2.0%	1.2%	1.9%
	-1.2%	0.2%		0.0%	0.0%
	1.3%	-0.1%	0.1%	0.0%	0.0%
	-0.9%	1.4%	0.7%	0.7%	0.9%
	11.9%	-0.2%	1.1%	1.4%	0.9%
	3.1%	0.0%	0.0%	0.0%	0.0%
Minnesota	1.8%	2.0%	1.3%	1.0%	1.3%
Paul	3.9%	3.5%	2.2%		
	3.8%	3.4%	2.2%		

ated
l Enplanements: Individual Minnesota Airports - Greater Minnesota Forecasts: KRAMER
ul Airport Forecasts: 2010 and 2015, Draft Environmental Assessment - MSP 2015 Terminal
Forecast. 2020 Forecast, FAA Terminal Area

Commercial activity at all of the airports shown in Tables 1-3 and 1-4 is expected to continue growing steadily over the next twenty years, with a forecast annual average growth rate of 1.3% for the eight Greater Minnesota airports. The Minneapolis-St. Paul International Airport is expected to grow at an annual average rate of 4.0% over the next fifteen years. See Table 1-4, above.

In total, commercial service airports directly create more than 108,600 full-time jobs and generate almost \$10 billion in total economic activity annually within Minnesota.⁹

Other small cities and towns within the state receive a big economic boost from their airports, too. Minnesota currently has 136 public airports that support a wide variety of functions, ranging from corporate/private business transport, pilot training, private transport, package delivery, and sightseeing. The majority of Minnesota’s aircraft take-offs and landings (61.3%) occur at general aviation airports, and they generate significant economic activity – more than 5,100 jobs with annual earnings of more than \$131.8 million. Overall, these airports generate more than \$374.6 million in economic activity annually.

⁹ Source: “The Economic Impact of Minnesota’s Airport System” (Mn/DOT Study: Wilbur Smith Associates) (1997).



TABLE 1-5: SUMMARY OF MINNESOTA JOBS RESULTING FROM AIRPORTS

Impact Source	Airports	Total Jobs
Met Council	6 relievers	2,258
MAC	Minneapolis-St. Paul International	153,376
State Aviation System Plan		113,775
Totals		269,409

*Sources:: "Metropolitan Airports Commission-Economic Impact Analysis of the Reliever Airport System"
Prepared for Metropolitan Airports Commission by Wilder Research (October, 2005)
"The Economic Impact of Minnesota's Airport System" (Mn/DOT Study: Wilbur Smith Associates) (1997)*

Of course, airports bring other important benefits to communities beyond stoking the local economy. They provide vital links for citizens not only for business but also for recreational travel. There are also critical services such as search and rescue missions, medical evacuations, and forest fire control that would be severely hampered without local airports.

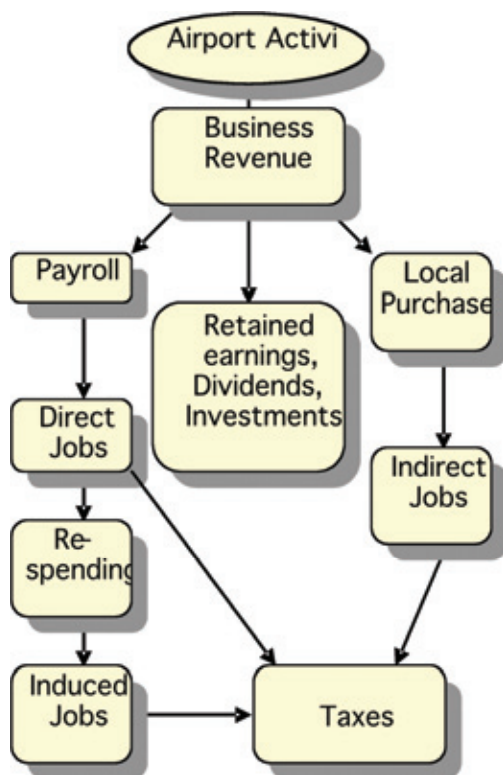
FIGURE 1-1: FLOW OF ECONOMIC IMPACTS GENERATED BY AIRPORT ACTIVITY



Defining the Threat – Incompatible Land Uses¹⁰

The story of one airport illustrates many of the challenges and problems Minnesota airports are facing with development that interferes with operations and creates safety hazards. A city approved several major developments around its airport decades ago, including a 130-foot storage residential nursing many communities, these developments important to economic tax base, and appreciate these would have airport until it was When a new master plan the city's would have to

major developments around its airport decades ago, including a 130-foot storage residential nursing many communities, these developments important to economic tax base, and appreciate these would have airport until it was When a new master plan the city's would have to



around its several including fields, a high grain elevator, uses, and a home. Like the city saw as the city's health and did not the impact decisions on future operations too late. airport determined airport expand or

¹⁰ This manual focuses primarily on safety-related issues, not noise impacts of airports. Appendix 14 provides some basic references related to airport noise issues.



improve its facilities to accommodate future demand, the city realized it would never get federal or state funding for the expansion because of the already-established incompatible land uses. As a result, the city is closing its current airport and building a brand new airport in the middle of cornfields at a cost of more than \$20 million dollars.

The airport sponsor in our story learned its lessons and has already purchased hundreds of acres of land around the new airport site. Additionally, a new multi-jurisdictional zoning board authorized by state law has been convened, and so far cooperation among the airport, city, county, and townships to limit potentially incompatible land uses is encouraging. The airport sponsor is working hard to retain agricultural uses around the airport and to ban residential uses on adjacent properties.

This case demonstrates how important it is to protect the huge investment in public dollars that airports represent. In a time of tight state and local budgets, no one can afford to make decisions detrimental to the airports and permit incompatible land uses that interfere with airport operations. But these decisions can have an even more serious consequence beyond dollars and cents—building houses, businesses, schools, cell towers, grain elevators, and other structures near runways will inevitably have serious safety consequences. While air travel is the safest form of transportation, and recent studies from 2004 even indicate that the number of accidents is dropping, accidents can and will happen. Putting houses and other structures too close to runways significantly increases the chance of a catastrophic accident with many casualties.

Airport safety can be broken down into three categories:

- Protecting people and property on the ground;
- Minimizing injury to aircraft occupants; and
- Preventing creation of hazards to flight.

National Transportation Safety Board (NTSB) records indicate that over 61% of accidents occur in the vicinity of an airport. Appendix 7 discusses the number of commercial and general aviation aircraft accidents that occurred during each portion of flight. The data clearly show that most of the risk involved with air transportation is associated with takeoffs and landings, with arrival accidents exceeding departure incidents by almost 3 to 1. Interestingly, general aviation flying has more accidents per operation by a factor of approximately five when compared to commercial scheduled flights. See Table 1-6 below.

TABLE 1-6: U.S. CIVIL AVIATION ACCIDENTS IN 2004

	Accidents		Fatalities		Flight	Departures	A
	All	Fatal	Total	Aboard			



					Hours					
U.S. air carriers operating under 14 CFR 121										
Scheduled	21	1	13	13	17,000,000	10,547,000	0.124	0.006	0.199	0.009
Nonscheduled	7	1	1	1	575,000	238,000	1.217	0.174	2.941	0.420
U.S. air carriers operating under 14 CFR 135										
Scheduled	5	-	-	-	330,000	593,000	1.515	-	0.843	-
Nonscheduled	68	24	65	64	3,072,000	-	2.21	0.78	-	-
U.S. general aviation	1,614	312	556	556	25,900,000	-	6.22	1.20	-	-
U.S. civil aviation	1,715	338	635	634						
Notes: All data are preliminary; flight hours and departures are compiled and estimated by the Federal Aviation Administration; departure information for non-scheduled part 135 operations and general aviation is not available; accidents and fatalities in the categories do not necessarily sum to the figures in the U.S. civil aviation because of collisions involving aircraft in different categories. <i>Source: National Transportation Safety Board Table 1 2004 Preliminary Statistics</i> http://www.nts.gov/aviation/Table1.htm										

The primary compatibility concerns range from tall buildings that may be obstructions to flight, to inappropriate higher density uses that put people on the ground in harm's way (such as high-density residential subdivisions and apartments), to uses that might interfere with aircraft operations (e.g., bright lights on towers, radio interference, landfills and standing water that might attract birds).

Population density, particularly in areas closest to a runway's ends and under the runway's approach and departure areas, is a major factor in estimating a crash consequence. A pilot who has some control capability of a small aircraft can usually avoid human habitations in low density developments. High-density development in these areas can greatly increase the risk for a catastrophic accident involving people on the ground. Moreover, occupants in developments such as hospitals, schools, and sports stadiums are more vulnerable in an accident because of mobility constraints and probable panic.

In summary, the critical areas at an airport that need to be secured and protected from a land use compatibility standpoint include the runway approach and departure. To enhance airport safety, it is important to maintain obstruction-free airport airspace and a reasonable amount of vacant land or land with very low intensity uses at both ends of the runway. While some of these potential hazard areas can be purchased by an airport, the large bulk is often beyond normal airport boundaries. Acquisition of huge tracts of land is cost prohibitive. Thus the primary tools available to local governments to prevent incompatible development are zoning and land use controls.

Who Should Use This Manual

While a wide variety of people will find this manual a useful reference, it is aimed primarily at local officials who manage airports, and those who make local land use decisions like city council members, zoning administrators, county commissioners, and planning commissioners, planning staff, and their legal counsel. The manual lays out step-by-



step instructions for adopting airport zoning ordinances in Minnesota and suggests ways to protect existing airports.

Local landowners and developers will also find this manual a helpful guide about do's and don'ts for projects within the vicinity of an airport, as will members of the aviation industry who may be interested in the plan for an airport or who will use the facilities identified in the plan. Finally, members of the general public who want to understand the basics of airport compatibility planning will hopefully find it an instructive primer.

How The Manual Was Prepared

This manual is the result of almost two years of intensive research and meetings undertaken at the direction of the Minnesota Department of Transportation Office of Aeronautics. The project was kicked-off in August 2004 when Mn/DOT retained a consultant, Clarion Associates, who performed a review of all 136 public airport zoning ordinances in place throughout the state and conducted follow-up in-depth interviews with 14 airports.¹¹ The purpose of these interviews was to gain a better understanding of local governments' motivations, politics, and rationale for their airport zoning choices and to hear how well those choices were working on the ground to protect airport operations and prevent airport hazards. In addition, these interviews provided an opportunity to gather specific suggestions "from the field" about what actions or policies the state might take to better guide and support local efforts to achieve airport land use compatibility.

¹¹ The airports interviewed included (1) Alexandria, (2) Bemidji, (3) Brainerd Lakes, (4) Faribault, (5) Fergus Falls, (6) Fosston, (7) Hibbing, (8) International Falls, (9) Little Falls, (10) Maple Lake, (11) Perham, (12) Redwood Falls, (13) St. Cloud, and (14) Willmar.



The consultants next undertook a detailed review of state and federal aviation-related statutes, rules, and policy documents. They researched airport land use, zoning, and planning statutes in the following nine states:

1. California
2. Colorado
3. Florida
4. Massachusetts
5. New Jersey
6. New York
7. Oregon
8. Virginia
9. Washington

The goal was to identify any provisions in these other states' laws that are significantly different from Minnesota's airport land use laws and that might prove useful in legislative revision efforts. These nine states were chosen because of their reputations for relatively proactive state approaches to land use zoning regulation and because several of them witnessed substantial airport construction/expansion activity in the last 20 years.

Following discussions with the advisory committee convened by Mn/DOT, the consultants produced a major report entitled "Airport Land Use Compatibility Best Practices & Recommendations." This report:

- Brought together findings and recommendations from research to date.
- Presented best practices for achieving airport land use compatibility in seven (7) areas:
 - Zoning
 - Planning
 - Regulations
 - Property Disclosure Mechanisms
 - Property Acquisition
 - Incentives
 - Public Education and Outreach
- Made recommendations for changes in the state model airport zoning ordinance and state legislation relating to airport land use compatibility.

After review by the advisory committee, staff from the Office of Aeronautics and the consultants prepared this manual, drawing on the airport land use compatibility best practices report and other documents prepared during the project.



How To Use This Manual

This manual is divided into a series of discrete topics that can be read and referenced individually or in tandem.

Chapter 2: The System Today, presents a succinct overview of the aviation system in the United States and Minnesota. It identifies key players such as the Federal Aviation Administration and the Minnesota Office of Aeronautics and discusses their roles and duties in airport operations and land use compatibility planning. It includes a brief summary of key federal and state aviation laws such as the state model airport zoning law. It concludes with a more detailed discussion of some of the current challenges and shortcomings with the current system.

Chapter 3: Compatible Airport Land Uses, discusses in greater detail the primary land use compatibility concerns facing airports today—everything from too tall buildings to residential subdivisions built too close to the end of airport runways. Drawing from project research, Chapter 3 presents an extensive table of land uses that might be expected to develop around an airport, and assesses the uses' relative safety compatibility. This table should serve as a useful reference to local zoning and planning officials.

Chapter 4: Preventive and Corrective Strategies for Airport Land Use Compatibility, presents detailed local strategies for preventing potentially incompatible land uses including planning, regulation, capital investments, acquisition, incentives, and education. It also discusses corrective actions that can be taken by local governments to address incompatible land uses after they are established.

Chapter 5: Applicable Laws, Statutes, and Legal Issues, summarizes the most important federal and state aviation laws related to land use compatibility. It also presents the unique aspects of Minnesota land use law that have affected land use planning around airports in the state.

The final chapter, **Chapter 6: Model Airport Safety Zoning Ordinance and Procedural Guide**, first provides an overview of the legal status of the model zoning ordinance and a summary of its contents. The complete Model Airport Safety Zoning Ordinance, with detailed annotations, is found at the end of Chapter 6. The revamped model ordinance reflects modern airport zoning practices as well as minimum requirements under Minnesota law. The intent is to provide more choices and options for local governments to tailor an airport safety zoning ordinance to their own unique circumstances. Mn/DOT encourages all affected public airports and local governments to review their current airport zoning regulations in light of this new model ordinance and to consider updating their regulations as desired. Chapter 6 also outlines the procedures to be used under state law to adopt an airport zoning ordinance, secure state

approval, and review development and variance applications after the airport zoning ordinance is in place.

Following these six chapters, a glossary of key terms is set forth and appendices that present major interim project reports and other resource/contact information.



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chapter 2: the system today



Introduction¹²

Chapter 2 highlights the different components of Minnesota's aviation system today. Beginning with a primer on the key players involved with compatible land use decision-making, and followed by a closer look at the state's airport zoning regulations and procedures, this chapter examines how the current system is set up for addressing land use compatibility and safety issues.

Key Players and a Summary of their Roles and Responsibilities

There are many levels of responsibility regarding airport operations and airport land use compatibility issues. While the federal government, through the Federal Aviation Administration, plays an important role, the primary responsibility for implementation and enforcement resides with the Mn/DOT Office of Aeronautics and local governments throughout the state. This section discusses the respective roles of the federal, state, and local governments regarding airport safety and land use, as well as the other key players in the process in Minnesota such as airport owners and managers, regional governments like the Metropolitan Council, and others.

CHAPTER 2 OVERVIEW

- Introduction
- Key Players and a Summary of Their Roles and Responsibilities
- Minnesota's Current System – Land Use and Airport Safety
- Federal System – Compatible Land Uses and Airport Safety
- Successes and Challenges With Current Minnesota Approach Toward Airport Safety
- Recommended Best Practices

THE FEDERAL GOVERNMENT AND THE ROLE OF THE FEDERAL AVIATION ADMINISTRATION

While the federal government does not have a direct hand in zoning and regulating development around airports, it plays several important roles related to compatible land use including planning, technical assistance, and funding.

At the federal level, the primary agency responsible for aviation-related land use compatibility is the Federal Aviation Administration

¹² If this chapter is read in full, we recognize its contents may overlap with other discussions presented in other chapters. We believe most users will read specific chapters of this manual as needed and, therefore, we feel it is better to include some discussions that may be repetitive. Where possible, however, we have eliminated duplicate text and included cross references.



(FAA). Other federal departments such as the U.S. Environmental Protection Agency have minor regulatory review of various aspects of airport development and, more importantly, off-airport land issues. These other federal departments are quite diverse and are not considered to have a substantial role in the daily issues of compatible airport land uses, but are discussed in Appendix 9 with regard to specific regulations.

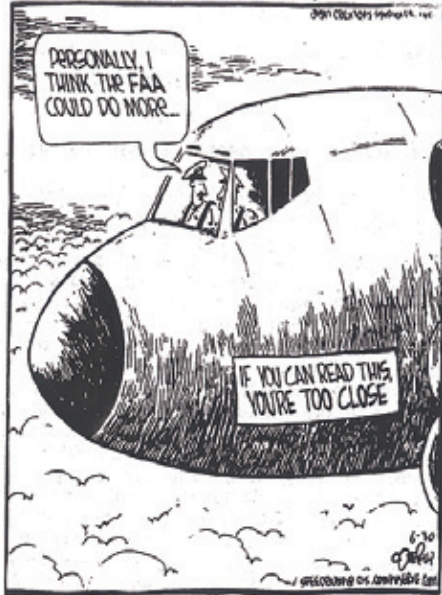
The FAA is responsible for federal laws and regulations affecting the aviation industry. It issues a variety of regulations and documents to this end, such as Federal Aviation Regulations (FARs), FAA Orders, and FAA Advisory Circulars (ACs). The FAA is also the funding mechanism for airport master plans, noise and land use studies, and other issues related to land use compatibility, as well as the funding mechanism for the construction, expansion, and safe operation of airports. As the governing aviation agency, the FAA is responsible for preservation of the national airspace and control of aircraft while in flight. This responsibility includes areas such as airworthiness and noise emissions of aircraft, as well as navigational aids and air traffic control facilities.

With regard to land use compatibility, the primary funding emphasis is on acquiring clear runway safety areas and approach areas in close proximity to the airport. The secondary funding emphasis is acquisition of easements to provide height controls over properties in close proximity to the airport. When warranted by a noise study, the FAA will typically participate in noise mitigation measures, which may include soundproofing structures, construction of noise barriers, or possibly acquisition to remove or relocate a noise-sensitive development.

Specific FAA regulations and their impact on land use issues provide the foundation for airport owners when developing a compatible land use strategy. These various regulations have historically focused on on-airport safety and land use. However, as land use issues continue to plague the nation's airports, the FAA has become more active in developing FAA Orders and Advisory Circulars to address more non-traditional land use compatibility issues such as wetlands, bird attractants, and cell towers.

Despite the FAA's important policy, oversight, and funding roles, local governments retain full control and jurisdiction over the use of land outside an airport's boundaries. The FAA's only leverage for promoting compatible land use planning off-airport is through the grant assurances that airport proprietors must sign in order to obtain federal funding for airport improvements. These grant assurances typically include promises or undertakings by the airport operator that surrounding local governments will impose adequate zoning and land use controls to protect the airport. However, after-the-fact monitoring or enforcement of such assurances by the FAA are rare. State and local agencies are free to set more stringent land use compatibility policies as they see fit.

Speed Bump by Dave Coverly





THE STATE OF MINNESOTA

At the state level, the Minnesota Department of Transportation (Mn/DOT) is responsible for providing leadership in developing and operating a safe and efficient transportation system. Within the agency, the Office of Aeronautics has the responsibility of implementing the Mn/DOT mission as it relates to aviation and generally supervising aeronautics in Minnesota. The Office of Aeronautics is divided into five sections: Aviation Planning, Airport Development, Nav aids, Aviation Education, and Aviation Operations. Of the five, the Aviation Planning Section has the most involvement with land use compatibility issues.

Aviation Planning Section

The Aviation Planning Section of the Mn/DOT Office of Aeronautics has responsibility to:

- Conduct and coordinate statewide and regional strategic, system, and master planning for aviation;
- Provide aviation involvement in intermodal planning activities;
- Maintain an aviation data base and make such information available to state agencies and the public;
- Assist the owners of publicly-owned airports in developing appropriate airport improvements;
- Develop forecasts of aviation activity and revenue needs;
- Assist and support Minnesota communities with scheduled air service matters;
- Assist airport owners in meeting federal and state environmental requirements;
- Monitor aviation issues and legislation; and
- Coordinate special programs and policy initiatives.

One of the most important activities of the Mn/DOT Aviation Planning Section is to advise local governments on land use compatibility issues and to monitor and enforce compliance with the state's minimum airport zoning standards and related procedures. In practice, many airport authorities seek the advice and guidance of section staff when confronted with potentially incompatible land uses. Staff from the section often makes presentations and gives advice to local planning commissions, zoning boards, and elected officials on a variety of land use issues such as variance requests.

As part of its education and information-sharing function, the Mn/DOT Aviation Planning Section directed the preparation of this Airport Land Use Compatibility Manual.



LOCAL GOVERNMENTS

While the federal government and the State of Minnesota play important roles in assuring compatible land uses around airports, local governments are the first line of defense. Under state law, local governments are given the power to zone and directly regulate land uses like tall structures, residential developments, and landfills. The ultimate authority to say “yes” or “no” to a potentially incompatible land use in the airport environs rests with local jurisdictions. Accordingly, the relationship between local jurisdictions and airports is of critical importance, since airport sponsors rely upon local government staff to provide notice of land use actions proximate to airports, and establish the planning and zoning policies that enable the airport to operate effectively and safely.

Land use controls like zoning have proven to be one of the most effective tools to prevent incompatible land uses near an airport. Minnesota aviation law (Minnesota Statutes, Chapter 360) strongly supports local use of zoning powers, rather than condemnation, to control incompatible land uses. Zoning is most effective when enacted prior to development activity near an airport, which is typically early in the life of an airport.

Mn/DOT provides a model ordinance for local airport zoning regulations. The model ordinance provides a very good starting point for local regulatory drafting efforts. The statutes and rules allow a local government to provide more strict requirements than found in the state’s model. The statutes and rules also allow less restrictive zoning rules than contained in the model ordinance if a municipality can demonstrate to the Mn/DOT Commissioner of Transportation that: “the social and economic costs of restricting land uses in accordance with the standards outweighs the benefits of a strict application of the standards.”¹³

The State of Minnesota has adopted legislation creating several powerful tools to facilitate multi-jurisdictional airport zoning. These include joint zoning boards, preemptive extraterritorial zoning, and withholding of state funds for noncompliant communities.

The joint airport zoning board mechanism that is permitted under Minnesota airport zoning enabling legislation (Minnesota Statutes, Section 360.063, subd. 3) is perhaps the most effective tool for joint airport vicinity planning and adoption of consistent airport protection regulations. However, this approach has some significant shortcomings.

In addition to the joint multi-jurisdiction airport zoning board approach authorized by state law, the Minnesota statutes also authorize an airport-owning municipality and joint zoning board to apply airport zoning unilaterally to land within noncompliant municipalities, townships and counties. State law also gives

¹³ Minnesota Statutes, Section 360.065, Subd. 2.



municipalities extraterritorial zoning powers over adjacent un-zoned territory, which could be used to apply airport zoning to balking county or township areas. (See Minnesota Statutes, Section 462.357, subd. 1.) However, based on recent research, no jurisdiction has invoked any of these far-ranging powers to help implement airport zoning.

Another tool that can be used to encourage and require cooperative airport zoning rests with the Minnesota Department of Transportation, which may withhold airport funding if an airport jurisdiction fails to create a joint airport zoning authority or comply with the minimum airport zoning requirements. Of course, withholding state funds is an ineffective tool if a jurisdiction adjacent to an airport is the recalcitrant party—cutting off airport funding would have no effect and, in some instances, may be the desired result on the neighboring local government.

AIRPORT SPONSORS

The owner/operator of an airport has the often-challenging role of working with independent local governments to protect its facility from incompatible land uses in the airport vicinity outside the airport proper. When the surrounding land is controlled by the same jurisdiction that operates the airport, theoretically this task should be less difficult—but that is not always the case when local economic development goals compete with the need for safe and efficient airport operation. The situation can be much more difficult if the adjacent local government has no direct stake in the airport.

Consequently, airport sponsors must be vigilant in their efforts to keep abreast of their local communities' actions regarding land use issues in proximity to the airport vicinity. Airport operators and sponsors must be closely involved with city and county officials in developing comprehensive plan policies, plan elements, and land use regulations that:

- Preserve the viability of airport uses,
- Minimize and/or mitigate potential noise impacts on surrounding uses,
- Preserve adequate space for airport operations, expansion, and safety zones, and
- Protect airports and airport vicinity from encroachment and incompatible land uses.

All federally funded airports have FAA assurances relating to land use compatibility that are part of their grant packages to build airport improvements, and such assurances must be adhered. Sound airport land use compatibility planning/management is incumbent on all local governments, but it is a grant compliance requirement for those airport sponsors who are also the authority for planning, zoning and permitting activity in the airport vicinity. Consequently, airport



owners must also be cognizant of the commitment these assurances carry with regard to land use compatibility. When receiving federal funds, a local community must be aware of the potential penalties for failing to fulfill the assurances. An example of these assurances is the preservation of a clear Runway Protection Zone (RPZ). The airport sponsor should acquire title to the entire RPZ in fee whenever possible since it should not be off-airport; however, an easement should be acquired if outright purchase is not possible. Commitments from the assurances also typically include the preservation of compatible land uses and the protection of navigable airspace.

Airport sponsors should also stay in close contact with surrounding property owners so that those owners are not taken by surprise by airport improvement and expansion plans that may affect them. Often a little education will go a long way toward avoiding problems. For example, property owners are often simply unaware that certain types of uses (e.g., a landfill or lake that might attract wild fowl) may have serious adverse impacts on airport operations.

THE METROPOLITAN COUNCIL AND THE METROPOLITAN AIRPORTS COMMISSION

The Minneapolis-St. Paul region has two major governmental entities that play a key role in airport land use compatibility in addition to local governments. They are the Metropolitan Council, a regional planning agency, and the Metropolitan Airports Commission, which manages Minneapolis-St. Paul International Airport and six reliever airports in the same region.

The Metropolitan Council

The Metropolitan Council (“Met Council”) is the regional planning agency that serves the Twin Cities seven-county metropolitan area and provides essential services to the region. The Metropolitan Council is responsible for regional transportation planning, including aviation, highway, and transit systems as well as transit operations. Since federal law requires the participation of local elected officials in transportation planning, the Transportation Advisory Board (which consists primarily of local elected officials), together with the Metropolitan Council, comprises the Metropolitan Planning Organization (MPO) for the Twin Cities area.

The Met Council must prepare a long range (20 year) transportation plan for the region every four years (the current plan was adopted December 15, 2004). It is also responsible for the selection of projects for federal funding and the preparation of a three-year transportation improvement program (TIP).

The most significant function of the Metropolitan Council relating to airport compatible land uses involves its regional land use planning process, which is defined under the Metropolitan Land Planning Act. All metro area communities prepared plan updates in 1998 and are



required to again update their comprehensive plans by 2008. The Council reviews these local plans for conformance with the regional systems plans developed by the Council, including aviation, consistency with regional policies, and compatibility with adjacent and affected local governmental units.

The Metropolitan Airports Commission

The Metropolitan Airports Commission (MAC) was created by state law in 1943. A public corporation, the commission was designed to provide for coordinated aviation services throughout the Twin Cities metropolitan area.

Today, the MAC operates the third largest aviation system in the nation, consisting of Minneapolis-St. Paul International (MSP) and six reliever airports. A 15-member board of commissioners appointed by Minnesota's governor and the mayors of Minneapolis and St. Paul sets and interprets the commission's policies. The Mn/DOT Commissioner is a nonvoting member of the MAC under Minnesota Statutes, Section 174.02, Subd. 5. Policies are implemented by the commission's executive director and staff.

The MAC's Planning and Environment Division is the section most involved in land use compatibility issues. This division supervises property acquisition, planning, design, engineering and architecture, and construction of all MAC facilities, as well as all commission-related environmental issues including noise, air quality and water quality. Relationships with other local, state and federal agencies are part of its overall responsibilities.

AIRPORT USERS

Commercial airlines, air cargo carriers, and general aviation users are equally responsible for awareness of issues relating to land use compatibility, and for participating in local land use decision-making that may affect airport operations. While these players often focus their attention on noise issues because of community pressure and objections, it is equally important that they participate in both local land use planning and zoning efforts that establish permissible land uses around an airport and in specific land development decisions that may have an adverse impact on airport operations. They should take an active role by testifying at local land use hearings, and helping to establish the positive economic impact that their businesses have on the local economy.

Similarly, pilots, both commercial service and general aviation, are responsible for operating their aircraft in a prudent manner and should support local airport efforts to prevent the establishment of tall buildings and towers, excessive lighting, and other developments that might interfere with aircraft operations and navigation.



Airport users should take an active part in local land use decision-making to ensure their needs are met.



PROPERTY OWNERS

Numerous studies document the positive economic impact an airport can have on a local economy and how it can create development opportunities related to air cargo, offices, hotels, restaurants, and similar uses.¹⁴ On the other hand, a property owner may have plans to build residential or other development that is potentially incompatible with airport operations and will generate opposition for the airport operator and users.



Nearby property owners also benefit from being involved in the airport land use planning and zoning decision-making process.

Property owners who support the airport and stand to benefit from it should participate actively in local land use planning and zoning decision-making as outlined above for airport users. Additionally, if a nearby property owner is an advocate of aviation and has verbally committed to the local airport that he will cut trees on his property or promise to avoid any further development that may penetrate the required safety areas, steps should be taken to formalize these understandings. While this relationship is positive, the property owner must be educated about the need to procure at least an easement over his property to ensure the lifetime commitment to preserving the clear airspace after he no longer controls the property.

For those owners who might seek to undertake residential or other developments that are potentially incompatible with airport operations, they should work closely with local airport operators and stay abreast of airport improvement plans. With a little forethought, problems often can be side-stepped and developments planned in such a way that adverse impacts on the airport are avoided altogether. Property owners should also seek the advice and input of airport operators early in the planning process for new development so that developments can be configured to reduce or eliminate potential incompatibilities.

GENERAL PUBLIC

The role of local citizens in the land use planning process is one of understanding and education. Involving the public in the planning process is essential so they understand the importance of maintaining compatible land uses near their local airport. Raising public awareness about the detrimental impacts of incompatible land uses is important to developing and understanding the commitment required to create a safe operating environment for not only the airport, but also the citizenry located in proximity to the airports. The most desired climate for implementation of compatible land use initiatives is one in which the local government has the support of citizens to implement the necessary policies and procedures. This support is usually gained through a deliberate process of educating and informing the public on safety and noise related issues.

¹⁴ Source: "A Better Way to Plan Airports" (Duerksen C., Reaves R., and Roddewig R.) *Urban Land*, March 1993; "Ready for Takeoff: Developing the 21st Century Airport" (Duerksen, C., Roddewig, R.) *Urban Land*, November, 1992.



Local citizens are also an important part of the land use planning process since they are often the individuals most affected by the land use techniques utilized to develop compatible land uses. For example, a local homeowner whose residence is located in an airport safety zone needs to be educated about the need for clear airspace within the safety zone. Educating and informing the local population about the necessity of compatible land uses around airports is essential to the preservation of the aviation system. These individuals influence the decisions of local planners, elected officials, and policy-makers who are directly responsible for the implementation of the various planning techniques required for implementation of compatible land uses.

Minnesota's Current System – Land Use and Airport Safety

BRIEF HISTORY OF AIRPORT ZONING IN MINNESOTA

The State of Minnesota has been among the national leaders in addressing the challenging issues involved with land use compatibility around public airports. Since 1943, airports in Minnesota have been authorized by state law to enact safety zoning. However, the first aviation regulatory statutes began in Minnesota as early as 1925. On January 1, 1946, the state enacted its first model airport zoning ordinance, and by 1958 it had designated Safety Zones A, B, C, and D as part of the model airport zoning standards. In 1973, local protective zoning was made a condition for receiving federal and state funding.

Since it was first established, the Minnesota model airport zoning ordinance has incorporated several changes to its restrictions on safety zones and uses. The model ordinance was last comprehensively amended in 1990. The state model currently provides an easy-to-use approach to airport protection through the device of three Safety Zones (A, B and C), with safety compatibility regulations specified for each zone.¹⁵

Local governments are also authorized to create joint multi-jurisdictional zoning boards to control land uses around airports with their neighbors, or to control land use in adjacent localities if cooperation is not forthcoming. Adoption of an ordinance must be certified by the state for airport funding.

Special airport planning requirements have also been established for the Minneapolis/St. Paul region where the large majority of aviation

“Highway shoulders are the equivalent of aviation safety zones. It costs a significant amount of money to acquire an additional 20 feet of land to construct shoulders on our highway system. We know they prevent accidents and save lives, but it is difficult to statistically justify on a mile-by-mile basis. System-wide, we just know it is worth it. The same for safety zones applied throughout the state airport system – we know it’s worth it, and so do the vast majority of our State airport owners.”

*-Mike Louis, Director,
Mn/DOT Aviation
Planning Section*

¹⁵ In a previous version of the model ordinance, a fourth safety zone, “Safety Zone D,” was included. In most cases, Safety Zone D is no longer included in local Minnesota airport zoning ordinances, although some airports have still carried forward Safety Zone D.



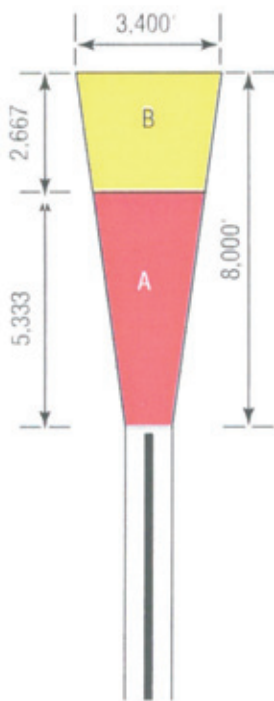
activity in the state takes place. When the Metropolitan Planning Act of 1976 became law, all communities in the seven-county metro area were required to prepare local comprehensive plans. Part of that planning process was for local airports and communities to recognize/implement the laws, rules, and regulations concerning airport safety zoning.

Despite these commendable steps, by 2004 it was becoming clear that there were gaps and shortcomings in the state's approach to protective airport zoning and prevention of incompatible land uses. Incompatible commercial and residential developments were being built close to growing airports, often hamstringing their operations.

THE STATE MODEL ZONING ORDINANCE

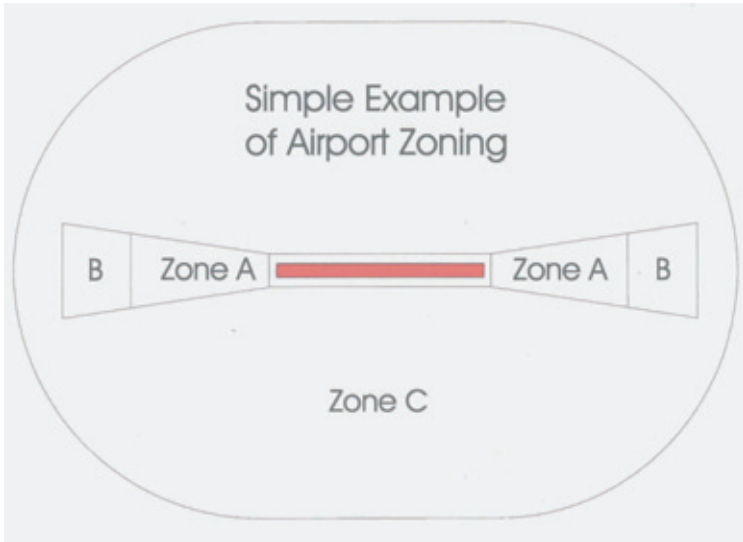
The Minnesota state model airport zoning ordinance was first issued by Mn/DOT Office of Aeronautics in 1946 and last comprehensively amended in 1990. The model ordinance provides a recommended structure for implementing height and land use regulations intended to minimize airport safety hazards and protect airport operations. These minimum regulations are outlined in Chapter 360 of the Minnesota Statutes, and further fleshed out in Minnesota Rule 8800.2400.

Airport safety zones recommended in the Minnesota state model airport zoning ordinance provide very useful guidance in drafting local protective zoning regulations and districts. The model airport zoning ordinance is very clear in setting the minimum dimensions of three airport land use safety zones: Zones A, B, and C. The three safety zones are intended to include all land under a runway's approach paths. Zones A and B extend a minimum distance, respectively, of two-thirds and one-third the planned length of the runway. See illustrations below and at left.



Minnesota
Standard
8,000' Runway

The model ordinance sets forth specific land use restrictions, height controls, and use prohibitions keyed to the three safety zones. While the ordinance's general regulations prohibiting the creation of new air navigation hazards and the ordinance's height restrictions apply in all zones, specific use restrictions currently apply only in Zones A and B, and not in Zone C. Thus, a local government desiring to provide protection for its airport and avoid incompatible uses can simply apply the dimensional requirements for delineating Zones A, B and C and adopt the relevant minimum height and use restrictions from the model ordinance as a starting point.





In a 2004 survey of Minnesota's 136 public airports, the state found that 130 airports have protective zoning in place where the text of the ordinance generally meets or exceeds the state model ordinance's minimum standards for safety zone dimensions, height limits, and use restrictions. See Appendix 3 for a summary table of the ordinance survey's key findings.



In fact, the state could identify only four ordinances in which the dimensions of the airport safety zones, as described in the ordinance's text, were less than the model ordinance's minimum specifications. For the four airport ordinances identified in the ordinance survey, Mn/DOT approved the safety zone reductions for different reasons.

Some airports above, current regulations

Complementing this survey of airport zoning ordinance text, Mn/DOT Office of Aeronautics staff analyzed zoning maps for all 136 of the state's public airports. Staff found that for 84 of the 136 public airports (about 62%), local zoning authorities had adopted runway safety zone dimensions (Zones A, B, and C) that *exceeded* the model ordinance's minimum dimensional requirements, while another 35 of the 136 public airports (26%) complied with the model ordinance's minimum safety zone dimensions. Seventeen (12.5%) of the state's public airports, primarily those with turf runways, did not, as of January 2006, comply with the minimum safety zone requirements. See summary Table 2-1 below.

TABLE 2-1: MINNESOTA AIRPORT ZONING SUMMARY (2006)			
Number of Public Airports [Notes 1 and 2]:			
Exceeding Minimum Ordinance Standards for Safety Zones:			84
Meets Minimum Ordinance Standards for Safety Zones:			35
Subtotal			119
Does Not Meet Minimum Ordinance Standards for Safety Zones:			
	MAC airports	6	
	Airports with turf runways (Master plan review required) [Note 3]	11	
Subtotal			17
Total Airports			136
Note 1: There are 23 airports with zoning in place for future runways that are not constructed to date. These future runways are not included in the totals indicated above.			
Note 2: A detailed list of airports used to compile this table can be found in Appendix 3.			
Note 3: Safety zoning for turf runways at public airports will be reviewed during the Master Plan process; Mn/DOT expects all safety zoning for turf runways to comply with Minnesota Statutes, Chapter 360, or else cease operations.			
<i>Source: Mn/DOT Office of Aeronautics, 2006</i>			



The State Model Airport Zoning Ordinance and Airport-Compatible Land Uses

FIGURE 2-1: HISTORY OF AIRPORT ZONING IN MINNESOTA

1925	Minnesota develops some form of aviation regulatory statutes		
1943		Minnesota State Department of Aeronautics absorbs the Minnesota Aeronautics Commission	1943
1944	Drafted Model Zoning Act		
1945	Minnesota Airport Zoning Act		
1946		First Minnesota Model Airport Zoning Ordinance	1946
1958	Minnesota State Zoning established after recommendations in the Doolittle report		
1967		Metropolitan Council established	1967
1969		Change in Land Use Standards and safety zones for airports	1969
1973	Airports are required to zone with due diligence		
1974		Change in Safety Zone lengths	1974
1975	Changed "Land-Use Zoning Standards" to "Airport Zoning Standards"		
1978		Airport zoning standards: Protection of Existing Neighborhoods amendment passed	1978
1979	Revised Model Zoning Ordinance		
1980		<i>McShane v. City of Faribault</i>	1980
1983	Minnesota Statutes Annotated		
1990		Updated Minnesota Model Airport Zoning Ordinance	1990



While the state model airport zoning ordinance provides an easy-to-use approach to airport protection through the device of the three protective zones (A, B and C), as noted earlier, the model ordinance is just a starting point in that it recommends only a very abbreviated list of compatible and incompatible uses. Some increasingly common uses like cell towers and wind turbines are not addressed at all. Based on a national survey, Mn/DOT has developed a more extensive, fine-grained list of uses that local governments can use to guide their decisions to allow, permit with conditions, or prohibit specific land uses in the three airport safety zones. This updated use list can be used to supplement the model ordinance in determining compatible uses in local airport zone districts or overlays (See Chapters 3 and 6 of this manual).

However, these use provisions will only be effective if implemented at the local level. This is not always the case today, although in some instances local governments enacted more stringent requirements. In 11 ordinances, or 8.5% of the 130 airport zoning ordinance texts surveyed by Mn/DOT, there are departures from the state model ordinance in their treatment of allowed or prohibited land uses within Safety Zones A and B. In several ordinances, existing residential or assembly land uses that would otherwise be prohibited and treated as nonconforming uses under the model airport zoning provisions for Safety Zones A or B, are specifically exempted (“grandfathered”) from these ordinance’s land use restrictions and treated as conforming uses.

Several of these ordinances also expanded the types of uses or density of uses allowed in the safety zones. One airport zoning ordinance prohibits many specific types of assembly and high-density uses from Safety Zone B, such as nursing homes and all densities of new residential development, but does not contain the model’s general prohibition on assembly type uses (i.e., the model limits the maximum number of persons that can congregate on a given-size parcel within Safety Zone B). In addition, the ordinance does not require a minimum 3-acre parcel size for new development within Safety Zone B, as stated in the model ordinance. In a different airport zoning ordinance, assembly uses in which no more than 100 persons are congregated for no more than two consecutive hours are allowed, which is a more liberal allowance than permitted under the model ordinance. Similarly, another ordinance allows new development in Safety Zone B on as small as 2.5-acre parcels, rather than the minimum 3-acre parcels allowed under the model ordinance.

In contrast, a few ordinances, primarily those applicable in more rural townships and counties, were more stringent than the state requirements. For example, several ordinances applicable in rural townships and counties required a minimum five-acre development parcel size for new uses in Safety Zone B—a more stringent requirement than the model ordinance’s suggested 3-acre minimum. The ordinance for one small regional airport also sets a minimum one-acre parcel size for Safety Zone C, an element not required by the model ordinance.



Consideration of the modern airport compatible land use list set forth in Chapters 3 and 6 of this manual may help rationalize the use restrictions in Zones A and B throughout the state. However, based on the interviews and best practices research conducted for this Manual, it appears the issue of appropriate land uses in Safety Zone C will likely become more important in the future. Currently, the minimum Minnesota standards and rules do not restrict specific uses or population density in Safety Zone C, and consequently, some jurisdictions have permitted significant residential and other potentially incompatible development relatively close to the ends of active runways and to the extended runway centerlines. These Safety Zone C areas often become problems if a runway is lengthened or reconfigured and permitted uses that were previously allowed are now potential safety issues. (When a runway is changed in length or orientation, all the safety zones for that runway will change correspondingly.) Local implementing bodies are authorized to exceed the state minimum airport zoning regulations and therefore may, on their own initiative, choose to regulate residential uses and development densities in all or parts of Safety Zone C.

HEIGHT RESTRICTIONS

In addition to use regulations, a key aspect of airport safety zoning is typically restrictions on the height of buildings and structures near airport runways. These height restrictions, required by both Minnesota and federal law, aim to prevent interference with aircraft flight as well as ensure safety of persons on the ground. Minnesota has adopted obstruction prohibitions in its administrative rules that are very similar to the federal height obstruction regulations adopted in FAR Part 77 (“Objects Affecting Navigable Airspace”).¹⁶

Minnesota statutes, as reflected in the state model airport zoning ordinance, limit applicability of airport height restrictions to a distance “not to exceed one and one half miles beyond the perimeter of the airport boundary and in that portion of an airport hazard area under the approach zone for a distance not exceeding two miles from the airport boundary.” The operative restriction provides that “no structure or tree shall be constructed, altered, maintained, or allowed to grow in any airspace zone ... so as to project above” any of the specified airspace surfaces contained in Zones A, B or C.”

Importantly, when a local government adopts the model airport zoning ordinance, which is consistent with Federal Aviation Administration regulations, the local zoning rules apply instead of the state permitting requirement.¹⁷ The state model airport zoning ordinance contains specific height restrictions within the various

¹⁶ See Minnesota Rules, Rule 8800.1200 (Criteria for Determining Air Navigation Obstructions) and FAR Part 77, Subpart C (Obstruction Standards).

¹⁷ To our knowledge, the state does not issue permits for tall structures at any of the state’s public airports, because all but three of the public airports are operating under an effective zoning ordinance. At the three MAC airports that do not have airport zoning in place, Anoka, Flying Cloud, and Lake Elmo, federal FCC rules or FAA Rule 7460 apply.



BENEFITS OF AIRPORT HAZARD AREA SAFETY ZONING

- Supplements federal airspace protections with state and local ground-based off airport land use protections, as intended.
- Provides a transitional approach to land use development to stabilize land values by incorporation within municipal comprehensive plans.
- Prevents concentrations of people from being injured or killed, and residential and commercial property from being destroyed.
- Provides a clear visual approach to the runway within densely developed urban areas.
- Protects the future utility of the airport.
- Protects the existing and future public investment in the airport.
- Creates a fixed or readily ascertainable standard that may exempt public entities from tort liability.

defined imaginary airspace surfaces or zones (i.e., primary surface, approach surface, horizontal surface, transitional surface, and conical surface). Interestingly, in 56 of the 130 airport zoning ordinances reviewed by the state, or 44% of the surveyed ordinances, the horizontal airspace zone was established by specifying a lower, more restrictive vertical height than the 150 feet required in the model ordinance and by FAA regulations. Fifty-three of these 56 ordinances used 100 feet rather than 150 feet, while the other three ordinances used 75 feet.

If a local government adopts conforming regulations and assumes authority over height restrictions in navigable airspace, the federal government—through the Federal Aviation Administration—still plays an important and valuable role in any local decisions to approve or deny tall structures that may affect airport operations or aircraft safety. First, the model airport zoning ordinance as well as the requirements contained in federal regulations (FAR Part 77)¹⁸ should form the basis of the local height restrictions. Second, if local jurisdictions receive an application to erect a tall structure near an airport, local decision-makers would be well-advised to ask the FAA to complete an aeronautical study of a proposed tall structure project and issue a determination of “No Hazard to Air Navigation.” The standard procedure is to submit FAA Form 7460-1 to the FAA. Local approval should be withheld until comments from both the FAA and Mn/DOT are received. The FAA will offer its opinion as to whether a proposal would be hazardous to air navigation; however, federal law specifically reserves final decision-making authority to the local level. Similarly, an FAA determination of “no hazard” does not constitute development approval that overrides local permitting authority.

GENERAL RESTRICTIONS

Virtually all airport zoning regulations state similar general “performance standards” for uses and development in all airport safety zones. Performance standards do not specifically prohibit or allow a particular type of use. Instead, performance standards establish limits related to the creation of adverse impacts on overhead flight or to persons or property on the ground. No use, regardless whether permitted under the applicable airport zoning regulations, can operate or perform in a way that exceeds the specified limits.

¹⁸ According to federal regulations outlined in FAR Part 77 (“Objects Affecting Navigable Airspace”), any object or structure that penetrates any of the “imaginary surfaces” outlined in FAR Part 77 is considered to be an obstruction to air navigation. The regulations contained in FAR Part 77 attempt to accomplish the following: Establish standards and requirements for notice to FAA of proposed construction or alteration of a structure that may impact aviation and therefore requires a study for aeronautical effect; establish standards for determining which structures will be obstructions to air navigation; provide for studies of obstructions to determine their effect on the safe and efficient use of airspace; provide authority for public hearings and other reviews to examine the potential for hazardous effects to air navigation of proposed construction or alterations; and reference guidelines for marking and lighting obstructions to air navigation. If an object is identified as an obstruction, but does not adversely affect a significant volume of air traffic, it is determined not to be a hazard to air navigation.



In most referenced zoning ordinances, performance standards prohibit any use in the proximity of an airport that:

- (1) Is tall enough to be hazardous to the navigation of aircraft, including tall buildings, smokestacks, construction cranes, trees, and cell towers. FAA Part 77 regulations address these hazards by establishing airspace surfaces above which structures or trees must not protrude. Many airport zoning regulations reference and incorporate the FAA Part 77 height provisions.
- (2) May interfere with electronic navigation aides such as radar facilities and instrument landing systems that provide for the safe movement of aircraft. These aides may be located on-airport or off. Non-aviation electronic sources placed near electronic navigation aides may cause interference. Similarly, new structures may block the navigation aid signals. Both these types of situations must be reviewed prior to the placement of such uses and structures.
- (3) May cause a visual distraction to pilots approaching the airport. Distractions can occur from outdoor lights near an airport (e.g., high mast lighting or stadium lighting), from highly reflective exterior building materials, or from water surfaces. Smoke generated by nearby businesses, industry, or field burning can also create severe visual difficulties for pilots. Activities that generate a lot of dust can cause similar problems.
- (4) Has the potential to attract hazardous wildlife such as birds. These uses include wetlands, ponds, stormwater retention facilities, and landfills, which offer excellent habitat for avian wildlife and flocks of bird. The goal is to avoid interaction between such wildlife and aircraft in flight or on the ground.

In Minnesota's 1990 model airport zoning ordinance, several of these performance standards are found in Section V.B.1, which states:

“No use shall be made of any land in any of the safety zones defined in Subsection V.A. which creates or causes interference with the operations of radio or electronic facilities on the airport or with radio or electronic communications between the airport and aircraft, makes it difficult for pilots to distinguish between airport lights and other lights, results in glare in the eyes of pilots using the airport, impairs visibility in the vicinity of the airport, or otherwise endangers the landing, taking off, or maneuvering of aircraft.”

Other types of performance standards include minimum open space criteria for each safety zone. Large open areas near airport runways are desirable, especially at smaller general aviation airports, because pilots of smaller planes often can control the aircraft and attempt an emergency landing. California, for example, suggests local airport compatibility land use plans include open space criteria (e.g., a minimum percentage of each safety zone that should remain “open” and undeveloped). Local zoning authorities are encouraged to consider requiring clustering of private structures—especially on large parcels nearest the airport that are under single ownership or control.



PROCEDURE FOR ADOPTION AND APPROVAL OF LOCAL AIRPORT SAFETY ZONING

The Office of Aeronautics has established a straightforward process for the adoption of local airport safety zoning by joint zoning boards and approval of the ordinance by the state.¹⁹ These steps are outlined briefly below and are discussed in greater detail in Chapter 6, *Model Airport Safety Zoning Ordinance and Procedural Guide*:

1. ESTABLISH ZONING BOARD

The airport owner has two options for how airport zoning is adopted: (a) Request creation of a joint zoning board, or (b) Request a county or other municipality to individually adopt and enforce airport zoning regulations for the area in question that conform to minimum standards prescribed by the Mn/DOT Commissioner.

2. DRAFT ZONING ORDINANCE & MAP

The zoning board, working with an attorney, an engineer, and the Minnesota Department of Transportation, Office of Aeronautics, drafts an airport zoning ordinance and map. (Mn/DOT furnishes a model ordinance and map to be used as guidance.)

3. MN/DOT OFFICE OF AERONAUTICS FIRST REVIEW

Mn/DOT will review and advise the zoning board on the draft ordinance proposal before the first public hearing.

4. PREPARE FOR PUBLIC HEARING

Zoning board passes a resolution declaring this ordinance to be their proposed ordinance, setting a date and place for public hearing. The zoning board gives mailed and advertised notice of the hearing as specified by the state (e.g., to adjacent local governments and affected property owners).

5. FIRST PUBLIC HEARING

Hold the first hearing. After the hearing, the board will pass one of the following resolutions: (a) If no changes are necessary, a resolution is passed stating that a public hearing was held, that no changes are necessary, and that this proposed ordinance will be submitted to the Mn/DOT Office of Aeronautics for approval, or (b) If changes are desired, the proposed ordinance is amended and a resolution is passed declaring the amended ordinance to be the newly proposed ordinance and that this proposed ordinance will be submitted to the Mn/DOT Office of Aeronautics for approval.

¹⁹Zoning procedures are based on Minnesota Statutes Chapter 360, sections 360.061 to 360.074.

**6. MN/DOT REVIEW AND COMMISSIONER'S ORDER**

Submit proposal to the Mn/DOT Office of Aeronautics for approval. Upon review for approval, the Commissioner of Mn/DOT will determine whether the proposal conforms to the minimum standards. If no objections are made, the proposed ordinance is issued a Commissioner's Order of Approval. If the Commissioner objects on grounds that such regulations do not conform to the minimum standards, the zoning board shall make such amendments as are necessary to meet such objections.

7. SECOND PUBLIC HEARING

Follow same procedures as for the first public hearing. Resubmit ordinance proposal to the Mn/DOT Office of Aeronautics if, at the public hearing it was decided to amend the proposed ordinance. Repeat steps 4 and 5 above. If the changes were not substantial, a new Commissioner's Order need not be issued. If substantial changes have been made, then final adoption shall not take place until after final approval by the Commissioner.

8. ADOPT ORDINANCE**9. FILE ORDINANCE WITH COUNTY RECORDER****10. SUBMIT REQUIRED DOCUMENTS TO MN/DOT**

Federal System – Compatible Land Uses and Airport Safety

Like the State of Minnesota, the federal government (through the FAA) has taken steps to establish safety zones to protect runways from incompatible land uses. It has also adopted procedures to review potential obstructions to navigable airspace. However, the federal rules and regulations tend to be focused much more narrowly on the areas immediately adjacent to runways (similar to the Minnesota Safety Zone A), and mainly on areas within airport boundaries. Moreover, in most instances, the FAA and federal government do not exercise direct regulatory control over potentially incompatible land uses. The FAA offers guidance and advice to local governments and others, but defers to them in the final analysis. This section focuses on the two primary areas of federal concern—runway protection and airspace protection. It is important to note that airports that are not a part of the federal system – i.e., airports that do not receive federal assistance – are exempt from these federal airport safety regulations. In Minnesota, 44 public airports fall into this category of federally exempt facilities.



RUNWAY PROTECTION

Runway safety areas, as defined by FAA Advisory Circular 150/5300-13, *Design Standards*, are created for the safe and efficient operation of an airport and to protect people on the ground. While there are many design requirements contained in the advisory circular, this section focuses only on the runway protection and airspace protection zones associated with runway approaches and ends. While runway protection standards focus on potential hazards and acceptable uses, the FAR Part 77 airspace protection standards discussed in the following sections concentrate on above-ground clearances and air navigation obstructions.

Runway Protection Zones

Formerly known as “clear zones,” runway protection zones (RPZs) were originally established to define land surface areas underneath aircraft approach paths. Allowing airport operators to control these areas was important in preventing the creation of airport hazards or the development of incompatible land use. First recommended in a 1952 report by the President’s Airport Commission titled “The Airport and Its Neighbors,” the establishment of clear areas beyond runway ends was deemed worthy of federal management.

Providing these clear areas was intended to preclude obstructions potentially hazardous to aircraft and to control building construction for the protection of people on the ground. The US Department of Commerce concurred with the recommendation on the basis that this area was “primarily for the purpose of safety for people on the ground.” The FAA adopted clear zones with dimensional standards to implement the commission’s recommendation.

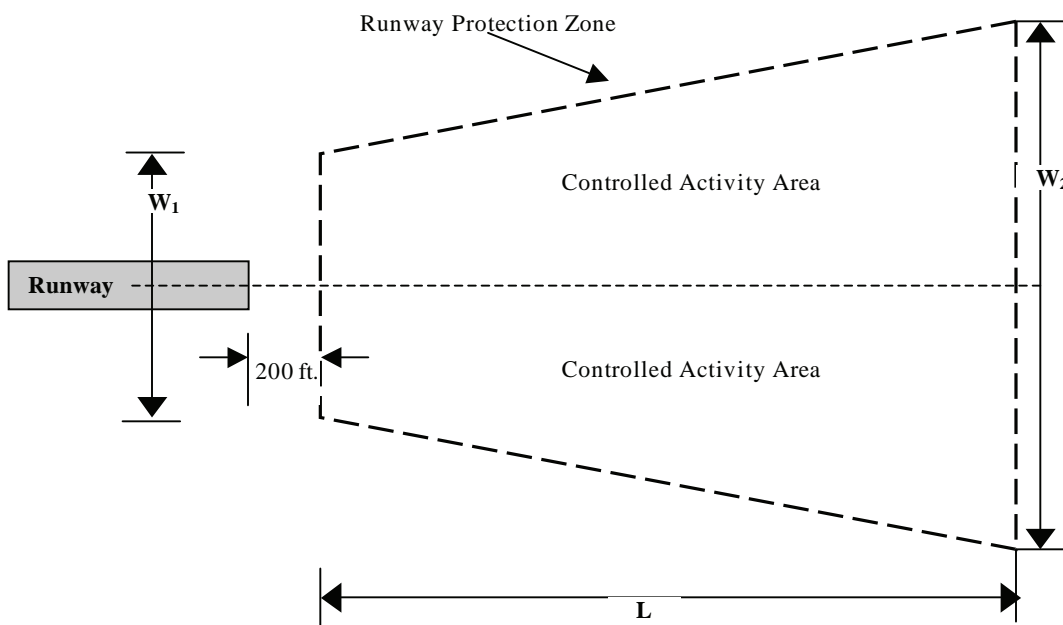
Recommended guidelines included clear zones being kept free of structures and developments that would create a place of public assembly. Today, clear zones are referred to as “RPZs,” and their function remains to protect aircraft and people on the ground. See Figure 2-2 for an illustration of RPZ dimensions.

The RPZ can extend beyond the airport property. Therefore, from an off-airport land use compatibility planning perspective, the RPZ is the most critical safety zone identified by the FAA design standards. The FAA recommends that, whenever possible, the entire RPZ be owned by the airport and be clear of all obstructions if practicable. When this is impractical, the FAA recommends obtaining easements sufficient to control the land use. Acquisition of this property by federal system airports is eligible for FAA grants (small airports that are not part of the federal airport system are ineligible). Even on portions of the RPZs not under airport control, the FAA recommends (but does not require) that churches, schools, hospitals, office buildings, shopping centers, and other places of public assembly, as well as fuel storage facilities, be prohibited. Automobile parking is considered acceptable only on the outer edges of RPZs.



Beyond the runway protection zones, the FAA recommends few additional safety-related land use measures other than airspace protection. It is in these areas that the Minnesota safety zone restrictions become particularly important because they are legally enforceable. However, additional property can also potentially be acquired with federal grants if necessary to restrict the use of the land to activities and purposes compatible with normal airport operations. In general, this property must be situated in the approach zones within a distance of 5,000 feet from the runway primary surface. Exposure to high levels of noise can also be the basis for FAA funding of property acquisition.

FIGURE 2-2: RUNWAY PROTECTION ZONE DIAGRAM



The RPZ is a trapezoidal area that begins at a point 200 feet beyond the end of the runway. The length (L in Figure 2-2) of the RPZ extends 1,000, 1,700, or 2,500 feet, depending on the category of runway and type of approach (visual, non-precision, or precision). The inner width of an RPZ is located closest to the runway end with the outer width extending out beyond the runway end. The inner width (W_1 in Figure 2-2) ranges from 250 to 1,000 feet, and the outer width (W_2 in Figure 2-2) ranges from 450 to 1,750 feet. The inner and outer widths are also dependent on the runway category and approach type.



Airspace Protection

Part 77 of the Federal Aviation Regulations (FAR), *Objects Affecting Navigable Airspace*, establishes standards for determining obstructions to navigable airspace and the effects of such obstructions on the safe and efficient use of that airspace. Additionally in Part 77, regulations require that the FAA be notified of proposed construction or alteration of objects—whether permanent, temporary, or of natural growth—if those objects would be of a height that exceeds the FAR Part 77 criteria.²⁰ The height limits are defined in terms of imaginary surfaces in the airspace extending about two to three miles around airport runways and approximately 9.5 miles from the ends of runways having a precision instrument approach. As noted earlier, Minnesota has codified its own administrative rules very similar to the federal FAR Part 77 airspace surface regulations. See Minnesota Rules, Rule 8800.1200 (2005).

As shown in Figures 2-3 and 2-4, the imaginary surfaces outlined in FAR Part 77 include the:

- Primary surface
- Transitional surface
- Horizontal surface
- Conical surface
- Approach surface

FAR Part 77 surfaces were devised by the FAA to protect specific airspace areas while, as discussed earlier, runway protection standards are intended to protect specific ground areas. The dimensions of FAR Part 77 surfaces vary depending on the type of runway approach.

When notified of a proposed construction, the FAA conducts an aeronautical study to determine whether the object would constitute an airspace hazard. Simply because an object would exceed an airport's airspace surfaces established in accordance with FAR Part 77 criteria does not mean that the object would be considered a hazard. Various factors, including the extent to which an object is shielded by nearby taller objects, are taken into account. The FAA may recommend marking and lighting of obstructions. The FAA has no authority to remove or to prevent construction or growth of objects deemed to be obstructions. Local governments having jurisdiction over land use are typically responsible for establishing height limitation ordinances which prevent new, and enable removal of existing, obstructions to the FAR Part 77 surfaces.

²⁰ In addition, pursuant to Minnesota Rule 8800.1200, all proposed construction or alteration of objects that would exceed the FAR Part 77 height criteria should be submitted to Mn/DOT, Office of Aeronautics, for review.



Federal action in response to new airspace obstructions is primarily limited to three possibilities:

- For airports with instrument approaches, an obstruction could necessitate modification to one or more of the approach procedures (particularly greater visibility and/or cloud ceiling minimums) or even require elimination of an approach procedure.
- Airfield changes such as displacement of a landing threshold could be required (especially at airports certificated for commercial air carrier service).
- The owner of an airport could be found in noncompliance with the conditions agreed to upon receipt of airport development or property acquisition grant funds and could become ineligible for future grants (or, in extreme cases, be required to repay part of a previous grant).

Additional guidelines regarding protection of airport airspace are set forth in other FAA documents. In general, these criteria specify that no use of land or water anywhere within the boundaries encompassed by FAR Part 77 should be allowed if it could endanger or interfere with the landing, take off, or maneuvering of an aircraft at an airport (FAA–1987). Specific characteristics to be avoided include:

- Creation of electrical interference with navigational signals or radio communication between the airport and aircraft;
- Lighting which is difficult to distinguish from airport lighting;
- Glare in the eyes of pilots using the airport;
- Smoke or other impairments to visibility in the airport vicinity; and
- Uses which attract birds and create bird strike hazards.

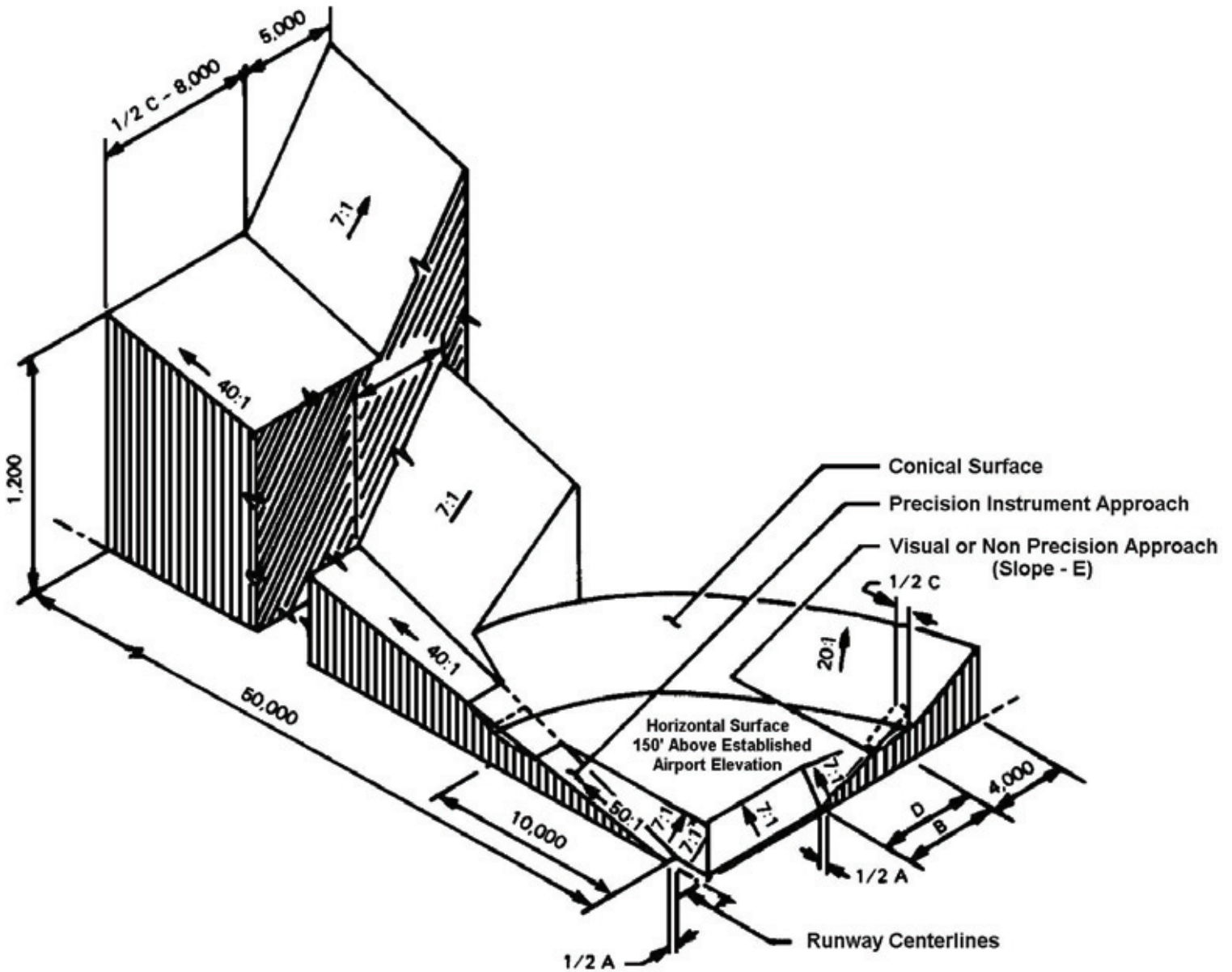
Bird strike and other forms of wildlife hazard have become a major concern internationally. In the United States and Canada, reduction and management of wildlife hazards are of particular concern. With regard to bird strike hazards, the FAA specifically considers waste disposal sites (sanitary landfills) to be incompatible land uses if located within 10,000 feet of a runway used by turbine-powered aircraft or 5,000 feet of other runways. Any waste disposal site located within five statute miles of an airport is also deemed incompatible if it results in a hazardous movement of birds across a runway or aircraft approach and departure paths. Caution should be exercised with regard to certain other land uses—including golf courses and some agricultural crops—in these locations to ensure that wildlife hazards do not result (FAA–1997). Additionally, Federal statutes (49 U.S.C. §44718(d)) now prohibit new “municipal solid waste landfills” within six miles of airports that (1) receive FAA grants and (2) primarily serve general aviation aircraft and scheduled air carrier operations using aircraft with less than 60 passenger seats. A landfill can only be



built within six miles of this class of airports if the FAA concludes that it would have no adverse effect on aviation safety (FAA–2000b).



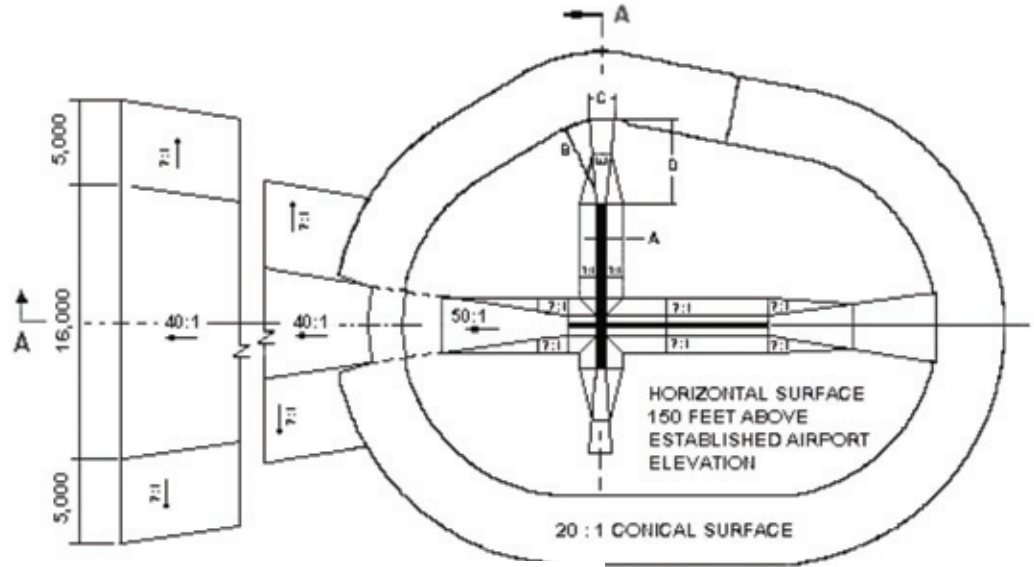
FIGURE 2-3: 3D DIAGRAM OF FAR PART-77 SURFACES



Source: www.ngs.noaa.gov/AERO/oisspec.html



FIGURE 2-4: PLAN VIEW OF FAR PART-77 SURFACES



Source:
www.ngs.noaa.gov/AERO/oisspec.html

TABLE 2-2: OBSTRUCTION IDENTIFICATION SURFACES -- FEDERAL REGULATIONS PART 77

Dimension (Note 1)	Item	Dimensional Standards (Feet)				
		Visual Runway		Non-Precision Instrument Runway		
		A	B	A	B	
					C	D
A	Width of Primary Surface and Approach Surface Width at Inner End	250	500	500	500	1,000
B	Radius of Horizontal Surface	5,000	5,000	5,000	10,000	10,000
		Visual Approach		Non-Precision Instrument Approach		
		A	B	A	B	
					C	D
C	Approach Surface Width at End	1,250	1,500	2,000	3,500	4,000
D	Approach Surface Length	5,000	5,000	5,000	10,000	10,000
E	Approach Slope	20:1	20:1	20:1	34:1	34:1

Note 1: See Figure 2-4 above.
Source: www.ngs.noaa.gov/AERO/oisspec.html



Successes and Challenges With Current Minnesota Approach Toward Airport Safety

tools and sources, Minnesota top or adverse land uses. Both simple

Between the State of Minnesota and the FAA, there are a wide array of tools, regulations, and funding sources to address potentially incompatible land uses around airports and obstructions to navigable airspace. Moreover, local governments in Minnesota have ample authority to plan for, enact, and enforce protective land use measures. Indeed, it appears that local airport zoning ordinances have been adopted for the vast majority of Minnesota public airports.

However, despite this assortment of tools and the creation of joint airport zoning boards, airports throughout the state continue to struggle to stop or mitigate the potential adverse impacts of incompatible land uses. Why? The reasons are both simple and complex. In many cases, it is often lack of knowledge about the long-term and cumulative impacts of local land use decisions on the nearby airport's future viability and flexibility to respond to the traveling public's demands. Often, the challenge boils down to balancing airport protection needs with local desires for economic development and growth that can produce jobs and tax revenues to support local government services. In this situation, the local government that is pushing for potentially incompatible development is typically independent of the jurisdiction owning or operating the airport. Local officials in those jurisdictions are often hard-pressed to see the long-term advantages of airport protection when there are obvious short-term economic gains to be had.

In other instances, local governments have been inclined to enact protective regulations, but have shied away because of the specter of having to pay damages to landowners who claim the value of their property has been illegally diminished by airport land use controls. Because of peculiarities in Minnesota land use law, such claims have sometimes been upheld in state court, thus giving localities pause.

This section summarizes these and other challenges documented in the extensive survey Mn/DOT commissioned in 2004 and discusses recommendations for best practices that may begin to address them.

KEY FINDINGS FROM THE ORDINANCE REVIEW

As a first task in creating an airport land use compatibility manual for the State of Minnesota, the Office of Aeronautics commissioned a comprehensive review of all airport zoning ordinances in effect around the state. This review was intended to confirm compliance with the state's minimum requirements for regulating airport hazard



areas, as codified in Chapter 360 of the Minnesota public statutes. In addition, the review was intended to shed light on the efforts of airport-area jurisdictions to tailor the state's model zoning ordinance to accommodate special local conditions.

The following are a summary of the key findings from the ordinance review, which was conducted in the Fall of 2004. A table summarizing these findings in more detail may be found in Appendix 3 of this Manual.

1. With Only Minor Variations, Most Local Ordinances Follow the State's Model Ordinance

In total, 70 of the 130 airport zoning ordinances surveyed, or 54%, followed the state 1990 model ordinance verbatim, with no changes to the model's substantive text provisions. Most of the remaining ordinances (46 ordinances or 35%), followed the state model text with only a deviation in the height of the horizontal airspace zone (nearly all of these ordinances set the height of the horizontal zone at 100 feet above mean airport elevation instead of 150 feet as stated in the model). Together, these two groups represent 89% of the total number of ordinances reviewed. In other words, nearly all the ordinances reviewed are in technical compliance with the statutes by virtue of having adopted the minimum requirements in the text of their ordinances, or more restrictive standards, under Minnesota law.

2. Two-Thirds of the Airport Ordinances Were Adopted or Last Amended More Than 25 Years Ago

Nearly two-thirds, or 85 of the 130 ordinances reviewed, were adopted or last amended before 1980. Thus, in many cases, at least 25 years have elapsed since the affected communities took a critical look at their airport protection and safety regulations. The age of the zoning ordinance should not necessarily determine the need for its amendment; instead, what matters more is how much local circumstances (i.e., growth and evolving land use patterns) have changed since the ordinance was originally adopted. While in some instances, the patterns of growth over time have not necessitated a detailed review, at other airports, growth pressures have increased at their boundaries, raising the question whether these communities have actively ensured that their ordinances can still do what was originally intended when adopted more than two decades ago.

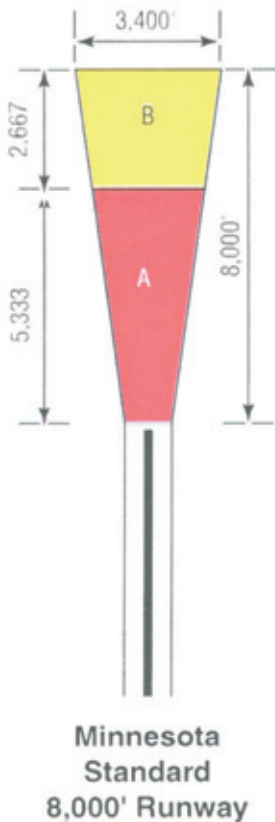
3. Virtually All the Ordinances Were Drafted and Adopted by a Joint Zoning Board

Virtually all the ordinances were drafted and adopted by a joint zoning board, signaling the fact that most airport zoning solutions in Minnesota require the cooperation of multiple jurisdictions. The other option allowed under the law and model ordinance is for all affected jurisdictions to act individually to adopt their own zoning ordinances in compliance with the model's minimum zoning requirements. Individually adopted zoning ordinances were in place at



only 15 airports, or 12% of all airports reviewed. All 15 of these airports, except one, are located in municipalities where the same municipality owns the airport and controls all the affected land area around the airport. The exception is one airport, where the joint zoning board was recently dissolved and where, instead, each of the three affected communities adopted and now administer and enforce their own separate (but very similar) airport zoning ordinances.

4. The Size and Shape of the Land Use Safety Zones Have Been Changed In Only a Few Instances



The state model ordinance is very clear in setting the minimum dimensions of the three airport safety zones (Safety Zones A, B, and C). The two primary safety zones, A and B, are intended to include all land under a runway's approach zones, extending a distance, respectively, of two-thirds and one-third the planned length of the runway. This results in both Zone A and B being trapezoid in shape—with the more narrow end of the trapezoid lying closest to the end of the runway and expanding outward from there to complete the shape (see example figure at left). The use prohibitions and density restrictions in the ordinance apply only within the established Safety Zones A and B.

In its survey of airport zoning ordinance text, Mn/DOT found four adopted or pending ordinances that established or requested airport safety zone dimensions that deviated from the model ordinance's specifications. The four ordinances, and their different justifications for the variations that are noteworthy, are summarized below:

AIRPORT CASE STUDY 1

A pending amendment to this airport's original ordinance would change the dimensions of Safety Zone A to make it more narrow than required under the model ordinance. The length of Safety Zone A would remain unchanged, and no changes are planned to the dimensions of Safety Zone B. This airport's authority is working closely with Mn/DOT staff on the pending amendment, and is requesting the change for two reasons. First, the airport has been on the losing side of multiple lawsuits challenging the application of Zone A restrictions to 17 different properties. The winning parties to these lawsuits were allowed to establish uses in Safety Zone A contrary to the state's model zoning use restrictions. Second, the airport has made an interesting case for a reduction in the safety zone dimensions based on accident and third-party risk data and research for the type of traffic that predominates at that airport (more than 75% of the airport's traffic is comprised



of commercial traffic flown by, typically, higher-trained pilots with better accident track records). For both these reasons, the airport proposes (1) moving its runway several hundred feet in order to move the existing, encroaching uses out of Zone A and into Zone B, and (2) the reduction in the width of Zone A described above.

AIRPORT CASE STUDY 2

With the recent construction of a new runway, this airport updated its zoning ordinance. The airport decided to zone for the ultimate length of the runway. However, strict application of the safety zones would have created a nonconforming use of an existing home located on the side edge of the proposed Safety Zone A, about three-quarters of the length of the zone (or farther away) from the runway. The home is located on the shore of the Mississippi River and other land use restrictions are in place as a result of waterway rules. The owner requested the zoning be adjusted so that his home would be located in Safety Zone B, rather than in Zone A. By dividing Zones A and B along the centerline of the Mississippi River, Zone A will become larger in size than it would have been by strict application of the model ordinance. In return, Zone B will be smaller by an equal amount, and the existing home will fall into Zone B where it will meet the standards.

AIRPORT CASE STUDY 3

A recently adopted amendment to the zoning ordinance applicable at this airport changed the dimensions of Safety Zone A to match the boundaries of the federally-mandated runway protection zone (“RPZ”). This reduced the length of Safety Zone A for all of the airport’s runways by 2,100 feet, and kept Zone A primarily within airport boundaries. The total length of both Safety Zone A and Zone B did not change for any of the airport runways from what had been adopted in the previous ordinance. The cumulative effect of these changes is to shift 2,100 feet (by length) of land and land use from being regulated as Zone A into the newly constituted Zone B. The change was based on an analysis of airport accident data compiled by the FAA, NTSB and ALPA, and third-party risk standards provided by the FAA.

In approving the change to the safety zone boundaries, the Mn/DOT Commissioner justified the amendment based on the airport authority’s demonstration that “the social and economic costs of restricting land uses in accordance with existing state zoning standards outweigh the benefits of a strict application of those standards,” as allowed under Minnesota Statutes, Section 360.063, subd. 2 (2002).

AIRPORT CASE STUDY 4

In a 1995 amendment to its ordinance, this airport’s joint zoning board adopted a change in the Zone A dimensions for one of the airport’s three runways, making that Zone A more narrow and longer than otherwise required by the state’s rules. According to



municipal officials, the change was made to exclude an existing residential trailer park, comprised of between 40 to 60 trailers, from the Zone A use and density restrictions.

CONCLUSION

Mn/DOT favors allowing flexibility in setting safety zone dimensions on a case-by-case basis, based on specific details of the airport area and operational uses at the airport. Thus, given the variations described above, and the likelihood that additional airports in the future will seek similar reductions in safety zone dimensions, Mn/DOT is considering adopting specific rules and regulations describing the review process for any safety zone modifications. Those rules would state the specific evidence Mn/DOT will consider (such as practical hardship, economic benefits, social costs, airport accident data or third party risk research, and overall public safety), and the criteria by which Mn/DOT will review and decide such requests. See Chapter 6 of this manual for a description of the information and criteria Mn/DOT recommends using to make such decision.

5. Only Twenty Airport Zoning Ordinances Address Established Residential Neighborhoods (“ERNs”)

Twenty ordinances (15% of all reviewed ordinances) referenced the statutory exemption for established residential neighborhoods (“ERN”), which allows preexisting (as of January 1, 1978) residential uses and lots located in an airport safety zone to continue as conforming uses regardless of the use restrictions under the applicable airport zoning regulations. However, two of these 20 ordinances include the relevant definitions for the ERN provisions, and the actual exemption language, while declaring that the jurisdiction actually does not contain any ERNs. Another two ordinances never use the term “established residential neighborhood” but set up specific residential exemptions using the statutory ERN scheme. The remainder followed the statutory provisions and model ordinance with no substantive text changes. In one instance, however, an airport zoning ordinance that followed the model took a significant step beyond the model. This particular zoning ordinance not only exempts existing residential uses and structures within an ERN from the ordinance’s use restrictions, but goes further to explicitly allow *new* residential development and expansion of existing residential structures in an ERN that is within Safety Zone B.

6. Many Ordinances Employed a More Restrictive Height to Establish the Boundaries of the Horizontal Airspace Zone

The state model airport zoning ordinance defines the horizontal airspace zone to encompass the space below an imaginary horizontal surface measured 150 vertical feet above the established airport elevation. In 56 of the 130 airport zoning ordinances reviewed, or 44% of all ordinances, the horizontal airspace zone is established by specifying a lower vertical height than 150 feet. Fifty-three of these



56 ordinances used 100 feet rather than 150 feet, while the other three ordinances used 75 feet. The effect of using a lower vertical height, obviously, is to define a larger airspace in which an ordinance's height restrictions will apply.

7. Several Ordinances Varied Their Treatment of Permitted and Prohibited Uses

This discussion can be found in Chapter 3 of this manual.

8. Few Ordinances Deviated in their Treatment of Nonconforming Uses and Structures

In only three ordinances, or 2.3% of the total zoning ordinances reviewed, did the treatment of nonconforming uses or structures differ substantially from the approach required under the state's model airport zoning ordinance. In two ordinances, the trigger for compliance with the ordinance after the destruction or deterioration of a nonconforming use or structure was lowered to 50%, versus the 80% destroyed/deteriorated trigger specified in the state rules. This 50% trigger is consistent with the minimum trigger allowed under the state's general planning and zoning enabling statutes, and may have been applied in the airport context to keep treatment of nonconformities consistent and equal across all land use types.

Only one ordinance reviewed specifically required the amortization of nonconforming uses or structures (including signs) that constituted airport hazards. This ordinance appears to apply the city's general amortization provisions to the airport zoning requirements within its code of ordinances. Therefore, it appears that the ordinance requires uses and structures nonconforming with the airport zoning restrictions to be eliminated through amortization within a reasonable period of time, tied to the type of building structure involved. However, this airport zoning ordinance was adopted in 1978, which was before the Minnesota legislature adopted new laws specifically prohibiting the use of amortization in the zoning context other than to eliminate public nuisances. It is unclear from the face of the ordinance whether the city has in fact considered how its airport zoning ordinance squares with the more recent state legislation, and whether the city has deliberately concluded that airport hazards are a public nuisance and therefore exempt from the new law's prohibition.

9. There Were Few Other Substantive and Significant Variations from the Model Ordinance's Zoning and Use Provisions

THREE ORDINANCES PROVIDE FOR A SMALLER OR LARGER NUMBER OF AIRPORT SAFETY ZONES.

In two instances, the ordinances established four safety zones instead of the three specified in the state model ordinance. In a third ordinance, only two safety zones were established rather than the minimum three required. In the latter case, the ordinance dates back to 1955 and may reflect an earlier version



of the state model ordinance. It is our understanding that this airport zoning ordinance will be revised in the near future to match the current version of the model ordinance.

MANY ORDINANCES CHOSE TO EMPLOY AN ALREADY-EXISTING BODY TO ACT AS THE BOARD OF ADJUSTMENT FOR AIRPORT ZONING PURPOSES.


At least 54 ordinances, or about 42% of all ordinances reviewed, designated an existing review body as the Board of Adjustment for airport zoning purposes, rather than constituting an entirely new body as allowed under the model ordinance. In these instances, the affected jurisdictions typically designated the existing city or county board of zoning adjustment, planning commission, or city council as the body with authority to hear and decide variances and appeals under the airport zoning provisions.

UNCERTAINTY REGARDING HAZARD LIGHTING REQUIREMENTS WAS FOUND IN SEVERAL ORDINANCES.

Some of the airport zoning ordinances reviewed did not include the model ordinance provision giving the administrator or board of adjustment authority to condition the grant of a permit or variance on the applicant’s installation of hazard lighting (at the applicant’s cost). Without this provision on the face of such ordinances, it makes it appear that all hazard lighting is installed at the airport’s expense.

RECOMMENDED BEST PRACTICES

Given the abundance of planning and zoning tools available to local governments and airports in Minnesota to protect airports and the almost universal compliance with state airport zoning requirements, one might conclude that there were few problems with incompatible land uses across the state. But on-the-ground experience shows otherwise. Increasingly, airports are struggling to prevent inappropriate land uses being developed too close to runways or obstructions to air navigation from being established. Clearly, there are some significant gaps and shortcomings that need to be addressed to achieve the goal of compatibility and protection of the public. The following is a list of recommended “best practices” that could help fill existing gaps and address these challenges. The reader can find many of these best practices incorporated into the new 2006 model zoning ordinance. In this section, and throughout the remainder of this manual and in Chapter 6’s model zoning ordinance,

best practices in the text are signified by a  symbol in the margin.



BP

Incorporate Airport Zoning Ordinances into Local Development Controls

Implementing bodies responsible for adopting and administering airport zoning ordinances, including joint airport zoning boards, should ensure that all affected and participating municipalities actually incorporate or reference the adopted airport zoning ordinance in their official land use controls, including their zoning and subdivision regulations. Many instances exist today where the model airport zoning ordinance was adopted, but local land use regulations remained unchanged.

BP

Allow Mn/DOT to Review Major Development Applications and Variance Requests

To ensure that major developments receive adequate scrutiny, a local zoning agency may refer “major” airport zoning permit applications to Mn/DOT for review and comment before final local action (similar to the FAA referrals under FAR Part 150). “Major” development around the airport may be defined, for example, as one or more “conditional” uses shown in the local government’s airport zoning ordinance’s summary compatible use table. (Conditional uses are designated for further scrutiny and often a public hearing.)

Similarly, while an airport zoning ordinance on its face may offer protection, its effectiveness can be eroded steadily by unwarranted variances. To reduce the granting of such variances and to assure thorough local understanding of a variance request’s likely effects on airport operations, local agencies may choose to refer some or all variance applications to Mn/DOT for review and comment before a final local decision.

Modernize and Expand the List of Incompatible and Compatible Uses in Local Airport Zoning Ordinances

The current list of appropriate and prohibited uses contained in the Minnesota model airport ordinance is out-of-date and incomplete. Few Minnesota jurisdictions, however, have stepped beyond the model to expand and clarify the scope of compatible and incompatible uses. Accordingly, local Minnesota governments are encouraged to revise their airport zoning standards to adopt a more detailed and clear list of allowed and prohibited uses near airports. The revised Minnesota model airport zoning ordinance contained in Chapter 6 of this manual includes a new compatible land use list, which local governments are encouraged to consider utilizing.

Consider Regulating Incompatible Land Uses in Safety Zone C

As part of the research for this manual, Mn/DOT examined other states’ approaches to regulating land uses around public airports to prevent safety hazards. Several other states, such as Florida, Oregon,



Washington and California, which have devoted considerable resources to studying safety compatibility issues at airports, all have recommended or mandated regulation of land uses and population densities in areas overlapping with Minnesota's Safety Zone C. In California, most notably, this directive was based on close examination of NTSB accident data and detailed third-party risk analysis. In recent years, the United States military has also recommended similar land use and density restrictions around its air bases.

Although an independent accident and risk analysis was not part of this effort, Mn/DOT believes its review of other states' analysis and research suggests there are valid safety compatibility concerns in land areas corresponding to Safety Zone C. In addition, providing additional "breathing room" or buffer in Safety Zone C may be good practice for many airports expecting future growth and possible expansion. Accordingly, Mn/DOT suggests local governments consider these issues in future updates to their airport zoning ordinances. Please refer to Chapter 3 of this manual for a more detailed discussion of incompatible airport land uses and other states' regulatory approaches.

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chapter 3: compatible airport land uses



Introduction²¹

This chapter first discusses the two primary categories of compatibility risks to airports: (1) Uses that put too many people on the ground in harm's way (e.g., a dense residential subdivision or gathering place like a sports stadium); and (2) Airspace obstructions (such as tall buildings and towers) and uses that interfere with actual aircraft flight or may distract pilots (such as those that emit smoke). It then presents a detailed compatible land use table that local governments may utilize in their local zoning ordinances and in development reviews to help protect airport operations and the public safety.

CHAPTER 3 OVERVIEW

- Introduction
- What Are the Primary Compatibility Concerns?
- An Alternative Approach to Regulating Compatible Land

What are the Primary Compatibility Concerns?

With careful planning, development can be accommodated and even encouraged within the airport vicinity. Too often, however, local governments review and approve uses and structures with little thought of how they might affect airport operations. Local officials may make decisions detrimental to an airport for a variety of reasons, including the promise of substantial fiscal benefits from certain types of commercial uses, or simply unawareness about how a perfectly acceptable development in other circumstances can have potentially devastating impacts on airport operations and public safety.

This section explores the two primary categories of compatibility risks to airports: (1) Uses that put too many people on the ground in harm's way; and (2) Airspace obstructions and uses that may interfere with actual aircraft flight or may distract pilots.

²¹ If this chapter is read in full, we recognize its contents may overlap with other discussions presented in other chapters. We believe most users will read specific chapters of this manual as needed and, therefore, we feel it is better to include some discussions that may be repetitive. Where possible, however, we have eliminated duplicate text and included cross references.



CONDITIONS THAT CREATE RISK OF INJURY TO PEOPLE ON THE GROUND AND DAMAGE TO PROPERTY

Limits on Intensity of Use and Building Density (Including Concentration of Residents/Users/Visitors to Specific Land Uses)

As discussed earlier in this manual, the greatest risk of an aviation-related accident is during takeoff and landing within a few miles of an airport, particularly in areas closest to the ends of the runway and the runway centerline extended. If there are few structures in this area, such as houses that pilots can avoid, the risk to both people on the ground and in the airplane is reduced significantly. The primary way to limit the risk of damage and personal injury from aviation accidents that occur near the airport is therefore quite simple—limit population and building density in the areas where aviation accidents are more likely to occur, particularly off the ends of runways.

More specifically, areas where aircraft regularly fly less than 500 feet above the ground, such as in Runway Protection Zones (RPZs), are regarded as the most critical. Low flight altitudes present the greatest risks because they offer pilots less opportunity to recover from unexpected occurrences. Because aircraft turn to follow the prescribed traffic pattern, this area encompasses more than just the area beneath the Federal Aviation Regulation (FAR) Part 77 approach surface. Turns predominantly take place between 2,000 and 5,000 feet from the runway end, depending upon the aircraft type, the number of aircraft in the traffic pattern, and the pilot's flying technique.

This raises a question regarding the degree of risk to which adjacent areas will be subjected. The most commonly used measure of acceptable development density in this context is the number of persons per acre. As discussed in detail in the following section of this chapter, a good regulatory approach is to ban certain high-density residential uses and places of public assembly in airport approach corridors (i.e., Safety Zones A and B) that, by their very character, attract or house large crowds of persons at one time (e.g., a sports stadium or church) or that exceed a specified population per acre density. Thus, for example, a residential development with a density of one dwelling unit per acre would not be allowed in Zone B, while a development that was developed at a lower density of one unit per three acres may be acceptable. Commercial and other nonresidential uses might be allowed only if they do not exceed specified densities for a particular type of use (e.g., industrial uses that house less than 15 persons/acre).

Choosing an appropriate development density to use as the threshold for permitted or prohibited uses near public airports is not an exact science. Jurisdictions around the country use varying density thresholds in their airport zoning rules and regulations. For example,



A Southwest Airlines jet rests on the tarmac at Midway International Airport in Chicago on Friday after crashing through a fence and into a house. The jet struck several cars, killing a boy.

Midway crash boosts calls for buffer zones

By Mike Tobin

Overrun safety

An Englewood, Illinois, woman says she was injured by a Southwest Airlines jet that crashed through a fence and into a house on Thursday. The jet struck several cars, killing a boy.

The crash occurred on the tarmac at Midway International Airport in Chicago. The aircraft was on its final approach to runway 29L when it struck a fence and then a house. The pilot was killed.

The National Transportation Safety Board (NTSB) is investigating the crash. It is expected to release its report in the next few weeks.

The crash has led to calls for increased safety measures at airports, including the creation of buffer zones around runways and taxiways.

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Real life evidence supports the need for safety zone requirements, such as this accident that occurred at the Chicago Midway airport in December 2005.



since 1959, Minnesota has had in place rules prohibiting public assembly uses and limiting population and building density in Safety Zones A and B. Minnesota Rule 8800.2400, containing these prohibitions and limits, is reprinted below (population and building density limits are highlighted in bolded text):

“Zone A shall contain no buildings, temporary structures, exposed transmission lines, or other similar land use structural hazards, and **shall be restricted to those uses which will not create, attract, or bring together an assembly of persons thereon.** Permitted uses may include, but are not limited to, such uses as agriculture (seasonal crops), horticulture, raising of livestock, animal husbandry, wildlife habitat, light outdoor recreation (non-spectator), cemeteries, and auto parking.”

“Zone B shall be restricted in use as follows. **Each use shall be on a site whose area shall not be less than three acres. Each use shall not create, attract, or bring together a site population that would exceed 15 times that of the site acreage.**”

“**Each site shall have no more than one building plot** upon which any number of structures may be erected. A building plot shall be single, uniform, and non-contrived area, whose shape is uncomplicated and **whose area shall not exceed the following minimum ratios with respect to the total site area.**” See Table 3-1 below.

TABLE 3-1: ZONE B MINIMUM RATIOS

(Source: Minnesota Rule 8800.2400 (2005))

Site Area at Least (Acres)	But Less Than (Acres)	Ratio of Site Area to Building Plot Area	Building Plot Area (Square Feet)	Maximum Site Population (15 Persons/Acre)
3		12:1	10,900	45
	4	12:1		
4		10:1	17,400	60
	6	10:1		
6		8:1	32,600	90
	10	8:1		
10		6:1	72,500	150
	20	6:1		
20	and up	4:1	218,000	300

“The following uses are **specifically prohibited** in zone B: **churches, hospitals, schools, theaters, stadiums, hotels and motels, trailer courts, camp grounds, and other places of public or semipublic assembly.**”

Comparison with Other States

Jurisdictions outside Minnesota have adopted similar density limits and prohibitions on public assembly uses for their airport safety zones, although the exact thresholds vary from place to place. Tables



3-2 through 3-4 below present population and building density guidelines adopted by California, Washington and Florida in their respective model airport zoning guides and regulations. Local government users of this manual should reference the minimum Minnesota density standards stated in table 3-1 above, and the alternatives shown in Tables 3-2 through 3-4 below to guide local decisions about appropriate population and building density thresholds for particular land uses.

CALIFORNIA—GUIDELINES FOR DENSITY LIMITS ON USES IN AIRPORT SAFETY ZONES

In Table 3-2, the State of California provides guidance to local government and airport planners about the range of acceptable densities and intensities of compatible land uses located in the six California airport safety zones. A map of the six California airport safety zones is pictured following Table 3-2 for the reader's reference. It is important to note, however, that California's safety zones are allowed to vary in their size and shape depending on several factors, including the type of airport, the length of the runway, and type/intensity of aircraft traffic.

Translating California's six safety zones into Minnesota's three safety zones is difficult at best; however, for purpose of rough comparison only, Minnesota's Safety Zone A is approximately equivalent to California's Zone 1 (the RPZ) plus Zone 2 (Inner Approach/Departure Zone); Minnesota's Safety Zone B is roughly equivalent to California's Zone 4 (Other Approach/Departure Zone); and Minnesota's Safety Zone C is roughly equivalent to California's Zone 3 (Inner Turning Zone), Zone 5 (Sideline Zone), and Zone 6 (Traffic Pattern Zone).

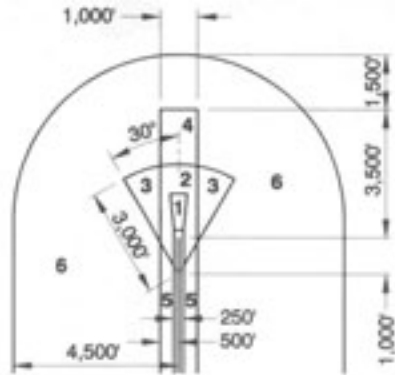


TABLE 3-2: CALIFORNIA SAFETY COMPATIBILITY CRITERIA GUIDELINES

Safety Compatibility Zones (Note 1)						
	(1) Runway Protection Zone	(2) Inner Approach/ Departure Zone	(3) Inner Turning Zone	(4) Outer Approach/ Departure Zone	(5) Sideline Zone	(6) Traffic Pattern Zone
Current Setting □	Maximum Residential Density					
	AVERAGE NUMBER OF DWELLING UNITS PER GROSS ACRE					
Rural Farmland /Open Space (Minimal Development)	0	Maintains current zoning if less than density criteria for rural / suburban setting				No limit
Rural / Suburban (Mostly to Partially Undeveloped)	0	1 d.u. per 10-20 ac.	1 d.u. per 10-20 ac.	1 d.u. per 10-20 ac.	1 d.u. per 10-20 ac.	No limit
Urban (Heavily Developed)	0	0	Allow infill development at up to average of surrounding residential area (Note 2)			No limit
Current Setting □	Maximum Nonresidential Intensity					
	AVERAGE NUMBER OF PEOPLE PER GROSS ACRE (NOTE 3)					
Rural Farmland / Open Space (Minimal Development)	0 (Note 4)	10-25	60-80	60-80	80-100	150
Rural / Suburban (Mostly to Partially Undeveloped)	0 (Note 4)	25-40	60-80	60-80	80-100	150
Urban (Heavily Developed)	0 (Note 4)	40-60	80-100	80-100	100-150	No limit (Note 5)
MULTIPLIERS FOR ABOVE NUMBERS (NOTE 6):						
Maximum Number of People per Single Acre	x 1.0	x 2.0	x 2.0	x 3.0	x 2.0	x 2.0
Bonus for Special Risk-Reduction Building Design	x 1.0	x 1.5	x 2.0	x 2.0	x 2.0	x 2.0
Notes:						
1) Clustering to preserve open land is encouraged in all zones.						
2) Residential infill development is appropriate only if nonresidential uses are not feasible.						
3) Certain uses should be prohibited regardless of usage intensity.						
4) Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied.						
5) Large stadiums and similar public assembly uses should be prohibited.						
6) Multipliers are cumulative (e.g. maximum intensity per single acre in inner safety zone is 2.0 times the average intensity for the site, but with risk-reduction building design is 2.0 x 1.5 = 3.0 times the average intensity).						
<i>Source: California Airport Land Use Planning Handbook, page 9-47, (January 2002)</i>						

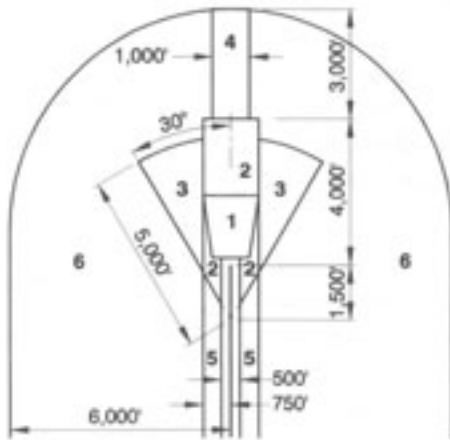


FIGURE 3-1: SAFETY COMPATIBILITY ZONE EXAMPLES FROM CALIFORNIA (GENERAL AVIATION RUNWAYS)



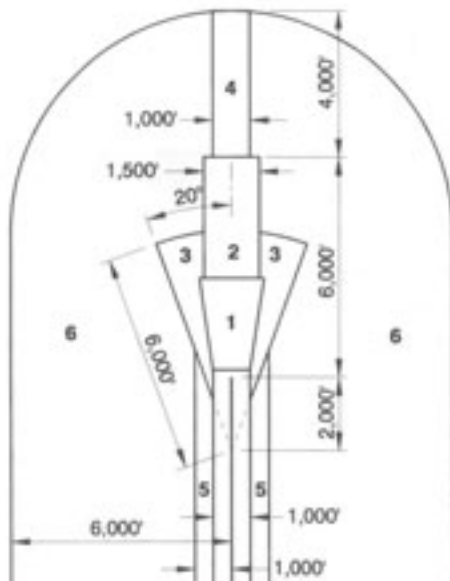
Example 1:
Short General Aviation Runway

- Assumptions:
- Length less than 4,000 feet
 - Approach visibility minimums \geq 1 mile or visual approach only
 - Zone 1 = 250' x 450' x 1,000'



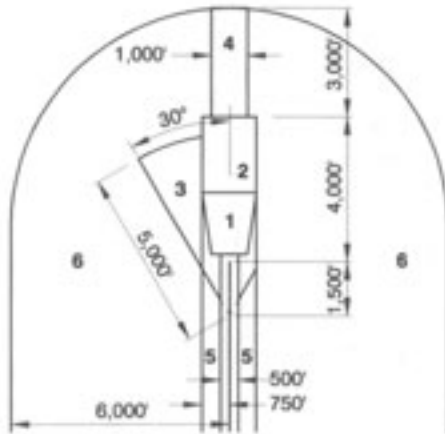
Example 2:
Medium General Aviation Runway

- Assumptions:
- Length 4,000 to 5,999 feet
 - Approach visibility minimums \geq 3/4 mile and $<$ 1 mile
 - Zone 1 = 1,000' x 1,510' x 1,700'



Example 3:
Long General Aviation Runway

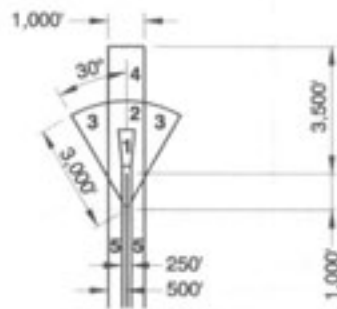
- Assumptions:
- Length 6,000 feet or more
 - Approach visibility minimums $<$ 3/4 mile
 - Zone 1 = 1,000' x 1,750' x 2,500'



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

Assumptions:

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



Example 5:
Low-Activity General Aviation Runway

Assumptions:

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

Legend

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

Notes:

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

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

Source: State of California "Airport Land Use Planning Handbook," Figure 9K (January 2002)



WASHINGTON— GUIDELINES FOR DENSITY LIMITS ON USES IN AIRPORT SAFETY ZONES

Similar to California, Washington provides guidance for appropriate population densities keyed to the state’s six safety zones, and varying depending on runway length. Washington’s guidelines are shown in Table 3-3 below.

TABLE 3-3: WASHINGTON RECOMMENDATIONS FOR COMPATIBLE POPULATION DENSITY BY AIRPORT SAFETY ZONE AND RUNWAY SPECIFICATIONS

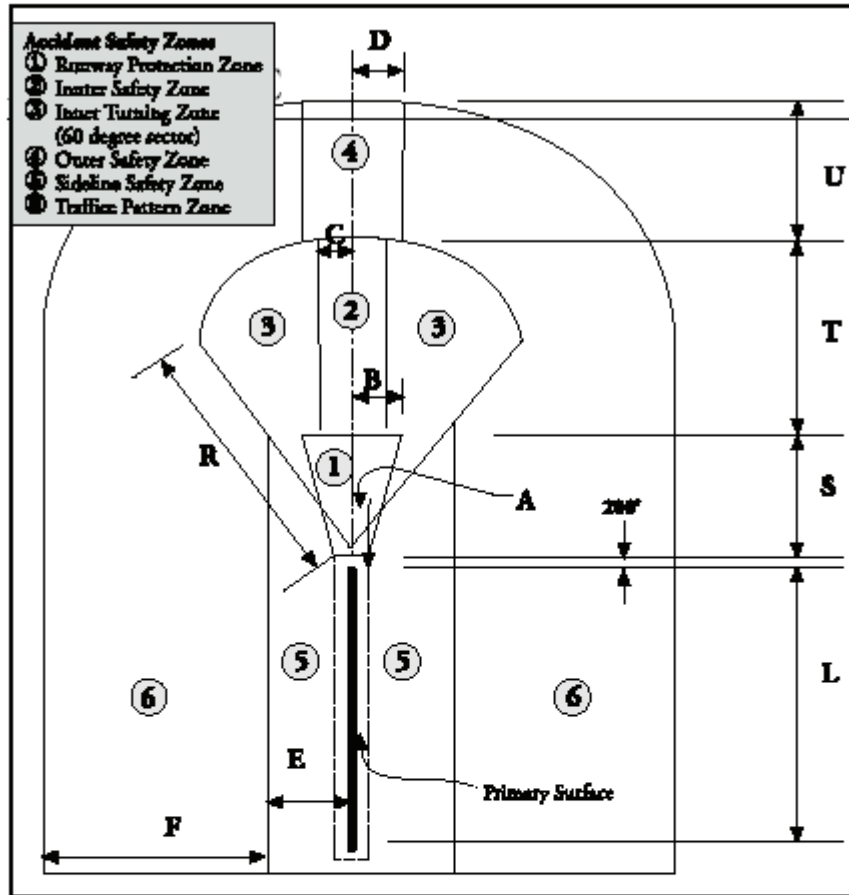
Accident Safety Zones	Population Density	Runway Specifications
ZONE 1	0-5 people/acre	
ZONE 2	0-5 people/acre	
ZONE 3	<25 people/acre	Runway <4,000 feet: Prohibit all residential land uses. Runway 4,000 – 5,999 feet: Limit residential development to 1 du/5 acres. Runway >6,000 feet: Limit residential development to 1 du/5 acres.
ZONE 4	<40 people/acre in buildings; <75 persons/acre outside building	Runway <4,000 feet: maximum 1 du/5 acre in rural or urban area. Runway 4,000 – 5,999 feet: maximum 1 du/5 acre in rural area, 1 du/2.5 acre in urban area. Runway > 6,000 feet: maximum 1 du/5 acre in rural area, 1 du/2.5 acre in urban area.
ZONE 5	0-5 people/acre	
ZONE 6	<100 people/acre in buildings; <150 persons/acre in outside buildings	Runway <4,000 feet: maximum 1 du/5 acre in rural or urban areas. Runway 4,000 – 5,999 feet: maximum 1 du/5 acre in rural area, 1 du/2.5 acre in urban area. Runway >6,000 feet: maximum 1 du/5 acre in rural area, 1 du/2.5 acre in urban area.

Source: Airports and Compatible Land Use, Volume I, Washington State Department of Transportation, Aviation Division, Appendix B page 40, (February 1999)



FIGURE 3-2: WASHINGTON STATE SAFETY ZONES

AIRCRAFT ACCIDENT SAFETY ZONE DIAGRAM



SAFETY ZONE DIMENSION (IN FEET)

Note:
 Data Source: NTSB
 accident investigations
 1984-1991. Illustration
 Source: Hodges and
 Shurt, Institute of
 Transportation Studies,
 University of California,
 Berkeley, 1993.

Dimension	Runway Length Category (L)		
	Runway less than 4,000	Runway 4,000 to 5,999	Runway 6,000 or more
A	125	250	500
B	225	505	875
C	225	500	500
D	225	500	500
E	500	1,000	1,000
F	4,000	5,000	5,000
R (60°Sector)	2,500	4,500	5,000
S	1,000	1,700	2,500
T	1,500	2,800	2,500
U	2,500	3,000	5,000

Source: Washington State Department of Transportation, Airport and Compatible Land Use Volume 1, February 1999.



FLORIDA— GUIDELINES FOR DENSITY LIMITS ON USES IN AIRPORT SAFETY ZONES

Florida’s airport compatible land use manual, published in 1994, provides a very detailed listing of compatible and incompatible land uses to guide local development decisions. In Table 3-3 below, only those land uses that Florida either allows or prohibits based on their density or intensity of use are included for the purposes of this manual.

TABLE 3-4: DENSITY-LIMITED LAND USES IN FLORIDA’S AIRPORT SAFETY ZONES

LAND USES AND ACTIVITIES	Overflight Zones (Note 1)		Notes
	Inner	Outer	
N = Not Permitted I = Incompatible unless mitigated by the condition noted in the last table column C = Compatible and permitted			
RESIDENTIAL DEVELOPMENT			
Single Units, Row, Semi- and Detached	N	I (Note a)	a) Density limited, 1-2 dwelling units per acre or 20% or less lot coverage for PUDs.
Duplexes	N	I (Note a)	a) Density limited, 1-2 dwelling units per acre or 20% or less lot coverage for PUDs.
Multi-Family Units	N	I (Note a)	a) Density limited, 1-2 dwelling units per acre or 20% or less lot coverage for PUDs.
Residential Hotels and Motels	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Transient Lodgings	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Mobile Home Parks and Courts	N	N	
Recreational Vehicles (RV) Parks	N	N	
Other Residential	N	N	
RELIGIOUS; CULTURAL; RECREATIONAL			
OUTDOOR ACTIVITIES			
Religious Services and Assemblies	N	I (Note c)	c) Population density limited, 40 persons per acre or less.
Entertainment Assemblies	N	I (Note c)	c) Population density limited, 40 persons per acre or less.
Sports Event Assemblies	N	I (Note c)	c) Population density limited, 40 persons per acre or less.
Sports Arenas, Court, Fields, and Tracks	N	I (Note f)	f) Spectator facilities, club houses and locker rooms not permitted.
Circuses and Carnivals	N	I (Notes b,c)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure. c) Population density limited, 40 persons per acre or less.
Amusement and Theme Parks	N	I (Notes b,c)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure. c) Population density limited, 40 persons per acre or less.
Playgrounds and Neighborhood Parks	N	I (Notes b,c)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure. c) Population density limited, 40 persons per acre or less.
Community and Regional Parks	N	I (Notes b,c)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure. c) Population density limited, 40 persons per acre or less.



TABLE 3-4: DENSITY-LIMITED LAND USES IN FLORIDA'S AIRPORT SAFETY ZONES

LAND USES AND ACTIVITIES	Overflight Zones (Note 1)		Notes
	Inner	Outer	
N = Not Permitted I = Incompatible unless mitigated by the condition noted in the last table column C = Compatible and permitted			
INDOOR ACTIVITIES			
Churches, Mosques, Synagogues, and Temples	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Theaters and Auditoriums	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Stadiums and Arenas	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Gymnasiums and Natatoriums	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
SERVICES			
Hospitals and Nursing Homes	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Other Medical Facilities	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Day Care Facilities	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Educational Facilities	N	I (Note g)	g) Low labor/manning intensity office uses only, meeting rooms, class rooms, lunch rooms, and cafeterias are not permitted.
Government Services	N	I (Note g)	g) Low labor/manning intensity office uses only, meeting rooms, class rooms, lunch rooms, and cafeterias are not permitted.
Correctional Institutions	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Cemeteries	C (Note e)	C (Note e)	e) Chapels or other occupied permanent structures are not permitted.
Professional, Financial, and Insurance	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Business and Real Estate	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Repairs and Contract Construction	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Personal and Miscellaneous	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
TRANSPORTATION; COMMUNICATION; UTILITIES			
Passenger Facilities	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Cargo-Freight Facilities	N	C (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Road, Rail, and Water Transit Ways	C (Notes e and h)	C (Note b)	e) Chapels or other occupied permanent structures are not permitted. h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.



TABLE 3-4: DENSITY-LIMITED LAND USES IN FLORIDA'S AIRPORT SAFETY ZONES

LAND USES AND ACTIVITIES	Overflight Zones (Note 1)		Notes
	Inner	Outer	
N = Not Permitted I = Incompatible unless mitigated by the condition noted in the last table column C = Compatible and permitted			
Vehicle Parking	C (Notes e and h)	C (Note b)	e) Chapels or other occupied permanent structures are not permitted. h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Vehicle Storage	C (Note e and h)	C (Note b)	e) Chapels or other occupied permanent structures are not permitted. h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Telecommunications	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Broadcast Communications	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Electric Generating Plants	I (Note i)	C (Note h)	i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted. h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
Sewer-Waste Water Treatment	I (Note i)	C (Note h)	i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted. h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
Gas Utility Facilities	N	C (Note h)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
Electric Utility Facilities	I (Note i)	C (Note h)	i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted. h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
RETAIL TRADE			
Building Materials and Hardware	N	C (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Automotive, Farm, and Marine Craft	N	C (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Apparel and General Merchandise	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Groceries and Food Stuff	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Eating and Drinking Establishments	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Shopping Malls and Centers	N	N	



TABLE 3-4: DENSITY-LIMITED LAND USES IN FLORIDA'S AIRPORT SAFETY ZONES

LAND USES AND ACTIVITIES	Overflight Zones (Note 1)		Notes
	Inner	Outer	
N = Not Permitted I = Incompatible unless mitigated by the condition noted in the last table column C = Compatible and permitted			
Gasoline, Diesel, and Heating Oil	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Liquefied and Bottled Gas	N	I (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
WHOLESALE TRADE			
Home Furnishings and Building Materials	N	C (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Food Products and General Merchandise	N	C (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Liquefied Gasses	N	I (Notes h,i)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.
Petroleum and Distillate Products	N	I (Notes h,i)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.
Industrial Chemicals	N	I (Notes h,i)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.
Explosive and Pyrotechnic Products	N	I (Notes h,i)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.
Other Wholesale Products	N	C (Notes b,h)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure. h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
MANUFACTURING			
Food Products and Processing	N	C (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Textiles and Apparel	N	C (Note b)	b) Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
Lumber and Wood Products	N	C (Note h)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
Paper and Allied Products	N	C (Notes h,i)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.



TABLE 3-4: DENSITY-LIMITED LAND USES IN FLORIDA'S AIRPORT SAFETY ZONES

LAND USES AND ACTIVITIES	Overflight Zones (Note 1)		Notes
	Inner	Outer	
N = Not Permitted I = Incompatible unless mitigated by the condition noted in the last table column C = Compatible and permitted			
Chemicals and Allied Products	N	I (Notes h,i)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.
Petroleum Refining and Related Products	N	N	
Explosive and Pyrotechnic Products	N	N	
Rubber and Plastics Products	N	I (Note h)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
Clay and Glass Products	N	I (Note i)	i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.
Primary and Fabricated Metal Products	N	I (Note h)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
Electronic and Optic Products	N	I (Note h)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
Professional and Scientific Products	N	I (Note h)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
Other Manufacturing	N	C (Note h)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted.
RESOURCE PRODUCTION AND RECOVERY			
Livestock and Poultry Farming	N	C (Note j)	j) Low labor/manning intensity uses only, permanent above ground structures are not permitted.
Animal and Poultry Breeding	N	N	
Crop and Related Agricultural Production	N	C (Note j)	j) Low labor/manning intensity uses only, permanent above ground structures are not permitted.
RESOURCE PRODUCTION AND EXTRACTION			
Fishing and Aquaculture Activities	N	C (Note i)	i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.
Forestry and Timber Production	I (Notes h,j)	C (Notes h,i)	h) Above ground storage of volatile, explosive, toxic, radio active or other hazardous material is not permitted. j) Low labor/manning intensity uses only, permanent above ground structures are not permitted. i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted.
Oil and Natural Gas Wells	N	N	
Strip and Open Pit Mining	N	N	
Stone and Mineral Quarries	N	N	
Other Mining and Resource	I (Notes	C	h) Above ground storage of volatile, explosive, toxic,



TABLE 3-4: DENSITY-LIMITED LAND USES IN FLORIDA'S AIRPORT SAFETY ZONES

LAND USES AND ACTIVITIES	Overflight Zones (Note 1)		Notes
	Inner	Outer	
N = Not Permitted I = Incompatible unless mitigated by the condition noted in the last table column C = Compatible and permitted			
Recovery	h,i,j)	(Notes h,i)	radio active or other hazardous material is not permitted. i) Open pits, excavations, ponds, dykes, levees, water courses and above ground pipes are not permitted. j) Low labor/manning intensity uses only, permanent above ground structures are not permitted.
Note 1: Florida recommends that the primary surface and the RPZ/clear zone should be designated the Inner Overflight Zone; that area beneath the approach surface extending beyond the RPZ/clear zone should be designated the Outer Overflight Zone. Source: <i>Airport Compatible Land Use Guidance for Florida Communities; Florida Department of Transportation, Appendix A (1994)</i>			



MEASURING USAGE INTENSITIES²²

Particularly for nonresidential uses, limits on population or building density are not common in most forms of land use planning and zoning. The discussion below provides helpful guidance on how usage intensity can be determined and measured.

Determining Usage Intensities for Specific Land Uses

Table 3-5 below lists average usage intensities for several types of nonresidential land uses often found or proposed in the vicinity of airports. Different methods are available by which local zoning authorities can estimate the usage intensity of other proposed uses. Each method has its advantages and disadvantages and none is clearly best in all situations. The most common methods are based on:

- Parking requirements as indicated in local parking ordinances;
- Maximum occupancy levels set in accordance with the uniform building and fire codes; and
- Surveys of similar uses.

Appendix 6 to this manual contains a brief assessment of each of these methods and examples of how usage intensities can be calculated.

TABLE 3-5: TYPICAL USAGE INTENSITIES	
Use	People Per Acre
Light-industrial uses	35-50
Two-story motel	35-50
Shopping center (single story)	75-125
Office structure (single story)	50-100
Sit-down restaurant	100
Fast food restaurant	150

Gross Versus Net Acreage

Usage intensities can be calculated in terms of the entire site or zone, regardless of streets or parcel lines (its gross acreage) or the area of a given parcel (the net acreage). Because safety area land use restrictions are applied, at least initially, at a general plan or large development level rather than with respect to small, individual parcels, **gross acreage measurements should normally be used for the purposes of safety compatibility criteria.** The California guidelines indicated in Table 3-2 above are set on the basis of gross acreage averaged over an entire compatibility zone or development site. If net is

²² The following discussion of measuring usage intensities comes from the *California Airport Land Use Planning Handbook* (January 2002), pages 9-51 through 9-55, and Appendix C.





substituted, the per-acre numeric limitations should be increased (typically 15% to 20%) to account for the acreage devoted to streets, utilities, etc.

Except in the case of major thoroughfares running through runway protection zones and inner safety zones, the number of people in vehicles can generally be ignored in usage intensity calculations. Roads where traffic is frequently stopped in locations immediately beyond runway ends deserve attention. However, unless the road is newly planned, local zoning authorities are unlikely to have the opportunity to review these conditions.

Average Versus Peak Usage Intensities

Limitations on the numbers of people per acre sometimes are stated as a never-to-exceed maximum and sometimes as an average measured over an indicated period (typically 2, 8, or even 24 hours). A combination of the two also is possible (e.g., an average of “x” people per acre over an 8-hour period, not to exceed 2x the average at any time).

It is recommended that restrictions be stated as a never-to-exceed maximum and the level be set accordingly. This is the same approach taken by fire codes for buildings and is preferred because an averaging approach assumes that an accident will not occur when a higher-than-average number of people is present.

The nonresidential intensity guidelines for California in Table 3-2 above indicate maximums both averaged over an entire site and for any single acre. If different measures are used, the numbers may need to be adjusted accordingly.

CLUSTERING VERSUS SPREADING OF DEVELOPMENT

Rarely is the usage intensity of a development spread equally throughout the site. Buildings, for example, normally will have more occupants than the adjacent parking lots. Also, for large developments, most of the buildings and other facilities are sometimes concentrated in one portion of the site, leaving other areas as open space because of terrain, environmental, or other considerations. The latter practice is often referred to as clustering. The issues for local zoning authorities are whether to place limits on clustering or to encourage the practice in airport safety zones. Some of the airport safety tradeoffs between clustered and spread-out development are as follows.

Clustered Development

The premise behind the concept of clustering is that, in a significant percentage of off-airport mishaps, the aircraft are under some degree of control when forced to land. (The reference here to “mishaps” is intentional—if a forced landing succeeds with no serious injuries or major damage to the aircraft, it would be categorized as an incident and thus not appear in accident records.) If the area remaining undeveloped is relatively level and free of large obstacles, clustering potentially allows a greater amount of open land toward which a pilot can aim. In addition to reducing the

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risks for people on the ground, open land provides benefits for aircraft occupants, as addressed later in this chapter. The disadvantage of clustering is that it allows an increased number of people to be in the potential impact area of an uncontrolled crash.

Spread-Out Development

By comparison, a uniform spreading of development may provide fewer emergency landing spots and increase the chance of someone on the ground being injured. On the plus side, a uniform distribution of development limits the maximum number of people who could possibly be in an impact area.

A compromise between these two strategies represents perhaps the optimum approach in most cases. This approach entails limiting the maximum occupancy level of a small area, but otherwise clustering development so as to provide the greatest amount of large open areas. For a small area (one acre is a good guideline), a limitation of two or three times the overall criterion is typical with the lower number applying in safety zones and parts of safety zones closest to the runway ends.

USES IN STRUCTURES VERSUS ONES NOT IN STRUCTURES

Some compatibility strategies make a distinction between the acceptable numbers of people per acre in land uses where people are outdoors versus those where the people are in a building or other enclosed area.

Outdoor Uses

One theory is that people outdoors have more of a chance to see a plane coming as well as more directions in which they can move to vacate the impact area. A greater concentration of people thus is sometimes considered acceptable for such land uses. An important exception, however, is for open stadiums and other similar uses where a large number of people are confined in a small area with limited exits. Such facilities can represent equal or higher risks than similar uses in buildings.

Uses in Buildings

Buildings provide substantial protection from the crash of a small airplane, particularly when the aircraft is still under control as it descends. If a fire subsequently ensues—historically, a relatively infrequent occurrence—it is unlikely to engulf the entire building instantly.

Taking both of these factors into account, **the suggested strategy is to set the acceptable number of people in a given area equal for uses either outdoors or in structures.** Additionally, restrictions on stadiums and other open facilities occupied by large numbers of people are appropriate.

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RISK REDUCTION THROUGH BUILDING DESIGN

Although avoidance of intensive uses is always preferable, a concept that may be acceptable in some situations is risk-reduction special building design. This concept should be limited to airports which are situated in highly urbanized locations and are used predominantly by small aircraft. In these circumstances, consideration might be given to allowing higher numbers of people (no more than 1.5 to 2.0 times the basic intensity) in buildings which incorporate special risk-reduction construction features such as:



- Concrete walls;
- Limited number and size of windows;
- Upgraded roof strength;
- No skylights;
- Enhanced fire sprinkler system;
- Single-story height; and/or
- Increased number of emergency exits.

RESIDENTIAL AREAS

Traditionally, airports have been built on the outskirts of towns and cities or in rural areas to avoid noise impacts on residential areas and to take advantage of relatively inexpensive land. Over time, however, communities grow and new houses and commercial and industrial developments creep into open space and farms that once provided a buffer around the airport. Indeed, sometimes this development is spurred by the airport itself as hotels, warehouses, and other facilities are built to service airport users. If not sited properly, this development can create threats to public safety and to airport viability.

Residential development near airports poses some of the most significant threats to human safety on many different levels. As discussed in the population density section above, the equation is quite simple—putting larger numbers of people near airports on a day-to-day basis makes them more ultimately susceptible to aircraft accidents. Moreover, residential developments can create other nuisances to aircraft operations. Distractions like street lighting at night and residential storm water detention ponds that could attract waterfowl to the area pose threats to aircraft safety. Clearly, the successful control of residential site development near airports can help alleviate these threats.

OPEN AREAS—SAFETY CONCERN FOR AIRCRAFT OCCUPANTS

Safety for people on the ground is not the only consideration in controlling development and population density around

Residential development near airports poses some of the most significant threats to human safety on many different levels. Putting larger numbers of people near airports on a day-to-day basis makes them ultimately more susceptible to aircraft accidents. Photo above shows tragic results from an aircraft that crashed into a 10-story



airports. The risk to airplane occupants in the event of an emergency landing is another important issue. In an emergency descent, pilots can often control the aircraft to a certain extent and will look for a farm field or other open space if they cannot reach the airport runway. Especially for small aircraft, the chances of the aircraft occupants avoiding serious or fatal injury in such situations are significantly affected by the terrain and land use features at the landing site. An open area does not have to be very large to allow a successful emergency landing in which the pilot and passengers survive the accident with limited injuries. However, in an emergency, the pilot's choices in selecting an emergency landing site are reduced as the aircraft's altitude decreases; thus, open areas should be provided in locations where aircraft fly over not only to reduce population density, but to help save lives on the airplane itself.

Ideal emergency landing sites are ones which are long, level, and free of obstacles, much like a runway. Certainly, the closer that open land areas around airports can fit these criteria the better. For small aircraft, however, successful (meaning survivable irrespective of the damage to the aircraft) emergency landings can be accomplished in much less space. Data from the general aviation aircraft accident database indicates that the median swath length for accidents in which the aircraft was under at least some control is less than 150 feet.²³

As a general guideline, open land sites should be at least 300 feet long by 75 feet wide (about 0.5 acre or the size of a football field) to be considered useful. Such sites should be relatively level and free of objects such as structures, overhead lines, and large trees and poles that can send the plane out of control at the last moment. Parking lots, while not ideal, also can be considered as acceptable open lands in urbanized settings.²⁴

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Guidelines for Extent of Open Land Near Airports

Determining the desirable number of open land sites or the percentage of open land in an airport vicinity is a complex proposition. To assist in this decision, the following three observations are offered:

- Accident location patterns and related data reveal that accidents in which aircraft are under control are bunched relatively close to the runway ends—mostly within about 5,000 feet—both for arrivals and departures.

²³ Source: This and the following discussion of guidelines for open areas are taken from the *California Airport Land Use Planning Handbook* (2002), pp. 9-54 – 9-55.

²⁴ Although terrain is a critical factor in the survivability of emergency landings, it is not a factor over which local governments have any influence. At airports in mountainous or densely forested locations, open land useful for an emergency landing may not exist, even if no development is present. For such airports, policies to preserve open land may be pointless. The discussion here is thus directed at airports in flat or moderately hilly terrain.



- The number of takeoff accident sites located a short distance laterally from the departure (climb-out) end of the runway may indicate that pilots have either headed for an open spot in that location or have attempted to turn around and land on the runway from the opposite direction, but not quite succeeded.
- A pilot's discretion in selecting an emergency landing site is reduced when the aircraft is at low altitude. Particularly at low altitude, the chance of a pilot seeing and successfully landing in a small open area is increased if there are more such spots from which to choose. At traffic pattern altitude (800 to 1,000 feet above the runway), a small airplane should, in the event of engine failure, normally be able to reach the runway from anywhere within the pattern. On takeoff, a small plane generally must have reached an altitude of at least 400 to 500 feet above the runway for a return to the runway to be possible following engine failure.

Each of these observations speaks to the need for preserving more and preferably larger open areas in locations nearest runways than in other portions of the airport vicinity. On this basis, the following guidelines are suggested.

Minnesota Safety Zone A:

Maintain all undeveloped land clear of objects in accordance with Mn/DOT standards.

Minnesota Safety Zone B:

Within Zone B to a distance of approximately 4,000 to 6,000 horizontal feet from the end of the runway, jurisdictions should seek to preserve 25% to 30% of the overall zone as usable open land. Particular emphasis should be given to preserving as much open land as possible in locations close to the extended runway centerline. Within the remainder of Safety Zone B, the goal should be to maintain approximately 15% to 20% open land within the overall zone, again with emphasis on areas along the extended runway centerline.

Minnesota Safety Zone C:

It is recognized that not every airport's traffic patterns will warrant the retention of significant open lands within Safety Zone C. However, within areas of Zone C that do fall under the standard traffic pattern, including turning zones, jurisdictions should attempt to preserve approximately 15% to 20% of the zone as open land. Elsewhere within Zone C, as warranted by proximity to the runway end and the nature of traffic patterns at the subject airport, jurisdictions might set a goal of approximately 10% usable open land or an open area approximately every 1/4 to 1/2 mile

Open land areas need to meet minimum size criteria to be of value. Therefore, the above guidelines are only practical when applied with respect to land use patterns proposed in specific





Planes may sometimes be forced to make emergency landings on makeshift runways, such as this plane did on I-25 near Denver, Colorado.

Source: Rocky Mountain News, November

plans for development (generally 20 acres or more), not to individual smaller parcels. Both public and private lands should be counted. If the indicated amount of open land can be provided totally on public property, individual private parcels may not need to have any.

One final factor to consider is the pattern of the existing land uses in the airport vicinity. In rural, agricultural areas, requirements for preserving open land can usually be met with little restriction on the prevailing land use form. However, in urban locations, if open land is defined to mean no development of private property, the potential for an unconstitutional “takings” must be recognized.²⁵ To avoid this prospect, the property must be allowed to retain an economically viable use. In urban areas, open land is generally only a viable land use designation if the property is in public ownership or its natural environmental constraints make development infeasible or inappropriate regardless of the airport. If no development is the desired end, the airport owner may need to acquire the property or at least the development rights.

Although open space is desirable under takeoff and landing paths from a safety perspective, it is important to consider and control the use of such open space. For example, while a farm field might seem an ideal open space use, it can act as a wildlife attractant if certain types of crops are planted, posing other safety concerns as discussed in the following section.

CONDITIONS THAT INTERFERE WITH AIRCRAFT FLIGHT AND DISTRACT PILOTS

A second major category of compatibility issues centers on structures and uses that directly interfere with and obstruct airspace or create distractions for pilots. In contrast to the population density issue which relates to the potential severity of an accident, hazards to flight can actually be the cause of an accident.

Hazards to flight fall into three basic categories:²⁶

- Obstructions to the airspace required for flight to, from, and around an airport;
- Wildlife that may affect aircraft operations, particularly the potential for bird strikes; and
- Other forms of interference with safe flight, navigation, or communication.

²⁵ See Chapter 5 of this manual for a more detailed discussion of other legal issues.

²⁶ Much of this material regarding flight hazards originates in the *California Airport Land Use Planning Handbook* (January 1994) and the *Wisconsin Airport Land Use Guidebook* (2004) C





Structure and Building Obstructions

Limiting the heights of structures to the heights indicated by the federal Part 77 surfaces (as discussed in Chapter 2) and Minnesota airport zoning requirements provide an ample margin of safety for normal aircraft operations. The guidance provided by Part 77 is not absolute, however. Deviation from the Part 77 standards does not necessarily mean that a safety hazard exists, only that offending objects must be evaluated by the Federal Aviation Administration and that mitigation actions such as marking or lighting be taken if appropriate.

In some locations, such as adjacent to a runway, objects exceeding the Part 77 height limits may not be regarded as a hazard. On the other hand, tall objects in the approach corridors—especially along instrument approach routes—may pose risks even though they do not penetrate the defined Part 77 surfaces. Such objects also can adversely affect the minimum instrument approach altitudes allowed in accordance with the U.S. Standard for Terminal Instrument Procedures (TERPS). TERPS is particularly likely to be more restrictive than Part 77 when:

- The approach is not aligned with a runway;
- The procedure includes a circle-to-land option with low minimums;
- The missed approach segment has a low minimum altitude and requires a turning movement; and/or
- High terrain is present beneath portions of the approach procedure which lie beyond the limits of the Part 77 surfaces.

In addition to these federal regulations, Minnesota rules (Minn. R. 8800.1200) authorize the Transportation Commissioner to review proposals for tall structures to ensure no new navigational hazards are created near airports. Minnesota statutes, as reflected in the state model airport zoning ordinance, limit applicability of airport height restrictions within to a distance “not to exceed one and one half miles beyond the perimeter of the airport boundary and in that portion of an airport hazard area under the approach zone for a distance of not exceeding two miles from the airport boundary.” The operative restriction provides that “no structure or tree shall be constructed, altered, maintained, or allowed to grow in any airspace zone ... so as to project above” any of the FAR Part 77 imaginary airspace surfaces.

If a local government adopts conforming regulations and assumes authority over height restrictions in navigable airspace, the federal government—through the Federal Aviation Administration—still plays an important and valuable role in any local decisions to approve or deny tall structures that may affect airport operations or aircraft safety. First, the requirements contained in federal regulations (FAR Part 77) as well as the model airport zoning ordinance should form the basis of the local height restrictions. Second, if local jurisdictions receive an application to erect a tall structure near an airport, local decision-makers would be well-

Tall objects in the approach corridors may pose risks even though they do not penetrate the defined FAR Part 77 surfaces.



advised to ask the FAA to complete an aeronautical study of a proposed tall structure project and issue a determination of “No Hazard to Air Navigation.” The standard procedure is to submit FAA Form 7460-1 to the FAA. Local approval should be withheld until comments from both the FAA and Mn/DOT are received. The FAA will offer its opinion as to whether a proposal would be hazardous to air navigation; however, federal law specifically reserves final decision-making authority to the local level. Similarly, an FAA determination of “no hazard” does not constitute development approval that overrides local permitting authority.

Lights, Reflective Glare, Smoke, Dust, Electronic Interference, and Wildlife Attractants

In addition to structure height, there are a number of other potential conditions associated with buildings, uses, and developments that may pose significant risks to airplanes in flight. This section summarizes those items and suggests possible approaches to dealing with them.

LIGHTS

Lights that shine upward, such as those found in commercial areas or parking lots, are potentially hazardous since they can detract from a pilot’s ability to identify an airport at night. A pilot could wrongly perceive such adjacent lights as part of the airport or as runway lights. This is especially true in the case of linear lighting layouts, such as street lights in subdivisions. Bright lights can also pose a safety concern at night by causing pilots to experience a moment of night blindness as they pass from dark areas into well-lit areas and back into darkness as they approach an airport.

GLARE

Reflective surfaces can produce a blinding glare, which can distract pilots. Water surfaces, such as storm water detention ponds, and light-colored or mirrored building materials also need to be considered because they produce glare. Limiting these surfaces in adjacent areas is recommended to reduce the possibility of glare.

SMOKE OR STEAM

Smoke or steam generated by nearby power plants, industry, or agricultural (field burning) operations can create severe visual problems when a pilot is either looking for an airport or preparing to take off or land. Dust, fog, and steam, which all contribute to reduced visibility, will also limit the effectiveness of an airport. Potential land uses which may generate smoke, dust, or steam should be reviewed for potential impacts to an airport.

ELECTRONIC INTERFERENCE

Land uses that generate electronic transmissions like radar dishes should not be permitted near airports: they can interfere with aircraft instruments





and radio communications. There are no Federal Aviation Administration (FAA) standards for specific electronic hazards; however, some of these hazards have been noted to include telecommunication devices and power stations. Coordination between airport owners and managers and local municipalities is essential.

WILDLIFE AND BIRD ATTRACTANTS

Water impoundments, wetlands, agricultural operations, sanitary landfills, sewage treatment plants, and certain species of flora and fauna often attract birds and wildlife. An increased number of birds and wildlife around airports amplify the possibility of collisions with aircraft. Damage to an aircraft and its occupants from a bird strike – with a gull, or goose, or birds of prey (hawks, eagles, etc.) – can be devastating. White-tail deer and even smaller mammals such as dogs, coyotes, and rabbits, also pose a risk for on-ground collisions.

Bird collisions with airplanes are both deadly for the bird and potentially damaging to the aircraft.

The United States Department of Agriculture (USDA) provides a listing of plants that are attractive to wildlife, reproduced as Appendix 12 and therefore should be avoided on or near airports. Woody plants such as oaks, firs, pines, maples, and cedars should be avoided, as well as upland weeds and shrubs such as oats, sunflower and crabgrass. Marsh plants such as water lily, wild celery, and wild rice can create wildlife hazards, as can crops and ornamental plants such as alfalfa, corn, birch trees, and dogwoods.

Advisory Circular (AC) 150/5200-33, *Hazardous Wildlife Attractants on or Near Airports*, discusses the various incompatible land uses and bird attractants included in this list. Notable guidelines urge airport authorities to discourage the creation of pools, ponds, sewage lagoons, and fountains on or near the airport. Permanent water sources should be managed by removal, physical exclusion, or alteration of appearance. Underground facilities such as French drains or buried rock fields are examples of successful retention/detention designs, while temporary holding basins that drain within 24 hours are also an option. If drains and ditches cannot be removed, their banks should be mowed regularly to control bird nesting and perching. Reporting all bird and other wildlife strikes to the FAA is important for the study of this issue. The FAA has developed several brochures that further detail wildlife hazard management. This material can be found in Appendix 13.

LANDFILLS

FAA Order 5200.5, *Guidance Concerning Sanitary Landfills On or Near Airports*, states that sanitary landfills, because of their bird attractant qualities, are considered to be an incompatible land use if located within specified distances of an airport. FAA Order 5050.4A, *Airport Environmental Handbook*, states that it is inadvisable to locate such facilities within 5,000 feet of runways accommodating piston-type aircraft and within 10,000 feet of runways accommodating turbine (jet) powered aircraft. Minnesota has adopted these

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guidelines as mandated state minimums in Minnesota Rule 7035.2815.

AGRICULTURAL LAND USES

The proximity of farmland to airports can cause unwanted interactions between wildlife and aircraft, especially if the crops cultivated are highly attractive to birds or wildlife for their nutritive or nesting value. The USDA bulletin in Appendix 12, *Plants Attractive to Wildlife*, provides a list of cultivated plants that can attract wildlife much to the detriment of local airports and aircraft. Alfalfa, barley, corn, oats, rice, sorghum, wheat, vineyards, apple trees, and cherry trees are major wildlife attractants. They can create problems for departing and approaching aircraft if birds and mammals congregate to eat or nest in farm areas. Coordination between airports and surrounding local communities is important if the number of wildlife strikes caused by the close proximity of farmlands becomes an issue.



An Alternative Approach to Regulating Compatible Land Uses

OVERVIEW

This section recommends an alternative approach to regulating compatible land uses in Minnesota’s three airport safety zones that differs from the approach encapsulated in the 1990 model airport zoning ordinance. It draws on an extensive survey of laws and ordinances and airport land use manuals from other states, with updates to reflect newer land uses (e.g., wind turbines) and modern land use practice.

As used here, the term “compatible” means that the land use will not typically interfere with normal aircraft flight operations or unreasonably risk the safety of persons on the ground or in aircraft from possible accidents. The recommendations do **not** address noise compatibility, which typically involves limitations different than the use limitations at issue when safety compatibility is the focus. For example, safety concerns justify limits on uses that attract large numbers of people for long periods of time (e.g., a baseball stadium), while noise concerns justify limits on uses where the inhabitants are extra-sensitive to the disruption from airplane noise (e.g., a hospital). While overlap certainly exists between the two use groups, the safety-related use standards described in this section do not include all uses that should be limited near airports because of noise concerns.

Before presenting the details of the recommended alternative approach to regulating compatible land uses, the following Table 3-6 states the land uses and activities which Minnesota statutes and laws currently prohibit in the three airport safety zones. Regardless of the approach chosen to regulate airport vicinity land uses, the uses shown in Table 3-6 **MUST** be prohibited under Minnesota state law.

TABLE 3-6: LAND USES PROHIBITED UNDER MINNESOTA LAW (MINN. STATUTES, CHAPTER 360)

SAFETY ZONE	PROHIBITED LAND USE OR ACTIVITY
Zone A	Uses that create or cause interference with the operations of radio or electronic facilities on the airport or with radio or electronic communications between the airport and aircraft
	Uses that make it difficult for pilots to distinguish between airport lights and other lights, results in glare in the eyes of pilots using the airport, impairs visibility in the vicinity of the airport, or otherwise endangers the landing, taking off, or maneuvering of aircraft
	Above-ground structural hazards are prohibited, including buildings, temporary structures, exposed transmission lines,



TABLE 3-6: LAND USES PROHIBITED UNDER MINNESOTA LAW (MINN. STATUTES, CHAPTER 360)	
SAFETY ZONE	PROHIBITED LAND USE OR ACTIVITY
	and other similar above-ground structures Uses that create, attract, or bring together an assembly of persons thereon.
Zone B	Uses that create or cause interference with the operations of radio or electronic facilities on the airport or with radio or electronic communications between the airport and aircraft
	Uses that make it difficult for pilots to distinguish between airport lights and other lights, results in glare in the eyes of pilots using the airport, impairs visibility in the vicinity of the airport, or otherwise endangers the landing, taking off, or maneuvering of aircraft
	Uses that create, attract, or bring together a site population that would exceed 15 times that of the site acreage
	New uses on sites less than three (3) acres in size
	Churches, hospitals, schools, theaters, stadiums, hotels and motels, trailer courts campgrounds, and other places of public or semipublic assembly.
	New uses with more than one building plot or a building plot greater than specified in Minn. R. 8800.2400, Subpart 6C.
Zone C	Uses that create or cause interference with the operations of radio or electronic facilities on the airport or with radio or electronic communications between the airport and aircraft
	Uses that make it difficult for pilots to distinguish between airport lights and other lights, results in glare in the eyes of pilots using the airport, impairs visibility in the vicinity of the airport, or otherwise endangers the landing, taking off, or maneuvering of aircraft

RECOMMENDATIONS FOR COMPATIBLE LAND USES IN AIRPORT SAFETY ZONES

Performance Standards—General Recommendations for Airport Compatible Land Uses

Virtually all of the sources researched for this section, including Minnesota’s current laws and regulations, set forth similar performance standards for uses and development in all airport safety zones. Performance standards do not prohibit or allow a specific type of use. Instead, performance standards establish limits related to the creation of adverse impacts on overhead flight or to persons or property on the ground. No use, regardless whether permitted under the applicable airport zoning regulations, can operate or perform in a way that exceeds the specified limits.

In virtually all the sources researched, the performance standards prohibit any use in the proximity of an airport that:

1. **Is tall enough to be hazardous to the navigation of aircraft**, including tall buildings, smokestacks, construction



cranes, trees, and cell towers. FAA Part 77 regulations and Minnesota Rules 8800.2400 address these hazards by establishing airspace surfaces above which structures or trees must not protrude. Many airport zoning regulations reference and incorporate the state and federal height provisions.

2. **May interfere with electronic navigation aides** such as radar facilities and instrument landing systems that provide for the safe movement of aircraft. These aides may be located on-airport or off. Non-aviation electronic sources placed near electronic navigation aides may cause interference. Similarly, new structures may block the navigation aid signals. Both these types of situations must be reviewed prior to the placement of such uses and structures.
3. **May cause a visual distraction to pilots approaching the airport.** Distractions can occur from outdoor lights near an airport (e.g., high mast lighting or stadium lighting), from highly reflective exterior building materials, or from water surfaces. Smoke or steam generated by nearby businesses, industry, or field burning can also create severe visual difficulties for pilots. Activities that generate a lot of dust can cause similar problems.
4. **Has the potential to attract wildlife such as birds.** These uses include wetlands, ponds, stormwater retention facilities, and landfills, which offer excellent habitat for avian wildlife and flocks of bird. The goal is to avoid interaction between such wildlife and aircraft in flight or on the ground.

Summary Table of Compatible Land Uses by Safety Zone

IN GENERAL

In Minnesota, prior to this manual being published, the state's recommended approach to regulating compatible land uses was to specify a very short list of *prohibited* land uses (e.g., residential uses in Safety Zone A; public assembly uses in Safety Zones A and B), specify a small number of allowed compatible uses in Safety Zone A (but not for Safety Zone B), and rely heavily on general performance standards (e.g., prohibiting uses that cause glare or electronic interference) and density limits to control incompatible land uses near airports. See Table 3-6 above and Minnesota Rule 8800-2400, Subp.6 (Use Restrictions).

This section suggests an alternative to the approach described above – namely, an approach that lists more specifically which land uses are generally compatible, which are not compatible, and which may or may not be compatible in the vicinity of an airport. The vehicle chosen to achieve this is a detailed “summary use table” – typical of the summary tables of allowed uses found in most traditional zoning ordinances across the country.



In the detailed summary use table, the universe of land uses is divided into use classifications, categories, and specific use types. There are a relatively few number of broad use classifications (e.g., residential, commercial, industrial), that are further divided into a greater number of general use categories (e.g., professional offices), and in some instances further divided into more precise use types (e.g., medical clinics).

The **advantage** of this detailed use list approach, as seen in most modern zoning ordinances, is that it can remove much of the need for interpretation of standards found in more general use listings (such as stated in Minnesota Rule 8800.2400, Subp. 6) or in a more performance-based approach. A local government may denote each listed use as compatible or incompatible, or as requiring more individualized scrutiny, within a given level of airport safety impacts. This greatly simplifies the task of local planners when they evaluate individual development proposals in the vicinity of the airport. One of the **disadvantages** of this approach is the work required to ensure consistency between the listing and interpretation of airport compatible uses in an airport zoning ordinance and a local jurisdiction's unique listing of uses for other local zoning purposes. This could be especially challenging when an airport zoning ordinance is prepared by a joint airport zoning board encompassing multiple local jurisdictions, the latter which may have varying approaches to categorizing land uses for zoning purposes.

While employing a detailed use table may be consistent with best zoning practices nationwide, a jurisdiction's choice to employ the minimum use prohibitions and allowances found in Minnesota Rule 8800.2400 and the 1990 model ordinance should not be viewed as "bad" or "wrong." To the contrary, such option is relatively simple in approach, which may be appealing for a small jurisdiction with limited staff or may offer adequate protection for a general aviation airport expecting few problems with encroaching incompatible land uses. There are also some jurisdictions that simply prefer the open-ended approach as a means to negotiate compatibility on a more case-by-case basis. On the other hand, the use restrictions in Minnesota Rule 8800.2400 (and the 1990 Ordinance) are relatively vague and unclear about the wider range of *compatible* uses (particularly nonresidential uses) that may be allowed close to an airport, which could result in development delays while an applicant seeks an interpretation, or may even result in missed economic development opportunities.

Obviously, each individual jurisdiction or joint airport zoning board must weigh the relative advantages and disadvantages of each approach to regulating land use compatibility, and determine which approach most advances local airport planning and zoning goals and which is most feasible given the existing regulatory context and available resources.



EXPLANATION OF SUMMARY USE TABLE

Table 3-7 below provides a detailed listing of potentially compatible and incompatible land uses for each Minnesota safety zone. The first part of the table summarizes performance-based limits on all uses within all safety zones, as discussed in the previous section. All specific land uses listed later in the table remain subject to the performance limits stated in the first part of the table. Thus, if a specifically allowed use fails the performance standard (e.g., causes excessive glare), it should not be allowed, regardless in which safety zone it is located.

The table lists typical land uses and denotes whether the use is generally considered compatible in each of Minnesota’s three safety zones. If a single parcel is located in more than one safety zone, the safety zone use restrictions in the table below should apply only to the portion of the property located in that safety zone. For example, if a property under single ownership is located half in Zone A and half in Zone B, the half located in Zone A is subject to the use restrictions applicable in Zone A, and the half located in Zone B is subject to the applicable Zone B use restrictions.

A “**C**” entry in a table cell means the use is recommended as **Compatible** and permitted in that safety zone.

A “**P**” in a table cell means the use is explicitly **Prohibited** by Minnesota law (M.R.S. Chapter 360 and Minnesota Rule 8800.2400) as not compatible in that safety zone.

A “**◆**” table entry means **the use may or may not be compatible** in that zone, and will typically require additional scrutiny. A local government may find that such use is compatible based on a case-by-case review and more specific study that considers the use’s proposed location, surrounding land uses, scale, intensity/density, and operation in relation to the subject airport’s operations and long-term safety needs. Beyond what Minnesota laws require, implementing bodies are free to adjust the limitations and recommendations to suit their local situations. Accordingly, Mn/DOT suggests that each implementing body carefully review these “**◆**” uses and consider if any should be reclassified more definitively as “not compatible” or “compatible” based on local experience and factors. *Consultation with Mn/DOT aviation planning staff prior to permitting these uses in a safety zone is strongly encouraged.* Finally, if the implementing body decides to allow a “**◆**” use in Safety Zone B, it **MUST** carry forward the minimum use restrictions mandated by Minnesota law (Minnesota Rules, Rule 8800.2400, Subp. 6.C.) for uses allowed in Zone B: namely, a minimum lot area of three acres, a site population no greater than 15 persons per acre, and no more than one building plot of a maximum size specified in Minnesota Rule 8800.2400.

Regardless whether a use is permitted by right as compatible or is subject to additional scrutiny, there may be **Additional**



Regulations that are applicable to or recommended for a specific use. A number entered with the table entry refers to one or more conditions described in the last column of Table 3-7 titled “Additional Regulations.” For example, if a table cell shows “◆-1” as the entry, an applicant should check the last table column under “Additional Regulations” for the condition numbered “1”. The decision-making body should approve the use only if it complies with all stated conditions in Table 3-7.

- Each implementing body should consider what the specific “additional regulations” should be. Table 3-7 provides only an indication when additional regulations may be appropriate for a particular use and what type of restriction typically is applied.
- For safety compatibility purposes, the most typical condition that an implementing body should specify is “density-limited.” The density or intensity of a use is usually limited through a cap on the number of structures allowed on a single site (e.g., 1 dwelling unit per 3 acres) or on the number of persons congregating at the use (e.g., no more than 15 persons per acre). Please note that uses allowed in Safety Zone B must comply with the minimum density/intensity standards stated in Minnesota Rule 8800.2400. See also the discussion earlier in this Chapter 3 about determining an appropriate threshold for and measuring the intensity or density of land uses.
- For a local government contemplating adoption of or updates to airport zoning regulations, the important point to take from these discussions of density/intensity is that, at this point in time, there is no “magic” number that works for every jurisdiction or every airport. Except where mandated by state law for uses in Safety Zone B, chosen density threshold should reflect thoughtful consideration of a number of local and airport variables, including but not limited to:
 - The type of airport runway and traffic;
 - Proximity of the safety zone to the runway centerline extended, and the relative risk of accidents in the safety zone;
 - Intensity of existing development in the safety zone;
 - Current local zoning use and density restrictions already in place;
 - Future runway expansion plans; and
 - Degree of development growth pressures in the safety zone.
- Other types of conditions often relate back to the performance criteria, such as approving an industrial use only if its operation are completely enclosed and

will not cause smoke or glare hazardous to flight. Other conditions might restrict the specific location of a structure or activity on the development site. For example, a use might be incompatible or more hazardous if located on the extended runway centerline, but might be compatible if sited significantly far away from the centerline extended.

In all cases, all land uses proposed within a safety zone remain subject to other restrictions that prevent obstructions to airflight (i.e., height limits) and that prevent the creation of other hazards to flight (i.e., glare, smoke, dust, wildlife attractants).

TABLE 3-7: COMPATIBLE LAND USES WITHIN AIRPORT SAFETY ZONES

TABLE 3-7: COMPATIBLE LAND USES WITHIN AIRPORT SAFETY ZONES				
Use Categories and Specific Use Types	Safety Zones			Additional Regulations
	Zone A	Zone B	Zone C	
P = Prohibited by Minnesota Law C = Recommended as Permitted Compatible Use ◆ = May or May Not be Compatible – Additional Review Required – May Be Allowed with Conditions or More Specific Study – Prior Consultation with Mn/DOT Recommended				
GENERALLY PROHIBITED USES AND ACTIVITIES IN ALL SAFETY ZONES				
Uses creating large areas of standing water	P	P	◆	1. Use shall not cause smoke, ash plumes or other adverse conditions that would inhibit pilot visibility or affect the operation of aircraft.
Uses causing electrical, navigational, or radio interference between airport and aircraft	P	P	P	
Uses or structures emitting fly ash, dust, vapor, gases or other emissions	P	P	◆-1	
Uses fostering increase in bird population	P	P	◆	
Use, device, structure making it difficult to distinguish airport lights (billboards, lights, signs)	P	P	P	
Use, device, structure causing glare or impairing pilot visibility	P	P	P	
Uses or structures that promote concentrations of flammable substances or materials	P	◆	◆	



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RESIDENTIAL AND ACCOMMODATION USES				
Residential Uses				
Single Family, Two-Family, Duplex Dwellings	P	◆-1	C	New residential uses are prohibited in Zone A; however; pre-existing single family residential uses may be allowed to continue, unless they are found to be a hazard so severe, either to persons on the ground or to the air traveling public, or both, that they must be prohibited under Minnesota Statutes, Section 360.066. 1. The use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than one (1) building plot subject to the size limits stated in Table 3-1.
Multi-Family Dwellings	P	◆-1	C	
Nursing Homes and Other Group Living for the Elderly	P	P	C	
Permanent Mobile Home Parks and Courts	P	P	C	
Accommodation Uses				
Hotels & motels	P	P	C	
Transient mobile home parks courts (RV Parks) or campgrounds	P	P	C	
PUBLIC, CIVIC AND INSTITUTIONAL USES				
Educational Uses				
Schools and Other Educational Services	P	P	C	
Day Care Facilities	P	P	C	
Institutional and Assembly Uses				
Correctional Institutions	P	◆-1	C	1. The use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1 consider location restrictions as well.
Government Offices	P	◆-1	C	
Hospitals	P	P	C	
Libraries	P	◆-1	C	
Religious or Cultural Assembly Uses (Outdoor or Indoor)	P	P	C	
Other Miscellaneous Public, Civic, or Institutional Uses Not Specifically Listed	P	◆-1	C	
Other Public Uses				



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Cemeteries	◆-2	C	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1.1. 2. Cemeteries are acceptable in Zone A with no buildings, structures, or other above-ground objects hazardous to airport operations allowed. 3. No public facilities or above-ground structures; wildlife attractants should be minimized. No spectator facilities allowed.
Parks and Nature Exhibitions	◆-3	◆-1	C	
COMMERCIAL USES				
Business & Professional Offices				
Medical & Other Health Care Offices or Clinics	P	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1.
All Other Business and Professional Offices	P	◆-1	C	
Retail Sales or Services				
Shopping Malls & Centers	P	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1.
All Other Retail Sales or Service Uses, Including Repairs and Personal Services	P	◆-1	C	
Eating and/or Drinking Establishment				
Eating and drinking places	P	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1.
Amusement, Entertainment and Recreation Establishments				
Fairgrounds, Amusement Parks, Theaters, Amphitheaters, and All Other Amusement, Entertainment, and Recreation Establishments Not	P	P	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1. 2. No above-ground structures; no spectator facilities; wildlife attractants should be minimized.



TABLE 3-7: COMPATIBLE LAND USES WITHIN AIRPORT SAFETY ZONES				
Use Categories and Specific Use Types	Safety Zones			Additional Regulations
	Zone A	Zone B	Zone C	
P = Prohibited by Minnesota Law C = Recommended as Permitted Compatible Use ◆ = May or May Not be Compatible – Additional Review Required – May Be Allowed with Conditions or More Specific Study – Prior Consultation with Mn/DOT Recommended				
Specifically Listed (Indoor or Outdoor)				
Golf Courses, Driving Ranges, Riding Stables & Water Recreation Establishments	◆-2	◆-1	C	
Recreational Vehicle Accommodations and Campgrounds	P	P	C	
Zoos	P	◆-1	C	
Vehicle Sales or Service Establishment				
Vehicle Body Repair Shops, Parts and Supply Distributors; Automobile Rental/Leasing Agencies, Sales and Service	P	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1.
Vehicle Body Repair Shops, Parts and Supply Distributors; Automobile Rental/Leasing Agencies, Sales and Service	P	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1.
INDUSTRIAL, WHOLESALE TRADE AND STORAGE USES				
Manufacturing, Assembly, or Processing Uses				
Chemicals and Allied Production; Liquefied & Bottled Gas Production or Distribution; Rubber & Misc. Plastics Manufacturing; Primary Metal Industries; Fabricated Metal Production	P	◆-1,2	C-2	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1. 2. Use shall not cause smoke, ash plumes or other adverse conditions that would inhibit pilot visibility or affect the operation of aircraft.
Explosives and Pyrotechnic Production	P	◆-1, 2	C-2	
General Industry – Not Otherwise Listed	P	◆-1,2	C-2	
Mail Order House	P	◆-1	C	
Mini-Storage	P	◆-1	C	



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Warehouse				
Petroleum Refining & Related Industries (Gasoline, Diesel & Heating Oil)	P	◆-1, 2	C-2	
Building and Contracting				
Building Materials And Hardware; Construction, General Building Contractors; Building Materials Supply	P	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1.
Manufactured/Mobile Home – Sales Only	P	◆-1	C	
Wholesale Trade				
Wholesale Trade	P	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1.
Automotive, Marine & Aircraft Accessories	P	◆-1	C	
Warehouse and Storage Services				
Warehousing And Storage Services	P	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1. 2. Subject to local community zoning ordinance.
Explosives Storage	P	◆-1	C-2	
Waste and Salvage Uses				
Hazardous Waste Facility	P	◆-1, 2	◆-2	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1. 2. Subject to additional review to determine compliance with general
Landfills; Solid Waste Facility	P	◆-1, 2	◆-2	
Recycling Collection Facility	P	◆-1, 2	◆-2	
Refuse Hauling	P	◆-1, 2	◆-2	



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Facility		2		performance standards in Section 9.2.(f)(3) and minimum state and FAA requirements for siting of municipal waste facilities near airports.
Salvage or Junk Yard	P	◆-1, 2	◆-2	
TRANSPORTATION, PARKING & UTILITY USES				
Transportation Facilities (Rail Ways, Highways/Roads, Vehicle Parking)	◆-2,3	C	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1. 2. Allowed only if no practical alternatives exist or use is directly related to airport operations. 3. Lights, guardrails, buildings, structures, above-ground transmission lines are prohibited. 4. Subject to height restrictions. 5. All utilities, power lines, and pipelines must be underground. Wind turbines are prohibited structures.
Passenger Facilities & Terminals	P	◆-1	C	
Cargo-Freight Facilities	P	◆-1	C	
Communications Towers/ Telecommunications/ Broadcast Communications/ Antennas	◆-3	◆-1	C-4	
Energy Utilities, Transmission Lines, Wind Turbines, & Pipelines	◆-5	◆-1	C-4	
AGRICULTURAL AND RESOURCE EXTRACTION USES				
Agricultural Uses				
Agriculture, General – Annual Crops (Except Livestock)	◆-2, 3	◆-1	C	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1. 2. Wildlife attractants shall be minimized (e.g., cereal grain crops discouraged). 3. Above-ground structures prohibited including crop bales and product piles.
Agricultural Accessory Structures	P	◆-1	C	
Forestry Activities, Shooting Ranges, Game Farms & Related Services	◆-3	◆-1	C	
Fishing and Hunting Activities, Shooting Ranges, Game Farms & Related Services	C-2, 3	C-1, 2	C	
Greenhouses	P	◆-1	C	



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Livestock Farms and Ranches Not Otherwise Listed	◆-2, 3	◆-1,2	C	
Mink and Poultry Production/Breeding	◆-2,3	◆-1,2	C	
Resource Extraction Uses				
Mining Activities and Related Services	◆-2, 3	◆-1, 2, 3	C-2, 3	1. Use must be on a lot no less than 3 acres, the use shall result in a site population no greater than 15 persons per acre, and each site shall have no more than 1 building plot subject to the size limits stated in Table 3-1. 2. Use shall not cause smoke or dust plumes or other adverse conditions that would inhibit pilot visibility or affect the operation of aircraft. Structures prohibited. 3. Activities involving creation or expansion of water impoundments shall not be created.
Oil & Natural Gas Wells; Stone & Mineral Quarries	P	◆-1, 2, 3	C-3	
OTHER USES				
Water Areas	P	◆-1	C	1. Creation of wildlife attractants and hazards must be substantially mitigated if allowed.
Stormwater Detention Facilities Accessory to Another Use (Surface Only)	P	◆-1	◆-1	
Undeveloped and Vacant Land, Open Space	C	C	C	



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chapter 4: preventive and corrective strategies for airport land use compatibility



Introduction²⁷

Minnesota local governments have a wide variety of tools available to them to prevent the development of incompatible land uses in the airport vicinity and other tools to help correct problems once they are established. Planning, zoning, land acquisition, infrastructure investment, incentives, and education are the primary categories of implementation mechanisms that can help insulate airport operations and keep people safe in the air and on the ground.

This chapter identifies a variety of strategies and recommendations aimed at ensuring compatibility between airport operations and surrounding land uses. “Compatibility” in this chapter means compatible in terms of safety to the public on the ground and to persons in airplanes in the event of an aircraft accident.²⁸ In all cases, the recommendations seek to protect the public health, safety, and welfare while preserving the operational capabilities of the state’s valuable aviation system.

The first section of this chapter deals with “preventive” strategies; that is, steps government agencies can take to prevent incompatible land uses around airports that can hamper airport operations and create greater risks to people on the ground and in aircraft. These practices are broken down into the categories noted above, including planning, regulations, property acquisition, incentives, and miscellaneous. They include the use of tools like local zoning regulations and land purchase. In each category, where applicable, a

CHAPTER 4 OVERVIEW

- Introduction
- Preventive Strategies and Tools
- Corrective Strategies and Tools

²⁷ If this chapter is read in full, we recognize its contents may overlap with other discussions presented in other chapters. We believe most users will read specific chapters of this manual as needed and, therefore, we feel it is better to include some discussions that may be repetitive. Where possible, however, we have eliminated duplicate text and included cross references.

²⁸ This chapter does not offer strategies aimed at addressing noise compatibility concerns. However, significant overlap exists between strategies that address safety and noise; in many cases, land use strategies to address safety concerns will also mitigate many noise concerns. See Appendix 14 to this Manual for a list of resources regarding noise compatibility strategies and mitigation.



subsection recommends best practices relating to airport protection that may strengthen and support preventive actions.

The second section focuses on “corrective” strategies that might be employed by government agencies or an airport sponsor to address situations in which incompatible land uses already exist in close proximity to the airfield. Corrective actions seek to reduce the impacts of these incompatible land uses. This section is broken down into categories like those used in the first section, again with recommendations for best practices where appropriate.

Minnesota presently has 136 public airports in the state system; naturally, preventive and corrective actions will vary from airport-to-airport depending on a number of factors such as location (rural vs. urban), level of airport activity, development activity around the airport, aircraft type, and similar considerations. For example, a commercial airport located in a metropolitan area with significant peripheral growth pressure will probably be pressed to employ a range of aggressive regulatory and other tools to protect itself from encroachment by incompatible uses. In contrast, a small, rural, general aviation airport without commercial airline or jet service and little surrounding development pressure may be able to use simple zoning regulations or a modest land acquisition program to protect itself.

The following Table 4-1 illustrates the variety of tools that might be used by different sized jurisdictions depending on their location, growth pressures, and type of airport. Not all possible combinations of preventive and corrective strategies are shown; the table is intended to be illustrative only. Each community will need to consider carefully its own circumstances and then tailor an implementation strategy accordingly. Each tool shown in the table below is described and discussed in more detail in the sections of this chapter following the table.



TABLE 4-1: COMPATIBILITY STRATEGIES -- A SAMPLING OF POSSIBLE APPROACHES

Local Govt/ Airport Type/ Growth Pressure	Planning Strategies	Zoning/ Regulations	Capital Investment	Land Acquisition/ Easements ²⁹	Incentives	Education	Misc.
Small rural town/city; general aviation airport; minimal growth pressure	Comprehensive land use plan for airport area designates low-density residential and agriculture uses.	Adopt model airport zoning ordinance; large-lot or agricultural zoning in airport vicinity.	No water or sewer lines extended in airport vicinity, especially in airport safety zones.	Within RPZ (Safety Zone A), acquire incompatible land uses; Consider limited acquisition of farmland or easements adjacent to airport.	None	Hold public meetings for plan; Mn/DOT staff available to explain airport land use issues. Work with farmers to avoid planting grains that attract wildlife.	Utilize joint zoning board if airport surrounded by multiple jurisdictions.
Mid-size town/city; general aviation airport with commercial flights; modest growth pressure	Comprehensive land use plan contains specific airport-area element; designates airport area for compatible industrial development. No high-density uses allowed. Residential and commercial growth areas designated away from Safety Zones A, B, and C.	Adopt model zoning ordinance. Zoning map and ordinance amended to follow land use plan. No residential development allowed in airport vicinity. Landfill, water bodies prohibited. Restrictions on lighting for all uses.	Water/sewer lines and roads extended into airport industrial park; targeted residential and commercial growth areas away from airport receive priority funding for infrastructure improvements.	Within RPZ (Safety Zone A), acquire incompatible land uses; City purchases land for industrial development around airport; resells with restrictive easements.	City agrees to help surrounding jurisdictions defend zoning challenges, in exchange for putting in place protective airport zoning.	Require all large residential developments near airport to disclose that fact in deeds.	Utilize joint zoning board if airport surrounded by multiple jurisdictions.
Suburban city; general aviation airport with corporate jet service; major growth pressure	Comprehensive land use plan designates area around airport for business parks; capital investment plans target road and water/sewer investment there; no residential allowed in safety zones.	Adopt model zoning ordinance with airport overlay district. Allow only airport-related uses or those that do not have high employee density. Restrict building heights and lighting.	Do not extend infrastructure into safety zones. Targeted residential and commercial growth areas away from airport receive priority funding for infrastructure improvements.	Within RPZ (Safety Zone A), acquire incompatible land uses; Purchase land and easements in safety zones A, B, and C.	City sets up transferable development rights program to transfer density away from airport to targeted growth areas.	City establishes multi-jurisdictional citizen airport advisory committee; Plain-English disclosure for purchasers of any existing or new residential uses in airport vicinity.	Utilize joint zoning board if airport surrounded by multiple jurisdictions.

²⁹ Outside of Safety Zone A, Minnesota law generally discourages the acquisition of existing, legal land uses in favor of corrective and prospective regulatory strategies, such as zoning. The law specifically states: “The elimination or removal of existing land uses, particularly established residential neighborhoods in built-up urban areas, or their designation as nonconforming uses, is not in the public interest and should be avoided whenever possible consistent with reasonable standards of safety.” Minn. Stat., Sec. 360.062.



TABLE 4-1: COMPATIBILITY STRATEGIES -- A SAMPLING OF POSSIBLE APPROACHES

Local Govt/ Airport Type/ Growth Pressure	Planning Strategies	Zoning/ Regulations	Capital Investment	Land Acquisition/ Easements ²⁹	Incentives	Education	Misc.
<p>Large city; Commercial airport; Existing development and infill</p>	<p>City's comprehensive plan targets airport area for compatible commercial/industrial redevelopment. Residential uses discouraged.</p>	<p>Model zoning ordinance adopted. Zoning regulations (parking, landscaping) revised to encourage compatible infill development. Significant expansion of existing residential uses and new high-density residential uses prohibited. High-density, public assembly uses (schools, etc.) prohibited.</p>	<p>Infrastructure in targeted redevelopment areas upgraded to encourage compatible commercial and industrial infill.</p>	<p>Within RPZ (Safety Zone A), acquire incompatible land uses. In other high-risk areas, existing residential uses in safety zones purchased and removed using urban renewal tools. Nonconforming uses and existing residential uses encouraged to relocate.</p>	<p>Funding provided to relocate residents in incompatible residential developments.</p>	<p>Plain-English disclosure for purchasers of any existing or new residential uses in airport vicinity.</p>	<p>Utilize joint zoning board if airport surrounded by multiple jurisdictions.</p>



Preventive Strategies and Tools

Preventive strategies and tools are geared to avoiding or prohibiting the introduction of incompatible land uses within an airport's designated safety zones. Preventive actions include clear planning policies, regulations, monetary and other incentives, and public education. The Minnesota Department of Transportation (Mn/DOT), local jurisdictions, or the airport sponsor may have authority and responsibility to implement these measures. Preventive practices often require a willingness to be aggressive, perseverant, consistent, and collaborative. Experience at airport after airport demonstrates that, in the long run, avoiding incompatible uses is easier and more cost-effective than correcting them after the fact.

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GENERAL PLANNING STRATEGIES

Experience in Minnesota and the rest of the United States shows that thoughtful land-use planning is the essential solid underpinning for effective strategies to ensure compatibility between airports and surrounding development.

Minnesota law authorizes all municipalities and counties to prepare long-range comprehensive plans for their communities. Minnesota Statutes (2004), Section 394.23 (Counties) and Section 462.353 (Municipalities). When a municipality prepares a comprehensive plan, which describes future land uses and development patterns, state law requires that the plan include a transportation element. When relevant, best planning practice recommends that the transportation element of the plan address land use and development around any public airport.³⁰ A strong and inclusive local plan lays the foundation for implementing preventive measures, including targeted acquisition or zoning regulations designed to prohibit incompatible uses.

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There are a number of good examples of effective planning efforts around airports in Minnesota that have helped prevent or limit potentially incompatible land uses. For example, in the Minneapolis/St. Paul region, the Metropolitan Council has developed an aviation system plan that is implemented through local land use plans that must conform to the adopted 2030 Regional Development Framework (of which the aviation system plan is an element). Many of these local plans contain elements aimed at protecting airport operations and enhancing economic development associated with aviation facilities. On the other hand, there are instances where local governments around airports have not addressed airport and aviation facilities in their land use plans, setting the stage for land use conflicts with airport zoning conflicts.

³⁰Smith, Herbert, *The Citizen's Guide to Planning* (APA Press, 1979), pp. 59-61.



Local planners should prepare capital improvement programs and other growth management plans cognizant of nearby airports. For example, it makes little sense to run sewer lines to serve sites within a safety zone and then try to use zoning to restrict residential development—the very availability of the sewer service will create enormous development pressures that are hard to resist.

This section details some of the basic planning practices that all local governments that host or are affected by airport operations should consider.

Coordinated Local Land Use Planning, Capital Investment, and Airport Master Planning

As stated above, local comprehensive land use plans should address airport compatibility issues when relevant. These plans should acknowledge airport safety zones and tailor land use recommendations accordingly. Effective plans will include specific written policies addressing airport/aviation issues such as safety, noise, access, and economic development, and tie such policies to maps that steer incompatible development away from sites in airport safety zones. The Metropolitan Council, for example, recommends that its constituent municipalities with airports address in their plans such airport-related issues as ground access, utility infrastructure, and local services.



When should a local jurisdiction address airport compatibility issues in its planning efforts? Mn/DOT recommends local jurisdictions (both counties and municipalities) do so whenever the jurisdiction includes an airport, or whenever the jurisdiction's planning area is located close to a public airport. The “trigger” distance from the airport will vary depending on the type of airport. For example, two or three miles distance may be a good trigger for smaller general aviation airports, while five miles may be more appropriate when the subject airport is larger, services jet aircraft, and/or has scheduled aircraft flights. Local jurisdictions should consult with a near-by airport to learn more about the airport's reasonable areas of influence.

At the same time, local communities must insure that their comprehensive land use plans designate alternative growth areas for uses found to be incompatible with airport operations. These alternative areas must be sufficient and adequate to accommodate growth pressures that would otherwise encroach upon the airport. These areas should also reasonably accommodate uses that might need to relocate out of the airport safety zones under applicable airport zoning rules.

The process by which local governments draft the aviation element of their local plans is also important. During the planning process, in addition to the usual stakeholders, a local government should consult with airport sponsors, affected property owners, and other airport-related stakeholders. Moreover, local plans should be reviewed and updated regularly to account for changes in airport expansion plans or operations.

Similarly, professional planning practice suggests that local planners should prepare capital improvement programs and other growth management plans cognizant of nearby airports because the construction or extension of public facilities such as roads and water and sewer systems near an airport can influence and even drive the



type and density of development that follows. Such decisions should avoid encouraging incompatible land uses in the vicinity. For example, it makes little sense to run sewer lines to serve sites within or across a safety zone and then try to use zoning to restrict residential development—the very availability of the sewer service will create enormous development pressures that are hard to resist. At the same time, local capital improvement plans should ensure adequate public facilities in designated growth areas to provide an alternative to near-airport incompatible development.

Special Management and Mitigation Plans

Comprehensive community land use plans are often supplemented by focused area plans or special resource management plans. These specialized plans can help ensure compatible airport vicinity development.

WILDLIFE HAZARD MITIGATION OR MANAGEMENT PLANS

Airport owners working in concert with adjacent municipalities should inventory existing wildlife activity and habitats around an airport to determine the potential for wildlife hazards to aircraft operations. This inventory becomes the basis for a management plan, which can recommend mitigation and control techniques appropriate to the local condition. Control techniques include removing wildlife, installation of fences, and maintaining airport grounds and property so that certain species of wildlife are not attracted to the area. Habitat modification includes mowing grass to less than 10 inches in order to lessen bird use³¹, prohibiting cereal grain crops near airports, eliminating standing water, and using audio repellents such as propane cannons to disperse wildlife.

To assist these efforts, the Minnesota Department of Natural Resources maintains a multi-layer data basis containing invaluable information on regional biology and natural resources, including wildlife. These data can lay the groundwork for an effective wildlife hazard mitigation/management plan. Other available expertise exists at the University of Minnesota's AirTAP and the state DNR offices in Grand Rapids.

NATURAL FEATURE INVENTORY AND MITIGATION STRATEGIES

Similar to the wildlife inventory approach, airport owners working cooperatively with local municipalities should inventory natural features, such as trees, shrubs, and topography, which might pose a hazard to flight. This knowledge becomes the foundation for appropriate mitigation measures, including removal, trimming, visual marking, and pilot education. At the same time, the inventory informs local zoning and landscaping

³¹ While mowing grass can be an effective control technique in many cases, too short grass may attract Canadian Geese—unintentionally creating another type of hazard for Minnesota airports. The compromise is not clear. Local governments should consult with wildlife habitat experts, including the state's Department of Natural Resources, for more information and guidance.



regulations, which—if appropriate—can specifically prohibit too-tall vegetation and trees (typically over 50 feet) under an airport’s approach surfaces.

Joint or Regional Planning and Intergovernmental Agreements

Because airport safety issues do not stop neatly at municipal or county borders, cooperative intergovernmental planning in this arena is critical.

While land use planning by individual local jurisdictions hosting or affected by airport operations is a good first step to an effective hazard prevention program, airport compatible land use planning begs for joint/regional planning because airport influence areas often cross jurisdictional lines. One lone jurisdiction acting in a vacuum in making land use decisions can quickly cause irreparable harm and jeopardize an entire region’s investment in, and dependence on, an airport. One good example of effective joint planning comes from Allegheny County (Pennsylvania), host to the Pittsburgh Airport. There county officials and the surrounding townships participated in joint land use planning and coordinated airport protection zoning. Allegheny County and the state also coordinated together in the planning and construction of new roads for the airport to separate passenger and employee/service traffic.

Fortunately, Minnesota law already authorizes municipalities in a region to plan jointly in a coordinated fashion—and in the Twin Cities region, state law requires regional planning under the auspices of the Metropolitan Council. See, for example, Minnesota Statutes (2004), Section 462.3535 (Community-based Planning). While more challenging to implement than voluntary, informal protection efforts, experience shows that these joint planning efforts are best memorialized in enforceable intergovernmental agreements that spell out clearly the roles, responsibilities, and obligations of each party individually or through the joint zoning board mechanism discussed later in the “Regulatory Actions” section.

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The Metropolitan Council’s aviation system plan and local plan conformity requirements are a good example of a reasonable regional approach to airport planning and addressing airport land-use compatibility issues. Local government plans in the Twin Cities region must conform to the regional aviation system plan and contain policies to protect public airports. Most local governments have responded positively, taking steps to protect MSP and other regional airports from encroachment. However, even in the Twin Cities metro area, some local governments have failed to include adequate policies to protect major facilities or have not implemented local plans with effective zoning and subdivision regulations.

Good examples exist of effective problem-solving when multiple jurisdictions work together rather than at loggerheads. For example, the adjoining cities of Denver and Aurora, Colorado, recently executed a joint development agreement to stave off potentially incompatible residential development within DIA’s 60 DNL noise



contour.³² The proposed mixed use development straddles the Denver/Aurora border. In the agreement, the developer agreed not to seek residential zoning within the Denver portion of his parcel north of the 60 DNL contour. Within the Aurora portion of the parcel north of the 60 DNL contour, the developer agreed not to construct any residential uses for 2.5 years and to use his best efforts to secure additional land to relocate the displaced residential development. (Denver intends to offer the developer city-owned land close to the subject private parcel in exchange for the portion of the developer's land in Aurora north of the 60 DNL contour.) Denver also agreed to share tax revenues with Aurora from commercial development allowed on the Denver portion of the parcel to offset the loss of development potential on Aurora's portion from reductions in office building heights and development intensity that Denver demanded to protect DIA's future operations. Finally, the DIA airport managers—also a party to these negotiations—got both cities to agree to require aviation easements and plain language notice to all prospective purchasers and minimum construction standards for noise mitigation. Through these negotiations, Denver realized significant protection for DIA from development in an adjacent jurisdiction.

Recommended Best Practices

While the State of Minnesota has some useful planning laws on the books that are supportive of airport compatibility planning, there is significant room for improvement. The following best practices are recommended for consideration by all interested Minnesota parties, but in particular local governments:

Local governments that have planning and zoning authority over airport hazard areas/safety zones, as identified in an adopted airport master or layout plan, should complete comprehensive land use plans that contain a specific element addressing airport-related land use compatibility issues. This element should address issues such as safety, noise, access, and economic development. The local government should ensure that periodic updates in coordination with updates to local airport master plans are completed.

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REGULATORY ACTIONS

Local land-use and other regulations—especially zoning—can be one of most effective tools to prohibit or reduce the prevalence of incompatible land uses near airports. One of the basic functions of zoning has always been to separate potentially incompatible uses—for example, residential from heavy, polluting industry. Currently,

³² Denver uses the 60 DNL rather than the more typical 65 DNL trigger because it was a day/night maximum level, not an averaging, that allows noise to higher at some times of the day. In addition, the city's intent was to have a moderate noise limit with a built-in "margin of error." All the surrounding jurisdictions wanted lower noise levels as a condition for their supporting Denver's annexation of land in neighboring Adams County. In other words, Denver had to play political ball.



Minnesota state law requires more local government participation in terms of airport protection than many other states, although there are several states (such as Washington, Florida, and California) that specifically mandate local government airport compatibility planning and zoning actions. Indeed, a recent survey documented the fact that most local governments hosting public airports in the state have adopted the model state airport zoning regulations promulgated by Mn/DOT, with only minor variations. However, there are several shortcomings in the existing state airport zoning process that have allowed incompatible developments to occur around an increasing number of airports.

Many local airport zoning ordinances [in Minnesota] do not address new uses that may cause compatibility problems like cell towers and wind turbines.

First, most of these airport zoning ordinances are quite dated—enacted over 25 years ago with few updates since. For example, the land use lists contained in these ordinances, which spell out allowed and prohibited uses, are typically woefully out-of-date. As a result, local airport zoning ordinances do not address new uses that may cause compatibility problems like cell towers, wind turbines, or wildlife attractants.

Second, in practice some neighboring jurisdictions adjacent to an airport refuse to cooperate with the airport sponsor and the host local government—they simply do not adopt protective zoning regulations to protect an airport in a neighboring jurisdiction. While the State Commissioner of Transportation and the host jurisdictions have authority to unilaterally impose land use restrictions in some cases, in practice they have never done so.

Finally, even where host and neighboring jurisdictions desire to enact protective zoning regulations, they have sometimes been hesitant to do so because of decisions by Minnesota courts that have awarded significant monetary damages to landowners subject to airport zoning restrictions.

The following sections discuss the experience with airport zoning in the State of Minnesota, identify effective regulatory actions, and highlight shortcomings in state law that adoption of recommended best practices may help address to make this essential compatibility tool even more effective.

Local Zoning, Subdivision, and Development Control Regulations

Land use controls like zoning have proven to be one of the most effective tools to prevent incompatible land uses near an airport. Minnesota law (Minnesota Statutes, Section 360.062) strongly supports local use of zoning powers, rather than condemnation powers, to control incompatible land uses. Zoning is most effective when enacted prior to development activity near an airport, which is typically early in the life of an airport and ahead of significant growth pressures.



The Minnesota Department of Transportation provides a model ordinance for local airport zoning regulations. The model ordinance provides a very good starting point for local drafting efforts. See Chapter 6 of this manual for the most current version of the model airport zoning ordinance. Minnesota statutes and rules allow a local government to provide more strict requirements than found in the state's model. The statutes and rules also allow less restrictive zoning rules than contained in the model ordinance, but only if a municipality can demonstrate to the Mn/DOT Transportation Commissioner that: "the social and economic costs of restricting land uses in accordance with the standards outweighs the benefits of a strict application of the standards." Minnesota Statutes, Section 360-065, Subd. 2.

With only minor variations, the text of most local airport zoning ordinances in Minnesota meet or exceed the minimum requirements found in Mn/DOT's 1990 model ordinance. Six of the metropolitan area airports are not zoned or not zoned to meet current standards. Of the 130 airports with zoning in place, 70 airports, or 54%, followed the state 1990 model ordinance verbatim, with no changes to the model's substantive text provisions. Most of the remaining ordinances (46 ordinances or 35%), followed the state model text with only a deviation in the height of the horizontal airspace zone (nearly all of these ordinances set the height of the horizontal zone at 100 feet above mean airport elevation instead of 150 feet as stated in the model). Together, these two groups represent 89% of the total number of ordinances reviewed. In other words, nearly all the ordinances reviewed are in technical compliance with the statutes by virtue of having adopted the minimum requirements in the text of their ordinances, or more restrictive standards, under Minnesota law.

Nearly two-thirds, or 85 of the ordinances, were adopted or last amended before 1980. All except one of those 85 older ordinances were completed and last changed during the 1970s. Thus, in many cases, at least 25 years have elapsed since the affected communities took a critical look at their airport protection and safety regulations. The age of the zoning ordinance should not necessarily determine the need for its amendment; instead, what matters more is how much local circumstances (i.e., growth and evolving land use patterns) have changed since the ordinance was originally adopted. While in some instances, the patterns of growth over time have not necessitated a detailed review, at other airports, growth pressures have increased at their boundaries, raising the question whether these communities have actively ensured that their ordinances can still do what was originally intended when adopted more than two decades ago.

Modern airport zoning regulations in most states typically address the following elements of land use near airports to achieve safety compatibility objectives:

POPULATION DENSITY

Usually the regulations prohibit land uses that concentrate large numbers of people inside or outside, within airport safety zones. Limits on the number of dwellings or persons in an area close to



an airport runway are typical approaches to reducing land use density or intensity.

RESIDENTIAL VS. NONRESIDENTIAL LAND USES

In safety zones closest to the end of a runway, the regulations often prohibit or strictly limit residential uses. Aviation uses like freight offices and equipment repair are often acceptable. Other nonresidential uses such as warehouses, subject to the population density limits, are often allowed.

HIGH-RISK USES

High-risk uses, in which the mobility of occupants is effectively limited, such as schools, stadiums, hospitals, nursing homes, daycare facilities, and churches, are typically prohibited regardless of population density. In addition, special functions and facilities, such as aboveground utility lines, hazardous materials storage, or uses that create large areas of standing water that might draw birds should be avoided near airports.

SITE DESIGN AND PERFORMANCE

Frequently, airport zoning regulations address the size of building sites, the number of buildings allowed per site, and the location of buildings on a site relative to the runway centerline (e.g., many regulations seek to shift buildings away from the extended centerline to the maximum extent possible). Other elements addressed include outdoor lighting (no tall lights and all lights must be shielded), landscaping (allow only low-growth vegetation), and performance or operation limits (avoid smoke, steam, dust, glare).

PROCEDURE

Airport zoning regulations use process in different ways to control potential land use conflicts. Often regulations subject uses that may be incompatible with a nearby airport to heightened public scrutiny and study through a “special use review” or “conditional use review” process. These types of public review procedures give interested parties, including the airport sponsor, the opportunity to comment on potential conflicts before the final decision is made. In many cases, the regulations will require a zoning permit prior to the construction or establishment of any land use in a designated airport influence area. The permit process allows planning and zoning staff to carefully review the proposed use for compliance with airport zoning regulations.

Some communities find it useful to draft tailored zoning districts for *on-airport* property and adjacent lands. Such zones, often called airport development or airport protections zones, are intended to spur compatible development of on-airport property and in the immediate airport vicinity. They are typically base zoning districts³³

³³ “Base zone districts” are zone districts that are mapped to specific properties in a jurisdiction, and provide the base minimum standards relating to land use, density/intensity, and often lot dimensions (e.g., lot size and width) and building



that directly provide for an array of airport-related and airport-dependant public, industrial, and commercial uses (e.g., passenger terminals, airport operation and service centers, fueling facilities, etc.) in appropriate locations. Where possible, an airport development zone should be mapped to apply not only to current airport-controlled property but also to future possible expansion areas.

Local airport zoning regulations are typically applied directly through base zoning district standards or, alternatively, may be applied as an “overlay zone,” which layers special airport-related restrictions on top of otherwise applicable base zoning rules (e.g., an industrial or commercial zone district).³³ An overlay airport zone may address permitted uses, maximum structure heights (see discussion of FAA Part 77 height restrictions below), maximum density or intensity of development (e.g., number of buildings per parcel or number of building occupants per acre), hazard or warning lighting, and other performance standards necessary to prevent the establishment of new airport hazards. The overlay zone approach is best applied to off-airport properties within the designated airport influence area.

Another type of overlay zone is “Airport Noise Overlay Zone” (ANOZ) or district. The ANOZ is an overlay district that is incorporated into a local zoning ordinance. A local jurisdiction bases the boundaries of an airport noise overlay zone on an airport’s noise exposure contours. Each airport noise overlay zone restricts permitted land uses based typically on noise sensitivity. The ANOZ may be combined with airport safety or height hazard zoning districts, or treated as a distinctly separate zone district.

Inter-jurisdictional Zoning Administration and Enforcement

The State of Minnesota has adopted legislation creating several powerful tools to facilitate multi-jurisdictional airport zoning. These include joint zoning boards, preemptive extraterritorial zoning, and withholding of state funds for noncompliant communities.

The joint airport zoning board mechanism permitted under Minnesota airport zoning enabling legislation (Minnesota Statutes Section 360.063, subd. 3) is perhaps the most effective tool for joint airport vicinity planning and adoption of consistent airport protection regulations. However, this approach has some significant

bulk (building height). A person may vary a base zone district’s requirements only through the zoning variance process. In contrast to a base zone district is a “planned development” zone district, in which an applicant may propose a customized slate of land uses and tailored design standards that may not apply to any other district in the city. Finally, an “overlay” zone district contains zoning regulations, often tied to a specific location or geography, that supplement the base zone district’s regulations to achieve a specific planning purpose (e.g., airport protection, hillside protection, and historic preservation). An overlay zone’s regulations are layered on top of the base zone’s requirements and apply in addition to the base zone standards; in case of any conflict between the overlay and base zone district standards, typically the overlay zone’s standards will apply and control.



shortcomings. For example, once a joint airport zoning board in Minnesota adopts an airport zoning ordinance, and Mn/DOT certifies its compliance with minimum state requirements, state law does not compel consistent local administration and enforcement of the ordinance.

Moreover, after a joint board adopts an airport zoning ordinance, state law does not require constituent jurisdictions to incorporate the ordinance into their official land use controls, nor are the local jurisdictions obligated to review regularly or update their aviation plans or airport zoning as rules or local conditions change. As revealed in airport interviews conducted during preparation of this manual, some places actually “forget” over time that a joint airport zoning board had adopted an ordinance that still applies to them.

In addition to the joint multi-jurisdiction airport zoning board approach authorized by state law, the Minnesota statutes also authorize an airport-owning municipality and joint zoning board to apply airport zoning unilaterally to land within noncompliant municipalities, townships and counties. State law also gives municipalities extraterritorial zoning powers over adjacent un-zoned territory, which could be used to apply airport zoning to balking county or township areas. (See Minnesota Statutes, Section 462.357, subd. 1.) However, based on recent research, no jurisdiction has invoked any of these far-ranging powers to help implement airport zoning.

A third tool that can be used to encourage and require cooperative airport zoning rests with the Minnesota Department of Transportation, which is authorized to withhold state airport funding if a host airport jurisdiction fails to create a joint airport zoning authority or enforce an airport zoning ordinance. Mn/DOT has, in fact, withheld airport funding a number of times for public airports that did not comply with the state’s minimum airport zoning requirements. Often, once informed of this action, the airport has complied by adopting the model zoning ordinance. However, in some cases, the airport has decided to reject state funding and become a private airport. In other cases, exemplified in the case of six MSP reliever airports under MAC jurisdiction, the airports have remained inadequately zoned, have not received any state funding, but remain public airports. Much of this recalcitrance is motivated by surrounding communities’ fears about possible joint liability if they cooperate in a joint airport zoning board’s regulatory actions. Of course, withholding state funds can be an ineffective tool if a jurisdiction adjacent to an airport is the recalcitrant party—cutting off airport funding would have no effect and, in some instances, may be the desired effect.

Variations

Minnesota law allows variances from airport zoning regulations. However, Minnesota’s airport zoning law and rules and regulations offer only vague and undefined criteria for variance review and few



parameters. As a result, some communities grant variances that stray from the law's intent to limit their frequency and breadth. In addition, Minnesota regulations do not require local governments to refer variance requests to Mn/DOT, which might help to better guide and constrain local decisions. In other states, such as Florida, local agencies must notify the state of variance requests and give the state an opportunity to comment prior to a final decision. Thus, recommended "best practices" would include better definitions of the parameters and review criteria for granting airport zoning variances, and referral to Mn/DOT of significant variance requests for staff's review and comment prior to final local action. (See the 2006 Model Ordinance in Chapter 6 of this manual for suggested codification of these best practices.)

Legal Constraints on Zoning as a Compatibility Tool

While zoning has proven to be an effective compatibility tool in many communities, it has some noteworthy limitations, particularly in Minnesota. One of the primary legal concerns that must be considered in any strategy to use zoning regulations to restrict incompatible land uses is the so-called "takings" issue. In brief, the takings clause of the U.S. Constitution has been interpreted to restrict local governments in their control of the use of land. If regulations are too strict and deprive an owner of all reasonable economic use of his property, then a taking has occurred and the owner must be compensated. However, nationally, the state of takings law is very positive for local governments wanting to address land use compatibility regulations near airports. Other jurisdictions have taken a different approach and have sided in favor of local zoning regulations against takings claims. See Chapter 5 of this manual for a more detailed discussion of federal and state "takings" law.

Twenty-five years ago the Minnesota Supreme Court adopted a unique interpretation of takings law and applied it to airport zoning regulations. In 1980, the Minnesota Supreme Court, in *McShane v. Faribault*, held that all zoning restrictions are not the same. The court distinguished between regulations that "arbitrate" between competing land uses and regulations that serve a "governmental enterprise." The consequence of this unique classification, called the "enterprise/arbitration test," is significant. Regulations that arbitrate are an appropriate exercise of the police power if any reasonable use of the property remains. Regulations that serve a governmental enterprise constitute a taking of property if there is a substantial diminution in the property's value. The *McShane* court found that Faribault's airport zoning served a "governmental enterprise" – i.e., the operation of an airport, and because the zoning caused a substantial reduction in the property's value, there was a *per se* taking of property. This test was first posited by a legal scholar who subsequently rejected it as unworkable.³⁴ Fearing expensive litigation, *McShane* has made Minnesota local governments hesitant to enact strong zoning regulations but some lower courts have still upheld

³⁴ See Sax, *Takings, Private Property and Public Rights*, 81 Yale L.J. 149 (1971).



zoning ordinances against takings claims. See *Jeff Olsen vs. City of Ironton*, (unpublished) CX-00-1371 (Minn. Ct. App. 2001); *Leon DeCook vs. City of Rochester*, (unpublished) C8-97-1518 (Minn. Ct. App. 1998).

Recommended Best Practices

As discussed above, the State of Minnesota has enacted a number of laws that provide important protections for airports against potentially incompatible uses. Similarly, Mn/DOT has taken a number of administrative steps to implement state law such as the model airport zoning ordinance. However, there are some significant gaps and shortcomings that should be addressed to achieve the goal of compatibility and protection of the public. Mn/DOT encourages local governments to consider adopting the following best practices to address these issues³⁵:

- Local governments that are members of a joint airport zoning board should incorporate or reference adopted airport zoning regulations in their official land use controls, including their zoning and subdivision regulations.
- Local agencies (e.g., Boards of Adjustments) should consider referring some or all airport zoning variance applications to Mn/DOT for review and comment before a final local decision.
- Adopt standards and guidelines to more clearly prohibit land uses that attract wildlife such as birds and waterfowl.
- Consider supplementing the minimum state airport zoning regulations and adopt standards to address use type and density restrictions in at least those parts of Safety Zone C closest to the runway centerlines extended. Many airport owners/sponsors in Minnesota expressed a desire to limit zone C residential and high-intensity uses to forestall potential safety issues and facilitate future runway expansions.
- Consider incorporating the updated use list presented in Chapters 3 and 6 into local airport zoning regulations.
- Consider referring “major” airport development permits to Mn/DOT for review before final local action (similar to the FAA referrals under FAR Part 150). “Major” airport development might, for example, be defined as all uses recommended for further inquiry shown in the model ordinance’s summary use list (See Chapter 6 of this manual).

See Chapter 6 of this manual for the newest version of the Mn/DOT model airport zoning ordinance, which incorporates all the best practices described above.

³⁵ See Chapter 2 of this Manual for a more detailed discussion of the basis for these recommended best practices.



PROPERTY DISCLOSURE MECHANISMS

Property disclosure mechanisms are used in a variety of circumstances to alert real estate buyers of potentially dangerous or other situations that might affect the value or usability of their property. Disclosure mechanisms include recorded deed notices or, more commonly, real estate disclosure statements. Deed notices are recorded at the same time as the approved subdivision map, and might describe possible airport-related impacts, including noise, aircraft overflights, or the applicability of airport zoning. Because the recorded notice becomes part of the deed to each lot, it should show up in a title search prepared when the lot is sold. Often, local decision-makers require recorded deed notices as a condition of approval for residential uses near an airport where noise and safety concerns are not major, but frequent aircraft overflights might annoy some residents. New Jersey, for example, requires each municipality that has adopted airport safety zones to record notice of the zone boundaries for each property located in the zone.

Real estate law often requires seller disclosure statements about the possible impacts from a nearby airport. Such mechanisms have been used in several other states (Arizona, Hawaii, California, New Jersey) in an airport context to alert purchasers in airport influence areas of noise and other potential impacts. Minnesota statutes were revised in 2006 to require sellers of all real property in Safety Zones A, B, or C to disclose to prospective buyers the fact that the property is located in such safety zone and may be subject to restrictive airport zoning regulations.³⁶

In addition, disclosure mechanisms have been used to notify buyers if the property is encumbered by an existing aviation easement that allows low overflights. These disclosure mechanisms have proven valuable in helping to avoid situations where a purchaser finds after-the-fact that his or her property is located in airport noise or safety zones.

Recommended Best Practices

Adopt local anti-fraud ordinances that complement the state statutes, and clarify that all sellers of real property must disclose, as a “material fact,” whether the property is located in an airport safety zone, within a noise contour area, or in a specifically defined “airport influence area” (e.g., all property located within 3-5 miles from a public airport—the distance could vary based on the type of airport).

Amend local zoning regulations to specifically grant decision-making bodies the authority to condition approval of development applications for any land use located within an airport influence area upon recordation of a deed notice.

³⁶ Minn. Statutes, section 360.365, subd. 3. The disclosure requirement is **not** required for sellers of real property located in a safety zone associated with an airport owned or operated by the Metropolitan Airports Commission (MAC).



Airport sponsors should send copies and information about its master plan to local real estate brokers and recommend a specific disclosure policy consistent with minimum statutory requirements. Having actual knowledge of such facts, brokers are obligated under existing state law to advise sellers to disclose possible airport impacts to prospective buyers. With the recent change in Minnesota's real estate disclosure laws, airport sponsors now have the authority to require such disclosure and enforce their advisory policies.

PROPERTY ACQUISITION

Buying vacant or undeveloped lands close to an airport is a very effective strategy to prevent incompatible land uses. Using this approach, a local jurisdiction or airport sponsor acquires property for either noise mitigation, safety protection, or to bank for future airport use. Funding for airport land acquisition is the obvious challenge. Most local governments do not have sufficient funds for large-scale land purchases, nor do airport sponsors typically earn enough from user fees to fund significant acquisitions. Fortunately, federal and state grants are available, but only to fund essential acquisition of property closest to the airport (within the RPZ and portions of Safety Zone A).

As the number of instances of incompatible land uses being developed around airports increase, more and more airports are seeking to buy additional land to protect their operations or they are opting to move the facilities to more rural areas. Often they request funding from Mn/DOT or directly from the state legislature, and both institutions have expressed growing concern given the state's fiscal limitations. Recently, for example, a new airport is being built well outside the nearest city's limits. Substantial portions of private lands located within the RPZ and Safety Zone A have already been purchased at the new airport site, but the airport sponsor would like additional state/federal funding to purchase parcels that are located only partially in Safety Zone A and to purchase a protective additional "buffer" of land at the edge of Zone A. Unfortunately, such funding is not available at this point in time. Nevertheless, acquisition will remain a principal tool to ensure compatibility. It can take several different forms as discussed below, each with its advantages and disadvantages.

Acquisition of Fee Simple Interest

Outright purchase of property near airports may be the most effective compatibility tool, but also is the most expensive. If an airport buys property in any of the safety zones, it can be assured that it will have direct control over proposed uses. "Fee simple" acquisition means all the rights attached to the property are acquired, including buildings and structures as well as air and subsurface mineral rights. The FAA recommends airport sponsors own the property under the runway approach and departure areas that include, at a minimum, the limits of the federal Runway Protection Zones (RPZs).



When purchasing property with federal funds, local jurisdictions and airport sponsors must adhere to the federal process outlined in FAA Advisory Circular 150/5100-17, Chapter 3, “Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects,” and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646). The FAA publishes a very useful information brochure titled “Land Acquisition for Public Airports,” that summarizes the required process for land acquisition. Guidance should be sought from Mn/DOT when land acquisition is considered to ensure the proper process is utilized if federal funding is applied to an acquisition project. Importantly, in making money available for land acquisition, the FAA looks for local assurances that protective land use regulations will be put into place to avoid encroachments on the airport by incompatible development.

In Minnesota, a governmental entity can use its eminent domain powers to acquire property for airport purposes or to prevent airport hazards. This is a more costly option than purchase from a willing seller, because it takes more time and involves legal and court costs. In addition, the Minnesota statutes strongly discourage the use of condemnation to remedy incompatible land uses around airports. See Minnesota Statutes, Section 360.062.

Acquisition of Less-Than-Fee-Simple Rights (Easements and Development Rights)

Purchasing easements or development rights can be an effective and more affordable strategy than total fee purchase to reduce incompatible land uses in the airport vicinity. Purchasing an easement on a property restricting incompatible development may cost less than buying the entire parcel. However, to be effective, easements should be used as part of a comprehensive planning and regulatory effort, and they must be consistently enforced. Like fee simple acquisitions, local jurisdictions and airport sponsors must adhere to the same process and rules, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and associated FAA Advisory Circulars.

To be effective, easements should be used as part of a comprehensive planning and regulatory effort, and they must be consistently enforced.

Easements come in a variety of forms. One of the most common in an airport context is an aviation easement that typically gives the easement holder (usually the airport sponsor) the right to fly airplanes in the airspace above the subject property. This right of flight includes the right to make noise over the property and may include an easement to prevent the property owner from using his land or building structures that are incompatible with flight (e.g., tall structures, noise-sensitive uses, uses at risk from plane crashes).

An aviation easement is a grant of property interest in land over which a right of unobstructed flight in the airspace is established; which prohibits any structures, growth, or other obstructions from penetrating the approach surface; and which provides a right of entry to remove, mark, or light any structure or any such obstruction.

One major advantage of easements is that they are usually permanent agreements, whereas restrictive zoning regulations (e.g., Zone A and B use lists) can be changed and relaxed. However, the easement holder must be vigilant and consistently enforce the terms of the easement over time, even as the affected property changes ownership.



A good example of the effectiveness of an aviation easement comes from South St. Paul. The city reserved aviation easements on city owned property sold for residential development in the vicinity of the city's general aviation airport. The city reports that having the recorded easements has very effectively protected the city from potential litigation, and being able to point to the easements has foreclosed resident nuisance complaints. Another good example can be found in the aviation easements obtained by MAC at the Bloomington end of MSP runway 17-35.

A variation on purchasing an easement is to purchase development rights. Many states use purchase of development rights programs to protect open space and natural resources. They typically strip most development rights from a property, allowing only compatible agricultural or recreational uses to remain with the landowner. As with easements, usually the purchase price is less than buying the entire fee, helping to stretch the acquisition dollar. But similar to easements, the holder of the development rights must closely monitor the property to ensure compliance.

INCENTIVES

In the land-use arena, local and state governments are increasingly supplementing and supporting their plans and regulations with incentives. For example, many jurisdictions allow the transfer of density on one parcel where development is highly restricted to protect natural resources to another parcel under the same ownership, or the transfer of density on the same parcel but to a less sensitive location. Local governments dealing with airport compatibility issues would do well to consider similar tools.

Another important incentive that has been employed in Minnesota to support local government efforts to restrict incompatible development is indemnification. In connection with construction of the new runway at the Minneapolis-St. Paul International Airport in Minneapolis, the Wold-Chamberlain Field Joint Airport Zoning Board adopted amendments to its joint zoning ordinance to protect the runway from incompatible uses. The Board requested that its constituent municipalities then adopt changes to their respective plans and zoning codes to enforce the amended ordinance. However, the municipalities all expressed significant concern about potential litigation and the award of damages due to such restrictions—particularly in light of Minnesota's unusual case law regarding airport zoning. As a result, the Metropolitan Airports Commission (which operates MSP International Airport) agreed to hold harmless these jurisdictions and their officers and employees from any judgments or other liability associated with the amended zoning regulations. This indemnification agreement persuaded most of the local governments to adopt the new zoning controls to protect the airport.

While indemnification can be a very effective complement to a regulatory approach, it can also potentially be quite expensive, especially for smaller jurisdictions.



PUBLIC EDUCATION AND OUTREACH

Many state agencies and individual airport sponsors that have put in place successful preventive strategies feel that public education and outreach programs are important elements of that success. Information must be provided to and shared with the community to enhance credibility and ensure success in airport planning efforts. In particular, public education and outreach during airport and local planning efforts are essential in preventing future incompatible land use problems.

Public education programs take a variety of forms, but mostly fall into one of two categories: information dissemination and information exchange. Most agencies and communities find a combination of both types are necessary to fully engage the public in airport planning issues.

Information Dissemination

Information dissemination is a one-way flow of messages or information to targeted audiences or the community-at-large. There are many avenues for information dissemination, including information manuals, brochures, radio/T.V., newsletters, paid advertising, and Internet web sites. Mn/DOT's Office of Aeronautics employs a number of these tools, including information brochures, technical assistance programs, and an easy-to-navigate website. It is equally important that individual airports employ similar tools in an organized program of airport marketing, promotion, and public education.

Information Exchange

Information exchange is a two-way flow of information; in other words, a dialogue between interested or affected parties and the airport and/or local planning agencies. There are many avenues for information exchange, including public workshops, public advisory committees, talk shows, and speaking engagements. A dialogue enhances the community's education and gives governing authorities important feedback about public attitudes and concerns. Mn/DOT's Office of Aeronautics has employed public advisory committees in many of its planning and rule-making efforts, and has found this to be a particularly helpful tool.

Local governments and airport authorities must do a better job both providing and exchanging information with all affected stakeholders during their respective long-range planning efforts. That means the airport authority must reach out and include municipal planners, officials, and affected private property owners during their airport master planning efforts. Public workshops or open houses, letters and key documents explaining the planning process mailed to affected land owners, and interactive dialogues with local businesses and commerce groups are just a few ways to bridge this communication gap. Similarly, local governments should ensure that the local airport



authority is aware of, and given the opportunity to participate early in, land use planning projects that may affect airport operations.

In general, during research for this manual, Mn/DOT found a need for continuing and recurrent public education regarding airport zoning. Efforts should be aimed at a wide audience of affected municipal planners, decision-makers, property owners, realtors, and the development community. The following points must be conveyed clearly:

- Airport zoning exists in Minnesota and is mandated for all public airports that receive state or federal monies;
- Protecting airports from incompatible uses is a wise policy choice for multiple reasons, not the least of which is the future economic development of the surrounding jurisdictions;
- Airport zoning is accomplished through the application of several technical components (e.g., delineation of airspace and safety zones), which may be difficult to comprehend, but must ultimately be understood for successful implementation;
- Airport zoning must be administered as part and parcel of an affected community's comprehensive land use and development regulations;
- Municipal airport owners dealing with multiple, affected jurisdictions actually have authority under state law to adopt and enforce airport zoning even in the face of recalcitrant municipalities; and
- Land use plans for jurisdictions in the airport hazard areas should acknowledge and account for airport-related land use issues when the airport is owned or controlled by a different municipality. In this way, property owners' reasonable expectations may be better managed.



The Mn/DOT Office of Aeronautics strives to notify local governments of changes in federal and state aviation and airport laws and regulations. The office should continue its programs to educate local zoning administrators, building officials, code enforcement officers, planning commissioners and elected officials in the adoption and enforcement of effective airport compatibility laws.

SUMMARY OF PREVENTIVE STRATEGIES FOR AIRPORT LAND USE COMPATIBILITY

The following Table 4-2 presents a summary of the preventive tools and strategies described in the text above, including each tool's advantages and disadvantages, and advice on when such tool may be an appropriate choice.





TABLE 4-2: SUMMARY OF PREVENTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
Planning Strategies				
COORDINATED LOCAL LAND USE PLANNING AND CAPITAL INVESTMENT PROGRAMS	Through coordination and communication among local planners, state and metropolitan aviation organizations, affected private property owners, and the local FAA Airports office, local governments can review recommended airport development programs and adopt local land use plans or plan elements that thoughtfully address future airport growth and include policies consistent with long-range airport plans. Local CIPs should also be prepared to ensure infrastructure investment policies support and implement the comprehensive land use plan for the airport vicinity.	<p>The planning process can engender open communication in the early stages of an airport’s growth, which can avoid unexpected (and sometimes costly) roadblocks further down the road.</p> <p>Comprehensive plans are relatively low cost efforts, and create minimal controversy if the airport is not in a developed area.</p>	<p>Coordination may sometimes be time-consuming and consensus may be difficult to achieve.</p> <p>Comprehensive plans are not effective when existing incompatible development has already encroached on the airport.</p> <p>Plans are only effective when implemented by consistent zoning or other tools as early as possible before incompatibilities arise.</p>	<p>When a community is facing significant growth pressures.</p> <p>When the airport owner controls land use in all of the airport vicinity.</p> <p>When a county or municipality does not own the airport, but contain lands located within 3-5 miles of a public airport.</p>
SPECIAL MANAGEMENT AND MITIGATION PLANS	Specialized plans, such as Wildlife Hazard Mitigation or Management Plans and Natural Feature Inventory and Mitigation Strategies, focus on specific airport safety risks, and supplement comprehensive community land use plans.	<p>Focused area plans or special resource management plans ensure that specific issues are thoroughly identified, measured, and addressed.</p> <p>Allows airports and local governments to plan for and budget mitigation efforts.</p>	Not immediately effective when wildlife hazards already exist on or near the airport.	When deer or bird strikes are a likely threat to aircraft and passengers.
JOINT OR REGIONAL PLANNING AND INTER-GOVERNMENTAL AGREEMENTS	Airport compatible land use planning conducted jointly among affected communities or at a regional level because airport influence areas typically cross jurisdictional lines. Intergovernmental agreements (IGAs) are binding contracts between two or more local governments intended to implement a joint or regional plan.	<p>The educational by-product of an open planning process, where all affected players are involved, can help avoid a piecemeal approach to airport safety and avoid short-sighted local land development decisions.</p> <p>The channels of communication opened during the planning process, if continued after plan adoption, can lead to coordinated local decision-making and policy-making – i.e., avoid surprises.</p>	<p>More challenging to coordinate multiple parties and to reach consensus.</p> <p>Most effective when parties are willing to enter into a binding IGA to implement plan policies.</p>	When the airport owner is different from the county or municipality that controls lands in airport safety zones and the greater airport vicinity.



TABLE 4-2: SUMMARY OF PREVENTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
Regulatory Actions				
LOCAL ZONING, SUBDIVISION, AND DEVELOPMENT CONTROL REGULATIONS	Zoning and other land development regulations that limit uses, density, and operations to prevent safety hazards on lands located in airport safety zones.	<p>Proven to be an effective preventive tool if consistently administered and enforced. Prevents and reduces hazards and incompatible land uses.</p> <p>To be most effective, regulations must be drafted in the context of an open, public, and inclusive process, including all relevant stakeholders.</p> <p>Can be an important economic development tool to enable and facilitate airport-related and airport-compatible development.</p>	<p>Treatment of existing uses in safety zones (i.e., nonconforming uses) can be controversial.</p> <p>New limits on private property rights are often controversial, and may provoke litigation for alleged unconstitutional “takings.”</p> <p>Zoning regulations are reversible, and subject to change or dilution given shifts in local politics.</p>	<p>Best if employed before growth pressures around an airport grow too heated, but appropriate in almost all circumstances as a preventive tool.</p> <p>Minnesota law provides joint airport zoning board option to encourage coordinated, inter-jurisdictional zoning when the airport owner is different from the municipalities controlling land development surrounding the airport.</p>
Property Disclosure Mechanisms				
REAL ESTATE DISCLOSURES AND PLAIN ENGLISH NOTICES	Property disclosure mechanisms alert potential buyers to potentially adverse circumstances that might affect the value or usability of property near an airport.	<p>Avoids situations where a purchaser discovers only after-the-fact that property is located in an airport safety zone.</p> <p>Can preclude or dampen resident complaints to airport owner about noise or other safety hazards.</p>	<p>May meet with resistance from existing property owners seeking to sell their properties unencumbered.</p>	<p>Effective if applied to all existing residential properties located in a safety zone. 2006 Minnesota legislation makes property disclosure mandatory in most instances when property is located in Safety Zone A, B, or C.</p>
Property Acquisition				
ACQUISITION OF FEE SIMPLE INTEREST	All the rights attached to the property are acquired, including buildings, structures, air and subsurface mineral rights.	<p>Fee simple acquisition gives the buyer direct control over the property’s use forever.</p> <p>Additional revenue may be derived from the compatible land uses that could be developed on the acquired property, such as an airport business park or agricultural lease.</p> <p>Acquisition is a permanent solution.</p>	<p>This option is usually costly, with possible legal opposition.</p> <p>Takes land off the tax rolls if not resold for private use.</p>	<p>Use to protect critical Runway Protection Zones (RPZ’s) and areas subject to high risks of safety impact.</p> <p>Most effective for resolving existing problems, also use to avoid new problems.</p> <p>May be eligible for state and federal grants moneys.</p>
ACQUISITION OF LESS-THAN-FEE-	Easements are the transfer of money to obtain the rights	<p>More affordable than total fee simple purchase.</p>	<p>Permanent agreements must be consistently</p>	<p>Easements should be used as part of a</p>



TABLE 4-2: SUMMARY OF PREVENTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
SIMPLE RIGHTS (EASEMENTS AND DEVELOPMENT RIGHTS)	<p>to use or restrict use in a specified manner. For example, aviation easements grant rights for aircraft passage over a specific property, and identify the effects associated with aircraft operations, including noise and vibration.</p> <p>The purchase of property development rights precludes future, incompatible development of a property, in perpetuity.</p>	<p>Easement or development rights acquisition in certain areas may be eligible for state and federal funding.</p> <p>Easements can provide more positive control than zoning; less expensive than acquisitions, and land often remains on active tax roles.</p>	<p>enforced</p> <p>Easements do not alter existing incompatible land uses.</p> <p>Purchase of development rights requires coordination and taxpayer moneys.</p>	<p>comprehensive planning and regulatory effort.</p> <p>Easements can be used to compensate land owner for substantial airport related impacts and can be used to gain right to remove obstructions (i.e. trim trees).</p> <p>Coordination with Mn/DOT and local communities is suggested if this action is considered.</p>
Incentives				
TRANSFER OF DENSITY	The owner of land where development is highly restricted because of near-by airport operations is allowed to transfer the land's development rights to another parcel either under the same or different ownership.	<p>Less costly than fee simple acquisition.</p> <p>Places primary onus of implementation on private parties, not the airport owner or affected local governments. A market-based approach to compensating the restricted landowner.</p>	<p>Can be very complicated to research, create, and administer.</p> <p>May not be suitable to very large areas that include multiple jurisdictions, unless all jurisdictions participate.</p>	A viable strategy only where a strong real estate market and strong development demand exists.
INDEMNIFICATION	One party, which could be the state, a MPO, or a local government, agrees to pay the legal costs incurred by a second party in the defense of a lawsuit challenging airport zoning regulations.	Can help ensure adoption of preventive zoning rules where fear of litigation is a potential stumbling block.	<p>The indemnifying party must have sufficient funds to pay any costs covered by the indemnification agreement.</p> <p>May be complicated to negotiate and execute.</p>	When the airport owner is different from the municipalities with control of lands located in an airport safety zone.



TABLE 4-2: SUMMARY OF PREVENTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
Public Education and Outreach				
INFORMATION DISSEMINATION	One-way flow of information to targeted audiences or the community-at-large.	Media tools allow for fast and up-to-date information (internet, newspaper, etc). Enhances community education and, often, communication (especially when using interactive media like the internet).	Information materials can sometimes be costly to distribute. Certain media channels may not be accessible to all members of the community (i.e. internet access).	Useful at any time, but especially during planning and plan implementation efforts.
INFORMATION EXCHANGE	Two-way dialogue between interested or affected parties and the airport and/or local planning agencies.	Enhances community education. Ensures feedback about attitudes and concerns.	Potential to be more time consuming and costly to implement.	Useful at any time, but especially during planning and plan implementation efforts.



Corrective Strategies and Tools

Many public airports have incompatible land uses in close proximity. Corrective strategies seek to remedy impacts in existing areas of incompatible land uses. With these strategies, the goal is to reduce the number or intensity of existing or future unavoidable incompatible land uses. As the reader will see, the list of corrective strategies is considerably sparser than the list of preventive strategies. It is always more difficult to correct a problem after-the-fact than to prevent it before-the-fact; the limited extent of the corrective strategies listed below underscores this truism.

PLANNING CONSIDERATIONS

Mitigation Strategies for Existing Hazards

In some instances, a community may have an opportunity to mitigate existing airport safety hazards through targeted planning and implementation efforts. For example, a community may engage in a focused planning exercise to fully explore alternative mitigation strategies to control wildlife in the area adjacent to a landfill or wildlife refuge. Strategies might include removal or relocation of the hazard altogether (e.g., closing and relocating a municipal landfill), or a more limited response, such as the installation of fencing to contain roaming wildlife. The City of Denver’s airport planners engaged in such an exercise to come up with workable strategies to mitigate wildlife hazards from a wildlife refuge located near Denver International Airport—in that case, fencing the area became the strategy of choice among the various affected parties.

REGULATORY ACTIONS

Treatment of Nonconforming Uses

When incompatible uses already exist in airport safety zones, i.e., uses that do not comply with the minimum use or density restrictions in the applicable airport zoning regulations, the governing jurisdiction must decide how it will legally treat them. Some communities will “grandfather” such existing uses and treat them as legal, conforming uses—typically without any limits on future physical expansions or alterations or future intensification of use. While this decision is often politically expedient, it can result in intractable incompatibility problems. Other communities may allow these existing uses to continue “as is,” but clearly label and treat them as nonconforming uses. The “nonconforming” label typically evokes severe limitations on future expansions, alterations, or changes in use under a community’s general zoning laws. This strategy at least stems worsening the current, incompatible situation.



The Mn/DOT Office of Aeronautics strongly urges Minnesota communities to confer with Mn/DOT staff about the local treatment of nonconforming land uses near airports.

In Minnesota, however, the Legislature has clearly stated its preference that local governments refrain from classifying an existing use as a “nonconforming use” to the extent possible when not contrary to reasonable standards of public safety. Minnesota Statutes, Section 360.062. Moreover, even within Safety Zones A or B, a community cannot prohibit existing land uses in “established residential neighborhoods in built-up urban areas” or classify isolated single-family or two-family residential uses or lots in such established neighborhoods as nonconforming. Minnesota Statutes, Section 360.066, Subd. 1a. While recognizing the public’s interest in protecting established uses, these statutory mandates make it very difficult for a Minnesota local government to remove or limit existing, nonconforming uses.

Amortization

Amortization is a time-tested zoning tool used to control the continuation of nonconforming uses. When a community enacts a new zoning law that makes a formerly legal use nonconforming, the community can also require that the use be removed over time without compensation. Amortization has been used frequently in other states to control and require removal of nonconforming signs and billboards and noxious uses (e.g., an industrial use near or in a residential area).

In order to be treated as a nonconforming use, the use must actually exist prior to the zoning change that made it nonconforming, and it must have been legal; that is, it must have met all the requirements contained in the previous zoning regulations. Generally, owners of nonconforming uses have the right to continue the prohibited use as a legal, nonconforming use in order to allow them time to recoup their investment in the property made when the use was lawful. However, an owner’s right to continue a nonconforming use is not necessarily indefinite. Under the common law in most states, nonconforming uses are disfavored because they reduce the effectiveness and public benefits of zoning ordinances. Because of their undesirable effect on the community, the common law has typically allowed for their elimination as speedily as possible. Amortization is a zoning tool especially tailored toward advancing this policy: It provides for the phased, mandatory, and uncompensated termination of a nonconforming use following a time-specific period. The time-specific period must be reasonable and long enough, given the nature and scale of the use, for the owner to reasonably recoup the remaining investment value and turn the property over to a conforming use.³⁷

While amortization has been a useful tool in other jurisdictions, it is often controversial because it requires shutting down or removing

³⁷ Amortization is most successful when applied to a land use that generates an annual stream of income. A measurable stream of income provides a solid basis by which to calculate a reasonable time frame in which the land use owner can recoup his or her investment value in the property. It follows that for land uses that do NOT generate a regular stream of income, such as non-profit uses, churches, or single-family residential uses, amortization may not be a workable solution.



what was a legal use. Indeed, the Minnesota legislature banned the use of zoning amortization by counties and municipalities in 1999 (See Minnesota Revised Statutes, Sections 462.357 and 394.21.), except to abate “public nuisances.” Minnesota’s statutes are unclear whether “airport hazards,” which Chapter 360 declares as “public nuisances,” are included in the exception to the general ban on amortization. In the absence of clarifying language in the statutes, Mn/DOT currently interprets state law as NOT allowing amortization to phase out incompatible airport land uses over time without compensation.

Transfer of Density/Land Swaps

Often, there are development proposals for land uses incompatible with a near-by airport that are approved, but not yet built. In this situation, the local government may have an opportunity to step in, negotiate an alternative development scheme or location, and retract its mistaken approval. The solution may involve a transfer of density within the proposed development site, so that incompatible uses are shifted as far from the extended runway centerline as possible. Or, the solution may involve a swap or sale of municipally owned land appropriate for the intended development for the parcel at issue.

Property Acquisition

The same property acquisition strategies described under “Preventive Strategies” can be employed as corrective strategies. Property acquisition, whether it is acquisition or condemnation of fee-simple interests, or purchase of easements or development rights, may be used to correct an existing incompatible land use near an airport. Of course, “after-the-fact” acquisition tends to be more expensive than an acquisition strategy employed in advance of development. Again, funding is a major challenge, although state and federal funds are available toward acquisition of properties within the runway protection zone (RPZ) and much of Minnesota’s Safety Zone A. At a minimum, an airport should own all property located within the RPZ and maintain Safety Zone A free of structures or any large assemblies of persons.

Another acquisition tool municipalities may consider is using their urban renewal or redevelopment powers under Minnesota Statutes, Chapter 469 (Economic Development) to acquire incompatible land uses.

Change in Operational Procedures

While typically a last-resort measure and highly unusual, airport owners and sponsors can take corrective measures by changing the airport’s operations, such as changing aircraft traffic patterns to avoid heavily populated areas. The City of Denver, for example, agreed to a host of operational and noise limitations in planning for Denver International Airport in the late 1980s to address noise and safety concerns by surrounding counties and cities.



However, after-the-fact operational changes as a corrective strategy are very difficult to implement in practice. Any access restriction requires a cost-benefit analysis in accordance with federal regulations (FAR Part 161 and the Airport Noise and Capacity Act of 1990 (“ANCA”)) prior to implementation. Even after the Part 161 analysis is done, the restriction is still subject to FAA approval. The Part 161 studies are very expensive to prepare, and since enactment of the ANCA, the FAA has not approved an airport access restriction anywhere in the country.

OTHER CORRECTIVE OR REMEDIAL ACTIONS

Negotiation/Mediation Services

Negotiation and mediation services can address land use compatibility conflicts or disputes associated with airport facilities. The State, local government, airport authority, or a neutral entity might offer services to mediate disputes between private landowners and regulating jurisdictions, or disputes between multiple jurisdictions over appropriate land use planning and controls in the vicinity of a public airport. While mediation may not be possible or appropriate in every case, some cities and airport authorities have had success using alternative dispute resolutions to address airport noise issues. Mediation efforts have been successful to resolve airport expansion and also noise conflicts in Seattle, Dallas/Ft. Worth, Phoenix, and Cleveland.³⁸

Public Education and Outreach Programs

Public education and awareness programs are both a preventive and corrective strategy. As described in the preventive strategies, public education programs should include both information dissemination (one-way flow of messages or information) to targeted audiences or the community-at-large (e.g., information manuals, brochures, radio/T.V., newsletters, paid advertising, web sites); and information exchange (two-way flow of information – a dialogue) between interested or affected parties and the airport and/or local planning agencies (e.g., public workshops, public advisory committees, talk shows, speaking engagements).

In the context of corrective strategies, a related public education measure might be to require “plain language disclosures” in all sales of residential properties located in a safety zone. These disclosure statements would typically be provided prior to the sale’s closing and state, in plain English, the likely infringements on the buyer’s use and enjoyment of the property from being located near the airport.



Public education and awareness programs are both a preventive and corrective strategy.

³⁸ Brown, Laura, “Airport Wars: Can Mediation Help Reduce Public Dispute Noise Levels?” Reprint of article available at www.mediate.com/pfriendly.cfm?id=90.



SUMMARY OF CORRECTIVE STRATEGIES FOR AIRPORT LAND USE COMPATIBILITY

The following Table 4-3 presents a summary of the corrective strategies and tools described in the text above, including each tool's advantages and disadvantages and advice on when such tool may be an appropriate choice.



TABLE 4-3: SUMMARY OF CORRECTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
Planning Strategies				
SPECIAL MANAGEMENT AND MITIGATION PLANS	Specialized plans, such as Wildlife Hazard Mitigation or Management Plans and Natural Feature Inventory and Mitigation Strategies, focus on specific airport safety risks, and supplement comprehensive community land use plans.	<p>Focused area plans or special resource management plans ensure that specific issues are thoroughly identified, measured, and addressed.</p> <p>Allows airports and local governments to plan for and budget mitigation efforts.</p>	Not immediately effective when wildlife hazards already exist on or near the airport.	When deer or bird strikes are a real threat to aircraft and passengers.
Regulatory Actions				
TREATMENT OF NONCONFORMING USES	Existing uses that do not comply with new airport safety zoning regulations are deemed “nonconforming uses” and subject to limitations on their right to expand, alter, or change.	Can be effective in not worsening an existing, incompatible situation.	<p>May result in intractable incompatibility problems.</p> <p>Can be controversial because of the severe restrictions on future expansions or changes in use.</p>	Upon adoption or amendment of airport area zoning regulations.
AMORTIZATION	Tool used to control the continuation of nonconforming uses when new zoning laws are enacted. Nonconforming uses are strictly limited in their ability to alter, expand, or change use, and must cease operation after a time-specified period.	<p>Guarantees the ultimate termination of an incompatible use.</p> <p>Does not require the local jurisdiction to pay compensation.</p>	<p>Careful calibration required to assure a reasonable amortization period for different types of nonconforming uses.</p> <p>Often a controversial tool. Jurisdiction may have to assist with relocation of amortized uses to make tool more palpable.</p> <p>Minnesota law appears to currently prohibit amortization to eliminate airport hazards, although the law is unclear.</p>	Works best if there are not a large number of nonconforming uses targeted for amortization.
TRANSFER OF	The owner of land where	Less costly than fee	Can be very	A viable strategy



TABLE 4-3: SUMMARY OF CORRECTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
DENSITY /LAND SWAPS	development is highly restricted because of near-by airport operations is allowed to transfer the land's development rights to another parcel either under the same or different ownership.	<p>simple acquisition.</p> <p>Places primary onus of implementation on private parties, not the airport owner or affected local governments. A market-based approach to compensating the restricted landowner.</p>	<p>complicated to research, create, and administer.</p> <p>May not be suitable to very large areas that include multiple jurisdictions, unless all jurisdictions participate.</p>	only where a strong real estate market and strong development demand exists.
Property Acquisition				
ACQUISITION OF FEE SIMPLE INTEREST	All the rights attached to the property are acquired, including buildings, structures, air and subsurface mineral rights.	<p>Fee simple acquisition gives the buyer direct control over the property's use forever.</p> <p>Additional revenue may be derived from the compatible land uses that could be developed on the acquired property, such as an airport business park or agricultural lease.</p> <p>Acquisition is a permanent solution.</p>	<p>This option is usually costly with possible legal opposition.</p> <p>Takes land off the tax roles if not resold for private use.</p>	<p>Use to protect critical Runway Protection Zones (RPZ's) and areas subject to high levels of noise impact.</p> <p>Most effective for resolving existing problems, also use to avoid new problems.</p> <p>May be eligible for state and federal grants moneys.</p>
ACQUISITION OF LESS-THAN-FEE-SIMPLE RIGHTS (EASEMENTS AND DEVELOPMENT RIGHTS)	<p>Easements are the transfer of money to obtain the rights to use or restrict use in a specified manner. For example, aviation easements grant rights for aircraft passage over a specific property, and identify the effects associated with aircraft operations, including noise and vibration.</p> <p>The purchase of property development rights precludes future, incompatible development of a property, in perpetuity.</p>	<p>More affordable than total fee simple purchase.</p> <p>Easement or development rights acquisition in certain areas may be eligible for state and federal funding.</p> <p>Easements can provide more positive control than zoning; less expensive than acquisitions, and land often remains on active tax roles.</p>	<p>Easements are permanent agreements that must be consistently enforced.</p> <p>Easements do not completely alter existing incompatible land uses.</p> <p>Purchase of development rights requires coordination and taxpayer moneys.</p>	<p>Easements should be used as part of a comprehensive planning and regulatory effort.</p> <p>Easements can be used to compensate land owner to gain right to remove obstructions (i.e. trim trees).</p> <p>Coordination with the Mn/DOT and local communities is suggested if this action is considered</p>
Change in Operational Procedures				



TABLE 4-3: SUMMARY OF CORRECTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
CHANGE IN OPERATIONAL PROCEDURES	Operational measures can be implemented at landing facilities to provide an additional degree of land use compatibility, including: changes to airport traffic pattern, or other access restrictions, if approved by the FAA under FAR Part 161.	May reduce ground safety impacts in areas of incompatible development.	Does not change incompatible land use patterns; thus, may be only a temporary fix if continued development of incompatible use occurs or airport grows. Requires FAA approval, which may be difficult to get.	Consider as part of Airport Master Plan, Part 150 or Environmental Assessment for airport; must be fully coordinated with airport owner, users, and FAA. Airports without air traffic control towers should give final authority on landing direction to the pilot.
Other Corrective or Remedial Actions				
NEGOTIATION/MEDIATION SERVICES	Mediation or negotiation is a facilitated process by which adversarial parties are encouraged to find common ground and solve their conflict without resort to litigation.	Can avoid costly legal battles between airport opponents/neighbors and the airport owner. A “win/win” solution results, and the process invests participants in ensuring the solution works.	Both sides must agree to participate in a mediation or negotiation process. Typically requires services of a professional mediator, and may take a long time to resolve. Both these factors can add up in costs. (But typically not as costly as litigation).	To address resident complaints about airport operations (e.g., risk of harm to persons on the ground). To address local government treatment of existing, incompatible land uses in airport safety areas.
Public Education and Outreach				
INFORMATION DISSEMINATION	One-way flow of information to targeted audiences or the community-at-large.	Media tools allow for fast and up-to-date information (internet, newspaper, etc). Enhances community education and, often, communication (especially when using interactive media like the internet).	Information materials can sometimes be costly to distribute. Certain media channels may not be accessible to all members of the community (i.e. internet access)	Useful at any time, but especially during planning and plan implementation efforts.
INFORMATION EXCHANGE	Two-way dialogue between interested or affected parties and the airport and/or local planning agencies.	Enhances community education. Ensures feedback about attitudes and concerns.	Potential to be more time consuming and costly to implement.	Useful at any time, but especially during planning and plan implementation efforts.



chapter 5: applicable laws/ statutes and legal issues



Introduction³⁹

This chapter compiles and summarizes federal and Minnesota legislation related to the regulation of land uses in the vicinity of public airports. Many federal and state entities are involved in the regulation of airports and, in particular, with implementing programs related to land use compatibility around airports, including but not limited to the Federal Aviation Administration (FAA), the Minnesota Department of Transportation (Mn/DOT), and a myriad of local governments. The statutes, rules, orders, and circulars described in this chapter are narrowed only to those that address airport and land use planning related regulations. Taken as a whole, this package of legislation is intended to accomplish the following goals:

- To protect the substantial public investment in, and the numerous public benefits derived from the nation's air transportation facilities.
- To protect property owners from the adverse impacts associated with activity at public airports, including protection from noise and the risk of harm from air traffic accidents.

CHAPTER 5 OVERVIEW

- Introduction
- Summary of Key Federal Legislation
- Summary of Key Minnesota Legislation
- Airport Zoning and the "Taking" Issue

Summary of Key Federal Legislation

There are a multitude of federal laws granting authority to the FAA, other federal entities, and recipients of federal funding to protect public airport operations. The following compilation is intended to provide only a "big picture" view of the applicable law. In sum, the federal body of law related to airport land use compatibility is comprised primarily of statutes and rules that:

1. Make the use of federal airport funding contingent on local assurances regarding the vigilant and wise management of land

³⁹ If this chapter is read in full, we recognize its contents may overlap with other discussions presented in other chapters. We believe most users will read specific chapters of this manual as needed and, therefore, we feel it is better to include some discussions that may be repetitive. Where possible, however, we have eliminated duplicate text and included cross references.



- use in the vicinity of the airport, including the prevention of encroaching, incompatible land use activities and structures.
2. Protect the public interest in the nation's navigable airspace by establishing standards and procedures to identify, prevent, and control obstructions that may affect air traffic (e.g., buildings, towers, etc.). Provide a model zoning ordinance for local governments to limits the height of objects around airports.
 3. Establish general rules for the operation and flight of specific types of aircraft, which in turn suggest specific spatial requirements for safety areas around airports that must be accounted for in master planning.
 4. Protect the public investment in airports, by specifying minimum land use compatibility standards and a comprehensive planning process to ensure that incompatible land uses that could pose a risk to the airport's operation are either not developed or mitigated.
 5. Specify guidelines for an effective airport master planning process that balances airport growth needs and compatible community development.
 6. Ensure public access to specific airport-related project information and the airport master planning and implementation process, including full disclosure of possible adverse impacts on the surrounding community.
 7. Provide guidance and minimum criteria to avoid the creation or intensification of land uses considered to be wildlife attractants when sited close to an airport (e.g., wastewater treatment facilities, waste landfills, wetlands).

FEDERAL AIRPORT PLANNING STATUTES AND REGULATIONS

Federal statutes and regulations relating to land use compatibility and airport planning, are summarized below. This is not an exhaustive summary, but it provides the primary legislation related to land use issues.

Airport and Airway Improvement Act of 1982

TITLE 49, UNITED STATES CODE (USC), CHAPTER 471 (GRANT ASSURANCES)

This Act identifies the safe operation of the airport and airway system in the United States as “the highest aviation priority.” § 47101(a)(1). It authorizes the Secretary of Transportation to make project grants for airport development and prescribes procedures for grant applications and awards. Among other things, it obligates airport owners, upon acceptance of federal funds, to make specific assurances, including mitigating and preventing airport hazards and maintaining compatible land uses



around airports by the adoption of zoning laws. § 47107(a)(9), (10).

Safety Regulation (Aviation Programs—Air Commerce and Safety)

TITLE 49, UNITED STATES CODE (USC), CHAPTER 447

This Chapter authorizes the administrator of the Federal Aviation Administration (FAA) to take measures to “promote safe flight of civil aircraft.” § 44701(a). Although most of this chapter pertains to aircraft, it does extend this authority prescribing minimum safety standards for operating airports that serve aircraft designed for at least 31 passenger seats. § 44701(b)(2). The FAA Administrator is authorized to issue airport operating certificates, which must include terms to insure safety. § 44706(b). Airports cannot operate without an operating certificate. § 44711(a)(8). Chapter 447 also authorizes the Secretary of Transportation to regulate structures that might interfere with navigable airspace. § 44718.

Federal Aid to Airports

TITLE 14, CODE OF FEDERAL REGULATIONS (CFR), PART 151

This regulation prescribes policies and procedures for application for and administration of federal funds to airports. In particular, § 151.26 requires an applicant for federal aid to describe in its application action it has taken to restrict the use of land adjacent to and in the vicinity of an airport to uses compatible with airport activities.

Notice of Construction, Alteration, Activation, and Deactivation of Airports

TITLE 14, CODE OF FEDERAL REGULATIONS (CFR), PART 157

This regulation requires any person who intends to construct, alter, activate, or deactivate an airport in any way to notify the FAA. The FAA must issue a written determination that considers, among other things, the effect of the proposed change on “the safety of persons and property on the ground.” § 157.7.

Objects Affecting Navigable Airspace

TITLE 14, CODE OF FEDERAL REGULATIONS (CFR), PART 77

This regulation establishes standards for determining obstructions in navigable airspace. It sets forth requirements for construction and alteration of structures (e.g., buildings, towers, etc.). It also provides for studies of obstructions to determine their effect on the safe and efficient use of airspace, as well as providing for public hearings regarding these obstructions. It includes provisions for the creation of antenna farms. It also establishes methods of identifying surfaces that must be free from penetration by obstructions, including buildings, cranes, and cell towers, in the vicinity of an airport. This regulation is



predominately concerned with airspace related issues. Implementation and enforcement of the elements contained in this regulation is a cooperative effort between the FAA and the individual state aviation agencies, in this instance, Mn/DOT. A more in-depth review of the specific regulations found in FAR Part 77 is outlined in Chapter 2 of this manual.

Proposed Construction or Alteration of Objects That May Affect the Navigable Airspace

FAA ADVISORY CIRCULAR (AC) 70/7460-2K (2000) (FORM 7460-1)

This document works within the requirements of FAR Part 77 and provides information about obtaining approval for the construction or alteration of objects that may affect navigable airspace. Form 7460-1 is required at all federally obligated airports to assess each proposed or temporary construction in the vicinity of the airport. The FAA conducts an aeronautical study and issues a determination to the airport operator. The determination identifies whether or not the proposed development is a hazard to airspace. It is imperative that local planners be aware of the various critical safety considerations when siting developments around airports.

A sample FAA 7460-1 form is included in the Appendix 11 of this manual.

U.S. Standards for Terminal Instrument Procedures (TERPs)

FAA ORDER 18 (NOVEMBER 1999) AND FAA ORDER 8260.3 B, CHANGE 14 (JULY 7, 1976 WITH CHANGES 1-19 THROUGH MAY 2002)

This document contains standards for establishing and designing Terminal Instrument Flight Procedures (TERPS). The criteria are applicable at any location over which the United States has jurisdiction. TERPS are similar to FAR Part 77 in that there are constraints placed on the airspace in the vicinity of the airport that may have an impact on the land uses allowable beneath those surfaces.

Criteria for Municipal Solid Waste Landfills

TITLE 40, CODE OF FEDERAL REGULATIONS (CFR), PART 258, SUBPART B—LOCATION RESTRICTIONS

The subpart establishes criteria for the expansion and/or development of new Municipal Solid Waste Landfills (MSWLF). In particular, §258.10 (Airport Safety) requires a demonstration that new and certain existing MSWLFs do not pose a bird hazard to aircraft. In part, it states that:

- (a) Owners or operators of new MSWLF units, and lateral expansions that are located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft



or within 5,000 feet (1,524 meters) of any airport runway end used by only piston-type aircraft must demonstrate that the units are designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft.

(b) Owners or operators proposing to site new MSWLF units and lateral expansions within a five-mile radius of any airport runway end used by turbojet or piston-type aircraft must notify the affected airport and the FAA.

General Operating and Flight Rules

TITLE 14, CODE OF FEDERAL REGULATIONS (CFR), PART 91

This regulation establishes general rules for the operation of aircraft with regards to various airports, various types of flight, i.e., Instrument Flight Rules (IFR) or Visual Flight Rules (VFR) conditions, as well as maintenance, special flight operations, foreign aircraft operations and operating noise limits. These requirements are considered planning regulations, because the recommendations for flight operations translate into specific spatial requirements for safety areas that must be considered during the master planning process.

Airport Land Use Compatibility Planning

FAA ADVISORY CIRCULAR (AC) 150/5060-6 (1977)

This document guides the development of a compatibility plan to ensure that areas surrounding an airport are not developed in a manner that could pose a risk to the airport's operations. This document specifically looks at land use and noise issues.

Airport Master Plans

FAA ADVISORY CIRCULAR (AC) 150/5070-6B (2005)

This document provides guidance for the preparation of master plans for airports that range in size and function from small general aviation to large commercial service facilities. This advisory circular replaces the 1985 version (AC No: 150/5070-6A) and incorporates newer methods and techniques associated with airport master plan studies, including current industry methods and procedures commonly employed in the preparation and documentation of master plan studies. The scope of each Master Plan must be tailored to the individual airport under evaluation, and this advisory circular fosters a flexible approach to master planning that directs attention and resources to the most critical issues.

Model Zoning Ordinance to Limit Height of Objects Around Airports

FAA ADVISORY CIRCULAR (AC) 150/5190-4A (1987)

This advisory circular concerns developing zoning ordinances to control the height of objects. It is based upon the surfaces



described in Subpart C of 14 CFR Part 77, Objects Affecting Navigable Airspace. This document provides sample language and model ordinances for use by local airports.

Obstruction Marking and Lighting

FAA ADVISORY CIRCULAR (AC) 70/7460-1K, CHANGE 1 (2000)
This document contains FAA standards for marking and lighting obstructions to promote aviation safety.

Airport Design

***FAA ADVISORY CIRCULARS (AC) 150/5300-13
CONSOLIDATED REPRINT (1998), AND CHANGES 6 (2000)
AND 7 (2002)***

These documents provide the basic standards and recommendations for airport design. The Consolidated Reprint includes five previous documents pertaining to airport design. The most recent update provides expanded information for new approach procedures for Runway Protection Zones, threshold-siting criteria and new instrument approach categories.

Planning the Metropolitan Airport

FAA ADVISORY CIRCULAR 150/5070-5 (1970)
This document provides guidance in airport planning for large metropolitan areas.

Hazardous Wildlife Attractants On or Near Airports

FAA ADVISORY CIRCULAR (AC) 150/5200-33A (2004)
This document (which replaces AC 150/5200-33 (1997)) provides guidance regarding the types of land uses that are considered to be incompatible near airports because they attract wildlife. These uses include but are not limited to the following: wastewater treatment facilities, wetlands, dredge spoil containment areas, solid waste landfills, certain agricultural activities, and golf courses. Typically, these uses should be located at least 5,000 feet away from an airport runway end if the airport serves piston-type aircraft, and at least 10,000 feet away from an airport runway end if the airport serves turbojet aircraft.

Construction or Establishment of Landfills Near Public Airports

FAA ADVISORY CIRCULAR (AC) 150/5200-34 (2000)
This document provides guidance regarding the requirements for complying with federal statutory requirements concerning the construction or establishment of municipal solid waste landfills (MSWLF) near public airports. These new limitations apply to only those airports that are recipients of Federal grants and to those that primarily serve general aviation aircraft and scheduled



air carrier operations using aircraft with less than 60 passenger seats. These new restrictions require a minimum separation distance of six (6) statute miles between a new MSWLF and a public airport.

Summary of Key Minnesota Legislation

Minnesota law related to airport land use compatibility is more comprehensive compared to other states in the country. Minnesota has granted its executive departments (Mn/DOT) and local governments the authority and powers to protect public airport operations within the state, and to plan for and manage land uses around the airports. In sum, the Minnesota body of laws and regulations related to airport land use compatibility is comprised primarily of statutes and rules that:

1. Grant state and municipal officials broad powers, including the power of eminent domain, to acquire property rights and interests for the construction or expansion of airport facilities and when necessary to assure safe approaches to and operation of airport landing areas.
2. Specify minimum land use controls and specific procedures for adopting and administering safety- and noise-related zoning of land in the vicinity of the state's airports. This includes regulation of structure heights. Prohibits the state from funding airports unless a local government has established an airport zoning authority and an airport zoning ordinance.
3. Grant authority to joint airport zoning boards to apply and enforce airport zoning to lands under the jurisdiction of any local government that fails to cooperate with the board or otherwise does not act on its own to adopt and apply airport zoning to airport safety areas.
4. Require reasonableness in the adoption and administration of airport zoning controls. The laws require the Commissioner of Transportation and local officials to consider local conditions, as well as possible net social or economic costs, in determining what airport zoning regulations to adopt.
5. Give local governments "breathing room" to study, plan, and adopt local controls by authorizing interim ordinances, including moratoriums on building activity within potentially affected areas adjacent to planned airport facilities.
6. Proclaim a policy and require specific actions to protect existing residential neighborhoods near airports from the effects of airport zoning. Specifically, local governments must avoid the elimination of existing residential uses if it can be done without severely compromising safety.
7. Enable municipalities in the metropolitan area to regulate building construction and methods to attenuate aircraft noise in buildings and around airport noise zones.



8. Prohibit the use of amortization to eliminate a land use that was lawful at the time of its inception, unless the land use constitutes a public nuisance.
9. Ensure a process that informs state and local decision-makers about the impacts of airport-related projects on the human environment, and requires the decision-makers to account for and mitigate any disclosed, adverse impacts.
10. Require the replacement of drained or filled wetlands with wetlands of equal public value, when the loss of the wetlands is unavoidable in the course of development activity.

MINNESOTA AIRPORT ZONING STATUTES

Minnesota Statutes 2004, Chapter 360—Airports and Aeronautics

The declared purpose of Chapter 360 is “to further the public interest and aeronautical progress by providing [among other things] for the protection and promotion of safety in aeronautics” §360.011. To this end, Chapter 360 includes two sections that directly regulate airport zoning to ensure safety and land use compatibility.

This part highlights only the provisions of Chapter 360 that directly or indirectly affect airport development and describes in greater detail the two sections regulating airport zoning (§§ 360.061--360.074) and structure height (§§360.81--360.91).

ADMINISTRATION (§§ 360.011—360.024)

Several sections are pertinent to airport zoning for safety and land use compatibility, including Section 360.013, which defines key terms related to land use compatibility, such as “airport,” “airport hazard,” “structure,” and “tree.”

§§ 360.016, 360.0161—Federal Aid

Section 360.016 authorizes the Transportation Commissioner to cooperate with the federal government in the planning, acquisition, construction, improvement, maintenance, and operation of airports in Minnesota. It further authorizes the Commissioner to receive federal funds for these activities and authorizes the Commissioner to act as an agent for any municipality to receive and disburse federal funds. It gives the Commissioner authority to enter into any contracts necessary to engage in the powers authorized by this section.

Section 360.0161 requires municipalities to receive the Commissioner’s approval before submitting any project applications to the federal government. It also requires municipalities to designate the Commissioner as their agent to receive and disburse any federal funds they may receive for projects.



§ 360.017—State Airports Fund

This section authorizes creation of a fund for the acquisition, construction, improvement, maintenance, and operation of airports in Minnesota. Money in this fund can be used to assist municipalities in these activities.

§ 360.018—Regulating Airports

This section specifically authorizes the Transportation Commissioner to approve and license airport and restricted landing area sites. Subdivision 6 requires licensing of airports and restricted landing areas before they can be used. It further requires any person or municipality to obtain from the Commissioner a certificate of site approval before acquiring property for an airport or restricted landing area. This pre-acquisition approval insures “that the property and its use shall conform to minimum standards of safety” Subdivision 8 directs the Commissioner to consider, in determining whether to issue a certificate of site approval or an operating license:

- the proposed location, size, and layout of the airport
- the relationship of the proposed airport to “a comprehensive plan for statewide or nationwide development” (no definition of this phrase is offered in Chapter 360);
- the availability of safe areas for expansion purposes;
- the presence (or absence) of obstructions in adjoining areas;
- the nature of the terrain; and
- the nature of the uses to which the proposed airport will be put.
- Other subdivisions of this section provide for hearings on certificates or licenses and revocation procedures.

ESTABLISHING AIRPORTS (§§ 360.031—360.045)

Several sections are pertinent to the review of airport zoning for safety and land use compatibility.

§ 360.031—Definition

For purposes of these sections, “municipality” means any county, city or town in the state.

§ 360.032—Municipality May Acquire Airport

This section authorizes municipalities to acquire property for establishing, constructing, enlarging, and moving airports and airport facilities. Municipalities may purchase or lease such property, acquire it by gift or devise, and, if no other means is available, by condemnation.

Subdivision 3 authorizes municipalities to acquire easements and invoke other airport protection privileges that may be necessary to insure unobstructed airspace for



landing and taking off and to acquire easements to facilitate placing and maintaining marks and lighting of airport hazards. This authority is not to be “so construed as to limit any right, power, or authority to zone property adjacent to airports and restricted landing areas under the provisions of any law of [Minnesota].”

Subdivision 4 makes it unlawful for anyone to build any object or plant any tree or other vegetation that would encroach upon any airport protection privileges that municipalities may acquire under this section for airport or airport operations. It declares such encroachments to be public nuisances and authorizes municipalities to use legal procedures to abate them or to enter others’ property to remove encroachments.

§ 360.038—Specific Powers of Municipality

This section grants to municipalities a number of powers necessary to establish, operate and maintain airports, including the power to adopt regulations and ordinances for the management and use of any property under their control. Such municipal enactments must be consistent with state and federal laws and with the regulations of the Transportation Commissioner.

§ 360.042—Joint Operation; Joint Powers Board

This section authorizes joint agreements by two or more municipalities or by the state and one or more municipalities to acquire, construct, operate, maintain, and regulate airports and to acquire airport protection privileges. It requires municipalities acting jointly to create a board to act on their behalf.

AIRPORT ZONING (§§ 360.061—360.074)

These sections of Chapter 360 are directly applicable to safety and land use compatibility.

§ 360.061—Definitions

This section contains several definitions applicable only to the airport zoning statutes. “Airport” includes restricted landing areas. This makes the term broader for the purpose of these sections than the general definition in § 360.013, which defines “restricted landing area” separately from “airport.” “Municipality,” for purposes of these zoning statutes, does not include a county, unless the county “owns or controls an airport.” “Municipality” specifically includes a town, the Metropolitan Airports Commission, and the State of Minnesota.

§ 360.062—Airport Hazard Prevention

After finding (1) that airport hazards endanger the lives and property of airport users and occupants of land in the vicinity of airports, and (2) that the “social and financial costs” of disrupting existing land uses around airports may



outweigh the benefits of reducing airport hazards in these areas, this section makes the following declarations:

- The creation of an airport hazard is a public nuisance and “an injury to the community served by the airport”;
- The public health, safety, and welfare require the prevention of airport hazards by exercise of the police power without compensation, to the extent legally possible;
- The elimination of existing land uses or their designation as nonconforming uses is not in the public interest and should be avoided whenever possible “consistent with reasonable standards of safety”; and
- The prevention of new airport hazards and the elimination, mitigation, or marking of existing airport hazards are public purposes, entitling political subdivisions to raise and spend public money and to acquire land or property interests.

§ 360.063—Airport Zoning; Authority, Procedure

Subdivision 1(a) (Enforcement under police power) authorizes municipalities, in the absence of a joint zoning board, to adopt and enforce zoning regulations to prevent the creation of airport hazards. It also authorizes municipalities to divide airport hazard areas located within the municipality’s territorial limits into zones and to regulate the height of structures and trees in these areas.

Subdivision 1(b) authorizes municipalities to regulate the location, size, and use of buildings and population density for no more than two miles from the airport boundary in portions of airport hazard areas under approach zones. In other portions of airport hazard areas, municipalities may regulate these uses by land use zoning for up to one mile from the airport boundary and by height-restriction zoning for up to one and one-half miles from the airport boundary.

Subdivisions 1(c) and 1(d) give these zoning powers to metropolitan airport commissions in contiguous first class cities and to state airport zoning boards for airports owned or operated by the state.

Subdivision 3(a) (Joint airport zoning board) governs situations in which an airport is owned or controlled by one municipality and an airport hazard area is appurtenant to the airport but is located in a different municipality. In such cases, the municipality owning or operating the airport may ask the adjacent municipality (or county) either to adopt and enforce zoning regulations for the airport hazard area that are consistent with standards set by the state commissioner of transportation; or to join in creating an airport zoning board. The municipality that owns or



controls the airport determines which action it will take, and it must make a request by certified mail to the governing body of each county or municipality affected. However, if the other municipality fails to respond, the municipality owning or controlling the airport may act unilaterally to apply airport zoning under Subdivision 3(c) below.

Subdivision 3(b) describes the procedure for creating a joint airport zoning board. Each county or municipality involved must approve the board by resolution or ordinance. Once approved, a joint zoning board has all the zoning powers granted municipalities in Subdivision 1. The members of the board consist of two appointed by the municipality or county that owns the airport and two appointed by each municipality or county in which the airport hazard is located. From these members, the board elects a chair. If the municipality that owns the airport is a city of the first class, however, then it appoints four members to the board.

Subdivision 3(c) provides that if a municipality or county in which an airport hazard is located fails to respond within 60 days to the request of a municipality owning or controlling an airport for either local regulation or the creation of a joint zoning board, then the owning or controlling municipality or a joint board created without the non-responsive municipality may adopt and enforce zoning regulations for the airport hazard area within the non-responsive municipality.

Subdivision 3(d) includes in the definition of “owning or controlling municipality” joint airport operating boards created under § 360.042 and the metropolitan airports commission established under Chapter 473 of the Minnesota Statutes.

Subdivision 4 (Airport approach) authorizes the Transportation Commissioner to recommend an airport approach plan for each publicly owned airport and each privately owned airport of the publicly owned class in the state. The plan must indicate the circumstances in which trees or structures would be airport hazards and describe the airport hazard area, as well as measures to eliminate airport hazards in the area. The commissioner must also designate airport approach and turning standards, and any locally adopted airport zoning regulations must conform to these standards.

Subdivision 6 (Procedure when zoning board fails to act) authorizes the Transportation Commissioner to adopt and enforce zoning regulations if a municipality, county, or joint zoning board fails to do so within a reasonable time. If one of these entities adopts regulations that are inconsistent with state standards, then the Commissioner may amend, supplement, or repeal the local zoning regulations so that



they conform. The commissioner’s actions under this subsection are subject to judicial review.

Subdivision 6a (Review of variance) authorizes the Transportation Commissioner to review any airport zoning variance that is granted because of a board of adjustment’s failure to act on the variance application. (See § 360.067 below.) The Commissioner may amend or rescind a variance if necessary to protect the public safety. The Commissioner has 60 days after the initial grant of the variance to take action and notify the applicant. The Commissioner’s actions under this subsection are subject to judicial review.

Subdivision 7 (Airport zoning board, each airport) requires the creation of state airport zoning board when an airport is owned or operated by the state and airport hazard areas are located in adjacent counties or municipalities. A state board has the same authority to adopt and enforce airport zoning regulations that Subdivision 1 grants to municipalities and counties. The members of a state airport zoning board consist of the Transportation Commissioner, who is the chair, one member appointed by the county board for each county in which the airport hazard is located, and one member appointed by the governing body of each municipality located in the area to be zoned. If no municipalities are located in the area to be zoned, then the board must select another county representative. Members have a three-year term. Zoning rules adopted by the board must be published once in a legal newspaper for the county in which the airport is located and must also be filed with the Transportation Commissioner and the county recorder in each county affected by the zoning.

Subdivision 8 (Airport zoning board authority after failure to appoint member) authorizes the remaining members of a state airport zoning board or the Transportation Commissioner, if no board is created (presumably because the county or counties involved did not appoint members), to adopt and enforce airport zoning regulations when a county or municipality that should be part of the state zoning board fails to appoint a member to the board within 30 days after the Transportation Commissioner requests it to do so.

§ 360.064—Airport Zoning; Comprehensive Ordinance, Conflict

Subdivision 1 (Comprehensive regulations) authorizes municipalities to incorporate airport zoning regulations into any “comprehensive zoning ordinance” it may adopt or have already adopted and to administer and enforce the airport zoning regulations as part of the larger ordinance.

Special Note: The term “comprehensive zoning ordinance” is not defined in Chapter 360 and is not a



term used in either the county or municipal planning and zoning enabling acts (Chapters 394 and 462, respectively). The latter chapters use the defined term “official controls” to refer to the local government’s compiled set of land use and zoning regulations.

Subdivision 2 (Effect when regulations conflict) provides that the more stringent limitation shall prevail in the event of a conflict between airport zoning regulations adopted pursuant to Chapter 360 and other zoning regulations applicable to the same area.

§ 360.065—Airport Zoning; Adoption, Approval

Subdivision 1 (Notice, hearing) requires public hearings to be held on proposed airport zoning regulations before they are submitted to the Transportation Commissioner for approval and after that approval but before final adoption by the local zoning authority. It also establishes the publication requirements for notice of these public hearings.

Subdivision 2 (Regulations submitted to Commissioner) requires municipalities, counties, or joint airport zoning boards to submit proposed regulations for airport hazard areas to the Transportation Commissioner. The Commissioner must immediately review the proposed regulations for their conformity with state standards. If the regulations do not conform to state standards, then the municipality, county, or joint airport zoning board must amend the regulations “unless it demonstrates that the social and economic costs of restricting land uses in accordance with the standards outweighs the benefits of a strict application of the standards.” The Commissioner may approve local zoning regulations that are more stringent than the state standards.

§ 360.066—Airport Zoning; Minimum Standards, Land Uses

Subdivision 1 (Reasonableness) mandates that state standards for airport hazard areas and airport zoning regulations be reasonable. In determining what airport zoning regulations to adopt, the Commissioner and local zoning authorities must consider, among other factors, the following:

- The character of the flying operations conducted at the airport;
- The location of the airport;
- The nature of the terrain in the airport hazard area;
- The existing land uses and character of the neighborhood around the airport;
- The uses to which the property to be zoned may be put; and



- The “social and economic costs of restricting land uses versus the benefits derived from a strict application of the [state] standards”

Subdivision 1a(a) (Protection of existing neighborhood) requires the state standards and local airport zoning regulations to distinguish “between the creation or establishment of a use and the elimination of an existing use” and to avoid eliminating or reclassifying existing uses if this can be done without compromising safety. The state standards must include criteria for determining when an existing use constitutes an airport hazard “so severe that considerations of public safety outweigh the public interest in preventing disruption to that land use.”

Subdivision 1a(b) prohibits the state and local zoning authorities from adopting standards or regulations that classify any “low-density residential structure” or any “isolated low-density residential building lots existing on January 1, 1978 in an established residential neighborhood” as a nonconforming use.

Subdivision 1a(c) authorizes local airport zoning authorities to classify a land use described in subsection (b) as an airport hazard if considerations of public safety justify this classification and it is consistent with state airport zoning standards. Any land use described in subsection (b) that is classified as an airport hazard must be acquired, altered, or removed at public expense.

Subdivision 1b requires the Transportation Commissioner to amend the airport hazard standards to conform to legislation adopted in 1978.

Subdivision 2 prohibits airport zoning regulations from requiring the removal or alteration of any nonconforming structure or tree or any other nonconforming use already in existence when the regulations are adopted or amended, except as provided in § 360.067.

§ 360.067—Airport Zoning Permit, Variance; Administrative Agent

Subdivision 1(a) (Permits) authorizes airport zoning regulations to require a permit to construct or establish a new use or structure or to substantially change, alter, or repair an existing use or structure. All regulations must require a permit before any nonconforming structure or tree may be “replaced, substantially altered or repaired, rebuilt, allowed to grow higher, or replanted” No permit can be issued that would allow the creation of an airport hazard or a nonconforming use or that would allow an existing nonconforming use to become a greater hazard to air navigation that it was when the regulation was adopted or the permit application made.



Subdivision 1(b) provides that no permit can be granted that would allow a nonconforming use, structure, or tree, which has been abandoned or is more than 80 percent torn down, decayed, or destroyed, to exceed applicable height limitations or “otherwise deviate from the zoning regulations.” It also authorizes the local governing body to compel the owner of the nonconforming structure or tree to “lower, remove, reconstruct, or equip the object” to make it conform to the zoning regulations. This must be done at the owner’s expense. If the owner refuses, the local authority can proceed and assess the owner for the cost.

Subdivision 1(c) provides that all permits shall be granted, except as provided in the preceding subdivisions.

Subdivision 2 (Variance) provides that anyone who wants to build or increase the height of any structure, allow the growth of a tree, or otherwise use property in violation of applicable airport zoning regulations, may apply to the board of adjustment for a variance. If a variance is not granted by the board within four months⁴⁰ after the last board member receives the application by certified mail, the variance is deemed granted. The person obtaining a variance in this manner must notify the board of adjustment and the Transportation Commissioner by certified mail and include the variance application with the notification to the Commissioner. The variance is effective 60 days after the Commissioner receives the notice, subject to any action the Commissioner might take pursuant to § 360.063, subd. 6.

The subdivision further provides that variances “shall be allowed where a literal application or enforcement of the regulations would result in practical difficulty or unnecessary hardship and the [variance] would not be contrary to the public interest but do substantial justice and be in accordance with the spirit of the regulations” The board of adjustment may impose reasonable conditions on a variance.

Subdivision 3 (Hazard marking and lighting) authorizes a board of adjustment or local zoning authority to impose conditions on a permit or variance that require the applicant to allow a municipality to install, operate, and maintain, at

⁴⁰ Note: Minnesota Statutes, Section 360.067, Subd. 2, allows the Board of Adjustment to take up to four (4) months to make a final decision on a variance application. However, since Section 360.067, Subd. 2, was drafted, a new state law became effective. Known as the “Sixty-Day Rule,” Minnesota requires all state and local decision-making agencies to take action on a “zoning application” within 60 days of receipt of a complete application. Minnesota Statutes Sec. 15.99. If the agency fails to comply with the 60-day rule, the zoning application is deemed approved. It is unclear whether Section 15.99 applies to airport zoning permit or variance applications, and the question has not yet been adjudicated. Accordingly, Mn/DOT believes the airport zoning procedures under Chapter 360 are distinct from and different than the types of zoning applications that trigger the Sixty-Day Rule in Section 15.99. Municipalities are urged to check with their own legal counsel prior to adopting the model ordinance language.



public expense, any markers and lights that may be necessary to indicate an airport hazard.

Subdivision 4 (Administrative agent, appointment) requires a state airport zoning board to appoint a local official in the governmental unit of the area where the airport hazard area is located to act as the administrative agent. This official is authorized to exercise the powers and duties granted in this section and in § 360.069 to local governing bodies.

§ 360.068—Appeal of Airport Zoning Decision

Subdivision 1 (When granted) authorizes any “person aggrieved, or taxpayer affected” by any decision of a local zoning agency, a county or municipality governing body, or a joint airport zoning board, to appeal to the board of adjustment.

Subdivision 2 (Reasonable time) requires appeals to be made within a reasonable time (as defined by rules of the board of adjustment) by filing a notice of appeal.

Subdivision 3 (Stay) directs that all proceedings relating to the action appealed from are stayed unless a stay would cause “imminent peril to life or property.”

Subdivision 4 (Hearing; notice) requires the board of adjustment to set a hearing and notify the public and interested parties of the date. Any party may appear at the hearing in person or by an agent or attorney.

Subdivision 5 (Decision and order) authorizes the board of adjustment to affirm, reverse, or modify the decision appealed from, to make any additional orders, and to exercise the powers of the agency from which the appeal is taken.

§ 360.069—Airport Zoning Administration

This section requires all airport zoning regulations to provide for administration and enforcement of the regulations by an “appropriate permit-issuing agency.” The regulations may create an agency or may designate an existing agency, board, or official (other than the board of adjustment) to perform these functions. The agency’s duties must include hearing and deciding all permit applications but cannot include any powers delegated to boards of adjustment.

§ 360.071—Board of Adjustment

Subdivision 1 (Powers) grants boards of adjustment the following powers:

- To hear and decide appeals from orders made by the administrative agency charged with enforcing airport zoning regulations;



- To hear and decide special exceptions to the airport zoning regulations; and
- To hear and decide variance applications.

Subdivision 2 (Membership) provides that an existing zoning board of appeals or adjustment may be appointed as the board of adjustment required under this section. Otherwise, a board of adjustment must have five members appointed for three-year terms by the authority adopting the airport zoning regulations. A metropolitan airports commission must appoint five members from the area for which the commission was created. For an airport owned or operated by the state, the board of commissioners of the county or counties in which the airport hazard is located comprise the airport board of adjustment.

Subdivision 3 (Majority control) makes a vote of the majority of the members of the board of adjustment sufficient to reverse any orders of a zoning agency, or to decide in favor of a permit or variance applicant.

Subdivision 4 (Rules and procedure) authorizes boards of adjustment to adopt procedural rules, directs that all meetings be public, and requires boards to keep minutes of proceedings that record members' votes. It also makes these minutes public records.

§ 360.072—Judicial Review

Subdivision 1 (Appeal) gives any “person aggrieved, or taxpayer affected” by any decision or action of boards of adjustment, the Transportation Commissioner, or local government agencies the right to judicial review.

Subdivision 6 (Allowance of costs) prohibits the assessment of litigation costs against a board of adjustment or the Transportation Commissioner in the absence of gross negligence, bad faith, or malice.

Subdivision 7 (Unconstitutional taking) provides that if a court finds “generally reasonable” airport zoning regulations to be so onerous in their application to a particular structure or parcel of land as to constitute a taking, that holding does not affect the application of the regulations to other structures or parcels of land.

§ 360.073—Violations, Penalties, and Remedies

This section makes any person who does not obtain a permit or variance when required to do so under § 360.067, or who does not conform to the requirements of the permit or variance issued under that section, or who violates any other airport zoning regulations guilty of a misdemeanor and creates a separate offense for each day a violation continues to occur. This section also gives local governments or the Transportation Commissioner the authority to seek injunctive relief or institute abatement proceedings in any court of competent jurisdiction.



§ 360.074—Acquisition of Air Rights

If a nonconforming structure or use must be removed, lowered, or otherwise terminated, or approach protection cannot be provided by airport zoning regulations because of constitutional limitations, or approach protection would be better provided by acquiring property rights than by zoning regulations, the municipality in which the property or nonconforming use is located, or the municipality that owns or is served by the airport, may acquire easements or other airport protection privileges in accordance with § 360.032.

RECIPROCITY (§§ 360.201 TO 360.203)

If an adjoining state grants such rights and privileges to local governments in Minnesota, these sections authorize local governments in an adjoining state to construct, operate, and maintain airports or restricted landing areas in the state of Minnesota, subject to Minnesota’s laws and regulations. They give the local governments of an adjoining state the rights and duties granted to local governments in Minnesota, including the right to exercise the power of eminent domain.

**EXPENDITURES FOR AIRPORTS – ZONING REQUIRED
(§ 360.305)**

This section governs airport financing. Subdivision 6 prohibits the Transportation Commissioner from spending money to acquire land for or to construct, improve, or maintain airports unless a local government has established or is establishing an airport zoning authority and an airport zoning ordinance. It also directs the Commissioner to make “maximum use” of zoning and easements to eliminate potential airport hazards instead of acquiring land or interests in land for this purpose.

REGULATION OF STRUCTURE HEIGHTS (§§ 360.81 TO 360.91)

§ 360.81—Purpose; Safe Flight

After finding that safety requires the maintenance of unobstructed airspace and approaches to airports, this section declares that the location, height and identification of structures and the land related to them can be regulated.

§ 360.82—Definitions

This section contains definitions of “airport reference point” (point selected and marked at the geometric center of the airport landing area), “permit” (refers to permits issued under the height regulation statutes), and “public airport” (area of land licensed as a public use airport).

§360.83—Permit, Necessity

Subdivision 1 (Building height) prohibits any structure at any place in the state from extending more than 500 feet above the highest point of land within a one mile radius of the structure, until a permit has been issued or unless zoning regulations otherwise allow.



Subdivision 2 (Permit required in unzoned areas) requires issuance of a permit by the Transportation Commissioner to erect or add to the height of a structure that will obstruct air navigation in unzoned areas surrounding public airports. Height standards set by the Transportation Commissioner must conform to federal laws.

Subdivision 3 (Zoning regulations controlling) provides that no permit from the Transportation Commissioner is required in territory for which airport zoning regulations have been adopted. Height regulations and restrictions in airport zoning regulations control the construction or addition to the height of any structure in such territory.

Subdivision 4 (Exception for unnecessary hardship) authorizes the Transportation Commissioner to issue a permit for a structure “which will be located with respect to natural formations or other objects of a permanent character so that no material increase in the aeronautical hazard results therefrom.” This section also directs the Commissioner to issue permits “where a literal application or enforcement of the regulations would result in practical difficulty or unnecessary hardship and the relief granted would not be contrary to the public interest”

Subdivision 5 (Exception for structure already in place or federally authorized) creates an exception from the permit requirement for structures existing or authorized by the federal government prior to the 1959 effective date of the structure height statutes. It further provides that neither a change in the Commissioner’s rules nor the relocation or alteration of an airport imposes any new restriction on a structure existing or authorized by the federal government.

§ 360.84—Height Limitations; Exceptions

This section prohibits the issuance of a permit to erect or add to the height of a structure that will extend more than 1000 feet above the highest point of land within a one mile radius of the structure. It does authorize the Transportation Commissioner to issue a permit that exceeds this restriction if the proposed structure will not be higher than “50 feet above the height of the highest structure in existence” on the 1959 effective date of this section. This section also prohibits anyone from building or adding to the height of a structure for which a permit is required that exceeds the height allowed in the permit. These requirements are not applicable to a structure for which a permit is required from the federal government.

§ 360.85—Interest of Applicant for Permit

An applicant for a permit required by these sections need not have an ownership or possessory right to the site for which the permit is requested before the permit application is filed.



§ 360.86—Visual or Aural Identification

This section requires every permit granted to specify any markers, lighting, or other visual or aural identification that must be installed on or in the vicinity of the structure. Identification must, at a minimum, conform to federal standards, but a higher standard may be required.

§ 360.87—Investigation, Determination, Notice, and Hearing

This section authorizes the Transportation Commissioner to perform any investigation necessary to process an application submitted for a height permit. If the Commissioner determines a permit should not be issued, the permit applicant must be notified of that decision in writing and given an opportunity for a public hearing before the Commissioner.

§ 360.88—Failure to File for Permit; Commissioner’s Action

This section authorizes the Commissioner to order any person who is constructing or adding to the height of a structure that is governed by the height restrictions to appear and show cause why a permit need not be obtained.

§ 360.89—Enforcement

This section authorizes the Commissioner to commence court action to prevent, restrain, correct, or abate violations of the height restrictions and authorizes a court to grant injunctions and other appropriate relief.

§ 360.90—Structure Height Rules; Forms

This section authorizes the Commissioner to adopt regulations and forms necessary to administer the height restrictions.

§ 360.91—Misdemeanor

This section makes violations of the structure height provisions a misdemeanor and further provides that each day a violation continues constitutes a separate offense.

MINNESOTA AIRPORT NOISE STATUTES

Minnesota’s airport noise statutes apply to the Minneapolis-St. Paul metropolitan area, which includes seven counties.

Minnesota Statutes 2004, § 473.192—Aircraft Noise Attenuation

This is the “Metropolitan Area Aircraft Noise Attenuation Act.” It authorizes municipalities in the metropolitan area to adopt and enforce ordinances and controls that regulate building construction and methods to attenuate aircraft noise in buildings in and around airport noise zones. Such ordinances must conform with the



metropolitan area council's guidelines for land use compatibility with aircraft noise.

Minnesota Statutes 2004, § 473.661—Budget

Subdivision 4 provides for the allocation of metropolitan area funds to implement the federal noise compatibility program established by the Federal Aviation Administration and to install soundproofing in buildings affected by aircraft noise in the metropolitan area. Subdivision 4(d) requires an analysis of probable noise levels before new runways are constructed at the Minneapolis-St. Paul International Airport and development of an accompanying noise mitigation program with a reservation of funds for its implementation.

MINNESOTA AIRPORT ZONING RULES

Minnesota Rules, Chapter 8800—Aeronautics

This chapter contains regulations governing aircraft, airports, and aviation in Minnesota. Several regulations are pertinent to airport zoning and land use. Because they contain great detail, this document merely highlights and summarizes key concepts in the regulations. The text of the regulations themselves should be consulted for specific information.

§ 8800.0100—DEFINITIONS

This section contains definitions of terms used in the regulation, including “airport,” “height,” “structure,” and “tree.”

§ 8800.1100—REGULATION OF STRUCTURE HEIGHTS

This section authorizes the Transportation Commissioner to make any investigation necessary to assist in determining whether to grant a permit, required by Minnesota Statutes §§ 360.81 to 360.91. It authorizes interested persons to intervene in any permit determination by written notification to the Commissioner. It further authorizes the Commissioner to request an informal appearance by the permit applicant or any intervener.

§ 8800.1200—DETERMINING AIR NAVIGATION OBSTRUCTIONS

This section contains the height and surface measurements for determining whether any existing or future object would be an obstruction to air navigation, public airports, or public heliports.

§ 8800.2400—AIRPORT ZONING STANDARDS

This section contains minimum standards for airport zoning airspace, land use safety, and noise sensitivity. Any governmental body that has been granted airport zoning powers under Minnesota Statutes, Sections 360.061 to 360.074, may adopt more restrictive standards. Subpart 3 establishes six airspace zones (the primary, horizontal, conical, approach,



precision instrument approach, and transitional airspace zones) and Subpart 4 imposes height restrictions consistent with these zones. Subpart 5 establishes three land use safety zones for an airport and each runway associated with it.

Subpart 6 details the use restrictions applicable to each land use safety zone. A separate section (6E) of this subpart specifies use restrictions for “established residential neighborhoods in built up areas.” It includes a list describing hazards so severe that local airport zoning ordinances must prohibit them, but it authorizes local ordinances to prohibit other uses deemed to be equally hazardous. Examples of such extreme hazards include existing residences either located entirely within Safety Zone A and within 1,000 feet of the end of a runway’s primary zone, or entirely within either Zones A or B and which penetrate an approach airspace zone.

Subpart 7 authorizes the creation of noise sensitivity zones.

SELECTED MINNESOTA ZONING AND PLANNING LAWS—MUNICIPALITIES

Enabling Legislation for Municipality Land Use Planning and Control

MINNESOTA STATUTES 2004, CHAPTER 462—HOUSING, REDEVELOPMENT, PLANNING, ZONING

§ 462.351—Municipal Planning and Development

This section contains findings concerning municipalities’ problems in guiding the development of land within their jurisdiction and the value of comprehensive planning. “Municipalities” is defined in § 462.352 as “any city, including a city operating under a home rule charter, and any town.”

§462.353—Authority to Plan

This section grants general authority to municipalities to conduct comprehensive municipal planning activities.

§462.355—Interim Ordinance

Subdivision 4 (Interim Ordinance), as amended in 2004, specifically authorizes municipalities to adopt interim ordinances, including moratoriums on new development, if the municipality is conducting planning studies or is in the process of adopting or amending its comprehensive plan. An interim ordinance may “regulate, restrict or prohibit any use, development, or subdivision” within the jurisdiction for up to a one-year period. In the case where Mn/DOT has requested a city to update its airport master plan prior to August 1, 2004, the municipality may extend the period of an interim ordinance applicable to an area affected by an airport master plan for “such additional periods as the municipality may deem appropriate,” but no more than 18 months. (*Note:* Prior to this deadline, Mn/DOT Office of



Aeronautics in fact mailed notice letters to all of the state's public airports requiring them to update their airport master plans.)

The wording of this provision is convoluted in parts, but with the 2004 amendments, it appears that an interim ordinance necessitated by a city adopting or amending its airport master plan is the only type of interim ordinance that may halt development in a subdivision previously granted preliminary approval or that may delay the municipality's action on a development application submitted prior to the effective date of the interim ordinance.

§ 462.357—Procedure to Effect Plan: Zoning

Subdivision 1 (Authority for zoning) specifically authorizes municipalities to regulate by ordinance the use of all surface, airspace, and subsurface areas. It authorizes the purchase and transfer of development rights and the creation of districts or zones within each municipality. It further directs that regulations be uniform for each class or kind of building, structure, or land and for each class or kind of use within a zoning district. Finally, this section gives municipalities extra-territorial zoning jurisdiction over lands within two miles of its corporate boundaries, but only within unincorporated counties or towns that have not adopted zoning regulations.



Amortization—Municipalities

MINNESOTA STATUTES 2004, § 462.357, SUBDIVISION 1C (AMORTIZATION PROHIBITED) (ENACTED 1999) AND SUBDIVISION 1D (NUISANCE)

Subdivision 1c prohibits municipalities from enacting or enforcing an ordinance eliminating or terminating by amortization a use that was lawful at the time of its inception. The statute’s prohibition expressly does not apply to adults-only businesses.

Subdivision 1d clarifies, however, that Subdivision 1c does not prevent enforcement of an ordinance providing for the prevention or abatement of “nuisances” or the elimination of “public nuisances.”

For purposes of this section, the term “nuisance” is as defined in Minnesota Statutes §561.01 as “anything injurious to health, or indecent or offensive to the senses, or an obstruction to the free use of property” that interferes with the “comfortable enjoyment of life or property.”

For purposes of this section, the term “public nuisance” is as defined in Minnesota Statutes §617.81 to include maintaining a public nuisance in violation of §609.74, clause (1) or (3). Sections 609.74(1) and (3) declare an actionable public nuisance to include where a person “maintains or permits a condition which unreasonably annoys, injures or endangers the safety, health, morals, comfort, or repose of any considerable number of members of the public,” or whenever a person is “guilty of any other act or omission declared by law to be a public nuisance and for which no sentence is specifically provided.” This latter clause may arguably encompass the Minnesota airport safety statutes, and specifically Section 360.062(b)(1), which declare “the creation or establishment of an airport hazard is a public nuisance and an injury to the community served by the airport in question.”

Special Note: Technically – although it is unclear – the elimination of land uses that constitute “airport hazards” may fall **outside** the general municipal prohibition of amortization in this Section 462.357(1)(c). However, Section 360.062(b)(1) states clearly that the establishment or creation of airport hazards should be accomplished “to the extent legally possible” by a municipality’s police powers (e.g., its zoning powers) and not by eminent domain (e.g., condemnation) and that municipalities should avoid designating existing land uses as nonconforming uses “whenever possible consistent with reasonable standards of safety.” Thus, while Section 462.357(1)(c) may arguably leave room for municipalities to amortize nonconforming land uses in airport safety zones to legitimately eliminate a declared public nuisance, the Minnesota legislature has also made clear in Chapter 360 that such tool should be avoided to the maximum extent possible to avoid substantial hardship to



property owners. Therefore, until more clarifying legislation is adopted, Mn/DOT interprets the general amortization ban in Sections 462.357 (for municipalities) and 394.421 (for counties) as **NOT** allowing the use of amortization to eliminate nonconforming airport land use hazards without compensation. This is one area where the state might consider clarifying the intent of the amortization ban as it applies to airport hazards.

Nonconforming Uses—Municipalities

**MINNESOTA STATUTES 2004, § 462.357, SUBDIVISION 1E
 (ENACTED 2001, AMENDED 2004)**

This section authorizes the continuation of any lawful nonconforming use existing at the time of the adoption of a zoning ordinance or regulation. “Continued” is further defined to include “repair, replacement, restoration, maintenance, or improvement, but not including expansion.” However, there are two circumstances where a municipality may require the nonconforming use to be discontinued: (1) if the nonconforming use is discontinued for more than one year; or (2) if the nonconforming use is destroyed “to the extent of greater than 50 percent of its market value” and no building permit has been applied for within 180 days from the date of damage. In those two instances, any subsequent use or occupancy must be conforming. This section also authorizes municipalities to impose reasonable regulations upon nonconforming uses to prevent and abate nuisances and to protect the public health, welfare, and safety.

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SELECTED MINNESOTA ZONING AND PLANNING LAWS—COUNTIES

Enabling Legislation for County Land Use Planning and Control

MINNESOTA STATUTES 2004, CHAPTER 394—PLANNING, DEVELOPMENT, ZONING

§ 394.21—Authority to Carry On County Planning and Zoning Activities

This section authorizes any county with a population of less than 300,000 in the 1950 U.S. Census to conduct county planning and zoning activities.

§394.23—Comprehensive Plan

This section authorizes counties to prepare and adopt by ordinance a comprehensive plan, which becomes the basis for any “official controls” the counties adopt.



§ 394.24—Official Controls

This section directs that any official controls that further the purpose and objectives of the comprehensive plan must be adopted by ordinance.

§ 394.25—Forms of Control

This section directs that official controls be adopted by ordinance and lists some features that may be included, such as zoning districts, zoning maps, conditional uses for manufactured home parks, feedlot zoning ordinances, special conservation areas, and subdivision rules.

§ 394.34—Interim Zoning

This section authorizes counties to adopt, as an emergency measure, temporary or interim zoning maps or ordinances regulating the use or occupancy of land when a county is in good faith conducting studies or has held a hearing to adopt or amend a comprehensive plan or official control. The term of such interim zoning is limited to one year, and extensions of up to one year are allowed.

Amortization—Counties

MINNESOTA STATUTES 2004, § 394.21, SUBDIVISION 1A (AMORTIZATION PROHIBITED) (ENACTED 1999) AND SUBDIVISION 3 (NUISANCE)

Subdivision 1a contains the same exact language as the municipal provisions in §462.357.1e, and prohibits counties from enacting or enforcing an ordinance eliminating or terminating by amortization a use that was lawful at the time of its inception. This prohibition expressly does not apply to adults-only businesses. Subdivision 3 further clarifies that the prohibition on amortization does not prohibit the prevention, abatement, or elimination of “nuisances,” as defined in Minnesota statutes §561.01, or the elimination of “public nuisances” as defined in Minnesota Statutes §617.81. Until more clarifying legislation is adopted, Mn/DOT interprets the general amortization ban in §394.421 as **NOT** allowing the use of amortization to eliminate nonconforming airport land use hazards without compensation.

Nonconforming Uses—Counties

MINNESOTA STATUTES 2004, § 394.36 (ENACTED 1959)

Subdivision 1 authorizes the continuation of any lawful nonconforming use existing at the time of the adoption of a zoning ordinance or regulation. If the nonconforming use is discontinued for more than one year or is destroyed “to the extent of greater than 50 percent of its market value,” any subsequent use must be a conforming use.

Subdivision 2 authorizes counties to adopt regulations they deem desirable or necessary to control, regulate, reduce the number of, or provide for the gradual elimination of nonconforming uses. They may require nonconforming uses to



conform to official controls within a reasonable time or be terminated. They may also impose additional regulations on nonconforming uses.

Special Note: Section 394.21(1)(a) of the Minnesota Statutes (described above), which was enacted in 1999, generally prohibits the use of amortization in eliminating nonconforming uses that are not considered public nuisances. This later general prohibition would appear to trump the earlier-adopted general allowance stated in this Subdivision 2.

Subdivision 3 authorizes counties to acquire nonconformities that they find to be detrimental to achieving the goals of a comprehensive plan.

SELECTED MINNESOTA ENVIRONMENTAL LAWS

The following summary highlights the primary Minnesota state environmental laws and regulations that typically are implicated in airport development. Development at public airports almost always involves the use of state funds, which triggers environmental review under state statutes. This review is intended to analyze and disclose the impacts of state actions – including funding Minnesota’s public airports – on the surrounding human environment. Any identified adverse impacts must be substantially mitigated. One of the criteria for determining the potential for adverse impact is whether existing and planned land uses in the vicinity of an airport are compatible with the proposed airport development. The more compatible surrounding airport land uses are, the easier it is to make a finding of “no significant impact,” and the smoother the path toward future airport growth.

Environmental Policy—Minnesota Statutes 2004, Chapter 116D

This chapter is Minnesota’s NEPA-like statute which, paralleling the federal National Environmental Policy Act (“NEPA”), declares a statewide policy to “encourage productive and enjoyable harmony between human beings and their environment.” The Minnesota act is similar to NEPA, and parallels the federal provisions in virtually all its elements. The Act requires state agencies to implement a process to identify, acknowledge, and mitigate the effects of its actions on the human environment prior to making a final decision. The primary vehicle for doing this is preparation of environmental assessments (EAs) and environmental impact statements when there is potential for significant environmental effects resulting from any major governmental action. One significant difference between the Minnesota Act and NEPA is that the state’s requirements for scoping the contents of an EIS, including the range of reasonable alternatives to the proposed action, is more extensive than the federal requirements.



Wetlands Conservation Act—Minnesota Statutes 2004, Chapter 103G

Wetlands near airports can be a significant attraction of migratory birds. The potential for “bird strikes,” however constitutes a substantial aviation hazard. Federal and Minnesota rules and regulations advise significant separation between airports and airport operations from bird attractants, such as wetlands. Consequently, and solely in terms of airport planning, wetlands located under or close to an airport’s approach zones arguably constitute an incompatible land use. Thus, the ability or inability to fill or remove wetlands as part of private development activity in the vicinity of an airport can be important in airport planning.

The Minnesota Wetlands Conservation Act (Minn. Statutes §§ 130G.001 through 130G.251) requires a public waters work permit and a wetlands replacement plan for any proposals to drain, fill, alter, or remove “public water wetlands” within the state. “Public water wetlands” include types 3, 4, and 5 wetlands as defined in the U.S. Fish and Wildlife Services Circular No. 39 (1971), and which are larger than 10 acres in unincorporated areas or 2.5 acres in incorporated areas. All other wetlands cannot be drained or filled, wholly or in part, unless replaced by restoring or creating wetland areas of at least equal public value according to an approved replacement plan. While the Act does expressly exempt certain public transportation road projects from the requirement for a wetlands replacement plan, the Act does not similarly exempt wetland drain/fill related to public airport construction projects from the Act’s requirements.

Local governments issue permits required under the Act, and approve wetland replacement plans consistent with a locally adopted wetland protection and management plan. When a proposed activity triggers the jurisdiction of the federal government under Section 401 or Section 404 of the Clean Water Act, applicants may submit a joint application to the appropriate local government, the state Department of Natural Resources, and to the U.S. Army Corps of Engineers; grant of a permit pursuant to the joint application satisfies the local, state, and federal wetlands requirements.

Replacement wetlands must be of equal public value to the wetland that is drained or filled. The Act specifies the amount of replacement wetlands that must be provided for every one acre of removed wetland, depending generally on whether the removed/altered wetland is on agricultural or nonagricultural land. Replacement wetlands may be sited on-site, preferably, or off-site under circumstances specified by the Act.

Minnesota Environmental Coordination Procedures Act, Minnesota Statutes 2004, Chapter 116C

This Act provides the guidelines and minimum requirements for an optional procedure to assist persons undertaking development or construction projects with potential environmental impacts, and who



must obtain more than one state permit, by establishing a mechanism to coordinate the administrative decision-making process. The Act is also intended to make it easier for the general public to present their comments on such projects seeking state approval. Essentially, the option allows a project proponent to submit a “master application” to the designated coordination unit (the Minnesota Bureau of Business Licenses) requesting the issuance of all state permits necessary for the project. Such master application will only be processed if the applicant certifies that, among other things, an EIS is completed (or not required) and that the project complies with local zoning, subdivision, environmental, and planning requirements. When required or desired, a single public hearing may be conducted on the master application, and within 60 days of the close of the administrative hearing, each involved state agency must make its final decision on the permit application.

Airport Zoning and the “Takings” Issue

As discussed in Chapter 4, one of the most effective tools to protect airports from incompatible development is local zoning and land use controls. The State of Minnesota has granted its local governments broad authority to impose land use controls for a variety of purposes ranging from protection of natural resources to specifying allowed uses in appropriate locations. As such, there is little question that Minnesota communities have the power to adopt protective regulations to prevent incompatible development around airports.

However, that is not the last word on the subject. The United States Constitution and the Minnesota courts impose some limitations on the extent that regulations can be used to control the use of land through zoning—the so-called “taking” issue. These limitations and the threat of having to pay damages to landowners subjected to strong development controls through zoning have made some jurisdictions in Minnesota wary of utilizing their land use control authority to protect airports from incompatible development. Until these issues are resolved, airport zoning may not be as an effective tool as it has proven to be in other states. This section discusses the taking issue in greater detail from a national and state perspective.

AN OVERVIEW OF TAKINGS LAW

**“... nor shall private property be taken
for public use, without just compensation.”**

With these few words, the framers of the United States Constitution enshrined in the Fifth Amendment one of the most fundamental of individual rights—to own property free of the threat of seizure by government, unless the government pays for it. This basic property right was derived from 17th- and 18th-century English legal tradition



that prohibited the king from taking a subject's property except by a duly enacted law of the land and with full indemnification.

Historical records show that what the drafters of the Bill of Rights had in mind when they adopted the “just compensation” or “takings” clause was to permit the government to take private property for public use—for example, land needed for a public highway—but only upon payment of compensation. Today, we call this government action exercising the right of eminent domain or condemnation. Thus, once again, the framers demonstrated their genius in balancing the rights of the individual with the clear need of the people—government—to undertake public projects for everyone's benefit. It is hard to imagine how the nation could have grown or society would have functioned without the ability to judiciously exercise the power of eminent domain to build roads, dams, parks, and other projects. Indeed, hardly any reasonable person would quarrel with that notion.

How then has the just compensation clause of the Fifth Amendment become the center of a controversy involving zoning that lawyers like to call the “takings” issue—which has little to do with the actual seizure of property or exercise of the power of eminent domain as our forefathers understood it?

Interestingly, early experience from England and Colonial America does not suggest that by simply regulating, the government could “take” someone's property. Indeed, there are many examples of strict government regulation of land during this period where there is no hint that anyone expected compensation to be paid. These cases reflect the American tradition of landowner responsibility to use property prudently. For example, after the great fire in Boston in the late 17th century, a series of laws was enacted directing the use of brick or stone in buildings. No dwelling house could be constructed otherwise upon threat of serious fine. A later act declared that any building that did not meet these standards was a nuisance subject to demolition.

Where landowners sought compensation, courts typically were unsympathetic. For example, in *Hadacheck v. Sebastian*, 230 U.S.394 (1915), the City of Los Angeles banned brick making--an industrial operation that spewed “fumes, gases, smoke, soot, steam and dust” into the air--from certain areas of the city to protect surrounding residential neighborhoods, even though the plaintiff's brickyard was built before people moved into the area. The factory owner sued, arguing a taking had resulted because the value of his property was reduced from \$800,000 to \$60,000. The U.S. Supreme Court rejected this argument, balancing the needs of the public against the harmful or inappropriate use of land. The city was promoting a legitimate public need, and the property owner could still use the parcel, even if for a different purpose.

The general rule was that “acts done in the proper exercise of governmental powers, and not directly encroaching upon private property, though their consequences may impair its use, are universally held not to be a taking within the meaning of the



constitutional provision.” 230 U.S. 394, citing *Northern Transp. Co. v. City of Chicago*, 99 U.S. 635, 638 (1878).

The clear line between actual physical takings and regulatory takings began to blur in the 1920s. In a case called *Pennsylvania Coal Company v. Mahon*, 260 U.S. 393 (1922), the U.S. Supreme Court accepted the notion that regulations can cause a taking even if there is no actual physical invasion of the property in question. The State of Pennsylvania had passed a law forbidding coal mining that would cause buildings or streets on the surface to subside, or sink, into the mine shafts—even though the coal mining companies retained that right when they sold the surface rights to individual landowners.

While the Supreme Court found that the law served a valid public purpose, the only constitutionally acceptable method to accomplish that goal was for the government to buy the property interest held by the coal company. Since the state law did not authorize compensation, only regulatory control, the Court struck down the legislation, and Justice Oliver Wendall Holmes said:

“The general rule is that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking.” 260 U.S. 393, 415.

Just how far was too far? In literally thousands of cases over the ensuing decades, state and federal courts were called upon to determine whether a particular environmental or zoning regulation was overly burdensome and violated the takings clause. Judges considering these cases had considerable difficulty in establishing hard and fast rules—largely because each situation involving the use of land is unique, both as to the economic impact of regulation and the impact of unregulated use on neighboring property owners and the public generally. Nevertheless, rarely did state or federal courts strike down local land use regulations as a taking.

Almost 50 years after the *Pennsylvania Coal* decision, the Supreme Court finally agreed to consider another major land-use takings case and to try to provide more guidance on the taking issue. In 1978, in *Penn Central Transportation Company v. New York City*, 438 U.S. 104, the Supreme Court reaffirmed the accepted takings analysis that an owner must be denied all reasonable use of a property for a taking to occur. The Court also set forth basic principles to guide communities, property owners, and reviewing courts in evaluating the constitutionality of regulatory acts in specific situations. What are these principles? Briefly, that:

- Communities clearly have the authority to adopt laws and regulations that are designed to protect and enhance the quality of life of their citizens.
- The regulation of private property will not constitute a taking, as long as: (1) the regulation advances a legitimate governmental interest; and (2) the property owner retains some viable use of the property (particularly as measured by the



owner’s reasonable investment-backed expectations).

- Property owners may not establish a taking “simply by showing that they have been denied the ability to exploit a property interest that they heretofore had believed was available for development.” 438 U.S. 104, 130.
- In deciding whether a particular governmental action has caused a taking, a reviewing court must examine the effect of the regulation on the entire property, and not focus on any one specific segment or interest.

Although *Penn Central* involved a challenge to a landmark preservation ordinance, these principles have been applied to a variety of public interest laws, including zoning and land-use regulations. In subsequent decisions, the Supreme Court did hold that if a zoning regulation went too far and deprived a landowner of all reasonable use, the local government would be liable for damages for the period in which the offending regulation was in place. The Supreme Court in *Lingle v. Chevron*, 125 S.Ct. 2074 (2005), recently confirmed the taking rules as set forth in the *Penn Central* decision.

The practical upshot of the *Penn Central* decision has been that rarely will courts find that a zoning regulation will amount to an unconstitutional taking unless an owner is not left with any reasonable use of the property. For example, if a zoning regulation required an owner to maintain his land as open space and the only use he was allowed was to camp on it, a taking would likely occur. Similarly, if a large city zoned land off the end of its airport’s runway in Safety Zones A and B as agriculture, even though the airport was located in a densely developed urban area, the takings line might be crossed because agriculture might not be an economically viable use. On the other hand, in a more rural or small city setting, there are a number of cases holding restricting land to agricultural use does not amount to a taking. In such instances the locality might be able to zone land in Safety Zones A, B, and C as agriculture without much risk. Again, the exact facts of the case will be determinative. Thus, notwithstanding the specter of damages, which are remote, numerous local governments around the United States have enacted very strong zoning and land use controls to preserve community character and protect airports from incompatible development.

The Minnesota Courts’ Interpretation of the Takings Issue⁴¹

Nationally, the state of takings law is very positive for local governments wanting to address land use compatibility regulations near airports. Both at the U.S. Supreme Court level and in the majority of other states, takings law has noticeably shifted more strongly in favor of local zoning regulations against takings claims.

⁴¹ For a more thorough discussion of Minnesota takings law, see Appendix 8.



Twenty-five years ago, however, the Minnesota Supreme Court adopted a unique interpretation of takings law and applied it to airport zoning regulations. In 1980, the Minnesota Supreme Court, in *McShane v. Faribault*, 292 N.W.2d 253 (Minn. 1980), held that all zoning restrictions are not the same. The court distinguished between regulations that “arbitrate” between competing land uses and regulations that serve a “governmental enterprise.” The consequence of this unique classification, called the “enterprise/arbitration test,” is significant. Regulations that arbitrate are an appropriate exercise of the police power if any reasonable use of the property remains. Regulations that serve a governmental enterprise, however, constitute a taking of property if there is a substantial diminution in the property’s value. Thus, when a court finds that a zoning regulation serves an enterprise rather than an arbitrating function, the defending municipality’s zoning actions are measured against a much less deferential standard of review. The *McShane* Court found the airport zoning in that case served a “governmental enterprise” – i.e., the operation of an airport, and because the zoning caused a substantial reduction in the property’s value, there was a *per se* taking of property. As a result of this one case, airport zoning in Minnesota (and really all local zoning efforts) operates under a legal cloud and an assumption of risk. *McShane*’s legacy is the real threat of litigation if a local government adopts the Minnesota Model Ordinance or some variant of airport zoning.

After *McShane*, a local government in Minnesota faces a tough choice: (1) It can choose to pay or compensate a landowner whose property will be substantially devalued by the airport zoning ordinance, (2) it can refuse to compensate and possibly face a takings claim based on the *McShane* holding, or (3) it can simply give up on airport zoning all together and allow incompatible development to proceed. None of these choices are appealing.

However, for several reasons, the foundation supporting the *McShane* case appears to be weakening. First, the *McShane* case relies on the “government enterprise versus government arbitration” test to determine government takings liability. No other state in the country now uses this test. Even the test’s originator, a noted law professor and scholar, has repudiated it as unworkable and incorrect.⁴² Subsequent appellate Minnesota airport zoning cases also confirm the test may be flawed. Since *McShane*, no other reported appellate case in Minnesota has found that airport zoning laws have worked an uncompensated taking (although state trial courts, in unreported opinions, have relied on *McShane* to overturn airport zoning as applied to specific properties). These subsequent appellate cases either found that *McShane* was “inapplicable”; or that the facts presented did not support finding a taking. These recent cases suggest that *McShane*’s underlying theory—the government enterprise test—may no longer be viable. For example, see *Olsen v. City of Ironton*, 2001 WL 379010 (Minn. App., unpublished opinion) (“We question whether a land-use regulation adopted . . . contemporaneous with the

⁴² Joseph Sax, *Takings, Private Property and Public Rights*, 81 Yale L.J. 149 (1971)



preparation of a . . . comprehensive plan could be considered a land-use regulation adopted to benefit a specific governmental enterprise.”).

It is important to realize that the state courts have never found that Minnesota’s model ordinance, and more specifically local zoning ordinances based on that model, are unconstitutional on their face. There is only one reported appellate case—*McShane*—where the local government was found liable for just compensation, and that was where the government conceded their airport zoning laws, as applied to Mr. McShane’s property, resulted in a “substantial and measurable” decline in the property’s market value. Since *McShane*, landowners typically have not been able to meet their burden beyond the trial courts to show this same loss of market value. Indeed, Minnesota appellate courts have announced this is a “difficult” burden to meet. This fact, coupled with the fact that state trial courts continue to rely on the *McShane* test to strike down airport zoning, underscore how *McShane* has had influenced assumptions about local government takings liability for the past 25 years in Minnesota.

Second, outside Minnesota, takings law has taken a different direction. Virtually every modern court case dealing with takings liability for airport zoning laws has concluded that laws very similar to the Minnesota model ordinance are proper exercises of the police power and NOT unconstitutional uncompensated takings of property. These cases are cited and discussed at length in the legal memorandum found in Appendix 8 to this manual.

The judicial authority from other states is that airport zoning laws, like the Minnesota model ordinance, are not unconstitutional uncompensated takings when applied. Instead, courts generally uphold them as valid and necessary exercises of the police power. They are tested as more generic land use laws are normally tested, by simply asking: What was the underlying reason for the law? Does it benefit the public interest in safety and orderly land use planning? If the answers to these questions are “yes,” then the courts almost always find the laws constitutional, unless their application to a specific piece of property virtually wipes out all of the land value (a total taking).

McShane also appears inconsistent with the direction found in the United States Supreme Court’s recent takings cases. These cases reveal that courts will test land use laws like the Minnesota model airport zoning ordinance against a takings challenge by whether: (1) the law produces a public benefit and (2) whether the law take away essentially ALL of an affected property’s remaining value. Minnesota local governments that adopt the model ordinance, or a variant, would almost certainly meet the U.S. Supreme Court’s takings test if challenged. Airport zoning laws are adopted for important public benefits, and rarely will remove all the value of affected land.





chapter 6: model airport safety zoning ordinance and procedural guide



Introduction⁴³

Since 1946, Mn/DOT has provided local governments with a model airport safety ordinance that suggested one approach toward codifying Chapter 360's minimum, mandated airport safety requirements. The vast majority of Minnesota's public airports have airport safety zoning in place consistent with the most recent Mn/DOT model ordinance (last comprehensively revised in 1990). In fact, most affected jurisdictions simply adopted the text of the model ordinance verbatim or with very minor changes. However, most Minnesota public airports are protected by airport safety ordinances that are more than 25 years old, and may need to be revised or updated.

This chapter presents a revamped model airport safety ordinance for Minnesota local governments that reflects modern zoning practices as well as minimum requirements under Minnesota law. Mn/DOT encourages all affected public airports and local governments to review their current airport zoning regulations in light of this new model ordinance and update the regulations accordingly. However, the intent of the model ordinance in this new manual is to also provide more choices and options for local governments to tailor an airport safety zoning ordinance to their own unique circumstances. Circumstances of note that often affect local application and choice of airport safety zoning approaches include:

- The type of airport and type/intensity of aircraft use, taking into consideration future prospects for airport growth and runway expansion;
- The nature of the existing built environment, ranging from urban-density residential neighborhoods surrounding the airport to rural backdrops of expansive agricultural and open lands;

⁴³ If this chapter is read in full, we recognize its contents may overlap with other discussions presented in other chapters. We believe most users will read specific chapters of this manual as needed and, therefore, we feel it is better to include some discussions that may be repetitive. Where possible, however, we have eliminated duplicate text and included cross references.

CHAPTER 6 OVERVIEW

- Introduction
- Legal Status of the Model Zoning Ordinance
- Summary of Model Ordinance Contents
- Procedural Requirements and Guidelines for Adopting Zoning Regulations
- Procedure and Criteria for Requests for Modification of Safety Zone Boundaries
- Procedures for Specific Development Project Approval
- Procedures for Zoning Variance Requests
- Model Airport Safety Zoning Ordinance
- Procedural Forms



- Growth pressures, ranging from intense growth pressures near the airport to no growth pressures of concern;
- Special geographical conditions, such as rough, steep, or uneven topography in close proximity to a runway; and
- Available administrative resources—i.e., the current and anticipated staffing and administrative capacity of a local government to effectively apply and enforce an airport safety zoning ordinance.

The remainder of this chapter presents first an explanation of the model ordinance’s legal status under Minnesota law and an overview of the 2006 model ordinance’s contents, including key differences from the previous 1990 model ordinance’s substance or approach. Following this, the next sections of this Chapter summarize the key procedural requirements derived from Chapter 360 of the Minnesota Statutes, including the procedures for formation of a joint airport zoning board, procedures for adoption and amendment of an airport zoning ordinance, and procedures for approval of a variance. Finally, the new 2006 model airport safety zoning ordinance can be found at the end of this chapter, complete with annotations and commentary discussing the purpose of the zoning provisions and offering, where appropriate, choices in approach or substance tailored to some of the differing circumstances described above.

Legal Status of the Model Zoning Ordinance

As described in more detail in Chapters 2 and 5 of this manual, Chapter 360 (Airports and Aeronautics) of the Minnesota Statutes contains the state’s aviation laws, including enabling authority for local governments to adopt airport safety zoning. The zoning enabling authority is found in Sections 360.061 through 360.074 of Chapter 360. Local jurisdictions who adopt airport zoning regulations must comply with Chapter 360’s minimum airport zoning mandates (including provisions addressing treatment of nonconforming uses and existing residential uses in established residential neighborhoods). Further, to implement Chapter 360, the Minnesota Department of Transportation adopted administrative rules and regulations, which are found primarily in Rule 8800.2400 (“Airport Zoning Standards”) of the Minnesota Rules.⁴⁴ Again, local jurisdictions who adopt airport zoning regulations must comply with the minimum standards stated in Minnesota Rule 8800.2400.

What, then, is the legal status of the model zoning ordinance? The short answer is that adoption of Mn/DOT’s model zoning ordinance is not mandatory. Mn/DOT’s publication and promulgation of the

⁴⁴ For jurisdictions that have adopted Mn/DOT’s model zoning ordinance for Minnesota airports, the contents and minimum standards in Rule 8800.2400 should look very familiar. The Airport Zoning Standards set forth in Rule 8800.2400, together with several of Chapter 360’s key provisions, were incorporated, verbatim, into the 1990 Mn/DOT model zoning ordinance.



model zoning ordinance has always been a service intended to aid the state's public airports and local decision-makers. There is no legal penalty if a local jurisdiction does not adopt the model zoning ordinance, or any other airport zoning approach. **However, while there may not be legal penalties for failure to adopt the model ordinance (i.e., an airport would not be violating Chapter 360 or other Minnesota laws), there may be significant financial penalties for failure to adopt airport zoning regulations.**

Mn/DOT will not grant monies to a public airport for construction projects unless the public airport has in place airport zoning regulations, such as the model ordinance, that comply with Minnesota Statutes Chapter 360 and Minnesota Rules. Similarly, one of the grant assurances for receipt of federal airport funding is affirmative action taken to preclude incompatible land uses around the airport. In all cases, once a local government invokes its airport zoning authority under Chapter 360, the governing body **must** comply with the minimum airport zoning regulations in Chapter 360 and the minimum standards in Rule 8800.2400. Over time, most Minnesota jurisdictions who considered adoption of airport zoning regulations found it easiest to simply adopt the model ordinance wholesale, since the model ordinance includes the exact same minimum standards found in Chapter 360 and Rule 8800.2400.

This manual takes a different approach with the new, revised model ordinance. Those portions of the 2006 model ordinance that simply repeat, verbatim, the minimum airport zoning standards required by Chapter 360 and Rule 8800.2400, are specially highlighted in **bold text** so the manual user can easily recognize and acknowledge them. A local government referring to the model ordinance will recognize those bolded provisions as minimum standards that it must include in its local airport zoning regulations.

However, a local jurisdiction having airport zoning authority under Minnesota law is free to adopt airport zoning ordinances and regulations *more restrictive* than the minimum standards set forth in the statutes or rules. Minn. Stat. 360.065(2) and Minn. R. 8800.2400(2). Accordingly, the new model ordinance suggests a variety of zoning standards and approaches that are different from, or may be more restrictive than, the minimum Chapter 360 statutes and implementing rules, but which are based on national "best practices" for ensuring optimal protection for persons and property on the ground and in the air. Those standards recommended as "best practices" are specially noted in the new model ordinance by the "BP" symbol. Mn/DOT recommends that local jurisdictions consider implementing the best practice zoning standards whenever practicable, recognizing that such standards may not be appropriate or even possible to implement in every case.



Summary Of Model Ordinance Contents

The content of the new 2006 model ordinance is based closely on the previous 1990 model ordinance and uses a similar organization. The 2006 model ordinance's contents, in order, are:

2006 Model Airport Safety Zoning Ordinance for Minnesota Airports

1. How to Use this Ordinance
 2. Title and Introduction
 3. Authority
 4. Statement of Purpose and Finding
 5. Short Title
 6. Applicability
 7. Definitions
 8. Airspace Obstruction Zoning
 9. Land Use Safety Zoning
 10. Official Airport Zoning Map
 11. Administration—Board of Adjustment and Airport Zoning Administrator
 12. Treatment of Nonconforming Uses and Structures
 13. Airport Zoning Permits
 14. Variances
 15. Allowance for Hazard Markings and Lighting
 16. Avigation Easements and Real Estate Disclosures
 17. Appeals
 18. Judicial Review
 19. Penalties
 20. Conflicting Regulations
 21. Severability
 22. Effective Date
- Exhibits to Model Ordinance

The significant changes and additions found in the 2006 model ordinance, versus the previous 1990 model, are summarized below.

Land Use Compatibility Regulations

The 2006 model ordinance suggests, as one option, that local governments consider using a more detailed, modern listing of compatible and incompatible land uses for each of the three safety zones. This detailed use list is based on extensive national research, including third-party risk research from California and Europe, and reflects current best national practices in airport zoning to ensure compatible land uses. While the compatible use regulations found in Section 9 of the model ordinance carry forward and clarify the statutorily required list of incompatible uses that a local jurisdiction **must** prohibit, the more extensive list of potentially compatible uses is offered as advisory only. Mn/DOT strongly encourages local governments to consider the detailed use list approach. See Chapter 3 of this manual for additional discussion about compatible land uses.



Use Regulations in Safety Zone C

The 2006 model ordinance goes beyond the previous model by encouraging local governments to consider restricting specific incompatible land uses in Safety Zone C. These regulations are based on a survey of other states' approaches to zoning for land use safety in areas comparable to Minnesota's Safety Zone C. In the nine states that were researched as part of the preparation of this manual, the majority included specific use limitations for properties under an airport runway's horizontal approach surface that correspond to areas contained within Minnesota's Zone C. The 2006 model ordinance's suggested Zone C use restrictions, including restrictions on certain residential uses located nearest the runway centerline extended, stem primarily from the desire to ensure maximum protection to persons on the ground from possible aircraft accidents. Where the local context allows it, targeted Zone C use restrictions, particularly in areas located closest to the extended runway centerline, can also provide additional buffer to accommodate possible future airport growth.

Address Wildlife Attractant Hazards

The 2006 model ordinance incorporates best practices and Minnesota's minimum standards for avoiding wildlife attractants, especially bird attractants, near airport runways. Wildlife attractants include sanitary landfills, water impoundments, garbage dumps, sewage treatment plants, and certain species of flora and fauna. The dangers associated with bird strikes are real and potentially devastating, as recognized by the FAA.⁴⁵

Recommendations for Revised Procedures Regarding Adoption of Airport Zoning Ordinances

One gap identified during the preparation of this manual concerned the obligation of participating jurisdictions to take follow-up action on an airport zoning ordinance after its adoption by a joint airport zoning board. Minnesota statutes and rules do not create an obligation for the local, participating jurisdictions to take any action to individually acknowledge the joint board's zoning ordinance or even formally incorporate it by reference in the community's official

⁴⁵ See FAA Order 5200.5, *Guidance Concerning Sanitary Landfills On or Near Airports*, which states that sanitary landfills, because of their bird attractive qualities, are considered to be an incompatible land use if located within specified distances as cited by the FAA. FAA Advisory Circular 150/5200-33, *Hazardous Wildlife Attractants on or Near Airports*, discusses the various incompatible land uses, and bird attractants are included in this list. It is stated in FAA Order 5050.4A, *Airport Environmental Handbook*, that the FAA advises against locating such facilities within 5,000 feet of all runways accommodating or planned to accommodate piston-type aircraft, and within 10,000 feet of all runways accommodating or planned to accommodate turbine (jet) powered aircraft. Minnesota State solid waste management rules dictate specific operating criteria for solid waste landfill sites that encourage compatible land uses around airports. For example, the State's rules on landfill site location requirements relative to airports coincide with the requirements set forth in FAA Order 5050.4A. See Minnesota Rule 7035.2815.



land use controls. Accordingly, in the Procedural Guidelines portion of this manual, Mn/DOT recommends, as best practice, that each jurisdiction with representation on a joint airport zoning board formally acknowledge (e.g., by resolution) their participation on the joint airport zoning board and the binding effect of the adopted airport zoning ordinance. In addition, the Procedural Guidelines suggest that each member jurisdiction formally incorporate the joint airport zoning board's ordinance into the jurisdiction's own zoning and subdivision controls. Both these local actions should occur within a specified time frame, for example 90 or 180 days, from the joint airport zoning board's final adoption action.

Criteria for Variances and Referral to Mn/DOT

The 2006 model ordinance provides a new definition of the important term "practical difficulty or unnecessary hardship," which under Minnesota statutes is the threshold for justifying a variance from a zoning regulation. The 2006 model ordinance also encourages, again as a best practice based on other states' experiences, the referral of all or some subset of "major" variances to Mn/DOT staff for comment and recommendation prior to the local government's final decision on the variance requests. Suggestions for what might be considered a "major" variance include variances from structure height standards, variances from use restrictions, or variances from the density limitations in the ordinance. Note, however, that a local government may **not** grant a variance from any prohibition or limitation specified in Minnesota Statutes Chapter 360 or state rules and regulations.

In addition, the 2006 model ordinance makes clear that a jurisdiction always has the option to more specifically limit or prohibit other types of variances. For example, the ordinance may expressly prohibit all variances for new structures that seek to exceed the height limits created by the adopted airspace (height) zones.

Encourage Use of Avigation Easements and Property Disclosure Mechanisms

AVIGATION EASEMENTS

The 2006 model ordinance encourages, as a best practice, giving the local decision-making body the authority to require avigation easements on certain properties seeking residential development approval, use variances, or other land use approvals in an area subject to the airport zoning ordinance.

Avigation easements come in a variety of forms. One of the most common in an airport context is an avigation easement that typically gives the easement holder (usually the airport sponsor) the right to fly airplanes in the airspace above the subject property. This right of flight includes the right to make noise over the property and may include an easement to prevent the property owner from using his land or building structures that are incompatible with flight (e.g., tall structures, noise-sensitive uses, uses at risk from plane crashes). See Chapter 4 of this



manual for a more detailed discussion of aviation easements in the section on Preventive Strategies and Tools.

One major advantage of easements is that they are usually permanent agreements, whereas restrictive zoning regulations (e.g., Zone A and B use lists) can be changed and relaxed. However, the easement holder must be vigilant and consistently enforce the terms of the easement over time, even as the affected property changes ownership.

PROPERTY DISCLOSURE MECHANISMS

The 2006 model ordinance, implementing recently adopted Minnesota law, requires plain language disclosures in certain real estate transactions involving properties located in an airport safety zone.

Property disclosure mechanisms are used in a variety of circumstances to alert real estate buyers of potentially dangerous situations, or other situations that might affect the value or usability of their property. Disclosure mechanisms include recorded deed notices or, more commonly, real estate disclosure statements. Deed notices are recorded at the same time as the approved subdivision map, and might describe possible airport-related impacts, including noise, aircraft overflights, or the applicability of airport zoning restrictions. Because the recorded notice becomes part of the deed to each lot, it should show up in a title search prepared when the lot is sold. Often, local decision-makers require recorded deed notices as a condition of approval for residential uses near an airport where noise and safety concerns are not major, but frequent aircraft overflights might annoy some residents. New Jersey, for example, requires each municipality that has adopted airport safety zones to record notice of the zone boundaries for each property located in the zone.

Real estate law often requires seller disclosure statements about the possible impacts from a nearby airport. Such mechanisms have been used in several other states (Arizona, Hawaii, California, New Jersey) in an airport context to alert purchasers in airport influence areas of noise and other potential impacts. Minnesota statutes were revised in 2006 to require sellers of all real property in Safety Zones A, B, or C to disclose to prospective buyers the fact that the property is located in such safety zone and may be subject to restrictive airport zoning regulations.⁴⁶

In addition, disclosure mechanisms have been used to notify buyers if the property is encumbered by an existing aviation easement that allows low overflights. These disclosure mechanisms have proven valuable in helping to avoid situations where a purchaser finds after-the-fact that his or her property is located in airport noise or safety zones.

⁴⁶ Minn. Statutes, section 360.365, subd. 3. The disclosure requirement is **not** required for sellers of real property located in a safety zone associated with an airport owned or operated by the Metropolitan Airports Commission (MAC).





Procedural Requirements And Guidelines

ADOPTING AN AIRPORT ZONING ORDINANCE FOR PUBLICLY-OWNED AIRPORTS

General Rule—Single Jurisdiction

Under Minnesota Statutes, Chapter 360, when a municipality owns or operates a public airport, and that same municipality has jurisdiction over all lands included with the airport hazard area, the owning or operating municipality may adopt airport zoning regulations. Minnesota Statutes, Section 360.063, Subd. 1(a).

Choices in Adopting an Airport Zoning Ordinance—Multiple Jurisdictions

Under Minnesota Statutes, Chapter 360, when an airport is owned or controlled by one municipality, but where all or part of the airport hazard area is located within the territorial limits of a different county or municipality, the public airport owner, except for the Metropolitan Airport Commission (“MAC”)⁴⁷, has two options for adopting airport zoning. Minnesota Statutes, Section 360.063, Subd. 3.

OPTION 1: Request creation of a joint airport zoning board. See **Form No. 2**.

OPTION 2: Request an affected county or other municipality⁴⁸ to individually adopt and enforce airport zoning regulations for the areas in question that comply with the minimum standards prescribed by the Commissioner in Minnesota Statutes, Chapter 360, and Minnesota Rule 8800.2400. See **Form No. 2**.

- Requests under either option shall be made by **CERTIFIED MAIL** to the governing body of each county and municipality affected by the area to be zoned, as per Minnesota Statutes, Section 360.063, Subd. 3(a)(2).
- If, **within 60 days**, a county board, town board, or city council **FAILS** to adopt airport zoning regulations under Option 1, or fails to join in creating a joint airport zoning board under

⁴⁷ The MAC (Metropolitan Airports Commission) has one option only. The MAC must request creation of one joint airport zoning board for each airport operated under its authority, as stated in Minnesota Statutes, Section 473.608, Subd. 21.

⁴⁸ A “municipality,” for airport zoning purposes under Minnesota Statutes, Section 360.063, Subd. 3, is defined as: (1) Cities, big and small, which are incorporated; (2) Towns, including townships; (3) the Metropolitan Airports Commission; and (4) the State of Minnesota, when it owns an airport. The term “municipality” may, specifically for airport zoning purposes, include a county **ONLY** when the county owns or controls an airport (in which case the county may exercise all the powers granted by Minn. Statutes, Section 360.61 through Section 360.74 to other municipalities).



Option 2, then the airport owner may zone and enforce an airport zoning ordinance for the airport hazard area in question, according to Minnesota Statutes 360.063, Subd. 3(c). See **Form No. 2** and **Form No. 4**.

PROCEDURES FOR LOCAL ADOPTION OF AIRPORT ZONING ORDINANCE

Joint Zoning Board Procedures for Ordinance Adoption

When a public airport is owned or controlled by one municipality, but where all or part of the airport hazard area is located within the territorial limits of a different county or municipality, the public airport owner may request the establishment of a joint airport zoning board to adopt airport zoning regulations. Minnesota Statute 360.063, Subd. 3. The following describes the steps the airport owner must take under Minnesota law⁴⁹ to first establish the joint airport zoning board, and then to adopt an airport zoning ordinance.

MANDATORY STEPS:

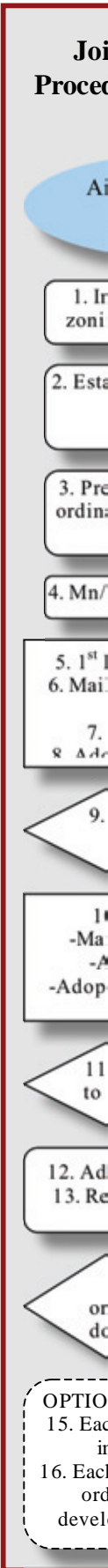
1. **Airport Owner Resolves to Create Joint Zoning Board.** Airport owner passes resolution to create a joint airport zoning board and to authorize invitations to join. See **Form 1**.
2. **Invitation to create joint zoning board.** Airport owner invites all affected counties and municipalities to join in creating a joint airport zoning board. Requests must be sent in writing, by Certified Mail. See **Form No. 2**.
3. **Affected jurisdictions agree to join board.** The municipalities and counties who accept the invitation each pass a resolution to join the joint zoning board. See **Form 3**.

NOTES: If a municipality or county refuses to join the joint airport zoning board, the airport owner (or the board created without the participation of the refusing municipality or county) may adopt, administer and enforce airport zoning regulations for the airport hazard area located in the refusing municipality or county.

If *all* of the invited municipalities and counties refuse to join the airport zoning board, the airport owner should dissolve the board and proceed on its own to adopt airport zoning regulations. In such instance, the airport owner may also administer and enforce the regulations in the airport hazard areas located in the non-participating jurisdictions. See **Form 4**.

4. **Convene board and elect chair.** After the participating jurisdictions create the joint zoning board, each appoints a maximum of two members to the board to serve until they are

⁴⁹ See Minn. Stat., Chapter 360, Section 360.065.





replaced by their appointing authority. The appointed members elect an additional person who is to serve as chairperson. Rules of procedure should also be adopted.

NOTE: Cities of the first class (population 100,000 or more, such as Duluth) that own or control an airport shall appoint four members (instead of two) to the joint zoning board.

5. **Prepare draft airport zoning ordinance and zoning map.** The joint zoning board, which may choose to work with an attorney, engineer, or other qualified professional, submits a draft ordinance and zoning map to the Minnesota Department of Transportation, Office of Aeronautics (Mn/DOT will furnish a model ordinance and zoning map to be used as guidance).
6. **Mn/DOT review and comment.** Mn/DOT will review and advise the joint zoning board on the draft proposal before the first public hearing.

NOTE: Unlike the process for adoption of other types of municipal or county zoning ordinances, a minimum of **two** public hearings must be held to consider adoption of the draft airport zoning ordinance.

7. **Resolution setting 1st public hearing.** Joint zoning board passes a resolution declaring this ordinance to be their proposed ordinance, setting a date and place for the first public hearing. **See Form No. 5.**

NOTE: If an Established Residential Neighborhood (ERN) in a Built Up Urban Area exists, the airport zoning board must note the requirement of Minnesota Statutes 360.066, Subd. 1 a (a) and (d) (1978) that certain prohibited land uses must be acquired, altered, or removed at public expense. (See Model Ordinance, Section 9-3(b), "Exemptions.")

In the event that a prohibited land use exists in an Established Residential Neighborhood, the joint zoning board shall so notify the airport owner at least sixty (60) days prior to the first hearing on adoption of the ordinance. The airport owner shall then consider the alternatives of closing a runway, runway realignment or relocation, runway extension or shortening and displaced thresholds, and shall then promptly notify the local zoning authority in writing, if it proposes to take any of such alternative actions.

8. **Give mailed notice of 1st public hearing.** The zoning board shall give mailed notice of the 1st public hearing as follows:
 - o At least 15 days before the hearing to any persons in municipalities who own land proposed to be included in Safety Zones A and B, and to any persons who own property in an identified Established Residential Neighborhood (See **Forms 6, 7, and 8**), and



- To the governing body of each political subdivision whose territory is affected by the area to be zoned, (See **Form 9**), and
- At least 15 days before the hearing, to persons or municipalities that previously requested such notice from the authority. (Send interested parties a copy of the published notice).

For the purpose of giving mailed notice, the zoning authority may use appropriate records to determine the names and addresses of owners. The failure to give mailed notice to individual property owners or defects in the notice shall not invalidate the proceedings, provided a *bona fide* attempt to comply with this subdivision has been made.

A copy of the notice and a list of the owners and addresses to which the notice was sent shall be attested to in an affidavit by the responsible person and shall be made a part of the records of the proceedings. See **Form No. 10 and 14**.

9. **Advertise 1st public hearing.** The notice of hearing shall be published at least **three** times during the period between 15 days and 5 days before the hearing in:

- An official newspaper, and
- A second newspaper designated by the zoning authority that has a wide general circulation in the area affected by the proposed regulations.

The notice shall not be published in the legal section of a newspaper. See **Form No. 11**.

10. **Adoption resolution.** After the 1st public hearing, the joint airport zoning board will pass one of the following resolutions:

- If no changes are necessary, a resolution is passed stating that a public hearing was held, that no changes are necessary, and that this proposed ordinance will be submitted to the Minnesota Department of Transportation, Office of Aeronautics, for approval. See **Form No. 12**.
- If changes are desired, the proposed ordinance is amended and a resolution is passed declaring the amended ordinance to be the newly proposed ordinance, and that this proposed ordinance will be submitted to the Minnesota Department of Transportation, Office of Aeronautics, for approval. See **Form No. 12**.

11. **Submit Ordinance to Mn/DOT—Commissioner's Order.** The joint airport zoning board shall submit the ordinance to the Minnesota Department of Transportation, Office of Aeronautics, for approval.

- Upon review for approval, the Commissioner will determine whether the proposal conforms to the



minimum standards. If no objections are made, the proposed ordinance is issued a “Commissioner's Order of Approval.”

- If the Commissioner objects on the grounds that such regulations do not conform to the minimum standards, the joint zoning board shall make such amendments as are necessary to meet such objections.
12. **Notice 2nd public hearing and hold hearing.** Repeat steps 7, 8, and 9, and hold the second public hearing.
 13. **Resubmit ordinance to Mn/DOT** (only if ordinance is amended). Resubmit ordinance proposal to the Minnesota Department of Transportation, Office of Aeronautics if, at the second public hearing, it was decided to amend the proposed ordinance.
 - Repeat steps 10 and 11 above, as necessary.
 - If the changes were not substantial, a new Commissioner's Order need not be issued.
 - If substantial changes have been made, then final adoption shall not take place until after final approval by the Commissioner according to Minnesota Statutes 360.065, subdivision 2.
 14. **Adopt ordinance.** Upon completion of Steps 11 through 13, adopt ordinance. See **Form No. 13**.
 15. **Record adopted ordinance.** The adopted ordinance must be filed with the County Recorder in each county in which an airspace or safety zoned area is located.
 16. **Submit adopted ordinance and required documents to Mn/DOT.** Submit documents to the Minnesota Department of Transportation, Office of Aeronautics. See “List of Documents to be Submitted to Mn/DOT,” below.

OPTIONAL BEST PRACTICE STEPS:

- BP**
17. **Each jurisdiction formally resolves to implement ordinance.** Each jurisdiction represented on the joint airport zoning board adopts a resolution or ordinance formally acknowledging their participation on the joint airport zoning board and the binding effect of the adopted airport zoning ordinance on local land use decisions. This step must be completed within ninety (90) days from the joint airport zoning board’s final action to adopt the ordinance (Step 14 above).
- BP**
18. **Each jurisdiction incorporates ordinance into their land development/zoning controls.** Each jurisdiction represented on the joint airport zoning board shall take the necessary actions to formally incorporate the adopted airport zoning ordinance into the jurisdiction’s zoning and subdivision controls. This step must be completed within one hundred eighty (180) days from the joint airport zoning board’s final action to adopt the ordinance (Step 14 above).



Individual Municipality Procedures For Ordinance Adoption

This subsection describes the steps that Minnesota law⁵⁰ requires for a municipality to adopt an airport zoning ordinance when one of the following circumstances exist:

- A public airport is owned or controlled by one municipality, and the same municipality owns and controls the entire airport hazard area.
- A public airport is owned or controlled by one municipality, and all or part of the airport hazard area is located within a different county or municipality, but the other municipalities and counties all decline to participate in the establishment of a joint airport zoning board. In this case, Steps 1 and 2 in the procedures outlined above were followed, but all invitees responded and declined participation in the joint airport zoning board. See **Form No. 4**.

In all the cases stated above, the owning or controlling municipality⁵¹ may, on its own, adopt airport zoning regulations.

1. **Prepare draft airport zoning ordinance and zoning map.** The owning or controlling municipality, who may work with an attorney, engineer, or other qualified professional, submits a draft ordinance and map to the Minnesota Department of Transportation, Office of Aeronautics (Mn/DOT will furnish a model ordinance and map to be used as guidance).
2. **Mn/DOT review and comment.** Mn/DOT will review and advise the municipality on the draft proposal before the first public hearing.

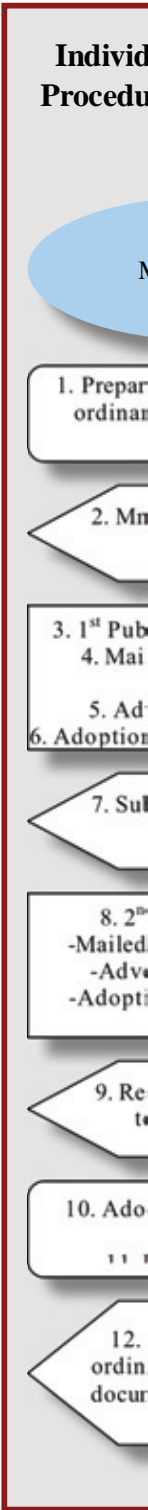
NOTE: Unlike the process for adoption of other types of municipal or county zoning ordinances, a minimum of **two** public hearings must be held to consider adoption of the draft airport zoning ordinance.

3. **Resolution setting 1st public hearing.** The owning or controlling municipality passes a resolution declaring this ordinance to be their proposed ordinance, setting a date and place for the first public hearing. See **Form No. 5**.

NOTE: If an Established Residential Neighborhood (ERN) in a Built Up Urban Area exists, the municipality must note the requirement of Minnesota Statutes 360.066, Subd. 1 a (a) and (d) (1978) that certain prohibited land uses must be

⁵⁰ See Minn. Stat., Chapter 360, Section 360.065.

⁵¹ In this instance, “owning and controlling municipality” is defined consistent with Minnesota Statutes to include a joint airport operating board under certain circumstances (See Minn. Stat., Chap. 360, Subd. 3(d)) and “municipality” is defined consistent with Section 360.061 to include a county that owns or controls a public airport.





acquired, altered, or removed at public expense. (See Model Ordinance, Section 9-3(b), “Exemptions.”)

In the event that a prohibited land use exists in an Established Residential Neighborhood, the owning or controlling municipality shall so notify the airport owner at least sixty (60) days prior to the first hearing on adoption of the ordinance. The airport owner shall then consider the alternatives of closing a runway, runway realignment or relocation, runway extension or shortening and displaced thresholds, and shall then promptly notify the local zoning authority in writing, if it proposes to take any of such alternative actions.

4. **Give mailed notice of 1st public hearing.** The municipality shall give mailed notice of the first public adoption hearing as follows:

- At least 15 days before the hearing to any persons in municipalities who own land proposed to be included in Safety Zones A and B, or in an identified Established Residential Neighborhood (See **Form Nos. 6, 7, and 8**) and
- To the governing body of each political subdivision whose territory is affected by the area to be zoned, (See **Form 9**), and
- At least 15 days before the hearing, to persons or municipalities that previously requested such notice from the authority. (Send interested parties a copy of the published notice).

For the purpose of giving mailed notice, the municipality may use appropriate records to determine the names and addresses of owners. The failure to give mailed notice to individual property owners or defects in the notice shall not invalidate the proceedings, provided a bona fide attempt to comply with this subdivision has been made.

A copy of the notice and a list of the owners and addresses to which the notice was sent shall be attested to in an affidavit by the responsible person and shall be made a part of the records of the proceedings. See **Form Nos. 10 and 14**.

5. **Advertise 1st public hearing.** The notice of hearing shall be published at least **three** times during the period between 15 days and 5 days before the hearing in:

- An official newspaper, and
- A second newspaper designated by the municipality that has a wide general circulation in the area affected by the proposed regulations.

The notice shall not be published in the legal section of a newspaper. (See **Form No. 11**.)



6. **Adoption resolution.** After the hearing, the municipality will pass one of the following resolutions:
 - If no changes are necessary, a resolution is passed stating that a public hearing was held, that no changes are necessary, and that this proposed ordinance will be submitted to the Minnesota Department of Transportation, Office of Aeronautics, for approval. See **Form No. 12.**
 - If changes are desired, the proposed ordinance is amended and a resolution is passed declaring the amended ordinance to be the newly proposed ordinance, and that this proposed ordinance will be submitted to the Minnesota Department of Transportation, Office of Aeronautics, for approval. See **Form No. 12.**
7. **Submit Ordinance to Mn/DOT—Commissioner’s Order.** The municipality shall submit the ordinance to the Minnesota Department of Transportation, Office of Aeronautics, for approval.
 - Upon review for approval, the Commissioner will determine whether the proposal conforms to the minimum standards. If no objections are made, the proposed ordinance is issued a “Commissioner's Order of Approval.”
 - If the Commissioner objects on the grounds that such regulations do not conform to the minimum standards, the municipality shall make such amendments as are necessary to meet such objections.
8. **Notice 2nd public hearing and hold hearing.** Repeat steps 3, 4, and 5, and hold the second public hearing.
9. **Resubmit ordinance to Mn/DOT** (only if ordinance is amended). Resubmit ordinance proposal to the Minnesota Department of Transportation, Office of Aeronautics if, at the public hearing, it was decided to amend the proposed ordinance.
 - Repeat steps 6 and 7 above, as necessary.
 - If the changes were not substantial, a new Commissioner's Order need not be issued.
 - If substantial changes have been made, then final adoption shall not take place until after final approval by the Commissioner according to Minnesota Statutes 360.065, subdivision 2.
10. **Adopt ordinance.** Upon completion of Steps 7 through 9, adopt ordinance. See **Form No. 13.**
11. **Record adopted ordinance.** The adopted ordinance must be filed with the County Recorder in each county in which an airspace or safety zoned area is located.



12. **Submit adopted ordinance and required documents to Mn/DOT.** Submit documents to the Minnesota Department

ADOPTION OF AIRPORT ZONING ORDINANCE – LIST OF DOCUMENTS TO BE SUBMITTED TO MN/DOT

Following documents to the Minnesota Department of Transportation, Office of Aeronautics, as soon as they are drafted:

from the airport owner to the county(s), township(s), and/or city(s) requesting the establishment of a joint airport zoning board. **Form No. 2.**

and resolutions of the airport owner, the county(s), township(s), and/or city(s) establishing the joint airport zoning board. **Form Nos. 1, 3, and 4.**

of the proposed ordinance and map prior to presentation at public hearing.
TWO NOTICED PUBLIC HEARINGS MUST BE HELD.

and resolution of the zoning board for each hearing held, declaring a proposed ordinance and designating a time and place for a public hearing. **Form No. 5.**

of publication from TWO newspapers of the notice of public hearing for each hearing held.

of that mailed notice was given for each hearing held. **Form No. 10,** and additional “notice” documents. **Form Nos. 6, 7, 8, 9, and 14.**

minutes of each public hearing.

and zoning board resolution as to a proposed zoning ordinance to be submitted for the Commissioner's Order of Approval. **Form No. 12.**

and zoning board resolution adopting the proposed ordinance. **Form No. 13.**

certified copies of the adopted ordinance with accompanying map sets.

notification as to the filing of the ordinance with the County Register of Deeds and the recording numbers.

of Transportation, Office of Aeronautics. See “List of Documents to be Submitted to Mn/DOT,” below.



Requests For Modification Of Safety Zones

Prior to adopting airport zoning regulations, Minnesota law requires the municipality, county, or joint airport zoning board to submit the proposed regulations to the Mn/DOT Commissioner for certification. The Commissioner must determine whether the proposed regulations conform to Minnesota law, including the minimum standards stated in Minnesota Rule 8800.2400. If the Commissioner objects to the proposed regulations on the ground that the regulations do not conform with the minimum standards, the municipality, county, or joint zoning board must either amend the regulations to address the Commissioner's objections or demonstrate that "the social and economic costs of restricting land uses in accordance with the standards outweigh the benefits of a strict application of the standards." Minnesota Statutes 360.065, Subd. 2.

This section focuses on the situation where a municipality, county, or joint airport zoning board requests the Commissioner to *modify airport safety zone boundaries* and certify the regulations in compliance on the ground that the "social and economic costs...outweigh the benefits of a strict application of the standards" Because state law is currently based on the fundamental premise that airport zoning regulations should minimize impacts from accidents when (and not if) such accidents occur, such requests must make a reasoned showing that the safety risk to people living and working in the vicinity of an airport will not be unreasonably compromised by such modification. It is generally recognized that the risk to people living and working in the vicinity of an airport ("third party risk") varies with several factors. Guided by the general intent stated in Minnesota Statutes, Chapter 360, and based on an extensive review of third party risk research and literature, Mn/DOT acknowledges the following conclusions about third party risk.

CONCLUSIONS ABOUT THIRD PARTY RISK⁵²

- Most research agrees that Third Party Risk is primarily affected by three factors:
 - Probability of a crash occurring near a specific airport.
 - The probable distribution of crashes with respect to the location.
 - Size of the probable crash area.
- General Aviation flying has more accidents per operation by a factor of approximately eight when compared to Scheduled and Unscheduled Commercial Service Part 121 operations, and a factor of five when compared to Scheduled Commercial Service Part 135 operations.

⁵² A more detailed analysis and summary of available third party risk research and literature may be found in Appendix 7 to this Manual.



- Accidents by aircraft on approach are tightly concentrated along the extended runway centerline.
- Accidents by departing aircraft are more spread out than for arriving aircraft. The shape is a fan starting at the liftoff point on the runway.
- Arrival accidents exceed departure accidents by almost 3:1.
- Population density is a major factor in estimating a crash consequence. A pilot who has some control capability of a small aircraft can usually avoid human habitations in low density developments. As population density or aircraft size increases, the destruction of property and possible loss of life on the ground becomes a greater risk. High density development greatly increases the risk for a catastrophic accident involving people on the ground.
- Occupants in developments such as hospitals, schools, and sports stadiums are more vulnerable in an accident because of mobility problems and probable panic.
- Europeans primarily use “Individual Risk Contours” to analytically display Third Party Risk. They express risk in exposure per year if a person were in a location 24 hours per day, 365 days a year. The desired level of risk exposure for a new development proposal is a risk of death in 10,000 years from an aircraft accident. Individual Risk Contours generally resemble elongated isosceles triangles centered on the extended runway centerline with the base at the runway end. This shape is almost a mirror of the approach shape used to protect aircraft in flight.
- The public is less accepting of a catastrophic event than a larger number of events affecting one person each. Individual risk is not a complete picture of public acceptance.

EVIDENCE REQUIRED IN SUPPORT OF AIRPORT SAFETY ZONE MODIFICATIONS

It is important to note that the above third party risk conclusions were closely considered during revisions to Mn/DOT’s model airport zoning ordinance. In particular, these third party risk elements are reflected in the revised compatible land use standards in the 2006 model ordinance. Thus, the Commissioner’s starting point for reviewing a request to modify airport safety zone boundaries should be determining how significantly different the modified regulations are from the 2006 model zoning ordinance.

In addition, to demonstrate that the benefits associated with strict compliance with the State’s minimum safety zone requirements are outweighed by the social or economic costs of strict compliance, the municipality or joint zoning board should present, at a minimum, the following evidence to the Commissioner:



- Historical and forecast operational data by type and runway end.
- Accident data about the airport.
- Airport Design Aircraft information to include weight and approach category.
- Development plan information including:
 - Population density.
 - Mobility of proposed occupants.
 - Occupancy time estimates.
 - Information necessary for aviation safety determinations like height, electronic or visual hazards to aircraft, bird attractants, etc.

CONSIDERATIONS FOR DETERMINING MODIFICATION REQUESTS

When considering airport safety zone regulations not in conformance with the model zoning ordinance or other minimum state standards or regulations, the Commissioner should consider, at a minimum, the following seven factors. Tables 6-2 through 6-8 below (excerpted from Appendix 7 of this manual) show ranges for the seven factors. **These factors are not equally weighted and should not be added or multiplied for “scores.”** The tables are designed to show the relative range of third party safety risk for each factor in the context of a specific request for airport safety zone modification. The factors are:

- Number of Aircraft Operations
- Type of Aircraft Operations
- Development Location
- Aircraft Size and Speed
- Development Density
- Occupant Mobility
- Occupancy Time

Again, all of the above risk factors have generally been taken into account in drafting the compatible land use standards, and in particular the detailed summary use table, in the 2006 model zoning ordinance.

**TABLE 6-2: AIRCRAFT OPERATIONS FACTOR**

Aircraft Operations per Runway End	Factor
More than 90,000 per year	10
80,001 to 90,000	9
70,001 to 80,000	8
60,001 to 70,000	7
50,001 to 60,000	6
40,001 to 50,000	5
30,001 to 40,000	4
20,001 to 30,000	3
10,001 to 20,000	2
1 to 10,000	1

A factor of 1 is the least risk and a factor of 10 is the greatest risk.

TABLE 6-3: AIRCRAFT SIZE AND SPEED FACTOR

Design Aircraft Weight	Weight Factor	Design Aircraft Approach Category	Speed Factor
120,001 lb. and greater	20	D	4
60,001 to 120,000 lb.	10	C	3
12,501 to 60,000 lb.	5	B	2
Less than or equal to 12,500 lb.	1	A	1

To obtain the relative aircraft size and speed factor, multiply the Weight Factor times the Speed Factor. A factor of 1 is the least risk and a factor of 80 is the greatest risk.

TABLE 6-4: TYPE OF OPERATION FACTOR

Type of Operations	Factor
General Aviation	8
Part 135 Scheduled	2
Part 121 Scheduled and Nonscheduled	1

A factor of 1 is the least risk and a factor of 8 is the greatest risk.



TABLE 6-5: DEVELOPMENT LOCATION FACTOR			
Distance from Runway End	Longitudinal Factor	Distance from Runway Centerline Extended	Transverse Factor
Equal to or less than RWY Length	4	500' or less	4
1.01 to 1.5 times the RWY Length	3	501' to 1000'	3
1.51 to 2.0 times RWY Length	2	1001' to 2000'	2
Greater than twice the RWY length	1	Greater than 2000'	1

To obtain the relative weight of a proposed development's location, multiply the Longitudinal Factor times the Transverse Factor. A factor of 1 is the least risk and a factor of 16 is the greatest risk.

TABLE 6-6: DEVELOPMENT DENSITY FACTOR	
Density of the Development	Factor
High Rise Developments	40
Greater than 100 persons per acre	20
51-100 persons per acre	15
21-50 persons per acre	8
5-20 person per acre	3
Less than five persons per acre	1

A factor of 1 is the least risk and a factor of 40 is the greatest risk.

TABLE 6-7: DEVELOPMENT MOBILITY* FACTOR	
Type of Development	Factor
Hospitals	10
Schools, Churches, Sport Stadiums	5
General Public, i.e. shoppers, tourists, etc.	2
Working Population	1

* Mobility includes familiarity with the facility, confined space, age and physical impairment

A factor of 1 is the least risk and a factor of 10 is the greatest risk.

**TABLE 6-8: DEVELOPMENT OCCUPANCY FACTOR**

Type of Development	Factor
Residential, Hospitals, Hotels	12
Retail, Leisure	6
Warehouses	6
Offices	4
Schools	3
Churches, Sports Stadiums	1

A factor of one is the least risk and a factor of 12 is the greatest risk.

After considering all the evidence, and using the above tables as a tool in weighing the risk of modifying the airport safety zone regulations, the Commissioner will make a determination whether to allow the modification based on a specific finding that “the social and economic costs of restricting land uses in accordance with the standards outweigh the benefits of a strict application of the standards.” Minnesota Statutes 360.065, Subd. 2.

Permitting Process

Chapter 360 of the Minnesota Statutes authorizes airport zoning regulations to require a development permit prior to the construction or establishment of a new structure or use, or prior to a substantial change, alteration, or repair to an existing use or structure, in any of the three safety zones. Minnesota Statutes, Section 360.067, Subd. 1(a). The same law requires airport zoning regulations to require a development permit before a nonconforming structure or tree may be replaced, substantially altered or repaired, rebuilt, or allowed to grow higher or replanted. The following steps are the minimum procedural requirements for an airport zoning development permit.

1. **Submit permit application to Zoning Administrator.** Applicants for a development permit shall submit an application, including all documents required by the applicable airport zoning regulations, to the Zoning Administrator authorized to administer and enforce the regulations.
2. **Zoning Administrator review and final decision.** The Zoning Administrator shall review the permit application and make a final decision, based on the application’s compliance with the airport zoning regulations.
 - o Minnesota law prohibits the Zoning Administrator from approving a development permit if the permit would allow the establishment or creation of an airport hazard, or would allow a nonconforming structure, tree, or use to be made or become higher or become a greater hazard to air navigation than it was when the applicable regulation was adopted or when the permit application was



submitted. Minnesota Statutes, Section 360-067, Subd. 1(a).

- Minnesota law prohibits the Zoning Administrator from approving a development permit to reestablish an abandoned nonconforming use or structure, or to rebuild a nonconforming use or structure that has been more than 80 percent torn down, deteriorated, or decayed, if the structure or tree will exceed the applicable height limit or otherwise deviate from the applicable airport zoning regulations.
- **BP Optional Best Practice Step:** The Zoning Administrator may refer a development permit application to Mn/DOT for the Department’s review and comment prior to the Administrator’s final decision. Mn/DOT staff should use best efforts to complete its review and transmit its recommendation to the Zoning Administrator in a timely manner, and in no instance more than twenty-one (21) days after receipt of the permit application for review.

3. **Appeal to the Board of Adjustment.**

An applicant, other aggrieved party, or affected taxpayer may appeal the Zoning Administrator’s final decision on a development permit application to the Board of Adjustment (“BOA”) authorized to hear and decide appeals related to the airport zoning regulations. Minnesota Statutes, Section 360-068.

- **Appellant must file notice of appeal within a reasonable time.** The appealing party must file a notice of appeal with the Zoning Administrator and with the Board of Adjustment within a reasonable time after the final permit decision and no later than the time specified in the applicable airport zoning regulations. The Zoning Administrator must then forward the record of the permit proceedings to the Board of Adjustment.
- **Stay of proceedings.** An appeal timely filed shall stay all proceedings in furtherance of the action appealed from, unless the Zoning Administrator certifies to the Board of Adjustment that a stay would, in the





Administrator’s opinion, cause imminent peril to life or property.

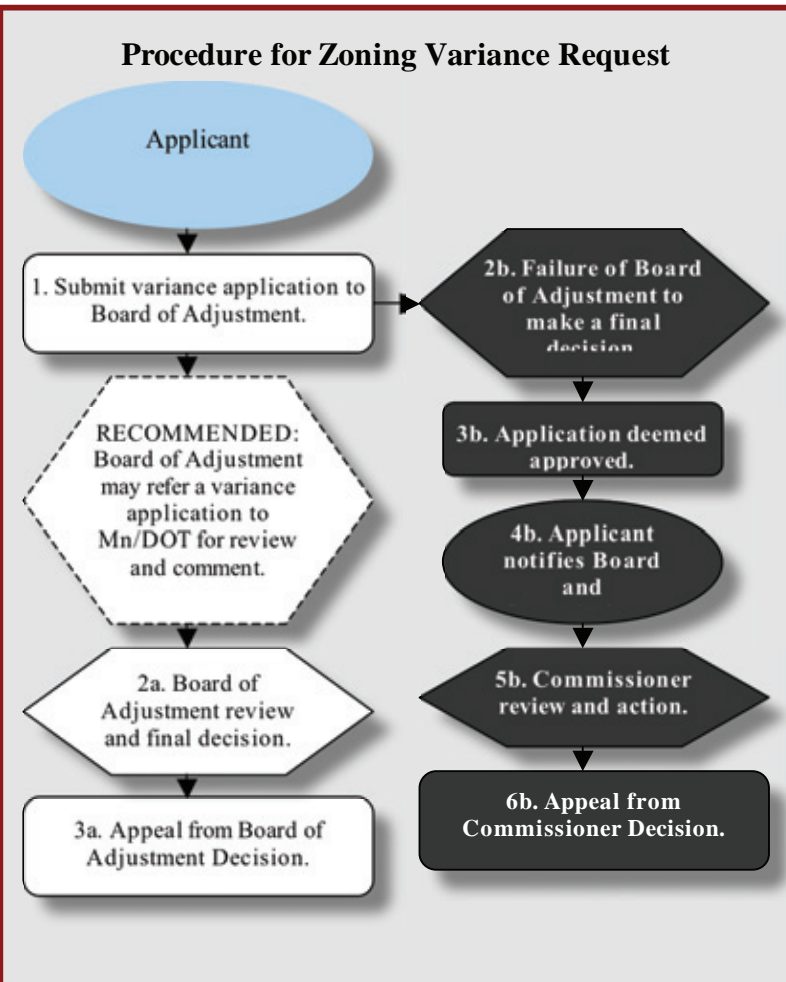
- **Notice of BOA hearing and public hearing.** The Board of Adjustment shall provide public notice of a hearing on the appeal. The hearing shall be held, and a decision on an appeal made, within a reasonable time and no later than the time specified in the applicable airport zoning regulations.
- **Decision and order.** The Board of Adjustment shall make a decision to grant or deny the appeal, in whole or in part, based on the appealing party’s compliance with the applicable airport zoning regulations.
- **Appeal from the Board of Adjustment’s decision.** Any person aggrieved, or taxpayer affected, by the Board of Adjustment’s decision may appeal in accordance with Minnesota Statutes, Chapter 14., Administrative Procedure.

Procedures For Zoning Variance Requests

Chapter 360 of the Minnesota Statutes authorizes any person desiring to erect any structure, or increase the height of any structure, or permit the growth of any tree, or otherwise use the person’s property in violation of airport zoning regulations to apply to the Board of Adjustment for a variance from the zoning regulations in question. Minn. Stat., Section 360.067, Subd. 2. The following summarizes the

minimum procedural requirements for variance applications.

1. **Submit variance application to Board of Adjustment.**
Applicants must transmit their variance application **BY CERTIFIED MAIL** to the Board of Adjustment





, including all required documents.

2. **Board of Adjustment review and final decision.** The Board of Adjustment shall review the variance application and make a final decision. The Board of Adjustment may approve a variance only if it finds:
 - A literal application or enforcement of the regulations would result in practical difficulty or unnecessary hardship; and
 - The relief granted would not be contrary to the public interest but do substantial justice and be in accordance with the spirit of the airport zoning regulations and Minnesota Statutes, Chapter 360.

BP Optional Best Practice Step: The Board of Adjustment may refer a variance request to Mn/DOT for the Department’s review and comment prior to the Board’s final decision. Mn/DOT staff should use best efforts to complete its review and transmit its recommendation to the Board of Adjustment in a timely manner, and in no instance more than twenty-one (21) days after receipt of the permit application for review.

The Board of Adjustment may allow a variance subject to any reasonable conditions that the Board deems necessary to effectuate the purposes of the applicable airport zoning regulations and Minnesota Statutes, Chapter 360.

3. **Failure of Board of Adjustment to make a final decision.** If the Board of Adjustment fails to grant or deny the variance within four (4) months⁵³ after the last Board of Adjustment member receives the application, the variance shall be deemed to be granted by the Board.
 - When the variance is granted by reason of the failure of the Board of Adjustment to act on the variance, the person receiving the variance must notify the Board of Adjustment and the Commissioner by certified mail that the variance has been granted. The applicant shall include a copy of the original variance application with the notice to the Commissioner.

⁵³ Minnesota Statutes, Section 360.067, Subd. 2, allows the Board of Adjustment to take up to four (4) months to make a final decision on a variance application. However, since Section 360.067, Subd. 2, was drafted, a new state law became effective. Known as the “Sixty-Day Rule,” Minnesota requires all state and local decision-making agencies to take action on a “zoning application” within 60 days of receipt of a complete application. Minnesota Statutes Sec. 15.99. If the agency fails to comply with the 60-day rule, the zoning application is deemed approved. It is unclear whether Section 15.99 applies to airport zoning permit or variance applications, and the question has not yet been adjudicated. Accordingly, Mn/DOT continues to assert that the airport zoning procedures under Chapter 360 are distinct from and different than the types of zoning applications that trigger the Sixty-Day Rule in Section 15.99. Municipalities are urged to check with their own legal counsel prior to adopting the model ordinance language.



- The variance shall be effective 60 days after the Commissioner receives the notice, subject to any action taken by the Commissioner pursuant to Minnesota Statutes, Section 360.063, Subd. 6a.
 - The Commissioner must review the application, and may amend or rescind the variance on finding that the action is required to protect the public interest.
 - If the Commissioner takes action to amend or rescind the variance, the Commissioner must notify the applicant within 60 days after receiving the notice that the variance was granted.
4. **Appeal from Board of Adjustment or Commissioner Decision.** Any person aggrieved, taxpayer affected, or municipality aggrieved by the Board of Adjustment's decision on the variance application, or the Commissioner's action on a "deemed approved" variance application, may appeal according to Minnesota Statutes, Chapter 14, Administrative Procedure.



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minnesota model airport zoning ordinance



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procedural forms



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