



CHAPTER 4: PREVENTIVE AND CORRECTIVE STRATEGIES FOR AIRPORT LAND USE COMPATIBILITY



*Introduction*²⁷

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

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.



like local zoning regulations and land purchase. In each category, where applicable, a 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.



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

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.



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.

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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.

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

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.



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, 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 protection zones, are intended to spur compatible development of on-airport property and in the immediate airport vicinity. They are typically base zoning districts³³ 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

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 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.



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 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.

Variances

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 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:

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- 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

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

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



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.

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

³⁶ Minn. Statutes, section 360.365, subd. 3. The disclosure requirement is **not** required for



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).

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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.

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

sellers of real property located in a safety zone associated with an airport owned or operated by the Metropolitan Airports Commission (MAC).



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

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



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.

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).

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.

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.

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:

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- 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

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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>	<p>Not immediately effective when wildlife hazards already exist on or near the airport.</p>	<p>When deer or bird strikes are a likely threat to aircraft and passengers.</p>
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>	<p>When the airport owner is different from the county or municipality that controls lands in airport safety zones and the greater airport vicinity.</p>



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>	May meet with resistance from existing property owners seeking to sell their properties unencumbered.	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.
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>



TABLE 4-2: SUMMARY OF PREVENTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
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>Permanent agreements must be consistently enforced</p> <p>Easements do not 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 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 what was a legal use. Indeed, the Minnesota legislature banned the use of zoning amortization by counties and municipalities in 1999 (See Minnesota Revised

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.



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).



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

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.

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.



TABLE 4-3: SUMMARY OF CORRECTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
TRANSFER OF DENSITY /LAND SWAPS	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.
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>



TABLE 4-3: SUMMARY OF CORRECTIVE STRATEGIES

Strategy	Description	Considerations		When to Use
		Pros	Cons	
Change in Operational Procedures				
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.