Section 5:
Airport Impact Element

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5.1 Introduction

Minneapolis-St. Paul International Airport

The close proximity of Minneapolis-St. Paul International Airport (MSP) creates a mix of positive and negative impacts on Bloomington. Airport-related service facilities such as hotels are a major portion of Bloomington's economy. Proximity to the airport is also a major incentive for other businesses to locate in Bloomington and an important component in the success of existing land uses such as the Mall of America. With over 25,000 employees, the airport itself is one of the region's largest employers. Many of these employees call Bloomington home.

Unfortunately, the proximity of the airport brings with it significant noise that creates nuisance impacts on existing land uses and limits future land use. The airport also limits development in parts of Bloomington through runway-related safety zones and height limits. Runway safety zones for the planned north/south runway (35/17) will require removal of several existing buildings and will limit development on some of the city's most prime real estate near the Mall of America.

Reliever Airports

While MSP has been designed primarily for regularly scheduled commercial flights, there are ten other airports in the metropolitan airport system designed to serve personal and business general aviation needs and to "relieve" MSP of general aviation traffic. The closest reliever airport is Flying Cloud in Eden Prairie. Along with Airlake Airport in Lakeville, Flying Cloud serves the travel needs of Bloomington businesses and residents that cannot be met by scheduled airline service. Although air traffic departing and arriving at Flying Cloud frequently passes over Bloomington, the associated noise impacts on Bloomington are minimal.

All things considered, having these airports as neighbors is a net positive for the City of Bloomington. The City supports retaining MSP as the region's one major passenger and cargo airport and supports continued improvements for general aviation needs at the Flying Cloud Airport. At the same time, the City will work actively to reduce and contain the adverse impacts of these airports on Bloomington.

Changes at MSP

Within the next twenty years, several changes are anticipated at MSP which will have an impact on Bloomington, including:

- A potential revised runway use system (RUS) which would increase the number of takeoffs and landings (and aircraft noise) over Bloomington on the crosswind runway (4/22) until the planned north/south runway is operable.
- The opening of a new north/south runway which would limit development in the Airport South District through runway safety zones and structure height restrictions and increase aircraft noise levels east of Highway 77 while lowering noise levels west of Highway 77. The north/south runway will reduce the number of flights using runway 4/22.
- A possible fixed path transit connection between downtown Minneapolis, the airport, Airport South District, and Dakota County.
- After 2010, the potential relocation of the main terminal to the northwest corner of the airport could increase travel time between the terminal and the Airport South District.
- The continued growth of air traffic levels at MSP and corresponding noise level increases. The Metropolitan Airports Commission forecasts 640,000 takeoffs and landings by 2020, up from 485,000 in 1997.
- The evolution of commercial aircraft fleets to quieter, Stage III aircraft by the year 2000.

5.2 Development Impacts

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The proximity of the airport creates significant impacts on development within Bloomington, most notably in the Airport South District, through spin-off development, runway safety zones, and structure height limits.

Spin-Off Development

Airport-related service facilities, including hotels, private parking lots, car rental agencies, and others, are a major portion of Bloomington's economy. The majority of these service facilities are located in Bloomington due to the close proximity of the airport. Bloomington also has a competitive advantage in attracting and retaining land uses that benefit from being close to a major hub airport, such as Fortune 500 companies whose executives are constantly traveling or a tourist-oriented destination such as the Mall of America.

The primary benefit of having a major airport as a neighbor is the economic development opportunities that it generates. Relocation of the airport would have a major detrimental impact on the economic well being of Bloomington.

Safety

Public safety and flight operation safety are overriding considerations in achieving compatibility between the airport and its surroundings. To protect the safety of the flying public and those on the ground, the federal and state government have instituted a variety of safety controls which include limits on development intensity and height near the end of runways.

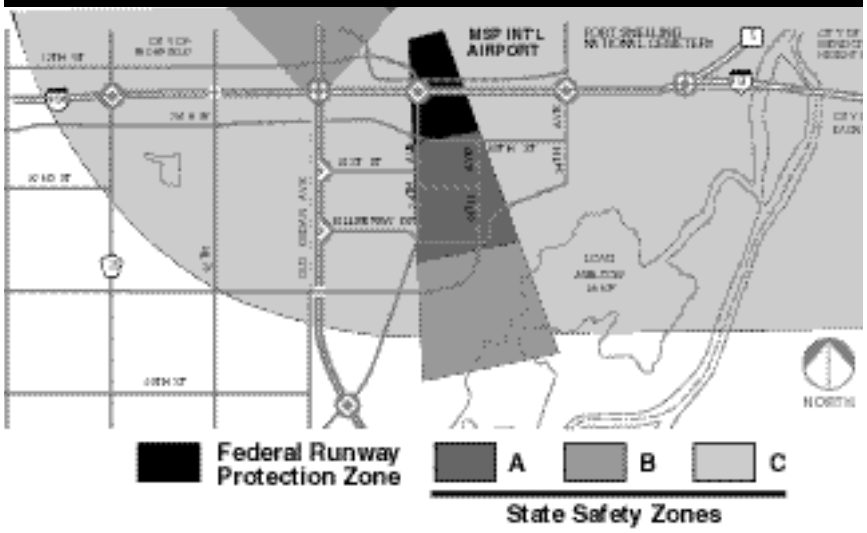
Federal Runway Protection Zones

The Federal Aviation Administration requires the area immediately surrounding the end of a runway to be kept clear of buildings and possible obstructions. As depicted in *Figure 5.1*, the planned north/south runway's protection zone will extend into Bloomington's Airport South District and require the removal of several existing buildings and an electric substation. Acquisition of the required properties will be completed by the Metropolitan Airports Commission with federal funds.

State Runway Safety Zones

The Minnesota Department of Transportation has established runway Safety Zones A, B, and C which extend beyond the limits of the federal runway protection zones. Land uses, development density, occupancy density, and site coverage are regulated within Safety Zones A and B. In Safety Zone C, activities which would interfere with airport communications or with a pilot's view of the airport are regulated. The City and MAC are in the process of defining how new development in Safety Zones A and B should be regulated.

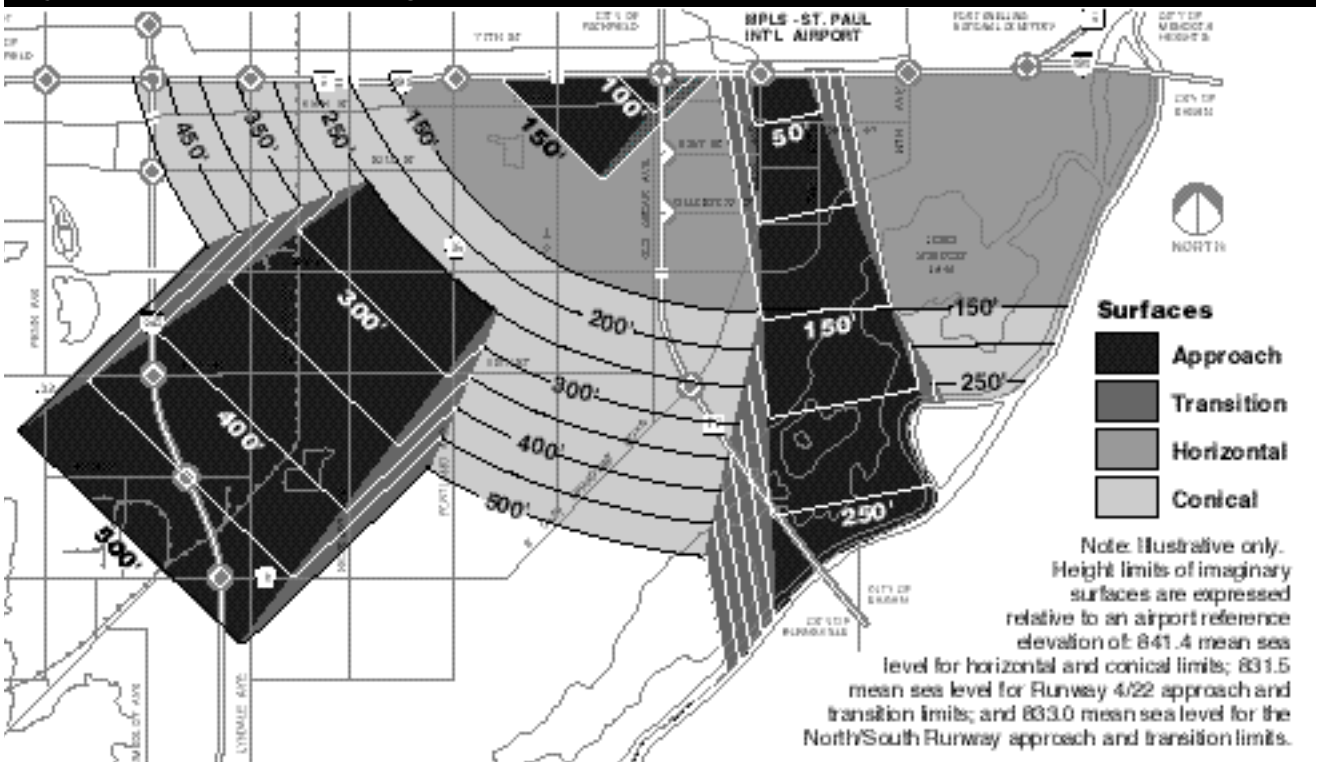
Figure 5.1 **Federal and State Airport Runway Safety Zones**



Height Limits

The Federal Aviation Administration has also adopted height restrictions for structures, trees, and other objects in the vicinity of the runways. As depicted in *Figure 5.2*, the regulations establish a number of imaginary surfaces constructed from the ends of runways. Any object piercing these imaginary surfaces is considered an obstruction to navigable airspace. In certain cases, the Federal Aviation Administration grants exceptions for structures to be constructed above the horizontal or conical surfaces, provided the structure has appropriate marking lights and that the Federal Aviation Administration finds that safe operation of the airport will not be impeded.

Figure 5.2 **FAA Structure Height Restrictions**



5.3 Noise Impacts

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Noise is the most widespread environmental impact associated with the airport and perhaps the most difficult airport-related problem to mitigate. While all of Bloomington is exposed to noise from overhead aircraft, noise levels are most intense in portions of eastern Bloomington that lie near the airport and under the designated flightpaths. In these areas, aircraft noise exceeds that of a mere annoyance and can represent a significant nuisance.

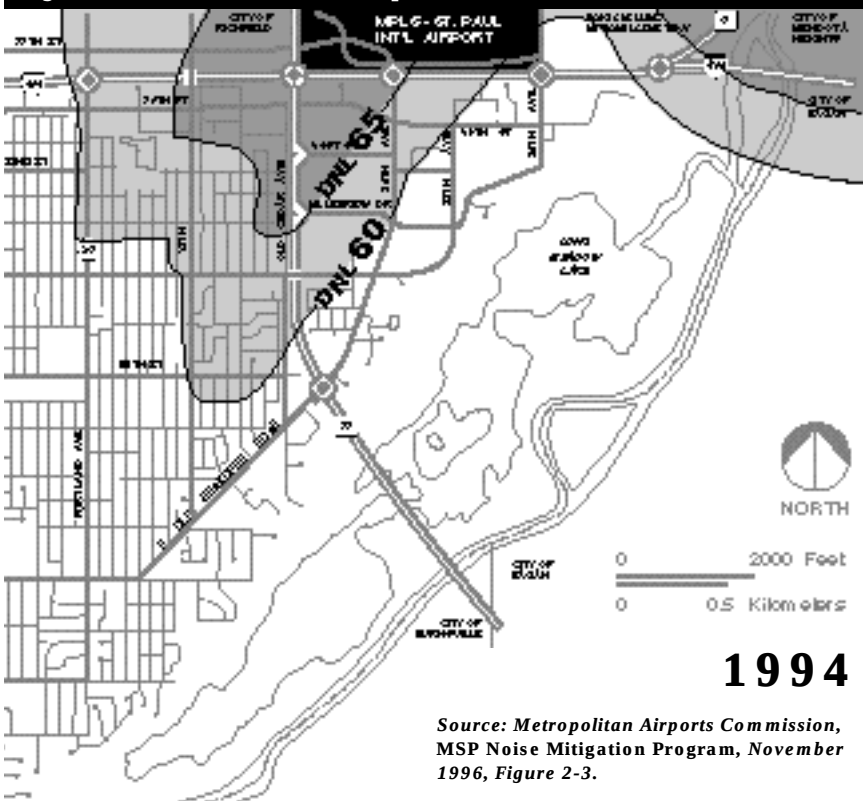
The primary noise generator in an aircraft is its engine, whether jet or propeller. In Bloomington, the noise created by overflying jet aircraft causes the bulk of noise impacts. Jet engine noise is generated by both the mixing of hot exhaust gases with the cooler ambient air and the fan noise produced by rotating blades in the engine. New technology allows for a reduction in the fan noise component, but it will take time for older aircraft to be phased out of service and replaced by newer, quieter aircraft.

The federal government classifies aircraft based upon the noise they generate. For example, aircraft classified as "Stage II" generate more noise than aircraft classified as "Stage III". In 1994, a federal law was enacted that requires subsonic turbojet aircraft over 75,000 pounds to meet Stage III noise requirements by the end of 1999.

Noise is typically measured according to its loudness using the logarithmic decibel (dB) scale. To more closely measure sound within frequency ranges to which humans are most sensitive, an A-weighted decibel (dBA) scale is often used in aircraft and environmental noise analysis. Federal agencies use "Day-Night Levels" (DNL or Ldn) as an expression of average noise levels over one year's time. DNL is a logarithmic average of sound levels in dBA that assigns a penalty to nighttime (10 p.m. to 7 a.m.) noise to reflect increased human sensitivity to noise during those hours.

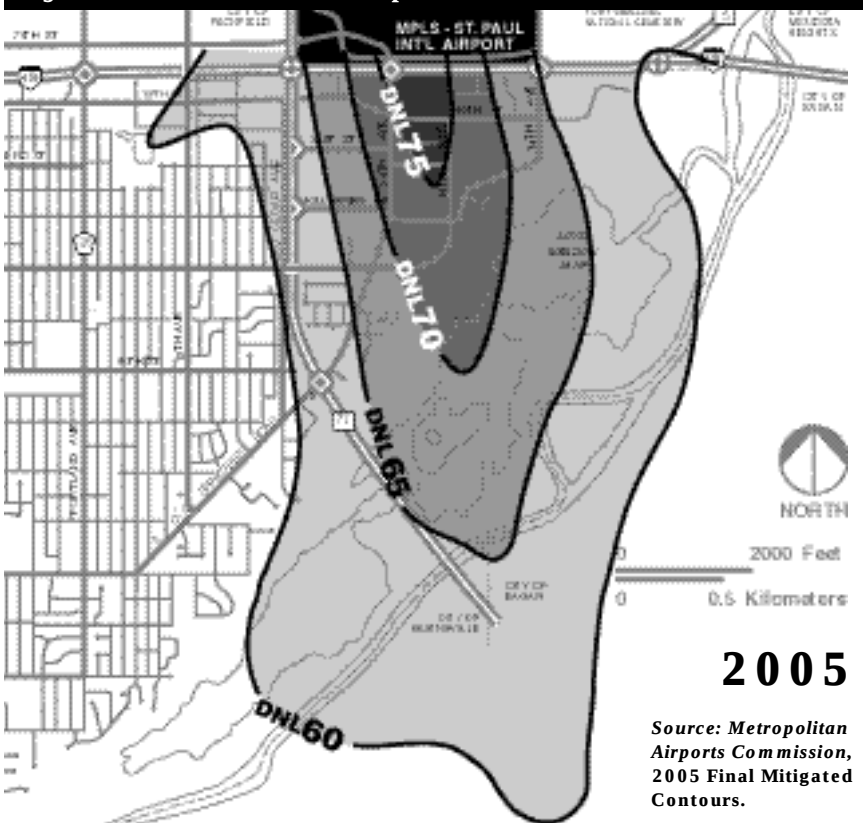
Aircraft noise impacts are based on variables such as the number and proximity of overflights and the type of aircraft being used. Using a computer to analyze forecasted changes in the variables, future noise levels on the ground

Figure 5.3 **Aircraft Noise Exposure 1994**



Source: Metropolitan Airports Commission,* MSP Noise Mitigation Program, *November 1996, Figure 2-3.

Figure 5.4 **Aircraft Noise Exposure 2005**



***Source: Metropolitan Airports Commission,* 2005 Final Mitigated Contours.**

can be modeled. *Figures 5.3 and 5.4* depict 1994 and projected 2005 noise levels in Bloomington in DNL units. The changes in Bloomington's noise exposure levels between 1994 and 2005 primarily reflect the redistribution of air traffic after the completion of the north/south runway in 2003; although, to a lesser extent, the changes are also attributable to increased overall air traffic levels, quieter aircraft, and revised flight paths.

As is demonstrated with the 1994 and 2005 noise contour maps, the addition of a new north/south runway will dramatically impact aircraft noise exposure levels in Bloomington. As air traffic using runway 4/22 decreases and air traffic begins using the new north/south runway, noise levels east of Highway 77 will increase and noise levels west of Highway 77 will generally fall. *Figures 5.5 and 5.6* depict the use of MSP runways in both 1994 and 2005 by showing the percentage of all incoming and outgoing flights using each of the runways. In 1994, 3 percent of outgoing flights and 2 percent of incoming flights flew over Bloomington through use of the 4/22 runway. Between 1994 and 2005, use of the 4/22 runway is anticipated to drop dramatically but the new north/south runway will begin handling 37 percent of all outgoing flights and 17 percent of all incoming flights, according to Metropolitan Airports Commission data in the *MSP Noise Mitigation Program* (November 1996).

In the short term, aircraft noise levels in Bloomington may also be impacted by a proposed revision to the runway use system (RUS) that would route additional air traffic onto runway 4/22 and over Bloomington. If implemented, the

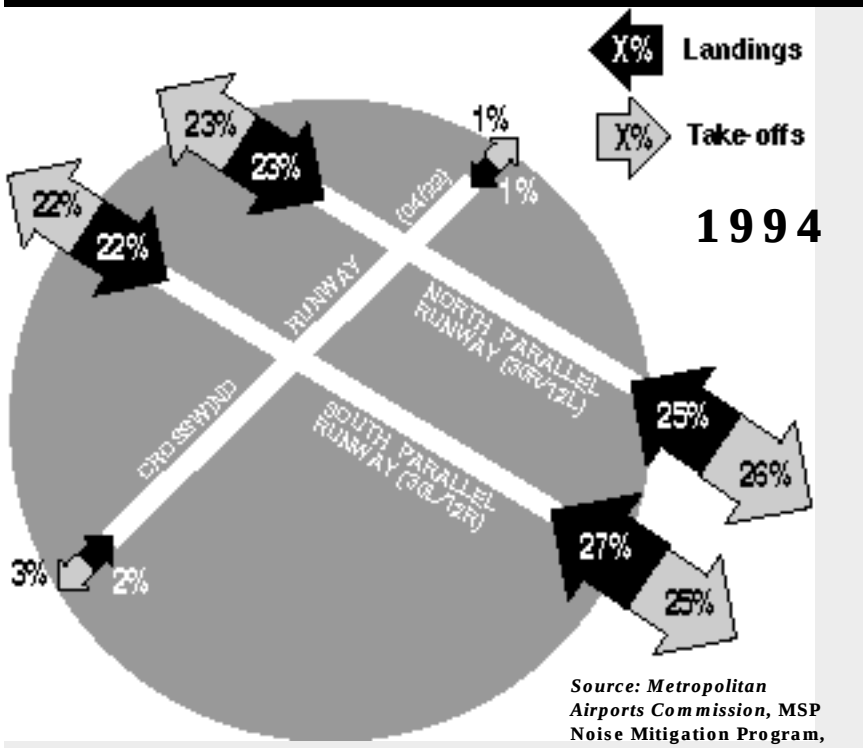
proposed redistribution of takeoffs and landings would increase aircraft noise levels in Bloomington while decreasing levels under the parallel runway flightpaths. The mitigation required if MAC were to implement the 4/22 RUS is described in the 1995 Record of Decision and includes acquisition of 75 single family homes in Bloomington and noise insulation of 1,047 single and 2,175 multi-family homes in Richfield and Bloomington. The 4/22 RUS may not be implemented however due to the very high cost of mitigating the associated impacts and the fact that the shifting of operations to the north/south runway will accomplish even greater noise relief by 2003 for areas under the parallel runway flightpaths.

Noise Compatibility of Impacted Land Uses

Certain land uses are more tolerant of aircraft noise than others. Residential uses and hotels are considered the least tolerant of aircraft noise, followed by schools and churches. Industrial and agricultural uses are considered the most tolerant. *Table 5.1* compares the number of existing Bloomington dwelling units exposed to various aircraft noise thresholds both before and after the construction of the north/south runway. Although the number of flights passing over Bloomington will greatly increase, the overall number of dwelling units exposed to 60 DNL and above will actually decrease due to the fact that the flights will be passing over a less populated area.

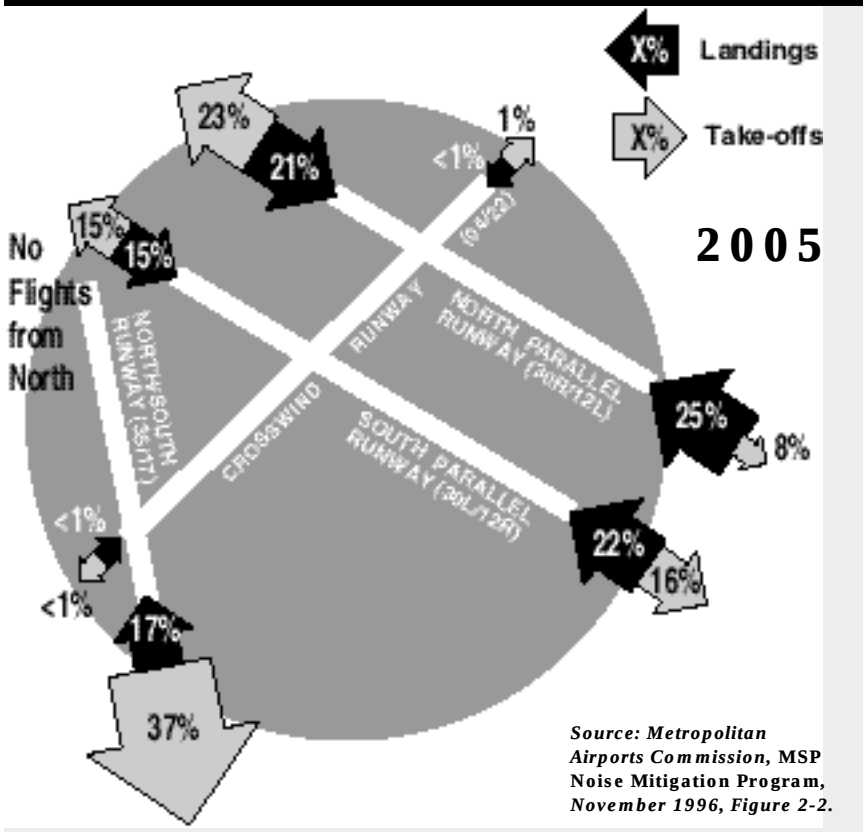
Noise impacts at DNL 75 and above are considered severe. Residential, most public and

***Figure 5.5* MSP Runway Use 1994**



Source: Metropolitan Airports Commission,* MSP Noise Mitigation Program, *November 1996, Figure 2-2.

***Figure 5.6* MSP Runway Use 2005**



Source: Metropolitan Airports Commission,* MSP Noise Mitigation Program, *November 1996, Figure 2-2.

Table 5.1 **Comparison of Bloomington Dwelling Units Exposed to High Levels of Aircraft Noise Before and After Construction of the North/South Runway**

	Units within Exposure Level	
Exposure Level	**1994**	**2005**
75 DNL and above	**0**	**0**
70-75 DNL	**0**	**4***
65-70 DNL	**411**	**383***
60-65 DNL	**2,269**	**1,251**
Total Units Affected	**2,680**	**1,638**

*** Numbers reflect the anticipated MAC removal of 112 units in the 70-75 DNL zone and 49 units in the 65-70 DNL zone.**

***Source: Metropolitan Airports Commission,* MSP Noise Mitigation Program, *November 1996, Figure 2-3 and* 2005 Final Mitigation Contours.**
Unit counts by Bloomington Planning Division.

quasi-public, and hotel uses are incompatible with these noise levels. Other non-industrial land uses are appropriate only when adequately insulated. In Bloomington, most of the existing land uses that will be exposed to noise levels at or above 75 DNL, including three hotels, also fall within the Federal Runway Protection Zone and will be removed in conjunction with the north/south runway.

Noise impacts at DNL 70-75 are sustained and can routinely interfere with speech and sleep. Residential land uses and most public and quasi-public uses are incompatible with these noise levels. Other uses may require insulation depending on the nature of the use. In Bloomington, much of the central Airport South District including the bulk of the vacant Kelley property, a portion of the Met Center site, 24 single and 92 multi-family dwellings are exposed to this level of noise. It is anticipated that 20 single and 92 multi-family dwellings will be purchased and removed by MAC in conjunction with the completion of the north/south runway.

Noise impacts at DNL 65 to DNL 70 are significant. Residential land uses and most public and quasi-public uses are incompatible with these noise levels and other uses may require insulation depending on the nature of the use. In Bloomington, this area includes hotels, a portion of the Mall of America, office and commercial uses, and 432 single and multi-family dwelling units. It is anticipated that 9 single and 40 multi-family dwellings will be removed and the remainder of the dwellings insulated in conjunction with the north/south runway.

Noise impacts at DNL 60 to DNL 65 are considered moderate. There are 1,251 Bloomington dwellings that will be exposed to this level of aircraft noise in 2005. It is anticipated that MAC will insulate all of these dwellings as a mitigation measure for the north/south runway.

Noise Mitigation Techniques

Strategies for minimizing aircraft noise impacts generally involve, 1) reducing noise at the source, 2) reducing interior noise levels through acoustic insulation, or 3) restricting incompatible land uses from high noise areas. Reducing noise at its source is of primary importance because it can reduce or reconfigure the geographic area subject to adverse noise and because it is usually less expensive than insulation or land use measures. Available techniques include requirements for quieter aircraft, setting time limits on flights, distributing takeoffs and landings among the runways to minimize noise impacts, limiting nighttime runups, and routing flights over noise tolerant land uses or sparsely populated areas when possible.

While reducing noise at the source is the most desirable noise mitigation technique, it cannot solve the entire noise problem. Acoustic insulation and land use programs will continue to be necessary to mitigate noise impacts around the airport. Where extreme incompatibilities exist, there may be a need for appropriate agencies to assist in the redevelopment of the incompatible land use or even to purchase the use outright for removal. In the case of less extreme incompatibilities, retrofitted acoustic insulation can greatly reduce interior noise levels. Future incompatibilities can be mitigated through development restrictions that prohibit new noise sensitive land uses in the highest noise areas and building regulations that require appropriate acoustic insulation in areas exposed to airport noise.

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5.4 Transportation Impacts

Generating over 71,000 vehicle trips per day in 1996, MSP is one of the metropolitan area's largest traffic generators. As air traffic increases in the future, vehicle trips will also increase, placing increased burdens on area transportation corridors such as I-494 which are already congested.

MAC also has plans to double the size of parking ramps at the airport which will reduce the need for private airport parking facilities in Bloomington and encourage redevelopment on these sites in the future.

To avoid further congestion and maintain easy airport access for the region, airport area roadway improvements will be necessary as will alternative forms of transportation. Routes are currently being refined and federal funding sought for a fixed path transitway that would link downtown Minneapolis with the airport, Bloomington's Airport South District, and possible points beyond. A heavily used bus line currently links the airport with Bloomington's Airport South District.

5.5 Intergovernmental Relations

Several agencies are involved in airport-related issues. The *Metropolitan Airports Commission* operates the airport and prepares short and long range airport improvement plans. The *Metropolitan Council* reviews airport improvement plans, prepares aviation policy plans, and reviews the aviation elements of local comprehensive plans. The *Minnesota Department of Transportation* also reviews airport improvement plans in addition to licensing airports and promulgating airport-related regulations. The *Minnesota Pollution Control Agency* monitors noise and air quality levels and enforces state noise and air quality standards. The *Federal Aviation Administration* controls all air traffic and reviews airport improvement plans and federally funded airport projects. The *Metropolitan Aircraft Sound Abatement Council* advises the Metropolitan Airports Commission on noise compatibility issues. *Municipalities* surrounding the airport, including Bloomington, control land use and building regulations for airport-related facilities and noise impacted areas. The City of Bloomington feels it is important to use the principle that MAC should pay for any mitigation and local land use action which may result in a property damage claim if the action is taken by the City in order to protect current or future operation of an airport.

Given the airport's large impact on Bloomington, it is essential that the City closely follow the activities of each of these agencies and participate in airport-related activities through advisory boards and committees.

5.6 Goals, Policy Objectives, and Implementation Actions

Airport Impact Goal 1

Support continued airport improvements to preserve MSP as a first class hub airport while capitalizing on its proximity to Bloomington.

Policy Objective 1.1

Support continued use of MSP as the region's one major passenger and cargo airport.

Policy Objective 1.2

Support improvements to keep MSP operating safely and efficiently.

Policy Objective 1.3

Encourage continued improvements at Flying Cloud Airport for general aviation needs and as a method for "relieving" general aviation traffic from MSP.

Policy Objective 1.4

Encourage prompt implementation of the north/south (35/17) runway both as a means for increasing airport capacity and as a reasonable measure for mitigating noise in cities surrounding the airport.

Policy Objective 1.5

Support the use of the extended crosswind (4/22) runway for heavy aircraft or emergency situations where a long runway is needed and to allow two runway operation and adequate runway length while the south parallel (30L/12R) is being reconstructed.

Policy Objective 1.6

Oppose changing the runway use system to simultaneously use the crosswind (4/22) and north parallel (30R/12L) runways to redistribute aircraft flights and noise.

Policy Objective 1.7

Encourage improved and diverse transportation connections between the airport and Bloomington, including roadway improvements, bus service, and fixed path transit systems.

Airport Impact Goal 2

Reduce and contain the airport's adverse impacts on Bloomington.

Policy Objective 2.1

Support aggressive mitigation of aircraft noise impacts to reduce the airport's nuisance effect on residents around the airport.

Implementation Actions

- Support the use of building codes and other local controls to increase the compatibility of new development with MSP.
- The MAC and FAA should accept responsibility for all costs of implementing runway safety zones, enforcing height restrictions, and mitigating noise impacts. Pursue MAC indemnification for damages caused by City actions to preserve safety zones and avoid navigation obstructions.
- Support strategies to reduce aircraft noise at its source as an efficient method of minimizing aircraft noise impacts.

- Encourage the expansion of residential noise insulation programs to the DNL 60 line.
- Advocate the implementation of runway 4/22 noise mitigation by MAC. If the revised runway use system is implemented, mitigation should include acquisition of all residential parcels identified for acquisition in the City's proposal "Acquisition of 75 Residential Properties in Bloomington's Northeast Noisepoint Neighborhood" submitted to the MAC in January of 1994. If the revised runway use system is not implemented, mitigation should include acoustic insulation of those same identified residential parcels.
- Advocate the implementation of north/south runway noise mitigation by MAC at the same time the north/south runway is constructed.
- Encourage appropriate noise mitigation to proceed in conjunction with all future airport-related changes impacting noise levels.
- The City will evaluate redevelopment strategies for residential areas east of Old Cedar Avenue if there is owner interest expressed through a written petition of over half the property owners on any given block. The petition will be reviewed by the Planning Commission, which will make a redevelopment recommendation to the City Council.
- In conjunction with the residential Time-of-Sale Inspection Program, provide information to a buyer on a property's anticipated aircraft noise exposure level in the same manner that information on zoning and flood zone status is currently provided.

Policy Objective 2.2

Implement land use strategies to comply with federal and state runway related development limitations as expressed in the *Minneapolis-St. Paul International Airport Zoning Ordinance*.

Implementation Actions

- Amend the *Zoning Ordinance* to create a new overlay zoning district that reflects the use and development limitations of the *Minneapolis-St. Paul International Airport Zoning Ordinance*.
- Rezone land within Bloomington that falls within Safety Zone A or Safety Zone B in the *Minneapolis-St. Paul International Airport Zoning Ordinance* to achieve consistency with the *Minneapolis-St. Paul International Airport Zoning Ordinance* and to apply the new overlay zoning district.

Policy Objective 2.3

Support road capacity and transit improvements to lower congestion levels on transportation corridors serving the airport.

Policy Objective 2.4

Continue to participate actively in airport-related advisory boards and committees.