

METROPOLITAN AIRPORTS COMMISSION

Minneapolis-Saint Paul International Airport

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March 21, 2005

ACI – NA Environmental Achievement Awards

Airports Council International – North America

1775 K Street, Northwest Suite 500

Washington, DC 20006

To Whom It May Concern,

It is with great enthusiasm that I am submitting the Minneapolis-St. Paul Metropolitan Airports Commission's 14 CFR Part 150 noise reduction accomplishments for consideration as part of the Airport Council's International 2005 Environmental Achievement Awards for Class C & D airports.

I thank you for the opportunity to submit our Part 150 mitigation efforts for consideration in these achievement awards. For additional information on the MSP Part 150 Program, beyond that submitted herein, please visit the MAC Aviation Noise and Satellite Programs Web site at www.macnoise.com.

Sincerely,

Jeffrey W. Hamiel

Executive Director

Minneapolis-St. Paul Metropolitan Airports Commission

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MAC 2005 ACI-NA Environmental Achievement Award Submission Summary

The topic of airport noise impact is a significant issue for urban airports surrounded by development such as the Minneapolis-St. Paul International Airport (MSP). It still remains a fact that community noise concern is one of the largest impediments to airport development around the world.

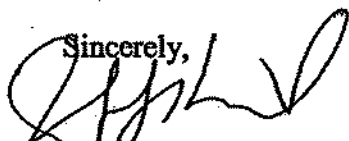
Realizing the importance of noise reduction in the development and operation of a major airport like Minneapolis-St. Paul International (MSP), the Metropolitan Airports Commission (MAC) submitted the airport's first 14 CFR Part 150 document in 1987. Subsequently, in 1992 the MAC began an extensive Residential Sound Insulation Program consistent with the provisions of land use measures in the 1987 Noise Compatibility Program (NCP) and updates to the Part 150 program NCP and Noise Exposure Map (NEM) in 1992. In 2004 final bids were awarded for homes in the 1996 65 Day-Night Average Sound Level (DNL) noise contour, marking the completion of a 12-year mitigation effort that began in 1992 and has resulted in the expenditure of over \$335 million dollars in sound insulation and property acquisition. The development, implementation, evolution and completion of this program represents a significant milestone in noise mitigation at MSP.

Responsible and effective noise reduction planning around our nation's airports is critical to the effective and successful development and operation of major airports. I believe this project and the resultant noise reduction benefits are a testament to such a goal. This effort provided the ability to undertake a \$3.1 billion development project without significant community opposition at MSP.

I have attached a paper for your review outlining the significance of this noise mitigation accomplishment at MSP. I am sure you will find this project meets all of the selection criteria for the 2005 ACI-NA Environmental Achievement Awards.

Thank you for the opportunity to submit this program for your review.

Sincerely,



Jeffrey W. Hamiel

Date: 3-21-05

Executive Director



Metropolitan Airports Commission

14 CFR Part 150 Program

Addressing Airport Noise Impacts at Minneapolis/St.
Paul International Airport (MSP) Through Corrective
Land Use Measures Completed in the 1996 65 DNL
Noise Exposure Map

Chad E. Leque

Metropolitan Airports Commission

Manager - Aviation Noise and Satellite Programs

March 2005

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Background

In 1978 the landscape of the U.S. aviation industry was transformed in a manner that placed new challenges before the nation's airports. The prevailing sentiment in the mid 1970's that the Civil Aeronautics Board (CAB) was inhibiting growth and encouraging inefficient practices fostered desires to remove government control and open the airline industry to market forces. Subsequently, the United States Congress passed the 1978 Airline Deregulation Act. What resulted from the action was an increasingly competitive aviation environment and a flurry of mergers and acquisitions within the airline industry. The average airfare, for example, dropped by more than one-third between 1977 and 1992 (adjusting for inflation).¹ It is estimated that ticket buyers saved as much as \$100 billion on fares alone. Deregulation also allowed the proliferation of smaller airlines that took over the shorter routes that were no longer profitable for the big carriers.² However, more notably for airports, deregulation resulted in the centralization of major airline operations through proliferation of the hub-and-spoke system. For an airport such as Minneapolis/St.Paul International (MSP), which is a hub facility for Northwest Airlines, operations and passengers have grown from 263,461 and 9,357,998 in 1978 to 541,092 and 36,713,173 in 2004, respectively.

Shortly after the Airline Deregulation Act, in 1979, the United States Congress passed the Aviation Safety and Noise Abatement Act (ASNA). In recognition of the challenges facing airports, ASNA directed the Federal Aviation Administration (FAA) to develop procedures for noise and land use compatibility programs at airports. As a result, in January 1985, 14 CFR Part 150 was enacted.

Realizing the challenge of the forthcoming need for increased infrastructure and the emerging importance of noise issues that continued to increase as the operations at MSP increased, the

¹ Asif Siddiqi, *Deregulation and Its Consequences*,
http://www.centennialofflight.gov/essay/Commercial_Aviation/Dereg/Tran8.htm
(January 2005).

² Ibid.

Metropolitan Airports Commission (MAC) submitted its first MSP 14 CFR Part 150 Study to FAA in October 1987. The Noise Exposure Maps (NEM) were accepted by FAA in October 1989, while portions of the Noise Compatibility Program (NCP) were approved in April 1990. The NCP included Corrective Land Use Measures, which called for the soundproofing of residences, schools and other public buildings in the forecast 1992 NEM 65 Day-Night Average Level (DNL) noise contour. In 1992 the MAC began a single family sound insulation pilot program within the 1992 NEM 65 DNL noise contour, marking the beginning of the Part 150 Residential Sound Insulation Program at MSP.

An update of the 1987 study began in 1990. The update determined the degree to which the approved measures in the 1987 study had been implemented, examined ways to improve measures, and incorporated new procedures and trends into the NCP. FAA accepted the revised NEMs in December 1993 and approved portions of the revised NCP in July 1994. The updated NCP Included a Corrective Land Use Measure that stated:

“The program involves modifications to reduce the amount of noise entering such environments from the outside. Priority will be given to the sound insulation of single and multi-family residences and schools. In addition, noise sensitive public buildings other than schools may be included on a case-by-case basis.

Residential program eligibility will be limited to homeowners residing in the previously approved 1992 LDN 65 contour in neighborhoods identified by each individual city. The new 1996 LDN contour contained in this Part 150 Update will be used to determine program eligibility when they are approved by the FAA.”³

Following approval of the 1992 Part 150 Update, the MSP Residential Sound Insulation Program was based on addressing dwellings within the 1996 NEM 65 DNL noise contour. As discussed

³ Metropolitan Airports Commission, *MSP Part 150 Update Document*, (March 1992 (Revised December 1993)), p. 4-8.

later in Chapter Five of this document, in 1996 the insulation of all dwellings within the 1996 65 DNL noise contour became an important element of the future development plans for MSP.

Chapter 1 – Implementation of the MSP Residential Sound Insulation Program

Since 1992, the Residential Sound Insulation Program has been a large and visible part of the Part 150 program at MSP. Through an implementation process predicated on noise reduction commensurate with noise impact levels, the MSP Residential Sound Insulation Program origins were grounded in tangible noise reduction. The initial program framework was built on the use of FAA structural Noise Level Reduction (NLR) documentation to establish product-specific Sound Transmission Class (STC) ratings and associated NLR goals, creative bidding practices and cooperative prioritization and funding efforts. Through innovative approaches to continually enhancing the program as new information and technologies became available, the MSP Residential Sound Insulation Program quickly became a national model.

This chapter provides a history of program implementation focusing on planning, program adjustments, cooperative implementation efforts via the Policy Advisory Committee (PAC), and implementation of the multi-family mitigation program.

1.1 – 1989-1991: Planning

During the drafting of the Part 150 Study Update in the early 1990's, MAC developed a series of "base case" assumptions that represented the initial Residential Sound Insulation Program framework. These assumptions were eventually incorporated into the Residential Sound Insulation Pilot Program during the planning period and included the following primary components:

- NLR goals and insulation modification packages that differed among 1996 DNL contour areas:

- A NLR goal of 10-15 decibels was established for eligible homes within DNL contours equal to or greater than 75 dB. Due to these higher noise exposure levels, this insulation modification package included window and door treatments, wall and ceiling treatments, “quiet room” treatment (for a pre-selected room of choice), vent baffling, attic insulation, and central air conditioning.
 - A NLR goal of 5-10 decibels was established for eligible homes within the 70-74 DNL noise contour interval. This modification package included window and door treatments, limited wall treatments, vent baffling, wall and attic insulation, and central air conditioning.
 - A NLR goal of 5 decibels was established for eligible homes within the 65-69 DNL noise contour interval and included window and door treatments, wall and attic insulation and central air conditioning.
- Sound Insulation Modification Financial Cap. Due to bidding requirements, MAC initially established a limit of \$25,000 per home for sound insulation modifications.
 - Bulk Contract Bid Method. Within the “Bulk” Contract Bid Method, numerous individual home designs (ranging from 5 to 60 homes) were combined into large, single bid packages. MAC believed this bid method would simplify the bid/award process, reduce paperwork and administrative overhead, reduce contractor mobilization costs, take advantage of bulk product orders, and maximize project management efficiency.
 - Sound Transmission Class (STC) Rating of 44 required for all acoustic products. During the Part 150 Study Update development in 1990, MAC did not have field-verified data that defined how well Twin City homes were attenuating aircraft noise before receiving Sound Insulation Program acoustic modifications. According to FAA assumptions, a typical U.S. home

attenuated between 20-24 decibels on average. Using this assumption, MAC established a 44 STC requirement for all approved Sound Insulation Program acoustic products.

- City-Specific Block Prioritization System. Since the eligible homes contained within the 65 DNL contour of the 1996 NEM were located within five different cities (Minneapolis, Richfield, Bloomington, Eagan, Mendota Heights), MAC allowed each city to develop their own method of prioritizing eligible homes. Among the strategies used were lotteries, city blocks based on geographical distance from the airport, and DNL noise contour levels.
- Annual MSP Part 150 City Funding Allocations. Due to recommendations from all five participating cities, MAC and community representatives developed an annual funding allocation system consisting of a *base* allocation and a *remainder* allocation for each city within the 65 DNL noise contour of the 1996 NEM. Using this system, each participating city would first receive a base allocation, which represented five percent of the annual Part 150 budget. The remaining 75 percent of the annual Part 150 budget was divided among the cities, based on actual population percentages within the 65 DNL noise contour.

The above listed elements represent significant planning, research and coordination in the early phase of the program. However, as discussed below, given the magnitude of this project and the several dynamic variables that can impact specific elements of the project, adjustments were needed and creative management solutions were applied.

1.2 – 1992-1996: Program Adjustments

After the initial Residential Sound Insulation Program development during the 1989-1991 time period, MAC implemented a 143-home Pilot Program in 1992 in an effort to test the base case assumptions. During the 1992 pilot year, MAC experienced several implementation problems, ranging from contractor performance issues, field construction problems, problems resulting from the Bulk Bidding Method, lack of desirable acoustic products, block prioritization

inconsistencies, and high construction costs. Based on this experience, MAC made considerable adjustments over the next several years to the single family sound insulation program. The following is a summary of the primary program changes:

- Elimination of the Bulk Bidding Method, and adoption of a Single Parcel Bidding Method where each home is treated as an independent design and construction contract.
- Elimination of the 44 STC acoustic requirement for all approved program acoustic products and adoption of a 40 STC standard.
- Elimination of city-specific home prioritization and the development of a universal block prioritization system based on noise exposure (DNL noise contours and Airport Noise and Operations Monitoring System – ANOMS flight tracks).
- Elimination of different NLR goals for homes in different DNL contour areas, and the establishment of a universal “5-Decibel Reduction Package” for all homes within the 65-75 DNL contour interval.
- Introduction of homeowner choices (selection of contractors, product styles and colors) and the establishment of a product showroom to display all approved program products to eligible homeowners.
- Introduction of additional product styles and colors, which could include wood-frame windows with exterior acoustic storm windows, steel-insulated doors with exterior acoustic storm windows, decorative wood doors, and vinyl acoustic replacement windows.
- Elimination of the \$25,000 limit due to larger homes and higher construction costs.
- Introduction of a maximum 30-day construction period to eliminate the inconvenience to the homeowner of extended construction periods.

- Introduction of homeowner orientation sessions to better inform eligible homeowners of the sound insulation program processes and responsibilities.
- Introduction of a contractor training/certification process as a condition for bidding.
- Introduction of contractor orientation sessions to better inform certified contractors of the program specifications, product installation techniques, and construction expectations.
- Introduction of contractor penalties (suspensions, removal) in the event of construction deficiencies.

As detailed above, the implementation and completion of the MSP Residential Sound Insulation Program within the 1996 NEM 65 DNL noise contour is a true example of Process Kaizen – continuous, incremental improvement of an activity to create more value with less waste.⁴

1.3 – Policy Advisory Committee (PAC)

The Part 150 Policy Advisory Committee (PAC) was established in April 1991 to advise MAC on policy issues related to the implementation and operation of the MSP Part 150 Residential Sound Insulation Program. The PAC was comprised of representatives from the cities of Minneapolis, Richfield, Bloomington, Eagan, Mendota Heights and St. Paul along with members from the Metropolitan Council, MAC, Metropolitan Aircraft Sound Abatement Council (MASAC) and the FAA.

At the time of its formation, the PAC represented an innovative approach to ensuring that the communities around the airport were an integral partner in the project implementation decision-making process. The Committee is credited with several contributions to the project elements including community specific program funding allocations, the house by house mitigation prioritization scheme,

⁴ Superfactory, *Best Practices*, <http://www.superfactory.com/Community/BestPractices/Kaizen/default.aspx> (January 2005).

program mitigation goals and project implementation elements considerate of the Dual-Track Airport Planning Process occurring at the time, as discussed in Chapter Five of this document.

1.4 – Multi-Family Mitigation Program Implementation

In 2000 the MAC began the process of establishing a framework for a multi-family sound insulation program consistent with the MSP Part 150 NCP and mitigation priorities established during the course of airport development planning, as outlined in Chapter Five. Subsequently, in October 2000 a multi-family pilot project was commissioned in an effort to establish acoustical performance goals, sound level testing criteria, building material specifications and standards, material supplier lists, administrative and management parameters and cost data.⁵

In addition to determining these elements, of paramount interest was capitalizing on the success of the single family sound insulation program and, in doing so, developing options that mirrored the core elements (consultants, contractors, suppliers, etc.) of the single family program. Specifically, the multi-family pilot project would research and test several program processes including program implementation planning, building selection and prioritization, acoustic package development, property owner and tenant communication strategies, noise and ventilation testing, design process, bidding process, construction process, and budgeting and tracking processes.⁶

Based on analysis of the data developed during the pilot project, five possible design packages were considered outlining specific elements to be included in the multi-family sound insulation program package. In November 2002 the final pilot project report was published outlining a recommended package that focused on the treatment of exterior window openings and pull-through air conditioning units (PTAC).

⁵ Metropolitan Airports Commission, *Multi-Family Sound Insulation Pilot Program Final Report*, (November 2002), p.4.

⁶ Ibid.

Chapter 2 – Completion of the 1996 NEM 65 DNL Residential Sound Insulation Program

In 2004 the MAC completed the award of the final bids for the remaining unmitigated homes in the 1996 NEM 65 DNL noise contour. This marks not only a significant milestone at MSP, but represents a significant accomplishment for a program that for many years has been considered an industry leader in airport noise reduction.

This chapter provides an in-depth review of the scope of both the single family and multi-family elements of the program.

2.1 – Scope of the Single Family Dwelling Unit Mitigation

As discussed in Chapter One, implementation of the Residential Sound Insulation Program around MSP has been dynamic in nature and continually improved based on new insights and knowledge gained during program development. This has resulted in a mitigation package for each home that is based on the existing condition of each individual structure and critical elements of the structure related to noise infiltration and reduction. The goal of the program is to provide a five dB reduction of noise infiltration into a structure. As outlined in Section 1.2, early in the program implementation process, the varying NLR goals related to the specific DNL impact of a structure were consolidated into one NLR goal of five dB. This was consistent with guidance provided in 14 CFR Part 150 relating to the degree of NLR above standard construction practices that should be sought within the 65 DNL contour area. This was due to the determination in early analysis phases of the project that pre-existing noise attenuation properties of cold climate home construction already provided a high degree of attenuation and, as a result, reductions in excess of five dB were not necessary.

The five dB noise reduction package is comprised of seven major elements. The degree to which each structure is treated depends on the existing condition of the respective element in the structure. The following are the seven major elements of the mitigation package.

- Prime window and door treatments;

- Acoustical storm doors and storm windows;
- Mechanical system modifications (central air conditioning, furnace, duct work and electrical, as needed);
- Attic and wall insulation;
- Roof vent and gable vent treatments;
- Chimney treatments;
- Indoor air quality tests and house ventilation modifications.

The program requirements for each of the elements was extensively researched and documented to ensure the highest degree of noise reduction benefit. MAC Part 150 program management staff facilitated the development of detailed construction diagrams/practices for dwelling modifications. For example, construction practices for chimney dampers in masonry fireplaces, roof vent baffles, gable vent baffles, vent installation, attic blower vent baffles, gable fan baffles, attic access panel treatments, ridge vent baffles, in-door vent fan baffles and through wall exhaust fan baffle boxes, etc., are all detailed for contractors as part of the program.

Additionally, all products used in the program by the contractors must be from a Part 150 program approved product list. Prior to approval, products were subjected to noise testing to ensure adequate noise reduction characteristics. Examples of products on the approved materials list include glass unit masonry, building insulation, sealants, steel and fiberglass doors, wood doors and frames, sliding glass storm doors, storm doors, vinyl windows and patio doors, vinyl windows with integral storm windows, storm windows, wood windows, prime window reconditioning and sash replacement products, door hardware, glass and glazing, acrylic glazing panels, lath and plaster.

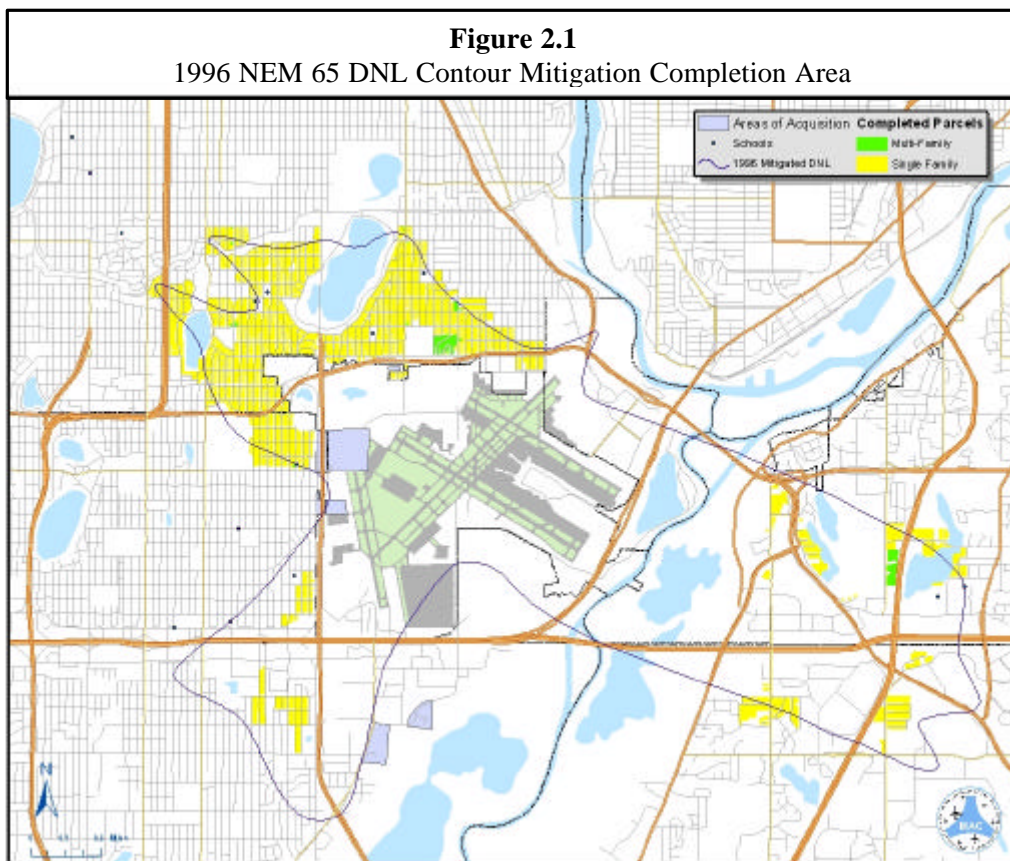
As a result of detailed and extensive project management and quality control the program has an excellent record of homeowner satisfaction. On an annual average, since 1997, when homeowners are asked if the improvements were effective at reducing aircraft noise, approximately 97% responded yes. When asked if the modifications have improved interior home comfort, approximately 95% responded yes. In 2003, when homeowners were asked if they were satisfied with the overall program product quality, 100% answered yes.

In 2004, bids were awarded for the mitigation of the final single family dwellings contained within the 1996 NEM 65 DNL noise contour. This represents mitigation of 7,690 homes in communities around MSP.

Table 2.1 provides a summary of the number of homes by city that will have been mitigated upon

Table 2.1 1996 NEM 65 DNL Contour Count of Single Family Mitigated Units	
<u>City</u>	<u>Homes</u>
Bloomington	158 homes
Eagan	196 homes
Richfield	660 homes
Mendota Heights	94 homes
Minneapolis	6,582 homes

completion of the program. **Figure 2.1** provides a geographic representation of the single family



area around MSP (in yellow) that was mitigated upon completion of the 1996 65 DNL noise contour area.

2.2 – Multi-Family Dwelling Unit Insulation

As discussed in Section 1.4, in 2000 the MAC commissioned a pilot project to establish the specific elements of the multi-family sound insulation program. It was determined that multi-family structures typically have more commercial grade construction characteristics with fewer externally exposed surfaces and external penetrations to living spaces. As such, elements of the multi-family sound insulation program package were different from the single family program.

The specific elements of the multi-family sound insulation program package included the following, based on the existing condition of the structure and the respective elements listed:

- Acoustic storm windows;
- Pull-through air conditioning units;
- Pull-through air conditioning unit soft covers.

In 2001, MAC began mitigating multi-family structures, and, in 2004, all multi-family structures

Table 2.2 1996 NEM 65 DNL Contour Count of Multi-Family Mitigated Buildings	
<u>City</u>	<u>Buildings</u>
Richfield	1 building
Minneapolis	67 buildings

in the 1996 NEM 65 DNL noise contour were completed. **Table 2.2** provides a summary of the number of multi-family buildings per city that are mitigated with the completion of the 1996 NEM 65 DNL noise contour. As a result of this mitigation, a total of 752 multi-family dwelling units have

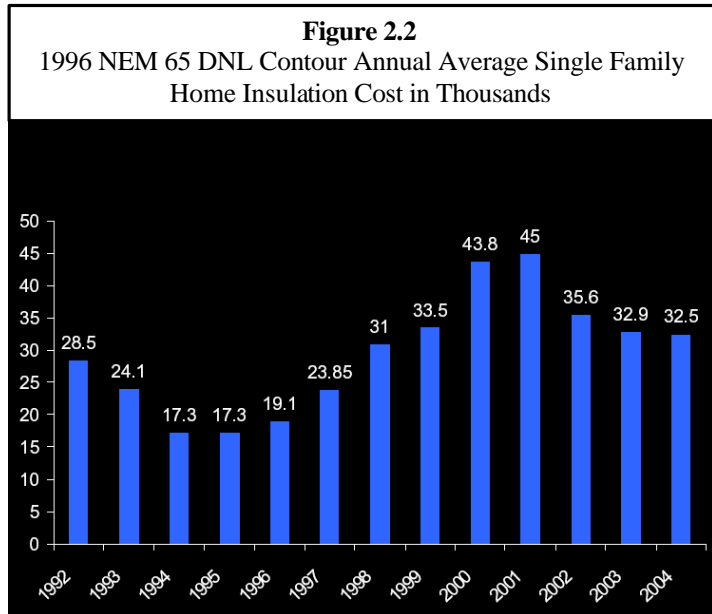
received acoustical mitigation. Figure 2.1 provides a geographic representation of the multi-family areas located around MSP (in green) that have been mitigated with the completion of the 1996 NEM 65 DNL noise contour.

2.3 – Financial Specifics of the Residential Sound Insulation Program

The financial investment in the MSP Residential Sound Insulation Program is among the largest in the nation for such programs. Throughout the 12-year project (1992-2004) several variables impacted the project’s annual financial profile. Year-to-year variations in housing stock and material costs caused fluctuations in the unit, or house-per-house, costs. This, combined with

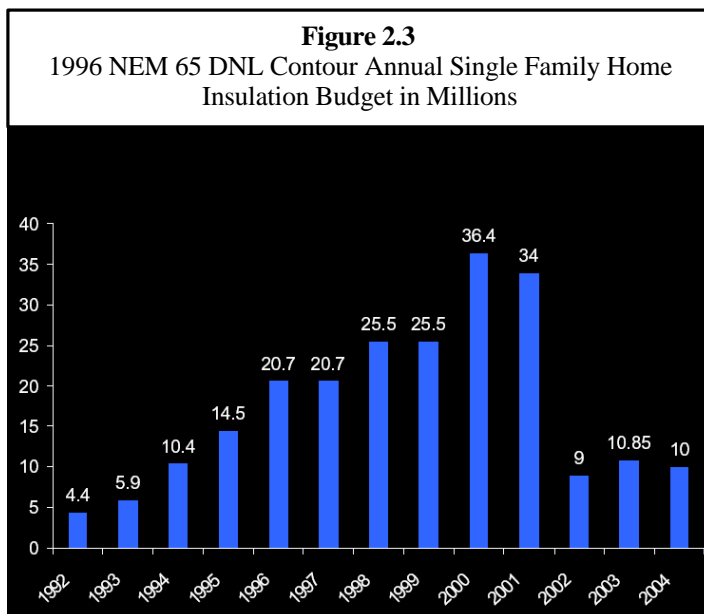
variations in annual budgets due to challenges such as the fallout from 9/11, resulted in a fluctuating rate of annual home completions.

Figure 2.2 provides a graphic depiction of the annual average cost per home for the single family sound insulation program.



Annual average insulation costs per

single family home have ranged from a low of \$17,300 in 1994 to a high of \$45,000 in 2001. The



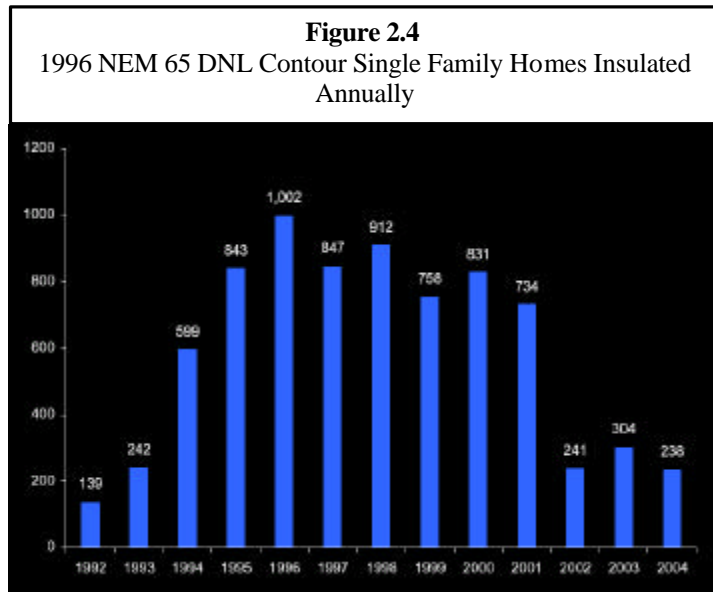
highest cost incurred during the 12-year span of the project for the insulation of a single home was approximately \$125,000.

Figure 2.3 provides a graphic depiction of the annual budget allocated by the MAC for the single family sound insulation program.

The MAC spent a total of approximately \$226 million on the single family home insulation program during its 12-year lifespan.

As outlined in **Figure 2.4**, the annual rate of home insulation varied over the course of the project.

The number of homes insulated on an annual basis was directly proportional to the costs outlined



in Figure 2.2 and the annual budget totals in Figure 2.3. The highest annual productivity was in 1996 when 1,002 homes were insulated, with an average per home cost of \$19,100 and a program budget of \$20.7 million.

The multi-family component of the Residential Sound Insulation Program started in 2001, and was significantly smaller in both the number of structures mitigated and the associated costs. With completion of multi-family structures in the 1996 NEM 65 DNL noise contour, approximately 752 multi-family units were insulated at a total cost of approximately \$6.3 million.

The single family and multi-family components of the Residential Sound Insulation Program at MSP represents a total expenditure of approximately \$232.3 million on residential structures. The composition of the funding sources for the Residential Sound Insulation Program consisted of approximately 43% federal grants and 57% Passenger Facility Charge (PFC) revenues.

Chapter 3 – School Sound Insulation Program

In addition to the sound insulation of residential structures, a school sound insulation program was also completed at MSP.

This chapter provides a review of the scope of the School Sound Insulation Program around MSP and the MAC's associated financial investment.

3.1 – Scope of the School Insulation Program

Since 1981, the MAC has insulated 17 schools located around MSP. This represents the completion of all schools located within the 1996 NEM 65 DNL noise contour. The locations of the insulated schools are depicted in Figure 2.1 (black dots). As a result of legislative direction, some schools were mitigated outside the 1996 NEM 65 DNL noise contour.

Depending on a school's pre-existing condition, the program provided an insulation package consisting of treatment of roofs and roof penetrations, building entries, modification of windows, air conditioning systems and electrical service modifications.

3.2 – Financial Specifics of the School Insulation Program

The costs of insulating individual schools varied from \$850,000 to \$8 million. A total of approximately \$45 million was spent on the school sound insulation program. Funding sources consisted of approximately 19% federal grants, 10% MAC generated revenues, and 71% Passenger Facility Charge (PFC) revenues.

Chapter 4 – Residential Property Acquisition Program

In addition to the residential and school sound insulation programs, the MAC also pursued a residential property acquisition program. The program facilitated the relocation of sensitive land

uses, such as residential buildings in high impact noise areas. The program was based on the 1996 NEM 65 DNL.

This chapter provides a review of the scope of the Residential Acquisition Program around MSP and the MAC's associated financial investment.

4.1 – Scope of the Residential Acquisition Program

The intent of the Residential Acquisition Program was to address highly impacted properties in the 1996 NEM 65 DNL noise contour where the property owners, and the city in which the respective property resides, were in concurrence that acquisition was the desirable means of mitigating the homes.

As a result, approximately 410 residential properties have been acquired and converted to compatible land uses. Figure 2.1 provides a depiction of the property acquisition areas located around MSP (in grey).

4.2 – Financial Specifics of the Residential Property Acquisition Program

In total, approximately \$60.7 million has been spent on the Residential Property Acquisition Program. The composition of the funding sources for the Residential Property Acquisition Program consisted of approximately 50% federal grants, 6% MAC generated revenues, and approximately 44% Passenger Facility Charge (PFC) revenues.

Chapter 5 – Contributions to Efficiently Building Needed Airport Infrastructure Through Investment in Part 150 Noise Reduction and Community Stabilization

In 1989 the Metropolitan Airports Commission (MAC) was in the early stages of evaluating the future of MSP as part of the Minnesota Legislature's Dual-Track Airport Planning Process. In 1996 the Minnesota State Legislature made the decision to keep MSP at its present location and develop the airport to meet air transportation demands through the year 2010. The resultant MSP

2010 Plan included major landside and airside improvements totaling an investment of approximately \$3.1 billion, which included the construction of a new 8,000 foot long runway (Runway 17-35). The new runway is anticipated to increase capacity at the airport by as much as 25%. In September 1998 the FAA issued its Record of Decision (ROD) and approved the MSP 2010 Plan for federal funding. The EIS was completed in two years with no significant objection from communities around the airport.

Shortly after issuance of the ROD, in 1999 the MAC began implementing major elements of the MSP 2010 Plan, including construction of Runway 17-35. As of September 2004 MAC has completed approximately 88% of the \$3.1 billion MSP 2010 Plan, with Runway 17-35 scheduled to open in October 2005. Substantial completion of the plan in approximately eight years is a significant accomplishment that could not have been achieved without securing stakeholder agreement and the associated methods/plans for addressing existing and future noise impacts.

The estimated median time for a new runway to be constructed and operational at a major airport in the United States is 14 years.⁷ One fundamental issue related to the delays associated with the construction of new runways at U.S. airports is agreement, or lack thereof, on how to mitigate the impact of noise and other environmental issues.⁸

The elements of the MSP Part 150 Program outlined in this document are a significant aspect of MSP's development success. The FAA, Minnesota Department of Transportation, and airport officials agree that consensus building, while taking longer than expected in the early stages of the development project, saved time in the long run.⁹

This chapter provides a review of this project's significance in the context of major development efforts at MSP.

⁷ U.S. General Accounting Office (GAO), *GAO-03-164 Aviation Infrastructure: Challenges Related to Building Runways and Actions to Address Them*, (January 2003), p. 3.

⁸ Ibid.

⁹ Ibid at 51.

5.1 – MSP Noise Mitigation Program: Part 150 as a Critical Element of Airport Development

As part of the Minnesota state legislation directing the development of MSP, the MAC was required to study the environmental effects of the plan, including noise impacts.¹⁰ The legislation stated:

“The [Metropolitan Airports Commission], with the assistance of its sound abatement advisory committee, shall make a recommendation to the state advisory council on metropolitan airport planning regarding proposed mitigation activities and appropriate funding levels for mitigation activities at Minneapolis-St. Paul International Airport and in the neighboring communities. The recommendation shall examine mitigation measures to the 60 [DNL] level.”

In response to the legislation, the MAC established the MSP Noise Mitigation Committee, comprised of six MAC Commissioners, eight city representatives (including seven mayors), two Metropolitan Council members, one Northwest Airlines representative and one Metropolitan Aircraft Sound Abatement Council (MASAC) member. The MSP Noise Mitigation Committee made several recommendations to the MAC, which were approved by the Commission in October 1996. The MAC then submitted the recommendations to the Minnesota Legislature’s State Advisory Council on Metropolitan Airport Planning who concurred with the recommendations.

Specifically, the MSP Noise Mitigation Program, as published in November 1996, states the following regarding noise mitigation in the Part 150 1996 NEM 65 DNL noise contour:

“The residential sound insulation program for the area encompassed by the 1996 DNL 65 contour be completed on the currently approved schedule.”

It is important to note that the Residential Sound Insulation Program in the 1996 NEM 65 DNL noise contour was a significant element of the stakeholder coordination and concurrence with

¹⁰ Laws of Minnesota (1996), ch. 464, art. 3, sec. 11.

regard to mitigating the impacts of the planned development. As such, the measures were included in Appendix B of the Dual Track Final Environmental Impact Statement (FEIS), and in the FAA's Final Record of Decision (ROD) approving the MSP 2010 plan.

5.2 – 2004 Part 150 Update and Mitigation in the 2007 NEM 65 and 60 DNL Contours

In addition to the provision in the 1996 MSP Noise Mitigation Program and Appendix B of the Dual Track FEIS and ROD, the following was outlined regarding future Part 150 mitigation related to the future development and operation of MSP:

“The program be expanded after completion of the current program to incorporate the area encompassed by the 2005 60 DNL.”

There are different perspectives regarding the level of noise mitigation that was committed to by MAC for this area. Perspectives ranged from some members on the MSP Noise Mitigation Committee whose views were that no specific commitment was made as to the nature and scope of the mitigation in the 60 DNL to those who assumed that the expansion to the 60 DNL meant continuation of the five dB noise insulation package out to the future 60 DNL.

Due to the lengthy Part 150 Update process which began in 1999, the November 2004 MSP Part 150 Update Document models a 2002 base case noise contour and a 2007 forecast contour. Initially it was anticipated that the update would analyze a 2005 forecast contour. However, with the additional consideration given to the events of 9/11 and the effects it would have on future aviation activity, the forecast year was extended to 2007.

The 2007 NEM 65 DNL noise contour adds an additional 165 single family units and one school to those mitigated under the 1996 NEM program. The additional homes and school are a direct result of the new impacts associated with the operation of Runway17-35. These homes and school will be insulated in 2005 at an estimated cost of approximately \$12.5 million. Additionally, 461 multi-family units are added to the 65 DNL contour as a result of the 2007 NEM. These will be

mitigated shortly after the completion of the 165 single family homes at an estimated cost of approximately \$7 million.

In addition to the sound mitigation in the 2007 NEM, approximately 29 single family homes and 136 multi-family units are being acquired in the 2007 NEM 65 DNL contour as a result of the impacts associated with Runway 17-35. This acquisition is estimated to cost approximately \$25.1 million.

In the expanded area between the 2007 NEM 64 to 60 DNL noise contours an additional 5,776 single family homes are added for mitigation in addition to the homes that have already been completed as part of the 1996 NEM 65 DNL noise contour program and those added in 2007 NEM 65 DNL.

Since testing and evaluation indicates that the majority of homes near MSP provide over 27 dB of outside to inside sound attenuation, homes within the 2007 NEM 64 to 60 DNL noise contour interval already meet EPA guidelines for an indoor DNL of 45 dB. In 2004 the MAC determined that homes between the 64 and 60 DNL noise contours would not need new windows, doors, and baffles. However, for a home to achieve its maximum sound attenuation, windows must remain closed. As such, homes without air conditioning would require its installation in order to be able to close the windows in the warm months. The recommended 2007 NEM 60 to 64 DNL contour interval single family sound mitigation program package recognizes this need and proposes the installation of air conditioning for those homes where it is not currently installed within the 60 DNL contour. Additionally, the 64 to 60 DNL mitigation package includes a graduated homeowner co-pay requirement that is proportional to the DNL noise impact on the home. The MAC will also provide a low interest loan program to assist homeowners with the co-payment.

Summary – MAC’s Completion of Part 150 Corrective Land Use Mitigation Related to the 1996 NEM – Meeting the ACI-NA Selection Criteria

Completion of the Part 150 NCP corrective land use measures in the 1996 NEM 65 DNL noise contour that focused on residential and school sound insulation and residential land acquisition activities represents a significant accomplishment at MSP in terms of noise reduction and effective, efficient and responsible airport development. In total, the project represents a MAC investment of approximately \$338 million in noise mitigation around MSP.

As is evident from this document, the approach to operating and developing airport facilities at MSP in many regards has been, and continues to be, industry-leading, not the least of which are the mitigation efforts that have been completed via 14 CFR Part 150.

As detailed in Chapter Two, the implementation of this project was a process of continual improvement based on increased technical knowledge as the program matured. Additionally, through the use and application of new technologies in the form of analysis and project materials, the program benefited and the project was enhanced. Over the 12-year period of the program these developments have contributed significantly not only to the noise mitigation efforts at MSP, but at other airports around the country, who have looked to MSP as a model of how to develop and implement a successful Part 150 noise mitigation program. This contribution to the airport environmental field, in terms of providing an established and proven Part 150 mitigation program, has been significant and one which many airport proprietors have, and will continue to capitalize on while operating and developing major airports.

As documented in Chapter Five, the FAA, the Minnesota Department of Transportation and airport officials all agree that this effort helped reduce the time necessary to develop needed airport infrastructure at MSP, primarily in the form of a new runway. In the case of airport planning and development, time is money. When delay is attributed to litigation, which is typically the case with noise concerns related to airport development, delay costs can grow

exponentially. Although this project represents a significant investment, when evaluated in the context of a \$3.1 billion airport expansion to increase airport capacity and services to the public the cost savings of delay avoidance can be significant. Furthermore, projects such as these help address future airport delay reduction, through facilitating the timely development of needed airport infrastructure. Considering these variables makes the benefits of implementing such a program evident.

This project is a true testament to innovative conflict resolution techniques, and is a true example of stakeholders working together toward noise solutions and environmental improvement at a major airport.

Considering the information contained within this document and the project's compliance with the five selection criteria for the 2005 ACI-NA Environmental Achievement Awards, completion of the Part 150 corrective land use measure based on the 1996 NEM 65 DNL noise contour at MSP is an excellent example of a significant environmental achievement.



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THE LONE OAK TREE

The symbol of
strength and growth
in our community.

March 9, 2005

Chad E. Leqve
Manager - Aviation Noise & Satellite Programs
Metropolitan Airports Commission
6040 28th Ave. S.
Minneapolis, MN 55450

Dear Chad:

As a community impacted by aircraft noise from the Minneapolis-Saint Paul Airport, the City of Eagan was pleased to have 196 homes insulated under the 1996 NEM Part 150 Program.

The City of Eagan and the Metropolitan Airports Commission (MAC) have had a long standing relationship, in large part due to the cooperation demonstrated in supporting the use of the Eagan/Mendota Heights Corridor.

As a result of the volume of traffic using the corridor, hundreds of homes in and surrounding the corridor are severely impacted by aircraft noise. Consequently, 196 homes, all of which were located in the 1996 65+ DNL, were insulated under the MAC 1996 NEM Part 150. Based on the feedback of homeowners that benefited from the mitigation, the insulation package they received has significantly improved their quality of life. I have also heard from residents who were pleased with the professionalism demonstrated by the MAC staff responsible for overseeing the construction process associated with the insulation program.

The City of Eagan is grateful for the insulation that was provided to the homes in the 1996 65+ DNL contours given the levels of noise with which those affected homeowners must live day in and day out. It is now the City's hope and expectation that the MAC will continue its noise mitigation program for homes located in the 60-64 DNL as was committed to in 1996 when the decision was made to keep the MSP Airport at its current location.

Sincerely,

Dianne Miller
Assistant to the City Administrator