

## **MetroGIS: Performance Measures Case Study**

# **METROPOLITAN AIRPORTS COMMISSION**

**Organization:** Metropolitan Airports Commission (MAC)  
Dept. of Environment, Aviation Noise and Satellite Programs

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**Organizational Profile:** The Metropolitan Airports Commission (MAC) owns and operates Minneapolis-St. Paul International Airport (MSP) and a system of six general aviation or “reliever” airports in the seven-county Twin Cities metropolitan area. Its mission is to serve the community by ensuring the safety of airport users and to provide efficient services and facilities for all air travelers. The Aviation Noise and Satellite Programs division, operating within MAC’s Department of Environment, uses diplomacy, science, state-of-the-art technologies and communication to plan and implement noise abatement programs for the regional airport system.

**Uses of GIS:** GIS is an integral tool in the work of the MAC’s Aviation Noise and Satellite Programs. The office uses GIS to map and analyze noise data from its system of monitoring stations in neighborhoods surrounding MSP. The office uses noise contour data to determine the impact of different airport operation scenarios on the surrounding area. It also uses GIS to design, prioritize, estimate costs, and manage implementation of sound insulation and property acquisition programs. Interactive web mapping services on the MAC website allow users to track airport takeoffs and landings, and see noise levels created by each airplane. GIS is also used to produce a variety of noise abatement-related maps for internal and external use.

**Current Project:** The Aviation Noise and Satellite Programs office is updating its “Part 150” Noise Compatibility Plan for MSP. The plan is submitted to the Federal Aviation Administration so that the MAC can qualify for funds to implement residential sound insulation and property acquisition programs.

Using GIS, the plan identifies and evaluates the impacts of different scenarios to minimize noise impacts of airport operations on surrounding neighborhoods. These scenarios include various combinations of modifications that can be made at the airport as well as in surrounding communities. For example, runways and flight tracks can be chosen to reduce noise. Thrust settings that will minimize noise can be required of individual flights. Modifications in surrounding communities include relocating residents and planning land uses that are more compatible with flight paths. The challenge, according to GIS Specialist Mark Kill, is to balance the goal of noise reduction with meeting service demands.

The modeling and analysis in the plan rely heavily on GIS data such as parcels and street centerlines. “The Lawrence Group street centerline data is the backbone of just about every map

we produce,” according to Kill, “and the regional parcel data is critical.” [Editor’s note: The availability of these regional datasets is a result of the MetroGIS initiative.]

The MAC originally submitted the Part 150 update to the FAA in Fall 2001, but within months it became evident that the events of 9/11/01 had created changes of such magnitude in the aviation economy that the assumptions in the plan were no longer valid. The MAC decided to withdraw its update and develop new noise exposure maps reflecting a year 2002 base case and year 2007 forecast case, incorporating the forecasted level of operations for 2007 and the airlines' newly announced aircraft orders and fleet plans. The goal is to resubmit the plan by Summer 2003.

**Impact of MetroGIS:** The biggest impacts of MetroGIS on the work of the Aviation Noise and Satellite Programs office can be summarized in two words: time and money. When Kill and his colleagues first started developing the databases required to do the analysis to update the Part 150 Plan in the 1990s, they had to approach each separate county and community surrounding the airport to get data. Once they acquired the data (which they often had to pay for), they had to normalize the attributes and otherwise reconcile the data across jurisdictional boundaries so it could be made into a coherent whole. After the modifications, Kill had to check back with each jurisdiction to see if the data still had integrity from the local perspective. Sometimes the MAC had to send crews into the field to verify land uses and addresses. This process could take months to complete.

The regional datasets available through MetroGIS have eliminated this painstaking process. Now Kill simply sits down at his computer and visits [www.datafinder.org](http://www.datafinder.org), where he can download current parcel, street centerline, future land use or any other data he wants in one easy step. The new DataFinder Cafe function allows him to choose any geographic subset of the regional data he wants, along with the attributes of his choice. Occasionally, he said, he still needs to ask the counties for some assessor’s data. But now he can get it in the form of a table which he can easily link back to features in the regional data.

“This has been an enormous benefit for the MAC,” Kill said. “The whole process has become much easier.” And less expensive. Consultants no longer need to be hired to help collect or normalize the data. “The work has already been done,” Kill said.

In addition, Kill said, he has more confidence in the data now than in the past. “It’s important to us to have a high degree of accuracy in our data. Now we know the data we are using is the same as everyone else, and our numbers should be able to be replicated.” As Kill’s office produces high-quality GIS products, their standing and credibility increase both internally and externally.

Another benefit of MetroGIS is the ability of participants to network with each other. “You get to hear about how applications are working for other organizations, and you can see how it might benefit your own,” Kill said. The updated MetroGIS business plan calls for exploring shared GIS applications. Kill said this is a good idea and “well worth exploring. It could result in more savings and better services delivered by governments in the region.”