Land Use Around Airports

Airports and the communities they serve are partners. Airports offer air service to local residents and business, while bringing in jobs, tourists, and cargo. They are an essential stimulus to the economic vitality of the communities they serve. They also have some unique characteristics that can impact the community in negative ways. Conversely, growth of the community around airports can stifle the heath of the airport. These impacts can be mitigated so that the optimal balance between an airport's needs and the community's needs can be achieved.

Geographic Information Systems (GIS) can help airport, local, and regional planners, as well as elected officials and other influential stakeholders understand these impacts so that they can establish plans, restrictions and guidelines that can minimize these impacts. GIS takes a variety of information and puts it into an informative map the helps visualize, understand, and make decisions on a complex array of interrelated information. Many feel GIS is an essential tool for compatible land use planning around airports.

What Are the Impacts and How Can GIS Help?

Following are a few of the ways in which airports and communities impact each other and how GIS can help:

Noise – Noise from aircraft, particularly as the take off and land at airports, is a nuisance and a potential long-term health hazard to nearby residents and business. The pattern of aircraft noise impact around airports is also changing with new aircraft approach and departure procedures implemented as a part of the FAA's NextGen program. Understanding these patterns helps ensure that impacted areas can be used for industrial, recreational, or other purposes that are not as sensitive to aircraft noise. GIS helps analyze, understand, and communicate these impacts so that better land use choices and restrictions can be put into place.

Airspace – Protecting the navigable airspace around airports from manmade and natural safety hazards is essential in protecting the safety and capacity of the aviation infrastructure that has become critical to our economic and social well-being. GIS helps identify existing tall objects that may need to be removed or lit. GIS also helps determine how high new structures can be before they interfere with aircraft operations.

Fauna – Birds, deer, and a variety of other species can be hazardous to safe aircraft operations yet they are attracted to the grass, water, and other habitats that often surround airports. The result can be catastrophic. GIS can help understand where different species are more likely to be and where these locations interfere with aircraft operations. It can help alter habitats in sensitive areas or place mitigating devices in effective locations.

How to Implement GIS

Get Data

GIS requires relevant data that can be shown on a map. Other data, such as demographics, can be linked to the map data to show patterns and trends that otherwise cannot be seen. Layer by layer this informative information comes together to tell a story.

The are many public and private sources of this data including the Federal Aviation Administration, local and regional planning offices, and other agencies that are trending towards sharing data openly through web data services. In some cases, airport specific noise, obstacle, and wildlife citing information may need to be collected by authorized staff or consultants.

Structure the Data

Data coming from many sources needs to be structured and stored in a manner that allows is to be accessed and combined with other data. Data that is not accessible or understandable will not be beneficial. Putting data into a database designed by experts across all relevant disciplines ensures that the data that is assembled is relevant.

Work the Data

Data must be transformed, analyzed, and combined to communicate the desired information. Such processes turn data into intelligence upon which confident descisions can be made. GIS desktop and increasingly web based software tools empower analysts with the analytic, transformation, and symbology capabilities they need to create informative output.

Publish the Information

While many still rely on printed maps and exhibits, web sites and services are increasingly being used to deliver information to those who need ii, where they need it. Web sites can also be interactive so that each viewer can see, query, and extract the unique information they need.

GIS desktop software offers the ability to view, customize, and print maps. GIS server software, as well as a growing number of Software as a Service (SaaS) providers on the internet, offer the ability to publish interactive maps via the web.