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DEPARTMENTS

FYI

GIS in Local Government

At the ICMA 2005 Annual Conference in Minneapolis in September, ICMA and ESRI released a new joint publication, The GIS Guide for Local Government Officials*. The publication can help local officials think through how GIS can assist in streamlining daily operations and providing better service in their communities. Over the course of the next three months,* Public Management (PM) *magazine will feature excerpts from the book to illustrate how this technology is changing the way in which local government manages information.*

The Next Dimension: GIS Goes 3-D in Milford Township, Pennsylvania

For more than three decades, planners and community developers have used GIS to better envision the impact of land use changes. GIS has been especially useful in managing growth and controlling urban sprawl by devising alternate buildout scenarios for communities. But until recently, growth has primarily been considered in the horizontal, not the vertical, sense. Things like building height, floor-to-area ratios, and sunlight requirements have received little consideration in developing land use plans. New GIS technology, which creates a three-dimensional image of buildings and spaces, is changing all that.

According to a team of researchers at the Center for Sustainable Communities at Temple University in Pennsylvania, 3-D GIS helps identify the natural and historic resources that give a community its unique sense of place. By identifying areas in and around a community that should be preserved for their historic and environmental resources, community residents can see the potential results of alternative development scenarios.

The researchers selected Milford Township in southeastern Pennsylvania as a test case for using 3-D GIS to prepare alternate buildout scenarios for a community. The team first determined Milford's buildout capacity by taking into account:

- Land use designations: agricultural preservation, airport buffer zones, wetlands, and similar protected areas.
- Density specifications: number of dwelling units per acre, lot size, floor space, and so forth.
- Land use efficiency: an assigned value that considers how much land is lost to development.

- Building placement constraints: soil types, infrastructure requirements, zoning districts, and so forth.

Ultimately, the team came up with three-dimensional simulations of two development alternatives. The first scenario looked at places in the township that were zoned for high-density use and considered optimal for dense development. Under this scenario, the researchers found that 2,171 new buildings could be incorporated into the township without losing any of the essential elements of the local landscape.

The second scenario spread development more evenly throughout the township, converting one acre of rural development zoning into a higher-density use. This scenario produced 1,896 new buildings for the township.

The end-results of these two scenarios clearly show that the township is affected by a number of environmental and physical constraints, assuming that its citizens want to preserve the general landscape of the community and their unique sense of place. The three-dimensional GIS representations of the two development alternatives offer a concrete sense of how today's choices will affect tomorrow's environment.

Source: Based on "Growth Management Plan for Milford Township, Pennsylvania: Suitability Analysis and Buildout Scenarios" by Mahbubur Rabb Meenar, Abdul Bari, and Jesse Sherry, a paper presented at the 2004 ESRI International User Conference, August 9–13, 2004, San Diego, California.

Look to ICMA

For more information on *The GIS Guide for Local Government Officials* (item no. 43350), visit the ICMA Web site at bookstore.icma.org.