



### GIS technology used to safeguard Orange County, Calif. citizens

In March 2007, the citizens of Orange County, Calif. came together for a project critical to sustaining human life and prosperity in the area. Orange County was selected as a pilot community in a risk assessment project using HAZUS-MH, a powerful GIS-based software program that estimates potential losses from earthquakes, hurricane winds and floods.

HAZUS-MH, developed by the National Institute of Building Sciences (NIBS), estimates physical damage and functional loss to essential facilities, such as fire and police stations, hospitals and schools. It also estimates social impact of deaths, injuries and human displacement economic losses. This enables emergency managers to better prepare and planners to be more strategic in the mitigation investments they make to protect citizens from natural hazards.

Raymond T. Lenaburg, chief, Risk Analysis Branch of FEMA's Region IX, worked closely with a Community Executive Committee (CEC) to compile the local data needed to maximize the accuracy of HAZUS analysis.

The management team held its initial planning meeting in early 2007. Due to the massive scope of the project, this meeting emphasized the importance of engaging key stakeholders in the process and established the CEC, chaired by Vicki Osborn, Orange County's assistant emergency manager. CEC members met throughout the year to guide development, ensure usability of products and deliver the best possible risk information for their county.

The Orange County Sheriff Department's Emergency Management Office coordinated input from the 114 political subdivisions and 34 incorporated cities that make up Orange County including schools and special districts such as water departments. The Orange County Fire Authority provided a complete set of data from its GIS system.

Other agencies rallied as well, providing either existing data or helping create new data for HAZUS by collecting information about the date structures were built, types, square footage, replacement costs, back-up power availability and other details.

As shown in the police station and fire station graphics, there were substantial differences from the default national data sets in HAZUS and the real data for the community. The pinpoint accuracy of this data will dramatically improve the accuracy of the HAZUS loss estimations.

With highly accurate data loaded into HAZUS, the project provides an unprecedented "crystal ball" into what could happen in an earthquake or flood scenario in Orange County. More importantly, the project's fresh data set, and the commitment of CEC members to keep it up-to-date, will enable local communities to model disaster scenarios in the future with just the push of a button.

While only two disaster scenarios were funded under this project, the close involvement of all of the local communities and their work compiling the data sets makes them now interested in using HAZUS for additional scenarios specific to their needs.

FEMA Region IX and the Orange County Sheriff's Department have equipped these communities with the ability to conduct sophisticated modeling normally beyond the capability of local communities.

In fact, school districts, police districts, city planning authorities and others who were unaware of the availability of HAZUS at the start of the project are now beginning to install and use the powerful loss-estimation tool available free from FEMA. At the county's request, FEMA will be conducting free HAZUS

training in April 2008 for local authorities.

With the computing power of HAZUS, sophisticated risk analyses can be done in minutes, instead of days, allowing planners throughout Orange County to focus on planning instead of data analysis and number crunching.

"The hope has already begun for us. This is a very important tool and without FEMA providing this to us at no charge, we would never have been able to make this progress on our own," said Orange County's Osborn. "We will continue to make the database more accurate as well as build upon the great work FEMA has done."

For more information, contact Eric Berman, HAZUS program manager, [eric.berman@dhs.gov](mailto:eric.berman@dhs.gov). You can also order your copy of HAZUS-MH at [www.fema.gov/plan/prevent/hazus](http://www.fema.gov/plan/prevent/hazus).

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