

Pilot Project Enhances Efficiency in Substantial Damage Estimations

MARATHON, FL – When impacted by disasters, all communities participating in the National Flood Insurance Program (NFIP) are required to determine whether damage to structures reaches a 50 percent or greater threshold.

The Federal Emergency Management Agency’s (FEMA) Substantial Damage Estimator (SDE) tool is often used to make these estimates. However, Marathon, Florida has devised a method using a Geographic Information System (GIS) digital database with the damage fields from FEMA’s SDE tool to generate another effective way of reporting substantial damage information.

“Our system links assessors tax parcel numbers, address information, aerial four-dimensional photos (both pre- and post-disaster) and permit information. It gives us the advantage of using the software in the field and communicating interactively with people in the office,” said George Garrett, Marathon’s assistant city manager. “What we can see in GIS also allows us to gather much information without making a field visit.”

Garrett described the process used before the GIS.

The field phase had three or four teams, including a community code enforcement member or city planner and a FEMA employee. The city staffer had iPads pre-loaded with the SDE tool and an aerial photo of the damaged structure. The city staffer/driver took a picture of the damaged building and provided the property number to the FEMA team member, who would use printed SDE forms to make an assessment, while the city staffer made a determination of Not Affected, Affected, Major Damage or Totally Destroyed. A red dot was used to indicate structures evaluated and green for those to be evaluated.

According to Garrett, data entries were live. As field and office staff had the same information, there was no overlap in entry. The team returned to City Hall to compare information. The city copied the paper SDE forms and FEMA staff entered the assessments into the SDE tool. When completed, FEMA exported the SDE assessments to the city to add to the GIS database. The city then combined the FEMA SDE data with their own assessments for quality control and review.

The GIS was Marathon’s solution for a more accurate and efficient assessment method. The city hired a civil engineer, James Barton, as a technical consultant to oversee expedited property damage assessments so citizens could make prudent rebuilding decisions.

“The city mapped all the buildings and posted them online, so they can be accessed by field crews,” said Barton. “Using GIS made it viable for the city to access data from the field and make changes, use pictometry to review damage from high resolution oblique imagery, access county parcel data and edit data in the cloud and review progress.”

Barton noted that the FEMA forms were entered into the Damage Estimator with the parcel identity or address. Each form includes location information, so it can be linked to the GIS and mapped. It also allows field teams to



Cody Ward, City of Marathon Code Enforcer, points to a particularly hard-hit neighborhood from Hurricane Irma, while Senior Planner Brian Shea validates information on field I-Pad during discussion with Project Consultant, Marcus Austin. **Photo by: Bret Gates/FEMA**

review data spatially and quickly respond to questions on why some properties were badly damaged while others had minor damage. Spatial patterns emerged providing greater insight about the damage.

Merging GIS with the SDE proved beneficial. Field crews can accurately determine a building's location. Parcel IDs were identified on the mobile device and added to FEMA's field forms. Field crews can easily identify areas previously visited by other teams, eliminating duplicate visits to sites and areas under review.

It is the city's responsibility to make substantial damage determinations and inform building owners, via letter, of the damage assessments. Owners may dispute the assessments or alternatively bring the building into compliance with current codes, including mitigation measures such as elevation, demolition and acquisition..

Participating communities in the NFIP must determine whether the damage can be categorized as Substantial Damage. This applies to a structure located in a Special Flood Hazard Area (SFHA). Similarly, improvements to structures located in a SFHA must be evaluated to determine if they meet the criteria for Substantial Improvement. These may include rehabilitation, remodeling and lateral or vertical additions. Check with the local jurisdiction on additional requirements for Substantial Damage and Substantial Improvement requirements.

For additional information, visit:

- www.ci.marathon.fl.us/
- www.fema.gov/media-library/assets/documents/18692



George Garrett, Deputy City Manager & Planning Director, led the damage assessment process of receiving "live" assessments as they occurred in the field. **Photo by: Bret Gates/FEMA**