



HURRICANE IKE FIVE YEARS LATER: A MORE RESILIENT COMMUNITY



SEPTEMBER 2013



MISSION

The Harris County Office of Homeland Security and Emergency Management will be a national model of best practices in emergency planning, preparation, response and recovery.

The office will help prepare, safeguard and protect the residents and property of Harris County from the effects of disasters through effective planning, preparation, response and recovery activities.

INTRODUCTION

Greetings,

September 13, 2013, marks the fifth anniversary of Hurricane Ike making landfall over southeast Texas as the third-most costly storm in our nation's history. Five years later, its memory lingers and its physical scars remain on our landscape. The good news is that we have made great progress on the road to recovery, and we are today a more resilient community.

The lessons learned from Hurricane Ike teach us where we responded well and where there were opportunities for improvement. By examining those lessons immediately after the storm, with input from our emergency management partners and the public, we set a course to be better prepared for the next major disaster to strike our region. This report summarizes how we have become the more resilient community we are today.

I am proud of the first responders, emergency management officials and dedicated employees who met the challenge of Hurricane Ike from every corner of Harris County and the region. I am equally proud of the community volunteers who served wherever needed, and the neighbor-helping-neighbor spirit that jump-started our recovery.

Another storm will eventually strike the southeast Texas coast. Preparedness is a shared responsibility between local government and the residents. While we are more resilient today than before Hurricane Ike, we cannot take anything for granted.

Sincerely,

A handwritten signature in black ink, appearing to read "Ed Emmett".

County Judge Ed Emmett, Director
Harris County Office of Homeland Security
& Emergency Management



Harris County Judge
Ed Emmett

A MASSIVE STORM

Hurricane Ike was the third-most costly tropical system to strike the United States in 150 years.

As the ninth named storm of the active 2008 hurricane season, Hurricane Ike made landfall over Galveston Island at 2:10 a.m. on Saturday, September 13, 2008. As a powerful Category 2 hurricane with sustained winds of 110 mph, Hurricane Ike produced a storm surge far greater than a typical Category 2 storm due to its massive size and track over shallow waters.

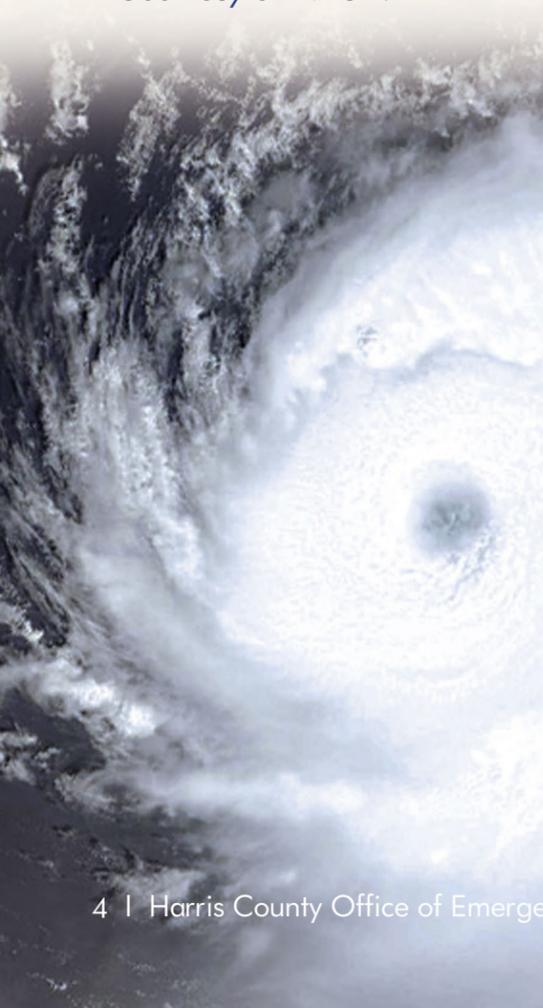
Hurricane Ike also set a record for the highest storm surge along the upper Texas coastline since 1915, which resulted in flooding throughout a significant portion of southeast Harris County.

The cities of Shoreacres, Clear Lake Shores, Seabrook, La Porte, Baytown, El Lago, Taylor Lake Village, portions of Pasadena and surrounding communities were the most devastated. Excessive, widespread rainfall occurred along the track of Hurricane Ike, with an average of six to eight inches across Harris County. The flooding of approximately 2,500 homes was due to storm surge, and another 1,200 homes were flooded due to the heavy rainfall.

Harris County residents heeded the call from emergency management officials to prepare for a strong Category 2 hurricane. Orderly evacuations of coastal communities took place, while inland residents sheltered in place.

Eleven deaths within Harris County have been attributed to Hurricane Ike.

Sept. 13, 2008 –
Satellite image of
Hurricane Ike.
Courtesy of NASA.



HISTORIC RESPONSE

The overall response and recovery efforts by the Harris County Office of Homeland Security & Emergency Management (HCOHSEM) and its partners demonstrated an exemplary level of planning, coordination and collaboration among a large number and diverse set of government organizations and private sector partners. Harris County alone had to collect more than 10 million cubic yards of debris while it managed 44 points of distribution (PODS) during a crucial eight-day period. While managing this large-scale response, the county grappled with damage in excess of \$103 million to its own infrastructure.

The response also was a testament to the extraordinary results that are achieved when residents invest in their communities through adopting a culture of preparedness. Volunteers from Harris County's Medical Reserve Corps delivered 81,410 meals to homebound individuals and families immediately after Ike struck.

Harris County Citizen Corps has proved to be an invaluable resource of volunteers. Harris County Citizen Corps, its partners and volunteers helped distribute 1.1 million gallons of water, 10.5 million pounds of ice and 2.8 million ready-to-eat meals to devastated residents.

Sept. 15, 2008 –
Local volunteers stack
ice at a Points of
Distribution center.
Courtesy of FEMA.



RECOVERY CONTINUES

Harris County Community Services has completed 455 of the 520 single family homes damaged by Hurricane Ike that applied and qualified for assistance. Almost half of those homes are total reconstructions and the rest involve major rehabilitation. Additionally, six multi-family rental projects totaling more than 700 units will soon be under construction, with planned completions by early to mid-2014. Three historical structures are at various stages of completion including Sylvan Beach Pavilion in Baytown, the Leonel Castillo Community Center in east Harris County and the Washburn Tunnel in Pasadena which is Texas' only underwater tunnel.

Improvements have been made to area roadways, parks, drainage systems, water treatment facilities and other projects dealing with infrastructure. Nearly two dozen new generators have been added to a variety of buildings such as fire stations, community centers and hospitals to help keep them operational during the next major emergency.

To date, Harris County has spent roughly \$60 million, with another \$100 million committed toward the continuing recovery effort.

May 2011 – Harris County Recovery Program construction project.
Courtesy of Harris County Community Services



BUILDING RESILIENCE

The goal of HCOHSEM is to be a national model of best practices in emergency planning, preparation, response and recovery. Working toward that goal is a team of dedicated emergency management professionals and county employees who improve our region's emergency management capabilities when it makes the greatest difference — when our lives are free from disaster. They are creating a culture of preparedness within government and in the community. Preparation and planning are constant. Seeking out ways to do their jobs better is part of the daily routine.

Immediately after Hurricane Ike, HCOHSEM commissioned an After Action Report (AAR) to identify strengths and areas for improvement during response and recovery activities. Identifying these issues after a disaster is essential to improving the county's ability to respond and recover from large-scale events. The AAR was released in March of 2009 and served as a roadmap for a plan to build a more resilient community after Hurricane Ike. The input of county emergency responders, external partners and the public created a path forward to sustain strengths observed during the response and implement solutions to resolve weaknesses.

As a result of this effort, today we are a more resilient community.

Aug. 8, 2012 – Full-scale exercise to test Points of Distribution plan.



MAJOR STRENGTHS

The AAR listed six strengths observed during the Hurricane Ike response that the county should sustain:

- 1 County personnel demonstrated an impressive level of commitment to protect the residents of Harris County and the region.
- 2 Commitment and active participation of elected officials during response and recovery efforts.
- 3 Relationship between HCOHSEM and other county departments emphasized partnerships.
- 4 The Regional Joint Information Center (JIC) was a successful collaboration between county agencies, as information was shared with the media and other organizations in an accurate and timely manner.
- 5 Harris County Citizen Corps volunteers were well-trained and provided essential support to the response and recovery efforts throughout the community.
- 6 Federal, state and local agencies worked well to provide Emergency Support Function (ESF) 10 – Hazardous Materials Response.

Sept. 16, 2008 – Judge Ed Emmett assisting FEMA with Points of Distribution operations during Ike recovery.

HCOHSEM's homeland security and emergency management strategy incorporates the three fundamental elements of communication, collaboration and coordination. They are at the core of the six major strengths outlined in the AAR and are an indispensable part of the ongoing effort to be a national model of best practices that support local responders and build community resilience throughout the region. Since 2005, the office has received several national awards from its peers and highly respected organizations for numerous best practices.

AREAS FOR IMPROVEMENT

The AAR also helped identify 19 primary areas for improvement that the county needed to address to help its emergency response and recovery capabilities. The following issues were identified and addressed accordingly:

- 1 **OBSERVATION:** County departments navigated through overlapping roles and responsibilities as their operations evolved.

SOLUTION: Emergency planners from county departments worked with HCOHSEM staff to review plans and identify more specific responsibilities for each department. Since 2008, 23 basic plan annexes have been revised.

- 2 **OBSERVATION:** County departments had to modify how they identified and used essential personnel in transitioning from normal operations to disaster response.

SOLUTION: County departments were asked to review job descriptions to better identify and support essential personnel. County management officials also led training in continuity of operations planning for county departments. A system was also developed to deploy experienced personnel to areas of the county requiring additional assistance.

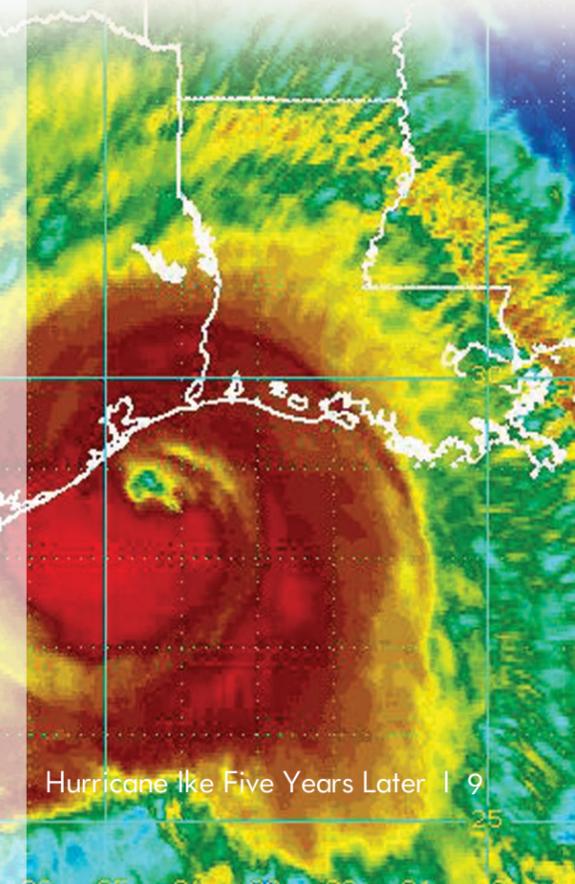
- 3 **OBSERVATION:** Personnel exhibited an operational understanding of the Incident Command System (ICS) and National Incident Management System (NIMS), but could have benefited from more practical experience.

SOLUTION: HCOHSEM has continued to offer training to county departments and partner organizations. County employees may now also take advantage of online training opportunities to fulfill basic NIMS/ICS requirements. A new Emergency Operations Center (EOC) quick start guide also orients new responders when an emergency activation occurs.

- 4 **OBSERVATION:** Past exercises have prepared county personnel for most emergency planning and response efforts, but a renewed focus on recovery activities is desirable.

SOLUTION: HCOHSEM has conducted and participated in hundreds of exercises and drills since Hurricane Ike. Other county departments also have conducted mini-exercises to test their specific roles. Most of these have been post-landfall

Sept. 13, 2008 – Hurricane Ike radar image. Courtesy of NOAA.



AREAS FOR IMPROVEMENT

tabletops and full-scale exercises to test various disaster plans, among these the Continuity of Operations Plan. The most recent POD exercises took place in late 2012. The Recovery Plan, commonly known as the R+ plan, has since been written to guide the response, restoration and re-entry phase immediately after landfall to jump start the community's long term recovery process.

- 5 **OBSERVATION:** JIC capabilities successfully met expectations, but could have operated more efficiently with additional resources.

SOLUTION: The Regional JIC has become our community's most trusted source for emergency public information during major disasters. The JIC website, www.readyharris.org, was created after Hurricane Ike and has been upgraded and improved several times since. The JIC mobile website version brings access to timely information to your fingertips. The integration of Harris County Alerts and Social Media has also helped reach more residents in the region.

- 6 **OBSERVATION:** The county's public outreach and education efforts should be expanded to meet the rapidly growing population.

SOLUTION: HCOHSEM works closely with the private and public sector to promote disaster preparedness at all levels. Participation in numerous seminars and workshops, including the annual Houston/Galveston National Weather Service Hurricane Workshop, helps prepare residents for emergencies. Since 2009, HCOHSEM has participated in more than 800 outreach events.

- 7 **OBSERVATION:** Emergency procurement procedures are not as well understood by county organizations as the normal purchasing process.

SOLUTION: The HCOHSEM logistics team has pre-identified a list of vendors to meet the most likely resource requests during local emergencies. Revised emergency procurement procedures also offer improved guidance for purchases made during declared and non-declared disasters.

- 8 **OBSERVATION:** The list of vendors with whom the county has an agreement to supply goods and services during an emergency should be expanded.

SOLUTION: An expanded emergency vendor list is now in place that creates redundancies and ensures backup vendors are identified. The list includes 24-hour contact information for vendors when it is available and updated agreements streamline the availability of important goods and services.

- 9 **OBSERVATION:** The county's database of resources available for emergency response and recovery activities should be revised.

SOLUTION: Various asset lists have been compiled and modified to better identify and type resources based on capabilities, availability and other features. Such resources include items like technology, heavy equipment and personnel. Personnel from suppliers experienced in disaster response are able to respond to the EOC when needed.

- 10 **OBSERVATION:** The process for submitting, tracking and closing out resource requests should be streamlined to maximize efficient management.

SOLUTION: Improved procedures are in place for requesting, tracking and demobilizing resources, including those deployed offsite to destinations such as POD locations. The process is regularly revised to be compliant with the state process tied to financial reimbursement.

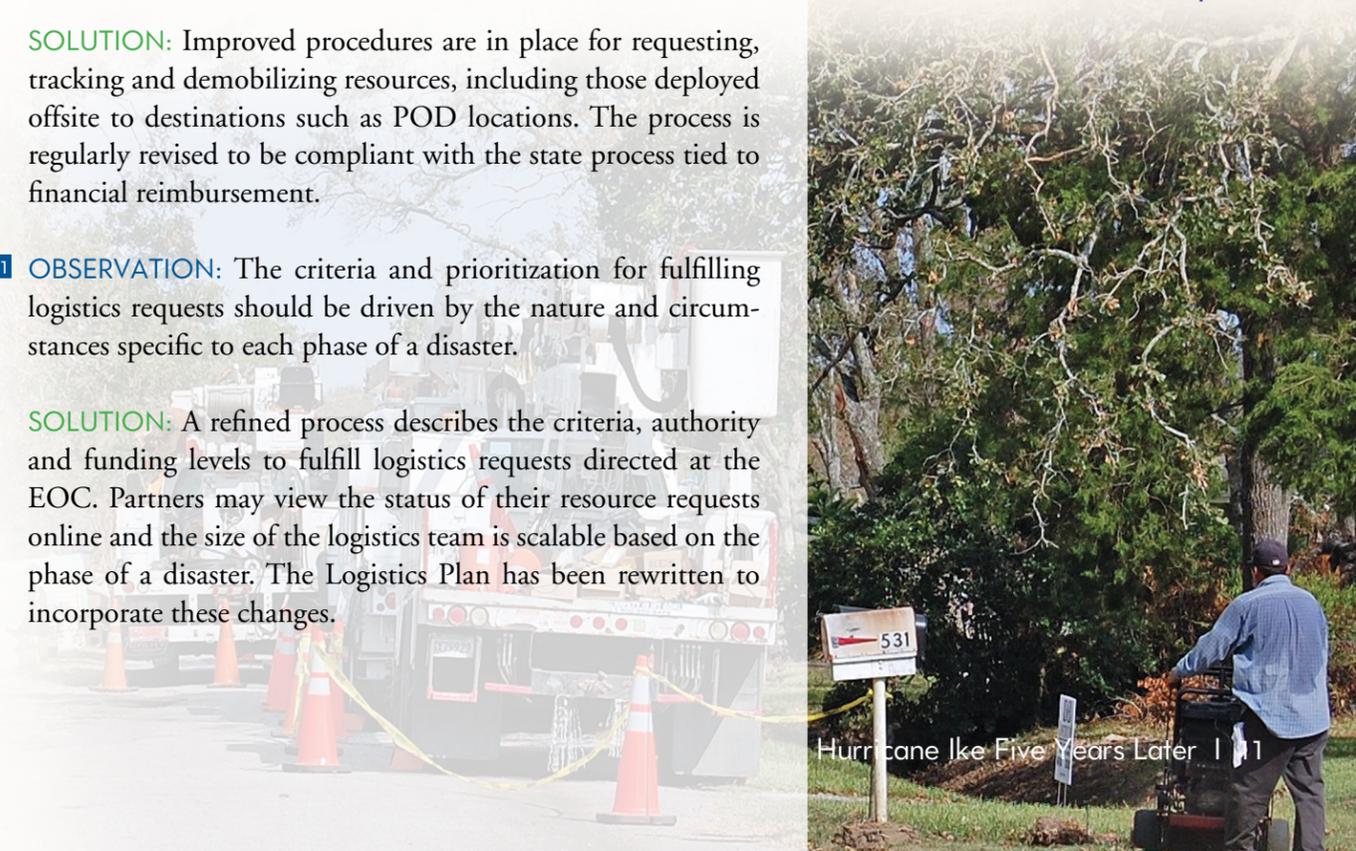
- 11 **OBSERVATION:** The criteria and prioritization for fulfilling logistics requests should be driven by the nature and circumstances specific to each phase of a disaster.

SOLUTION: A refined process describes the criteria, authority and funding levels to fulfill logistics requests directed at the EOC. Partners may view the status of their resource requests online and the size of the logistics team is scalable based on the phase of a disaster. The Logistics Plan has been rewritten to incorporate these changes.

Sept. 19, 2008 – Crews working to restore traffic signals after Hurricane Ike.



Utility crews working to restore power in southeast Harris County during Hurricane Ike recovery.



AREAS FOR IMPROVEMENT

New technology in the EOC allows partners to remotely participate in activations.

12 OBSERVATION: County employees responding to the event experienced delays due to limited access to fuel.

SOLUTION: County departments have reviewed and revised fuel contracts to help secure fuel for county vehicles during emergencies.

13 OBSERVATION: Loss of power, lack of generators and limited access to fuel hindered the restoration of services among county departments.

SOLUTION: County buildings that provide critical services have installed generators to support their operations when power is lost. Contingency plans also have been put in place to mitigate disruption when electricity, fuel or repair services are not immediately available.

14 OBSERVATION: The EOC at TranStar can only provide limited support to response and recover efforts.

SOLUTION: New web-based technologies are now in place to allow emergency response personnel to work remotely and be integrated in real-time with activities at the EOC. New credentialing and lock down procedures also alleviate overcrowding during shift transitions.

15 OBSERVATION: EOC operations were hindered by insufficient space for staff over an extended period of time.

SOLUTION: Construction is underway at TranStar to expand the regional response capabilities of the EOC. Completion is expected in 2014. Improvements will allow the EOC and other facilities to be flexible so they can adapt to daily needs.

16 OBSERVATION: Due to the size and scope of the incident, the county used subject matter experts who made invaluable contributions to response, but lacked previous exposure to emergency management in catastrophic incidents.

SOLUTION: HCOHSEM has worked diligently to encourage emergency management partners to complete NIMS/ICS training. The office frequently updates a list of EOC personnel that documents their experience, expertise and training so mission objectives can be assigned to the proper individuals.

17 OBSERVATION: Demobilization encountered numerous challenges due to the scope of the incident, staff size and office space restraints.

SOLUTION: Internal procedures were modified to assure that adequate personnel are assigned to the planning section demobilization unit to ensure a coordinated, efficient demobilization.

18 OBSERVATION: Handheld radios did not work well in the EOC at TranStar and volunteers lacked training on radio use.

SOLUTION: New training programs help empower staff and volunteers to use handheld radios correctly so that improper use does not overwhelm the system. Regularly scheduled radio tests also improve practical experience with the system and enhance communication reliability during high use periods such as disasters.

19 OBSERVATION: Many county buildings are not sufficiently hardened to remain operational during response and recovery efforts.

SOLUTION: Inventory was taken of county buildings that are used for various types of emergency response activities to determine their capabilities and what unique features are best suited for a variety of disaster needs. Improvements to facilities and hardening measures are considered as part of long term capital improvement projects.

Aug. 2013 – TranStar expansion project to be completed in 2014.

THE PATH FORWARD

The lessons learned from Hurricane Ike have been pivotal in making Harris County and southeast Texas a better prepared and a more resilient community. However, simply planning for the most recent storm is shortsighted. HCOHSEM has adopted lessons learned from Hurricane Ike to improve its plans in the context of a broader picture. Residents, too, must plan accordingly.

On a daily basis, HCOHSEM approaches disaster planning, response and recovery from an all-hazard perspective. Hurricanes and tropical storms are just one of the many threats we face and even then each storm is different. In partnership with local, state, federal, non-profit and private sector partners Harris County tackles a dynamic risk environment that involves more than hurricanes. The office plans for the various disaster scenarios that are specific to this community.

Communication, coordination and collaboration remain the path forward for Harris County to remain a national model in emergency preparedness.

Jan. 2012 – Crystal and Forrest Flowers of Huffman receiving key from Levonne Harrell of Harris County Community Services.



STAY INFORMED

Follow us on the web, from your smart phone and on social media for preparedness tips and emergency alerts.





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