



FEMA

PRACTICE NOTE

Mass Evacuation: Harris County, Texas, Office of Homeland Security and Emergency Management's Zip Code-Based Evacuation Plan

PRACTICE

The Harris County, Texas, Office of Homeland Security and Emergency Management (HCOHSEM) developed a zip code-based evacuation plan. The plan clarified evacuation protocols for Harris County residents and helped reduce evacuation time by half.

DESCRIPTION

On September 20, 2005, Texas officials ordered the evacuation of 3 million residents in Chambers, Galveston, Harris, and Matagorda counties in response to the approach of Hurricane Rita. Prior to landfall, HCOHSEM implemented a staggered evacuation and collaborated with the media to inform the public of the evacuation. HCOHSEM provided the media with information and evacuation maps that used three colors but were not zip code-based. However, television stations could not display the maps clearly, which left many residents confused about whether they were in an evacuation zone. To clarify this issue, HCOHSEM used Interstates 10 and 45 and other roads as reference points to specify evacuation areas, but residents still had difficulties determining when to evacuate. Evacuees encountered heavy traffic congestion and experienced unprecedented delays on routes to Austin, Dallas, and San Antonio. Many drivers attempted to avoid the traffic by taking detours, but some became lost or were stranded on roads when Hurricane Rita approached the coastline.

Harris County, Texas, had 3,984,349 residents in 2008. The county is approximately 1,728 square miles and the metropolitan areas include Houston, Sugar Land, and Baytown.

After the hurricane, HCOHSEM recognized the need to revise its evacuation plan and developed a simple-to-understand evacuation map that was based upon lessons learned from the Hurricane Rita evacuation. HCOHSEM developed a plan based on four zip code Zones (see Figure 1). This plan evacuates specific zip codes based upon where the storm is projected to make landfall. In addition, the plan includes staggered evacuations and procedures for monitoring traffic patterns.

HCOHSEM prioritizes the risk of coastal residents by grouping zip codes in the following manner:

- Zone Coastal: 13 zip codes in Galveston and Matagorda counties;
- Zone A: 11 zip codes in Galveston County;
- Zone B: 26 zip codes in Brazoria and Chambers counties; and
- Zone C: 30 zip codes in Harris, Montgomery, and Brazoria counties.

HCOHSEM works closely with elected officials, state and local agencies, and the National Weather Service (NWS) when the zip code-based evacuation plan is activated. Once an elected official orders an evacuation, HCOHSEM meets with the Texas Department of

Transportation (TxDOT), the NWS, and other emergency managers to discuss the implementation of the evacuation plan. HCOHSEM consults with NWS for information about the storm's trajectory and with TxDOT on the most efficient way to evacuate affected populations. This helps HCOHSEM and transportation partners control the flow of traffic and evacuate people in the most efficient manner.

The evacuation plan's benefits were demonstrated before Hurricane Ike made landfall on September 13, 2008. On September 11, 2008, Judge Ed Emmett, the chief executive officer of Harris County, ordered the evacuation of approximately 245,000 residents in Chambers, Galveston, Harris, and Matagorda counties. The Harris/Galveston region immediately evacuated all zip codes in Zone Coastal and in Galveston County. HCOHSEM monitored traffic cameras with TxDOT and consulted with NWS to determine whether additional zip codes should be evacuated. Over the course of 24 hours, HCOHSEM, with the help of its local and regional partners, evacuated zip codes in Zones Coastal, A, and B. This limited traffic congestion and ensured that all affected residents were evacuated. Most residents knew when they should vacate; residents who evacuated before their zip code Zones were evacuated did not significantly disrupt operations. HCOHSEM successfully evacuated over 100,000 residents from all zip codes in Zone Coastal, 8 zip codes in Zone B, and 1 in Zone A within a 12-hour period. Further, the reduced traffic congestion limited the number of drivers who decided to take detours off the evacuation routes.

Hurricane Ike caused 20 deaths and \$19.3 billion in damages in the US, making it the third most expensive hurricane in US history.

HCOHSEM continues to improve its zip code-based evacuation map and plan based upon lessons learned from Hurricane Ike. Harris County is now conducting outreach efforts to make the map more readily available to tourists, who found it helpful during the 2008 storm season. HCOHSEM observed that some residents found the zip code-based map confusing due to recent changes in some neighborhood zip codes. To address this issue, HCOHSEM plans to periodically check for changes in zip codes, especially prior to hurricane season.

CITATIONS

Harris County Office of Homeland Security and Emergency Management. *Harris County Hurricane Ike After Action Report and Improvement Plan*. 01 Mar 2009. <https://www.llis.dhs.gov/docdetails/details.do?contentID=37139>

Sanchez, Jr., Francisco. Public Information Officer, Harris County Office of Homeland Security and Emergency Management. Interview with *Lessons Learned Information Sharing*, 26 Aug 2009.

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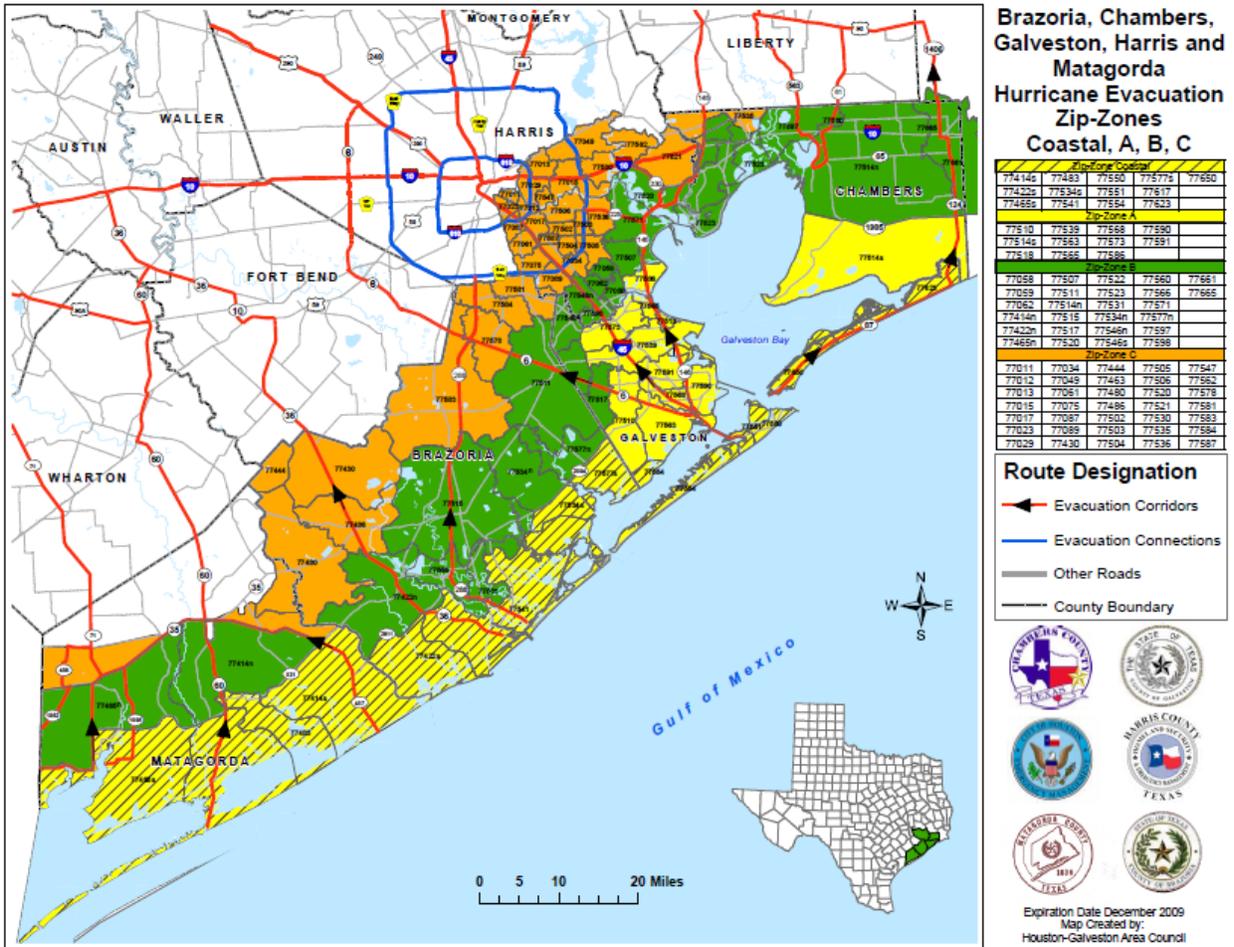


Figure 1: Harris County Zip Code Evacuation Map