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GOOD STORY

Hurricane Sandy: Sandy Hit Too Soon for NYC to Test Innovative Shipping Container Housing Units

The LLIS.gov team identified several innovative Whole Community ideas and practices to support preparedness, response, and recovery following Hurricane Sandy.

SUMMARY

In 2008, the [New York City Office of Emergency Management](#) (NYC OEM) initiated a first-of-its-kind disaster housing program. The city planned to create modular apartments carved out of shipping containers that could temporarily house displaced victims following a large-scale disaster. NYC OEM is actively working to build and test this housing prototype in 2013.

DESCRIPTION

Hurricane Sandy

On Monday, October 29, 2012, Hurricane Sandy made landfall near Atlantic City, New Jersey, pushing a massive storm surge to shore and generating winds to up to 75 miles per hour. Shortly after landfall, the National Hurricane Center downgraded Sandy to a post-tropical cyclone. Sandy caused storm surge, record flooding, and wind damage. Nine days after the storm, a large nor'easter caused massive snowfall undermining response operations in the disaster-impacted areas.



Aerial View of Surge Damage on the New York Coastline after Sandy (Source: FEMA)

Hurricane Sandy displaced thousands of people along the New York-New Jersey coastline, forcing a large number of residents to seek alternative housing solutions soon after the storm. More than 72,000 homes and businesses were severely damaged or destroyed in New Jersey. In addition, approximately 265,000 businesses were affected and 305,000 housing units were damaged or destroyed in New York. According to the U.S. Census Bureau's [2010 Census Urban Area Facts](#), the New York-New Jersey metropolitan area is the most populated region of the United States. Further, the United States Geological Survey's [U.S. Geological](#)

The [FEMA Housing Portal](#) helps individuals and families displaced by a disaster find available rental units in their area. The portal consolidates rental resources identified and provided by federal agencies such as the U.S. Department of Housing and Urban Development, U.S. Department of Agriculture, and U.S. Veterans Administration as well as by private organizations and individuals.

[Survey Studies in the New York Bight](#) found that, “New York city, with a population of about 8 million, is the largest city in the United States and the New York & New Jersey metropolitan area, with a population of about 20 million, is the second largest in the world.”

The “What if New York City...” Design Competition

In 2008, NYC OEM in partnership with the NYC Department of Design and Construction (DDC), the Rockefeller Foundation, and Architecture for Humanity, held the [What If New York City...](#) design competition for post-disaster provisional housing. Participants were asked to submit innovative housing designs that could be used to accommodate displaced families and individuals after a major disaster. A total of 465 registrants from 52 countries participated in this competition.

The [LLIS.gov Resource Compilation for Hurricane Sandy](#) lists housing-specific resources that the LLIS.gov Team compiled that helped support response and recovery operations following Hurricane Sandy.

The city selected [10 winners](#) and [10 honorable mentions](#) from a total of 117 valid submissions. The selected designs included interim housing solutions that:

- Maximized the number of housing units per land area
- Could be rapidly deployed and occupied
- Could be deployed to many different sites
- Could accommodate many types and sizes of household
- Could be reused for future disasters or other purposes
- Were convenient, comfortable, secure, and cost-effective
- Allowed access for people who have limited mobility
- Had limited energy costs and carbon footprint

Urban Post-Disaster Housing Prototype Program

Following the competition, NYC OEM and DDC established the [Urban Post-Disaster Housing Prototype Program](#) to develop and test a deployable, reusable, secure, and cost and energy efficient housing solution. The goal of this program was to employ “a new approach to interim housing that provides higher-density living spaces than the single-household homes or trailers typically used for post-disaster housing.” As part of this program, NYC OEM and DDC developed:

- The [Urban Interim Housing Unit Specification](#), a blueprint that the manufactured housing industry should use to create post-disaster housing. The document listed stringent safety, environmental quality, and durability requirements.



Average Density of Households in a Trailer Park and in a Manhattan City Block (Source: The City of New York)

- A [Playbook](#) for post-disaster site selection with design principles for keeping residents in the community and allowing them to live and work in their neighborhood.

In 2012, NYC OEM secured funding from FEMA to build and test the multi-story, multi-family interim housing prototype. This prototype would consist of a 3-4 story complex built using shipping container-based modules. The complex would include a minimum of six units - three 1 bedroom units and three 3-bedroom units.

The U.S. Army Corps of Engineers (USACE) was designated as project manager for the prototype construction process. In addition, USACE would test living conditions, including air quality and energy efficiency. NYC OEM and DDC were preparing to solicit proposals from the housing industry as Hurricane Sandy made landfall.

The Post-Sandy Plan

NYC OEM and DDC plan to begin the next phase of this program in 2013 by building the interim housing prototype. The prototype will be installed for a year in a parking lot owned by the NYC Department of Parks and Recreation and the NYC Department of Transportation.



**The Interim Housing Prototype Site
(Source: The City of New York)**

The site measures approximately 40' by 100' and is adjacent to the NYC OEM headquarters in Brooklyn, NY. NYC OEM and DDC selected this site because it presented many of the challenges that the city would encounter during the deployment of temporary housing structures following a large-scale disaster. Once built, NYC OEM and DDC plan to use one of the first-floor units as a project gallery space open to the public for the duration of the project.

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