

A F F O R D A B L E H O U S I N G

ISSUES

SHIMBERG CENTER FOR AFFORDABLE HOUSING

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Manufactured Housing and Hurricanes

Manufactured housing provides affordable housing opportunities for many Floridians.

Volume 20, Number 3 of the Florida Housing Coalition's "Housing News Network" included a series of articles addressing manufactured housing and the 2004 hurricanes.

Presented below is a version of the article that appeared in the Coalition's "Housing News Network" that was authored by the Shimberg Center for Affordable Housing.

The news coverage of property damage resulting from hurricanes Charley, Frances, and Ivan has indicated that the thousands of manufactured homes in Florida do a poor job of protecting the occupants and their belongings. But is that the complete story?

There are a number of organizations that are busy pouring over data collected during on-site inspections following Charley and Frances. More data will be collected in the Florida panhandle communities ravaged by Ivan.

The organizations performing this study include the US Department of Housing & Urban Development, the Florida Department of

Highway Safety and Motor Vehicles, the Florida Manufactured Housing Association, and the Institute for Business and Home Safety. Teams of experts from these organizations have visited manufactured home parks throughout the track of the hurricanes for the purpose of documenting the damage and the characteristics of the housing units.

Of particular interest in this effort has been the performance of different age manufactured units. If the changes that have been made in the codes that govern the manufacture and the placement of manufactured housing units have improved the units' performance, the data should show the improvement.

The key dates of interest are when the units were produced relative to the dates that major changes have taken place in the building codes that dictate how the units are produced and tied down:

- Units produced before 1976.
- Units produced after 1976 when the Federal Manufactured Home Construction and Safety Standards (FMHCSS) were adopted by Congress. Manufactured units produced under the Standards became known as “HUD-Code” units.
- Units produced after 1994 when the FMHCSS were updated following Hurricane Andrew in order to reflect increased wind-load requirements .
- Units produced and set after 1999 when Florida issued more stringent installation and tie-down standards and licensing of installers.

A team from the Manufactured Housing Institute (MHI) accompanied the HUD damage inspection team following Hurricane Charley when they inspected six manufactured housing communities near Punta Gorda. In MHI's *Just the Facts* published 23 August 2004 it was reported that the wind speeds in the six communities ranged from 100 to 145 mph depending on the location. The homes built prior to the 1976 HUD Code did not perform well in two of the communities. The damages were attributed to inadequate anchors, corroded anchors, or penetrations of the exterior walls and windows of the units by wind-borne debris. Car ports

that had been attached to the units failed due to wind forces and tore off portions of the walls and roof . These wall penetrations and those resulting from wind-borne debris allowed internal pressure to increase and destruction of the home resulted. The only homes that survived without considerable damage were protected by nearby tree lines.

Most of the damage experience by manufactured units built according to the 1976 HUD Code, but before the 1994 changes, was related to the failure of attached carports that peeled away siding and roof covering exposing the home to increased internal pressure. Wind-borne debris impact was also observed as a cause of damage. A small number of homes were observed to have shifted off their foundations. Many homes were saved from serious damage by being equipped with hurricane shutters. In general, it was concluded that most of the homes could be repaired and would still be livable.

Homes that were built after the 1994 HUD Code, with its wind-load updates, performed well. Most of the units had storm shutters that likely prevented buildup of internal pressure. Wind-borne debris damage was observed on siding and roofs. Where attached garages failed, collateral damage to the units was limited to small wall or roof areas. Movement on the foundation was observed in very few units and was considered to be easily repairable.



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Next to the older, demolished manufactured home, stands a manufactured home built and installed to the newer HUD codes governing manufactured home construction in wind zone III. The newer home lost a few shingles, but remains intact. It was installed one month before Hurricane Charley struck.

None of the homes built after the 1994 HUD Code updates and in accordance with the 1999 Florida installation standards could be found that were displaced from their foundations. The tougher installation and tie-down safety standards for Florida's mobile homes required the use of more tie-downs. Today, a typical manufactured home might have as many as 45 tie-downs compared with just 10 for a pre-Andrew manufactured unit. Most damage that was observed was related to the loss of attached carports, the impact of wind-borne debris, or siding failure.

The summary statements published by the MHI stated, "Overall, performance of homes built to the post-1994 HUD Code wind changes was very good. Homes built to the pre-1994 HUD Code fared well. Homes built to the 1976 HUD Code failed at an alarming rate."

Another damage assessment of the manufactured home damage related to Hurricane Charley was conducted by the Florida Department of Highway Safety and Motor Vehicles, Division of Motor Vehicles. This team visited 77 manufactured housing parks and assessed the damage to 11,800 housing units located in Polk, Charlotte, DeSoto, Hardee, Lee, Highlands, and Orange Counties. The goal of the team was to assess the effectiveness of the 1994 HUD Code with its updates to improve the wind resistance of the units. Out of all the units observed, 2,422 (20.5%) were either destroyed or damaged to the point of not being repairable. Focusing only on the 2,883 post-1994 HUD Code homes that were observed, none of the units were seriously damaged. The damage observed to these units was related to the loss of attached carports and screen rooms, siding and shingle loss, broken windows, and siding / roof damage caused by wind-borne debris or falling trees.

Summary

The findings reported by the damage assessment teams indicate that the strengthened Federal Manufactured Home Construction and Safety Standards are improving manufactured housing structural performance during high-wind events. Similarly, the administrative rules implementing a mobile home installer training and licensing program has had a positive effect on the stability of manufactured units during high-wind events.

A comprehensive report of the HUD damage assessment teams is anticipated to be published later this year.

Subscription to the *Housing News Network* are provided with basic membership in the Florida Housing Coalition. The Coalition may be reached at 850-878-4219 or by visiting their website at www.flhousing.org.

Affordable Housing ISSUES is prepared bi-monthly by the Shimberg Center for Affordable Housing for the purpose of discussing contemporary issues facing affordable housing providers. Reproduction of this newsletter is both permitted and encouraged. Comments or questions regarding the content are welcome and should be addressed to Robert C. Stroh, Director.

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