When attempting to compare the design wind speeds of manufactured homes to that of homes designed under the International Code Council codes (I-Codes), the notable difference in wind speeds is merely the result of a change in how wind speeds are quantified and does not reflect a reduction in safety.

Many people do not realize that the underlying design pressures for a given geographical location are the same or less today than they were 20 years ago. As a result, a home designed under a previous edition of a building code to a lower wind speed – such as manufactured homes – is as safe, or safer, than a home built to the current codes and standards.

Structural design criteria, including wind design pressures, are derived from a publication known as ASCE 7 – Minimum Design Load for Buildings and Other Structures. From the American Society of Civil Engineers, this publication is updated and republished approximately every six years. Manufactured homes are designed to the wind pressures of the 1988 edition of ASCE 7. In this edition, wind speeds are based on “fastest-mile” wind speeds.

In the 1995 edition of ASCE 7, the wind speed criteria were updated to “three-second gust” wind speeds. The purpose of this change was to have design wind speeds that more closely matched the speeds reported by meteorologists. A correlation between these two methods of measurement is provided in the current model codes.

In the 2012 International Residential Code (IRC), Table R301.2.1.3 allows for “fastest-mile” speeds to be converted to equivalent “three-second gust” speeds. Thus, under the 2012 IRC, a manufactured home is designed to wind pressures equivalent to that of homes built to wind speeds of 105, 116, and 126 miles per hour.

In the most recent edition of the ASCE 7 in 2010, wind speeds were again increased. This change recalibrates the wind speed maps for use with a design philosophy known as “ultimate strength design,” which is preferred over an older design philosophy known as “allowable stress design.” Similar to the previous change in the wind speed definition, this change resulted in increased wind speeds but results in equal or lesser design pressures for a given geographic location. In the 2012 International Building Code (IBC), Table 1609.3.1 allows for “allowable stress design” wind speeds to be converted to “ultimate strength design” wind speeds. Thus, under the 2012 IBC, a manufactured home is designed to wind pressures equivalent to that of homes built to wind speeds of 136, 150, and 163 miles per hour.

<table>
<thead>
<tr>
<th></th>
<th>1988 ASCE 7 “fastest mile”</th>
<th>2012 IRC “three second gust”</th>
<th>2012 IBC “ultimate strength design”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone I</td>
<td>90 mph</td>
<td>105 mph</td>
<td>136 mph</td>
</tr>
<tr>
<td>Zone II</td>
<td>100</td>
<td>116</td>
<td>150</td>
</tr>
<tr>
<td>Zone III</td>
<td>110</td>
<td>126</td>
<td>163</td>
</tr>
</tbody>
</table>

(over)
Design wind speeds has less impact on the actual safety of a structure than other factors. Surveys of hurricane damaged homes have demonstrated that the amount of damage sustained is primarily dependent on two factors: the involvement of a design professional and quality assurance during construction (FEMA 55 Coastal Construction Manual: Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Building in Coastal Areas, 3rd edition).

In the construction of manufactured homes, the federal building code requires both of these elements to be in place and verifies their efficacy through a rigorous auditing system. Every manufactured home bears a label certifying that the home has been designed, constructed, tested and inspected to comply with the federal standard. A home must be certified by an independent third party inspector before it is allowed to leave the factory. These facts greatly reduce the risk of damage during a hurricane or high-wind event.

Conventional construction is not required to have the critical two elements of the involvement of a design professional and quality assurance during construction. Under the codes that regulate conventional construction, a contractor may prescriptively construct a single-family home without consulting a design professional or having a quality assurance program to verify the home is built correctly.

As a result of these facts, various jurisdictions have taken steps to require conventional site built home construction to be built to quality standards approaching the standards required for manufactured homes. Such requirements were implemented in Florida following the devastating impact of Hurricane Andrew in 1992, and more recently, Texas has enacted regulations for conventional site built homes located in high-wind areas to require the homes be designed and inspected by specially licensed design professionals.

Unfortunately for many homeowners in hurricane prone regions, catastrophic events were required before local building departments enacted practices similar to those that have been in place for manufactured housing for decades. Safety requires building code enforcement for all structures not additional design requirements for manufactured housing.

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