
Insurance Incentives for Wind Mitigation Measures

March 2007 Summary

Windstorm damage to houses results in extensive property damage and extremely costly insurance claims. Among the several failure mechanisms from wind that lead to water damage and significant insured losses, the failure of roof deck attachment is a major consideration. The loss of roof deck panels (e.g. OSB, plywood) during a high wind event like a hurricane, quickly leads to extensive water damage to the building and its furnishings. Insurance claim data shows that once a roof deck fails even partially, a house becomes a major loss.

There are several practices which can be used to increase the strength of the roof deck to roof frame connection. One such practice is the use of adhesives to increase the uplift resistance of roof deck panels, which is the focus of the current ASC research project. Further, incentives in the form of premium discounts are emerging in hurricane-prone areas to encourage the use of such mitigation practices. This paper summarizes such incentive programs in several states in the southeast U.S.

Florida

Since Hurricane Andrew struck in 1992, Florida has taken the lead in adopting regulatory provisions related to hurricane resistant construction. Shortly after Andrew, Florida Statute 627.0629 was adopted to require residential property insurance providers in Florida to provide “discounts, credits, or other rate differentials, or other appropriate reductions in deductibles” for residential properties where construction methods that have been shown to reduce loss caused by windstorms are employed. Incentives are required to be offered for mitigation techniques that address “roof strength, roof covering performance, roof-to-wall strength, wall-to-floor-to-foundation strength, opening protection, and window, door, and skylight strength.” Insurance providers are required to provide a percentage discount range for the mitigation measure to the Florida Office of Insurance Regulation to be available to homeowners.

In the years since Andrew, changes have been made to continue to improve the hurricane resistance of homes. This is done predominately through building codes for new homes and through insurance incentives for existing homes. The Florida Department of Community Affairs and the Florida Office of Insurance Regulation are both active in these arenas, and their efforts as related to insurance incentives are summarized below.

Incentives for Wind Damage Mitigation Measures

An internet tool developed by the Florida Department of Community Affairs (DCA) provides a list of wind mitigation measures recognized by Florida residential property insurance writers as eligible for insurance discounts:

- <http://www.dca.state.fl.us/fdem/mitdb/index.cfm>

Within this tool, adhesives are recognized as a wind mitigation measure affecting roof deck attachment in retrofit construction, but not construction in or after 2002. The tool lists measures in decreasing order of strength/incentive valuation. In decreasing order of effectiveness for resisting uplift, the following wind mitigation measures are recognized for roof sheathing to roof framing attachment:

- Plywood with 8d Nails @ 6/6
- Plywood with Screws/ Bolts
- Plywood with Structural Connection
- Plywood with 8d Nails @ 6/12
- Plywood with 6d Nails @ 6/12
- Plywood with Adhesive

Note that plywood with adhesive and plywood with 6d Nails @ 6/12 are only recognized as wind mitigation measures for homes built before 2002. These techniques are not viewed as improvements beyond the 2001 Florida Building Code, even though studies by Clemson University demonstrated that retrofitting adhesives (whether two-part polyurethane or AFG-01 compliant adhesive) at the joint of roof sheathing to roof framing increases uplift resistance by 100 – 200 psf.

As an example of this tool’s capabilities, the following sample house is provided.

Inputs:

Construction Type: Re-Construction
Year Built: Prior to 2002
County: Okaloosa
Number of Stories: One Story
Roof Shape: Gable
General Roof Deck Type: Plywood / OSB

Outputs:

Wind Speed Region: 110 MPH
Terrain Region: Terrain B
Windborne Debris Region: Non-Windborne Debris Region

Mitigation Incentives:

SWR	Roof Cover	Roof Deck	Roof Wall Connection	Door Type	Opening Protection
					Basic
Any	FBC Shingle	Plywood with Adhesive	Toe Nails	Protect Single	9%
		Plywood with 6d Nails @ 6/12	Toe Nails	Protect Single	11%
		Plywood with 8d Nails @ 6/12	Toe Nails	Protect Single	11%

		Plywood with 8d Nails @ 6/6	Toe Nails	Protect Single	11%
		Plywood with Screws/ Bolts	Toe Nails	Protect Single	14%
		Plywood with Structural Connection	Toe Nails	Protect Single	14%

In the table above, various factors affecting wind mitigation are presented, such as Secondary Water Resistance (SWR), type of roof covering, roof deck connection methods, door type, and type of opening protection. For the example house described by the inputs, the output indicates that the use of plywood with adhesives (in addition to nails) to fasten the roof decking to the framing would result in a discount of 9% on the wind portion of the total insurance premium. The wind portion of a homeowner’s premium is anywhere between 15 and 70% of the total premium depending on the location in Florida. The entry of “any” for the SWR in the table above indicates that the insurer does not account for this factor in determining premium discounts. This particular example is based on data supplied by State Farm Insurance of Florida. A user can examine similar information for any insurer active in Florida, and can also cross compare discounts offered by different insurers.

Impact of Incentives

Until recently, the guidance on the magnitude of incentives was limited to a general percentage range. E.g. if a homeowner applies mitigation measure X, then he will receive a 10-40% discount on the wind portion of the insurance premium for the house. This level of information does not support decision making on mitigation measures, because actual dollar figures are not provided.

The Office of Insurance Regulation has successfully lobbied for a change in the way incentives for wind mitigation measures are provided by insurance providers. Recently, the Florida Financial Services Commission passed a rule requiring insurance providers to supply specific information on the value of individual wind mitigation measures based on an individual home’s location, age, construction methods, and materials. This rule went into effect in March 2007, and should provide actionable data for homeowners that will let them decide the cost/benefit of implementing various wind mitigation measures. However, it still appears that a homeowner must directly engage their provider to get actual dollar amounts of discounts.

It is also unclear how broadly the mitigation incentives are being widely used by homeowners. From conversations with DCA we were told that no broad PR campaign has spread the word about the incentives. We have also been told by groups involved with incentives that homeowners need to be very specific when talking to their insurers about the discounts, or else the customer service representative may not understand the request and find the appropriate information in their database.

Home Structure Rating System

The University of Florida is currently under contract with the State of Florida's Office of Insurance Regulation to develop a Home Structure Rating System that will allow homeowners to obtain an objective hurricane resistance rating of their home and determine the effect of various mitigation measures.¹ The contract was issued to fulfill the requirements of Section 39 of FL SB1980, passed in 2006. Other participants in the development of the rating system include the Florida Department of Community Affairs, the Federal Alliance for Safe Homes, the Florida Insurance Council, the Florida Home Builders Association, the Florida Manufactured Housing Association, the Risk Management School at Florida State University, the Institute for Business and Homes Safety, and Mercedes Homes of Central Florida. Input variables for the Home Structure Rating System will include home location, age, and construction methods. Mitigation measures that will be evaluated within the Home Structure Rating System include:

- Roof deck attachment
- Secondary water barrier
- Roof covering
- Bracing gable ends
- Reinforcing roof-to-wall connections
- Opening protection and
- Exterior door protection (garage door included)

The inclusion of roof deck attachment mitigation measures could spark interest from the public in the use of adhesives, should the cost benefit analysis of this mitigation measure prove favorable. The system and outreach materials are currently under development and are expected to be delivered in May 2007.

Texas

The Texas Department of Insurance (TDI) regulates the insurance industry within the state. Texas has a significant difference compared to Florida, in that TDI cannot require private insurers to offer wind damage mitigation incentives. However, due to recent losses in the state, insurers in Texas are generally becoming more proactive. Instead of simply pulling out of the state, they are taking a harder look at measures they can take to still insure homeowners but mitigate their risk.

The Texas Windstorm Insurance Association (TWIA) is the "insurer of last resort" and provides windstorm and hail insurance coverage for structures located in designated catastrophe areas along the Texas Gulf Coast. The designated catastrophe areas, designated as such by the Commissioner of TDI, need the windstorm and hail portion of their homeowner's insurance policy to be provided by the TWIA.

¹ Florida Office of Insurance Regulation. "Home Structure Rating System". <http://www.floir.com/HomeStructureRatingSystem.htm>. Accessed 7 Nov 2006.

To qualify for windstorm and hail insurance coverage through TWIA, new structures, alterations, additions, or repairs to existing structures, including re-roofs or roof repairs, located in the designated catastrophe areas must be constructed and inspected according to the building specifications adopted by TDI. While these specifications currently do not include provisions for the use of adhesives, TDI is open to assessing other mitigation measures that prove to be effective. Further, the building specifications developed for the catastrophe areas (where they are mandatory) may also serve as a model for mitigation techniques to be applied elsewhere in the state on a voluntary basis.

Mississippi

In early 2007 Mississippi considered legislation that would have mandated insurance industry incentives for wind mitigation practices, established a program to evaluate the wind resistance of homes and recommend affordable wind mitigation techniques, and established a wind mitigation program within the MS Dept of Insurance. This legislation also called for the statewide adoption of the International Building Code (IBC), in addition to other provisions. This bill passed the State Senate by a wide margin but was defeated in the House. Despite the defeat, these provisions clearly show the growing interest in wind mitigation programs in hurricane-prone areas.

Summary

Florida's property insurance companies were the first in the nation to offer incentives for wind mitigation techniques that are based on individual features.² Florida's statutes have required insurance providers to incentivize wind mitigation practices which are shown to reduce property loss caused by windstorms since 1994. The amount of the incentive varies according to risk associated with the geographical location, building materials, and construction methods of each home as well as actuarial data from individual insurance companies. Within this established regulatory framework, there appears to be great opportunity for recognition of both new and retrofit applications of adhesives for increasing the uplift resistance of roof sheathing to roof framing, especially if previous and future tests can be used to substantiate the increased structural integrity provided by this application.

Other Gulf Coast States lag behind Florida, but there is clearly growing regional interest in establishing programs which will give homeowners and builders incentives to apply mitigation techniques. Depending on each state's regulatory framework, such programs may be optional or insurers may be required to offer mitigation incentives.

² "Florida Hurricane Loss Mitigation Program Report to the Florida Legislature". Florida Department of Community Affairs. Jan 2002. <http://www.floridadisaster.org/brm/RCMP/files/legreport.PDF>. Accessed 7 Nov 2006.