

PREFACE

(Draft Version 2.1)

The Florida Department of Community Affairs (DCA) contracted with Applied Research Associates, Inc. (ARA) to evaluate the effectiveness of wind resistance features in reducing hurricane damage and loss to single family residences in Florida. The project was begun in September 2001 and will be concluded in February 2002. The scope of the project has dealt with both existing construction and new construction built to the new Florida Building Code 2001. The Florida Building Code (FBC) is scheduled to go into effect in March 2002.

The scope of this study is limited to single family residences. A companion project is anticipated to address multifamily residential occupancies by June 2002.

The Department of Community Affairs, Department of Insurance, and Applied Research Associates make no representations on the possible interpretations in the use of this document by any insurance company. The use of information in this document is left solely to the discretion of each insurance company.

This draft version of the report (available in PDF format on the DCA website: www.dca.state.fl.us/fhcd/programs/rcmp/ or printed copy or CD-ROM from DCA) is for public comment and comments should be sent to:

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All comments, questions, and suggestions are welcome, preferably by email, but phone calls or faxes will work as well. Comments need to be received by February 22, 2002 in order to have a reasonable chance to be addressed in the final document.

Distribution of the final document is anticipated by late February 2002 and will be handled by the Florida Department of Community Affairs and the Florida Department of Insurance.

EXECUTIVE SUMMARY

A project has been conducted to estimate the effects of wind-resistive building features in reducing hurricane damage and loss to single family residential structures located in the state of Florida. The scope of this project has included both new construction to the Florida Building code 2001 and existing construction. An analysis of the building stock distribution for existing construction has been developed to aid insurance companies in the computation of average rating factors.

The basic approach used in this study to develop the loss relativities has involved the analyses of individually modeled buildings at numerous locations in Florida. Each building has been modeled with a specific set of wind resistive features. The features considered in this project include: roof shape, roof covering, secondary water resistance, roof-to-wall connection, roof deck material/attachment, opening protection, gable end bracing, wall construction, and wall-to-foundation restraint. For new construction, the buildings have been designed to the FBC 2001 according to the design wind speed, wind-borne debris region design options, and FBC definitions of Terrain Category. In the wind-borne debris region, designs for both enclosed and partially enclosed structures have been evaluated, per the FBC and ASCE 7-98.

The loss cost relativities for existing construction are developed in the form of a set of tables. Two main tables are provided for the seven primary rating factors, one set for Terrain B and one set for Terrain C. Additional tables are used for four secondary rating variables. These tables are normalized to a “central” house, which is a representative house as opposed to the weakest house. The relativity for the central house is one and the relativity for a very weak house is 2.37 for Terrain B and 1.60 for Terrain C. A very strong house has a

relativity of 0.41 for Terrain B and 0.21 for Terrain C. These relativities are all computed for 2% deductible. The Terrain B results are primarily for inland locations and the Terrain C results are primarily for barrier islands and locations within 1500 feet of the coastline.

For new construction to the Florida Building Code (FBC), the loss relativities have been computed and reduced to a single table for minimal design loads. The loss relativities for minimal design construction to the FBC range from 0.5 to 0.76 in Terrain Exposure B for the case of no opening protection. When the openings are protected for wind borne debris impact, the loss relativities reduce to 0.41 to 0.48. In Terrain C, the loss relativities range from 0.3 to 0.38 for no opening protection and 0.23 to 0.27 for openings protected for impact resistance. In Broward and Miami-Dade Counties, opening protection is required for all new construction and the loss costs relativities range from 0.23 to 0.26. Since new construction may be designed for higher loads than the FBC 2001 minimums, a separate table of adjustments is provided for these cases. In addition, this table can also be used for new homes that are later mitigated beyond the code minimums.

The analysis results for new construction clearly indicate that the Florida Building Code 2001 will improve the design and construction of new buildings in the state. The loss relativities for new construction are much less than the average rating factors for existing construction.

The building stock distribution analysis for existing residences in Florida has been developed primarily from the Residential Construction Mitigation Program database of inspected homes. Four regions and three construction eras were identified to provide an

approximate method for estimating the distribution of business. Each insurance company should compute its distribution of business by year built in each region. The average rating factors by region and era computed herein can then be used to develop a portfolio-specific average rating factor and offset.

Further improvement and refinement of the work performed in this project may lead to improved estimates of relativities in the future. The report discusses areas where more data is needed as well as house features that have not been explicitly modeled.