



December 15, 2006

To: Florida Hurricane Cat Fund
Florida Building Commission
Florida Department of Community Affairs
Florida Office of Insurance Regulation
Florida Department of Financial Services
Florida Homebuilder's Association
Florida Insurance Council
Institute for Business and Home Safety

From: L. A. Twisdale, Jr.

Re: Technical Recommendations for the Long-Term Solution to Florida's Insurance Crisis

Greetings,

I have been involved in analyzing wind effects on buildings since 1974, and specifically in modeling and analyzing hurricane hazards, mitigation, loss analysis, and building code studies since 1992. For the State of Florida, I have been fortunate to be able to perform numerous studies beginning in 1998, including: Residential Construction Mitigation Program (statewide inspections, home mitigation analysis, 1998-2000), Development of Loss Relativities for Wind Resistive Features of Residential Structures (mandatory insurance credits for mitigation features, 2002), Development of Loss Relativities for Wind Resistive Features of Residential Structures with Five or More Units (2002), Loss Relativities for Wood Panel Shutters (2003), Loss Relativities for Wood Panel Shutters Anchored to Masonry Walls (2004), Mitigation Incentives Database Website (2003-2006), Windborne Debris Criteria (2005-2006).

I realize that there is a great deal of interest in seeking short term solutions to the "insurance crisis" in Florida. While I will present a few recommendations for the short term, most of my recommendations are focused on the long term. It is critical that we think strategically and long term in trying to affect lasting solutions.

I strongly recommend that Florida decision makers consider investments that will achieve real and long term reduction in insurance costs. Without affecting improvements to the wind resistance of buildings in Florida, there can be no real solution to the insurance crisis because insurance loss costs are the result of physical damage, according to:

Hurricanes → Building Stock Vulnerability → Physical Damage → \$Losses → Loss Costs → Insurance Costs

Efforts that improve insurance market efficiency and competitiveness, provide more deductible options, allow reduced insurance coverage, etc. are worthy and may produce some benefits. However, without a

major focus on actually reducing losses, the “crisis” will never really go away. Hence, we need to focus on building stock vulnerability in the above sequence, which affects everything that follows, included real reductions in loss costs and the cost of insurance.¹

Our long term goal should be to aggressively reduce losses by reducing the hurricane vulnerability of the building stock. This goal has to be achieved in a cost-effective manner.

There are basically three ways to reduce hurricane wind losses to buildings.

1. **Mitigate the Existing Building Stock.**
2. **Improve the Florida Building Code in terms of cost-beneficial wind loss reduction.**
 - a. For New Construction
 - b. Repairing damaged homes to improved standards
3. **Reduce the severity of losses after the buildings are damaged in a storm through loss control approaches shortly after the damage has occurred.**

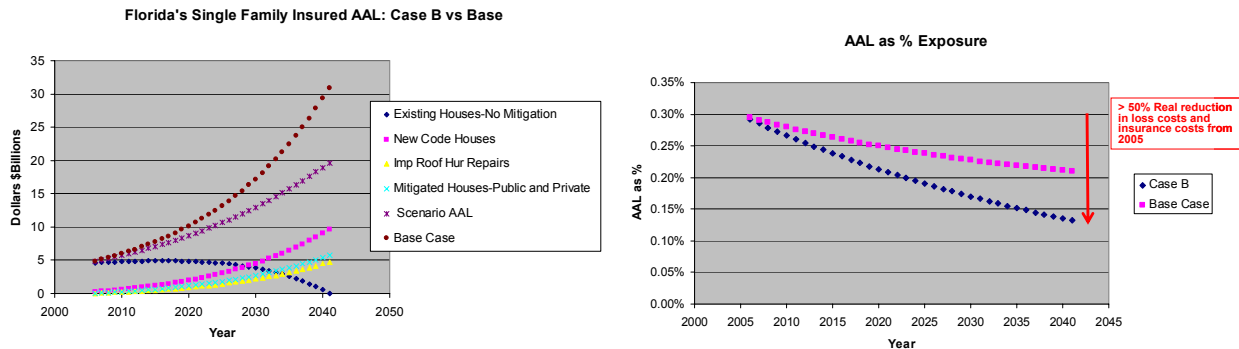
Strategies 1 and 2 will provide the greatest long-term benefits.

The potential effects of reducing losses using Strategies 1 and 2 above are illustrated in the attached briefing.² Following are some key points made from the analysis, coupled with some additional recommendations.

1. ***The real cost of hurricane losses can be dramatically reduced.*** The real cost of hurricane losses (as measured by the reduction in statewide average annual loss divided by the statewide exposure or value of the building stock) can be reduced (using 2005 as a base year) in Florida over time by a combination of: (1) aggressively improving the Florida Building Code to achieve an optimal code (which balances the net present value of the increased cost of hurricane mitigation improvements with reductions in average annual losses); (2) cost-effective mitigation of existing homes, and (3) improved repairs of hurricane damaged homes. The following charts, from pages 21-22 in the briefing, show some results of one such scenario. This illustration shows that the real cost of insurance, as measured in 2005, can be reduced by ½ with a statewide approach to mitigation and building codes. A more aggressive approach could reduce loss costs to ⅓ or ¼ of today’s costs.
2. ***Ramped-up Investment in Building Code improvements will produce dramatic reductions in losses.*** While the Florida Building Code is significantly improved over earlier codes, there are known problem areas and little funding to produce innovative and cost-effective solutions. New building code improvements will reduce the loss costs of both new code

¹ Loss costs are a measure of the long term average losses divided by the value of the building. For the entire state, the losses over all the building stock classes are divided by the value of building stock classes in the state, producing a measure that indicates both building vulnerability and insurance risk. Reducing statewide loss costs reduces risk, which, in an efficient market, will reduce the cost of risk transfer (insurance).

² The attached briefing is a slightly updated version of a briefing presented to the Hurricane Research Advisory Committee of the Florida Building Code Commission in July 2006.



buildings and, with new amendments, buildings repaired after hurricane damage. The attached briefing shows that an increase for research and testing to achieve cost-effective building code improvements will produce huge payoffs. The state needs to increase the research funding to a level of at least \$5-10 million per year. Such a continuous investment will achieve systematic reductions in loss costs for new code buildings and improved repairs of hurricane damaged buildings. The leveraging of this investment will be enormous (see page 31 of briefing), as each point (0.01) reduction in loss relativity produces average statewide average annual loss reductions of \$6 million in year one after implementation, \$200 million cumulative savings by year 10, and \$3.4 billion cumulative loss reduction by year 35. The following list is not exhaustive, but identifies some critical areas for optimizing the building code:

- a. Improve Roof Cover Performance (emphasis on tile and shingle performance; research investment of about \$2 million per year over five years).
- b. New requirements for leakiness of windows, doors, soffits, and other components (research investment for testing, analysis, improved designs of about \$2 million per year over three years).
- c. Address secondary water resistance (redundant covering applied under traditional roof cover) issues and consider requiring on all homes (research investment of about \$0.4 million per year over 2 years).
- d. Improved Designs of Attached and Freestanding Structures (research investment of about \$0.6 million over two years).
- e. Improve Wind Borne Debris Criteria, including 110 mph and possibly 100 mph zones, impact standards, and terrain definitions (research investment of about \$1 million over two years).
- f. Develop Quality Initiative and Rating for New Homes (each one independently inspected and rated; research investment to develop processes and systems of about \$0.6 million over two years).
- g. Roof Ventilation (vents, soffits, and enclosed attics, research investment of about \$1 million over 3 years).
- h. Mitigation of Damage from Tree Fall on Residences (loss reduction and life safety, research investment of about \$0.5million per year over 2 years).
- i. Complete pressure loads research on multistory homes (research investment of about \$0.2 million over 1 year).
- j. Develop requirements for repairs of damaged buildings that include cost-effective upgrades in repairs, as identified above (research investment of about \$0.2 million per year over three years).
- k. Others, ...

While these estimates are approximate, the research, testing, and cost-effective implementation would clearly produce huge payoffs in future loss reduction. Every year

wasted in implementing cost-effective improvements in new code buildings allows more than a hundred thousand buildings to enter the building stock with deficiencies.

3. ***Work toward a goal of 100% cost-effective mitigation of existing building stock.*** The state needs to move toward 100% cost-effective mitigation of existing homes.³ Achieving close to 100% mitigation will require 20 or more years (since certain roof mitigation elements are most cost-effectively done when the roof cover is being replaced). Steps to achieve a 100% cost-effective mitigation goal include:
 - a. Improve the home inspection process started under *My Florida Safe Home*. The inspection process needs to evolve to more detailed inspections (including roof condition assessment, among other enhancements; estimated development costs of about \$0.2 million).
 - b. Inspect all houses in the state and produce a rating and mitigation report on each house. Inspecting all homes also ensures that each home will receive all the insurance credits available.
 - i. A goal of 100% inspections is critical to mitigation and lowering insurance rates. If we know how the buildings are built, then we can measure the effects of mitigation and estimate the statewide annual improvements in loss cost reduction. We need to demonstrate reduction in statewide insurance rating factors and this is the only way to do it and prove it.
 - ii. Cost-effective mitigation decisions cannot be made without an inspection. Over 90% of homes in Florida qualify for one or more mitigation credits, yet most homeowners do not receive any credits because they haven't had an inspection. This situation must be addressed quickly to generate the needed private investment for mitigation.
 - iii. Encourage or require insurers to inspect all their business, thereby knowing exactly what is their distribution of business, which, when coupled with rating factor offsets, will produce further market incentives for owners to mitigate vulnerable homes.
 - iv. Citizens should definitely perform inspections on its book of business. The advantages far outweigh the cost of inspections, which can be amortized to about \$25 per year over each policy.
 - v. Expand the MFSF program, using benefit-cost measures as the ranking method for prioritizing grants.
 - c. Improve the Home Structure Rating System (HSRS) and make it a dynamic system that reflects the latest research and building code improvements.
4. ***Update insurance mitigation loss relativities and expand to include Commercial Buildings.*** The current insurance incentives⁴ are based on work done in 2001 and are in dire need of updating (needed research of about \$1 million per year). This work for residential construction also feeds directly into the HSRS improvements. New work is needed to develop a similar rating system for commercial buildings.
5. ***Capture the inspection and rating data into a statewide database.*** Include the statewide database of all inspected houses, accessible to insurance industry to promote competition. There should be some fees associated with use of the database by insurers and reinsurers, including, a fee every time an insurer hits the site to determine how the property is built for

³ Cost-effective mitigation refers to mitigation investments that produce positive net present values when compared to average annual loss reductions; 100% cost-effective mitigation does not mean that every house needs to be mitigated.

⁴ Visit the DCA website to see how the credits work: <http://www.dca.state.fl.us/fdem/mitdb/index.cfm>.

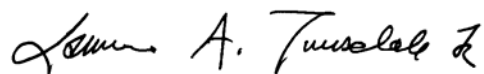
quoting purposes. An innovative enhancement would be to complete high resolution satellite/aerial photography of the entire state to produce something akin to “Google Florida”, which will be used for improved terrain data, capturing building ratings, and automatic determination of design terrain for new buildings. Designers could access the site for terrain determination per ASCE 7, at a small fee.

6. ***Expand the Cat fund as a reinsurer in Florida.*** Analysis is needed to quantify how much, but the idea is that with improving building stock, per above strategies, the Cat fund should be able to take additional top layers over time as the risk of these layers will steadily decrease. With the required inspections, the estimation of losses can be more exact and with mitigated houses the risk becomes less. Continue to expand Cat fund as more confidence is gained in the loss reduction and, particularly, if the reinsurance industry lags in the recognition of improved Florida Building Stock.
7. ***Demonstrate the effects of mitigation and improved housing stock in Florida to the reinsurers.*** This step is needed since reinsurers will not give insurers better rates for Florida if they assume the Florida building stock is “average”. The demonstrations would consist of:
 - a. Publishing of quality data on inspection and verification of inspected data losses to the reinsurers. That is, detailed damage validations after Florida storms for large samples of buildings using detailed house-by-house analyses. Provide direct comparisons of thousands of losses for mitigated and unmitigated houses to prove the reduced risk being achieved each year.
 - b. Annual conferences, etc. ...

A rough estimate to achieve all of this research and system development might be about \$12-15 million per year, initially, tapering off some after several years. The long term payoffs in loss reduction, when coupled with inspection and mitigation efforts, would easily exceed \$1 Billion per year in terms of loss reduction and impacts on insurance. Real insurance costs could be reduced by ½ to ¼ of what they are today.

I hope you will find this list of suggestions useful. Since there are many details left out of this letter, the rationale behind these recommendations can be discussed further. Please give me a call or email if you have any questions or suggestions.

Sincerely,



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Executive Vice President