

**Possible Problems/Recommendations for Discussion at the  
December 18, 2009 Meeting of the Windstorm Mitigation Committee  
Florida Commission on Hurricane Loss Projection Methodology**

**Possible Problems**

The complexity of process and problems means that there is no single solution available. The problems could include, but may not be limited to the following:

- complexity and lack of transparency of models used to develop relativities,
- translating mitigation relativities to mitigation credits in the ratemaking process,
- lack of information about housing characteristics at the exposure level,
- assumptions about average characteristics (as compared to specific exposure characteristics) used by insurers in the ratemaking process,
- timing issue and the financial impact of moving from less to more information,
- use of or discounting of information about housing characteristics throughout the insurance system (standard market, residual market, reinsurance market),
- inspection fraud and misalignment of incentives for consumers, agents, and home inspectors,
- inspection fraud and the potential impact on data used to validate future hurricane modeling loss costs,
- greater subsidy problem (e.g., coastal and inland exposures or regional)
- ~~consumer sense of entitlement regarding rates and the~~ consumer's general opposition to rate increases of any type but particularly following a multi-year period of no catastrophic loss.

Additional comments related to possible problems:

1. Even in the presence of positive action by the regulator, injecting mitigation credits in the ratemaking process creates a timing problem. Misapplication of mitigation credits or resistance to rate relief result in further distortions in the marketplace over a longer period of time. These distortions are likely to adversely impact insurer performance as insufficient premiums are being collected and insurers will not be able to add additional changes to future premiums to recuperate these lost premiums.
2. Mitigation provides positive benefits but those benefits have been oversold. If consumers receive substantial discounts for taking no action (e.g., MSFH program~68%), then the financial viability of the property insurance system is called into question. Additionally, the economic decision regarding mitigation has been tied directly to potential premium savings. Under a rational pricing scenario, it is unlikely that premium savings alone will result in a positive net present value project for consumers.
3. Too much credibility has been given to the modeled mitigation credits. Relativities developed through a modeling process provide an estimate or possible series of outcomes. As such, there are substantial differences between modeled wind storm mitigation relativities for property and with mitigation for non-catastrophic exposures (e.g., alarm system for a house; side air bags for a car). Credits for these feature a more precise estimate because of large amount of loss data that are available does not require the extensive use of computer simulation.
4. It may be likely that mitigation relativities developed through one modeling process (or one model) and translated to mitigation credits do not provide a suitable outcome when used with other models.

5. There is no accounting for the deterioration of mitigation effects over time.
6. Mitigation should help to reduce price volatility over time rather than price levels.
7. The three regulatory objectives are rates that are adequate, fair, and not discriminatory. The application of mitigation credits may have an adverse impact on rate adequacy and ultimately create financial stress in the insurance market and the potential assessments on future insureds.
8. Insurers were not proactive in pursuing rate adjustments in the move from 50% tempering to using 100% of the mitigation credit.

#### Possible Problems with Implementation of Mitigation Measures:

- A. Prevalence of mitigation measures in the existing building stock is poorly known or poorly documented both in aggregate and on a parcel-by-parcel basis. Most insurers use an estimated aggregate vulnerability curve to characterize buildings with unknown characteristics.
- B. Location of insured properties by ZIP Code, rather than accurately geocoding each parcel, often misrepresents exposure or local roughness, leading to mischaracterization of the damaging wind.
- C. Credits for mitigation have been inappropriately applied to Coverage B. They have also been applied additively when they should be modeled quantitatively using a scheme that represents the ways that they interact with each other. Structural failure in high winds is often a weakest-link process. For example, window shutters have limited value if the bottom cords of the roof trusses are toenailed to the walls or the garage door has no reinforcing.
- D. Too often, inspections to document mitigation status of homes have been inaccurate or deceptive. In some cases unscrupulous inspectors guarantee premium reductions on a money-back basis. Professional qualifications of inspectors are uneven.
- E. Poorly documented, or unrepresentative, characterizations of the mitigation status of the housing stock make reinsurers unwilling to incorporate the effects of mitigation into their rates.
- F. Primary insurers worry about premiums “lost” to mitigation credits. There is pressure to “rebalance” rates to keep the same revenue even though both legacy and properly implemented new mitigation measures may actually be reducing risk.
- G. The baseline for mitigation credits is poorly defined in practice, although rational schemes to deal with this issue seem to be available. There is presently no provision for lack-of-mitigation surcharges.
- H. Representation of structural vulnerability in catastrophe models is also uneven. At least one model uses component-based simulation of building failure, but others are based upon underwriting experience or a combination of simulation and experience. More rigorous and rational simulation based upon engineering models and full-scale testing is essential to more realistic assessment of vulnerability and fragility.

## Possible Recommendations

1. ~~**Take no major action**~~ (for discussion purposes)
  - Reasons/assumptions
    - i. ~~Through the passage of time, the problems in the market will correct themselves~~
    - ii. ~~Recommending a solution might lead to further distortions in the market~~
    - iii. ~~There is no significant problem~~
  
2. **A unified and consistent state vision** – The emphasis in the current system is on reducing consumer rates with secondary consideration given to hardening homes. Other important state objectives are apparently being given a lower priority. Since the residential property insurance market is complex, the state of Florida has a number of worthwhile objectives and goals that need to be considered and simultaneously achieved. These include the need for solvent and financially stable insurers; the need to depopulate the residual market (Citizens Property Insurance Corporation); the need for fair, actuarial, and scientifically sound windstorm mitigation discounts for policyholders; the need to reduce future wind losses and protect Florida families with hardened residential structures; the need to eliminate fraud, abuse, adverse selection, and moral hazard from the system; the need for complete, unbiased, quality data on all residential structures; the need to have reliable and credible windstorm mitigation discounts based on reliable and scientifically based hurricane computer models; and ~~the need for transparency and disclosure of any inherent rate subsidies such that disincentives are not created, thereby blocking mitigation efforts.~~ To accomplish a unified and consistent state vision, the recommendation is the following:
  - a. The creation of a state vision that is focused broadly on multiple state goals and objectives associated with the complex Florida residential property insurance marketplace.
  - b. A body of qualified, unbiased, objective experts be designated by the Legislature to monitor and evaluate the state’s vision annually and report back to the Legislature (e.g., February 1 of each year) regarding its observations and recommendations for accomplishing and balancing objectives.
  
3. **The Residential Structure Inspection Process** – The residential structure inspection system is revealing numerous errors upon re-inspections. The recommendation is that the current residential structure inspection process be replaced with an independent inspection organization that would ~~conduct~~ administer all aspects of the inspection process. The organization would operate as follows:
  - a. The sole purpose would be to ensure complete, unbiased, and the highest quality data on residential structures.
  - b. Policyholders would be required to have their residential structure inspected ~~once every five (5) years~~ periodically (e.g., 5 years) in order to be entitled to windstorm mitigation discounts.
  - c. The board of the independent inspection organization would consist of experts that understand windstorm mitigation of residential structures, data collection, hurricane modeling, insurance and reinsurance underwriting, and the inspection of residential structures.
  - d. The independent inspection organization would be financed by residential property insurers as well as certain fees paid by policyholders (~~i.e.g.~~ \$25 per inspection). Revised language will be submitted for consideration in the draft report.
  - e. An inspector pool would be created and each inspector would be certified by the independent inspection organization based on meeting various standards, background, training, and experience requirements.

- f. Each inspector should have a unique identification number that should appear on all work products.
  - g. A data base or data archive would be created and maintained so that various queries can be run regarding inspectors, mitigation features, and other relevant factors for the purpose of allowing the organization to monitor its operations to ensure consistency and data quality.
  - h. Once a year, the independent inspection organization would be subject to an outside audit.
  - i. Statutory penalties would be increased to the level of a felony for [conviction of anyone involved in](#) fraudulent activities.
  - j. A phase-out and phase-in period would be needed until the independent inspection organization could be up and running. It is recommended that insurers continue their re-inspection programs and strive to correct errors.
  - k. [TQM should be covered under the inspection oversight process as well.](#)
- A. Establishment of an independent inspection service and digital archive.
1. All inspections should be digitized and accessible. Positions should be geocoded using generally accepted standards.
  - ~~2. The service should be funded through the insurance industry by surcharges on policies, but management should be independent. Primary insurers have the fewest perverse incentives inasmuch as their interests are best served by offering discounts (or surcharges) that neither drive away customers nor jeopardize financial stability. Transparency and integrity of process are key here.~~
  - ~~3.2.~~ [3.2.](#) The complete history of legacy and new inspections should be accessible on-line by interested parties, including homeowners, prospective buyers, and insurers. If privacy considerations permit, the records should be public.
  - ~~4.3.~~ [4.3.](#) New inspections should be submitted on-line through a GUI interface with email reports of the submission to the inspector, homeowner, and insurer.
  - ~~5.4.~~ [5.4.](#) The archive service should have some inspectors working for it either as employees of contractors, but interested parties should also be able to hire outside inspectors and a percentage of inspections should be revisited for quality control.
  - ~~6.5.~~ [6.5.](#) There should be statewide qualification standards and licensing of inspectors. Each should have a unique ID number that appears on all products.
  - ~~7.6.~~ [7.6.](#) Cleaning up the inspection process will probably require working with law enforcement to prosecute perpetrators of fraudulent inspections.
  - ~~8.7.~~ [8.7.](#) There should be established procedures for correcting erroneous inspections and for settling disputes.
- B. The state should support development of a public-domain application (for PDAs or laptops) that will convert the results of a completed inspection into a vulnerability curve, perhaps including AAL and return periods for losses of a given magnitude. Such a site-specific catastrophe model should not be difficult to create given availability of hazard input as a local PDF of damaging winds. [\(move to future research area\)](#)
- [1. University Civil Engineering Departments – develop software application](#)
  - [2. be careful not to mislead, to give false pretenses](#)
  - [3. not a state of Florida application, but an academic research application](#)
- Further studies should be conducted to ascertain whether fraud is the significant problem that anecdotal evidence seems to suggest. Assuming a positive finding of significant fraud, existing laws should be modified to provide disincentives for fraud in the form on more severe penalties (i.e., felony) for all parties involved.

- Efforts should be undertaken to educate agents and brokers of their responsibility to report fraud and create incentives for all parties involved in the sales process to do so (e.g., possible anonymity?)
4. **Data Quality** – Little consideration has been given to the quality and completeness of data. The recommendation is that policies and procedures be put in place that ensure complete and high quality data. The data should be consistent with hurricane computer modeling needs and sufficient for the level of “granularity” required for modeling. These include the following:
- a. All residential structures in the state should be inspected and the results entered into a centralized database.
  - b. On-line data collection systems need to be utilized that have built-in data and edit checks.
  - c. Hurricane modeling organizations and insurance companies should have access to the database in order to have the most up-to-date data available. Privacy issues may need to be addressed such that the data is not used for any other purpose.
  - d. Re-inspections of residential structures should be conducted on a random sample of the residential structures to establish an error rate as a base line for quality improvement measurement purposes.
  - e. On-line training programs should be created to educate inspectors about errors and inconsistencies, etc.
  - f. The Florida Commission on Hurricane Loss Projection Methodology should have a role in providing input to the independent inspection organization since it is positioned to understand data requirements of the modelers and to facilitate the coordination of data issues.
  - g. A total quality management (TQM) program should be implemented by the independent inspection organization in order to strive for constant quality improvement and complete and error free data. The results of the TQM program should be reported on a periodic basis to the board of the independent inspection organization.
- Once the actual vulnerability of each insured property becomes available, the question of baseline vulnerability for figuring mitigation credits or surcharges becomes academic, or perhaps a matter of marketing. Nonetheless, it should be standardized. A reasonable course might be to compute the baseline for all insured properties in a given municipality at the time that 90% of the required data becomes available and to have the application in item C. compute discount/surcharge with justification as part of standard output. The point of the exercise outlined here is to compute the actuarially sound vulnerability and to charge rates consistent with it. Freezing the baseline at the time adequate data first become available insures that adjustments will always appear as discounts even as the building stock evolves toward greater windstorm survivability. Although they will appear as “discounts” the computed rates will reflect actual risk.
  - Capture relevant data on the housing stock and make it a part of the tax record for each house. This creates permanent data on the house and provides a more logical outcome by tying the information to the house and not to the insured. Inspections would be completed one time and important updates (e.g., new roof) would be verified by the tax inspector. The data would be publicly available and the information would be used by insurers/reinsurers/modelers for insurance related decisions and by all parties to the real estate transaction. Using the tax assessor’s

office also eliminates the need to create another entity to serve as a storehouse of the data.

- The data collection would be done outside of the insurance underwriting process and should be completed as soon as possible. During the initial data collection period, an organization should be identified to oversee the data collection efforts and be given the authority to license inspectors. Data collected in the initial state-wide phase would be fed through the supervisory organization to the appropriate tax assessor's office.
- All insurers should be required to produce data at the level that will provide insights into the impact that mitigation credits have on insurer performance (profitability and more importantly surplus). This data would be collected across time (e.g. 2003 to 2009). The Office of Insurance Regulation should be required to review its data (e.g. rate filings) and report on the impact that mitigation has on rate adequacy for the insurance market in Florida. [\(Language will be provided for this recommendation in the form of a data call under future research\)](#)

5. **Hurricane Computer Modeling** – There is a lack of understanding of the capabilities and limitations of hurricane computer models. The current system is operating on the assumption that hurricane computer models found acceptable by the Commission can accurately or reliably determine windstorm mitigation relativities. However, there are limitations as to the currently acceptable models. Although the models have met standards regarding the projection of loss costs and probable maximum loss levels, they have not been reviewed for their ability to model windstorm mitigation relativities as applied to policies on individual residential structures. This would require a new and different approach for the Commission. The recommendation is the following:
- a. The current statute regarding the Commission, s. 627.0628, F.S., needs to be expanded to task the Commission with developing the appropriate mitigation standards. The Commission would need to consider various validation requirements and logical relationship requirements, etc. The “granularity” level or level of resolution would need to be considered by the modelers and reviewed by the Commission in creating mitigation classes. Geocoding of the data would likely be a necessary additional requirement since the Commission currently only requires modeling at the five (5) digit ZIP Code level of resolution, which is insufficient for determining appropriate mitigation credits.
  - b. Insurers should use the same hurricane computer model for developing windstorm mitigation discounts as they do for developing loss costs.
  - c. The uniform home grading system needs to be repealed since it is not feasible and presumes a level of accuracy that does not exist, and, as such, could be misleading and dangerous to the public.
  - d. A structural engineer needs to be added as a member of the Commission.
  - e. S. 627.0628, F.S., needs to be changed back to requiring the Commission to develop standards annually rather than “every odd year.” This would expedite the development of the appropriate mitigation standards and the implementation of the windstorm mitigation discounts based on the revamped system.
  - f. Residential structures should be viewed as a system and modeled as such.
    - i. Consideration should be given to site factors that impact the risk or negate mitigation efforts to the residential structure.
    - ii. Human safety factors should be considered and policyholders should not benefit from a windstorm mitigation discount if it creates a safety issue [\(e.g., inspector checks to be sure mitigation features do not pose a threat\)](#)

to human safety, this should be part of the inspection form). (also suggest for future study)

- iii. The location of the property including the factors of terrain and wind vulnerabilities needs to be considered in the modeling process.

- ~~All modelers should be required to produce reports related to mitigation relativities. Additionally, an independent review of the ARA relativities should be completed. The reviews should be conducted by an independent entity that is external to the rate making process.~~

6. **Rating and the Determination of Windstorm Mitigation Discounts –**

The process of assessing, determining, and applying windstorm mitigation discounts has resulted in tensions between insurers and regulators. The fairness and adequacy of rates are important issues. Windstorm mitigation discounts should be fair and based on the best actuarial and scientific approaches rather than merely shifting cost from one set of policyholders to another. The recommendation is the following:

- a. The role of OIR should be limited to the review of rate filings. Windstorm mitigation relativities and discounts should be incorporated in the hurricane computer modeling review process. The Commission should determine the appropriate windstorm mitigation standards and review models according to these standards.
  - b. The determination and application of windstorm mitigation discounts applied to a policyholder's rates should be determined similar to the way any other rating factor is determined.
  - c. Windstorm mitigation discounts should not apply to Coverage B or coverage for "other structures" (external structures) since they are heterogeneous and present unmanageable modeling problems. Hazard increases due to other structures should be noted in the inspection process and considered in the underwriting process.
  - d. Windstorm mitigation discounts should not be applied to contents only type policies due to economic considerations.
  - e. All rate subsidies should be disclosed to the policyholder in order to avoid disincentives for policyholders to implement mitigation features.
  - f. The Florida Hurricane Catastrophe Fund should fully recognize the impact of windstorm mitigation discounts in its rating structure rather than phasing-in the discounts over time.
  - g. Both discounts and surcharges ~~need to~~would be part of the ~~rating system~~modeling process for windstorm mitigation factors such that there is greater motivation of both a positive and negative nature to harden residential structures. (will be moved under modeling section)
  - h. Insurers should be allowed to use offsets where appropriate to maintain an adequate rate level. (will be reworded in the final report and not included as a specific bullet on offsets)
  - i. Larger deductibles should be applied to wind losses if windstorm mitigation features such as shutters are not used at the time of a loss.
  - j. The active or passive nature of windstorm mitigation features should be considered in determining the amount of a windstorm mitigation discount. If the windstorm mitigation feature requires an action such as taking shutters out of a garage to install, the discount should be less than for a shutter system that is pre-installed and can be activated easily and quickly. (future research section)
- Impact of full information (housing characteristics)
    - ♦ Further studies should be conducted on the impact of moving from an informed market to a fully informed market. Cross-subsidies currently exist in the market

and consideration should be given to whether the current application of mitigation credits leads to an increase or decrease in these subsidies.

- Provision for Policyholder Obligations/Responsibility
  - a. If policyholders receive wind mitigation credits, they should be held responsible for taking certain steps prior to a hurricane or windstorm, in order to protect their home. For example, if a home has shutters on the windows but does not actually close or install them, the home will not be protected, yet, the policyholder receives a reduced premium for the mitigation feature. If a policyholder is negligent in taking necessary precautions, my recommendation is that insureds should be responsible/liable and allow insurance companies to increase the policyholder's deductible for the event in order to offset for the losses that otherwise would have been mitigated. For example, the hurricane deductible would move from 2%, to 10 or 15%, to reflect the additional exposure resulting from the lack of shutter protection for which the policyholder received mitigation credits. (language will be provided to address no double counting when a lower discount is given for a passive shutter and a higher deductible is charged if the shutter was not used during the covered event)
  - b. Another area of concern is exterior maintenance and overall condition of property. For example, if tree branches are allowed to grow over insured structures this presents additional potential loss to property and the insured premium should be debited until corrective action is taken by the policyholder.
  - c. Insurers should not be required to cover buildings/structures that are not of similar construction type required by approved building codes. (redundant, suggest deletion)

Additional comments related to possible solutions:

Clearly, accurate, well-documented characterization of building-stock vulnerability is a key element of the solution to the mitigation-credits problem and to the more general windstorm insurance problem in Florida. To an observer who does not work in the industry, it is astonishing that the stakeholders have not seen such a characterization as essential long ago given the amount of money at risk.

- A. The overarching goal of mitigation assessment should be accurate description of the strengths and vulnerabilities of individual insured properties, leading to actuarially sound premiums. It should also provide incentive to design new buildings and retrofit old ones with the understanding that both individual exposure and insurance premiums will decrease in real terms over time if the effort is successful and other factors such as climate change do not interfere.
- B. There is little to be done to increase survivability of Coverage B elements. For the most part, Coverage B should be excluded from mitigation discounts or subjected to a separate deductible. Perhaps one would want to leave a route by which hardened pool enclosures, fences, or garden sheds could be inspected for discounts, but it seems like an unnecessary complication, an opportunity for manipulation of the process, and almost certainly not cost-effective.
- C. A recommendation has been made to exclude from mitigation discounts legacy vulnerability features that would require major structural changes to implement. This proposal is inequitable to policyholders who already live in relatively invulnerable houses and are currently being overcharged. Moreover this proposal runs contrary to the course of computing actual vulnerability advocated here.

- D. Finally it is important to recognize that changes in building practices take a long time, decades to a generation, to become universal in an existing housing stock. Buildings are brought to current standards as they are remodeled, or repaired after damage, or demolished and replaced. It is likely that lowered insurance rates will be less persuasive than other incentives, such as reduced disruption or safeguarding pets, family members, and heirlooms.
- Recognition of Mitigation Credit Limitations
    - a. Mitigation credits are estimates and do not contain the level of precision related to future performance of mitigation features that is attributed to them at this point. Additionally, the process and potential combination of credits is too complex. Consider limiting mitigation to small package of possible combinations (e.g., pre and post 2002 building code).
    - b. Change the process of applying mitigation credits so that the average home serves as the baseline rather than applying credits off of the weakest structure.
    - c. In the short term, consider moving back to the 50% tempering level in order to reduce the adverse impact.

Thoughts for transition:

- Companies conduct re-inspections – should this be step 1 and then, if not having a positive impact.
- Move back to 50% tempering level – this would be step 2

Scott Wallace will provide language for recommendation on how to handle the unique circumstances for Citizens if the discounts are tempered back to a 50% level while the rates are capped at a 10% increase by law