**DRAFT: 1/14/10 – Recommendations by OIR – This is a working draft and does not represent the views or position of the Florida Commission on Hurricane Loss Projection Methodology.**

# Windstorm Mitigation Discounts Report[1]

## February 1, 2010

~~**EXECUTIVE SUMMARY**~~

Legislative changes brought about by the passage of CS/CS/CS/HB 1495 added a new subsection to the law which creates and defines the role of the Florida Commission on Hurricane Loss Projection Methodology (Commission). The new requirement in s. 627.0628(4), F.S., directs the Commission to hold public meetings for the purpose of receiving testimony and data regarding the implementation of windstorm mitigation discounts. The Commission is further required to present a report by February 1, 2010, to the Governor, the Cabinet, the President of the Senate, and the Speaker of the House of Representatives to include recommendations for improving the process of assessing, determining, and applying windstorm mitigation discounts pursuant to s. 627.0629, F.S.

~~In fulfilling~~Pursuant to the new requirement in the law, the Commission held six public meetings in Tallahassee, Florida. The input and data received during the process as well as other information gathered by the Commission resulted in this report.

Mitigation has been a concern of the state of Florida stemming back to the 1940s and 1950s. Over the years, lessons have been learned and building codes have been improved. Following Hurricane Andrew in 1993, serious efforts were made to strengthen and make building codes more effective at hardening homes. As a result, the Legislature, in its desire to motivate windstorm mitigation measures, began requiring recognition of the effects of hardened homes in residential property insurance rate filings. **The Department of Community Affairs contracted with a modeling firm to do a study to determine through engineering and other scientific means the appropriate relative rate effects of adding various windstorm mitigation features to homes.** The enactment of s. 627.0629, F.S., in 1993 lead the way for progressively more and more sophistication in the requirements for windstorm mitigation discounts. The Office of Insurance Regulation (OIR) was tasked with determining windstorm mitigation discounts "…that meet the minimum requirements of the Florida Building Code, based upon actual experience or any other loss relativity studies available to the office." The statute is augmented by further requirements in OIR's rule 69O-170.017, F.A.C. **which requires insurance companies to use either the discounts derived from the ARA study, or submit a detailed alternate study to justify mitigation discounts applied to policyholder premiums.** ~~–~~ Additionally, the law specifies a future requirement to be met by February 1, 2011, for the adoption of a uniform home grading scale and the development of a method whereby windstorm mitigation discounts are directly correlated to a numerical rating assigned to a structure per s. 627.0629(1)(b), F.S.

Residential property insurers use output from hurricane computer simulation models to develop their rates. Such models also should incorporate various windstorm mitigation features associated with the residential structures, which are being modeled individually and in combination with others. The output of the~~—~~models consists of loss costs that are then used by actuaries to develop rates. Insurers are required according to s. 627.0629, F.S., to include actuarially reasonable windstorm mitigation discounts in their rate filings. Insurers must use the

discounts developed by OIR or may use an alternative study as long as all assumptions are available to OIR for review. Additionally, insurers can modify other rating factors in their filing to reflect the overall revenue impact if the insurer has actual information on policies receiving the discounts and information to support the modification. Otherwise, insurers are not allowed to offset a loss of revenue that might result by virtue of applying the windstorm mitigation discounts to residential property insurance policies.

~~The end of the 2009 hurricane season was the fourth consecutive year that Florida did not have a landfalling hurricane. Yet, 102 of 210 insurers writing residential property insurance in the state posted underwriting losses in the second quarter. Florida's largest private residential property insurer, State Farm Florida, gave notice of its intent to withdraw from the state. The rating agency A.M. Best downgraded nine insurers in 2009, and Demotech, who rates some of the smaller Florida insurers, withdrew its rating from six insurers. Two such insurers were ordered into receivership. Three insurers participating in the state's Insurance Capital Build-Up Incentive Program paid back their surplus notes early due to problems maintaining writing ratios and minimum surplus requirements as a condition of the surplus note agreement. A number of circumstances have been reported to contribute to residential property insurers having financial difficulties. These include the following:~~
~~1) The inability to compete with Citizens Property Insurance Corporation (Citizens) since its rates were frozen in 2007,~~
~~2) The problem of having to replace reinsurance coverage offered by the Florida Hurricane Catastrophe Fund (FHCF) with more costly private reinsurance,~~
~~3) The loss of revenue associated with providing excessive windstorm mitigation discounts and not being able to offset premiums,~~
~~4) The losses in asset values due to recent financial market conditions,~~
~~5) The continued losses from hurricane claims,~~
~~6) The rising cost of private reinsurance.~~

During the public hearing process, as summarized below, the Commission received testimony identifying a number of problems and issues that may impact company underwriting results:

• The state is without a clear vision ~~and a~~or feedback structure~~, which~~that would allow it to ~~better~~ accomplish and align the joint goals of hardening homes and ensuring that consumers are receiving fair and appropriate discounts for their windstorm mitigation~~ing~~ efforts. The balancing of various regulatory and economic goals is not being accomplished in a planned and controlled fashion. Over time, a system has emerged whose overall results, implications, and effects are not ~~being~~ properly monitored and where underlying problems are not ~~being~~ clearly understood and addressed.

• The residential structure inspection system lacks clear accountability. The moral hazard is significant, with some home inspectors advertising their services free of charge to policyholders if the inspector cannot obtain a windstorm mitigation discount. Inspectors are also providing other "package" deals for various non-related services as an enticement to attract business. Some

inspectors are alleged to merely "drive by" in order to conduct the inspection. Other inspectors are reported to perform an incomplete inspection due to their failure to inspect the attic space. In some instances, home inspectors might not have entered the structure but merely filled out the inspection form while talking to the policyholder over the phone. Abuse of the system is not limited to residential structure inspectors, but also includes agents, insurance companies, and homeowners. The penalty for fraud and abuse of the system is ~~apparently~~ not ~~as strong and/or as clear as it could be~~sufficient to deter this crime. In many cases, a misdemeanor ~~would be the maximum penalty, which~~ may not be enough to discourage perpetrators ~~knowing that they can easily get away with~~who believe they will not be prosecuted for their ~~certain~~ unscrupulous activities and practices. But, some errors result from honest mistakes ~~arising from~~or ~~-~~ambiguities and judgment required in completing the form. The system lacks checks and balances; there are no audit requirements; there is very little accountability; and the system invites abuse and inefficiencies.

• A problem with the current windstorm mitigation discount system is that not all homes are required to be inspected, and for many of the homes that have been inspected, numerous errors are being recognized upon re-inspection. The quality of data is poor and impacts ~~both~~ hurricane computer modeling results and thus the validity of actual windstorm mitigation discounts being granted to consumers. The error rates that have come to light from re-inspection reports indicate that errors range as high as 55-80 percent depending on the region of the state.

• The work of the Commission associated with reviewing and making findings regarding hurricane computer simulation models is being relied on for producing windstorm mitigation discounts. There seems to be a presumption that the use of windstorm mitigation relativities is appropriate for developing windstorm mitigation discounts to apply to policyholder's premiums; however, more work needs to be done to properly validate the modeling process deriving such discounts.

• Various factors are putting pressure on insurer costs at the same time that the public is demanding more and more rate relief in a difficult economy. The fairness and adequacy of rates is an important issue. Those policyholders with high risk exposures should pay for the cost of their exposure, but what they are charged 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 current ratemaking process is highly controversial and contentious.~~

The current system of assessing, determining, and applying windstorm mitigation discounts has a number of problems as indicated above. These problems are identified in five broad areas of concern which include 1) a lack of a unified and consistent state vision, 2) a flawed residential structure inspection process, 3) incomplete and poor data quality, 4) hurricane computer modeling limitations, and 5) **incorrect application of discounts to the premium or the overlay of discounts without adjusting a rating algorithm, resulting in too little premium being charged for some risks.** ~~a system that has resulted in a controversial and frequently contentious~~

The Commission makes the following recommendations based on these five areas of concern:

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**Recommendations**

1. ***A unified and consistent state vision*** - . The original purpose of the discounts to encourage the hardening of homes has been lost. The emphasis in the current system is on reducing premiums rather than making sure additional efforts to harden homes is undertaken. A subtle expectation has been fostered that the premium savings alone should be sufficient to finance the hardening of homes. Insufficient processes are in place to prevent fraud in the inspection process, and to make certain that premium discounts are justified by a reduction of risk to the insurer.

   To accomplish the unified and consistent state vision, the Commission recommends the following:

   a. The development of a statement of objectives for the mitigation program that focuses all participants on the proper goals of the program in each responsible agency.
   b. The appointment of a monitoring body of qualified experts to evaluate the implementation of the objectives and report findings and recommendations to the Legislature annually.

2. ***The Residential Structure Inspection Process –*** The residential structure inspection process is revealing numerous errors upon re-inspections.

The Commission recommends that the current residential structure inspection process be replaced with a single not-for-profit 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~~high quality ~~data~~ inspection reports on residential structures.

b. Policyholders would be required to have their residential structure inspected ~~once~~ periodically (e.g., every five (5) years) in order to be entitled to continued windstorm mitigation discounts for those features that cannot be verified by photograph or other less expensive means. This will facilitate error correction and monitoring of techniques that deteriorate with age of the installation.

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 co-payments paid by policyholders (~~i~~.e.g., $25 per inspection).

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~~.~~. An inspector could be de-certified if the independent inspection organization finds that the inspector repeatedly submits erroneous reports without having to prove fraudulent intent.

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~~the ~~to ensure~~ consistency and ~~data~~ quality of inspection results.

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 ~~anyone involved in~~conviction of fraudulent activities.

j. The independent inspection organization would maintain a website to provide education for consumers. Other advertising efforts would also be done, but individual inspectors or inspection firms would not be allowed to advertise or independently solicit business since this would undermine the purpose of the organization.

k. 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.

l. A total quality management (TQM) program would be implemented by the independent inspection organization to strive for constant quality improvement and complete and error free ~~data~~inspection documentation. The results of the TQM program would be reported on a periodic basis to the board of the independent inspection organization.

3. ***Data Quality*** **–** Little consideration has been given to the quality and completeness of ~~Data~~the information recorded on inspection forms. The Commission recommends that policies and procedures be put in place ~~that~~to ensure~~s~~ 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 ultimately 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 insurers should have access to the database ~~to have the most up-to-date data available~~for the purpose of modeling and premium computation, respectively. Privacy issues may need to be addressed such that the data cannot be 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~~ provide~~ing~~ input to the independent inspection organization since it ~~is positioned to~~ understands data requirements of the modelers and ~~to~~can ~~facilitate the~~ coordinate~~ion of~~ data issues that may arise.

g. A total quality management (TQM) program should be implemented by the independent inspection organization 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.

4. ***Hurricane Computer Modeling –*** There is a lack of understanding of the capabilities and limitations of hurricane computer simulation models. The current system is operating on the assumption that hurricane computer simulation models found acceptable by the Commission can accurately or reliably determine windstorm mitigation relativities. However, ~~there are limitations as to~~ the currently accepted models have limitations in this regard. Although the models have met standards regarding the projection of loss costs and probable maximum loss levels, they have not been reviewed in depth for their ability to model windstorm mitigation relativities as applied to policies on individual residential structures. This would require a new ~~and different approach~~priority for the Commission.

The Commission recommends 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 discounts.

b. Insurers should use the same hurricane computer simulation model for developing windstorm mitigation discounts as they do for developing loss costs. The table of discounts should be published for each accepted model so that insurers, consumers, and policymakers can compare discounts as well as rates.

c. Both discounts and surcharges would be part of the modeling process for windstorm mitigation factors ~~such that there is greater~~to improve positive and negative policyholder motivations ~~of both a positive and a negative nature~~ to harden residential structures. Policyholders should be informed in their premium bills of the amounts of any surcharges or discounts.

d. ~~Insurers should be allowed to use offsets to maintain an adequate rate level. It is anticipated that this can be done within the hurricane computer modeling process~~ The hurricane computer simulation models would incorporate windstorm mitigation discounts as part of calculating loss costs; therefore, the~~re would not be~~ a need for offsets to maintain adequate but not excessive rate levels would be reduced.~~.~~

c.e. 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,~~ Therefore could be misleading and ~~dangerous~~ deleterious to the public interest.

d.f. A structural engineer needs to be added as a member of the Commission.

e.g.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.h. Residential structures should be viewed as a system and modeled as such.

1) Consideration should be given to site factors that impact the risk or negate mitigation efforts to the residential structure.

2) Human safety factors should be considered and policyholders should not benefit from a windstorm mitigation discount if it creates a safety issue (e.g., inspection form includes requirement for inspector to check and ensure that the mitigation features do not pose a threat to human safety).

3) The location of the property, including the factors of terrain and wind vulnerabilities, should be considered in the modeling process.

i. Various research results and efforts funded by the state of Florida should be integrated into the process of hurricane computer modeling to the maximum extent practical.

5. ***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 Commission recommends the following:

a. The role of the Office of Insurance Regulation 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 Florida Commission on Hurricane Loss Projection Methodology should determine the appropriate windstorm mitigation standards and review models according to those standards. The Commission's work in this regard should not involve any closed meetings and should allow public input prior to any change in mitigation discounts.

b. The determination and application of windstorm mitigation discounts ~~applied~~ to a policyholder's rates should be determined similarly to ~~the way any~~ other rating factors. ~~are 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~~ A study of the economic effect of wind mitigation on contents only type policies should be undertaken to determine whether such policies should receive windstorm mitigation discounts. ~~due to economic considerations~~.

e. All ~~rate subsidies~~ surcharges or discounts should be disclosed to the policyholder to ~~avoid disincentives~~ provide appropriate incentives for policyholders to implement mitigation features.

f. The Florida Hurricane Catastrophe Fund (FHCF) 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 be part of the rating system for windstorm mitigation factors such that there is greater motivation of both a positive and a negative nature to harden residential structures. But, these may be incorporated within the hurricane computer modeling results.~~

~~h.Insurers should be allowed to use offsets to maintain an adequate rate level. It is anticipated that this can be done within the hurricane computer modeling process. [this duplicates "d" above - same comment applies.~~

~~d. Insurers should be allowed to use offsets to maintain an adequate rate level. It is anticipated that this can be done within the hurricane computer modeling process~~ **~~The hurricane computer simulation models would incorporate windstorm mitigation discounts as part of calculating loss costs; therefore, there would not be a need for offsets~~**.

i.g. 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.h. 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.

After hearing testimony, reviewing reports, and considering other available data and information, the Commission concludes that the current system for assessing, determining, and applying windstorm mitigation discounts has failed to operate as intended and has significantly contributed to problems in the residential property insurance marketplace. There are no quick fix solutions. The system needs to be changed in a major way. The above recommendations will take time if they are to be implemented properly. Any interim measures taken should be designed to help prevent the current system from deteriorating further.

The Commission's recommendations are meant to improve the process and are designed to correct numerous problems with the current system. Implementing the Commission's recommendations should assist the state of Florida in obtaining the following results:

1) Better monitoring of the state's various goals and objectives related to the residential property insurance market,
2) Hardened residential structures to better withstand future windstorm losses,
3) Lower rates for deserving Florida residential property insurance policyholders,
4) Less fraud, less moral hazard, and less abuse in the system,
5) ~~A~~ H~~h~~igher quality of ~~data~~ inspections and record keeping,~~thus~~ enhancing fairness for policyholders and insurers,
6) More efficient and refined hurricane computer simulation models,
7) An improved and fairer rating system for all parties with ~~less~~ fewer subsidies,
8) Financially stronger insurers who are better able to pay claims,

9 [**9-14 are a stretch in our opinion**.]

~~9) Less future assessments on Florida policyholders,~~

~~10) A reduction in the number of policies in Citizens with more policies placed in the private market,~~
~~11) Less need for debt financing for the FHCF, Citizens, and the Florida Insurance Guarantee Association (FIGA),~~
~~12) A more competitive and innovative residential property insurance market,~~
~~13) More insurers seeking to do business in Florida,~~
~~14) Less insurer's exiting the Florida insurance market,~~
15) Complete and accurate information on every residential structure in Florida, and
16) Safer homes in Florida that can be relied on to protect Florida families.

It is important that the state of Florida develop a long-term vision regarding what it wants to accomplish and monitor results on an annual basis.
~~The state needs a long-term plan. And, there needs to be discipline to follow the plan regardless of the vicissitudes in the residential property insurance market. Underwriting cycles are a common fact of the insurance and reinsurance industries, and there needs to be some tolerance for market forces. Not that underwriting cycles should be ignored, but rather they should be understood for what they are. To recover from the residential property insurance crisis, the state of Florida needs to map out a course and then steer to it by monitoring results and taking corrective measures to reach the intended destination.~~ With this in mind, the Commission's recommendations for addressing windstorm mitigation discounts can be summarized ~~by~~ into two~~three~~ key ~~core~~ components:
~~1) the creation of a standing, objective body of experts to annually report to the Legislature regarding observations, problems/issues, and recommendations for accomplishing and balancing state goals and objectives related to the residential property insurance marketplace,~~
1) the creation of a not-for-profit independent inspection organization to ensure quality data and eliminate the potential for fraud and abuse, and
~~3~~2) adding a requirement in the law for windstorm mitigation discounts to be based on hurricane computer simulation models found acceptable by the Commission. Windstorm mitigation relativities are an output of the hurricane computer modeling process and the recommended approach would be to eliminate the current requirements of OIR determining windstorm mitigation discounts or alternatively requiring insurers to do their own studies.
This~~e~~ problem is too complex ~~with~~ and has major ramifications, dictating a stronger scientific approach. Such an approach can only be ~~that is embodied~~ implemented in the hurricane computer modeling process. The Commission is positioned to expand its current scope to develop standards and review hurricane computer simulation models to ensure accuracy or reliability in the development of windstorm mitigation discounts as applied to individual policyholder policies. ~~This approach will remove much of the "credibility issues" inherent in the current system, will result in greater fairness, will reduce long-term costs, and will lessen the risk of assessments to all Floridians.~~

## END REPORT HERE

Various problems and issues as well as the recommendations are discussed in greater detail in Section V of this report. The recommendations are listed in summary form in the last part of that section.

## I. INTRODUCTION

Legislation passed in the 2009 Legislative Session created a requirement for the Florida Commission on Hurricane Loss Projection Methodology (Commission) to report to the Governor, the Cabinet, the President of the Senate, and the Speaker of the House of Representatives by February 1, 2010, its recommendations for improving the process of assessing, determining, and applying windstorm mitigation discounts. The new law requires that the Commission hold pubic hearings for the purpose of receiving testimony and data.

The Commission is an independent body of experts created by the Legislature in 1995 for the purpose of developing standards and reviewing hurricane computer simulation models used in the development of residential property insurance rates and the calculation of probable maximum loss levels.

On Wednesday, August 12, 2009, the Commission held its first meeting to receive public testimony from various interested parties regarding the ratemaking process and procedures for the development of windstorm mitigation discounts. The Commission held its second meeting on Thursday, September 17, 2009, to solicit input from interested parties regarding problems and issues resulting from the current system of creating and implementing windstorm mitigation discounts. On Thursday, October 29, 2009, the Commission held its third meeting in order to solicit additional input regarding problems and issues and to begin its discussion of various solutions and recommendations. The Commission continued its discussion of solutions and recommendations at its Friday, December 18, 2009, meeting. [additional meetings here – January 15, 2010 and January 25, 2010]

The Commission's recommendations are designed to improve the process by ensuring that rate differentials reflecting mitigation 1) are capable of being properly administered from a regulatory standpoint, 2) are scientifically determined and are expected to result in a true reduction of future wind losses, 3) are fair to consumers and insurers, and 4) can be implemented efficiently without fraud and/or abuses in the system. Section 16 of CS/CS/CS/HB 1495 specifies the new requirement for the Florida Commission on Hurricane Loss Projection Methodology. Subsection (4) was added to s. 627.0628, F.S. It reads as follows:

*(4) REVIEW OF DISCOUNTS, CREDITS, OTHER RATE DIFFERENTIALS, AND REDUCTIONS IN DEDUCTIBLES RELATING TO WINDSTORM MITIGATION.—The commission shall hold public meetings for the purpose of receiving testimony and data regarding the implementation of windstorm mitigation discounts, credits, other rate differentials, and appropriate reductions in deductibles pursuant to s. 627.0629. After reviewing the testimony and data as well as any other information the commission deems appropriate, the commission shall present a report by February 1, 2010, to the Governor, the Cabinet, the President of the Senate, and the Speaker of the House of Representatives, including*

*recommendations on improving the process of assessing, determining, and applying windstorm mitigation discounts, credits, other rate differentials, and appropriate reductions in deductibles pursuant to s. 627.0629.*

The Commission's work is focused on improving and refining the current process involving windstorm mitigation discounts. It will be the decision of the Legislature whether to implement some or all of the Commission's recommendations. The Commission began its work by discussing and understanding its mission and then by developing an approach to 1) gather information regarding the process of assessing, determining, and applying windstorm mitigation discounts, 2) understand the problems and issues associated with the current process, 3) understand various recommendations and solutions, and then 4) draft and finalize its recommendations for improving the process. The materials provided to the Commission during the public meetings are provided in the reference section of this report. The problems and recommendations are discussed in depth in Section V, along with a summary.

## II. THE CURRENT STATE OF THE FLORIDA RESIDENTIAL PROPERTY INSURANCE MARKET

In this section the Florida residential property insurance market is discussed. To fully understand the problems and issues related to windstorm mitigation discounts, it is important to have a perspective of the marketplace. ~~This section is for that purpose and starts off reviewing the 2009 hurricane season. The financial difficulties include a discussion of underwriting loses, State Farm Florida's planned withdrawal from the state, the veto of HB 1171 and aftermath, insurance company downgrades, insurer insolvencies, companies having difficulties meeting their surplus note requirements under the Insurance Capital Build-Up Incentive Program, and problems caused by current economic conditions. The Florida Hurricane Catastrophe Fund (FHCF) and insurer reinsurance issues are discussed in order to provide an understanding of financial market volatility and Florida's reliance on financing hurricane losses with debt. Insurance and reinsurance costs are discussed followed by a review of the results from both public and private administered windstorm mitigation programs.~~

### The 2009 Hurricane Season

The end of the 2009 hurricane season marked the fourth consecutive year that the state of Florida did not have a landfalling hurricane. There were nine (9) named storms and three (3) hurricanes. Figure 1 illustrates the accumulated cyclone energy (ACE) index values, which are a measure that considers both the strength and the duration of storms. "ACE is a measure of the kinetic energy of each individual storm over the entire life cycle of the storm, which is then added together with the corresponding values of all storms in the course of the season. The long term average ACE in the Atlantic basin is about 102 per season" (Dailey 2009). It can clearly be seen that 2009 was a mild year with a value of 50. Only the year 2008 (ACE of 145) out of the last four years had an index value over the average. Early indications are for an above average year for 2010. Researchers are predicting that there will be 11 to 16 named storms, 6 to 8 hurricanes, and 3 to 5 major hurricanes of Category 3 or greater on the Saffir-Simpson scale (Klotzback and Gray 2009).

**Accumulated Cyclone Energy**
**Index Values for 2004–2009**
***Source: NOAA/AIR***
**Figure 1**

## Delete entire section: Residential Property Insurer Financial Difficulties

~~**Residential Property Insurer Financial Difficulties**~~

**Insurance and Reinsurance Costs**

Figures 5, 6, and 7 illustrate the average premium per $1,000 of exposure in the state. [14] The blue line represents all policies. The red line represents all policies excluding Citizens' policies. Figure 5 is for both personal and commercial residential policies, Figure 6 is for only commercial lines residential policies, and Figure 7 is for only personal lines residential policies. From the first quarter of 2007 until the second quarter of 2009, it appears that average rates per $1,000 have dropped significantly. Personal lines premiums per $1,000 exposure appear to have dropped from $5,800 to $4,600 (-21 percent), whereas commercial lines have dropped from $7,200 to $4,600 (-36 percent). Excluding Citizens, the drop is not as dramatic for the combined lines, $5,200 to $4,300 (-17 percent). Breaking out the data in Figure 7, the drop in commercial lines residential policies excluding Citizens was much greater from $8,400 to $4,600 (-45 percent).

**Florida Insurance Market Premium Levels –**
**Personal & Commercial Residential Property Lines**
Source: Citizens Property Insurance Corporation
**Figure 5**

**Florida Insurance Market Premium Levels –**
**Personal Residential Property Lines**
Source: Citizens Property Insurance Corporation
**Figure 6**

**Florida Insurance Market Premium Levels –**
**Commercial Residential Property Lines**
Source: Citizens Property Insurance Corporation
**Figure 7**

The combination of decreasing premiums and increasing loss trends have led to increasingly inadequate rate indications and the associated negative impacts on the financial viability of the Florida property insurance market as illustrated in Figure 8 below.

Premium and Loss Trends since 2004
Personal Residential Property
[130]
**Figure 8**

The pricing in the private reinsurance market in 2005, 2006, 2007, 2008, and 2009 is illustrated in Figure 9 below. The rate on line[15] is graphed on the *y*-axis and the loss on line[16] is on the *x*-axis. The chart is divided into the higher reinsurance layers, the middle layers, and the lower layers as indicated by the three circles. The years are denoted by the color lines. The year over year (YOY) price changes are shown for each of these layers in the yellow boxes. The information graphically illustrates the nature of the insurance crisis in 2006 and the reaction of the reinsurance markets since then. For example in 2005, the green line represents reinsurance pricing for the various layers during that year. For 2006, the change in price jumped to +45 percent for the higher layers, +29 percent for the middle layers, and +22 percent for the lower layers above the pricing levels for the 2005 year. But the following year in 2007, prices decreased, although not as dramatically, by -23 percent, -17 percent, and -15 percent respectively.

Then in 2008, the overall reinsurance pricing levels dropped below the 2005 pricing levels with additional reductions of -19 percent, -15 percent, and -11 percent for that year – see the bottom black line. This indicates that reinsurance pricing had returned to below its pre-crisis level in 2008. The dotted line illustrates the 2009 pricing levels, which are very similar to the 2007 pricing levels as prices increased by +18 percent, +14 percent, and +11 percent for each of the respective layers – high, middle, and low. For the higher layers, a one in 20-year event (a 5 percent probability of loss) costs about 24 percent rate on line (24 cents for every dollar of coverage) in 2006, but only 15 percent rate on line (15 cents per dollar of coverage) in 2008, which represents a -37.5 percent reduction in cost per dollar of coverage for this upper layer of reinsurance coverage. The middle layer, represented by a 15 percent probability of loss, was priced at about 46 percent rate on line in 2006, but had dropped to 36 percent in 2008 representing a -21.7 percent reduction in the pricing for middle layers. The lower layers represented by a 30 percent probability of loss were priced at about 56 percent rate on line in 2006 and had dropped to about 42 percent by 2008 representing a reduction of -25 percent in the pricing of the layer over these two years. Prices have edged up in 2009 to the 2007 levels, but the chart clearly indicates that reinsurance pricing has settled down from the sharp jump in 2006. Although reinsurance prices continue to be high since the Florida hurricane peril makes it the "peak catastrophic zone" in the world. Because it is not possible to fully diversify the risk with offsetting exposures in other parts of the world, a higher risk load is needed to attract capital.

Historical Year Over year Risk Adjusted
Traditional Pricing – Florida Clients

**Figure 9**

Note also that although the rate on line is lower for the higher reinsurance layers, that the "risk load multiple" is higher. For example, looking at the 2009 black dotted line, for a 5 percent loss on line, the rate on line is 20 percent as illustrated in Figure 9. This results in a risk load multiple of 4 times (20 percent divided by 5 percent). For the lower reinsurance layers of coverage, the 2009 loss on line of 25 percent corresponds to a rate on line of 40 percent, which results in a much lower risk load multiple of 1.6 times (40 percent divided by 25 percent). Comparing 2009 to 2006 risk load multiples for the high risk layer using these examples results in a difference in

risk load multiples of 5 times for 2006 compared to 4 times for 2009 or one multiple. In the lower reinsurance layer, the difference is 1.6 compared to 1.92 or .32 of a multiple.

**Windstorm Mitigation Discount Programs – Public and Private Results**

The My Safe Florida Home (MSFH) Program expired on June 30, 2009. The program resulted in 401,372 home inspections and $82,650,215 in mitigation grant reimbursements by the Department of Financial Services, where the MSFH Program resides. Of the homeowners who received a free wind inspection, 55 percent (220,754 homes) were eligible for discounts averaging $217.[17] The average time for a home inspection took 47 minutes (Torres 2009).

The percentage of residential property insurance policies that were receiving windstorm mitigation discounts as of June 30, 2007, was 2 percent and the premium reductions averaged 1 percent on such policies. A year later, the number of policies receiving discounts increased to 21 percentage and the premium reductions averaged 13 percent. Two years later, as of June 30, 2009, it is noted that 40 percent of all residential policies were receiving windstorm mitigation discounts and the corresponding premium reductions are now on the order of 26 percent. Of note, is that the base rates in insurer rate filings are intended to account for wind mitigation discounts. The relativities applied to individual policies are then used to distinguish between the various mitigated and nonmitigated structures and also the relative differences among the various mitigated structures. As such, the relativities should generally offset as a way to spread loss cost among risks and maintain actuarial soundness. If not, discrepancies are created that will need to be made up over the long run. This can be a problem for obtaining both rate adequacy and rate fairness (Miller, T 2009b).

Citizens reported to the Commission at its September 17, 2009, hearing that its windstorm mitigation discounts totaled $741 million or 30% of its total wind premium of $2.46 billion. This represents an average windstorm mitigation discount of $1,451 ($1,040 for personal residential policies and $3,990 for commercial residential policies) (Fischer 2009). Since CS/HB 1A was enacted in 2007, Citizens' rates have been frozen. Beginning January 1, 2010, Citizens' rates will be allowed to increase within limits due to CS/CS/CS/HB 1495. OIR recently issued an order establishing Citizens' rates effective January 1, 2010. For homeowners insurance policies, the rate increase will average 5.4% although some policyholders will see rate increases and others will see rate decreases. Due to concerns over the accuracy of windstorm mitigation discounts resulting from previous inspections, Citizens recently implemented a residential structure re-inspection program for a portion of its business. It has been reported that "nearly a dozen" other insurers have initiated re-inspection programs as well (Garcia 2009a).

## III. HISTORICAL BACKGROUND

Mitigation has been a concern for the state of Florida going back to hurricane damage occurring during the 1940s and 1950s, which lead to the South Florida Building Code in Dade and Broward Counties. Since that time, the state's population along with residential construction has boomed. Various expansions and revisions to building codes have occurred over time. Following Hurricane Andrew on August 24, 1992, it was recognized that what was deemed the "best hurricane code" in the United States failed.

Florida acted quickly by improving roof system requirements in 1993 followed by major structural and building component upgrade requirements in 1994. The state's building product approval system was expanded and enhanced. Building codes continued to evolve over the years and are still evolving with on-going research efforts. A statewide building code with various local options was adopted in 2007, effective March 1, 2009. The overall impact from improving the building codes has been to strengthen residential structures. However, there still remains a wide variation in loss potential between a wind mitigated residential structure and a non-mitigated residential structure. Not all of Florida's housing stock was built under the most recent building codes; therefore, structures built today may differ substantially in their wind vulnerability than those built in the past (Dixon 2009).

Beginning in 1993 in the aftermath of Hurricane Andrew, residential property insurers began to reassess their exposures in the state. Prior to Hurricane Andrew, it was widely thought that the worst-case hurricane scenario would amount to a $4 billion industrywide loss. In the months that followed Hurricane Andrew, it became obvious that losses were going to far exceed the $4 billion estimate. Ultimately, Hurricane Andrew's residential losses amounted to over $10 billion in 1994 dollars. Using hurricane simulation computer models, it was recognized that had Hurricane Andrew made landfall only 30 miles to the north that losses could have exceeded $50 billion. Insurers began to immediately adjust their exposures and increase their rates to account for the increase in their perceived risk. Residential structures, which were thought to be adequately constructed, were realized to be far more vulnerable to the peril of wind than previously thought. As the state of Florida was undergoing changes to strengthen its building codes, it also undertook to address problems that arose in the residential property insurance market. This lead to the creation of the Florida Hurricane Catastrophe Fund (FHCF), the creation of the Florida Residential Property and Casualty Joint Underwriting Association (the FRPCJUA),[18] a moratorium on cancellations and non-renewals, the creation of the Florida Commission on Hurricane Loss Projection Methodology (Commission), and numerous other statutory measures.

As building codes were improving and residential property insurance rates were rising, the benefits of wind mitigation came into focus. The impact of hardened homes in Florida could have a substantial positive long-term impact on future hurricane losses and, as a result, should allow insurance rates to be lower.

Addressing the need for recognizing the impact of mitigation features in residential insurance rates, the Legislature enacted s. 627.0629, F.S., in 1993, following Hurricane Andrew, to require insurers to offer shutter discounts or deductible reductions for fixtures designed to reduce hurricane losses. Since shutters were the most prevalent loss preventive technique, the rule became known as the "shutter discount rule." Later in 2000, the Legislature sought to expand the sophistication of mitigation rating factors and added discounts for both fixtures and construction techniques for insurers to include in their rate filings. The idea was to incorporate the benefits of the enhancements brought about by the Florida Building Code into savings for consumers. This led the Legislature

to adopt a rate filing requirement where enhanced discounts were to be incorporated in filings no later than February 28, 2003.

On June 6, 2002, the Department of Insurance (known as DOI then but the Office of Insurance Regulation or OIR today) issued an informational bulletin referring to both the filing deadline and the 2002 Applied Research Associates, Inc. (ARA) Study[19] as the basis for deriving the actuarially reasonable rate differentials required by the statute. The bulletin advised insurers that they could not offset premium dollar reductions when implementing the windstorm mitigation discounts. To partly accommodate for the lack of an offset, the DOI allowed the modifying of the discounts such that they could be half of the full rate indications. This was known as 50 percent tempering of the discounts. A supplemental bulletin was issued on January 23, 2003, which further advised that the 50 percent tempering would be discontinued after insurers developed additional information about the implementation of the discounts. Additionally, the supplemental memorandum advised that the Building Code Effectiveness Grading Schedule (BCEGS)[20] credits could be reduced by 25 percent to account for potential overlap with the required discounts. In a similar fashion, DOI allowed insurers to modify or eliminate age of home credits recognizing another potential for an overlap.

In late 2006, the Financial Services Commission adopted revisions to rule 69O-170.017, F.A.C., which required the full implementation of windstorm mitigation discounts no later than March 1, 2007, but still did not allow for the offset in lost premium revenue. The removing of the 50 percent tempering has been referred to as "doubling" of the mitigation discounts. However, insurers have had an alternative to using these mitigation discounts since the rule reads, *"These discounts must be used without any modification unless they are supported by detail alternative studies where all assumptions are available to the Office for review."* Additionally, the rule reads that, *"Filings can modify other rating factors to reflect revenue impact on current business only if they have actual information on policies receiving the discounts currently to support the modification."* Following the eight hurricanes that caused so much residential property damage in 2004 and 2005, OIR was directed by the Legislature to conduct another study. On November 20, 2007, OIR released a Request for Proposal for a "Residential Wind Loss Mitigation Study." OIR selected ARA to the conduct the study which was completed in October 2008. The results from this study, 2008 Florida Residential Wind Loss Mitigation Study, have not been adopted by rule as of the date of this report**, but is available on the OIR website as a detailed alternate study if any insurer elected to use it.** The 2008 ARA study evaluated windstorm loss relativities for construction features, included single and multifamily homes, involved the analysis of damage and loss data from the 2004 and 2005 Florida hurricanes, and included the analysis and integration of new engineering load and test data to update the mitigation discount relativities (ARAc). Under a separate statute, s. 215.55865, F.S., the Financial Services Commission was required to adopt a uniform home grading scale by June 30, 2007. By February 1, 2011, OIR in consultation with the Department of Financial Services and the Department of Community Affairs, is now required to "… *develop and make publicly available a proposed method for insurers to establish discounts, credits, or other rate differentials for hurricane mitigation measures which directly correlate to the*

*numerical rating assigned to a structure pursuant to the uniform home grading scale adopted by the Financial Services Commission…*" In addition, changes to the uniform home grading scale may also be proposed.

In accordance with s. 627.711, F.S., insurers must notify policyholders at the time of policy issuance and annual renewal of the availability of mitigation discounts. OIR has adopted a form for this purpose – "Notice of Premium Discounts for Hurricane Loss Mitigation." OIR has also adopted a form entitled "Uniform Mitigation Verification Inspection Form," which is used for requesting mitigation discounts. The form requires a qualified inspector to verify the mitigation fixtures and construction techniques. OIR held a workshop on August 18, 2009 and a hearing on December 21, 2009 related to the nature of the form. Insurers noted numerous errors being made by inspectors using the form (Miller, T 2009), **and the OIR has since made additional changes to the form which will be ready for adoption by the Financial Services Commission within the coming weeks.**

## IV. THE CURRENT PROCESS FOR DETERMINING WINDSTORM MITIGATION DISCOUNTS

Residential property insurers collect certain information from potential policyholders in the application process. Although the agent often has the authority to bind coverage immediately, the application will still go through an insurance company's underwriting process. The underwriting process is based on the insurer's underwriting guidelines and results in the ultimate selection or rejection of the risk. The insurer's underwriting guidelines specify the type of business the insurer will write. When a residential property insurer makes a rate filing, it may not have complete information on the exposure (the structure) regarding the various windstorm mitigation features. Available data is either passed on to a hurricane computer modeling firm or the company's actuary may plug the data into a specific model licensed to the insurer for such use. When data are missing or incomplete, the hurricane modeling firm may make certain assumptions about the insurer's book of business including the "average" windstorm mitigation features present in the data. Such assumptions would generally be considered in light of the insurers underwriting guidelines. The model's output is in the form of loss costs. The insurer's actuary uses the loss costs as the basis for developing residential property insurance rates. Per s. 627.0629, F.S., the insurer must include actuarially reasonable windstorm mitigation discounts *"… for properties on which fixtures or construction techniques demonstrated to reduce the amount of loss in a windstorm have been installed or implemented."* Therefore, the insurer's actuary must follow the requirements in the law and rule 69O-170.017, F.A.C., to ensure policyholders receive credit for windstorm mitigation features. Insurers must either use the windstorm mitigation discounts as developed by OIR based on the ARA study or alternatively, they can use an alternate study as long as all assumptions are available to the OIR for review. Also, the rate filing can modify other rating factors to reflect the overall revenue impact on the insurer's current book of business only if the insurer has actual information on policies receiving the discounts and such information supports the modification in the rate filing. Citizens has different requirements from those of private residential property insurers.

The Florida Public Hurricane Loss Model[21] serves as a minimum benchmark for determining the wind portion of Citizens' rates. Although Citizens is subject to the requirements of s. 627.062, F.S., there are exceptions provided in the law. Citizens is required to file recommended rates with OIR at least annually and provide any additional information required by OIR. OIR then considers the recommendations of Citizens' Board of Governors and issues a final order establishing the rates for Citizens within 45 days after the recommended rates have been filed. Citizens is precluded from pursuing an administrative challenge or judicial review of the final order (Palumbo 2009).

## V. DISCUSSION OF PROBLEMS AND RECOMMENDATIONS

The current situation in the state of Florida with regard to the granting of windstorm mitigation discounts for residential property policyholders is in need of immediate attention by the Legislature. Although the requirement for insurers to provide savings to consumers in their rate filings has evolved over time, various problems and issues associated with the process of assessing, determining, and applying windstorm mitigation discounts pursuant to s. 627.0629, F.S., have not been reviewed and evaluated until now. ~~The hardening of residential structures and the need for insurer solvency have taken a back seat to the objective of lowering consumer rates. Unfortunately, this has raised concerns that the current process may be resulting in a system that is promoting and accelerating the inadequacy of residential property insurance premiums rather than producing an actuarially sound rating system. The consequences of this include not only the continued build up and transfer of policies to Citizens Property Insurance Corporation (Citizens), but other implications since Citizens must provide various mitigation discounts on top of already inadequate rates. The phase-in to rate adequacy for Citizens following its rate freeze (required by CS/HB 1A) will be gradual and, as a result of recent legislation (CS/CS/CS/HB1495), will take an unspecified number of years to reach actuarial soundness. Due to the various shortfalls with the current system, private residential property insurers may find themselves lacking in needed resources to pay future hurricane claims. The overall solvency of Florida's residential property insurance market is at risk. This will ultimately result in severe consequences for Florida taxpayers and for Florida's economy unless the current direction and emphasis is dramatically changed. Concerns have also been raised that "false" and "undeserved" mitigation discounts may lead consumers to believe that their homes are stronger than they actually are. The current system may be putting Floridians' lives at risk if they rely on their structures for "false" protection and fail to evacuate. The unintended consequence stemming from problems in the current system may be a deception of the public with the potential for a disastrous result for the financial wealth and the safety of the state's citizens.~~

Multiple problems exist with the current system which include 1) the lack of a clear state vision without appropriate monitoring and follow up, 2) problems with the current residential structure inspection process that is rife with moral hazard, adverse selection, and the potential for massive fraud, waste, and abuse, 3) inaccurate and incomplete data regarding residential structures, 4) a reliance on computer simulation models, which have not been reviewed and validated to provide the level of accuracy being attributed to them, and 5) ~~a controversial and contentious ratemaking process where requirements may frequently be creating unrealistic expectations.~~ **Incorrect application of discounts to the wrong portions of the insurers' rates, and the application of discounts without adjusting rating algorithms and duplicative discounts.**

Figure 10 below illustrates the general nature of problems associated with the current system and the general nature of the solutions incorporated in the Commission's recommendations.

## The Proposed System
## The Current System

**Figure 10**

In this section, we will review the problems and issues according to the five problem areas enumerated above: 1) state vision, 2) residential structure inspection process, 3) data quality, 4) computer hurricane modeling, and 5) ratemaking and the determination of windstorm mitigation discounts. Following the review of each of the various problems/issues, the recommendations for improving the process of assessing, determining, and applying windstorm mitigation discounts associated with each area will be discussed. In the final part of this section, the Commission's recommendations are provided in summary form.

**State Vision**

***Problems and Issues – The Lack of a Unified and Consistent State Vision***

For some time, the goal of the state has been to encourage the hardening of residential structures by motivating consumers with incentives in the form of windstorm mitigation discounts on their insurance policies. The law, s. 627.0629, F.S., requires that insurers give windstorm mitigation discounts as part of their rate filings. The underlying goal is to improve the wind resistance of the housing stock so as to reduce future hurricane losses. Incentives are needed to encourage the building and retrofitting of stronger wind resistive structures. Over time as new building codes are adopted, new mitigation techniques are developed, and new building materials are manufactured, the housing stock will gradually improve. At any given point in time, a certain portion of the residential building stock will have been "mitigated" or hardened to some degree including new structures built to the latest building code. Hurricane computer simulation models presently consider the fact that various mitigation features already exist in the data being modeled. Without considering this, the impact of windstorm mitigation effects will be over counted if offsets are not allowed. The resulting mitigation discounts thus will exaggerate the benefits of mitigation to the policyholder and otherwise reduce the overall rate level below the level needed for an insurer to maintain adequate rates. Other problems include the following: 1) the inspections of residential structures reveal numerous errors upon re-examination, 2) little consideration has been given to the quality and integrity of data, 3) there is an apparent lack of understanding as to the capabilities and limitations of hurricane computer simulation models to accurately quantify actuarially sound windstorm mitigation discounts, and 4~~) a contentious ratemaking process where major problems and inconsistencies are coming to light. The current system is often in conflict with other statutory and regulatory objectives. As a result, some policyholders are taking advantage of statutory and regulatory requirements to obtain rate reductions creating a situation where other policyholders are likely to end up paying higher rates than necessary in the long run. Additionally, there are reports of~~

~~market disruptions, underwriting losses, and inefficiencies regarding residential property insurers that are apparently being aggravated by the way the current system of granting mitigation discounts is operating. Insurers report that the lack of confidence and credibility in the underlying data has resulted in a reluctance of private reinsurers to give credit for mitigated homes. Thus, insurers are not seeing reductions in their reinsurance costs. The concept of hardening homes and reducing future hurricane damage (brought about by improvements in the building code) is not matching up and being translated into the appropriate wind mitigation discounts for policyholders. In the haste to provide policyholders with lower rates, the scientific and actuarial justification in calculating the windstorm mitigation discounts is flawed due to a system that lacks controls and has strayed away from basic economic and risk management principles.~~

A system has been put in place that is without checks and balances to control fraudulent and unethical activities. Conflicting issues make it difficult for agents and insurers to question their policyholders' actions and motives without risking a backlash and a loss of business (Florida Association of Insurance Agents 2009). [T**he law contains an unambiguous requirement for agents to report fraud whether or not it results in the loss of business: 626.989(6).. any insurer, agent, or other person licensed under the code, or an employee thereof, having knowledge or who believes that a fraudulent insurance act or any other act or practicewhich, upon conviction, consititues a felony or a misdemeanor under the code… is being or has been committed shall send to the Division of Insurance Fraud a report or information pertinent to such knowledge or belief and such additional information relative thereto as the department may require. The Division of Insurance Fraud shall review such information or reports and select such information or reports as, in its judgment, may require further investigation….**]

The state is without a clear vision and a feedback loop which would allow it to better accomplish and align the joint goals of hardening homes and ensuring that consumers are receiving fair and appropriate discounts for their windstorm mitigating efforts. Accountability is unclear, and the balancing of other regulatory and economic goals is not being accomplished. Over time, a system has evolved with results, implications, and effects that are not being properly monitored and where problems are not being corrected. The state of Florida needs a clear and consistent vision that drives multiple types of results without the various "disconnects." Quality data is needed for appropriate and accurate hurricane computer modeling. Appropriate and accurate modeling is needed for making rate filings to determine the actuarially correct windstorm mitigation discounts. The residential structure inspection system needs to result in honest discounts that reflect an expected reduction in wind damage. The regulatory rate filing review process is faced with obstacles to actuarially sound pricing without these critical elements in place.

~~***Recommendation – A Unified and Consistent State Vision***~~

~~The state needs to have a unified and consistent vision as to what it wants to accomplish over the long-term. It needs to establish clear and meaningful goals and monitor the results and consequences of its statutory requirements designed to reach those goals. How programs are designed to implement statutory requirements is important and such~~

programs should always attempt to coordinate with other state programs rather than take a myopic short-term approach to solving problems. Consideration needs to be given to how a windstorm mitigation program should be implemented and to how to avoid conflicts with other state goals and objectives. The insurance marketplace is complex with various interacting parts. Fraud, moral hazard, abuse, and adverse selection are common problems that have to be dealt with in any insurance system.[22] It is easy to lose sight of the complexities in the residential property insurance marketplace when there is an overriding focus on one goal. Florida statutes rightly emphasize the need for rate filing requirements for insurers to make sure that consumers' premiums reflect windstorm mitigation discounts. However, in doing so, the state's goal of hardening homes for the purpose of reducing future hurricane losses should not be ignored. And, the potential that systemic risk is being created should be carefully considered to protect the interest of policyholders and taxpayers. Real results have to tie hardened homes to lower future losses to accurately and scientifically result in lower residential premiums. A large number of residential structures incorporate mitigation features and are built to various code standards. Insurers are using hurricane computer simulation models that presently incorporate certain mitigation factors in their existing model output. The current system seems to require discounts on top of rates that already consider mitigation features frequently resulting in over counting. Some policyholder's premiums are artificially lower, but their insurance companies are not necessarily in a strong position to pay claims. The ultimate goal has to result in financially viable insurers capable of paying claims in a timely fashion and avoiding large-scale assessments on policyholders and other taxpaying citizens.

The Commission recommends that the state recognize multiple goals in conjunction with a windstorm mitigation program. Goals need to be established that consider the overall health and financial soundness of the residential property insurance market. These goals include the following: 1) hardening residential structures for the purpose of reducing future hurricane losses, 2) ensuring a healthy insurance marketplace with financially viable insurers capable of paying claims, 3) requiring fair, scientific, and actuarially sound windstorm mitigation discounts and surcharges for policyholders to encourage appropriate mitigation behavior, 4) creating a system that engineers fraud, abuse, adverse selection, and moral hazard out of the system to the greatest extent possible, 5) requiring

[22] A recent report (Kennedy 2009) noted that Miami-Dade County received half a billion dollars from Medicare in home-health-care payments intended for the sickest patients in 2008, which is more than the rest of the country combined. This was half of the claims in the entire United States going to 2 percent of the total patients receiving home-health-care. Miami-Dade County accounts for more than $3 billion in false claims a year. Medicare fraud is estimated at $60 billion a year. This is an example of what can happen when proper controls to address abuse of a system are not in place. It is easier to prevent a problem than to prosecute law breakers after the fact.

complete, unbiased, quality data on all residential structures, 6) ensuring that windstorm mitigation discounts are based on reliable hurricane computer simulation models that are subject to the level of scrutiny appropriate to the level of granularity needed to be applied to a particular policy, 7) fostering a balanced regulatory system that is focused on the review of rates and that is not responsible for the determination of windstorm mitigation discounts, 8) creating confidence in an insurance system where the impact of windstorm mitigation discounts is considered fair to all policyholders and all insurers, 9) ensuring

~~transparency in ratemaking so that policyholders are aware of any subsidizes they are paying or receiving in their premiums, 109) encouraging the depopulation of the residual market (Citizens Property Insurance Corporation), and 110) ensuring that information regarding a residential structure is not misleading to the extent that it endangers Florida families.~~

~~The Commission recommends that the Legislature designate a standing body to annually study the problem, to hold public hearings, and to report back to the Legislature each year (e.g., by February 1), regarding its recommendations as to what is needed to meet the state's multiple goals including the goal of properly implementing windstorm mitigation discounts. The particular body should consist of qualified and knowledgeable individuals capable of making an objective, unbiased, and thorough report including recommendations to the Legislature.~~

~~**The Residential Structure Inspection Process**~~

~~***Problems and Issues – A Flawed Residential Structure Inspection Process***~~

~~For policyholders to obtain windstorm mitigation discounts, they are required to have a home inspection. The Office of Insurance Regulation (OIR) has adopted a Uniform Mitigation Verification Inspection Form, OIR-B1-1802 for use by a qualified inspector in inspecting a policyholder's residential structure. The form does not have detailed instructions to assist inspectors in filling it out. At the bottom of the form is a comment that reads, "*This verification form is valid up to five (5) years provided no material changes have been made to the structure*." OIR held a workshop on August 18, 2009 and a hearing on December 21, 2009 to solicit comments on the form. Under consideration is a requirement for photo documentation of mitigation features, a requirement for the property owner to verify that the inspection actually took place, and other revisions to eliminate fraud and mistakes in the mitigation discount inspection process.~~

~~A number of problems have been noted with the way residential property inspections are being conducted. The cost associated with a home inspection is generally on the order of about $150. Under the current adopted windstorm mitigation discounts, most types of windstorm mitigation features are likely to qualify for a discount, while surcharges are not allowed. Many home inspectors advertise that if they cannot qualify a homeowner for a discount that they will not charge for the inspection. There have been reports of inspectors that merely drive by the property without actually entering the structure. Others are reported to do a cursory inspection and may not go up into the attic to inspect the roof system. Residential policyholders are allowed to shop for inspectors who may certify more mitigation features associated with their home than actually exist.~~

~~Competition among home inspectors is reported to be "fierce" with some inspection companies giving insurance agents gift certificates as referral fees. Additionally, some insurance companies and agents are reported to be abusing the system in order to gain business. Other problems stem from honest mistakes, ambiguities, and differences of opinion or judgment, which result in inconsistent data. The penalty for conviction of fraudulent activities is generally limited to a misdemeanor and, as such, there is no strong incentive to prosecute crimes of this nature. However, given the magnitude and importance of the problem, literally billions of dollars are at risk along with the potential for loss of life for families that incorrectly rely on erroneous inspections thinking that their homes are safer than they actually are.~~

~~The way the current system operates allows for, and in many cases is, the cause of adverse selection, moral hazard, fraud, and abuse. As a result, the objective of hardening homes to reduce future hurricane losses is not being accomplished to the extent needed. The main value of a windstorm mitigation program is being weakened by a system that is not focusing on the hardening of residential structures and is tolerating carelessness in the collection of data resulting in the improper application of windstorm mitigation discounts. Instead of the state being better off with hardened homes and a reduction in future hurricane losses, the result will be fewer financially sound companies and a larger residual market requiring larger public funding through future assessments. For policyholders, the result is an unfair shift of premiums from one set of policyholders to another.~~

***Recommendation – Re-Engineering the Residential Structure Inspection Process***

The current way residential structure inspections are being conducted is not working and creates a number of problems. The recommended solution is to create a not-for-profit independent inspection organization with the sole purpose of ensuring quality data. Halfway measures or partial solutions will not be sufficient to eliminate the serious problems with the current system.[23] Fraud, abuse, adverse selection, and moral hazard need to be engineered out of the system. The Commission recommends that the penalty for conviction of fraudulently obtained windstorm mitigation discounts be increased to the level of a felony for a policyholder, for an agent, for an inspector, for an insurer, or for anyone that stands to gain or profit off the deception. Quality data are critical to the operation of a sound windstorm mitigation program since every part of the process depends on it. Without quality data, the complex job of hurricane modeling will produce unreliable and non-credible results. Without proper hurricane modeling results, the ratemaking process breaks down and the appropriateness of rates cannot be evaluated with any reliability. Figure 11 is a graphical representation of the proposed independent inspection organization and a bullet listing of its various roles and responsibilities.

[23] For example, one suggestion to the Commission was to increase the number of fraud investigators. This well intended recommendation fails to address the bigger problem of engineering fraud out of the system. Ideally, if the problem is properly addressed, the number of fraud investigators can be reduced thus allowing existing fraud investigators to investigate other types of fraud.

# Independent Review Process

**Figure 11**

Unfortunately, a new system involving an independent inspection organization designed to be responsible for all aspects of a residential inspection program and gathering quality data cannot be implemented overnight. A certain amount of time will be needed to phase-out the current system, and a certain amount of time will be needed to phase-in a new system. In the interim, it is recommended by the Commission that insurers reinspect residential structures in those situations where problems are indicated. A timetable with various deadlines is needed to be established so that the independent inspection organization can be created and up and running as quickly as possible. The proposed new independent inspection organization will need to create a plan of operation, to contract with various service providers, to establish various standards for inspection, to

establish qualifications for inspectors, to adopt inspection forms and procedures, to create training programs, to specify licensing or certification requirements, to select home inspectors for a home inspector pool, to create a website to provide education for consumers, to create data bases and the software necessary to monitor results, to implement a total quality management program, and to provide reports to monitor its progress related to the accuracy, completeness, and overall quality of the data being generated.

In order to calculate appropriate windstorm mitigation discounts, all residential structures in the state will need to be inspected and the data maintained in a data base so that hurricane computer simulation models can accurately model the impact of mitigation features on insurance rates and insurers can have access to the information for underwriting purposes. Today, the prevalence of mitigation features in the existing housing stock can only be estimated, proper documentation is lacking, and too frequently data are inaccurate both in the aggregate and on a site-specific basis. It is recommended that the law require all owners of residential properties to have their structures inspected at least onceperiodically (e.g., every five years) since over time depreciation and other factors can negate the value of mitigation features. The inspection should be done by the proposed independent inspection organization as discussed. The organization would be created by law for the sole purpose of ensuring quality data by being responsible for administering the entire residential structure inspection process. The goal should be that the data are of the highest quality, such that its quality and accuracy are acceptable to policyholders, insurers, computer hurricane modeling organizations, financial institutions, the capital markets, and reinsurers around the world.

Residential property insurers should finance the independent inspection organization, and the cost should thus be passed through in residential property insurance rates. Additionally, the organization should be allowed to charge a small copayment directly to the policyholder with each inspection. The board of the organization should be made up of objective individuals that have the expertise and credentials that would ensure that the goal of complete, high quality, unbiased, and credible data is met. Once a year, the organization should be required to have an outside independent audit. The audit should deal with both the organization's financial operations and with the quality, accuracy, and completeness of the data collected by the organization.

Each residential property policyholder would need to contact the independent inspection organization in order to have the windstorm mitigation inspection scheduled. The independent inspection organization would be responsible for developing personal and commercial residential windstorm mitigation inspection forms consistent with data requirements of the modelers and consistent with the appropriate fixtures and construction techniques designed to reduce hurricane losses.

Data collection using the forms should also include "site factors" that could increase the risk of damage and negate structural mitigation efforts. Such site factors would include large trees next to the structure, man-made hazards creating vulnerability such as pool

enclosures, certain other unmitigated structures on the site, low-lying locations subject to flooding, storm surge areas, and the like. Space should be provided on the form for explanations and pictures should be required to document any particular site hazards. The age of various mitigation features and structural elements need to be collected for consideration in the modeling and actuarial determination of windstorm mitigation discounts. Distinctions regarding the collected data should include whether the mitigation feature has to be activated by the policyholder with great effort or whether it is a permanently existing feature that can be activated with little effort (active versus passive mitigation features). For example, storm shutters that have to be taken out of a policyholder's garage to be installed are not as reliable as ones that are permanently installed on a house and are closed in a matter of a few minutes. Consideration should also be given to any mitigated feature or construction technique that could result in a risk to human life. Any mitigation feature that does not fully consider the safety aspects of the occupants of a residential structure should not be encouraged with discounts. The personal safety of Florida policyholders and their families should always be a top priority. Insurers should not be required to provide windstorm mitigation discounts to policyholders where the mitigation features of the residential structure is negated by other factors or results in the unnecessary endangerment of occupants.

Both insurers and hurricane computer modeling organizations need to consider "site" factors and "human safety" factors. It is not realistic for modelers to assume that these factors do not exist. Once the data are collected, the modeler should use such information in modeling loss costs. Insurers, on the other hand, should consider these factors in underwriting and rating policies. The policyholder should be made aware of site factors and human risk factors that are creating the additional hazard so that steps can be taken to correct the issue and allow for the full recognition of structural mitigation features in their rates.

The independent inspection organization would be responsible for developing standards for the inspections and instructions for the inspection forms. Multiple pictures of the property are needed to document the structural strength of both the outside and inside of the residential structure. It is expected that the independent inspection organization would hire or contract with residential structure inspectors, certify such inspectors, and maintain a pool of such inspectors associated with various sections of the state. After being contacted by a policyholder, the independent inspection organization would select an inspector from its pool of certified inspectors. The inspectors should not have any conflicts of interest that might act to bias his or her judgment and objectivity. Each inspector should have a unique identification number assigned and such number should appear on all work products.

The independent inspection organization would be responsible for training inspectors, evaluating inspectors, certifying inspectors, and disciplining inspectors. Only individual inspectors who have been certified by the organization will be allowed to conduct an inspection. If a firm is contracted with, then each person performing an inspection with that firm will be required to meet certain educational, training, and certification

requirements. Certification requirements should be different for personal residential inspectors and commercial residential inspectors. Specific skill and knowledge is needed for the inspection of commercial structures. A data base will be established by the inspection organization such that queries can be run to compare the work of one inspector to that of another as well as review the types of mitigation features given by territory of the state, by inspector, by type of structure, etc. Re-inspections would periodically be performed by the organization in order to evaluate any errors to determine the error rate for individual inspectors, error rates for sections of the state, and error rates associated with various mitigation features, etc. The results of re-inspections should be used to enhance training efforts and improve standards.

All residential policyholders would be responsible for having their residential structure inspected once everyperiodically (e.g., five years) to obtain a windstorm mitigation discount. Failure to have an inspection would result in the policy being rated as a nonmitigated structure and surcharges could apply. ~~However, during the first two years, a policyholder would be entitled to a premium refund of the difference in the premium after the inspection and the prior premium based on the unmitigated structure rate. Any refund should be retrospectively based on the date the independent inspection organization becomes operational by law. After two years from the time that the organization becomes operational, the windstorm mitigation discount should only apply to the premium retrospectively from the date of the inspection. It should be the responsibility of the policyholder to schedule an inspection. The independent inspection organization should conduct the inspection within a specified time frame after the inspection is requested by the policyholder.~~ **[this would potentially result in draining cash from insurers that has not been quantified.]**
This solution will be further discussed in more detail in conjunction with "Data Quality" in the heading below.

**Data Quality**

***Problems and Issues – Incomplete and Poor Data Quality***

A problem with the current system is that not all homes are required to be inspected, and for many of the homes that have been inspected, numerous errors are being recognized upon re-inspection. Based on the reported results of re-inspection programs, there appears to be wide-spread fraud occurring in some geographic areas of the state. The error rates revealed in re-inspection reports indicate that errors range as high as 55-80% depending on the region of the state (Florida Association of Insurance Agents 2009). The system lacks checks and balances, there are no audit requirements, there is very little accountability, and the system invites abuse and inefficiencies.
The forms used by home inspectors do not have adequate or clear instructions and allow for the use of "judgment" and various interpretations in many instances. Honest mistakes are common as well. There is a lack of consistent training and an absence of clear standards for guidance. Currently, no specific licensing or certification requirements have been established for home inspectors. A large number of individuals given their association with construction or construction practices have been recognized as "qualified" inspectors. Training and instruction is limited and apparently inadequate

given the results of various re-inspections.
Insurers have been so concerned with the quality of the data that some are re-inspecting structures. Citizens Property Insurance Corporation's board recently approved a program to re-inspect a portion of its business. Residential structure inspectors lack accountability and there is a lack of consistent regulation as to their credentials and training. The current system encourages and tolerates inspectors aggressively "marketing" their services. The potential for abuse of the system does not stop with home inspectors. It has been pointed out to the Commission that insurance companies and agents may also be involved in activities that are injurious to the system. The bottom line result is poor and inconsistent data quality. Since not all residential structures are required to be inspected, the data is incomplete and fragmented. Insurers only collect limited information about the residential structure when taking an application and their agents generally do not have the expertise to properly inspect a structure for mitigation features. **As a result of data quality issues, modelers may have insufficient information from which to accurately model mitigation features and reinsurers may not be willing to give appropriate credit to reductions of risk commensurate with those features.**

***Recommendation – Data Quality Solution***
To solve the data quality problem, the state needs to create a new independent inspection organization as discussed above to replace the current system. Data need to be stored in a centralized archive. The independent inspection organization should implement an online data collection system complete with validation and quality control software checks to ensure consistency and to avoid typographical errors and input mistakes. Geocoding of the locations of residential structures is needed to accommodate hurricane computer modeling needs. Hurricane modeling organizations and insurers would need to have access to the residential structure data to update their models and ensure that they have the most up-to-date results. Privacy considerations may need to be addressed and the data restricted solely for hurricane modeling purposes. Re-inspections by the independent inspection organization would help it **self-monitor** its results and put it into a position to identify problem areas so that sound data quality improvement measures can be implemented. The independent inspection organization would set standards for inspections that would be required to be understood by the inspectors conducting the residential structure inspections (including the recognition of site hazards). Periodic training on the use of data collection forms and the various errors being identified would be necessary and could be implemented with an on-line system. Figure 12 is a graphical illustration of the process of ensuring quality data.

# Data Quality

**Figure 12**

Since quality data is essential to the hurricane modeling process, the Commission is positioned to understand the requirements necessary to ensure data quality for the hurricane modeling process and should have a role in providing input to the independent inspection organization and in providing a forum for coordinating data issues with the hurricane computer modeling organizations.

The independent inspection organization would be required to institute a total quality management program (TQM) with emphasis on recognizing errors and mistakes in order to constantly improve performance so as to strive for error free quality data. The improvement in results would be reported to the board of the independent inspection organization periodically.

**Hurricane Computer Modeling**

***Problems and Issues – Hurricane Computer Model Limitations***

Based upon a loss relativity study done by Applied Research Associates, Inc. (ARA), OIR has determined various mitigation discounts required to be used by insurers in rate filings unless they use alternative studies that are supported and all information is available to OIR. The Commission has found the ARA model acceptable. However, the appropriateness of the specific relativities has not been reviewed or validated to the Commission by ARA. Although the model has been evaluated as to its inclusion of various mitigation features in its loss costs, the relativities have not been validated by the Commission, and their application to specific policies may imply an unrealistic level of accuracy based on the way they are being used. For example, the relativities, which were created in the ARA study, are designed to operate with basically two territory distinctions denoted as terrain B (primarily inland properties) and terrain C (primarily coastal properties). As such, the loss cost differences among locations within each territory are eliminated as to the way that they might have interacted with various mitigation features. This has an impact on loss costs and the overall soundness of the windstorm mitigation discounts. There may be cross subsidies within territories with some policyholders paying more than they should and others paying less than they should if each group of policyholder's specific territorial distinctions were correctly accounted for.

***Recommendation – Eliminating Hurricane Computer Model Limitations***

The requirement in the statute that the OIR *"…shall determine the discounts, credits, other rate differentials, and appropriate reductions in deductibles that reflect the full actuarial value of such revaluation, which may be used by insurers in rate filings…"* presumes that the state of the art related to hurricane modeling is such that a certain level of "granularity" can be obtained from hurricane modeling without questioning its validity and credibility. This presumption may be based on the fact that the Commission has found various hurricane computer simulation models acceptable based on its review. At first, this may appear to be a reasonable assumption. However, it should be recognized that the Commission is tasked with establishing standards and reviewing hurricane computer simulation models and making findings as to the accuracy or reliability of the models in projecting loss costs and probable maximum loss levels. Although each of the models reviewed by the Commission is required to incorporate various windstorm mitigation measures, the Commission has not found the model output to be accurate or reliable for various location specific windstorm mitigation factors such that those factors can reliably be applied to specific residential policies as discounts to residential property insurance premiums. Once windstorm mitigation relativities are calculated, the development of windstorm mitigation discounts may be subject to actuarial judgment and other considerations. The various permutations and combinations related to relativities

can be numerous. Although the production of windstorm mitigation relativities is possible for model output, the Commission has not reviewed models for this level of granularity and detail. Since loss costs at the five-digit ZIP Code area vary significantly among the modelers, it is expected that wind mitigation discounts would also differ widely. The actuarial and statistical credibility of such data needs to be thoroughly examined. As such, the law needs to be expanded to require the Commission to review hurricane computer simulation models specifically for the accuracy or reliability of location specific windstorm mitigation discounts in addition to loss costs and probable maximum loss calculation purposes. This would require the Commission to establish rigorous windstorm mitigation standards that would be supported with validation requirements and logical relationship requirements.

To appropriately model windstorm mitigation discounts and not mischaracterize wind damage, the Commission would need to require geocoding of each property. Just because a hurricane computer simulation model can incorporate various mitigation features into its data when modeling loss costs and calculating probable maximum loss levels does not necessarily qualify the model to create specific windstorm mitigation discounts that can also satisfy the requirement of accuracy or reliability at a high granularity level. The law would also need to be changed back to its previous wording to allow the Commission to adopt standards every year rather than just every odd year in order for the state to move as quickly as possible in this direction.

For some time, the state of Florida has funded various research efforts dealing with windstorm mitigation. For example, the "Wall of Wind Research Initiative" at the International Hurricane Research Center (IHRC) at Florida International University is actively engaged in such research. The following statement is from IHRC's website (International Hurricane Research Center):

*The IHRC is currently developing an innovative research capability in full-scale structural testing to determine inherent weaknesses of structures when subjected to categories 1 to 5 hurricane-force winds and rain, leading to new technologies, designs and products. This new Wall of Wind testing facility, the first-of-its-kind, will revolutionize our building construction and retrofitting practices.*

The Commission recommends that research results from these and other efforts be integrated into the process of hurricane computer modeling to the maximum extent practical.

Additionally, the Florida Catastrophic Storm Risk Management Center (Center) at Florida State University is actively engaged in research activities, and it is important that the Center's efforts and results be understood and incorporated into the process of developing windstorm mitigation discounts. The hurricane computer modeling issues pointed out above call into question the future implementation of the uniform home grading system and whether it is a feasible objective to expect windstorm mitigation discounts to accurately correlate to a uniform home grading scale. The requirement in the statute implies a level of scientific accuracy that currently does not exist. It appears that the state of Florida is moving too quickly in this

direction although the requirement has been codified for some time. For example, a uniform home grading scale that assigns a grade of 0 to 100 to a home based on its level and degree of mitigated features could be inaccurate, misleading, and dangerous. Such a system implies a level of accuracy that could cause residential policyholders to falsely rely on their home for protection during a hurricane when such level of protection might not truly exist. There could conceivably be orders given during a storm warning in the future directing only people living in a home grading of 80 or below to evacuate an area. Those who rely on their 80 and above rating may be misled by the perceived safety of their home. Numbers can be misunderstood and used incorrectly. In other situations, the uniform home grading system could be abused by misleading consumers into buying a home that later proves not to live up to its rating.

Why create a system that could result in a number of unintended consequences involving complex legal, safety, and implementation issues. It is recommended that the Florida Legislature repeal the concept of the uniform home grading system. Although it was conceived of with the best of intentions, it is questionable whether such a system is feasible. There are many other ways to facilitate the selling of residential structures than the state of Florida certifying to a number that does not have the scientific accuracy and meaning that is implied by its use. A complete up-to-date database could serve a similar purpose for potential homebuyers by allowing them to be fully aware of a residential structure's vulnerabilities. This could work similar to purchasing an automobile and reviewing the sticker where all the features of the automobile are listed. It is also possible to require insurers to set up on-line systems such that a policyholder can select various mitigation features and determine insurance cost savings. Insurers already have such systems in place for rating automobile policies.

The Commission recommends that all windstorm mitigation discounts should be modeled by hurricane modelers and should be a part of the review as the modeling organization justifies that it meets standards before the Commission. **The Commission's work in this regard should be open and allow for public input.** The work of the Commission is being relied on for producing individual mitigation discounts. There seems to be a presumption that the use of ARA's windstorm mitigation relativities is appropriate for developing windstorm mitigation discounts to apply to policyholder's premiums; however, more work needs to be done to properly validate the discounts. Currently, the review of windstorm mitigation relativities as directly applied to policyholder premium discounts is beyond the scope of the Commission's review process.

A further recommendation is that the Legislature needs to add a structural engineer as a member of the Commission. Although the Commission is composed of a number of experts, it lacks a structural engineer. When it comes to windstorm mitigation discounts, engineering plays a large role in understanding the modeling process.

A residential structure should be viewed as a system as a whole. Additionally, the site where the structure is located as well as the specific location of the residential structure plays a critical role in the potential vulnerability of wind loss to the structure. For the

residential structure to be modeled accurately, a number of factors need to be considered beyond just the mitigation features associated with the structure. Also, it should be noted that certain mitigation features have a bigger impact on preventing wind loss in one part of the state than another. A house in North Florida situated in a heavily wooded terrain area may not need shutters to the extent that a beach front home in Southeast Florida would. Since the 100-year wind borne debris areas differ in various parts of the state, what constitutes a fully mitigated home in one part of the state may differ dramatically from that in another part of the state.

Loss costs and mitigation discounts need to be calculated using the same model to ensure that there are not inconsistencies and disconnects. Notwithstanding insurers' ability to conduct their own relativity studies, insurers are otherwise allowed to make their rates using one model and then use mitigation discounts determined by OIR derived from the loss relativities from the 2002 ARA study, a different model. The appropriateness of the use of different models has not been evaluated, and there have not been other loss relativity studies from other modelers to compare the reasonableness of the ARA results. It is unknown what the variation in results might otherwise be using other models. Just because an "acceptable" model can produce relativities does not necessarily justify the level of granularity and detail associated with the modeled results.

The requirements of the Commission should be such that the burden should be placed on the hurricane modeling organization to validate the level of granularity modeled for windstorm mitigation relativities used in the calculation of windstorm mitigation discounts. For example, it would seem logical that a modeler could model expected loss cost differences for a windstorm mitigated structure from one that is not mitigated and create a differential in the loss cost associated with each. But, the next consideration should be how many different types or classes of mitigated structures are reasonable for a modeler to be able to model and apply a specific windstorm mitigation discount. At some point, statistical credibility gives way to statistical "noise."

It was pointed out above that a residential structure is built as a system that is located in an environment due to its specific site characteristics and geographic location characteristics that impact long term losses and thus the average annual loss cost to the structure. It is conceivable that a modeler could model each individual exposure's loss costs and determine the percentage reduction in losses due to various mitigation factors and hazards associated with the structure, site, location, etc. The fundamental question is related to the ability of the structure given its environment, to withstand various wind speeds. Since variability plays a significant role in actual loss results and will be found in the actual loss data which the model's vulnerability is based on, the range and variability of the results are important. The variation around the mean of the results is expected to vary widely. To establish the proper level of credible results, various mitigated factors/features might need to be grouped and a discount established that is credible for the particular group or groups. It would be up to the modeler to determine the number of specific groups and the level of the discount associated with each group. It would be up to the Commission to determine that such groupings are reasonable based

upon accurate and reliable information. The wind mitigation discount should ideally be highly correlated to the reduction in loss costs associated with various mitigation treatments for specific properties. The significant point is that the windstorm mitigation discount will differ with two similarly mitigated homes located in different parts of the state and depend on whether there are site hazards involved. Computer hurricane modeling would solve this problem, whereas, it is largely being ignored with the current system.

**Ratemaking and the Determination of Windstorm Mitigation Discounts**

***Problems and Issues – Ratemaking and the Rate Review Process***

~~Various factors are putting pressure on insurer costs at the same time that the public is demanding more and more rate relief due to a difficult economy. The fairness of rates is an important issue since not every policyholder should be "entitled" to "affordable" premiums based on some arbitrary definition.~~ Those policyholders with high risk exposures should pay for the cost of their exposure, but what they are charged 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 current ratemaking process is highly controversial and contentious~~. A regulatory process for determining windstorm mitigation discounts per s. 627.0629, F.S., has been put in place where relativities from the ARA 2002 Study are used to develop windstorm mitigation discounts.[24] Insurers are allowed to use alternative studies as long as all the information is provided to OIR for review. However, insurers claim that such studies are costly, and there is no assurance that the discounts will be approved after this expense has been incurred. Insurers have criticized OIR for its failure to adopt the newer ARA 2008 relativity study (Miller, T 2009). **But OIR points out that the new study is available as a detailed alternate study and could be used now. Of course it would require most insurers to add fields to their data that they may not currently track**. ~~study's results are not significantly different from that of the ARA 2002 study and that insurers are not prepared for dealing with the results, which may require changes to computer systems and additional data (Miller, B 2009b)~~. Insurers that use the adopted windstorm mitigation discounts, are faced with the possibility of having to give virtually all of their policyholders discounts since the tables of discounts have been adjusted such that all but the lowest mitigated structure indicates a discount – see OIR-B1-1699 and OIR-B1-1700 forms. Insurers claim that the process results in exaggerated or overstated discounts. OIR points out that in a number of cases exaggerated results stem from the fault of the actuarial algorithms used by insurers such as applying windstorm mitigation discounts additively versus multiplicatively (Ritzenthaler 2009a). There have been actual situations where negative premiums have resulted. A problem that insurers have recognized is that BCEGS (Building Code Effectiveness Grading Schedule) credits overlap with the promulgated windstorm mitigation discounts and result in a double counting problem. OIR attempted to address this problem in a 2003 bulletin with the suggestion of tempering the BCEGS credits by 25 percent to account for the overlap. Other situations have arisen where insurers give other discounts that might overlap with windstorm mitigation discounts such as a new home discount. OIR rejects this as a problem since it

has allowed insurers to discontinue new home discounts. Although the process requires the application of the windstorm mitigation discounts to the wind premium, insurers point out that the wind premium also includes a portion for other structures and fixed expenses, which should not be included when the discount is being calculated. OIR notes that it is up to the insurer to remove these elements to derive an actuarially sound rate (Ritzenthaler 2009a).

When insurers calculate loss costs using hurricane computer simulation models, mitigation features are generally recognized in their base rates. Following OIR's procedures and implementing OIR's published windstorm mitigation discounts results in the need for additional premium to allow insurers to offset the discounts and corresponding reduction in premium, but the insurers note that they are not allowed to offset premium reductions by raising other rates to produce an adequate rate level. OIR has indicated that this is a timing problem since the insurer can make base rate filings over time for rate increases that will eventually result in these adjustments.[25] OIR has stated that a strict reading of the statute prevents the allowance of surcharges. In the meantime, insurers point out that they are losing premium. ~~This was one of the primary reasons indicated in State Farm Florida's "Withdrawal Plan" filed in 2009. State Farm Florida noted that inadequate premiums resulted in a loss of surplus thus leading to its projected insolvency by 2011. OIR indicated that the reason for various insurers' failure to get rate filings approved has not been because OIR has been disapproving rates (Miller, B 2009b).~~ [**MITIGATION DISCOUNTS TURNED OUT NOT TO BE THE DRIVER OF STATE FARM'S RATE NEED. SELF-INFLICTED DISCOUNTS WERE A MUCH LARGER PORTION- THE STATEMENTS HERE ARE DATED AND LACK CREDIBILITY.]**

~~**It appears a very difficult** situation has been created that is causing frustration on the part of all parties involved. All the problems and issues need to be resolved so that the system can operate to ensure that residential property insurance rates are appropriate and fairly reflect proper windstorm mitigation discounts. Otherwise, a worsening of the situation portends disastrous results for the state of Florida. The goal of protecting insurer solvency may not be given a high enough priority under the current system since there continues to be public pressure to lower consumer rates, and the insurance industry is not viewed in a favorable light. But regardless of public opinion, the citizens and taxpayers of Florida deserve a sound insurance system capable of paying claims.~~

The OIR's responsibility for residential insurer rate filings is defined according to the standards in s. 627.062, F.S., and extends to ensuring that insurers also comply with the requirements in s. 627.0629, F.S., as well as other applicable parts of the insurance code. Over time, the role of OIR has expanded to one of actually "determining" mitigation discounts, credits, other rate differentials, and appropriate reductions in deductibles. OIR has used the 2002 ARA study[26] to adopt windstorm mitigation discounts from relativities created as a result of the study. A number of questions have been raised as to the process and its impact on an insurer's rate level. The law, s. 627.062(1), F.S., requires that rates "…shall not be excessive, inadequate, or unfairly discriminatory," but the way windstorm mitigation discounts are being implemented

calls into question the adequacy and fairness of the ultimate rates being used by insurers and whether insurers' financial positions are being appropriately considered. The current process frequently raises serious questions regarding adequacy of residential property insurance rates. The major concern is the potential risk that this might be creating.

A number of issues regarding the ratemaking process have been raised. The relativities were produced by one model – the ARA model. Questions have been raised as to what the results would have been had the relativities been calculated using one of the other models found acceptable by the Commission – AIR, EQE, RMS, or the FPM.[27] Arguably, the other models had the same opportunity to compete for the study that ARA was awarded. ~~**It should be noted that the ARA model has not been used to date in any Florida residential rate filing for developing rates.** **[no longer true]**~~ The question of whether there is a mismatch for loss costs and rates to be developed using one model and windstorm mitigation discount relativities to be calculated by another model is highly relevant. The more fundamental question, however, is whether a table of relativities should be adopted at all. The way OIR calculated the discounts from the ARA relativity study was to divide the relativities by 2.37, the relativity associated with the least mitigated structure, in order to make the rate associated with the least mitigated structure the base rate. This way, only windstorm mitigation discounts would be given for an insurer's book of business. The problem is that an insurer may (based on the output of the hurricane model it uses to produce loss costs) be calculating its rate level needs based on mitigation features already existing in its data. Applying windstorm mitigation discounts on-top-of rates that already account for mitigation discounts has the result of over counting and could cause the ultimate rates used by an insurer to be inadequate. One way around this would be to turn off all mitigation features in the model prior to determining loss costs for use in a rate filing. But, this approach still has problems since the model used to calculate the relativities is not the same as the model that the insurer is using for developing its loss costs. Other problems were pointed out above in conjunction with the discussion of hurricane computer modeling.

OIR points out insurers have had the option to use alternative studies and create their own actuarial algorithms when they file their rates. If insurers take advantage of this opportunity, they have it within their means to solve their own problems if they think the relativities adopted by OIR overstate the mitigation discounts. Since the enactment of s. 627.0629, F.S., in 1993, there seems to have been ample time for insurers to take whatever actions necessary to file appropriate rates. When the relativities were initially adopted, OIR published an Informational Memorandum (OIR-03-001M) on January 23, 2003, indicating that only premium credits should be offered resulting in neutral or decreases in premium, but no premium increases. The credits were tempered by 50 percent to dampen large rate changes and account for possible differences among the various hurricane models and other factors. A subsequent Informational Memorandum (OIR-07-03M) issued on February 27, 2007, stated that the *"…windstorm mitigation discount filing shall not include any modification of the rating factors or base rates for any purpose, including the offset of revenue impact on current business."* An insurer may be able to get its rates back to an adequate level over time by filing increases to its base rates. But, this approach might also end up with rates that are inadequate, excessive,

or unfairly discriminatory for some policyholders if the windstorm mitigation discounts are overstated since those policyholders not receiving the discounts would be charged more premium to make up for any excessive discounts.

According to the reports,[28] some insurers will not insure homes built after 2002 since they don't think the required windstorm mitigation discounts will result in enough premiums to justify writing the business. Otherwise, this could involve as much as a 68 percent discount off the wind portion of a residential property insurance policy. At the extreme, there have been cases where negative premiums are produced after applying windstorm mitigation discounts. But most of these cases may be attributable to the faulty application of actuarial algorithms used by insurers in rate filings.

Windstorm mitigation discounts should only be applied to the loss costs and to those expenses that vary directly with loss costs such as commissions and taxes, which are calculated as a percentage of loss costs. Thus, the windstorm mitigation discounts should apply to the pure premium for losses to the structure and any associated variable expenses, but not to the fixed expenses and not to the premium for other structures. To apply the discount to the premium for other structures and fixed costs would grossly overstate the amount of the windstorm mitigation discount adding to the inadequacy of the resulting rates. The OIR points out that it is up to the insurers to change their ratemaking algorithm and data bases to account for fixed expenses and to remove other structures from the wind premium before applying the various discounts. If insurers fail to take these actions, it is likely that their premiums will be inadequate. The default position seems to be one of accepting inadequate rates in these circumstances -- a position that can have long term negative impacts on the citizens of the state of Florida. Despite the issues involved with the current ratemaking process, the law requires that by February 1, 2011, OIR develop and make publically available a proposed method of establishing mitigation discounts that correlates with the numerical ratings assigned to a structure pursuant to the uniform home grading scale pursuant to s. 215.55865, F.S. The Financial Services Commission (FSC) was tasked with adopting the uniform grading scale by rule no later than June 30, 2007. By October 1, 2011, the FSC is required to adopt rules requiring insurers to make rate filings such that their windstorm mitigation discounts correlate directly with the uniform home grading scale. The law requires the rate differentials to be consistent with generally accepted actuarial principles and windloss mitigation studies and allows two years for a property owner to obtain an inspection. The uniform home grading scale law assumes that a level of accuracy exists in the output from hurricane computer simulation models such that output consisting of windstorm mitigation discounts can be accurately correlated with the uniform home grading scale. No consideration has been given to the credibility of the data in terms of the appropriate level of granularity. At some point, the model output breaks down and the level of detail loses its meaning. The relevant correlation should be the relationship between the windstorm mitigation discount and the reduction in loss costs brought about by the mitigation factors associated with the residential property exposure. The question that follows is how many cells or classes can the data be separated into where the differences in loss costs are credible and subject to validation. Actuarial classification systems are

developed in consideration of the level of appropriateness for various class differentials. There is a limit to the degree of accuracy that can be obtained and the techniques employed in applying the windstorm mitigation discounts can impact overall results significantly. For example, two homes with the same uniform home grading score deserve a different windstorm mitigation discount depending on where they are located. Conversely, two homes may require different mitigation treatments but still have a similar uniform grading score since their mitigation treatments have a similar impact on reducing loss costs on a statewide basis. Potential dangers may be involved with the way a uniform home grading system is implemented and the way results are used. The more important question is whether the state of Florida should have a uniform home grading system.

Accomplishing other worthwhile goals should not be put at risk in order to create an oversimplified uniform home grading system that may lack scientific rigor and credibility. Care needs to be taken such that the already fragile residential property insurance market is not disrupted and that insurers are in the best position possible to pay future hurricane loss claims. The history of hurricane events reveals that six out of ten years a hurricane makes landfall in Florida, and that in one out of four years, a major category 3 or greater hurricane makes landfall in Florida. Given these odds, the importance of paying policyholder claims should not be overshadowed by other goals.

Under the current ratemaking process, windstorm mitigation discounts may be given for shutters that are not used at the time of a wind loss. For example, there are no penalties associated with not using shutters. If a policyholder is given a windstorm mitigation discount based on having shutters and at the time of loss fails to use them, their ability to prevent damage can have major consequences.

The current incentives for policyholders to seek windstorm mitigation discounts for existing mitigated aspects of their home may be discouraging the hardening of residential structures since almost everyone can qualify for some type of discount given the way the windstorm mitigation discount system is currently operating.

***Recommendation – Improving the Ratemaking Process and the Rate Review Process***

A number of problems and issues have been raised by insurers regarding the ratemaking process and regulatory requirements. OIR counters that the way insurers go about making rate filings results in many of their own problems, which are within their control to rectify. In conjunction with the above recommendation dealing with hurricane modeling, it is recommended that OIR can better serve the state by reviewing rates rather than playing a role in actually determining windstorm mitigation discounts. There is a level of complexity involved with the modeling of relativities and their application to windstorm mitigation discounts that can only be done quantitatively using a scheme that represents the ways that various factors interact with each other in reducing hurricane losses. Also, the use of one model to develop rates and another for the purpose of creating relativities which are converted to windstorm mitigation discounts creates a mismatch and a disconnect. The model doing the calculation of loss costs should be the same model that windstorm mitigation discounts are derived from. Windstorm mitigation

discounts should only be applied to the portion of the wind premium that represents loss costs and variable expenses including any variable profit loads, etc. Windstorm mitigation discounts should not be applied to fixed expenses or to structures other than the residential structure. Applying the windstorm mitigation discount to the entire wind premium, as is currently being done, can produce inadequate rates that may potentially impact on an insurer's solvency and financial condition.
It is recommended that the law be changed to only allow windstorm mitigation discounts derived from hurricane computer simulation models that are justified and found acceptable by the Commission in reducing loss costs associated with a residential structure. The modeling of windstorm mitigation discounts for other structures is currently beyond the scope of what hurricane computer simulation models can reasonably be expected to do with any degree of reliability and credibility. Other structures (Coverage B) are characterized by being heterogeneous and are thus not amenable for the modeling of windstorm mitigation features. Hazard increases due to other structures should be noted in the inspection process and considered in the underwriting process. It is clear the cost would outweigh the benefits of trying to model their windstorm mitigated features. The "default" way of filing rates allows for following a methodology that results in inadequate rates for many insurers. Although some insurers may not want to take the time nor incur the expenses to do things correctly, it should be recognized that inadequate rates penalize more than just the insurance company making such a rate filing. Under the current system, the inability of insurers to rebalance rates exaggerates problems by causing insurers to lose revenue and could result in consumers paying unfairly discriminatory rates. As base rates are increased over time to make up for lost revenue, one set of policyholders not benefiting from discounts will end up subsidizing another set that is benefiting from exaggerated windstorm mitigation discounts.

~~The concept of capping rates in one territory or area of the state and allowing rates in another part of the state to rise to meet an insurer's overall rate level need results in unfairly discriminatory rates and can operate as a disincentive to windstorm mitigation efforts. This is a common practice involved in rate filing negotiations between insurers and regulators. Rate capping apparently goes on in many lines of insurance and can be justified from the standpoint that the risk is merely being shared a different way, but otherwise produces an actuarially sound rate that is not excessive, inadequate, nor unfairly discriminatory. Those policyholders with a small increase in their rates do not complain nearly as loudly as those policyholders who would otherwise get a large rate increase. The company and the regulator frequently reach a satisfactory result, but at the expense of one set of policyholders who are involuntarily and unknowingly subsidizing another set of policyholders.[29] Those in highly vulnerable areas of the state who are receiving such a "subsidy" do not have as much incentive to harden their homes since the size of the discount would be smaller based on a subsidized premium. There exists a big incentive for the insurer to "get off the business" at the first available opportunity. The Commission's recommendation is that for the sake of transparency that all policyholders be informed by their insurance company when it is known that they are subsidizing other policyholders or being subsidized by rate capping or other methods of premium redistribution.~~

~~What can happen over time is that when rate caps are used, the "underpriced" business can be identified by insurers and non-renewed. This business could easily end up with Citizens. What is left of the insurer's business results in an "overpriced" book of business, which may be highly profitable to the insurer. Incentives exist for an insurer to manipulate its book of business including the negotiation of rate caps such that it ultimately has the rate level and probable maximum loss levels needed to meet its objectives. Allowing rate capping involves a judgment call on the part of the regulator that one set of policyholders cannot afford to pay the rates indicated and that another set of policyholders can better afford to pay higher rates than what is indicated. If such redistribution of income is occurring within the ratemaking process, it appears reasonable to at least require its disclosure to effected policyholders.~~

**[THE PRECEDING DISCUSSION IS ADVANCING A RECOGNIZABLE AGENDA AND IS NOT BASED ON EVIDENCE PRESENTED TO THE COMMISSION]**

The Commission recommends that the Florida Hurricane Catastrophe Fund (FHCF) fully recognize the impact of windstorm mitigation discounts in its rating structure.[30] The 2009-2010 FHCF reimbursement contract year was the first time the FHCF required mandatory windstorm mitigation discounts for participating insurers although such discounts have been optional in the past. However, such discounts were phased-in at a maximum impact of plus or minus 10 percent. The impact of an insurer that reports exposure data with mitigation is that the insurer will pay a lower FHCF reimbursement premium. This reduces the overall coverage for the insurer, but results in the insurer triggering the FHCF coverage with lower losses since its retention would be lower (other things being equal). The FHCF is a mandatory program and coverage is risk based. Since the FHCF operates as a reinsurer, participating insurers are required to absorb a large retention (deductible) prior to triggering coverage. The modeling and the calculation of windstorm mitigation discounts differ substantially from that of a direct writing insurer due to the "excess" nature of the coverage.[31]

The Commission recommends that if an insurer grants windstorm mitigation discounts, and at the time of loss the policyholder either fails to use the mitigation feature (e.g., shutters) or does something or fails to do something that results in the mitigation feature becoming ineffective, insurers should be allowed to apply a larger deductible at the time of loss (perhaps up to 15 percent). This might create a statutory requirement such that the policyholder warrants the existence of mitigation features that will be used to mitigate losses. Consideration should also be given to the amount of a discount where mitigation features are passive (i.e., require little effort to activate such as shutters that are installed and can be quickly closed at the first sign of a hurricane warning) versus those that are active (i.e., require effort on the part of the policyholder to implement such as the need to take shutters out of a garage and install them after a hurricane warning has been issued). Due to their heterogeneity, other structures (Coverage B) should not be subject to windstorm mitigation discounts. However, they should be considered as to their hazard potential and noted in the home inspection process and considered in the underwriting process. Measures may need to be recommended to residential policyholders so as to

avoid surcharges or loss of discounts due to certain types of other structures when they present a risk to an otherwise well mitigated residential structure. Windstorm mitigation discounts may not be warranted for contents only policies due to economic considerations. The discounts may not be worth the effort and cost to inspect the property and many contents only type policies are not specific to a fixed location. Additionally, insurers should not be required to provide windstorm mitigation discounts to policyholders where the mitigation features of the residential structure are negated by other factors although information should be made available to policyholders to alleviate such problems.

**Summary of Recommendations for Improving the Process of Assessing, Determining, and Applying Windstorm Mitigation Discounts**

A summary of the Commission's various recommendations are listed in an outlined bulleted format below. The current process of assessing, determining, and applying windstorm mitigation discounts pursuant to s. 627.0629, F.S., has many problems that cannot be solved with a single "magic bullet" type solution. All aspects of the process are related and should be treated as such. Properly determining windstorm mitigation discounts is essential for developing adequate rates. Insurer solvency and insurance availability in the private marketplace are adversely impacted if rates are not adequate.

The size of the residual market as reflected by Citizens Property Insurance Corporation is substantially impacted by how windstorm mitigation discounts are derived and applied to residential property owner's policies. The way incentives are created, the way moral hazard is managed, the way adverse selection is controlled, the way data are collected and used, and the way fraud and abuse of the system is addressed are critical to the operation of the entire residential property insurance market. Strong evidence suggests that the system is out-of-alignment. Various disconnects of the related parts are working to make the system appear to be dysfunctional and causing it to lack credibility. Therefore, the Commission recommends the following measures:

~~1. **A Unified and Consistent State Vision.** The Commission recommends that the state of Florida create a unified and consistent vision for the state.~~
~~a. The state's vision should be monitored and evaluated annually by a standing group of qualified and objective "experts" who report their results and recommendations to the Legislature prior to the start of the regular legislative session each year (e.g., February 1).~~
b. Multiple goals need to be simultaneously achieved. These goals would include:
1) Hardening of residential structures to reduce future wind losses,
2) Ensuring a healthy insurance marketplace with financially viable insurers capable of paying claims,
3) Requiring fair, scientific, and actuarially sound windstorm mitigation discounts and surcharges for policyholders to encourage appropriate mitigation behavior,
4) Creating a system that engineers fraud, abuse, adverse selection, and moral hazard out of the system to the greatest extent possible,
5) Requiring complete, unbiased, quality data on all residential structures,

6) Ensuring that windstorm mitigation discounts are based on reliable hurricane computer simulation models that are subject to the level of scrutiny appropriate to the level of granularity needed to be applied to a particular **policy in an open process that provides an opportunity for public participation**.

7) Fostering a balanced regulatory system that focuses on approving rates rather than one that is involved with determining windstorm mitigation discounts,
8) Creating confidence in an insurance system where the impact of windstorm mitigation discounts is considered fair to all policyholders not only to those who are granted the discounts,
~~9)Ensuring transparency in ratemaking so that policyholders are aware of subsidizes they are paying or receiving in their premiums,~~
10)9) Encouraging the depopulation of the residual market (Citizens Property Insurance Corporation), and
11)10) Ensuring that residential structures protect Florida families to the extent that they are being depended on.

2. **The Residential Structure Inspection Process**. The Commission recommends that the current residential structure inspection process be replaced and that Florida statutes create a not-for-profit independent inspection organization for the purpose of conducting administering all aspects of residential structure inspections.
a. The sole purpose of the proposed independent inspection organization would be to ensure that the data on residential structures are complete, unbiased, and of the highest quality.
b. Policyholders would not be entitled to a windstorm mitigation discount unless their residential structure is inspected by the independent inspection organization. Such inspections would be required once periodically (e.g., every five years).
c. The board of the independent inspection organization should be made up of experts that understand windstorm mitigation of residential structures, data collection, data used in 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 co-payments paid by policyholders (e.g., $25 per inspection).
e. The independent inspection organization would create a pool of inspectors who would be certified based on meeting various standards, background, experience, and training requirements **and could be de-certified if they repeatedly produce erroneous inspections without the need to prove fraudulent intent**.
f. Each inspector should be required to have a unique identification number that should appear on all work products.
g. The independent inspection organization would create and maintain a database so that it can query the work of its inspectors, various windstorm mitigation features by region, any other factors that would allow the organization to monitor the quality and consistency of its operations.
h. Once a year, the independent organization would be subject to an outside audit.
i. Statutory penalties would be increased to the level of a felony for anyone involved in conviction of fraudulent activity associated with obtaining windstorm mitigation discounts.
j. The independent inspection organization would maintain a website to provide education for consumers. Other advertising efforts would also be done, but individual inspectors or inspection

firms would not be allowed to advertise or independently solicit business since this would undermine the purpose of the organization.
k. Until the independent inspection organization can be implemented, the Commission recommends that insurers engage in re-inspection programs to correct errors in their existing data.
l. A total quality management (TQM) program would be implemented by the independent inspection organization to strive for constant quality improvement and complete and error free data. The results of the TQM program would be reported on a periodic basis to the board of the independent inspection organization.

3. **Data Quality**. The Commission recommends, in conjunction with the independent inspection organization noted above, that policies and procedures be put in place to ensure that the data on residential structures are complete and of the highest quality attainable. The nature of the data should also be consistent with the needs for computer hurricane modeling so that the data is sufficient for the level of "granularity" being modeled. The following would be required.:
a. All residential structures in the state should be inspected and the results entered into a centralized database or archive.
b. On-line data collection system should be used such that various validation and quality control software could be used to check the consistency and accuracy of the data regarding typographical errors, entry mistakes, and other errors.
c. Hurricane modeling organizations and insurers should have access to the database such that their models will have the most up-to-date data available. However, privacy issues may need to be addressed such that the data can be used for no other purpose than the development of windstorm mitigation discounts.
d. Re-inspections of residential structures would be conducted on a random sample of the residential structures by the independent inspection organization to monitor its efforts and identify and correct errors.
e. On-line training programs should be used to educate inspectors about errors or inconsistencies and for continuing education programs to help inspectors maintain certification requirements.
f. The Commission should have a role in providing input to the independent inspection organization since it is positioned to understand the data requirements of modelers and can serve as a forum for coordinating data issues with the hurricane modeling organizations.
g. The independent inspection organization would be required to implement a total quality management (TQM) program to strive for constant quality improvement and error free data. Results of the TQM program would be reported to the independent inspection organization's board on a periodic basis.

4. **Hurricane Computer Modeling**. The Commission recommends the following:
a. Windstorm mitigation discounts should be based on hurricane computer simulation models rather than based on a relativity study using a single model, the Applied Research Associates (ARA) model, and the discounts determined by the Office of Insurance Regulation (OIR). All hurricane computer simulation models should be reviewed by the Commission specifically for their accuracy or reliability in determining windstorm mitigation relativities used for developing windstorm mitigation discounts. Instead of assuming that models found acceptable by the Commission for calculating loss costs and probable maximum loss purposes are also suitable for

determining windstorm mitigation discounts, the law should be changed such that s. 627.0628, F.S., specifically adds this requirement. As such, the Commission would be required to develop windstorm mitigation standards. Various validation requirements and logical relationship requirements will need to be considered to apply at a certain "granularity" level. Geocoded data will be another necessary requirement since the Commission only requires loss cost currently at the five-digit ZIP Code level of resolution. The "granularity" or level of resolution at which the discounts are determined will need to be shown by the modeler to be credible upon review by the Commission. The nature of the modeler's data output will be necessary to determine a feasible level of granularity for the model.

b. Insurers should use the same hurricane computer simulation model for developing rates as the insurer uses for developing windstorm mitigation discounts since they are part of the same statistical and mathematical functions.

c. Both discounts and surcharges would be part of the modeling process for windstorm mitigation factors such that there is greater motivation of both a positive and a negative nature to harden residential structures.

d. The hurricane computer simulation models would incorporate windstorm mitigation discounts as part of calculating loss costs; therefore, there would not be a need for offsets.

c.e.The uniform home grading system is not feasible given the current state of scientific accuracy associated with hurricane computer modeling. The requirement in the law mandating the uniform home grading system should be repealed. Additionally, the implied level of accuracy with such a system could be both misleading to homebuyers and dangerous to Florida families who may be relying on a level of protection that may not exist.

f. A structural engineer should be added to the Commission.

g. The law, s. 627.0628(3)(e), F.S., should be changed back to an annual cycle of developing standards rather than "every odd year" such that the Commission can move quickly in developing new windstorm mitigation standards and make findings regarding various models.

e.Coverage B or coverage for "other structures" should not be subject to windstorm mitigation discounts since they are heterogeneous and present major modeling problems that cannot be overcome in a cost efficient fashion. In some cases, other structures could actually negate the impact of mitigation measures taken to protect and harden the residential structure.

g.h.Residential structures should be viewed as a "system" and modeled as such.

1) Consideration should be given to site factors that impact the risk or negate mitigation efforts to the residential structure. Certain site factors may increase the risk and result in additional premium charges.

2) Human safety factors should be considered and policyholders should not get a windstorm mitigation discount if it results in putting the safety of Florida families at risk (e.g., inspection form includes requirement for inspector to check and ensure that the mitigation features do not pose a threat to human safety).

3) The location of the property, including the factors of terrain and wind vulnerabilities, should be considered.

i. Various research results and efforts funded by the state of Florida should be integrated into the process of hurricane computer modeling to the maximum extent practical.

5. **Ratemaking and the Determination of Windstorm Mitigation Discounts**. The Commission recommends the following:

a. The role of OIR should be limited to the review of rate filings and should no longer be required to determine windstorm mitigation discounts. Windstorm mitigation discounts would be incorporated in the hurricane computer modeling process. The Commission would determine the appropriate windstorm mitigation standards and review models according to such standards.
b. The application of windstorm mitigation discounts applied to a policyholder's rates should be determined similar to any other rating factor.
~~c.All rate subsidizes should be disclosed to the policyholder as to whether the policyholder is being charged an additional premium or is benefiting by a reduced premium due to a subsidy~~.
d.c.The Florida Hurricane Catastrophe Fund (FHCF) should fully recognize the impact of windstorm mitigation discounts in its rating structure rather than phasing-in the discounts over time.
e.Both discounts and surcharges need to be part of the rating system for windstorm mitigation factors such that there is a greater motivation to harden residential structures of both a positive and a negative nature. But, these may be incorporated within the hurricane computer modeling results.
f.Insurers should be allowed to use offsets where appropriate to maintain an adequate rate level. It is anticipated that this can be done within the hurricane computer modeling process. AS NOTED ABOVE, THIS IS NOT NEEDED.
g.d.Larger deductibles should be applied to wind losses of a policyholder if windstorm mitigation features such as shutters are not used at the time of a loss.
h.The active and passive nature of windstorm mitigation features needs to be considered as to 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 easy to activate. [moved to future research section]
e. Coverage B or coverage for "other structures" (external structures) should not be subject to windstorm mitigation discounts since they are heterogeneous and present major modeling problems that cannot be overcome in a cost efficient fashion. In some cases, other structures could actually negate the impact of mitigation measures taken to protect and harden the residential structure. Hazard increases due to other structures should be noted in the inspection process and considered in the underwriting process.

The system of implementing windstorm mitigation discounts needs to be monitored in the broader context of the impact that they are having on the residential property insurance marketplace. Policymakers need to understand that the improper implementation of windstorm mitigation discounts can adversely impact consumers, insurers, and other interested parties. Although windstorm mitigation is always viewed in a positive light, like "mom and apple pie," there are right and wrong ways to go about the process of hardening homes and the process of recognizing the impact of such actions on policyholder rates. It is far more complicated than what is recognized in the current system. A concerted effort will be needed to put in place an effective system to correct the problems and inefficiencies that exist in the residential insurance marketplace today. Unless solutions are carefully thought out, it is easy for one solution to encroach upon and interfere with other worthwhile, important, and critical state goals and objectives. Several of these goals are listed above under the topic "Unified and Consistent State

Vision." To reiterate the point, multiple goals need to be simultaneously achieved. A system with its primary focus on "reducing consumer rates" can have other consequences and those consequences may result in added costs and inefficiencies. Instead of reducing costs to the system and to the consumer, costs can be unnecessarily added to the system. A broader focus is needed.

## VI. CONCLUSIONS

The current process of assessing, determining, and applying windstorm mitigation discounts has a number of problems that need immediate attention. The Legislature assigned to the Florida Commission on Hurricane Loss Projection Methodology (Commission) the requirement to make recommendations to improve the process. Efforts to ensure that policyholders receive discounts have proceeded over the years without having proper controls and monitoring in place to ensure that windstorm mitigation discounts are determined and implemented properly. The current residential structure inspection process is flawed in major ways. There are widespread reports of fraud and abuse and carelessness. Insurers are re-inspecting residential structures and finding that numerous errors have been made. Given this result, the quality of data needed for hurricane computer modeling is unacceptable, which makes both the modeling results and ratemaking results unreliable. The limitations of hurricane computer modeling have not been recognized and, as a result, hurricane computer simulation model results are being relied on in a way that assumes a level of accuracy that has not been thoroughly examined. The ratemaking process related to windstorm mitigation discounts has evolved over time such that the Office of Insurance Regulation (OIR) has been tasked with determining windstorm mitigation discounts, which insurers are required to use unless they use alternative studies that satisfy OIR's requirements. The flawed inspections of residential structures, the incomplete and poor quality of data, and the limitations of computer hurricane modeling, ~~and a contentious and controversial ratemaking process~~ have resulted in the current process used to produce and apply windstorm mitigation discounts.

For a number of reasons, Florida's current windstorm mitigation discount process lacks credibility. The system is out-of-control and will not be easy to fix nor can it be fixed quickly. Since many policyholders have spent significant dollars on mitigation features, they justifiably will be disappointed if they find out that their current windstorm mitigation discounts were incorrect. It will be a painful process to correct the current system. However, the problems with the current system stem from a system that fails to 1) control fraud, abuse, adverse selection, and moral hazard, 2) monitor the outcome and realign the process once problems become apparent, 3) insist on complete and quality data, 4) understand the limitations related to hurricane computer modeling, and 5) carefully consider ratemaking requirements for insurers and their full implications on insurers and the residual market.

The Commission's recommendations are meant to improve the process and correct numerous problems with the current system. It is important that the state of Florida

develop a long-term vision regarding what it wants to accomplish and monitor results on an annual basis. The "crisis de jour" approach to solving problems is sub-optimal and can be costly resulting in crisis after crisis; or worse – a long lingering crisis and slow deterioration of the marketplace with problems becoming more and more unmanageable every passing year. The state of Florida needs a plan~~. The Legislature's appointment of an objective "standing" body of experts (not the typical temporary task force approach) to review goals and objectives, to help develop a long-term plan, and to monitor results would be an important step toward addressing the residential property insurance problems in Florida. Annual reports to the Legislature regarding the results of various programs, their shortfalls and their benefits, would well serve policymakers. The impact of one program or initiative on another is important to understand so that conflicts do not undermine programs where large sums of money have been invested.~~

The Commission's recommendations for addressing windstorm mitigation discounts can be summarized by three key core components which are as follows: ~~1) the creation of a standing, objective body of experts to annually report to the Legislature regarding observations, problems/issues, and recommendations for accomplishing and balancing state goals and objectives related to the residential property insurance marketplace~~, 2) the creation of an independent inspection organization to ensure quality data, and 3) the adding of a requirement in the law for windstorm mitigation discounts to be based on hurricane computer simulation models found acceptable by the Commission. Figure 13 illustrates the three key recommendations.

Windstorm mitigation relativities are an output of the hurricane computer modeling process and should be based on the most advanced scientific principles and actuarial science available. The Commission recommends the elimination of the current requirements of OIR determining windstorm mitigation discounts or insurers using alternative studies. The problem is complex with major ramifications dictating to a stronger scientific approach that is embodied in the hurricane computer modeling process. The Commission is positioned to expand its current scope to develop standards and review models in order to ensure the accuracy or reliability of windstorm mitigation discounts as applied to individual policyholder policies. Although this approach is arguably not as transparent[32] as the current system, the benefits far out weigh the drawbacks. It removes the "credibility issues" inherent in the current approach, it will result in greater fairness, and it will reduce long term costs to all Floridians.

## The Proposed System
## Three Key Core Components

**Figure 13**

Since time will be needed to fully implement the Commission's recommendations, the Commission recommends that insurers continue to re-inspect residential structures where problems are indicated in the interim. Adding more fraud investigators is not the solution. Using another hurricane computer model to calculate a different set of relativities is not the solution. No quick fix to the problem is available. An abrupt

change of direction and focus is needed. Much may be accomplished in the short-run by recognizing multiple state goals and objectives and coordinating their solutions in line with the problems and issues that have been identified by the Commission in this report. A clearly defined, unified, and consistent vision serving the state as a long-term plan is the first step needed to coordinate and monitor the state's various efforts.

The Commission's recommendations are meant to improve the process and are designed to correct numerous problems with the current system. Implementing the Commission's recommendations should assist the state of Florida in obtaining the following results:

1) Better monitoring of the state's various goals and objectives related to the residential property insurance market,
2) Hardened residential structures to better withstand future windstorm losses,
3) Lower rates for Florida residential property insurance policyholders,
4) Less fraud, less moral hazard, and less abuse in the system,
5) A higher quality of data thus enhancing fairness for policyholders and insurers,
6) More efficient and refined hurricane computer simulation models,
7) An improved and fairer rating system for all parties with less subsidies,
8) Financially stronger insurers who are better able to pay claims,
~~9) Less future assessments on Florida policyholders,~~
~~10) A reduction in the number of policies in Citizens Property Insurance Corporation with more policies placed in the private market,~~
~~11) Less need for debt financing for the Florida Hurricane Catastrophe Fund, Citizens Property Insurance Corporation, and Florida Insurance Guarantee Association,~~
~~12) A more competitive and innovative residential property insurance market,~~
~~13) More insurers seeking to do business in Florida,~~
~~14) Less insurer's exiting the Florida insurance market,~~
15) Complete and accurate information on every residential structure in Florida, and
16) Safer homes in Florida that can be relied on to protect Florida families.

## INTERIM/TRANSITION MEASURES

• Step 1 would be for companies to conduct re-inspections, and then, if the reinspections are not having a positive impact, step 2 would be to move back to the 50% tempering level.

## FUTURE STUDY/RESEARCH

• ~~Rate capping in the rate review process should be studied with consideration being given on potential subsidies to policyholders and disclosure of such subsidies.~~
• 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. University Civil Engineering departments would develop the software application. This would not be a state of Florida application, but an academic research application. Care would be taken not to mislead or give false pretenses.

• 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). OIR 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.
• Residential structures should be viewed as a system and modeled as such. Consideration should be given to site factors that impact the risk or negate mitigation efforts to the residential structure. 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).
• 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.