



National Association of Insurance Commissioners

CATASTROPHE COMPUTER MODELING HANDBOOK



TORNADO WARN

The right side of the cover features a vertical strip with a dark background. It contains a weather radar overlay with various data points and labels such as "funnel cloud", "rain", and "tornado". The text "TORNADO WARN" is prominently displayed in a bold, white, sans-serif font at the bottom of this section. The background of the strip is a mix of dark and light green, suggesting a weather map or data visualization.



Catastrophe Computer Modeling Handbook

**Prepared by the
CATASTROPHE INSURANCE WORKING GROUP
of the
PROPERTY AND CASUALTY INSURANCE (C) COMMITTEE**

November 2010



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ISBN: 978-1-59917-412-9

Printed in the United States of America

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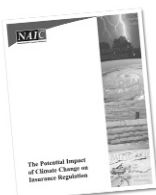
Final Report of the Earthquake Study Group

Outlines the work of a group appointed to study the earthquake peril, specifically the differences between west coastal earthquakes and earthquakes in the central United States. Provides recommendations to help mitigate insurance losses caused by earthquakes. Identifies strategies to communicate loss-mitigation measures to insurers and consumers.



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State Disaster Response Plan

Serves as a guide for state insurance regulators as they develop and adopt comprehensive disaster response plans. Represents the collective efforts of the NAIC membership to share best practices and learn from one another in effectively preparing for and reacting to catastrophic events.

How to Order

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SECTION I

PURPOSE OF THE HANDBOOK AND BACKGROUND INFORMATION ON CATASTROPHE COMPUTER MODELING

PURPOSE

The purpose of the *Catastrophe Computer Modeling Handbook* (Handbook) is to explore in some detail catastrophe computer models and to discuss issues that have arisen or can be expected to arise from their use.

The NAIC, in this Handbook, does not take a position as to the ultimate soundness of catastrophe computer models or the interpretation of the results derived therefrom, but attempts to objectively discuss the issues related to and the ramifications of catastrophe computer models. The guidance offered in this Handbook is advisory only and is not intended to prescribe mandatory regulatory procedures. The guidance is not intended to be all-inclusive; rather, it suggests areas and concepts that should be considered and explored in order to become well informed about catastrophe computer models.

The Handbook also includes as appendices detailed information about specific modelers, state and modeler contacts, enacted state legislation, the Florida Hurricane Fund and the California Earthquake Authority.

This Handbook will be revised as necessary to incorporate new developments and to provide additional guidance and information. The Catastrophe Insurance Working Group of the Personal Lines—Property and Casualty Insurance (C) Committee is charged with the responsibility of considering and recommending to the members of the NAIC revisions to this Handbook.

BACKGROUND

Exposure to catastrophe losses has been a topic that has garnered much attention from the insurance community since Hurricane Andrew. Other significant reminders like Hurricanes Hugo and Iniki, as well as the Northridge and Loma Prieta earthquakes, have served to focus attention on property insurers' significant exposure to catastrophe losses. These events highlighted the potential inadequacies of traditional empirical methods of quantifying that exposure.

The NAIC began to study issues related to catastrophes in March 1993 with the appointment of the Catastrophe Insurance Working Group by the Personal Lines—Property and Casualty Insurance (C) Committee. The committee is charged with providing a forum for discussing various issues related to catastrophe modeling and to monitor issues that will result in changes to the *Catastrophe Computer Modeling Handbook*. The Personal Lines—Property and Casualty (C) Committee initially delegated responsibility for this charge to the Catastrophe Modeling Subgroup, one of two subgroups which were appointed to assist the Catastrophe Insurance Working Group. The subgroup has since been discharged and the Catastrophe Insurance Working Group completed drafting. This effort has taken slightly longer than originally anticipated. Hopefully the end result was worth the wait.

Insurers' Perspective

Insurers continually seek ways to more accurately measure the risk of loss to which they are exposed. Before 1992, insurers generally believed that their probable maximum loss, in the aggregate, was much less than the actual insured losses caused by Hurricane Andrew. Insurers began to realize that the application of standard catastrophe ratemaking methodologies based on historical losses of 25 to 30 years of data were inadequate for low frequency, high severity perils such as hurricanes and earthquakes. Hurricane Andrew cost insurers \$16.5 billion, but that was not the “Big One.” Had Hurricane Andrew struck the coast 25 miles to the north, the insured loss potential would have been in the \$50 billion range. Andrew caused major market deterioration for the citizens and insurance regulators in Florida. Insurers came to the stark realization that their companies’ assets were much more exposed than previously believed. The potential for loss continues to cause availability problems for coastal states particularly states that have not experienced hurricanes in recent years.

As insurers seek to measure their potential loss exposure, they are motivated to raise prices to what they consider to be adequate levels or to reduce their exposure. If insurers believe that their products are inadequately priced, they will attempt to raise the prices to levels they believe to be adequate. If regulators resist these price changes, insurers may withdraw from the market and divert capital to other lines of business. From the insurers’ viewpoint, they are not attempting to punish consumers or make life difficult for insurance regulators. They are simply trying to protect capital and surplus.

In the past, property insurance rates have typically included a factor to reflect exposure from catastrophe loss. The typical ratemaking procedure called for capping catastrophe losses at a selected figure and then averaging the excess losses over a long period of time. The time period ranged from 10 to 30 years in duration. History has proven to be a good predictor of the future as long as there are no significant changes in the environment in which the coverage is to be provided and a time period that provides a sufficient number of catastrophes is used. Many insurers believe that past property insurance catastrophe loadings are no longer needed in areas that are subject to significant catastrophe losses. In addition, it is possible that weather patterns are changing. Insurers argue that using old ratemaking methods underestimate the cost of insuring catastrophe prone areas.

The problem with using relatively short periods of historical catastrophe losses, such as 25-30 years of insurers’ data, is as follows:

- A very long history is needed in order for it to be reflective of all the expected future hurricanes or earthquakes that are likely to occur. On the geologic, climatic and seismic timeframe, 100 years is not a lot of time, however 100 years of recorded scientific information is significant. When smaller geographic areas are considered, the available history of such events is even more problematic. Also, the traditional method does not take into account the full spectrum of possible catastrophes that could befall any particular geographic location. Some events have a “return period” of 50, 100 or even 250 years or more and would not be taken into account using the traditional method;
- Historical losses are reflective of the exposed structures (both as to numbers and their value) that were there when the historical events took place and not of what are currently exposed—what insurers believe is needed is a means to measure the loss impact on the exposures that

will be exposed at the time of the expected event, reflecting both the growth in the numbers of insureds living in “harm’s way” and the higher values of the structures built in these locations;

- People have been and still are building more dwellings and businesses in areas that are subject to significant catastrophe losses, casting doubt on the validity of historical loss figures in projecting future losses since fewer buildings were then subject to loss;
- Building codes and building practices have been more focused on life safety than on property preservation and have not kept pace with the changes in construction methods. In addition, there are conflicting interests for the construction and real estate development communities versus those of insurers, reinsurers and emergency management agencies often creating situations where owners and occupants are not adequately aware of the risk they are facing until it is too late; and
- When only the most recent historical period is used, losses can be over- or underestimated. What is needed is a methodology that creates stability in ratemaking to prevent unnecessary fluctuations in the premiums charged to policyholders. Many insurers believe that catastrophe modeling provides that stability.

Advances in technology in recent years have enabled insurers and reinsurers to apply computer modeling to estimate the effect catastrophe losses could have on their books of business. The results of these models are used to assist with decisions about where an insurer will choose to write business and how much to charge for business written. Some insurers are replacing the traditional catastrophe loading in rate filings with numbers supported by computer models.

Catastrophe Modelers’ Perspective

Application of catastrophe modeling is relatively new to property insurance. Catastrophe modelers have significant investments in these models and are, as a result, somewhat guarded in the information they publicly disclose about their models. They are doing what any prudent businessperson would—protecting a business asset from disclosure to competitors. As insurers are requested to provide information so that regulators can determine if the processes applied are logical and result in rates that reasonably reflect expected future loss costs, pressure is placed on catastrophe modelers to demonstrate that their models produce results that are acceptable to the regulators. Catastrophe modelers are being called upon to disclose information about elements used in their models and how data provided by an insurer is used. It is now incumbent upon the modeling firms to share enough information with regulators so that they can perform their regulatory duties to assure that rates are not excessive, inadequate, or unfairly discriminatory.

Consumers’ Perspective

Consumer representatives are skeptical about the application of computer models to property insurance rates and underwriting decisions. There has been a perception that the insurers are hiding behind a cloak of mystery that is held by the catastrophe modelers. The consumer representatives know that a great deal of public information goes into the models, yet the modelers’ claim the models are confidential and will not show consumer representatives how they work. This cloak of mystery and the varying results produced by catastrophe models tend to make consumer representatives wary. They often oppose including a catastrophe rate based on

confidential models. In states where consumer representatives are allowed to intervene in rate cases, they have sometimes hired their own experts to challenge the rates filed by an insurer.

Consumers have legitimate questions about the effects of the use of computer models on their insurance bills. In Florida, homeowners' rates have increased more than 100 percent since Hurricane Andrew. In addition, coverage for hurricane has been reduced with higher deductibles and lower effective policy limits. Yet, there are still many areas where availability and affordability remain problematic.

Some of the areas where consumers have not received satisfactory explanations are:

- Why their premiums may differ depending on which model is used;
- Why the geographic groupings seem arbitrary;
- Why contiguous counties or territories may have very different costs;
- Why a method with so much uncertainty is assumed to be correct to the exclusion of other methods. This can be particularly confusing since previous assumptions about expected costs were also purported by companies to be accurate enough for ratemaking;
- Why a model's estimates do not always match closely to actual storms;
- Why models that seem to overestimate large storms are allowed to be used;
- Why rates keep increasing even after significant increases have already been incorporated;
- Why the probability of a large hurricane in any given year is very small, yet premiums paid do not appear to generate any investment returns that benefit policyholders; and
- Why premiums are based on expected annual losses, yet many of the assumptions seem to be based on 250 or 500 years of generated experience for a location at the current time.

Consumer representatives call for public disclosure of the input and output from catastrophe models so independent tests can be run to assure that model results are reasonable.

Regulators' Perspective

Regulators are faced with an extraordinary challenge as they attempt to reconcile the vagaries of model-based loss costs with the obligation to assure that the resulting rates are appropriate and facilitate a vibrant industry. Regulators must weigh the relative merits of replacing a traditional model that has evolved very methodically over the years with a methodology that is in its relative infancy in terms of producing reliable results.

The table that follows highlights the wide range of answers obtained from catastrophe models' estimations of expected loss costs.

County	Model 1	Model 2	Model 3	Model 4	Model 5	Highest	Lowest
Dade	2.20	1.71	1.69	2.86	1.78	2.86	1.69
DeSoto	0.21	0.53	0.32	0.27	0.14	0.53	0.14
Dixie	0.26	0.26	0.13	0.11	0.16	0.26	0.11
Duval	0.20	0.31	0.08	0.07	0.09	0.31	0.07
Escambia	.038	0.49	0.82	1.07	0.16	1.07	0.16
Flagler	.044	0.35	0.19	0.14	0.23	0.44	0.14

These numbers are expected loss costs per \$1,000 of insurance that were provided to the Florida Commission on Hurricane Loss Projection Methodology. Inputs were the same for every model and each of the models was subjected to the same standards. Yet the highest modeled loss costs were almost seven times as high as the lowest within a county.

Regulators are reluctant to embrace the use of models for ratemaking without demanding answers to some relevant questions, given such a wide range of results.

Initial attempts by regulators to gain information about catastrophe models were met with caution by insurers and the entities that have developed the models, in part due to claims regarding the propriety and confidential nature of some aspects of the models. The typical regulatory response was to disapprove the filing containing the model results, since regulators were unable to obtain information necessary to evaluate the appropriateness of model output for a rate filing. Even now, no modeler has requested advisory organization status for use of its loss costs, which could facilitate model output use in ratemaking.

Most modelers have agreed to share basic information with regulators who have requested it. Regulators have been allowed to look at model input and output and review some formulas and algorithms within the model. This happens after an agreement is reached with a modeling firm about what will and will not be made part of the public record. Regulators recognize that some jurisdictions' freedom of information laws require public disclosure of all information provided to them. Both regulators and modelers are working to meet the challenge of providing enough disclosure to make informed decisions, while preserving the confidentiality of proprietary details. This handbook is an important step in that process.

Regulators are trying to better understand catastrophe models and their applications to insurers' books of business. These applications include underwriting, ratemaking and solvency monitoring. Regulators are constantly seeking new sources of information and objective guidance in understanding model input, output and methods.

SECTION II

SELECTED CATASTROPHE PERILS

The basic physical characteristics of natural phenomenon must be understood to see how modelers develop assumptions about the characteristics of each catastrophic event. This handbook addresses the hurricane and earthquake perils. Models are used for other perils as well, such as non-hurricane wind. However, it is these two types of events that are the most controversial.

Much of the uncertainty about potential damage is caused by the low frequency of hurricanes and earthquakes. This adds uncertainty to projections of future insured loss estimates. Other insurance, such as private passenger auto, need relatively short periods of time to generate reliable data. Accurate estimates can be calculated with traditional mathematical and statistical techniques. When dealing with these, the time span that is meaningful is so long that accurate records do not exist of frequency or severity of events. It is this lack of recorded data combined with the potential severity of the events that creates the challenges of estimating the impacts of catastrophes.

Earthquake

An earthquake is a shaking of the ground caused by the sudden breaking and shifting of large sections of the earth's rocky outer shell. A severe earthquake may release energy 10,000 times as great as that of the first atomic bomb. Rock movements during an earthquake can make rivers change their course. Earthquakes can trigger landslides that cause great damage and loss of life. Large earthquakes beneath the ocean can create a series of huge, destructive waves called *tsunamis* that flood coasts for many miles. Earthquakes almost never kill people directly. Instead, many deaths and injuries result from falling objects and the collapse of buildings, bridges and other structures. Fire resulting from broken gas or power lines are another major danger during a quake. Spills of hazardous chemicals are also a concern.

Earthquakes can damage buildings, bridges, dams and other structures, as well as many natural features. Near a fault, both the shifting of large blocks of the earth's crust, called *fault slippage*, and the shaking of the ground due to seismic waves cause destruction. Away from the fault, shaking produces most of the damage. Undersea earthquakes may cause huge tsunamis that swamp coastal areas. Other hazards during earthquakes include rockfalls, ground settling and falling trees or tree branches.

The rock on either side of a fault may shift only slightly during an earthquake or may move several feet. In some cases, only the rock deep in the ground shifts and no movement occurs at the earth's surface. In an extremely large earthquake, the ground may suddenly heave 20 feet or more. Any structure that spans a fault may be wrenched apart. The shifting blocks of earth may break down dams or the banks of rivers, lakes and other bodies of water, causing flooding.

Grounds shaking causes structures to sway from side to side, bounce up and down and move in other violent ways. Buildings may slide off their foundations, collapse or be shaken apart.

In areas with soft, wet soils, a process called *liquefaction* may intensify earthquake damage. Liquefaction occurs when strong ground shaking causes wet solids to behave temporarily like

liquids rather than solids. Anything on top of liquefied soil may sink into the soft ground. The liquefied soil may also flow toward lower ground, burying anything in its path.

Structures collapse during a quake when they are too weak or too rigid to resist strong, rocking forces. In addition, tall buildings may vibrate wildly during an earthquake and knock into each other.

A major cause of death and property damage in earthquakes is fire. Fire may start if a quake ruptures gas or power lines, and may be difficult or impossible to control if the water supply infrastructure has been damaged. The 1906 San Francisco earthquake ranks as one of the worst disasters in United States history because of a fire that raged for three days after the quake.

Other hazards during an earthquake include spills of toxic chemicals and falling objects, such as tree limbs, bricks and glass. Sewage lines may break and sewage may seep into water supplies. Drinking of such impure water may cause cholera, typhoid, dysentery and other serious diseases.

Tsunamis may build to heights of more than 100 feet (30 meters) when they reach shallow water near shore. In the open ocean, tsunamis typically move at speeds of 500 to 600 miles (800-900 kilometers) per hour. They can travel great distances while diminishing little in size and can flood coastal areas thousands of miles or kilometers from their source.

Loss of power, communication and transportation after an earthquake may hamper rescue teams and ambulances, increasing deaths and injuries. In addition, businesses and government offices may lose records and supplies, slowing recovery from the disaster.

The force of an earthquake depends on how much rock breaks and how far it shifts. Powerful earthquakes can shake firm ground violently for great distances. During minor earthquakes, the vibration may be no greater than the vibration caused by a passing truck.

On average, a powerful earthquake occurs less than once every two years. At least 40 moderate earthquakes cause damage somewhere in the world each year. About 40,000 to 50,000 small earthquakes—large enough to be felt but not damaging—occur annually.

Scientists can make fairly accurate long-term predictions of where earthquakes will occur. They know, for example, that about 80 percent of the world's major earthquakes happen along a belt encircling the Pacific Ocean. This belt is sometimes called the Ring of Fire because it has many volcanoes, earthquakes and other geologic activity. Scientists are working to make accurate forecasts on when and how often earthquakes are likely to strike.

Earthquake-resistant construction and building codes help minimize property damage and injuries from quakes. Knowing what to do when an earthquake occurs is instrumental to personal safety, as are some key steps to follow both before and after a quake. Such information can be obtained from the *NAIC State Disaster Response Plan* (1996) developed by the Catastrophe Insurance Working Group. Many insurance company and insurance industry association Web sites also contain useful information on disaster preparedness and loss mitigation.

Hurricane

A hurricane is an area of low air pressure that forms over oceans in tropical regions in either the North Atlantic Ocean or the eastern North Pacific Ocean. Hurricanes measure 200 to 300 miles in diameter and are defined as having wind speeds of 74 or more miles per hour. Such a storm in the western Pacific Ocean is called a *typhoon*, and one in the Indian Ocean is called a *cyclone*. Catastrophe models can be and are used to simulate other types of windstorm, such as tornadoes. In addition, winds less than 74 mph, which occur as a hurricane loses strength, must be considered.

In the United States, most hurricanes affect areas near the Atlantic Ocean or the Gulf of Mexico. Hurricanes occur in the North Atlantic and North Pacific Oceans from June to November—most of them in September. On average, six to eight hurricanes have historically formed in the North Atlantic or North Pacific each year; however, as many as 15 have occurred in the Atlantic in a single year.

In the Northern Hemisphere, hurricane winds blow around the eye in a counterclockwise direction. They blow clockwise in the Southern Hemisphere. Hurricane eyes travel at speeds of 10 to 15 miles per hour. Most hurricanes move westward at first and become larger and stronger as they travel. Then they turn from the equator and pick up speed. Most hurricanes turn east after they reach temperate latitudes, where they are called *extra-tropical storms*. Many end as weak storm centers over cool oceans.

In many hurricanes, winds in the wall cloud area blow at speeds of 130 to 150 miles per hour. The winds and rain, combined with the force of the sea, produce huge waves. These waves, called a *storm surge*, rise several feet above normal and cause floods. A storm surge can be especially destructive if it occurs at high tide. Tornadoes are often present in hurricane clouds.

When a hurricane moves over land, strong winds and heavy rain hit the area for several hours. As the eye of the hurricane reaches the area, the rain stops and the air becomes calm. Less than an hour later, the eye passes and the rain and wind return. The hurricane weakens as it moves over land because it needs the warm sea to supply energy by evaporation. Friction caused by the rougher land surface also slows the winds. Heavy rain continues after the winds decrease.

Significant advances have been made in predicting the paths of existing hurricanes and in building characteristics that can lessen the severity of damage. Following Andrew, many states, counties and cities improved their disaster response plans. Warnings, evacuations and post-damage assistance have greatly improved home mitigation.

During the hurricane seasons in the United States, meteorologists of the National Weather Service keep a close watch on the Atlantic and Pacific oceans, particularly on the Caribbean Sea and the Gulf of Mexico. They also collect information such as air pressure, temperature and wind speeds. They use this information to forecast where a hurricane will hit and how strong it will be. They track the storm with satellites, airplanes and radar, and they warn communities in the storm's path.

The 1990s have had more hurricane activity than preceding decades. It is possible that our weather is entering a more turbulent period of time than existed earlier in the 20th century. Phenomena such as El Nino and postulated changes such as global warming also appear to affect hurricane activity. It seems unlikely that accurate long-term predictions on a detailed level are likely with the level of knowledge currently in existence.

SECTION III

GENERAL OVERVIEW OF CATASTROPHE MODELS

Catastrophe models generally have three major components or modules: scientific, engineering and insurance. Each of these modules represents a mathematical model. The modules are used sequentially, with the output from one being used as input to the next.

The scientific module produces output about one or more physical characteristics of the catastrophic event, such as wind speed for hurricane events or shaking intensity for earthquake events. The engineering module uses the characteristics of the structures to estimate the degree of damage for an event. This engineering estimate is related to both the structure and the event. The event (output characteristics of the scientific module) is an input to the engineering module.

The damage estimates from the engineering module are in turn used by the insurance module to estimate dollars of insured damage. The insurance module adds information about a structure's insurance coverages.

Each of the modules makes assumptions about the parameters of the model. In particular, assumptions are made about the specific values the parameters can take (a deterministic model) or the probability distribution of those parameters (a stochastic model). The values of the parameters directly affect model output. There are many parameters whose true value (or distribution) cannot be determined. The assumptions and parameter values (or distributions) are subjected to various tests. Since there is no known way to ascertain whether or not the parameters or distributions are correct, the models incorporate many areas of informed judgement.

Once the values or probability distributions of all the parameters for all the modules have been defined, expected catastrophic events are projected using simulation or probabilistic techniques.

Frequency and Severity

The final output of catastrophe models can contain a wide array of information. Two important insurance statistics that are generated are estimates of frequency and severity of loss. Frequency (average number of claims per exposure unit) and severity (average dollars of loss per claim) information is usually organized by geographic region (ZIP code, county, state, or multi-state region). The estimates of frequency and severity of loss or event indicate areas of concentration of risk. Frequency and severity are also used to estimate the expected losses, both per exposure and at various levels of aggregation.

Historical frequency and severity data for appropriate events and from many sources is used to estimate some of the model's parameters. Details of how various models use this information are given in the Appendices.

Science Module

There is not sufficient historical information about catastrophic events to build a reliable model. Therefore, the historical data is augmented with the informed judgment of the relevant scientific community (such as meteorologists and geologists). One of the purposes of the scientific module

is to quantify that informed judgment into a cohesive model. The assumptions and functional relationships between input and output variables can then be observed.

For the hurricane peril, a scientific module output would be wind speed at a specific location. The input to the module might include the difference between ambient pressure and central pressure, radius of maximum winds, forward speed of storm, landfall location, etc. For the earthquake peril, the scientific module could output the shaking intensity at a specific location. Inputs include magnitude of earthquake, location of fault, location of epicenter, distance from epicenter, liquefaction potential, other ground conditions, etc.

Engineering Module

The output of the scientific module is used as input to the engineering module. The engineering module estimates the effects of catastrophic events on different types of structures. Inputs include information such as wind speed or shaking intensity. Engineering data includes age of building, construction type, number of stories, attachment to foundation, roof type and anchoring, etc.

Damage in this module is estimated in dollars or in terms of percent damage. The dollar amount of damage can be calculated using the percent damage and the exposure distribution (measured in dollars) corresponding to the geographic region.

Insurance Module

Once the total damage has been estimated for an event for a geographic region using the engineering module, the insurance module estimates the insured damage at a location. This might be done directly or as a function of the total damage. The insurance module uses information about the structure similar to that used by the engineering module, but in addition, includes such factors as guaranteed replacement cost multiplier, deductible and reinsurance limit.

While the engineering module estimates total damage the insurance module estimates insured damage. The insurance module must provide output that can be related to the insurance coverage (such as building, contents, appurtenant structures, additional living expense) that may reimburse the policyholder for damages.

The interested reader is directed to the Appendices for more detail and technical information about the various models and their modules.

SECTION IV

MODEL INPUT PROVIDED BY COMPANY

One significant advantage of using a model is that current (or expected future) exposure is the basis. Traditional methods are based on historical exposure, which may not be representative of what could happen in the future.

All models are dependent on exposure data available from insurers or statistical agents. To some extent, models can be tailored to the data available. However, some minimum level of data is necessary to model a company's catastrophe risk. The quality and level of detail in the data have material impacts on the accuracy of the model output.

Company databases vary considerably and are based primarily on rate filing or statistical agency requirements. Seldom have they been geared to catastrophe estimation. Catastrophe models would be more precise if insurers were able to provide more accurate information related to the catastrophe perils. Historical insurer data collection efforts have concentrated on the fire peril, not hurricanes or earthquakes. The information that is available is incomplete in some areas that have a significant impact on the model results. One example is type of construction. Fire resistance of a structure, which is standard information that has been collected by companies, is relevant for the fire peril, but earthquake or wind resistance and building code enforcement are more meaningful for the catastrophe perils but have not been collected for very long. In addition, most geographical rating territories are based on groupings driven by perils other than earthquake or hurricane.

Information provided to modelers is on an exposure basis, which means it relates to the entity exposed to loss, such as a house, rather than being related to premiums charged or collected. Exposure information can be separated into two categories: physical characteristics and insurance coverage. Physical characteristics cover such things as location, construction, number of stories, and age, and are essential for developing the engineering module of the model. Data is coded by line, classification and type of policy. Coding also distinguishes between the personal and commercial lines of insurance, kinds of property covered and types of commercial policies.

The detail of location data will vary substantially by company. Although exposures by ZIP code is a preferred level of detail, county or state level exposure data can be apportioned to ZIP codes. For an industry-wide model, this probably does not present severe distortions. However, for a single company, it can lead to substantial distortions in measuring concentrations.

Even a ZIP code level database presents some problems. Sometimes the indicated address on the policy is the billing location rather than the actual location of the insured property. For personal lines of insurance, this may not always be a problem. However, for commercial lines it may cause major distortions in the identification of exposure concentrations. This may result in an overestimation of expected losses at the billing location and underestimation in other areas.

Insurance coverage characteristics include the type and amounts of coverage, replacement cost and insurance-to-value provisions, deductibles, coinsurance and the effect of reinsurance arrangements. Coverage type indicates the type of insured exposure such as buildings, contents, appurtenant structures, vehicles, etc. Replacement cost and insurance-to-value provisions show how amounts payable relate to the specified coverage amounts. Deductibles, coinsurance and

reinsurance are provisions of the insurance contract that can reduce the insured loss to the company. This information is used in the insurance loss modules of models.

Insurance coverage data may vary by peril. For example, the hurricane peril may be excluded in some coastal counties because wind coverage is insured through a windstorm pool. Companies may also impose higher deductibles for wind and earthquake perils. As coverages change, it is critical that model estimates are re-run to accurately reflect the correct coverages for a set of exposures.

At a minimum, exposure data should be available by type of risk, location, total exposure amount, coverage type and coverage amounts. The detail of the exposures should at least be at the county or state level. For industry level models, other physical and insurance characteristics can be modeled to the ZIP code level. For an individual insurer, scaling of many of the physical and insurance coverage characteristics to the ZIP code level, however, may lead to large distortions in the modeled result.

The appropriate level of detail varies depending on the use of the modeled results. For example, territorial ratemaking within one state requires more detailed location data than is required for estimating the Probable Maximum Loss (PML) for a countrywide book of business.

Most, if not all, sets of data are missing some values. For example, 10 percent of a company's data may not have age of home recorded. This requires a decision to be made about what to do with this 10 percent. Not using the exposures missing information is one option, but may not always be the best choice. Instead, the decision may be to select a default value (perhaps the most common age), or to assign the house age to the records in the same proportions that exist in the data that does have the information. Similar choices will need to be made for data that contains or is suspected to contain coding errors, such as the billing location vs. property location example above.

To date, regulators have not been allowed to audit company data provided to modelers. The companies are reluctant to share information that they consider proprietary, and may be reluctant to reveal the errors or shortcomings in their data. Modelers do not reveal information about their clients. A description of how this auditing might be accomplished is provided in Section IX of this handbook.

Some modelers perform quality checks on the data provided to them by companies. Details on these can be found in the Appendices.

SECTION V

MODEL OUTPUT

Types of model output vary with the intended use of the model, the modeling company, and by peril modeled. This section contains a summary of the general types of output that are available from catastrophe modeling vendors.

Average Annual Losses

Average Annual Losses (AAL) are defined as the sum of all simulated losses divided by the number of model iterations. Average Annual Losses for a company's total book (also known as the exposure distribution or the portfolio of risks) provides an estimate of the amount a company needs to collect from policyholders each year to fund long-run catastrophe losses. Average Annual Losses are provided at many different levels of detail based on categorical variables such as geography, policy form, line of business, etc. For example, Average Annual Losses by policy form and by rating territory or ZIP code may be used for territorial ratemaking purposes.

Average Annual Losses do not provide an estimate for a given size event. Rather, AAL quantifies the expected losses for an "average" year. Of course, the "average" year will most likely never occur, but its expected losses can provide meaningful information.

Loss Costs

Loss costs are defined as Average Annual Losses divided by the number of exposure units giving rise to those losses. Loss costs should be available at the same level of geographic detail as Average Annual Losses. The definition of exposure unit for loss cost derivation may be a defined house, an amount of coverage (such as \$1,000), or alternate measures.

Loss costs are often used as the basis of ratemaking. While expenses, reinsurance arrangements and financial status may vary from company to company, models assume that property damage is dependent on location, construction and engineering differences. Company and policyholder behavior is considered irrelevant for predicting a structure's catastrophic loss. Some companies offer structural mitigation credits.

Distribution of Losses

There is a probability that a company will experience losses less than or equal to a specified amount. The (probability) distribution of estimates, for every dollar amount, is the "Distribution of Losses." This information is available at different levels of detail. In general, it is derived by observing, for a given set of exposures, losses for a large number of simulated events. These simulated losses are used either to estimate parameters when the form of the distribution has been assumed, or to create a non-parametric (empirical) loss distribution.

For non-catastrophic loss distributions, less severe loss events are usually more frequent. For catastrophes, it should be kept in mind that large events as well as a series of smaller events can contribute to a specified dollar amount.

Exceeding Probability Distribution

The Exceeding Probability Distribution is directly related to the Distribution of Losses. It represents the probability that a client company's portfolio of risks will experience losses greater than a given amount. It is also known as the Exceeding Probability Curve. Both the Distribution of Losses and the Exceeding Probability Distribution can be used to estimate the PML for a given portfolio of risks.

Individual Event Losses

This output shows the event characteristics (like seismic or meteorological data) as well as detailed estimates on the losses for a specific simulated catastrophic event for a specified portfolio of risks.

Historical Event Losses

Similar to Individual Event Losses, characteristics of a particular historical event are used to simulate the loss experience for a specific exposure distribution, typically the client's current distribution. It is used to estimate the effect of a historical event on a current portfolio.

SECTION VI

MODEL VALIDATION AND UPDATE

Models simulating natural disasters are largely based on areas of knowledge and experience that are outside most insurance professionals' areas of expertise. Therefore, it is necessary to rely on professionals from other areas. Models also contain insurance data, algorithms and assumptions, which can be more directly evaluated.

This section is based largely on the Florida Commission on Hurricane Loss Projection Methodology standards. A complete list of these standards and various modelers' submissions to the Commission are contained in the Appendices.

Accuracy

Various model results should be compared to empirical data. For example, modeled hurricane frequency can be compared to historical frequency on a countrywide, statewide and sometimes more detailed basis. Modeled amounts payable can be compared to actual amounts paid for a given event. However, since the assumption upon which catastrophe modeling is based is that historical loss data alone, even when adjusted for population growth and inflation, is not predictive of the future, such comparisons should not be considered sufficient to conclude that a model is producing accurate results.

Comparison to Historical Information

As mentioned in the "Accuracy" section, model output should be compared to historical data. For hurricanes, modeled probabilities of occurrence should be compared to observe frequency for each relevant geographical area. Frequency by (severity) category should also be compared.

Actual loss data should be used to validate models. Modelers should make appropriate adjustments to and specify assumptions in using historical data used to validate the modeling process. These range from assumptions about insurance coverages (such as replacement cost or actual cash value, deductibles, additional living expense limits, building construction) to socioeconomic factors such as demand surge.

Convergence

There should be sufficient iterations of models to convergence at the desired level.

Expert Opinion/Peer Review

It is common practice for modelers to hire outside experts to review their products. Modelers should disclose the extent to which the model has been verified or substantiated by independent expert opinion. It may also be helpful to review experts' qualifications.

Input Data Provided by Company

Modelers should perform validation checking on data provided to them. This includes checking for valid ZIP codes or counties, or ascertaining that critical values are coded. The modeler should

disclose how invalid data is treated in their model (i.e., assigned a default value, assumed to follow a given distribution, omitted, etc.). Modelers should consult with a client company before making any assumptions about missing or invalid data.

Due to the sensitive nature of such data, information on a company's input data should be obtained from the company rather than from the modeler.

Logical Relationship to Risk

Modeled loss costs should increase as exposure to potential loss is assumed to increase and should decrease as such exposure decreases. For example, modelers should verify that their expected hurricane losses increase as distance from the coast decreases.

Model Updates

Modelers should update their ZIP code databases on a regular basis. Models should be updated to the extent that changes in geographic data affect modeled output.

Modelers should provide details on how additional information from catastrophic events is used to update the various modules of their model and the degree of difference between the updated output and the output produced before the update.

Probabilistic Range

Models should produce results over ranges that can be reasonably expected. Historical information, in contrast, may be missing certain events or data that would be reasonably expected to occur.

Real-Time Predictions

“The Commission has discussed whether real-time loss projections by the modeling companies have any value in predicting the accuracy or reliability of the model's projections of hurricane loss costs over time. The Commission has received some documentation from some of the modeling companies presently participating in this process. The Commission may not have all the available existing documentation and may want to construct a test to be conducted during a hurricane season and then evaluate the results for their predictive value, if any.”¹

Sensitivity

Models should be tested to see how a change in input or in a model parameter affects the outputs.

Stability

Model results should be stable. Sampling and aggregation should have a negligible contribution to error.

¹Florida Commission on Hurricane Loss Projection Methodology (Tallahassee: Report of Activities as of June 1, 1998) p. 168

SECTION VII

Please note that this section primarily relates to hurricane and earthquake property loss. The suggested questions could be adapted for other catastrophic events (tornado, hail, freeze, etc) and for other types of loss such as workers compensation. Readers are directed to the Working Definitions section of this handbook for further clarification of terms.

The questions and interrogatories in this section should not be viewed as a recommended requirement for first response on a submission by a company or modeling firm. Prior to action on a submission the regulator may ask these questions of him or her self to determine what areas of attention are most relevant for further exploration. Following such a preliminary assessment the regulator is likely to be in a better position to conduct an effective and efficient review.

EVALUATING MODELS

This section contains three sets of questions. Section VIIA: General Questions contains questions that can be applied to earthquakes and hurricanes; Section VIIB: Questions Specific to Earthquakes contains questions that are specific to earthquake modelers; Section VIIC: Questions Specific to Hurricanes contains questions that are specific to hurricane modelers.

SECTION VIIA: GENERAL QUESTIONS

This section contains some questions a regulator may want to consider when reviewing a filing. The intent is to assist a regulator in formulating and implementing a set of questions and procedures that will be appropriate for the task at hand. Some questions may not be applicable for the filing or model under review.

The perspective taken is that of a regulator reviewing a rate filing that involves the use of a catastrophe model output. The questions are divided into three categories: those about input to the model, those about the model itself, and those about model output. The categories were not designed to be either mutually exclusive or all-inclusive, but provide a method of organizing questions and information.

A. Data Sources

1. What are the sources of the data, both within and outside the company? Where appropriate, do the various sources reconcile with each other?
2. To what extent has the company relied on data supplied by others? How did the company review the data for reasonableness and consistency?
3. Describe the exposure data provided to the modeling firm(s) by XX. Which data elements are modified or not used by the modeling firm(s)? Was bulk coding used?
4. At what level of detail is the data being supplied to the model?
 - a. Has the data been summarized or block coded in some way—how much is real data and how much is default coding? (Example: If don't know construction type, the default is "frame")

- b. Is the output of the model in less detail than the model input? (Example – street address input; output by entire territory)
5. Is the data comprehensive (does it include all data elements required by the model)?
 - a. Were all data elements summaries of raw data, or were interpolations, estimations, or other inferences or assumptions made to provide the model with the required input?
 - b. If there are estimates, describe the estimates. What percentage of the property values has been assigned estimated characteristics? For hurricanes and earthquakes, what percentage of the property values within XX miles (i.e. 20 miles) of the coast and/or fault have estimated characteristics (geocode, construction, property value, etc)
 6. Is the type of data appropriate for the analysis and model being used? Is the data over a year old? If so, how old is the data and why isn't it more recent? How have changes in exposure been accounted for in evaluating the results?
 7. Does the data appear appropriate when compared to similar data from other companies?
 8. Will the company provide the regulator with an electronic copy and/or summary of the data supplied to the modeler(s)? If not, why not? [Note: This is a good question particularly if the regulator has a catastrophe model for comparison.]

B. Accuracy of Data

9. Are there material inaccuracies due to imperfect data?
 - a. What elements of the data set used in the analyses were evaluated for materiality?
 - b. What is the threshold of materiality and whose threshold is it?
 - c. Are there any inaccuracies that could affect the output of the model and the expected range of possible outcomes?
10. Are there limitations to the data?
 - a. For example, have some buildings and locations been left out?
 - b. How have other coverage's, such as business interruption been accounted for?
 - c. How accurately are properties located, by zip code, geocode, county, etc.?
 - d. Are there limitations of the types of construction allowed in the model?

C. Insurance Data

11. Addressing/Geocoding:
 - a. What percentages of insured properties were coded to the following levels of detail: street address, zip code, city, or county?
 - b. Is the model based on exposures by zonal aggregates or at geocodable street level data?
12. Is the type of construction included in the model? Was the occupancy class included? When was this last reviewed? How was the building stock determined and evaluated?
13. Is the commercial property insured in a single location or does it have multiple locations? If it is a multi-location policy were all addresses included in the model?

14. For the homeowners policy form, please provide the number of policies, the average amount of insurance, the current average premiums and average rate changes for each of the categories below. Please calculate the premiums and rate changes.
 - a. By county and deductible
 - b. By county and with/without masonry veneer
 - c. By county and year built
15. Are there significant deductibles? If so, how are these handled by the model?
16. What role if any does the model play in the calculation of the net cost of reinsurance?
17. Is pre-event preparedness and post-event loss minimization taken into account? Was post event cost surge taken into account?

ASSUMPTIONS IN MODEL AND CALCULATION

D. Appropriateness of Model Selection

18. How did the company evaluate the model for appropriateness and applicability to the problem at hand?
19. Have any modifications been made to the model to accommodate the rate filing in question?
20. Has the model been updated or changed in any way since the rate filing analysis was done? Have all applicable catastrophic events been incorporated in the model?
21. Have actual events been compared to the model. If the results of the model differ materially from actual losses, explain what subsequent changes to the model have been made.
22. What simulation model(s) did XX utilize for the currently effective XX's Homeowner's coverage rates?
23. Are the results based on one model or an average of multiple models? If multiple models:
 - a. What are the individual answers to each model?
 - b. Was one of the models an internal model?
 - c. Was any model excluded? Why?
 - d. What are the advantages and disadvantages of each model?
24. Has the company disclosed the extent of reliance on experts in the use of the model? What is the level of expertise in the applicable field of those experts?
25. What is the insurer's largest probable maximum loss (PML)? Is a 1-in-100 year standard or 1-in-250 year standard or some other standard being used?
 - a. What threshold is used for calculating PML, 1-in-100, 1-in-250, or some other standard?
 - b. Which model was used? Was more than one model used? If so what is the PML from the other model?

E. Assumptions

26. What are the major scientific assumptions of the model? (What scientific papers, etc., have been relied upon as a foundation for the model? Also, are there other reasonable, alternative assumptions that have been rejected? Who made the selection, and why?)
27. What are the major actuarial assumptions of the model? (Also, are there other reasonable, alternative assumptions, which have been rejected? Who made the decision and why?)
28. What are the model's basic algorithms? (How are the major components inter-related?)
[Note: This also would tell how the model is structured.]
29. What are the material limitations of the model? Are there some types of loss that are excluded from the model? Are some catastrophic events excluded? Are some property locations, large property values, or construction types excluded from the model?
30. Does the model simulate and isolate appropriate causes of loss? For example, a model may produce both hurricane and other windstorm loss costs. In a rate filing, each of these components may have separate provisions.
31. Was the target a mean value or some other parameter (e.g. a probability distribution)? Do the iterations performed in the modeling reflect the mean values, stay within one standard deviation of the mean, or reflect the entire distribution? What is the range of modeled catastrophic events in terms of standard deviations from the mean?
32. Did the model take into account successive events (e.g. multiple hurricanes in a short timeframe, aftershocks in earthquake) in a region?
33. How has demand surge been taken into account? If so, what is the expected % increase in costs due to the demand surge? Describe how demand surge is used in the models. Provide the data and methods used to determine the effects of demand surge. What is the impact of demand surge?
34. Because not all damage is included in a standard model, has your company taken into account how these items will affect your overall catastrophe risk? If so how, and which perils are not in the model and which ones were accounted for?
35. Will any of the following "switches" be turned "on"? What switches are in the model?
 - a. Time dependency
 - b. Demand Surge
 - c. Storm Surge
 - d. Fire following earthquake
 - e. Secondary uncertainty
 - f. Business interruption
 - g. Automobile damage
 - h. Loss Adjustment Factors

F. Validation

36. What validation and testing has been performed with the model?
37. How long has the model been in production? Who has reviewed the model? Have any enhancements been made to the model?
38. Are there any significant differences of opinion among experts concerning material aspects of the model?
39. Describe sensitivity tests of the models. What was the most sensitive aspect of each model and the basis for making this determination? What is the degree to which these sensitivities affect expected loss costs results?
40. Has the model been certified or acknowledged to comply with a specified set of standards. If so, who certified it and what are the standards with which the model was required to comply?
41. Is the model based on generally accepted practices within the applicable field of expertise? [Note: This is more than just an actuarial question...structural engineering, etc.]

OUTPUT

G. What are the Outputs?

42. What are the outputs of the model? (Are the model outputs reasonable and what analysis or evaluation was performed to evaluate the reasonableness of the output? How were the model's calculations verified? Have the model and its outputs been peer-reviewed? Has the model output been validated? To what extent has other data been used in verifying the reasonableness of the output data?)
43. Were any other models evaluated? Are the results being relied upon consistent with similar output provided by different vendors? If not, please explain the differences. Please explain the differences between the historical indications and the model results? Please provide a summary of the modeled homeowners loss estimates produced by each of the simulation models by policy form, territory, and deductible. Please explain if one model was used or if more than one model was used and if so please provide a comparison of those models.

H. Adjustments to Outputs

44. Please describe the adjustments made for changes in risk, such as the coverage provided or the insurer's geographic distribution, to reflect the anticipated exposure for the period being priced? How was the model recalibrated to account for changes in the coverage provided?
45. Does the model produce loss costs for all classes or is a base loss cost produced and then adjusted for various risk characteristics? If adjustments are made, are they made by the model or afterward? Please provide support for any classification adjustments?

46. Is the level of detail in the filing the same as the model output? If not, what adjustments were made?
47. Have there been changes to the output data provided? What are the reasons for and effects of these modifications? Is the company willing to provide the output of the model before any changes were made as well as what is contained in the rate filing? If not, why?
48. Did the model vendor make any interpretations of the model output? If so, what were those interpretations and how were they incorporated into the filing?
49. How sensitive are the output results to changes in the input data, assumptions and model parameters?

I. Application of Outputs in Filing

50. How has the model output been used in the filing? Are results used for statewide indications, territorial indications, etc.?
51. What credibility is being assigned to the model output? How is the credibility determined? What is used as the complement of credibility?
52. How was Loss Adjustment Expenses (LAE) treated? How does the catastrophe LAE compare to the non-catastrophe LAE?
53. Other than the results of the simulation models, are there any changes to the data or assumptions that resulted in the overall average rate change to XX's Homeowners coverage?
54. To what extent is XX relying on the data, methods and assumptions underlying the currently effective Homeowners coverage rates?

SECTION VIIB: QUESTIONS SPECIFIC TO EARTHQUAKE MODELERS

55. Describe external independent peer reviews that have been performed on the following components as currently functioning in the models:
 - a. Seismology
 - b. Engineering (resulting damage or vulnerability)
 - c. Actuarial Science
56. Are the model estimates of earthquake frequency, earthquake intensity, and earthquake loss costs time-independent or time-dependent? Please provide a comparison of the results if more than one model is used or if both time dependent and time independent assumptions were considered.
57. How are shake intensity and duration measured? What is the minimum shake intensity that could generate property damage in your state? How do the models determine shake intensity and duration at one location for an earthquake occurring at another location? How does this compare with currently accepted scientific literature depicting land

- composition? What database was used by the models? Are the modeled results logical and consistent? How do the modeled shake intensities compare to the historic record?
58. In modeling earthquake risk, how are the parameters for the seismic activity and attenuation determined?
 - a. What are the seismic attenuation relationships used? Do they differ throughout the state (perhaps by earthquake source depths)?
 - b. What are the impacts on the parameters from other seismology and geology influences (other than the summary of historic earthquakes)?
 59. What is the model's "track record?" (How has the model performed in predicting the recurrence and magnitude of earthquakes, both in the mid-continent U.S. and elsewhere? Has well has the model predicted the insured damage caused by these earthquakes?)
 60. How sensitive are the model estimates to assumptions about tectonic plate movement? Please state the tectonic plate movements that were incorporated and their affect on the modeled estimates.
 61. Did the model take into account or apply only one type of earthquake? For instance, strike slip or dip slip.
 62. How were the following factors taken into consideration in the earthquake model?
 - a. Building construction – unreinforced masonry vs. seismic designed
 - b. Building height
 - c. Building location – soil type
 63. What analyses have been done on different soil types?
 64. Provide a list of past earthquakes that were capable of causing property damage in your state. What other characteristics are used to model earthquake frequency, location, intensity and duration? Describe the historical earthquake data used for each of these characteristics identifying all earthquakes data included. Describe the dependencies among variables and how these are represented in the model. For the earthquake characteristics modeled as random variables, describe the probability distributions being considered in the covariance or dependency among the variables. Identify the:
 - a. date
 - b. location and intensity
 - c. appropriate parameters
 - d. data source
 - e. earthquakes whose parameters are uncertain, in dispute or based on approximations.
 65. How does the probability of earthquake occurrence compare to the historical and geological records with respect to frequency, intensity and geographical locations?
 66. Please provide a table that shows the relationship between shake intensity and expected losses.

Use of Output

67. How were the epicenter locations, selected for iterations?
68. How has the model output been used in the filing? Are results used for statewide indications, territorial indications, etc.?
69. What data adjustments have been made for earthquakes from other regions that are incorporated in the model?

SECTION VIIC: QUESTIONS SPECIFIC TO HURRICANE MODELERS

Model

70. Are the model results near term or long term results? What definition of near term and long term is being used?
71. In hurricanes, construction, location and secondary modifiers play a role in insurer's risks. How were these factors included in the hurricane model?
72. When looking at the construction of a building in a hurricane prone area, does it have:
 - a. Bracing Gable – ends in roof framing
 - b. Upgraded exterior wall opening protections
 - c. Upgraded exterior doors
 - d. Shutters
73. How is wind intensity and duration measured? How do the models determine wind intensity and duration at one location for a hurricane that makes land fall at another location? What database was used by the models? How do modeled results for wind intensities compare to the historical record?
74. What is the probable cost of loss of insured property after such a large hurricane – cite assumptions needed and used?
75. Were storm surge, demand surge, hurricane frequency distribution, off shore oil rig losses and Caribbean Clash Modeling included in the hurricane model?

Historical Validation

76. Provide a list of past hurricanes that were capable of causing property damage in your state. Identify the date, location and intensity, and appropriate parameters. Identify the data source. Identify hurricanes whose parameters are uncertain, in dispute or based on approximations.
77. What other characteristics are used to model hurricane frequency, location, intensity and duration? Describe the historical hurricane data used for each of these characteristics and identify all the hurricanes used. Describe the dependencies among variables and how they are represented in the model. For hurricane characteristics modeled as random variables, describe the probability distributions.

78. How do the modeled probability distributions of hurricane characteristics compare to those in the currently accepted scientific literature. How does the probability of occurrence of hurricanes compare to the historical record for frequency, intensity and geographical locations.
79. How do the modeled results compare to the historical results for the recurrence and size of hurricanes, both in Florida, the Gulf of Mexico and coastal areas? How do the modeled results compare to the historical losses caused by these hurricanes?

SECTION VIII REGULATORY REVIEW AND ACCEPTANCE

The level of review by regulators is related to the impact of modeling upon policyholders. If the modeled rate is a substantial portion of the premium charged, it becomes more critical to carefully scrutinize both the process and the results of modeling.

Proprietary Information

When using catastrophe models, perhaps the greatest challenge is to balance the need for public access to information with the investment made by modelers in what they consider proprietary information. All catastrophe models start with publicly available information. The modelers use the public information as a foundation and invest time and resources in additional research and analysis of the public data. The seismological or meteorological data is then merged with insurer exposure data and run through the model's various iterations. It is this added value that the modelers wish to protect.

Insurance regulators may be able to work with modelers to accomplish a mutually acceptable result. Freedom of Information or Sunshine laws provides guidance concerning what information must be disclosed to the public. Sometimes these laws allow a filer and a regulator to agree that certain information is proprietary in nature and, thus, may be withheld from disclosure as a trade secret. If a state has a trade secret exception in its Freedom of Information or Sunshine laws, insurers and modelers can ask for relief from disclosure of proprietary modeling details. The regulator can then seek information necessary to review the model and its application to insurer data without potentially placing the insurer or the modeler at a competitive disadvantage.

Another method has proved useful in some cases. Some modelers are open to site visits from insurance regulators and will assist regulators with the review and understanding of the specific model and its application to insurer data. This method offers regulators an opportunity to visit modeler sites and work with modelers to gain an understanding that is much deeper than would likely be gained from review of model input and output. In a similar manner, some states with common concerns have gotten together as a group and conducted interviews of individual modelers. In this situation, state seismologists and geologists have served as expert advisers, providing assistance to regulators in understanding scientific aspects of the modeling process. Confidentiality agreements were drafted and signed by regulatory authorities in the participating states and by the NAIC on behalf of the staff support for the group. The downside to this process is that while the regulator gains a rich and thorough understanding of how the model works, this process cannot be replicated at the regulators' offices for the public. This may result in criticism of the practice from those who believe they have a right to view whatever data exists.

A sample non-disclosure agreement is provided in Appendix 10.

Regulators may also benefit from direct communication with other regulators from states that have similar interests. Appendix 4 provides a listing of State Insurance Department Contacts.

SECTION IX

RELATED ACTIVITIES, ACTIVITIES TO CONSIDER, EDUCATION AND OUTREACH

Related Activities

Actuarial Standard for Model Use

The Actuarial Standards Board has released the second exposure draft on complex models, entitled “Using Models Outside the Actuary’s Area of Expertise (Property and Casualty).” A separate standard on the Treatment of Catastrophe Losses in Property/Casualty Insurance is in the process of being redrafted. The full text of these proposed standards is available at <http://www.actuary.org>.

Pre-Tax Loss Reserves for Companies

The NAIC is developing a proposal for a statutory tax deductible pre-event catastrophe reserve. The reserve would be required to be established by any insurer that is subject to federal tax on net income and that under state law, must file a NAIC Annual Statement for property/casualty companies. Factors to be applied by line by state to determine the appropriate reserve have been recommended. These factors were developed based upon modeled expected losses and historical data, as well as other information.

Alternate proposals for pre-tax reserves have also been put forth, each with its own set of factors. The factor selection, as well as other mechanics of these reserves, is still under discussion and review. Further, the NAICs Catastrophe Insurance Working Group is evaluating the use of pre-tax catastrophe reserves as one element of an array of options that would be available for insurers to meet their overall financial obligations. This evaluation is underway as this Handbook goes to press.

Activities to Consider

Auditing Company Exposure Data

It can be a daunting task for insurance regulators to audit company exposure data. There are at least two procedures that may be employed for those up to the challenge. Insurance regulators might use a desk audit procedure where the insurer or its statistical agent provides information to the regulator for review in the regulator’s offices. A second method would have the regulator visit the offices of the insurer for an on-site review. Either process would be rather labor-intensive.

A desk audit procedure may involve a formal call to the insurer to advise that the regulator is interested in gathering information to evaluate the appropriateness of the company exposure data supplied to the modeler or used in its application of the catastrophe model to its data. The regulator must identify the statutory authority for requesting the company exposure data and advise the insurer that the information is being sought. The intended use of the information should be stated in the call (i.e., portfolio/solvency analysis or rate analysis). The regulator must

determine what information is needed and should specify the preferred format (i.e., paper or electronic). Once the regulator receives the information, it should be reviewed for accuracy and reasonableness for its intended purpose. This step may necessitate an agreement between the regulator and the insurer about the confidentiality of the information provided.

An on-site audit procedure will involve a formal call to the insurer to advise that the regulator is interested in gathering information to evaluate the appropriateness of the company exposure data supplied to the modeler or used in its application of the catastrophe model to its data. As with a desk audit, the regulator must identify the statutory authority for requesting the company exposure data and advise the insurer that the regulator will visit the insurer's offices. The date(s) that the regulator intends to visit should be specified. The intended use of the information should be stated in the call (i.e., portfolio/solvency analysis or rate analysis). The insurance regulator must determine what information will be reviewed and specify the format in which he or she wishes to review it (i.e., paper or electronic). Once on-site, the regulator should review the company exposure data for accuracy and reasonableness for its intended purpose. Insurers may prefer the on-site visit rather than submitting information that might be subject to public disclosure.

There are distinct advantages to an on-site audit. First, the regulator will have the opportunity to review the data and trace the compiled information to its source. Second, the regulator may be able to review the actual catastrophe model used if the insurer runs the model on-site. Further information on the financial examination process is available in the NAICs *Financial Examination Handbook*. Information on market conduct examinations is available in the NAICs *Market Conduct Examination Handbook*.

Exposure Default Values

Each insurer must evaluate its exposure data and decide upon a set of default values to use in the catastrophe model. These default values represent the "average" risk for the insurer. An integral part of the regulatory review process should involve the disclosure of the default values selected by the insurer. The regulator can review the exposure default values for reasonableness even if a desk audit or an on-site examination is not warranted or feasible.

Multi-State versus Individual State Review

One of the activities that may be contemplated by regulators is cooperative multi-state review of catastrophe modelers. This might be the preferred option for catastrophe modelers as well. There are several advantages to a multi-state examination over a single state review. First, it would be less intrusive for modelers to have a visit from a group of insurance regulators rather than multiple visits from individual states. Second, states would be able to minimize the resources expended for such an exam. They would also be able to learn from each other as the examination process progressed. In addition, the expenses associated with such an exam could be spread and duplication avoided. If outside experts were needed, the costs associated with them could also be shared.

Multi-State Considerations

For multiple states to decide to review or examine a catastrophe modeling vendor there are several areas that must be addressed. First would be the statutory authority for such an

examination. Clearly states have authority to examine insurers' activities and when insurers decide to use the services of others, certain aspects of that transaction seem to be within the domain of the insurance regulator. However, there may be resistance from modeling vendors and most are not licensed entities under state insurance law. States would have to review and evaluate whether a multiple state examination is both feasible and desirable. States would also need to evaluate their purposes for the examination and determine if their purposes were consistent with the other states on the examination.

Individual State Considerations

Insurance regulators may decide that individual examination and review are preferred. States have differing laws to contend with and may find that they have different goals and objectives related to catastrophe modeling and its application in their jurisdiction. An individual state may also have questions about the authority to examine a modeler.

Modelers may prefer to concentrate their efforts at any one time on whatever is requested by a specific state.

Education and Outreach

Efforts should be extended to educate and inform those affected about the use of models. Targeted audiences include elected officials, insurance companies, insurance regulators, advisory organizations, consumer advocates, the media, the engineering community, builders, building inspectors and consumers. Each constituency will have a slightly different interest in catastrophe modeling.

There are several areas where educational efforts will be needed. When targeting a given constituency, care should be given to evaluating whether the audience will be interested in the education provided. Efforts should emphasize one or more of the following areas:

1. Explanations of how computer models are used in ratemaking or portfolio management. This would include a description of how traditional ratemaking methods differ from catastrophe computer models.
2. An overview of the technical information that the models contain should be supplied. Care should be exercised in targeting your audience here to prevent information overload.
3. Educational materials should be prepared to increase public awareness of potential catastrophe risk. Cost-effective loss mitigation efforts should be identified and any incentives for mitigation should be described.
4. Educational materials should be developed. Brochures, news releases and information pieces that can be included in water or electric bills or along with premium notices should be prepared. Newsletters should also be considered along with the use of an Internet Web site.
5. States might consider establishing speakers' bureaus so that cities and towns, civic/business/religious organizations and educational institutions can identify resources.

Appendix 1

WORKING DEFINITIONS

Attenuation – A decrease in a property, as energy, per unit area of a wave or a beam of particles, occurring as the distance from the source increases as a result of absorption, scattering, spreading in three dimensions, etc.

Bulk Coding – Data defined by methods, programs or procedures that assign a predetermined or default value to a required data field when the actual value is unknown or missing.

Demand Surge – A temporary increase in repair costs above the standard levels of cost.

Dip-Slip - Dip-slip faults are inclined fractures where the blocks have mostly shifted vertically. If the rock mass above an inclined fault moves down, the fault is termed normal, whereas if the rock above the fault moves up, the fault is termed reverse. A thrust fault is a reverse fault with a dip of 45° or less. Oblique-slip faults have significant components of different slip styles.

PML – The probable maximum loss is the estimated loss amount for any occurrence with a probability equal to or less than a threshold probability. The PML can also be calculated for a period of time, such as one year (e.g., the 95% probable maximum loss is \$300 million for an insurer’s catastrophe exposure in South Carolina).

Shake Intensity – A measurement of the force of an earthquake at a specific location. This may be a scaled measurement, such as the Modified Mercalli Intensity Index or the peak ground acceleration. This also can be measured in terms of an earthquake’s affect on insured property, such as the spectral displacement of a structure, which is the maximum horizontal displacement of a building.

Strike-Slip – Faults that involve motion that is parallel to the strike of the fault, frequently described as a “side-by-side” motion. Strike-slip faults are further described as “right-lateral” (dextral) or “left-lateral” (sinistral) depending on whether the block opposite the viewer moved to the right or left, respectively.

Time-dependent – Modeling approach that takes into account prior historical rupture information when assessing the likelihood of future ruptures.

Time-independent – Modeling approach that is independent of the time that has passed since the last occurrence of an earthquake on that fault.

Appendix 2

MODEL DATA SOURCES AND DOCUMENTATION

PUBLISHED INFORMATION AND STATISTICS

All catastrophe modeling vendors rely on outside information to feed the inner workings of the models. The information contained in this section is intended to provide insight to insurance regulators about the published information and statistics that the modelers use to develop and run the catastrophe models. This information should provide guidance to the insurance regulators who are attempting to determine if the published information is reflective of the exposures faced in their jurisdiction. The information contained in this appendix was provided by the catastrophe modeling vendors. Not all catastrophe modeling vendors chose to provide information.

Applied Insurance Research, Inc. (AIR) Hurricane Model

Stochastic Storm Database

The AIR hurricane model is parameterized using available data on storms since 1900. The data is used to estimate the probability distributions for each model variable generated in the stochastic storm database. The primary data sources used to construct this historical storm database are:

- NOAA Technical Report NWS 23
- NOAA Technical Report NWS 38
- North Atlantic Storm Data Base, HURDAT
- Tropical Cyclones of the North Atlantic Ocean, 1871—1995
- Preliminary Reports on Landfalling Hurricanes, NHC

Windfield Generation

For each simulated storm in the stochastic storm database, the complete time profile of wind speeds is calculated for each affected location. These wind speeds are calculated taking into account: standard meteorological formulae relating central pressure and radius of maximum winds, Coriolis force, etc. and maximum gradient winds, the asymmetry effect of a moving hurricane, filling equations and surface roughness adjustments.

Damage Estimation

AIR estimates damages using relationships that are developed and refined through years of experience. These relationships relate the mean and variability of damage to locally experienced wind speeds. For any given wind speed, there is a mean expected damage for a particular type of property; however, all properties of that type will not experience the same level of damage. In fact, for any mean damage ratio, there is a very wide range of possible damage ratios. AIR's functions account for non-zero probabilities of 0- and 100-percent damage for most mean damage levels. This type of variability is observed globally in severe wind events for many types of structures.

The AIR damageability relationships are based on the results of engineering studies, tests and structural calculations. They also incorporate the results of post-disaster field surveys conducted by AIR and other structural engineers as well as detailed analyses of actual loss data supplied by AIR client companies. These relationships are continually refined and validated by our team of professional experts who collectively represent over 45 years of wind engineering experience.

AIR Earthquake Model

Stochastic Earthquake Database

AIR obtains data on historical earthquakes and the locations of faults from several sources; the most important of which is the U.S. Geological Survey (USGS). The USGS publishes maps of faults, soil conditions, and catalogs of historical earthquakes. Other information about historical earthquakes and specific areas of seismic activity is obtained from a variety of scientific organizations. These include the Earthquake Engineering Research Institute (EERI), the Seismological Society of America (SSA), and the National Center for Earthquake Engineering Research (NCEER) as well as numerous organizations concerned with the seismicity of specific regions.

Attenuation and Ground Motion

For every simulated earthquake, the local intensity is estimated for each site affected by the event. The local intensity is a function of the magnitude of the event, the distance from the source of energy release, the regional attenuation characteristics of the underlying rock, the local geological soil conditions and the earthquake source characteristics.

Damage Estimation

The earthquake damageability relationships incorporate well-documented engineering studies by earthquake engineers and other experts both within and outside of AIR. These damageability relationships also incorporate the results of post-earthquake field surveys performed by AIR engineers and others as well as detailed analyses of actual loss data provided to AIR by client companies. These relationships are continually refined and validated.

Risk Management Solutions, Inc. (RMS) Hurricane Model

Historical database

Stochastic (simulated) storms in IRAS™ (Insurance/Investment Risk Assessment System) are derived from an analysis and parameterization of historical storm data. The IRAS historical storm database was developed from the North Atlantic Basin Storm database (known as HURDAT²). The HURDAT database contains four pieces of information for each tropical cyclone recorded: time and date, latitude and longitude position, maximum sustained wind speed, and central pressure (when available).

NWS—23 (1979): Describes the standard projected and projected maximum hurricanes along the Gulf and Atlantic coasts.

NWS—38 (1987): Provides a methodology for determining the probability of various hurricane characteristics along the Gulf and Atlantic coasts.

Windfield Model

Georgiou (1985) sets forth the basic approach to determining peak gust wind speed at a site from a small set of parameters describing the hurricane and its location relative to the site and the coast. RMS uses the Georgiou model as a basis for its hurricane windfield modeling.

² *A Tropical Cyclone Data Tape for the North Atlantic Basin, 1886-1983: Contents, Limitations, and Uses*, NOAA Technical Memorandum NWS NHC 22.

Surface Friction (Roughness)

Hurricane wind speeds at ground level are degraded by interaction with surface roughness, whether natural or man-made. The IRAS roughness classifications are at the resolution of ZIP codes and are based on land-use, land-cover data published by the U.S. Geological Survey (USGS, 1978, 1990) and the density of building construction, derived from government and commercially available data sources.

Vulnerability

Vulnerability functions in IRAS relate peak gust wind speeds to levels of damage to various types of property. Published materials reviewed by RMS include studies performed for the National Science Foundation (J.H. Wiggins Company, 1980; NBS, 1981), for the Veterans Administration (Texas Tech. U., 1978); studies done by the Army Corps of Engineers, FEMA and NOAA (USACE, 1990), the National Research Council (NRC, 1993), the Building Research Establishment in England (Cook, 1985), Don Friedman at the Travelers (Friedman, 1987), Davenport et al. (1989), Hart (1976), Liu et. al. (1989), McDonald (1990), Mehta (1992), Minor (1979), Sparks (1993), Stubbs (1993), and Zollo (1993).

RMS Earthquake Model

The IRAS earthquake model considers the various parameters needed to evaluate losses due to potential earthquake events, including the following:

Hazard

- Seismic source locations and geometry;
- Source magnitude-recurrence relationships;
- Attenuation of ground motion; and
- Impact of local soil conditions on ground shaking intensity.

Vulnerability

- Building class dependent ground-motion damage relationships;
- Impact of building specific characteristics on damage; and
- Potential ground failure impacts on estimated damage.

The development of seismic source locations and recurrence parameters is based largely on published literature, in particular studies by the United States Geological Survey (USGS). The historical earthquake record provides basic data for developing the seismic source model. This information is supplemented with geologic data and research specific to each region of the United States. For example, in California, event probabilities for many major faults consider fault slip rate data and the time since the last major event in estimating the probability of future events. This Time-Predictive modeling of event probabilities is based on research published by the USGS Working Group on California Earthquake Probabilities.

Vulnerability functions provide the relationship between ground motion shaking intensity and building damage. The basic relationships are based on expert opinion provided in the document ATC-13: Earthquake Damage Evaluation Data for California. These relationships have been calibrated and in some cases adjusted based on actual insurance loss data in recent earthquakes, most notably the 1994 Northridge earthquake. Outside of California, vulnerability relationships have been modified to account for differing building code requirements and construction practices.

Tillinghast-Towers Perrin (ToPCat Model)

The ToPCat model relies primarily on published information and statistics. The sources include NOAA, Seismological Society of America, U.S. Geological Survey, *The Geneva Papers*, Applied Technology Council, Risk Prediction Initiative, as well as other published sources of meteorological, seismological and engineering information.

ToPCat Hurricane Model

Hurricane Landfall Probabilities and Storm Parameters

The ToPCat probabilistic storm library was developed from the ToPCat historical database. This database was constructed primarily from the HURDAT database, *Tropical Cyclones of the North Atlantic*, and NWS-38. The ToPCat database was used to create probabilistic distributions for central pressure, far-field pressure, radius of maximum winds, forward speed and landfall angle, as well as for the distribution of landfall probabilities.

Windfield Generation

ToPCat uses the wind generation model developed by Vincent Cardone (1992) of Oceanweather, Inc. This published and peer-reviewed model simulates the physical properties of a tropical storm model using a complex set of differential equations that account for the major forces in a storm.

Roughness

The winds generated by the windfield generator are degraded by the surface roughness of the land. The ToPCat model uses roughness coefficients developed from the USGS land-use database, at a ZIP code level.

Damage

The damages to risk locations are determined by damage relationships based partially on Friedman (1984) and Hart (1976), as well as internal evaluation of insurance loss data, and external expert opinion.

ToPCat Earthquake Model

Earthquake Event Parameters and Probabilities

The ToPCat probabilistic event library was developed from the historical database and from published scientific work. The event probabilities come from the various publications of the Working Group on California Earthquake Probabilities (1988, 1990 and 1995), as well as other sources for areas outside California.

Earthquake Shake Generation and Soil Conditions

ToPCat uses a shaking generation model developed by J. Evernden and others of USGS (1985), supplemented by work by B. F. Howell (1976). The soil conditions were also provided by the USGS.

Damage

The damages to risk locations are based the relationships between local shaking intensity and percentage damage from the publication ATC-13, *Earthquake Damage Evaluation Data for California* (1985).

Appendix 3 MODEL RESULTS

TYPES OF OUTPUT

The types of output can vary by model and by peril. The reader will recall that models may be used by insurers to measure risk concentration and exposure or for ratemaking purposes. The type of output will vary depending on the intended use of the model. In this section, modeling vendors were asked to provide specific information about the types of output that will result from the application of their model(s). Knowledge about the types of output expected should assist insurance regulators in evaluating the application of the model for either exposure management or ratemaking. The information contained in this appendix was provided by the catastrophe modeling vendors. Not all catastrophe modeling vendors chose to provide information.

AIR: The AIR simulation models provide a rich variety of output that can be used for many different applications. At the finest degree of resolution, the models can produce output on the losses to each location, by coverage, for each simulated event. However, most applications of the data require aggregations of the event level losses. Typical model output includes:

Average Annual Losses

Average annual losses (defined as the sum of all simulated losses divided by the number of model iterations) are provided by many different breakdowns based on geography, policy form, line of business, etc. For example, average annual losses by policy form and by rating territory or ZIP code, are provided for ratemaking purposes. Average annual losses for a company's total book provides an indication of how much the company needs to collect from policyholders each year to fund long run catastrophe loss potential.

Loss Costs

Average annual losses divided by the corresponding exposure values that generated the losses are also standard model output. These values are a good indication of relative risk and so have value in underwriting and pricing applications.

Probability Distribution of Losses or Exceedance Probability Curves

The probability distribution of losses and its complement, the exceedance probability curve, provide information on how likely a company is to experience losses of different amounts. This information can be provided, in the aggregate, for a company's entire book of business, or by line of business and by various levels of geographical resolution. This information is most useful for helping a company understand and control large loss potential.

Individual Event Losses

Another standard exhibit from the AIR models is the large loss or scenario event report. This exhibit shows the characteristics of, and detailed losses caused by, hypothetical simulated events. This report is useful for determining the types of scenarios that result in large losses to the company.

Historical Event Losses

Historical event loss estimates are derived by running the meteorological or seismological characteristics of actual events against today's exposures. This report allows the company to

look at the amount of loss they would experience if one of these historical events were to occur today.

Exposure Summaries and Exhibits

While not a direct output of the model, the AIR simulation process analyzes, verifies and edits, if necessary, client exposure information. As a result of that process, AIR is able to produce many useful exhibits detailing the company's exposures by line of business, by policy form, by geographical territory, etc.

RMS: The IRAS model produces a wide range of outputs, both in terms of reports and in terms of detailed electronic output files. At the finest level of granularity, the model can produce output that provides the amount of loss per coverage per location analyzed per simulated event. Related files provide the expected losses from all simulated events, or loss distributions. Output can also be provided by location, by coverage, and by financial perspective (e.g. ground-up vs. gross and/or net losses). IRAS can produce these loss results from Exceeding Probability Analyses, Expected Annual Loss Analyses, Historical Loss Analyses or specified Deterministic Event Loss Analyses.

Exceeding Probability

The Exceeding Probability analysis represents a comprehensive analysis of possible catastrophic events. For earthquake, for example, different events are simulated on each of the known faults or seismic sources, from the maximum event to events of magnitude 4.0; for hurricane, a series of events encompassing a range of probable United States storm events is simulated. A cumulative probability, which represents the probability of incurring a loss of the specified amount or greater (i.e., an exceeding probability), is then developed for each loss level by aggregating the individual event probabilities. The exceeding probability distribution is the cornerstone analysis for understanding the probability of various levels of overall portfolio loss.

Average Annual Loss

The Average Annual Loss analysis calculates a single loss number for the portfolio that reflects the theoretical average amount of loss that can be expected annually based on all simulated events that could impact a portfolio. This analysis serves as a basis for developing loss costs.

Scenario Event

The Scenario Event analyses provide the losses associated with specific event scenarios. These single-event analyses help assess the relative impact to a portfolio of events from different seismic sources or hurricane events.

Historical Event

Historical Event analyses allow RMS clients to gauge the losses associated with specified historical hurricanes or earthquakes on their current portfolios. This type of analysis allows clients to compare stochastic storm or specific fault-magnitude event losses, or exceeding probability loss levels, with actual historical events.

ToPCat Model: ToPCat model output can be tailored to client needs, but typically includes exposures and losses by ZIP code or risk location, by line of business, by coverage, by event, as well as event magnitudes (e.g., maximum wind speed or earthquake intensity) by ZIP code or

risk location. The output can be used for probabilistic analysis, loss cost analysis, reinsurance allocation and individual event analysis, or as input to a dynamic risk analysis.

Probabilistic Losses

Probabilistic losses are generally summarized by year, reflecting the probabilities of one or more events per year, to provide estimates of the likelihood that losses will exceed a given amount. For example, if the model indicates that there is a 1 percent chance that losses will exceed \$100 million in a year for a given set of property exposures, this amount is commonly referred to as a PML (probable maximum loss) at the indicated return period. (A probability of 1 percent implies that the loss amount will occur once every 100 years, or a 100-year return period.) This analysis is key to understanding a company's risk to catastrophe loss for reinsurance buying decisions and for managing its underwriting portfolio. Part of this analysis is the calculation of the average annual loss expected from a portfolio of risks.

Loss Costs

Annual loss costs are determined by calculating the average annual loss expected from a standard sized risk at certain locations. The modeled loss cost output is normally at a ZIP code level, but can be combined to a larger geographic area for actual use.

Distribution of Losses

In addition to probabilistic loss results, the output can be used to show distributions of losses by reinsurance layer, projected losses from hypothetical or historical events, geographic distribution of losses for an individual event (either historical or hypothetical), or concentrations of exposures, among other uses. Output can be configured as a table, as a database, or as a map.

USES OF RESULTS

The information contained in this section is intended to be useful to insurance regulators as they attempt to determine whether the insurers are applying the output that is developed from catastrophe models in a manner that will yield acceptable results. It builds on the output information provided in the previous section. Input was sought from each modeling vendor to assist insurance regulators in the evaluation process.

AIR: The primary purpose of AIR's products and services is to give insurers as accurate a picture as possible of the catastrophe loss potential derived from their book of business and to give them the tools they need to consider alternative strategies for managing that risk. The results of our models are, at a minimum, used to:

- Respond to rating agency requirements for catastrophe loss information;
- Make reinsurance buying decisions;
- Prepare information packages for reinsurers;
- Make other risk transfer decisions;
- Identify areas of high exposure to catastrophe losses;
- Develop and test strategies for controlling future catastrophe loss potential; and
- Determine the appropriate catastrophe component for property rates.

In addition, AIR's services include:

Exposure Management and Mitigation Strategies

While our standard CLAS and CLASIC service and software provide a wealth of information for assessing and managing catastrophe risk, our professional staff can also assist in developing more detailed information for decision-making. For example, detailed analyses of how individual risk characteristics affect loss potential can be very valuable for fine-tuning underwriting guidelines. Policy "scoring" systems can be established by peril and geographical area.

The effects of mitigation activities, such as installing storm shutters or bolting walls to foundations, can also be quantified using expert engineering judgment along with the limited amount of actual loss data. AIR is involved with several university and government-sponsored projects designed to address these issues.

Portfolio Optimization Techniques

Companies are frequently looking for a way to grow their books of business. How can property companies grow while effectively controlling catastrophe loss potential? AIR can help its clients incorporate into overall strategic plans, portfolio optimization techniques with respect to catastrophe loss potential. AIR builds in growth objectives by geographic area, non-catastrophe profitability and other lines of business. An integrated and holistic approach to risk management is utilized to help ensure that strategic objectives with respect to both growth and profitability are achieved.

Pricing and Ratemaking Services

AIR also provides to our primary company clients specialized simulation runs tailored to the ratemaking requirements of each state. These specialized runs typically involve a larger number of model iterations than the standard CLAS analysis to ensure convergence of results at the five digit ZIP code and rating territory level. These runs also may involve special processes for handling different types of exposures and/or for performing "contrived" exposure runs. Output from these special runs is also customized to meet the needs of our clients. AIR also provides support services for rate filings. These services can range from providing written documentation on the models to providing expert testimony at rate hearings. AIR's catastrophe loss costs, in pre-packaged format, will also soon be available through ISO.

RMS: RMS delivers solutions through a combination of three main product categories: Software, Information Products, and Services. The same technology forms the foundation for all RMS products and services, so the mixture of products and services used to deliver a solution is determined by the business objectives and implementation needs of the individual client. Some clients exclusively use products from one category, while others require a combination of products and services from multiple categories.

Available software products include IRAS™ Detailed Loss Model for more than 20 geography-peril-model combinations, RiskLink™, IRASMap™, RiskCost™, ADIS, and the IRAS Aggregate Loss Model (ALM™). Information Products include Analytical Reports, Data Products and Consulting Services. Analytical Reports can be either standard reports or specialized studies that address unique business issues. Data Products range from hazard data layers, such as soils or flood data, to industry loss data. Consulting Services can encompass any

aspect of a company's operations or strategy. Finally, RMS offers a broad range of Services, including consulting, engineering services and training.

The mixture of products and services deployed depends on each client's unique requirements for:

- On-demand access to catastrophe information;
- Deployment of catastrophe information to decision-makers throughout the organization;
- Development of loss costs for rate making purposes;
- Communication of its risk profile outside the organization, including to regulators, rating agencies, reinsurers, investor communities, etc.;
- Integration with existing systems and processes;
- Use and expertise of internal resources; and
- Addressing unique or highly sophisticated business issues.

RMS' large variety of products has been used by clients for a wide range of risk management applications, falling into these broad categories:

Metrics Definition
Risk Profiling
Benchmarking

Portfolio Action
Underwriting

ToPCat Model: Tillinghast uses the results of ToPCat catastrophe modeling as a base to help clients in their management decisions. Their consultants work with the model output as well as many other tools, to tailor solutions to their clients needs.

There are several areas where these services can be helpful to companies with property catastrophe exposures. Some of these are:

- Reinsurance buying decisions;
- Determination of catastrophe provisions in property rates;
- Determination of underwriting strategy (e.g., where to write more or less business, effects of changing deductibles or other coverage provisions);
- Optimization of portfolio by geographical or other management segment;
- As input to dynamic financial analysis; and
- Allocation of catastrophe reinsurance costs.

SAMPLE REPORTS

This section is intended to provide insight to insurance regulators as they review reports produced by catastrophe modelers or insurers using products that have been provided to them by catastrophe modelers. Each catastrophe modeler was asked to provide information about its models and to explain what typical reports will contain.

AIR: While reports will differ depending on the needs of our clients, the typical report will include:

- Introduction
- Executive Summary
- Description of Exposure Information and Assumptions; including Maps
- Long Run Average Losses; including Maps
- Distributions of Exposures and Losses
- Distributions of Potential Losses
- Large Losses; including Maps
- Reinsurance submission information including UNICEDE™, UNICEDE™/2 and CLF™ files

RMS:

Risk & Technology Consulting

Risk Management Solutions delivers its services and analytical products via the RMS Risk & Technology Consulting (R&TC) Group. Risk & Technology Consulting delivers highly innovative and advanced risk management consulting services to insurers, reinsurers, financial institutions, Fortune 1000 corporations, and government agencies. The group's skills and resources, which include 70 RMS professionals with credentials in risk management, actuarial science, corporate finance, engineering and information technology, complement the disciplines traditionally found at insurance and reinsurance businesses.

RMS Risk & Technology Consulting works with clients to develop and implement “best practice” strategies for risk management and cutting-edge approaches for business growth. The consulting group applies and builds on RMS' worldwide market-leading position in technology for risk assessment and management, particularly in the areas of catastrophe risk and other complex business risks that cannot be analyzed using traditional methods.

Risk & Technology Consulting Sample Reports

Services delivered by RMS Risk & Technology Consulting are specifically tailored to individual client goals and needs. R&TC products include:

- Underwriting process and guideline development;
- Underwriting best practices and system development;
- Policy scoring systems;
- Growth, profitability and capital deployment action plans;
- Pricing algorithms, rate discount/penalty practices;
- Insurer and reinsurer risk assessment analyses;
- Rating and loss cost analyses;
- Rating agency support/presentations;
- Peer group and industry benchmarking;
- Catastrophe response procedures and systems;
- Data audit, analysis, and enhanced data capture;
- Database design and workflow procedures;
- Capital markets support and advisory services;
- Financial impact analyses and management alternatives;
- Client issue-driven engineering and scientific studies; and
- Customized model development.

Communication of Risk and Exposure

In addition to its consulting services, RMS helps various participants in the financial risk industry, including insurers, reinsurers, banks, regulators, and other government agencies, to better understand and communicate risk.

- RMS DatEx exposure data formats allow insurers to provide exposure data to reinsurers and industry regulators in a standardized, globally accepted format.
- RMS Reinsurance Submission Reports are used by reinsurers throughout the world, and are developed by RMS for insurers or for reinsurers.
- RMS Event Reports are published following major catastrophes, providing interested parties with a thorough and focused review of insured and uninsured losses caused by major catastrophes.
- RMS Catastrophe Studies provide analyses of prospective catastrophes in major urban areas. Currently available reports address earthquakes in Los Angeles, San Francisco and Tokyo.
- RMS Hurricane/Typhoon/Cyclone Status Reports provide RMS clients with real-time updates and projections based on tropical depressions in various regions of the world. Information is provided by fax and Internet communication.

ToPCat Model: A useful byproduct of outsourcing catastrophe modeling (as opposed to running the model in-house) is the production of an independent report documenting the results. Reports generally summarize results in a variety of formats depending on the scope of the study, summarize input data and issues related to the preparation of that data, and provide background on the model used.

A typical report would have the following organization:

- Executive Summary
- Geographical Distribution of Exposure
- Catastrophic Loss Potential
- Methods and Assumptions
- Appendices, with maps and exposure and loss detail

Appendix 4

LIST OF MODELER CONTACTS

This section provides background information about the known active catastrophe computer simulation modeling vendors. The information contained was provided by each of the modelers. Minor editing was done for consistency.

Applied Insurance Research, Inc. (AIR)

Founded in 1987, AIR pioneered the development and application of catastrophe loss estimation technology—a technology that revolutionized the insurance industry and provided companies, for the first time, valuable tools to assess and manage their catastrophe risk. Today, AIR provides clients with a full suite of integrated products for underwriting, pricing, portfolio management, risk transfer and financing.

AIR has developed models to estimate potential catastrophe losses from all major natural hazards, including hurricanes, earthquakes, extratropical cyclones, tornadoes, hailstorms and flood, for more than 20 countries throughout North America, the Caribbean, Europe and the Pacific Rim. By incorporating the most recent scientific data and research results, AIR is able to provide clients with the most reliable loss estimates available on the market today.

AIR has created a broad range of software solutions based on these models to serve the diverse needs of our clients, among them: CATMAP[®]/2, CATRADER[®], CLASIC[™] and CLASIC[™]/2. To find out more about AIR products and services, visit their Web site at www.air-worldwide.com.

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Applied Research Associates, Inc.

Applied Research Associates, Inc. (ARA) is a diversified engineering and applied science research, consulting and software development firm. The company has approximately 500 employees with 10 major offices in the United States. ARA is recognized as a leader in the development and application of advanced wind modeling techniques. ARA's hurricane risk model was adopted for use in the ASCE 7 national standards on design windspeeds. The firm was selected in 1998 by FEMA to develop the national wind loss estimation methodology for the HAZUS software tool. The state of Florida selected ARA to perform hurricane mitigation and loss analysis for over 2000 buildings under the Residential Construction Mitigation Program. ARA's research on wind-borne debris risk has formed the basis for development of new shutter

protection standards in the United States. ARA's HURLOSS model was accepted by the Florida Commission by a unanimous vote on all standards.

ARA's modeling approach is based on engineering-based load and resistance models, allowing for accurate loss projections for individual buildings as well as portfolios of buildings. ARA has more than 20 in-house software tools to analyze the effects and losses of wind events on buildings and facilities. ARA specializes in custom software applications and risk management consulting services. ARA has extensive experience in developing and analyzing class plans for the wind peril.

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EQECAT, Inc. (Reproduced, in part, from EQECAT.com)

EQECAT, Inc., is a wholly-owned subsidiary of EQE International, one of the world's leading risk management companies. Setting EQECAT's modeling and consulting capabilities apart is the foundation of engineering, science and technology not found at traditional risk management companies.

EQECAT's Total Catastrophe Management Program

The insurance industry's ability to develop better risk assessment capabilities with respect to natural disasters is changing rapidly. Most companies recognize that emerging software technology provides additional tools for more accurately assessing exposures and managing portfolios. EQECAT has developed effective catastrophe management programs for many insurance companies using a three-phase total catastrophe management approach. The three-phase program provides a methodology for systematically implementing an efficient and effective catastrophe management program.

Phase I. The first step is estimating current exposure. EQECAT's portfolio analysis uses data that you have readily available. The resulting probable maximum loss (PML) establishes a baseline for developing a corporate catastrophe management strategy.

Phase II. The PML information (including identification of the number and types of risks contributing most to the estimated PML) is used to establish an overall strategy for managing the level of exposure. EQECAT may assist in this phase by conducting special product pricing, underwriting guidelines and other options designed to improve portfolio performance.

Phase III. In this phase, the strategies developed and refined in Phases I and II are implemented. EQECAT software can be installed to support catastrophe management policies and underwriting practices. EQECAT has also assisted companies by developing well-illustrated

underwriting manuals and by conducting training programs for underwriters and loss control staff on how to identify key structural features for each property type and peril category.

EQECAT is committed to delivering high-quality products and services to the insurance industry, which helps companies: improve risk selection, enhance the management of catastrophe exposure and better control losses from natural disasters. As a result, underwriters and risk managers are in a better position to maximize the use of available capacity and protect corporate assets.

For more information, visit their Web sit at <http://www.eqecat.com>.

E.W. Blanch

Catalyst[®] is the risk analysis products and services division of E.W. Blanch Co. (“EWB”), a provider of tools to manage exposure to natural disasters/catastrophes. EWB utilizes technology to provide its clients with a comprehensive suite of products and consulting services for the proactive management of financial risk due to natural perils. With capabilities including catastrophe modeling software tools, portfolio optimization software and services, business distribution template development, real-time event loss estimations, Catalyst[®] helps clients minimize risk exposures while achieving desired business objectives.

Catalyst[®] services are utilized by more than 140 insurance and reinsurance companies nationwide. In addition, Catalyst[®] has been approved by the Florida Commission on Hurricane Loss Projection Methodology for residential rate making in that state.

Armed with clearer insights into the potential impact of a natural disaster, clients are better prepared to analyze solutions resulting in greater predictability and stability in operating results.

E.W. Blanch Company has provided integrated risk management and distribution services for more than 40 years, including reinsurance intermediary services, risk management, primary distribution services, consulting and administration services. EWB is headquartered in Dallas with branch offices throughout the United States and strategic locations in Europe, Latin America and the Pacific Rim. For more information, check the Internet at www.ewb-catalyst.com, or call 1-888-333-2882.

Risk Management Solutions, Inc. (RMS)

Risk Management Solutions, Inc. (RMS) is a worldwide provider of models, software, and consulting services for the quantification and management of natural hazard risk. RMS’ risk assessment models cover catastrophic perils such as earthquakes (including fire following earthquake), hurricanes, tornadoes, hail, flood and weather-related risks in more than 40 countries. In addition to licensing these models and related software applications, RMS provides data and consulting services based on the RMS models to support the underwriting, pricing, transfer, and portfolio management of insurance and other financial contracts tied to natural hazard risk. More than 400 leading insurers, reinsurers, corporations, governments and financial institutions access RMS technology to manage their exposures.

RMS was founded in 1988, and currently operates from eight offices in North America, Europe and Asia, with headquarters in Menlo Park, California. The company employs approximately

660 people, including 260 employees in its primary risk management business, and more than 400 additional employees in a subsidiary based in India that specializes in the conversion and compilation of technical data. The company's risk management business includes professionals with backgrounds in actuarial and statistical sciences, geology, seismology, meteorology, physics, structural and civil engineering, management consulting, economics, and finance. Seventy-four percent of the technical staff and 68% of the total staff hold advanced degrees, including 28 PhDs. RMS also utilizes a global network of academic contacts and consulting engineers and scientists who are retained for periodic review of RMS technology or for specific projects.

RMS is a wholly owned subsidiary of The Daily Mail and General Trust, p.l.c.

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Tillinghast-Towers Perrin (Tillinghast)

Tillinghast provides risk management, actuarial, claim management and general management consulting services to a wide range of public and private entities. Tillinghast has offices in 18 U.S. cities, plus 16 other countries throughout the world. Its parent company, Towers Perrin, is one of the world's largest independent consulting firms (wholly owned by its active professionals).

Tillinghast's property catastrophe model (ToPCat) was developed in 1987, initially to measure the effect of hurricanes and earthquakes on insured property exposures in the United States, and has been expanded over the years to cover other perils, and regions outside the U.S. In 1998, Towers Perrin licensed the RMS models in North America as an additional tool to enable the use of multiple models in client assignments.

The ToPCat model simulates historical and hypothetical catastrophe events on company-supplied and estimated industry exposure information. ToPCat's probabilistic simulation library contains an extensive array of events that are representative of the range of possible locations and magnitudes of events for each peril and region. Tillinghast consultants use the results of the model to perform financial analysis and capital management studies, as well as to provide the tools to evaluate and implement cost effective risk financing strategies. The model also produces loss cost estimates for use in pricing and underwriting, and databases for use in developing exposure management strategies.

Tillinghast emphasizes teamwork in its approach; consultants with extensive insurance expertise and broad experience with catastrophe models from a variety of vendors work together with client staff to ensure quality model input and to provide added value uses for model output. Tillinghast believes that for most insurers it is more cost effective to outsource catastrophe modeling rather than to staff and maintain the in-house capabilities to run these very complex models. As a result, Tillinghast does not license its catastrophe modeling software for client use.

Tillinghast's clients include insurers, reinsurers, other financial institutions, corporations, public sector entities and rating agencies, as well as issuers and purchasers of non-traditional risk securitization investments.

Tillinghast has developed its catastrophe models primarily through the efforts of its staff, with expertise in insurance, actuarial science and catastrophe risks, in collaboration with outside experts in engineering, seismology and meteorology. This approach allows Tillinghast to offer consulting services that combine in-depth knowledge of model-building, current scientific thinking and the needs of users.

The wind field module of the ToPCat hurricane model was developed by Dr. Vincent Cardone of Oceanweather, Inc., noted meteorologist and wind physicist. Dr. Cardone's model has been peer reviewed and published in recognized scientific journals. He has worked as an advisor to Tillinghast to adapt his model for use in ToPCat.

The damage factors (vulnerability functions) were developed based on statistical analysis of historical hurricane claim data and scientific research. The damage relationships inherent in the insurance claims information were supplemented by the engineering expertise of Clemson University's Drs. Timothy Reinhold and Benjamin Sill, prominent structural engineers involved in hurricane damage research, and Dr. Nicholas Jones of Johns Hopkins University, a noted wind and earthquake engineer.

All other aspects of the hurricane model, including development of the landfall probabilities, storm parameter distributions and modeling the effects of land roughness were developed by Tillinghast staff. An additional independent peer review of all meteorological aspects of the hurricane model was completed by Dr. James Elsner of Florida State University, contributing to the acceptance of the ToPCat hurricane model by the Florida Commission on Hurricane Loss Projection Methodology.

The earthquake event module is based on the work of J. F. Evernden and his colleagues at the U.S. Geological Survey, supplemented by the work of Dr. Benjamin Howell of Penn State University and subsequent research. The damageability module is based on ATC-13; the principal published source of earthquake damage relationships. Additional engineering expertise and input has been obtained from Dr. Jones.

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Douglas Collins manages Tillinghast's catastrophe risk management consulting practice, from the Hartford office. Mr. Collins' contact information is as follows:

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Appendix 5

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Appendix 6

LIST OF ENACTED LEGISLATION BY STATE

Arkansas Statutes—Insurance Laws
TITLE 23—PUBLIC UTILITIES AND REGULATED INDUSTRIES
Subtitle 3. Insurance
Chapter 102—ARKANSAS EARTHQUAKE AUTHORITY ACT

§23-102-101 “Arkansas earthquake authority act”

This chapter shall be known and may be cited as the “Arkansas Earthquake Authority Act.”

§23-102-102 Purpose of provisions

- (a) The threat of or the actual occurrence of a major earthquake poses serious consequences for the State of Arkansas and its citizens. Of particular concern is the magnitude of damage to residential homeowner and farmowner dwellings and whether or not these structures are adequately insured.
- (b) The market for residential earthquake insurance within the State of Arkansas is currently characterized by the following:
 - (1) Potential for unavailability of earthquake insurance coverage or inadequate coverage;
 - (2) Potential lack of capacity and desire of insurers to write residential earthquake coverage due to pressure from rating agencies;
 - (3) Low percentage of Arkansans with earthquake insurance;
 - (4) Lack of awareness on the part of residential homeowners and farmowners regarding the consequences of a major earthquake; and
 - (5) Lack of awareness on the part of residential homeowners and farmowners that earthquake is not a covered peril under a basic homeowner or farmowner policy unless affirmatively added by endorsement.
- (c) The General Assembly hereby declares there is a compelling state interest in maintaining a viable and orderly private sector market for residential earthquake insurance in this state. To the extent that private sector insurers are unable to maintain a viable and orderly market for residential earthquake insurance in this state, state actions to maintain such a viable and orderly market are appropriate.

§23-102-103 Definitions

As used in this chapter, the following definitions apply:

- (1) “Authority” means the Arkansas Earthquake Authority;
- (2) “Board” means the governing Board of the Arkansas Earthquake Authority;
- (3) “Commissioner” means the Insurance Commissioner for the State of Arkansas;
- (4) “Event” means an earthquake and all subsequent earthquakes occurring within the following seventy-two-hour period;
- (5) “Insurer” means all property insurers as defined in §23-62-104 and includes farmers’ mutual aid associations and all casualty insurers as defined in §23-62-105;
- (6) “MAP” means the Market Assistance Program; and
- (7) “Net direct written premium” is the gross amount of premiums received from policies of insurance issued in this state less return premiums and dividends paid or credited to policyholders. The term does not include premiums for indemnity reinsurance accepted from other licensed insurers, and there shall be no deductions for premiums for indemnity reinsurance ceded to other insurers.

§23-102-104 Establishment; tax exemptions

- (a) There is hereby created a nonprofit legal entity to be known as the Arkansas Earthquake Authority. The authority shall operate subject to the supervision and control of the Board of the Arkansas Earthquake Authority. The authority is created as a political subdivision, instrumentality, and body politic of the State of Arkansas and, as such, is not a state agency.
- (b) The authority shall be exempt from all state, county, and local taxes, including insurance premium taxes, the Arkansas Purchasing Law, §19-11-201 et seq., and the Arkansas Administrative Procedure Act, §25-15-201 et seq., except to the extent defined in this chapter.

§23-102-105 Governing board

- (a) The Arkansas Earthquake Authority shall operate subject to the supervision and control of the Board of the Arkansas Earthquake Authority. There shall be a governing board of seven (7) members to be appointed by the Insurance Commissioner, which shall meet at least annually to review and prescribe operating rules. The commissioner shall apportion the number of positions into three (3) classes which shall consist of the following members:

- (1) Three (3) members shall be representatives of foreign insurance companies;
 - (2) Two (2) members shall be representatives of domestic insurance companies;
 - (3) One (1) member shall be a licensed insurance agent; and
 - (4) One (1) member shall be a consumer.
- (b) The commissioner shall appoint members by class of one-year, two-year and three-year terms. Thereafter, at each annual meeting, members appointed to succeed those whose terms expire shall be appointed to three-year terms.
 - (c) The board shall elect one (1) of its members as chairman.
 - (d) Any vacancy in the board occurring for any reason other than the expiration of a term shall be filled for the unexpired term in the same manner as the original appointment.
 - (e) Members of the board may be reimbursed from moneys of the authority for actual and necessary expenses incurred by them to attend board meetings, but shall not otherwise be compensated for their services.

§23-102-106 Immunity

There is no liability on the part of and no cause of action of any nature may arise against any participating insurer, the Arkansas Earthquake Authority's agents or employees, the governing Board of the Arkansas Earthquake Authority, or the Insurance Commissioner or his representatives for any act or omission in the performance of their powers and duties under this chapter.

§23-102-107 Plan of operation

- (a) The Board of the Arkansas Earthquake Authority shall adopt a plan of operation pursuant to this chapter and shall submit to the Insurance Commissioner for approval such plan of operation, including the Arkansas Earthquake Authority's bylaws and operating rules and any amendments thereto necessary or suitable to assure the fair, reasonable, and equitable administration of the authority. The plan of operation shall become effective upon approval in writing by the commissioner. If the board fails to submit a suitable plan of operation within one hundred eighty (180) days after the appointment of the governing board or at any time thereafter fails to submit suitable amendments to the plan of operation, the commissioner shall adopt and promulgate such rules as are necessary or advisable to effectuate the provisions of this section. Such rules shall continue in force until modified by the commissioner or superseded by a plan of operation submitted by the board and approved by the commissioner.

- (b) The plan of operation shall:
- (1) Establish procedures for operation of the authority;
 - (2) Create a fund under management of the board to pay administrative costs, claims, and other expenses of the authority;
 - (3) Develop and implement a Market Assistance Program to assist insureds in procuring residential earthquake coverage in the voluntary market;
 - (4) Develop and implement a program to publicize the existence of the Market Assistance Program and authority, the eligibility requirements, and procedures for enrollment, and to maintain public awareness of the Market Assistance Program and the authority;
 - (5) Establish procedures for the handling, accounting and auditing of assets, moneys and claims of the authority and the executive director or plan administrator;
 - (6) Establish procedures for selecting either an executive director or a plan administrator in accordance with §23-102-111;
 - (7) Establish procedures for issuance of policies;
 - (8) Establish procedures under which applicants and participants may have written grievances reviewed by a grievance committee appointed by the board. The grievances shall be reported to the board after completion of the review. The board shall retain all written complaints regarding the plan for at least three (3) years;
 - (9) Establish procedures to conduct necessary analysis at reasonable intervals to appropriately evaluate the Arkansas earthquake insurance market;
 - (10) Establish procedures and guidelines to prevent a company from transferring and causing to be transferred substantially all of its earthquake exposure to the authority, unless the commissioner finds after notice and hearing that it is in the best interests of Arkansas citizens to allow such a practice; and
 - (11) Provide for other matters as may be necessary and proper for the execution of the board's powers, duties, and obligations under this chapter.
- (c) If the board finds after investigation conducted pursuant to §23-102-107(b)(9) that there is sufficient availability and competition in the marketplace, the board shall request that the commissioner hold a public hearing to determine if it is in the best interest of Arkansas citizens to suspend operation of or dissolve the Market Assistance Program or the authority. If after the hearing the commissioner determines that there is sufficient availability and competition in the voluntary earthquake market and it is in the best interest of Arkansas citizens, the commissioner may:

- (1) Suspend operations of the Market Assistance Program or the authority;
- (2) Suspend policy issuance by the authority or any other operational component of the Market Assistance Program or the authority; or
- (3) Dissolve the Market Assistance Program or the authority.

§23-102-108 Board's powers; bond issuance; penalties

- (a) The Board of the Arkansas Earthquake Authority shall have the general powers and authority granted under the laws of the State of Arkansas and in addition thereto, the specific authority to:
 - (1) Enter into contracts as are necessary or proper to carry out the provisions and purposes of this chapter;
 - (2) Assess insurers pursuant to §23-102-112 regarding funding of the Arkansas Earthquake Authority;
 - (3) Set an appropriate policyholder surcharge for insurers entering the residential homeowner, farmowner, fire and allied lines, and earthquake markets after an event. This surcharge shall be remitted to the authority based on these insurers not having paid the post-event assessments contained in §23-102-112. The board shall determine the period of time during which this surcharge shall be applicable;
 - (4) Sue or be sued, including taking any legal actions necessary or proper;
 - (5) Take such legal action as necessary, including, but not limited to:
 - (A) Avoiding the payment of improper claims against the authority or the coverage provided by or through the authority;
 - (B) Recovering any amounts erroneously or improperly paid by the authority;
 - (C) Recovering any amounts paid by the authority as a result of mistake of fact or law;
 - (D) Recovering other amounts due the authority; or
 - (E) Coordinating legal action with the Insurance Commissioner to enforce the provisions of this chapter;
 - (6) Establish and modify from time to time as appropriate the rates, rate schedules, expense allowances, agent fees, deductibles, and any other actuarial function appropriate to the operation of the authority;
 - (7) Issue policies of residential earthquake insurance or reinsurance in accordance with the requirements of this chapter. All policy forms shall be subject to the approval of the commissioner;

- (8) Authorize the executive director or plan administrator to prepare and distribute instruction and application forms to agents and to the general public;
- (9) (A) Borrow money and issue or contract with another state authority, including the Arkansas Development Finance Authority, to be issued on its behalf negotiable evidences of debt, including bonds payable from and secured by a pledge of the authority of all or any part of the revenues of the authority to finance the activities authorized by this chapter and sell those bonds at public or private sale in the form and on those terms and conditions as approved by the board.
- (B) Proceeds of bonds and the revenues pledged to secure or pay bonds shall be cash funds and shall not be deposited in the State Treasury.
- (C) Bonds shall be special obligations of the Arkansas Earthquake Authority, secured solely by and payable from the revenues of the authority. The funds, credit, property, or taxing power of the state or political subdivisions of the state shall not be pledged for the payment of such bonds. In the discretion of the board and subject to approval by the commissioner, the Arkansas Development Finance Authority shall be authorized and empowered to issue negotiable evidences of debt on behalf of the Arkansas Earthquake Authority for the purposes of providing financing as set forth in subdivision (a)(9) of this section and for all other purposes consistent with and in furtherance of this chapter.
- (D) The term of the bonds may not exceed thirty (30) years. In addition, bonds may be issued for the purpose of refunding any bonds issued under this chapter.
- (E) Bonds issued by the authority are legal investments for all trust funds, the funds of all insurance companies, banks, trust companies, executors, administrators, trustees, and other fiduciaries. The bonds are securities that may legally be deposited with, and received by, any state or municipal officer or agency or political subdivision of the state for any purpose for which the deposit of bonds or obligations of the state is now, or may hereafter be authorized by law including deposits to secure public funds.
- (F) The state hereby pledges to and agrees with the holders of bonds that the state will not limit, alter, or restrict the rights hereby vested in the authority to fulfill each pledge of revenues and any other terms of any agreement made with or for the benefit of the holders of bonds or in any way impair the rights or remedies of the holders of the bonds.
- (G) Bonds issued by the authority, and the interest thereon shall at all times be exempt from all state, county and municipal taxes. This exemption shall include income, inheritance, and estate taxes;

- (10) Pledge, assign and grant a security interest in any of the assessments authorized by this chapter or other assets of the authority in order to secure any notes, bonds, or other evidences of indebtedness of the authority;
 - (11) Enter into one (1) or more credit facilities, including, but not limited to, lines of credit, permitting the authority to draw amounts as approved by the board, with payment, interest rate, indemnity, compensation, security, default, remedy, and other terms and conditions as approved by the board. All drawings under these credit facilities shall be available to finance the activities authorized by this chapter; and
 - (12) Purchase reinsurance, hedge, securitize or otherwise mitigate the risks insured or reinsured by the authority by entering into such commitments and undertakings and exercising such powers as may be appropriate to accomplish the financings contemplated in this section and thereby carry out the purposes of this chapter.
- (b) In addition to the other powers granted by the Arkansas Insurance Code, §23-60-101 et seq., the commissioner, after notice and hearing in accordance with the provisions of the Arkansas Insurance Code, §23-60-101 et. seq., may impose a monetary penalty upon any insurer or suspend or revoke the certificate of authority to transact insurance in the State of Arkansas of any insurer who fails to pay an assessment or otherwise file any report or furnish information required to be filed with the board pursuant to the board's direction that the board believes to be necessary in order for the board to perform its duties under this chapter.

§23-102-109 Market assistance program

- (a) The Board of the Arkansas Earthquake Authority shall develop and implement a Market Assistance Program to assist insureds in procuring residential earthquake coverage in the voluntary market. This shall be accomplished by providing those seeking residential earthquake coverage with a list of insurers participating in the Market Assistance Program.
- (b) Insurers may participate in the Market Assistance Program only after approval by the board. The board shall establish criteria which must be met by each Market Assistance Program applicant for approval, including, but not limited to, the following minimum requirements:
 - (1) All applicants for earthquake coverage which have underlying homeowner, farmowner, or dwelling fire insurance coverage, or meet other criteria as determined by the board and approved by the Insurance Commissioner, shall be accepted;
 - (2) Residential earthquake coverage must be offered as monoline coverage;
 - (3) The insurer-applicant is in sound financial condition; and
 - (4) The insurer-applicant has retained or contracted with appropriate skilled personnel to service insureds.

- (c) By rule and regulation, the commissioner may restructure the Market Assistance Program criteria set forth in subsection (b) of this section or any other component of the Market Assistance Program if the commissioner finds that the Market Assistance Program is not substantially accomplishing its objective of assisting residential insureds in procuring earthquake coverage in the voluntary market and that the restructuring will be in the best interests of Arkansas citizens.
- (d) Market Assistance Program insurers shall give ninety (90) days' notice in writing to the board and commissioner of its withdrawal from the Market Assistance Program.
- (e) Notwithstanding any provision in §23-64-201 et seq. regarding agent appointments, all licensed property and casualty agents shall be authorized to access and place coverage through a Market Assistance Program insurer.

§23-102-110 Policy issuance

- (a) As long as the Market Assistance Program has at least one (1) approved insurer, no residential earthquake coverage shall be issued by the Arkansas Earthquake Authority, except as provided in subsection (b) of this section.
- (b) If there are no approved insurers in the Market Assistance Program or if after notice and hearing, the Board of the Arkansas Earthquake Authority or the Insurance Commissioner finds that the Market Assistance Program rates substantially exceed rates that could be offered by the authority, and the board or commissioner find after a hearing that it is in the best interests of Arkansas citizens to issue coverage directly through the authority, and with the concurrence of the House and Senate Insurance and Commerce Committees, if the General Assembly is in session, or the concurrence of the House and Senate Interim Committees on Insurance and Commerce, if the General Assembly is not in session, the board shall proceed to offer coverage through the authority to potential insureds.

§23-102-111 Executive director or plan administrator

- (a) The Board of the Arkansas Earthquake Authority may either appoint an executive director or may select a plan administrator. If an executive director is chosen, he shall hire all staff necessary to enable him to discharge the duties imposed under this chapter and as may be authorized by law. If a plan administrator is chosen, the board may utilize a competitive bidding process to evaluate applicants and bids submitted under this section, based upon criteria established by the board which shall include, but not be limited to, the following:
 - (1) An estimate of total charges for administering the plan;
 - (2) The financial condition and stability of the plan administrator; and
 - (3) The technical expertise and qualifications of personnel.
- (b) The plan administrator shall serve for a period of three (3) years subject to removal for cause and subject to the terms, conditions, and limitations of the contract between the

board and the plan administrator. The board may advertise for and accept bids to serve as the plan administrator for the succeeding three-year periods.

- (c) The executive director or plan administrator shall perform functions related to the plan as may be assigned to it including:
 - (1) Determination of eligibility for coverage under the Market Assistance Program or authority;
 - (2) Payment and processing of claims;
 - (3) Establishment of a premium billing procedure for collection of premiums. Billings shall be made on a periodic basis as determined by the board;
 - (4) Other necessary functions to assure timely payment of benefits to covered persons under the plan, including:
 - (A) Making available information relating to the proper manner of submitting a claim for benefits under the plan and distributing forms upon which submissions shall be made; and
 - (B) Evaluating the eligibility of each claim for payment under the plan; and
 - (5) Conduct necessary analyses at reasonable intervals to appropriately evaluate the Arkansas earthquake insurance market and take action necessary to accomplish the purposes of this chapter.
- (d) The executive director or plan administrator shall submit regular reports to the board regarding the operation of the plan. Frequency, content, and form of the report shall be determined by the board.
- (e) The executive director or plan administrator shall pay claim expenses from the premium payments or other income received from or on behalf of plan participants and allocated by the board for claim expenses. If the total amount available at any time to the authority is insufficient to make all necessary claims payments, the moneys available shall be prorated and the unpaid portion shall be paid as soon thereafter as moneys become available.
- (f) The executive director or plan administrator shall be governed by the requirements of this chapter.
- (g) The plan administrator shall be compensated as provided in the contract between the board and the plan administrator.

§23-102-112 Premium rates; assessments

(a) Rates.

- (1) The Arkansas Earthquake Authority shall establish rates for plan coverage. These rates and rating schedules may be adjusted for appropriate factors such as geographical variation in claim costs, retrofitting, and other mitigation efforts and shall take into consideration appropriate factors in accordance with established actuarial and underwriting practices.
- (2) The rates charged by the authority shall not compete with voluntary market rates so that the authority functions as a residual market mechanism to provide insurance when insurance cannot be procured in the voluntary market. Rates and schedules shall be submitted to the Insurance Commissioner for approval prior to use.

(b) Initial assessment. Initial operating capital shall be contributed based on the following:

- (1) All authorized insurers reporting one million dollars (\$1,000,000) or more in premium on their most recent annual statement shall pay a maximum initial assessment of up to one thousand dollars (\$1,000) plus twenty-five hundredths of one percent (.025%) of their net direct written premium in the State of Arkansas as reported in their most recent annual statement. This assessment may be collected in incremental amounts or as one (1) single assessment; and
- (2) All authorized insurers reporting less than one million dollars (\$1,000,000) in premium on their most recent annual statement shall pay a maximum initial assessment of up to five hundred dollars (\$500), plus twenty-five hundredths of one percent (.025%) of their net direct written premium in the State of Arkansas as reported in their most recent annual statement. This assessment may be collected in incremental amounts or as one (1) single assessment.

(c) Administrative assessments.

- (1) Insurers shall contribute additional assessments as may be reasonable and necessary to meet the authority's annual projected administrative expenses. For the purposes of this section, administrative expenses shall include all reasonable and necessary operating expenses incurred or to be incurred by the authority and may be up to, but not exceeding, an aggregate total of one million dollars (\$1,000,000) for all authorized insurers identified in subdivision (c)(2) of this section.
- (2) These assessments shall be made as the actual need for additional administrative funds arises to ensure that the authority incurs no deficit spending. Assessments shall be apportioned by the Board of the Arkansas Earthquake Authority among authorized insurers writing homeowner, farmowner, fire and allied lines, excluding commercial policies and crop hail, in proportion to the ratio that the total net direct written premium collected in the State of Arkansas by the insurer on its homeowner, farmowner, fire and allied lines during the preceding calendar

year bears to the total net direct written premium collected by all insurers on their homeowner, farmowner, fire and allied lines, in the State of Arkansas for the preceding calendar year. Each insurer's assessment shall be determined by the board based on annual statements and other reports deemed necessary by the board and filed by the insurer with the board or the commissioner.

- (3) An insurer may petition the commissioner for an abatement or deferment of all or part of an assessment imposed by the authority. The commissioner may abate or defer, in whole or in part, such assessment if, in the opinion of the commissioner, payment of the assessment would cause the insurer to be deemed in hazardous financial condition, as defined in §23-68-102(14). In the event an assessment against an insurer is abated or deferred in whole or in part, the amount by which such assessment is abated or deferred shall be assessed against the other insurers in a manner consistent with the basis for assessments set forth in subsection (a) of this section. The insurer receiving such abatement or deferment shall remain liable to the plan for the deficiency for four (4) years.
 - (4) Insurers determined to be insolvent insurers by a court of competent jurisdiction shall be exempt from assessment from and after the date of that determination and until the commissioner determines that the insurer is no longer an insolvent insurer.
 - (5) All assessments shall be due and payable upon receipt and shall be delinquent if not paid within thirty (30) days of the receipt of the notice by the insurer. Failure to timely pay the assessment will automatically subject the insurer to a ten percent (10%) penalty, which will be due and payable within the next thirty-day period. The board and the commissioner shall have the authority to enforce the collection of the assessment and penalty in accordance with the provisions of this chapter and the Arkansas Insurance Code, §26-30-101 et seq. The board may waive the penalty authorized by this subsection if it determines that compelling circumstances exist which justify such waiver.
- (d) Post-event assessments.
- (1) If loss from an event occurs, the authority, in addition to any assessments in subsections (a) and (b) of this section, shall assess all authorized insurers writing homeowner, farmowner, fire and allied lines, excluding commercial policies and crop hail, as may be necessary to produce the additional funds needed to make payment of all covered claims and expenses of the authority.
 - (2) Assessments during a calendar year may be made up to, but not in excess of, five percent (5%) of each insurer's net direct homeowner, farmowner, fire and allied lines, excluding commercial policies and crop hail, written premium in the State of Arkansas for the preceding calendar year.
 - (3) Insurers shall recover the post-event assessment through a surcharge on homeowner, farmowner, fire and allied lines policyholder, excluding crop hail policyholders, equal to the percentage identified by the board for the insurers'

post-event assessment. This surcharge shall be exempt from insurance premium taxes.

- (4) Pursuant to §23-102-108, the board shall establish surcharge policies and guidelines for insurers entering the residential homeowner, farmowner, fire and allied lines and earthquake markets, excluding commercial policies and crop hail, after an event to ensure a fair and competitive market.
 - (5) If the maximum assessment in any calendar year does not provide an amount sufficient for payment of covered claims, the monies available shall be prorated with the unpaid portion being paid as soon thereafter as monies become available, with assessments being made in the next and successive calendar years. However, in no event shall the total assessment exceed two hundred fifty million dollars (\$250,000,000) in the aggregate, regardless of the frequency or severity of earthquake losses at any and all times subsequent to the creation of the authority.
 - (6) The authority may exempt or defer, in whole or in part, the assessment of any insurer if the assessment would cause the insurer to be deemed in hazardous financial condition, as defined in §23-68-102(14).
 - (7) Insurers determined to be insolvent insurers by a court of competent jurisdiction shall be exempt from assessment from and after the date of that determination and until the commissioner determines that the insurer is no longer an insolvent insurer.
 - (8) It shall be the duty of each insurer to pay the amount of its assessment to the authority within thirty (30) days after it gives notice of the assessment.
- (e) Failure to pay assessments.
- (1) The commissioner may suspend or revoke, after notice and hearing, the certificate of authority to transact business in this state of any insurer who fails to pay an assessment when due.
 - (2) As an alternative, the commissioner may levy a fine on any insurer which fails to pay an assessment when due. The fine shall not exceed one thousand dollars (\$1,000) per day and shall be payable to the authority for use in its operations.
 - (3) In addition, assessments may be collected by the authority through suits brought for that purpose. Venue for suits shall lie in Pulaski County, Arkansas, and the authority shall not be required to give an appeal bond in any cause arising hereunder.
 - (4) Any insurer whose certificate of authority to do business in this state is cancelled or surrendered shall be liable for any unpaid assessments made prior to the date of such cancellation or surrender.

§23-102-113 Policies offered

- (a) The Arkansas Earthquake Authority shall offer a residential earthquake policy with dwelling coverage in amounts up to one hundred thousand dollars (\$100,000).
- (b) Coverage for personal property and additional living expenses shall be provided as determined by the Board of the Arkansas Earthquake Authority in the plan of operation.
- (c) The applicable deductible for this coverage shall be determined by the board in the plan of operation.

§23-102-114 Notice of coverage availability

- (a) Existing policyholders.
 - (1) Insurers writing homeowner, farmowner, fire and allied lines, excluding commercial policies and crop hail, shall notify policyholders that do not maintain residential earthquake insurance or who maintain residential earthquake insurance at amounts less than one hundred percent (100%) of the insured value of the dwelling, of their potential eligibility for residential earthquake insurance through the Market Assistance Program or Arkansas Earthquake Authority. Such notice shall be on a form adopted by the Board of the Arkansas Earthquake Authority and approved by the Insurance Commissioner, and insurers shall verify to the board compliance with this provision. This notice shall be provided at such intervals and frequency to be determined by the board, but notice shall be given at a minimum of three (3) different times over a four-year interval.
 - (2) This notice from insurers shall not be deemed to provide earthquake coverage to existing policyholders who do not maintain a policy of residential earthquake insurance, nor shall the notice be deemed to increase the amounts of earthquake insurance for those policyholders who maintain coverage at less than one hundred percent (100%) of the insured value of the dwelling.
- (b) New policyholders. Insurers writing homeowner, farmowner, fire and allied lines, excluding commercial policies and crop hail, shall advise new applicants for these types of coverages of the availability of residential earthquake insurance through the Market Assistance Program or the authority, if coverage is unavailable from the insurer. If an applicant chooses not to purchase residential earthquake coverage through an insurer, including Market Assistance Program participants or the authority, the applicant shall reject this coverage in writing on the application or any addendum thereto. Insurers shall maintain the application containing the rejection as part of their files.

§23-102-115 Appeals

Any applicant for a policy, any persons insured under the Market Assistance Program or Arkansas Earthquake Authority, and any agency or insurer affected by the program or authority may appeal to the Insurance Commissioner any ruling or decision of the governing Board of the Arkansas Earthquake Authority, and the commissioner may consider the appeal under a de novo standard of review.

§23-102-116 Regulatory authority

The Insurance Commissioner is authorized to promulgate such reasonable rules and regulations as are necessary to carry out the provisions of this chapter.

§23-102-117 Federal or multistate programs

In the event a federal or multistate catastrophic insurance or reinsurance program intended to serve purposes similar to the purposes of the Market Assistance Program or the Arkansas Earthquake Authority is created, the Board of the Arkansas Earthquake Authority shall promptly take appropriate actions to coordinate with the federal or multistate program to the extent consistent with this chapter and if such actions are in the best interest of Arkansas citizens. The board shall also make recommendations to the General Assembly for coordination with the federal or multistate program or for termination of the program or the authority, if it is in the best interest of Arkansas citizens, or take such other actions as the board finds appropriate.

§23-102-118 Ineligibility for guaranty association benefits

Notwithstanding any other provision of law to the contrary, neither the Arkansas Earthquake Authority nor its policyholders shall be subject to the provisions of or be eligible for the benefits provided by the Arkansas Property and Casualty Insurance Guaranty Act, §23-90-101 et seq.

§23-102-119 Termination of authority

Upon termination of the Arkansas Earthquake Authority by the General Assembly or the Insurance Commissioner, its remaining funds shall be transferred to the State Insurance Department Trust Fund, unless otherwise directed by the General Assembly.

California Statutes – Insurance Laws
INSURANCE CODE
Division 2—CLASSES OF INSURANCE
PART 1—CALIFORNIA EARTHQUAKE AUTHORITY
SECTION 10089.5-10089.54

10089.5. Definitions

As used in this chapter:

- (a) “Authority” means the California Earthquake Authority.
- (b) “Available capital” means the sum of all moneys and invested assets actually held in the California Earthquake Authority Fund, except as otherwise allocated to pay specific losses and loss adjustment expenses under policies of basic residential earthquake insurance. “Available capital” includes all interest or other income from the investment of money held in the California Earthquake Authority Fund. “Available capital” does not include the proceeds of contracts of reinsurance procured by or in the name of the authority pursuant to subdivision (a) of Section 10089.10, or any funds realized on account of any transaction pursuant to capital market contracts authorized by subdivision (b) of Section 10089.10.
- (c) “Basic residential earthquake insurance” means that policy of residential earthquake insurance described in Section 10089 except as follows:
 - (1) (A) If one year after the authority commences operation the authority has available capital equal to or exceeding seven hundred million dollars (\$700,000,000), any policy issued or renewed on or after that date shall provide, less any applicable deductible, not less than two thousand five hundred dollars (\$2,500) in coverage for additional living expenses.
 - (B) If the authority met the available capital requirements of subparagraph (A) and two years after the authority commences operation the authority has available capital equal to or exceeding seven hundred million dollars (\$700,000,000), any policy issued or renewed on or after that date shall provide, less any applicable deductible, not less than three thousand dollars (\$3,000) in coverage for additional living expenses.
 - (2) (A) If the authority did not meet the available capital requirement of subparagraph (A) of paragraph (1) but, two years after the authority commences operation the authority has available capital equal to or exceeding seven hundred million dollars (\$700,000,000), any policy issued or renewed on or after that date shall provide, less any applicable deductible, not less than two thousand five hundred dollars (\$2,500) in coverage for additional living expenses.

- (B) If the authority met the available capital requirements as provided by subparagraph (A) and three years after the authority commences operation the authority has available capital equal to or exceeding seven hundred million dollars (\$700,000,000), any policy issued or renewed on or after that date shall provide, less any applicable deductible, not less than three thousand dollars (\$3,000) in coverage for additional living expenses.
- (d) “Board” means the governing board of the authority.
- (e) “Bonds” means bonds, notes, commercial paper, variable rate and variable maturity securities, and any other evidence of indebtedness.
- (f) “Capital market contract” means an agreement between the authority and a purchaser pursuant to which the purchaser agrees to purchase bonds of the authority.
- (g) “Nonparticipating insurer” means an insurer that elects not to transfer or place any residential earthquake policies in the authority.
- (h) “Panel” means the advisory panel of the authority.
- (i) “Participating insurer” means an insurer that has elected to join the authority.
- (j) “Policy of residential property insurance” means those policies described in Section 10087.
- (k) “Private capital market” means one or more purchasers of bonds of the authority pursuant to a capital market contract.
- (l) “Qualifying residential property” includes all those residential dwellings set forth in Section 10087.
- (m) “Residential earthquake insurance market share” means an individual insurer’s total direct premium received for (1) residential earthquake policies and endorsements written or renewed by the insurer in California and (2) residential earthquake policies written or renewed by the authority for which the insurer has written or renewed an underlying policy of residential property insurance, divided by the total gross premiums received by all admitted insurers and the authority for their basic residential earthquake insurance in California.
- (n) “Residential property insurance market share” means an individual insurer’s total gross premiums received for residential property insurance policies written or renewed by the insurer, divided by the total gross premiums received by all admitted insurers for residential property insurance in California.
- (o) “Revenue” means all income and receipts of the authority, including, but not limited to, income and receipts derived from premiums, bond purchase agreements, capital contributions by insurers, assessments levied on insurers,

surcharges applied to authority earthquake policyholders, and all interest or other income from investment of money in any fund or account of the authority established for the payment of principal or interest, or premiums on bonds, including reserve funds.

10089.6. California earthquake authority

- (a) There is hereby created the California Earthquake Authority, which shall be administered under the authority of the commissioner and have the powers conferred by this chapter. The authority shall be authorized to transact insurance in this state as necessary to sell policies of basic residential earthquake insurance in the manner set forth in Sections 10089.26, 10089.27 and 10089.28. The authority shall have no authority to transact any other type of insurance business.
- (b)
 - (1) The investments of the authority shall be limited to those securities eligible under Section 16430 of the Government Code.
 - (2) The rights, obligations, and duties owed by the authority to its insureds, beneficiaries of insureds, and applicants for insurance shall be the same as the rights, obligations, and duties owed by insurers to its insureds, beneficiaries of insureds and applicants for insurance under common law, regulations, and statutes. The authority shall be liable to its insureds, beneficiaries of insureds, and applicants for insurance, as an insurer is liable to its insureds, beneficiaries of insureds, and applicants for insurance under common law, regulations and statutes.
- (c) The operating expenses of the authority shall be capped at not more than 3 percent of the premium income received by the authority. The funds shall be available to pay any advocacy fees awarded in a proceeding under subdivision (c) of Section 10089.11.

10089.7. Governing board

- (a) The authority shall be governed by a three-member governing board consisting of the Governor, the Treasurer and the Insurance Commissioner, each of whom may name designees to serve as board members in their place. The Speaker of the Assembly and the Chairperson of the Senate Rules Committee shall serve as nonvoting, ex officio members of the board, and may name designees to serve in their place.
- (b) The board shall be advised by an advisory panel whose members shall be appointed by the Governor, except as provided in this subdivision. The advisory panel shall consist of four members who represent insurance companies that are licensed to transact fire insurance in the state, two of whom shall be appointed by the commissioner, two licensed insurance agents, one of whom shall be appointed by the commissioner and three members of the public not connected with the insurance industry, at least one of whom shall be a consumer representative. In addition, the Speaker of the Assembly, and the Chairperson of the Senate Rules Committee may each appoint one member of the public not connected with the

insurance industry. Panel members shall serve for four-year terms, which may be staggered for administrative convenience, and panel members may be reappointed. The commissioner shall be a nonvoting, ex officio member of the panel and shall be entitled to attend all panel meetings, either in person or by representative.

- (c) The board shall have the power to conduct the affairs of the authority and may perform all acts necessary or convenient in the exercise of that power. Without limitation, the board may: (1) employ or contract with officers and employees to administer the authority; (2) retain outside actuarial, geological, and other professionals; (3) enter into other obligations relating to the operation of the authority; (4) invest the moneys in the California Earthquake Authority Fund; (5) obtain reinsurance and financing for the authority as authorized by this chapter; (6) contract with participating insurers to service the policies of basic residential earthquake insurance issued by the authority; (7) issue bonds payable from and secured by a pledge of the authority of all or any part of the revenues of the authority to finance the activities authorized by this chapter and sell those bonds at public or private sale in the form and on those terms and conditions as the Treasurer shall approve; (8) pledge all or any part of the revenues of the authority to secure bonds and any repayment or reimbursement obligations of the authority to any provider of insurance or a guarantee of liquidity or credit facility entered into to provide for the payment of debt service on any bond of the authority; (9) employ and compensate bond counsel, financial consultants, and other advisers determined necessary by the Treasurer in connection with the issuance and sale of any bonds; (10) issue or obtain from any department or agency of the United States or of this state, or any private company, any insurance or guarantee of liquidity or credit facility determined to be appropriate by the Treasurer to provide for the payment of debt service on any bond of the authority; (11) engage the commissioner to collect revenues of the authority; (12) issue bonds to refund or purchase or otherwise acquire bonds on terms and conditions as the Treasurer shall approve; and (13) perform all acts that relate to the function and purpose of the authority, whether or not specifically designated in this chapter.
- (d) The authority shall reimburse board and panel members for their reasonable expenses incurred in attending meetings and conducting the business of the authority.
- (e)
 - (1) There shall be a limited civil immunity and no criminal liability in a private capacity, on account of any act performed or omitted or obligation entered into an official capacity, when done or omitted in good faith and without intent to defraud, on the part of the board, the panel, or any member of either, or on the part of any officer, employee, or agent of the authority. This provision shall not eliminate or reduce the responsibility of the authority under the covenant of good faith and fair dealing.
 - (2) In any claim against the authority based upon an earthquake policy issued by the authority, the authority shall be liable for any damages, including damages under Section 3294 of the Civil Code, for a breach of the covenant of good faith and fair dealing by the authority or its agents.

- (3) In any claim based upon an earthquake policy issued by the authority, the participating carrier shall be liable for any damages for a breach of a common law, regulatory or statutory duty as if it were a contracting insurer. The authority shall indemnify the participating carrier from any liability resulting from the authority's actions or directives. The board shall not indemnify a participating carrier for any loss resulting from failure to comply with directives of the authority or from violating statutory, regulatory, or common law governing claims handling practices.
- (4) No licensed insurer, its officers, directors, employees, or agents, shall have any antitrust civil or criminal liability under the Cartwright Act (Part 2 (commencing with Section 16600) of Division 7 of the Business and Professions Code) by reason of its activities conducted in compliance with this chapter. Further, the California Earthquake Authority shall be deemed a joint arrangement established by statute to ensure the availability of insurance pursuant to subdivision (b) of Section 1861.03.
- (5) Subject to the provisions of Section 10089.21, nothing in this chapter shall be construed to limit any exercise of the commissioner's power, including enforcement and disciplinary actions, or the imposition of fines and orders to ensure compliance with this chapter, the rules and guidelines of the authority, or any other law or rule applicable to the business of insurance.
- (6) Except as provided in paragraph (3) and by any other provision of this chapter, there shall be no liability on the part of, and no cause of action shall be permitted in law or equity against, any participating insurer for any earthquake loss to property for which the authority has issued a policy unless the loss is covered by an insurance policy issued by the participating insurer. A policy issued by the authority shall not be deemed to be a policy issued by a participating insurer.
- (f) The Attorney General, in his or her discretion, shall provide a representative of his or her office to attend and act as antitrust counsel at all meetings of the panel. The Attorney General shall be compensated for legal service rendered in the manner specified in Section 11044 of the Government Code.
- (g) The authority may sue or be sued and may employ or contract with that staff and those professionals the board deems necessary for its efficient administration.
- (h) (1) The authority may contract for the services of a chief executive officer, a chief financial officer, and an operations manager, and may contract for the services of reinsurance intermediaries, financial market underwriters, modeling firms, a computer firm, an actuary, an insurance claims consultant, counsel, and private money managers. These contracts shall not be subject to otherwise applicable provisions of the Government Code and the Public Contract Code, and for those purposes, the authority shall not be considered a state agency or other public entity. Other employees of the authority shall be subject to civil service provisions. The total number

of authority employees subject to civil service provisions shall not exceed 25.

- (2) When the authority hires multiple private money managers to manage the assets of the California Earthquake Authority Fund, other than the primary custodian of the securities, the authority shall consider small California-based firms who are qualified to manage the money in the fund. The purpose of this provision is to prevent the exclusion of small qualified investment firms solely because of their size.
- (i) Members of the board and panel, and their designees, and the chief executive officer, the chief financial officer, and the operations manager of the authority shall be required to file financial disclosure statements with the Fair Political Practices Commission. The appointing authorities for members and designees of the board and panel shall, when making appointments, avoid appointing persons with conflicts of interest. Section 87406 of the Government Code, the Milton Marks Postgovernment Employment Restrictions Act of 1990, shall apply to the authority. Members of the board, the chief financial officer, the chief executive officer, the chief operations manager, the chief counsel, and any other person designated by the authority shall be deemed to be designated employees for the purpose of that act. In addition, no member of the board, nor the chief financial officer, the chief executive officer, the chief operations manager, and the chief counsel, shall, upon leaving the employment of the authority, seek, accept, or enter into employment or a consulting or other contractual arrangement for the period of one year with any employer or entity that entered into a participating agreement, or a reinsurance, bonding, letter of credit, or private capital markets contract with the authority during the time the employee was employed by the authority, which that member or employee had negotiated or approved, or participated in negotiating. A violation of these provisions shall be subject to enforcement pursuant to Chapter 11 (commencing with Section 91000) of Title 9 of the Government Code.
- (j) The Bagley-Keene Open Meeting Act (Article 9 (commencing with Section 11120) of Chapter 1 of Part 1 of Division 3 of Title 2 of the Government Code) applies to meetings of the board and the panel.

10089.8. Written plan of operations

- (a) The authority shall operate pursuant to a written plan of operations. The panel shall submit a plan to the board for approval. If it approves the plan, the board shall submit the plan to the commissioner for his or her approval. On receiving the commissioner's approval, the board shall formally adopt the plan and submit the plan to the Legislature. Upon commencement of the issuance of insurance policies by the authority, any subsequent amendments to the plan of operation shall be approved by the board and the commissioner.
- (b) If at any time the commissioner disapproves the submitted plan or any plan amendments adopted by the board, the board may within 15 days submit changes in the plan to the commissioner. If the commissioner disapproves the plan or the

changes in the plan, or if the board fails to submit a plan or to make and submit the requested changes, the commissioner may require the board to adopt that plan or those changes directed by the commissioner.

- (c) The plan of operations shall establish in detail the policies and procedures of the authority, including, but not limited to, financial operations of the authority, claims procedures, methods of premium collection, procedures consistent with constitutional, statutory, and common law requirements for resolving grievances of applicants or policyholders who are dissatisfied with application handling or adverse claims decisions, whether by the authority or by a participating insurer, assessment procedures, a plan for resolution of assessment disputes between the authority and insureds, grievances between the authority and participating insurers, participating insurer fees and expenses, reasonable underwriting standards, and producer compensation.
- (d) The plan of operations shall include provisions that establish a mechanism for policyholders to make installment payments of the annual premium paid for coverage by the authority. The authority shall make the installment payment option available to all policyholders who elect to purchase coverage from the authority. The authority may charge a nominal fee to policyholders who opt to make installment payments. The fees, in the aggregate, shall cover the full costs of administering the installment payment option incurred by the authority and the participating insurer but shall not include any interest or finance charge. The authority shall not require a participating insurer, in the case of a policyholder who opts to make installment payments as provided in this subdivision, to remit any portion of the annual premium to the authority before that amount of the annual premium is collected by the participating insurer. The authority shall consult with participating insurers in establishing or amending the provisions of the plan of operations that govern the installment payment option.

10089.9. Contracts with participating insurers

Upon commencement of participation in the authority, each participating insurer shall be required to execute a contract with the commissioner that sets forth its rights and responsibilities as an authority participant. The form of contract shall be part of the authority's plan of operations and shall be uniform for every participating insurer.

10089.10. Reinsurance and capital market contracts

To expand the capacity of the authority and achieve maximum capacity for writing earthquake coverage, the authority shall do both of the following acts, on prior approval of the commissioner:

- (a) The authority shall purchase contracts of reinsurance at rates and on terms the board considers reasonable and appropriate.
- (b) The authority, through the Treasurer, shall enter capital market contracts on terms as the board and Treasurer may consider reasonable and appropriate. The Treasurer shall not withhold approval except for good cause related to the

purposes of the authority. Such terms may include indemnification and contribution provisions protecting parties to the capital market contracts of the authority against material misstatements in or material omissions from the authority's official statements and other authority documents referred to in the capital markets contracts.

- (c) The total annual expenditure for reinsurance contracts and capital market contracts pursuant to this section shall not exceed a reasonable and appropriate percentage of the annual earthquake insurance premiums collected by the authority.

10089.11. Emergency regulations

- (a) The commissioner shall adopt regulations to implement the provisions of this chapter within 60 days of its effective date. The regulations shall be adopted as emergency regulations in accordance with Chapter 3.5 (commencing with Section 11340) of the Government Code, and for the purposes of that chapter, including Section 11349.6 of the Government Code, the adoption of the regulations shall be considered by the Office of Administrative Law to be necessary for the immediate preservation of the public peace, health and safety, and general welfare.
- (b) Regulations shall specify procedures for ratemaking and forms approval, define the type and quality of investments the authority is authorized to make, define coverage types and limits, set forth producer compensation rates, and specify the procedures to be followed by the authority following any earthquake event where the magnitude of earthquake losses make it likely that prorated benefits may be paid. The regulations shall be consistent with the requirements of Proposition 103.
- (c) The rights provided by Section 1861.10 shall apply to proceedings under this chapter relating to establishing rates and regulations for earthquake insurance sold by the authority.
- (d) All materials and documents prepared or used by the authority to determine its rates other than proprietary materials and documents owned or licensed by third parties shall be considered public documents, and copies of the public documents shall be made available to the public for inspection at no charge. Members of the public may purchase public ratemaking related documents from the authority at actual cost.

10089.12. Commissioner's powers and duties

The commissioner shall have full power and authority to examine the books and records of the authority at any time, and in connection with the operations and function of the authority, the commissioner shall have the duties and powers set forth in Article 14.5 (commencing with Section 1065.1) of Chapter 1 of Part 2 of Division 1 and in Division 3 (commencing with Section 12900).

10089.13. Report to the legislature

- (a) One year following its commencement of operations, and annually thereafter by each May 1, the authority shall report to the Legislature and the commissioner on program operations in a format prescribed by the commissioner. The report shall include, but shall not be limited to, the financial condition of the authority, a description of all rates and rating plans approved for use in the authority, an evaluation of the functioning of the authority in light of its stated purpose of making residential property insurance and residential earthquake insurance more available. The report shall also include an analysis of the growth by market share of residential property insurance of participating insurers compared to nonparticipating insurers, any adverse consequences on the various insurance distribution systems resulting from the operation of the authority or alterations in the growth of the residential property insurance market share between participating insurers and nonparticipating insurers, any adverse consequences of the various insurance distribution systems resulting from the operation of the authority or alterations in the growth of homeowners' insurance market share between participating insurers and nonparticipating insurers, and an analysis of any recommended program changes to permit the authority to better fulfill its stated purpose. In making this determination the board shall be mindful of the competitive nature of the market and how any decision can negatively impact insurers who are currently competing in the marketplace.
- (b) The annual report shall include full information describing the following matters relating to the authority's condition and affairs:
 - (1) The property or assets held by the authority, including the amount of cash on hand and deposited in banks to its credit, the amount of cash in the hands of servicing insurance companies, the amount of any stocks or bonds owned by the authority, specifying the amount, number of shares, and the par and market value of each kind of stock or bond, and all other assets, specifying each.
 - (2) The liabilities of the authority, including the amount of losses due and unpaid, the amount of claims for losses resisted by the authority and the amount of losses in the process of adjustment or in suspense, including all reported and supposed losses, the amount of revenue bonds or other debt financing issues under Section 10089.29 or Section 10089.50, and all other liabilities.
 - (3) Income of the authority during the preceding year, specifying premiums received, interest money received, and income from all other sources, specifying the source.
 - (4) Expenditures of the authority during the preceding year, specifying the amount of losses paid, the amount of expenses paid by category, and the amount of all other payments and expenditures.

- (5) The costs and scope of all reinsurance and capital market contracts entered into by the authority under Section 10089.10.
- (c) As part of the annual report, the authority shall make a separate, summary report on the financial capacity of the authority to pay claims made against the authority. Copies of this report shall also be made available to the public. The report shall include, but shall not be limited to, the following information, valued as of 30 days prior to the date of the report:
- (1) The available capital of the authority.
 - (2) The liabilities of the authority.
 - (3) The amount of all assessments previously made and the amount of assessments that may be made in the future under Section 10089.23.
 - (4) The amount of the reinsurance under contract and actually available to the authority.
 - (5) The amount of all revenue bonds or other debt financing previously issued or contracted for and the amount of all revenue bonds or other debt financing that may be issued or contracted for in the future under Section 10089.29.
 - (6) The amount of surcharges previously assessed against policyholders and the amount of surcharges that are currently outstanding against policyholders under Section 10089.29.
 - (7) The amount of capital committed and actually available by contract from private capital markets that is available to pay claims against the authority.
 - (8) The amount of all assessments previously made and the amount of all assessments that may be made in the future under Section 10089.30.
- (d) In verification of the matters set forth in the annual report provided for in subdivision (a), the Department of Finance shall approve independent qualified auditors selected by the commissioner to examine the books and accounts relating to all matters concerning the financial and program operations of the authority. The commissioner shall file a certified report of the examination with the President pro Tempore of the Senate, the Speaker of the Assembly, the Chairpersons of the Senate and Assembly Insurance Committees, and the Chairperson of the Senate Committee on Judiciary within 10 days of its receipt. Copies of this report shall also be made available to the public. The expense of examining the books and accounts of the authority shall be paid out of the operating funds of the authority.
- (e) The authority shall, within 120 days following a seismic event that results in the payment of claims by the authority, and within one year of a major seismic event that results in the payment of claims by the authority, submit to the President pro

Tempore of the Senate, the Speaker of the Assembly, the Chairpersons of the Senate and Assembly Insurance Committees, and the Chairperson of the Senate Committee on Judiciary, and the commissioner a concise written report of program operations related to that seismic event. The reports shall include, but not be limited to, progress on payment of claims, claims payments made and anticipated, and the functioning of the authority in response to the seismic event. Copies of this report shall also be made available to the public.

10089.14. Earthquake policy issuance; transfer of risk

- (a) The authority shall not issue any earthquake policy and no insurer shall transfer any earthquake risk to the authority until all of the following conditions have been met:
 - (1) The Internal Revenue Service has determined that the authority will be or is exempt from federal income tax.
 - (2) Insurers whose cumulative residential property insurance market share is more than 70 percent of the total residential property insurance market in California, measured as of January 1, 1995, have filed letters of intent, with binding contractual obligation, to participate in the authority.
 - (3) The authority has obtained letters of intent, with binding contractual obligation, for capital contributions in the amounts set forth in Section 10089.15.
 - (4) The authority has obtained appropriate risk transfer ability in the form of firm reinsurance commitments in an aggregate amount of not less than 200 percent of the total capital contributions committed by all participating insurers.
- (b) Except as permitted by subdivision (e) of Section 10089.15 and subdivision (b) of Section 10089.16, insurers shall not be entitled to transfer any earthquake risk to the authority until they have met the capital contribution requirements set forth in Section 10089.15, and no insurer shall be entitled to transfer any earthquake risk to the authority pursuant to Section 10089.27 unless the insurer has signed a contract to participate in the authority, is in compliance with the capital contribution requirements set forth in Section 10089.15, and has complied with any related requirements set by the board.

10089.15. Initial operating capital

- (a) Initial operating capital shall be contributed by insurance companies admitted to write residential property insurance in the state. Each insurer that elects to participate in the authority shall contribute as its share of operating capital an amount equal to one billion dollars (\$1,000,000,000) multiplied by the percentage representing that insurer's residential earthquake insurance market share as of January 1, 1994, as determined by the board. A minimum of seven hundred

million dollars (\$700,000,000) in commitments shall be required before the authority may become operational.

- (b) Until the authority becomes operational, contributions of initial operating capital shall be held by the commissioner in trust for the contributing insurers in the California Earthquake Authority Fund.
- (c) Because insurers will retain the risk of earthquake losses on individual earthquake policies until they are renewed into the authority, participating insurers may elect to contribute operating capital in 12 installments payable on the first day of each successive calendar month after the insurer elects to participate. Each insurer shall compute its monthly installment based on the portion of the insurer's earthquake coverage that will be renewed into the authority during the next month. The final installment shall be equal to the excess of the participating insurer's required contribution over the sum of the previous 11 installments. Those insurers that elect to participate in the authority after the beginning operating date of the authority shall make initial capital contributions calculated using their residential earthquake insurance market share as of January 1, 1994, or the date of their election to participate in the authority, whichever contribution amount is greater.
- (d) An insurer or insurer group that represents 1.25 percent or less of the residential property insurance market, as measured by premium volume, or that has a surplus of less than one billion dollars (\$1,000,000,000), may elect to become a participating insurer with the full rights and responsibilities of participating insurers of the authority, pursuant to the provisions of this section.
- (e) The insurer or insurer groups defined in subdivision (d) may elect to contribute their operating capital, as required by subdivision (a) of Section 10089.15, in 60 equal monthly installments, payable on the first day of each successive calendar month after the insurer elects to participate. In the event that earthquake losses result in the authority's payment of claims while the authority's available funds are inadequate to meet claims liabilities, and insurers participating under this section have operating capital contributions outstanding, the operating capital contributions necessary to meet any unfunded claims liabilities will become due and payable within 30 days of a request for such accelerated payment by the board, not to exceed the maximum contribution owed by each insurer.
- (f) No insurer may elect to contribute operating capital pursuant to subdivision (e) unless the aggregate premium or aggregate surplus of all affiliated insurers in its group meets the eligibility standards established by subdivision (d).

10089.16. Application by nonparticipating insurer

- (a) On application to the board, payment of any assessments and fees calculated by the board, and fulfillment of any additional requirements imposed by the board, nonparticipating insurers may become participants in the authority with all rights and privileges attendant to that participation.

- (b) In order to act upon any findings and recommendations reported to the Legislature pursuant to Section 10089.13, or to implement a specific finding by the commissioner or the board that modification of requirements for entry into the authority is necessary to broaden the availability of residential property or residential earthquake insurance, the board is authorized to open the authority to participation by insurers who have not elected to participate in compliance with Section 10089.15. In implementing the authority granted by this section, the board may:
- (1) Offer incentives for insurers to participate in the authority.
 - (2) Allow any insurer or insurer group that has not elected to become a participating insurer to become an associate participating insurer without complying with the capital contribution requirements of Section 10089.15 if it has maintained or exceeded its number of policies of residential property insurance written as of January 1, 1996.
- (c) Any action by the board pursuant to subdivision (b) shall be subject to the following conditions and limitations:
- (1) Any deliberation and action by the board shall be conducted at a public meeting of the board.
 - (2) No action may be taken within one year of the date upon which the authority begins writing policies of basic residential earthquake insurance.
 - (3) The board shall have no authority to modify the requirements of Section 10089.23 or 10089.30, or to provide, in any other manner, for reduction of the liability of an insurer or insurer group to comply with the assessments placed upon participating insurers in the event of a loss.
 - (4) Notwithstanding Section 10089.11, any action of the board pursuant to subdivision (b) shall be by regulation promulgated by the board. Notwithstanding any other provision of law, there shall be no authority by the board to promulgate emergency regulations to implement subdivision (b). No regulations may be proposed within one year of the date upon which the authority begins writing policies of basic residential earthquake insurance. Notwithstanding any exception provided in Section 11343 of the Government Code, any regulation adopted pursuant to subdivision (b) shall be submitted to the Office of Administrative Law for approval pursuant to the Administrative Procedure Act.
 - (5) Any action by the board to establish an incentive pursuant to subdivision (b) that is available to a single insurer or insurer group shall be based upon standards adopted by the board that are not arbitrary or discriminatory. Notwithstanding Section 10089.11, these standards shall be established by regulation promulgated by the board.

- (6) A finding of necessity pursuant to subdivision (b) shall state the specific facts and conditions that establish the necessity and justify the actions to implement subdivision (b). All materials and documents prepared or used by the authority to determine the necessity to implement subdivision (b), other than proprietary materials and documents owned or licensed by third parties, shall be considered public documents, and copies of the public documents shall be made available to the public for inspection at no charge. Members of the public may purchase copies of these documents from the authority at actual cost.

- (d) Associate participating insurers shall place all new policies of residential earthquake insurance, when writing new policies of residential property insurance, into the authority. Insurers placing policies with the authority under this section shall be subject to the assessments provided for in Sections 10089.23 and 10089.30. Notwithstanding subdivision (m) of Section 10089.5, “residential earthquake insurance market share” for purposes of any assessments pursuant to Sections 10089.23 and 10089.30 levied on an associate participating insurer shall mean an individual associate participating insurer’s total direct premium received for residential earthquake policies written or renewed by the authority for which the insurer has written or renewed an underlying policy of residential property insurance, divided by the total gross premiums received by all admitted insurers and the authority for their basic residential earthquake insurance in California.

- (e)
 - (1) An associate participating insurer shall not cancel or refuse to renew a residential property insurance policy existing on the date it elected to become an associate participating insurer after an offer of earthquake coverage is accepted solely because the insured has accepted that offer of earthquake coverage.

 - (2) An associate participating insurer shall maintain in force any policy of residential property insurance existing on the date it elected to become an associate participating insurer after an offer of earthquake insurance has been accepted, unless the policy is properly canceled pursuant to Section 676 or the associate participating insurer has grounds for nonrenewal pursuant to subdivision (f).

- (f) An associate participating insurer may refuse to renew a policy of residential property insurance after an offer of earthquake coverage has been accepted if one of the following exceptions applies:
 - (1) The policy is terminated by the named insured.

 - (2) The policy is refused renewal on the basis of sound underwriting principles that relate to the coverages provided by the underlying policy of residential property insurance and that are consistent with the approved rating plan and related documents filed with the department as required by existing law.

- (3) The commissioner finds that the exposure to potential losses will threaten the solvency of the associate participating insurer or place the associate participating insurer in a hazardous condition. "Hazardous condition" has the same meaning as in Section 1065.1 and includes, but is not limited to, a condition in which an associate participating insurer makes claims payments for losses resulting from an earthquake that occurred within the preceding two years and that required a reduction in policyholder surplus of at least 25 percent for payment of those claims.
 - (4) There is cancellation under Section 676.
 - (5) The associate participating insurer has lost or experienced a substantial reduction in the availability or scope of reinsurance coverage or a substantial increase in the premium charged for reinsurance coverage for its residential property insurance policies, and the commissioner has approved a plan for the nonrenewals that is fair and equitable, and that is responsive to the changes in the associate participating insurer's reinsurance position.
 - (6) The named insured is insured based upon membership in a motor club, as defined in Section 12142, and the membership in that organization is terminated as provided in paragraph (2) of subdivision (c) of Section 1861.03.
- (g) For associate participating insurers, underwriting standards applicable to residential property insurance shall not be applied in an unfairly discriminatory fashion against any person who accepts or elects to continue earthquake coverage.
- (h) Associate participating insurers shall be subject to the following requirements:
- (1) Associate participating insurers shall conform to all provisions of the authority's plan of operation applicable to participating insurers.
 - (2) No property that has previously been covered by a policy of residential earthquake insurance written by the associate participating insurer or associate participating insurer group, absent at least one full policy year with an insurer not affiliated with the associate participating insurer or its group, may be placed into the authority by an associate participating insurer.
 - (3) Any associate participating insurer or associate participating insurer group defined in paragraph (2) of subdivision (b) that has failed to maintain or exceed the number of policies of residential property insurance in force on January 1, 1996, may become an associate participating insurer by contributing additional capital into the authority at a rate to be established by the board, which shall be a per policy rate comparable to the average cost per policy paid by a participating insurer that joins the authority pursuant to Section 10089.15.

- (i) Any associate participating insurer shall be required to establish procedures to verify compliance with this section. The procedures shall require verification that each basic residential earthquake policy written by the authority complies with paragraph (2) of subdivision (h).
- (j) Any violation of this section may be enforced as a violation of the Unfair Trade Practices Act (Article 6.5 (commencing with Section 790) of Chapter 1 of Part 2 of Division 1). Each policy of basic residential earthquake insurance written in the authority by an associate participating insurer in violation of this section shall be deemed to be a separate violation of the Unfair Trade Practices Act.
- (k) For purposes of this section, no insurer or associate participating insurer may participate in the authority unless all affiliated insurers participate in the authority.
- (l) Policies of basic residential earthquake insurance written by associate participating insurers shall be subject to assessment by the California Insurance Guaranty Association and shall be covered to the extent provided in Article 14.2 (commencing with Section 1063) of Chapter 1 of Part 2 of Division 1. Except as provided in Section 10089.34, insurance policies written by participating insurers that are not associate participating insurers shall not be subject to assessment by the California Insurance Guaranty Association if the assessment is imposed to pay claims covered by policies of basic residential earthquake insurance written by an associate participating insurer.

10089.17. Applicability of other laws

Notwithstanding subdivision (h) of Section 10089.7, the authority shall be subject to the provisions of the Political Reform Act of 1974 (Title 9 (commencing with Section 81000) of the Government Code).

10089.18. Repealed

10089.19. Insurer withdrawal

- (a) Participating insurers that want to withdraw from the authority may do so on 12 months' written notice to the authority. Insurers that withdraw shall not be entitled to any refund, reimbursement or reduction of any initial capital contribution obligation or earthquake loss assessments previously paid or accrued with respect to losses incurred prior to the withdrawal. Insurers that withdraw shall offer residential earthquake insurance coverage pursuant to Chapter 8.5 (commencing with Section 10081) of Part 1 of Division 2 to those policyholders for whom they write the underlying residential property insurance upon the first renewal following the insurer's notice to the authority. The authority shall nonrenew all policies of basic residential earthquake insurance issued to policyholders whose provider of residential earthquake insurance has withdrawn from the authority. No participating insurer may withdraw unless every insurer affiliated with that insurer (as defined in subdivision (a) of Section 1215), or under common control with that insurer (as defined in subdivision (b) of Section 1215), simultaneously withdraws from the authority.

- (b) If a noticed withdrawal would result in participation by insurers whose cumulative residential property insurance market share is less than 65 percent of the total residential property insurance market in California, the commissioner shall make recommendations to the Legislature for the continuation or termination of the authority.

10089.20. Renewal of underlying policies

The authority shall renew any policy of basic residential earthquake insurance, provided the authority receives payment of the applicable renewal premium on or before the expiration date stated in the policy. The authority shall nonrenew, rescind or cancel a policy if the property is no longer covered by an underlying policy of residential property insurance. The policy issued by the authority shall not provide coverage in the event that there is no underlying policy of property insurance at the time of loss. In that case, any unearned premiums shall be returned to the policyholder on a pro rata basis.

10089.21. State governmental function; applicability of laws

The authority is a public instrumentality of the State of California and the exercise of its powers is an essential state governmental function. No provision of law, including, but not limited to, subdivision (h) of Section 10089.7 and subdivision (e) of Section 10089.22, shall be construed to affect the status of the authority as a public instrumentality of the State of California. Notwithstanding any other provision of law, the authority is not and shall never be authorized to become a debtor in a case under the United States Bankruptcy Code (Title 11 of the United States Code) or to make an assignment for the benefit of creditors or to become the subject of any similar case or proceeding, nor is the authority subject to Article 14 (commencing with Section 1010) and Article 14.3 (commencing with Section 1064.1) of Chapter 1 of Part 2 of Division 1. Notwithstanding any other provision of law, the commissioner shall not, directly or indirectly, when exercising the power and authority contained or referred to in or arising from Section 10089.6, paragraph (5) of subdivision (e) of Section 10089.7, Section 10089.12, subdivision (e) of Section 10089.22, subdivision (b) of Section 10089.35, or any other statute, rule, or regulation, impede or in any manner interfere with, but shall affirmatively take all necessary steps to effect, and no person acting under subdivision (c) of Section 10089.11, or any other provision of law or principle of equity shall be permitted in any way to impede or in any manner interfere with: (a) the full and timely payment of principal, interest, and premiums on revenue bonds of the authority and amounts due those bond insurers and providers of credit support and letters of credit; and (b) any pledge or assignment of revenues as security for those payments or amounts due, and the full and timely application of those pledged or assigned revenues to those payments and amounts due, in each or either case, (a) or (b), as and when due in accordance with and subject to the limitations contained in Section 10089.22 and the terms of the constituent instruments defining the rights of the holders of the bonds and the providers of bond insurance, credit support, and letters of credit.

Division 3.6 (commencing with Section 810) of Title 1 of the Government Code shall not apply to acts of the authority.

10089.22. Revenue; funds

- (a) The authority shall be continued in existence for so long as its bonds are outstanding. Unless and until the authority is terminated pursuant to Section 10089.43, the commissioner and the authority shall execute assignments and contracts and take all necessary steps to assure that all revenue of the authority is paid to a trustee appointed by the Treasurer, which trustee may be the treasurer. The revenue of the authority shall be pledged and assigned to and held in trust by the trustee and invested and disbursed by the trustee, to pay, or to set aside funds to pay, principal, interest, and premiums on bonds and amounts due bond insurers and providers of credit support and letters of credit for those bonds, but only in the manner and in accordance with the terms of the constituent instruments defining the rights of the holders of bonds of the authority and the providers of bond insurance, credit support and letters of credit for those bonds. Amounts held by the trustee from time to time after provisions for those payments may be disbursed free of trust to the California Earthquake Authority Fund. Notwithstanding the foregoing provisions of this section, (1) debt service payments on bonds of the authority secured by or payable from securities described in Section 16430 of the Government Code shall not be secured by a pledge or assignment of revenue of the authority other than revenue of the authority from (A) the proceeds of sale of such bonds, (B) the securities described in Section 16430 of the Government Code, and (C) principal and interest payments on such securities described in Government Code Section 16430, but debt service payments on such bonds of the authority may also be made payable from revenue of the authority in the California Earthquake Authority Fund, and (2) the constituent instruments defining the rights of the holders of bonds of the authority referred to in paragraph (1) shall specify that payment of a portion of the interest on such bonds is contingent upon payment of policyholder claims for which the bonds are responsible and that the obligation of the authority is to first apply such assigned or pledged revenue to the payment of such policyholder claims instead of paying that contingent interest.
- (b) There is hereby created the California Earthquake Authority Fund, which is not a fund in the State Treasury. Notwithstanding Section 13340 of the Government Code, the fund is continuously appropriated without regard to fiscal years for the purposes of this chapter. The fund shall be administered by the commissioner, subject to the direction of the board, to pay all costs arising from this chapter, including, but not limited to, premiums payable by the authority under contracts of reinsurance, claims arising under policies of basic residential earthquake insurance issued by the authority, operating and other expenses of the authority, and to establish reserves. At the discretion of the commissioner, segregated, dedicated accounts within the fund may be established for those payments.
- (c) The board may cause moneys in the fund to be invested and reinvested, from time to time, in accordance with paragraph (4) of subdivision (c) of Section 10089.7 and subject to subdivision (b) of Section 10089.6. Moneys in the fund and not so invested may be deposited from time to time in (1) financial institutions authorized by law to receive deposits of public moneys, or (2) with the approval of the Treasurer, the Surplus Money Investment Fund as provided in Article 4

(commencing with Section 16470) of Division 4 of Title 2 of the Government Code.

- (d) A national bank shall be custodian of all securities belonging to the fund, except as otherwise provided in this chapter and except as otherwise provided in the constituent instruments that define the rights of the holders of bonds of the authority and the providers of bond insurance, credit support, and letters of credit for those bonds.
- (e) The board may, in cooperation with the Treasurer, authorize the establishment of an account or fund in the State Treasury in the name of the authority, but money deposited with the Treasurer in that account or fund is not state money within the intent of Section 16305.2 of the Government Code, and Sections 16305.3 to 16305.7, inclusive, of the Government Code shall not apply to money drawn or collected by the authority.

10089.23. Loss funding assessments

- (a)
 - (1) If at any time following the payment of earthquake losses the authority's available capital is reduced to less than three hundred fifty million dollars (\$350,000,000), or if at any time the authority's available capital is insufficient to pay benefits and continue operations, the authority shall have the power to assess participating insurance companies subject to the maximum limits as set forth in this section and Section 10089.30. The assessment shall be limited to the amount necessary to pay the outstanding or expected claims of the authority and to return the authority's available capital to three hundred fifty million dollars (\$350,000,000), as determined by the board, subject to approval by the commissioner.
 - (2) Each participating insurer's assessment shall be determined by multiplying its residential earthquake insurance market share, as of April 30 of the immediately preceding year or the most recent year for which premium data not more than one year old are available, by the amount of the total assessment sought by the authority.
 - (3) Maximum permissible insurer assessments pursuant to this section and Section 10089.30, maximum permissible earthquake policyholder assessments pursuant to Section 10089.29, and maximum permissible bond issuances or other debt financing issued or secured by the Treasurer pursuant to Section 10089.29 shall be reduced uniformly by multiplication of the maximum assessments and other amounts provided in those sections by the percentage of the total residential property insurance market share participation attained by the authority upon its commencement, as described in Section 10089.15. The total amount of all assessments levied on participating insurance companies by the authority pursuant to this section shall not exceed three billion dollars (\$3,000,000,000), regardless of the frequency or severity of earthquake losses at any and all times subsequent to the creation of the authority. Once a participating insurer has paid amounts equal to its residential earthquake insurance market

share multiplied by three billion dollars (\$3,000,000,000) pursuant to this section, the authority's power to assess that insurer under this section shall cease and the authority shall be prohibited from levying additional assessments on that insurer pursuant to this section.

- (4) Beginning December 31 of the first year of operations, and each December 31 thereafter, the board shall adjust the maximum permissible insurer assessments pursuant to this section and Section 10089.30, the maximum permissible authority policyholder assessment pursuant to Section 10089.29, and the maximum permissible bond issuances or other debt financing issued or secured by the Treasurer pursuant to Section 10089.29 to reflect the market share of new insurers entering into the authority as authorized by Sections 10089.15 and 10089.16 and participating insurers withdrawing from the authority as authorized by Section 10089.19. The adjustments shall be made in the same manner as authorized by paragraph (3).
- (b) In the case of any insurer assessment, the authority shall cause to be sent to each participating insurer a notice of that insurer's assessment, and full payment shall be due within 30 days and shall be overdue after 30 days. Penalties and interest shall be assessed for late payments in the same manner as provided for late payments of the insurer gross premium tax pursuant to Section 12258 of the Revenue and Taxation Code. The board may waive the penalties and interest for good cause shown. The board shall make every effort to assess insurers only for funds reasonably anticipated to be necessary for claims payments and to return the authority's available capital to three hundred fifty million dollars (\$350,000,000).
- (c) Notwithstanding the other provisions of this section, the aggregate assessment authorized by this section shall be reduced to zero 12 years following the commencement of authority operations.
- (d) The authority shall not assess a participating insurer under this section based on any insurance business that is attributable to the insurer selling additional insurance products that supplement or augment the basic residential earthquake insurance provided by the authority.

10089.24. Pro rated loss funding assessments

- (a) Notwithstanding any other provision of this chapter, the maximum permissible assessment pursuant to Section 10089.23 of a participating insurer that began renewing business into the authority less than 12 months prior to the date of the assessment shall be based on the residential earthquake market share of business actually placed into the authority by the insurer as of the date of the assessment.
- (b) Notwithstanding any other provision of this chapter, the maximum permissible assessments pursuant to Section 10089.23 that are permitted for all participating insurers not covered by subdivision (a) shall not be modified to reflect the addition of a new participating insurer until 12 months after that insurer has begun renewing business into the authority.

10089.25. Maximum assessment level

Beginning December 31, 1997, and annually thereafter on the 30th of April, the board shall notify each participating insurer of the maximum earthquake loss funding assessment level that it may be required to meet.

10089.26. Qualifying residential property

(a) The authority shall issue policies of basic residential earthquake insurance, including earthquake loss assessment policies for individual condominium unit properties, to any owner of a qualifying residential property, as long as the owner has secured a policy of residential property insurance from a participating insurer.

(1) For purposes of this section, earthquake loss assessment coverage shall be issued in a minimum amount of fifty thousand dollars (\$50,000) for individual condominium units valued at more than one hundred thirty-five thousand dollars (\$135,000). Earthquake loss assessment coverage shall be issued in a minimum amount of twenty-five thousand dollars (\$25,000) for individual condominium units of one hundred thirty-five thousand dollars (\$135,000) in value or less. The value of the land shall be excluded when determining the value of the condominium, as it relates to the earthquake loss assessment coverage offered by the authority.

(2) The panel shall submit to the board, and the board shall approve, rates for earthquake loss assessment coverage that reasonably balance the earthquake loss assessment coverages offered and the potential exposure to earthquake loss resulting from an earthquake loss assessment policy as compared to the coverages offered and the potential exposure to earthquake loss resulting from residential property other than individual condominium policies.

It is the intent of the Legislature, to the extent practicable, that rates charged by the authority to condominium loss assessment policyholders and residential property owner policyholders are treated equitably, and that a proportionate share of premiums is paid for potential exposure to loss, to the authority.

(b) Nothing in this section shall prohibit a participating or nonparticipating insurer from offering a condominium earthquake loss assessment policy for different amounts of coverage other than those offered by the authority.

10089.27. In-force residential earthquake policies

(a) Every participating insurer that has in-force residential earthquake insurance policies in the state as of the date of commencement of authority operations shall renew each inverse residential earthquake insurance policy or earthquake coverage provided by endorsement into the authority at the time the policy or endorsement comes up for renewal. The effective date of each policy renewal into the authority shall be the renewal date of the policy as recorded in the records of

the insurer and disclosed to the policyholder. The risk of loss under the insurance policy does not transfer to the authority until 12:01 a.m. of the policy renewal date.

- (b) (1) All policies of residential earthquake insurance written by any participating insurer shall have been renewed into the authority within one year of the commencement of operations of the authority or the date an insurer elects to participate in the authority, whichever is later, and after that date, no participating insurer shall be permitted to write a policy of insurance that provides coverage within the terms and limits of a policy of basic residential earthquake insurance for any qualifying residential property in the state. Participating insurers may sell residential earthquake insurance products that supplement or augment the basic residential earthquake insurance provided by the authority.
- (2) Upon application to the authority demonstrating good cause and approval of the commissioner, a participating insurer may take up to 60 days beyond that one-year period to complete its renewal of earthquake policies into the authority. No extension of time to complete earthquake policy renewals into the authority shall serve to extend the due date by which an insurer is to make its initial capital contribution, as set forth in Section 10089.15. The commissioner shall not approve any extension if the effect of the extension would allow an insurer to selectively transfer earthquake policies with high risks to the authority while retaining policies with lower risks during that interim period.
- (3) After policies of residential earthquake insurance are renewed in the authority, insurers shall have no responsibilities or liabilities regarding those policies for losses incurred after the date of renewal of those policies, except for duties and responsibilities to the authority and policyholders under the terms of this chapter.
- (4) No insurer may participate in the authority unless every insurer affiliated with that insurer (as defined in subdivision (a) of Section 1215) or under common control with that insurer (as defined in subdivision (b) of Section 1215) also participates in the authority.
- (5) If a person, directly or indirectly, owns, controls, holds with the power to vote, or holds proxies representing less than 33 percent of the voting securities of an insurer that writes earthquake insurance, but does not write homeowners or dwelling fire insurance in the state, and the insurer became part of an affiliated group which includes one or more participating insurers as a result of an acquisition or merger which occurred after the effective date of this chapter, notwithstanding paragraph (4), the insurer is not required to participate in the authority even though an insurer affiliated with it or under common control with it does participate in the authority, provided the insurer does not transact residential earthquake insurance business with agents exclusively appointed or employed by the participating insurer.

- (6) On or after October 1, 2002, but before January 1, 2003, each insurer exempted from participation in the authority by paragraph (5) shall report to the commissioner and the Legislature on the number of residential earthquake insurance policies written by that insurer where a participating insurer affiliated or under common control with that insurer has written the policies of residential property insurance on the same residential properties, the geographic distribution of those residential properties, and the percentage of that insurer's total residential earthquake insurance business represented by those policies. The commissioner shall compare the information received from each insurer exempt pursuant to paragraph (5), with the number and geographic distribution of residential earthquake insurance policies placed with the authority where the participating affiliated insurer has written the policy of residential property insurance. The commissioner shall report this data to the Legislature, together with a determination of whether or not there has been material adverse selection.
- (c) This section shall become inoperative on January 1, 2004, and as of that date is repealed, unless a later enacted statute, that is enacted before that date, deletes or extends that date.

10089.27. In-force residential earthquake policies

- (a) Every participating insurer that has in-force residential earthquake insurance policies in the state as of the date of commencement of authority operations shall renew each in-force residential earthquake insurance policy or earthquake coverage provided by endorsement into the authority at the time the policy or endorsement comes up for renewal. The effective date of each policy renewal into the authority shall be the renewal date of the policy as recorded in the records of the insurer and disclosed to the policyholder. The risk of loss under the insurance policy does not transfer to the authority until 12:01 a.m. of the policy renewal date.
- (b)
 - (1) All policies of residential earthquake insurance written by any participating insurer shall have been renewed into the authority within one year of the commencement of operations of the authority or the date an insurer elects to participate in the authority, whichever is later, and after that date, no participating insurer shall be permitted to write a policy of insurance that provides coverage within the terms and limits of a policy of basic residential earthquake insurance for any qualifying residential property in the state. Participating insurers may sell residential earthquake insurance products that supplement or augment the basic residential earthquake insurance provided by the authority.
 - (2) Upon application to the authority demonstrating good cause and approval of the commissioner, a participating insurer may take up to 60 days beyond that one-year period to complete its renewal of earthquake policies into the authority. No extension of time to complete earthquake policy renewals into the authority shall serve to extend the due date by which an insurer is to make its initial capital contribution, as set forth in Section

10089.15. The commissioner shall not approve any extension if the effect of the extension would allow an insurer to selectively transfer earthquake policies with high risks to the authority while retaining policies with lower risks during that interim period.

- (3) After policies of residential earthquake insurance are renewed in the authority, insurers shall have no responsibilities or liabilities regarding those policies for losses incurred after the date of renewal of those policies, except for duties and responsibilities to the authority and policyholders under the terms of this chapter.
- (4) No insurer may participate in the authority unless every insurer affiliated with that insurer (as defined in subdivision (a) of Section 1215) or under common control with that insurer (as defined in subdivision (b) of Section 1215) also participates in the authority.

(c) This section shall become operative on January 1, 2004.

10089.28. Authority as coverage provider

- (a) All policies of residential earthquake insurance provided by the authority shall be written by the authority. Authority policies shall be marketed and policyholders serviced by the participating insurer that writes the underlying policy of residential property insurance, and participating insurers shall be reasonably compensated for the claims and policyholder services they provide on behalf of the authority. Authority services may be performed on behalf of the authority in any reasonable manner by the participating insurer that is in compliance with statutory, regulatory, and case laws regarding claims handling practices; provided, however, where the authority has promulgated specific procedures to govern its operations, the participating insurer shall conform its practices to those procedures. The authority procedures shall comply with statutory, regulatory, and case law governing claims handling practices. Nothing in this provision shall be deemed or construed to affect any duty or liability of the authority or participating carrier as set forth in paragraphs (2) and (3) of subdivision (e) of Section 10089.7.
- (b) The participating insurer shall notify each of its insureds that the authority is the provider of earthquake coverage under the policy. The form and method of notice shall meet standards established by the commissioner by regulation. The authority shall provide to participating insurers appropriate applications and forms and shall maintain records of all policies written, moneys received, and claims paid.
- (c) The duty of an agent or broker to investigate the financial condition of the authority before placement of insurance shall be the same as the duty of an agent or broker to investigate the financial condition of an admitted insurer before placement of a policy of insurance.

10089.29. Revenue bonds; surcharge

- (a) If benefits paid by the authority following an earthquake event exhaust the total of (1) the authority's available capital, (2) the maximum amount of all insurer capital contributions and assessments pursuant to Sections 10089.15 and 10089.23, (3) all reinsurance actually available and under contract to the authority, and (4) all capital committed and actually available by contract to the authority from private capital markets, the Treasurer, as agent for sale of bonds for the authority, may sell investment grade revenue bonds or issue or secure other debt financing of the authority or any combination of the revenue bonds or debt financing in an amount up to one billion dollars (\$1,000,000,000), in an amount determined by the board pursuant to Section 10089.32. The Treasurer shall make available the net proceeds of the revenue bonds or debt financing as funding for the authority. These funds shall not be used to replenish the fund. Failure of the authority to obtain such funding for any reason shall not obligate the State of California to provide or arrange replacement funding for the authority. The Treasurer may sell revenue bonds for the purpose of refunding the revenue bonds or other debt financing when authorized to do so by the board, and the surcharge authorized by this section may be used to repay that refunding.
- (b) (1) In the event of a revenue bond sale or debt financing arrangement pursuant to this section, the authority shall have the power annually to surcharge all authority policies to secure funds solely to repay the bonded indebtedness or other debt. The net surcharge collected shall not exceed the sum calculated pursuant to paragraph (3) of subdivision (a) of Section 10089.23, and in no event exceed one billion dollars (\$1,000,000,000), plus costs of issuance and sale of those revenue bonds or other debt and amounts paid or payable to bond issuers and providers of credit support and letters of credit for and interest on those revenue bonds or other debt. In no event shall the surcharge on any authority policy exceed 20 percent of the annual basic residential earthquake insurance premium in any one year for the policy.
- (2) If a policy issued by the authority includes a premium surcharge pursuant to this subdivision, the participating insurer shall provide the insured a notice in a stand-alone document stating that the policyholder may cancel or nonrenew the earthquake policy. The notice shall specify that cancellation or nonrenewal of the earthquake policy will not affect the underlying residential property insurance policy. The statement shall be provided with the premium billing and shall include the following statement in 14-point boldface type:

**NOTICE OF SURCHARGE ON CEA EARTHQUAKE
INSURANCE POLICY AND RIGHT TO CANCEL**

**A SURCHARGE HAS BEEN INCLUDED IN THE PREMIUM FOR YOUR
CEA EARTHQUAKE INSURANCE POLICY. YOU MAY CHOOSE TO
RENEW THIS POLICY AT THE NEW RATE OR YOU MAY CANCEL OR**

NONRENEW YOUR CEA EARTHQUAKE INSURANCE POLICY. CANCELLATION OR NONRENEWAL OF YOUR CEA POLICY WILL HAVE NO AFFECT ON YOUR HOMEOWNERS' OR FIRE INSURANCE POLICY. HOWEVER, IF YOU WANT EARTHQUAKE INSURANCE TO BE PROVIDED BY THE CEA, YOU MUST PAY THE FULL PREMIUM FOR THE CEA POLICY, INCLUDING THE SURCHARGE.

- (c) The total amount of indebtedness and policy surcharges authorized under this section shall not exceed the sum calculated pursuant to paragraph (3) of subdivision (a) of Section 10089.23, and in no event exceed one billion dollars (\$1,000,000,000) plus costs of issuance and sale of those revenue bonds or other debt and amounts paid or payable to bond issuers and providers of credit support and letters of credit for, and interest on, those revenue bonds or other debt, regardless of the frequency or severity of earthquake losses at any and all times subsequent to the creation of the authority. Once the authority has levied policy surcharges in an amount equal to the sum calculated pursuant to paragraph (3) of subdivision (a) of Section 10089.23, and in no event more than one billion dollars (\$1,000,000,000) plus costs of issuance and sale of those revenue bonds or other debt and amounts paid or payable to bond issuers and providers of credit support and letters of credit for, and interest on, those revenue bonds or other debt, the authority's power to surcharge policies shall cease and the authority shall be prohibited from levying additional surcharges pursuant to this section.
- (d) Consistent with the provisions of Section 676, the authority shall cancel the policy of basic residential earthquake insurance if the policyholder fails to pay the earthquake policy surcharge authorized by the authority, and the insurer shall cancel the policy of residential property insurance if the policyholder fails to pay the policy surcharge authorized by the authority.

10089.30. Aggregate assessment

If benefits paid by the authority due to earthquake events exhaust the total of (a) the authority's available capital, (b) the maximum amount of all insurer capital contributions and assessments pursuant to Sections 10089.15 and 10089.23, (c) all reinsurance actually available and under contract to the authority, (d) the maximum amount of all authority policyholder assessments pursuant to Section 10089.29, and (e) all capital committed and actually available from the private capital markets, the board, subject to the approval of the commissioner, shall have the power to assess participating insurance companies subject to the maximum limits in this section. The total amount of all assessments levied against participating insurance companies by the authority pursuant to this section shall not exceed two billion dollars (\$2,000,000,000), regardless of the frequency or severity of earthquake losses at any and all times subsequent to the creation of the authority. Once a participating insurer has paid amounts equal to its residential earthquake insurance market share percentage multiplied by two billion dollars (\$2,000,000,000) pursuant to this section, the authority's power to assess that insurer under this section shall cease and the authority shall be prohibited from levying additional assessments on that insurer pursuant to this section. The board shall make assessments pursuant to this section by the same method set forth in paragraph (2) of subdivision (a) of Section 10089.23, in proportion to each participating insurer's residential earthquake insurance market share. The assessment shall be limited to the

amount necessary to pay the expected claims of the authority and return the authority's available capital to three hundred fifty million dollars (\$350,000,000), as determined by the board, subject to approval by the commissioner.

10089.32. Actual required funding

The authority shall endeavor at all times to make specific authority earthquake policyholder assessments, and the Treasurer shall endeavor at all times to secure debt financing, only for the actual funds reasonably estimated to be required for immediate authority operations.

10089.33. Excess capital

If the average daily balance of the authority's available capital exceeds six billion dollars (\$6,000,000,000) for the last 180 days of any calendar year, the board shall relieve all participating insurers of their obligation to pay additional earthquake loss assessments under this chapter, by an amount equal to the amount of available capital in excess of six billion dollars (\$6,000,000,000), as provided in this subdivision. Each December 31 thereafter, the board shall further reduce the aggregate assessment authorized under this section by the net increase in available capital in excess of the previous levels of available capital at which a reduction in the aggregate assessment was made. No reduction pursuant to this subdivision shall exceed 15 percent of the original aggregate assessment in any year of operation of the authority. In no event shall any reduction previously authorized by the board be reinstated.

10089.34. California insurance guaranty association

- (a) (1) The policies issued by the authority shall not be subject to assessment for, nor shall any authority policyholder be eligible for benefits from, the California Insurance Guaranty Association.
- (2) Policies of residential earthquake insurance written by participating insurers that supplement, augment, or are in excess of the authority's policy of basic earthquake insurance shall be subject to assessment by the California Insurance Guaranty Association and shall be covered to the extent provided in Article 14.2 (commencing with Section 1063) of Chapter 1 of Part 2 of Division 1.
- (b) (1) Policies of basic residential earthquake insurance written by nonparticipating insurers shall be subject to assessment by the California Insurance Guaranty Association and shall be covered to the extent provided in Article 14.2 (commencing with Section 1063) of Chapter 1 of Part 2 of Division 1.
- (2) Participating insurers of the authority shall have no obligation to pay assessments to the California Insurance Guaranty Association for covered claims obligation arising from policies of basic residential earthquake insurance written by nonparticipating insurers.

10089.35. Pro rata claims payment

- (a) If at any time the board determines that all the authority's available capital may be exhausted and no source of additional funds such as assessments, reinsurance, or private capital market moneys will be available to the authority to pay policyholder claims, the board shall draw up and present to the commissioner a plan to pay policyholder claims on a pro rata basis or in installment payments. The board shall maintain sufficient capital to ensure the continued operation of the authority for the purpose of implementing the proration or installment plan. At this point, the commissioner shall adopt a schedule for reinstatement of an insurer's statutory obligation to offer earthquake coverage by a means other than placement in the authority. In no event shall the schedule adopted pursuant to this subdivision be for a period longer than six months.
- (b) Upon presentation of that plan to prorate or pay in installments, the commissioner shall order the authority to cease renewing or accepting new earthquake insurance policies and may apply to the superior court for orders or injunctions as the commissioner deems necessary to prevent any event or occurrence adverse to the authority, including, but not limited to, any or all of the following:
 - (1) Interference with the commissioner's consideration and implementation of a plan for pro rata or installment payment of policyholder claims under this section.
 - (2) Interference with or attachment of the assets of the authority.
 - (3) Institution or prosecution of any actions or proceedings against the authority.
 - (4) The obtaining of preferences, judgments, attachments, or other liens or levies against the authority or its assets.
 - (5) The withholding by a participating insurer or any other person of any premium, surcharge, assessment, or other amount lawfully due and owing to the authority.
- (c) Entry of orders or injunctions obtained by the commissioner upon the application permitted by subdivision (a) shall not vest the superior court with general jurisdiction over the business or assets of the authority or any plan for the pro rata or installment payment of policyholder claims under this section, and the superior court's jurisdiction shall be limited to the entry and enforcement of those orders and injunctions.
- (d) The State of California shall have no liability for payment of claims in excess of funds available pursuant to this chapter. The State of California, and any of the funds of the State of California, shall have no obligations whatsoever for payment of claims or costs arising from this act, except as specifically provided in this act.

10089.36. Federal natural disaster program

In the event a natural disaster program is enacted by Congress, the panel shall convene and prepare a plan to dissolve the authority or conform this act with the federal program. Following its deliberations, the panel shall recommend a plan of action to the board and the Legislature.

10089.37. Earthquake loss mitigation fund

The board shall set aside in each calendar year an amount equal to 5 percent of investment income accruing on the authority's invested funds, or five million dollars (\$5,000,000), whichever is less, if deemed actuarially sound by a consulting actuary employed or hired by the authority, to be maintained as a subaccount in the California Earthquake Authority Fund. The authority shall use those funds to fund the establishment and operation of an Earthquake Loss Mitigation Fund. In the event a set-aside of mitigation-related funds may impair the actuarial soundness of the authority, the board may delay the implementation of this section. Any delay shall be reported to the Legislature and the commissioner and reported publicly.

10089.38. Grants and loans for retrofitting

Upon the development and implementation of an economical system satisfactory to the board and the commissioner to prevent misapplication of mitigation funds, the Earthquake Loss Mitigation Fund may be applied to supply grants and loans or loan guarantees to dwelling owners who wish to retrofit their homes to protect against earthquake damage.

10089.39. Fund operational rules

- (a) The operational rules of the Earthquake Loss Mitigation Fund shall be part of the authority's plan of operations.
- (b) On or before July 1, 2000, the authority shall establish in the operational rules of the Earthquake Loss Mitigation Fund, a plan for the expedited expansion of the residential retrofit program statewide. The program shall include personnel and administrative requirements and all other programmatic specifications necessary to the implementation of the plan.

10089.40. Rates

- (a) Rates established by the authority shall be actuarially sound so as to not be excessive, inadequate or unfairly discriminatory. Rates shall be established based on the best available scientific information for assessing the risk of earthquake frequency, severity and loss. Rates shall be equivalent for equivalent risks. Factors the board shall consider in adopting rates include, but are not limited to, the following:
 - (1) Location of the insured property and its proximity to earthquake faults and to other geological factors that affect the risk of earthquake or damage from earthquake.
 - (2) The soil type on which the insured dwelling is built.

- (3) Construction type and features of the insured dwelling.
 - (4) Age of the insured dwelling.
 - (5) The presence of earthquake hazard reduction factors, including those set forth in subdivision (a) of Section 10089.2.
- (b)
- (1) If scientific information from geologists, seismologists, or similar experts that assesses the frequency or severity of risk of earthquake is considered in setting rates or in arriving at the modeling assumptions upon which those rates are based, the information may be used to establish differentials among risks only if the information, assumptions, and methodology used are consistent with the available geophysical data and the state of the art of scientific knowledge within the scientific community.
 - (2) Scientific information from geologists, seismologists, or similar experts shall not be conclusive to support the establishment of different rates between the most populous rating territories in the northern and southern regions of the state unless that information, as analyzed by experts such as the United States Geological Survey, the California Division of Mines and Geology, and experts in the scientific or academic community, clearly shows a higher risk of earthquake frequency, severity, or loss between those most populous rating territories to support those differences.
 - (3) It is not the intent of the Legislature in adopting this subdivision to mandate a uniform statewide flat rate for California Earthquake Authority policies.
- (c) The classification system established by the board shall not be adjusted or tempered in any way to provide rates lower than are justified for classifications that present a high risk of loss or higher than are justified for classifications that present a low risk of loss.
- (d) Policyholders who have retrofitted their homes to withstand earthquake shake damage according to standards and to the extent set by the board shall enjoy a premium discount or credit of 5 percent on the authority-issued policy of residential earthquake coverage. For residential dwellings, the 5-percent discount shall be applicable if the dwelling, at a minimum, meets the following requirements: the dwelling was built prior to 1979, is tied to the foundation, has cripple walls braced with plywood or its equivalent, and the water heater is secured to the building frame. For mobilehomes, the 5-percent discount shall be applicable if the mobilehome, at a minimum, is reinforced by an earthquake resistant bracing system certified by the Department of Housing and Community Development. The board may approve a premium discount or credit above 5 percent, as long as the discount or credit is determined actuarially sound by the authority.

- (e) On or before July 1, 2000, the authority shall issue a report to the Legislature on the current status of the Earthquake Loss Mitigation Fund established by Section 10089.37, the residential retrofit program authorized by Section 10089.38, and application of the retrofit premium discount or credit established in subdivision (d). The report shall include a financial report on fund deposits, income and expenditures. The report shall also include statistics about the number of counties which are eligible for the retrofit program, the number of homeowners who have applied for the program, the number of retrofits which have been approved and completed, a breakdown of the amount of authority funds and private funds which have been expended in the program, the dollar amount of insurance rate reductions which have been provided, and other information concerning the status of the program. The report shall also include a copy of the plan for the expedited expansion of the residential retrofit program required by subdivision (b) of Section 10089.39 and any specifications for additional statutory authority or regulations necessary for the implementation of the plan.
- (f) All rates shall be approved by the commissioner prior to their use.

10089.41. Termination of earthquake authority

- (a) The offer of an authority policy by a participating insurer shall constitute a mode of insurer compliance with Chapter 8.5 (commencing with Section 10081) of Part 1 of Division 2, and as set forth in Section 10084.
- (b) If the authority ceases operation for any reason, including, but not limited to, repeal of this chapter or insolvency of the authority, participating carriers shall no longer be able to satisfy the requirement to offer residential earthquake insurance coverage by placement within the authority. The commissioner shall adopt a schedule in accordance with subdivision (a) of Section 10089.35 to establish when participating carriers shall be required to offer coverage by another mode authorized pursuant to Chapter 8.5 (commencing with Section 10081) of Part 1 of Division 2 to those policyholders for whom they write the underlying policies of residential property insurance.
- (c) If the authority ceases operation pursuant to a statute enacted by the Legislature, that statute shall determine the duty of participating insurers to provide earthquake insurance pursuant to Chapter 8.5 (commencing with Section 10081). Chapter 8.5 (commencing with Section 10081) shall remain in effect unless specifically repealed by that statute.

10089.43. Transfer of authority funds

Upon termination of the authority by the Legislature, its remaining funds shall be transferred to the General Fund unless otherwise directed by the Legislature.

10089.44. Premium tax exemption

Notwithstanding any other provision of law, premiums collected by the authority shall be exempt from collection of the state's insurance premium tax, and the amount of tax foregone by the state

shall be considered for all purposes a contribution by the state and its citizens to the capital and operating revenues of the authority.

No funds contributed to, or collected or held by, the authority shall be available to meet the general obligations of the state unless the authority has been terminated and wound up, and all funds due or owing to any person pursuant to this act have been paid, held in reserve, or returned.

10089.46. Prohibited state indebtedness

Bonds issued under this chapter shall not be a debt or liability of the state or of any political subdivision of the state, or a pledge of the full faith and credit of the state or of any political subdivision, but shall be payable solely from the funds provided in this chapter.

10089.47. Bonds as legal investments

Bonds issued by the authority are legal investments for all trust funds, the funds of all insurance companies, banks, trust companies, executors, administrators, trustees and other fiduciaries. The bonds are securities that may legally be deposited with, and received by, any state or municipal officer or agency or political subdivision of the state for any purpose for which the deposit of bonds or obligations of the state is now, or may hereafter be, authorized by law, including deposits to secure public funds.

10089.48. Interest tax exempt

Interest earned on any bonds issued by the authority shall at all times be free from state personal income tax and corporate income tax.

10089.49. Bondholder's rights

The state hereby pledges to and agrees with the holders of bonds that the state will not limit, alter, or restrict the rights hereby vested in the authority to fulfill each pledge of revenues and any other terms of any agreement made with or for the benefit of the holders of bonds or in any way impair the rights or remedies of the holders of bonds.

10089.50. Credit facilities

The Treasurer may from time to time enter into one or more credit facilities permitting the authority to draw an amount up to one billion dollars (\$1,000,000,000) with payment, interest rate, indemnity, compensation, security, default, remedy, and other terms and conditions as determined by the authority. All drawings under these credit facilities shall be available as funding for the authority as provided in Section 10089.29.

10089.51. Surcharges to secure payment obligations

The authority shall have the power to pledge to the providers of credit facilities and to the owners of bonds the surcharges imposed or to be imposed pursuant to subdivision (b) of Section 10089.29 to secure payment of all obligations of the authority under those credit facilities and bonds, respectively. A pledge of those surcharges shall constitute a lien and security interest that shall immediately attach to the surcharges whether or not imposed or collected at the time the

pledge is made, and shall be effective, valid, and binding and enforceable against the authority, the Treasurer, the beneficiaries of the basic residential earthquake insurance issued from time to time, and all others asserting rights in the surcharges to the extent set forth, and in accordance with, the terms of the pledge contained in the credit facilities or bonds, as the case may be, whether or not those parties have notice of the pledge and without the need for any physical delivery, recordation, filing, or further act.

10089.52. Applicability of other laws

Nothing in Section 10089.50 or 10089.51 is intended to limit the applicability to the authority of any provision of Section 5450 or subdivision (c) of Section 5922 of the Government Code.

10089.53. Annual premium surcharge

- (a) Any insurer that withdraws from the authority under Section 10089.19 while bonds or other debt is outstanding shall impose annually a premium surcharge on each policy of residential earthquake insurance written by it equal in percentage amount, calculated as a percentage of the basic residential earthquake insurance premium, to the percentage amount of the surcharge being imposed in that year by the authority pursuant to subdivision (b) of Section 10089.29. That insurer shall remit promptly all those surcharges collected by it to the trustee appointed pursuant to Section 10089.22. The surcharges shall be used solely to repay the bonded indebtedness or other debt issued pursuant to subdivision (a) of Section 10089.29. If the sum of the surcharges remitted to the trustee pursuant to this section plus the amount of the surcharges imposed by the authority pursuant to subdivision (b) of Section 10089.29 would exceed the amount authorized by that provision, then surcharges of the authority shall be reduced by an amount equal to that excess.
- (b) Should the Legislature and Governor approve legislation that causes the authority to cease operation while bonds or other debt are outstanding, participating insurers shall impose annually a premium surcharge on each policy of residential earthquake insurance written by them equal in percentage amount, calculated as a percentage of the basic residential earthquake insurance premium, to the percentage amount of the surcharge being imposed in that year by the authority pursuant to subdivision (b) of Section 10089.29. Those insurers shall remit promptly all these surcharges collected by them to the trustee appointed pursuant to Section 10089.22. The surcharges shall be used solely to repay the bonded indebtedness or other debt issued pursuant to subdivision (a) of Section 10089.29. If the sum of the surcharges remitted to the trustee pursuant to this section plus the amount of the surcharges imposed by the authority pursuant to subdivision (b) of Section 10089.29 would exceed the amount authorized by that provision, then surcharges of the authority shall be reduced by an amount equal to that excess.

10089.54. Effect of federal mortgage association action

- (a) Unless authorized by a statute enacted subsequent to the effective date of this section, the authority shall cease writing new earthquake insurance policies 180 days after implementation by both the Federal National Mortgage Association

(“Fannie Mae”) and the Federal Home Loan Mortgage Association (“Freddie Mac”) of policies to require earthquake insurance for any single-family residential structure, other than a condominium unit or townhome, as a condition of purchasing a mortgage or trust deed secured by that structure. Notwithstanding this restriction, the authority shall continue to renew its existing earthquake insurance policies and shall accept applications for earthquake insurance from residential property insurance policyholders of participating insurers in accordance with subdivision (b) of Section 10086.

- (b) In the event that both the Federal National Mortgage Association (“Fannie Mae”) and the Federal Home Loan Mortgage Association (“Freddie Mac”) have proposed to implement policies to require earthquake insurance for any single-family residential structure, other than a condominium unit or townhome, as a condition of purchasing a mortgage or trust deed secured by that structure, it is the intent of the Legislature that the Legislature should convene to consider whether the authority should continue to write new earthquake insurance policies, with or without modification, or to cease writing new earthquake insurance policies.

Florida Statutes—Insurance Related Laws
TITLE XIV—TAXATION AND FINANCE
Chapter 215—FINANCIAL MATTERS: GENERAL PROVISIONS

215.555 Florida hurricane catastrophe fund

NEW AMENDMENTS R—Ch. 2000-168 SB 2304

- (1) Findings and purpose.—The Legislature finds and declares as follows:
- (a) There is a compelling state interest in maintaining a viable and orderly private sector market for property insurance in this state. To the extent that the private sector is unable to maintain a viable and orderly market for property insurance in this state, state actions to maintain such a viable and orderly market are valid and necessary exercises of the police power.
 - (b) As a result of unprecedented levels of catastrophic insured losses in recent years, and especially as a result of Hurricane Andrew, numerous insurers have determined that in order to protect their solvency, it is necessary for them to reduce their exposure to hurricane losses. Also as a result of these events, world reinsurance capacity has significantly contracted, increasing the pressure on insurers to reduce their catastrophic exposures.
 - (c) Mortgages require reliable property insurance, and the unavailability of reliable property insurance would therefore make most real estate transactions impossible. In addition, the public health, safety, and welfare demand that structures damaged or destroyed in a catastrophe be repaired or reconstructed as soon as possible. Therefore, the inability of the private sector insurance and reinsurance markets to maintain sufficient capacity to enable residents of this state to obtain property insurance coverage in the private sector endangers the economy of the state and endangers the public health, safety, and welfare. Accordingly, state action to correct for this inability of the private sector constitutes a valid and necessary public and governmental purpose.
 - (d) The insolvencies and financial impairments resulting from Hurricane Andrew demonstrate that many property insurers are unable or unwilling to maintain reserves, surplus, and reinsurance sufficient to enable the insurers to pay all claims in full in the event of a catastrophe. State action is therefore necessary to protect the public from an insurer's unwillingness or inability to maintain sufficient reserves, surplus, and reinsurance.
 - (e) A state program to provide a stable and ongoing source of reimbursement to insurers for a portion of their catastrophic hurricane losses will create additional insurance capacity sufficient to ameliorate the current dangers to the state's economy and to the public health, safety, and welfare.
 - (f) It is essential to the functioning of a state program to increase insurance capacity that revenues received be exempt from federal taxation. It is therefore the intent of the Legislature that this program be structured as a state trust fund under the

direction and control of the State Board of Administration and operate exclusively for the purpose of protecting and advancing the state's interest in maintaining insurance capacity in this state.

- (g) Hurricane Andrew, which caused insured and uninsured losses in excess of \$20 billion, will likely not be the last major windstorm to strike Florida. Recognizing that a future wind catastrophe could cause damages in excess of \$60 billion, especially if a major urban area or series of urban areas were hit, it is the intent of the Legislature to balance equitably its concerns about mitigation of hurricane impact, insurance affordability and availability, and the risk of insurer and joint underwriting association insolvency, as well as assessment and bonding limitations.

(2) Definitions.—As used in this section:

- (a) “Actuarially indicated” means, with respect to premiums paid by insurers for reimbursement provided by the fund, an amount determined according to principles of actuarial science to be adequate, but not excessive, in the aggregate, to pay current and future obligations and expenses of the fund, including additional amounts if needed to pay debt service on revenue bonds issued under this section and to provide required debt service coverage in excess of the amounts required to pay actual debt service on revenue bonds issued under subsection (6), and determined according to principles of actuarial science to reflect each insurer's relative exposure to hurricane losses.
- (b) “Covered event” means any one storm declared to be a hurricane by the National Hurricane Center, which storm causes insured losses in this state.
- (c) “Covered policy” means any insurance policy covering residential property in this state, including, but not limited to, any homeowner's, mobile home owner's, farm owner's, condominium association, condominium unit owner's, tenant's, or apartment building policy, or any other policy covering a residential structure or its contents issued by any authorized insurer, including any joint underwriting association or similar entity created pursuant to law. “Covered policy” does not include any policy that excludes wind coverage or hurricane coverage or any reinsurance agreement and does not include any policy otherwise meeting this definition which is issued by a surplus lines insurer or a reinsurer.
- (d) “Losses” means direct incurred losses under covered policies, excluding losses attributable to additional living expense coverages and excluding loss adjustment expenses.
- (e) “Retention” means the amount of losses below which an insurer is not entitled to reimbursement from the fund. An insurer's retention shall be calculated as follows:
 - 1. The board shall calculate and report to each insurer the retention multiples for that year. For the contract year beginning June 1, 1995, the retention multiple shall be equal to \$3 billion divided by the total estimated

reimbursement premium for the contract year; for subsequent years, the retention multiple shall be equal to \$3 billion, adjusted to reflect the percentage growth in exposure to the fund for covered policies since 1998, divided by the total estimated reimbursement premium for the contract year. Total reimbursement premium for purposes of the calculation under this subparagraph shall be estimated using the assumption that all insurers have selected the 90-percent coverage level.

2. The retention multiple as determined under subparagraph 1. shall be adjusted to reflect the coverage level elected by the insurer. For insurers electing the 90-percent coverage level, the adjusted retention multiple is 100 percent of the amount determined under subparagraph 1. For insurers electing the 75-percent coverage level, the retention multiple is 120 percent of the amount determined under subparagraph 1. For insurers electing the 45-percent coverage level, the adjusted retention multiple is 200 percent of the amount determined under subparagraph 1.
 3. An insurer shall determine its provisional retention by multiplying its provisional reimbursement premium by the applicable adjusted retention multiple and shall determine its actual retention by multiplying its actual reimbursement premium by the applicable adjusted retention multiple.
- (f) “Workers’ compensation” includes both workers’ compensation and excess workers’ compensation insurance.
 - (g) “Bond” means any bond, debenture, note, or other evidence of financial indebtedness issued under this section.
 - (h) “Debt service” means the amount required in any fiscal year to pay the principal of, redemption premium, if any, and interest on revenue bonds and any amounts required by the terms of documents authorizing, securing, or providing liquidity for revenue bonds necessary to maintain in effect any such liquidity or security arrangements.
 - (i) “Debt service coverage” means the amount, if any, required by the documents under which revenue bonds are issued, which amount is to be received in any fiscal year in excess of the amount required to pay debt service for such fiscal year.
 - (j) “Local government” means a unit of general purpose local government as defined in § 218.31(2).
 - (k) “Pledged revenues” means all or any portion of revenues to be derived from reimbursement premiums under subsection (5) or from assessments under subparagraph (6)(a) 3., as determined by the board.
 - (l) “Estimated claims-paying capacity” means the sum of the projected year-end balance of the fund as of December 31 of a contract year, plus any reinsurance

purchased by the fund, plus the board's estimate of the board's borrowing capacity.

- (m) "Actual claims-paying capacity" means the sum of the balance of the fund as of December 31 of a contract year, plus any reinsurance purchased by the fund, plus the amount the board is able to raise through the issuance of revenue bonds under subsection (6).
- (3) Florida hurricane catastrophe fund created.—There is created the Florida Hurricane Catastrophe Fund to be administered by the State Board of Administration. Moneys in the fund may not be expended, loaned, or appropriated except to pay obligations of the fund arising out of reimbursement contracts entered into under subsection (4), payment of debt service on revenue bonds issued under subsection (6), costs of the mitigation program under subsection (7), costs of procuring reinsurance, and costs of administration of the fund. The board shall invest the moneys in the fund pursuant to §§ 215.44-215.52. Except as otherwise provided in this section, earnings from all investments shall be retained in the fund. The board may employ or contract with such staff and professionals as the board deems necessary for the administration of the fund. The board may adopt such rules as are reasonable and necessary to implement this section. Such rules must conform to the Legislature's specific intent in establishing the fund as expressed in subsection (1), must enhance the fund's potential ability to respond to claims for covered events, must contain general provisions so that the rules can be applied with reasonable flexibility so as to accommodate insurers in situations of an unusual nature or where undue hardship may result, except that such flexibility may not in any way impair, override, supersede, or constrain the public purpose of the fund, and must be consistent with sound insurance practices. The board may, by rule, provide for the exemption from subsections (4) and (5) of insurers writing covered policies with less than \$500,000 in aggregate exposure for covered policies, which exposure results in a de minimis reimbursement premium, if the exemption does not affect the actuarial soundness of the fund.
- (4) Reimbursement contracts.—
- (a) The board shall enter into a contract with each insurer writing covered policies in this state to provide to the insurer the reimbursement described in paragraph (b), in exchange for the reimbursement premium paid into the fund under subsection (5). As a condition of doing business in this state, each such insurer shall enter into such a contract.
 - (b)
 - 1. The contract shall contain a promise by the board to reimburse the insurer for 45 percent, 75 percent, or 90 percent of its losses from each covered event in excess of the insurer's retention, plus 5 percent of the reimbursed losses to cover loss adjustment expenses.
 - 2. The insurer must elect one of the percentage coverage levels specified in this paragraph and may, upon renewal of a reimbursement contract, elect a lower percentage coverage level if no revenue bonds issued under subsection (6) after a covered event are outstanding, or elect a higher percentage coverage level, regardless of whether or not revenue bonds are outstanding. All members of an insurer group must elect the same

percentage coverage level. Any joint underwriting association, risk apportionment plan, or other entity created under § 627.351 must elect the 90-percent coverage level.

3. The contract shall provide that reimbursement amounts shall not be reduced by reinsurance paid or payable to the insurer from other sources; however, recoveries from such other sources, taken together with reimbursements under the contract, may not exceed 100 percent of the insurer's losses from covered events. If such recoveries and reimbursements exceed 100 percent of the insurer's losses from covered events, and if there is no agreement between the insurer and the reinsurer to the contrary, any amount in excess of 100 percent of the insurer's losses shall be returned to the fund.
- (c)
1. The contract shall also provide that the obligation of the board with respect to all contracts covering a particular contract year shall not exceed the actual claims-paying capacity of the fund up to a limit of \$11 billion for that contract year, unless the board determines that there is sufficient estimated claims-paying capacity to provide \$11 billion of capacity for the current contract year and an additional \$11 billion of capacity for subsequent contract years. Upon such determination being made, the estimated claims-paying capacity for the current contract year shall be determined by adding to the \$11 billion limit one-half of the fund's estimated claims-paying capacity in excess of \$22 billion.
 2. The contract shall require the board to annually notify insurers of the fund's estimated borrowing capacity for the next contract year, the projected year-end balance of the fund, and the insurer's estimated share of total reimbursement premium to be paid to the fund. For all regulatory and reinsurance purposes, an insurer may calculate its projected payout from the fund as its share of the total fund premium for the current contract year multiplied by the sum of the projected year-end fund balance and the estimated borrowing capacity for that contract year as reported under this paragraph. In May and October of each year, the board shall publish in the Florida Administrative Weekly a statement of the fund's estimated borrowing capacity and the projected year-end balance of the fund for the current contract year.
- (d)
1. For purposes of determining potential liability and to aid in the sound administration of the fund, the contract shall require each insurer to report such insurer's losses from each covered event on an interim basis, as directed by the board. The contract shall require the insurer to report to the board no later than December 31 of each year, and quarterly thereafter, its reimbursable losses from covered events for the year. The contract shall require the board to determine and pay, as soon as practicable after receiving these reports of reimbursable losses, the initial amount of reimbursement due and adjustments to this amount based on later loss information. The adjustments to reimbursement amounts shall require the

board to pay, or the insurer to return, amounts reflecting the most recent calculation of losses.

2. If the board determines that the projected year-end balance of the fund, together with the amount that the board determines that it is possible to raise through revenue bonds issued under subsection (6) and through other borrowing and financing arrangements under paragraph (7)(b), are insufficient to pay reimbursement to all insurers at the level promised in the contract, the board shall:
 - a. First reimburse insurers writing covered policies, which insurers are in full compliance with this section and have petitioned the Department of Insurance and qualified as limited apportionment companies under § 627.351(2)(b) 3. The amount of such reimbursement shall be the lesser of \$10 million or an amount equal to 10 times the insurer's reimbursement premium for the current year. The amount of reimbursement paid under this sub-subparagraph may not exceed the full amount of reimbursement promised in the reimbursement contract. This sub-subparagraph does not apply with respect to any contract year in which the year-end projected cash balance of the fund, exclusive of any bonding capacity of the fund, exceeds \$2 billion. Only one member of any insurer group may receive reimbursement under this sub-subparagraph.
 - b. Next pay to each insurer such insurer's projected payout, which is the amount of reimbursement it is owed, up to an amount equal to the insurer's share of the actual premium paid for that contract year, multiplied by the actual claims-paying capacity available for that contract year, provided, entities created pursuant to § 627.351 shall be further reimbursed in accordance with sub-subparagraph c.
 - c. Thereafter, establish, based on reimbursable losses, the prorated reimbursement level at the highest level for which any remaining fund balance or bond proceeds are sufficient to reimburse entities created pursuant to § 627.351 for losses exceeding the amounts payable pursuant to sub-subparagraph b. for the current contract year.
- (e) 1. Except as provided in subparagraphs 2. and 3., the contract shall provide that if an insurer demonstrates to the board that it is likely to qualify for reimbursement under the contract, and demonstrates to the board that the immediate receipt of moneys from the board is likely to prevent the insurer from becoming insolvent, the board shall advance the insurer, at market interest rates, the amounts necessary to maintain the solvency of the insurer, up to 50 percent of the board's estimate of the reimbursement due the insurer. The insurer's reimbursement shall be reduced by an amount equal to the amount of the advance and interest thereon.

2. With respect only to an entity created under § 627.351, the contract shall also provide that the board may, upon application by such entity, advance to such entity, at market interest rates, up to 90 percent of the lesser of:
 - a. The board's estimate of the amount of reimbursement due to such entity; or
 - b. The entity's share of the actual reimbursement premium paid for that contract year, multiplied by the currently available liquid assets of the fund. In order for the entity to qualify for an advance under this subparagraph, the entity must demonstrate to the board that the advance is essential to allow the entity to pay claims for a covered event and the board must determine that the fund's assets are sufficient and are sufficiently liquid to allow the board to make an advance to the entity and still fulfill the board's reimbursement obligations to other insurers. The entity's final reimbursement for any contract year in which an advance has been made under this subparagraph must be reduced by an amount equal to the amount of the advance and any interest on such advance. In order to determine what amounts, if any, are due the entity, the board may require the entity to report its exposure and its losses at any time to determine retention levels and reimbursements payable.
 3. The contract shall also provide specifically and solely with respect to any limited apportionment company under § 627.351(2)(b) 3. that the board may, upon application by such company, advance to such company the amount of the estimated reimbursement payable to such company as calculated pursuant to paragraph (d), at market interest rates, if the board determines that the fund's assets are sufficient and are sufficiently liquid to permit the board to make an advance to such company and at the same time fulfill its reimbursement obligations to the insurers that are participants in the fund. Such company's final reimbursement for any contract year in which an advance pursuant to this subparagraph has been made shall be reduced by an amount equal to the amount of the advance and interest thereon. In order to determine what amounts, if any, are due to such company, the board may require such company to report its exposure and its losses at such times as may be required to determine retention levels and loss reimbursements payable.
- (f) In order to ensure that insurers have properly reported the insured values on which the reimbursement premium is based and to ensure that insurers have properly reported the losses for which reimbursements have been made, the board shall inspect, examine, and audit the records of each insurer's covered policies at such times as the board deems appropriate and in such manner as is consistent with generally accepted auditing standards. The costs of the audits shall be borne by the board. However, in order to remove any incentive for an insurer to delay preparations for an audit, the board shall be reimbursed by the insurer for any audit expenses incurred in addition to the usual and customary costs of the audit, which additional expenses were incurred as a result of an insurer's failure, despite

proper notice, to be prepared for the audit or as a result of an insurer's failure to provide requested information while the audit is in progress. If the board finds any insurer's records or other necessary information to be inadequate or inadequately posted, recorded, or maintained, the board may employ experts to reconstruct, rewrite, record, post, or maintain such records or information, at the expense of the insurer being audited, if such insurer has failed to maintain, complete, or correct such records or deficiencies after the board has given the insurer notice and a reasonable opportunity to do so. Any information contained in an audit report, which information is described in § 215.557, is confidential and exempt from the provisions of § 119.07(1) and § 24(a), Art. I of the State Constitution, as provided in § 215.557. Nothing in this paragraph expands the exemption in § 215.557.

- (g) The contract shall provide that in the event of the insolvency of an insurer, the fund shall pay directly to the Florida Insurance Guaranty Association for the benefit of Florida policyholders of the insurer the net amount of all reimbursement moneys owed to the insurer. As used in this paragraph, the term "net amount of all reimbursement moneys" means that amount which remains after reimbursement for:
1. Preliminary or duplicate payments owed to private reinsurers or other inuring reinsurance payments to private reinsurers that satisfy statutory or contractual obligations of the insolvent insurer attributable to covered events to such reinsurers; or
 2. Funds owed to a bank or other financial institution to cover obligations of the insolvent insurer under a credit agreement that assists the insolvent insurer in paying claims attributable to covered events.

Such private reinsurers, banks, or other financial institutions shall be reimbursed or otherwise paid prior to payment to the Florida Insurance Guaranty Association, notwithstanding any law to the contrary. The guaranty association shall pay all claims up to the maximum amount permitted by chapter 631; thereafter, any remaining moneys shall be paid pro rata to claims not fully satisfied. This paragraph does not apply to a joint underwriting association, risk apportionment plan, or other entity created under § 627.351.

(5) Reimbursement premiums.—

- (a) Each reimbursement contract shall require the insurer to annually pay to the fund an actuarially indicated premium for the reimbursement.
- (b) The State Board of Administration shall select an independent consultant to develop a formula for determining the actuarially indicated premium to be paid to the fund. The formula shall specify, for each ZIP code or other limited geographical area, the amount of premium to be paid by an insurer for each \$1,000 of insured value under covered policies in that ZIP code or other area. In establishing premiums, the board shall consider the coverage elected under

paragraph (4)(b) and any factors that tend to enhance the actuarial sophistication of ratemaking for the fund, including deductibles, type of construction, type of coverage provided, relative concentration of risks, and other such factors deemed by the board to be appropriate. The formula may provide for a procedure to determine the premiums to be paid by new insurers that begin writing covered policies after the beginning of a contract year, taking into consideration when the insurer starts writing covered policies, the potential exposure of the insurer, the potential exposure of the fund, the administrative costs to the insurer and to the fund, and any other factors deemed appropriate by the board. The formula must be approved by unanimous vote of the board. The board may, at any time, revise the formula pursuant to the procedure provided in this paragraph.

- (c) No later than September 1 of each year, each insurer shall notify the board of its insured values under covered policies by ZIP code, as of June 30 of that year. On the basis of these reports, the board shall calculate the premium due from the insurer, based on the formula adopted under paragraph (b). The insurer shall pay the required annual premium pursuant to a periodic payment plan specified in the contract. The board shall provide for payment of reimbursement premium in periodic installments and for the adjustment of provisional premium installments collected prior to submission of the exposure report to reflect data in the exposure report. The board shall collect interest on late reimbursement premium payments consistent with the assumptions made in developing the premium formula in accordance with paragraph (b).
 - (d) All premiums paid to the fund under reimbursement contracts shall be treated as premium for approved reinsurance for all accounting and regulatory purposes.
- (6) Revenue bonds.—
- (a) General provisions.—
 - 1. Upon the occurrence of a hurricane and a determination that the moneys in the fund are or will be insufficient to pay reimbursement at the levels promised in the reimbursement contracts, the board may take the necessary steps under paragraph (b) or paragraph (c) for the issuance of revenue bonds for the benefit of the fund. The proceeds of such revenue bonds may be used to make reimbursement payments under reimbursement contracts; to refinance or replace previously existing borrowings or financial arrangements; to pay interest on bonds; to fund reserves for the bonds; to pay expenses incident to the issuance or sale of any bond issued under this section, including costs of validating, printing, and delivering the bonds, costs of printing the official statement, costs of publishing notices of sale of the bonds, and related administrative expenses; or for such other purposes related to the financial obligations of the fund as the board may determine. The term of the bonds may not exceed 30 years. The board may pledge or authorize the corporation to pledge all or a portion of all revenues under subsection (5) and under subparagraph 3. to secure such revenue bonds and the board may execute such agreements between the board and the issuer of any revenue bonds

and providers of other financing arrangements under paragraph (7)(b) as the board deems necessary to evidence, secure, preserve, and protect such pledge. If reimbursement premiums received under subsection (5) or earnings on such premiums are used to pay debt service on revenue bonds, such premiums and earnings shall be used only after the use of the moneys derived from assessments under subparagraph 3. The funds, credit, property, or taxing power of the state or political subdivisions of the state shall not be pledged for the payment of such bonds. The board may also enter into agreements under paragraph (b) or paragraph (c) for the purpose of issuing revenue bonds in the absence of a hurricane upon a determination that such action would maximize the ability of the fund to meet future obligations.

2. The Legislature finds and declares that the issuance of bonds under this subsection is for the public purpose of paying the proceeds of the bonds to insurers, thereby enabling insurers to pay the claims of policyholders to assure that policyholders are able to pay the cost of construction, reconstruction, repair, restoration, and other costs associated with damage to property of policyholders of covered policies after the occurrence of a hurricane. Revenue bonds may not be issued under this subsection until validated under chapter 75. The validation of at least the first obligations incurred pursuant to this subsection shall be appealed to the Supreme Court, to be handled on an expedited basis.
3. If the board determines that the amount of revenue produced under subsection (5) is insufficient to fund the obligations, costs, and expenses of the fund and the corporation, including repayment of revenue bonds, the board shall direct the Department of Insurance to levy an emergency assessment on each insurer writing property and casualty business in this state. Pursuant to the emergency assessment, each such insurer shall pay to the corporation by July 1 of each year an amount set by the board not exceeding 2 percent of its gross direct written premium for the prior year from all property and casualty business in this state except for workers' compensation, except that, if the Governor has declared a state of emergency under § 252.36 due to the occurrence of a covered event, the amount of the assessment for the contract year may be increased to an amount not exceeding 4 percent of such premium. Any assessment authority not used for the contract year may be used for a subsequent contract year. If, for a subsequent contract year, the board determines that the amount of revenue produced under subsection (5) is insufficient to fund the obligations, costs, and expenses of the fund and the corporation, including repayment of revenue bonds for that contract year, the board shall direct the Department of Insurance to levy an emergency assessment up to an amount not exceeding the amount of unused assessment authority from a previous contract year or years, plus an additional 2 percent if the Governor has declared a state of emergency under § 252.36 due to the occurrence of a covered event. Any assessment authority not used for the contract year may be used for a subsequent contract year. As used in this subsection, the term "property and casualty business" includes all lines of

business identified on Form 2, Exhibit of Premiums and Losses, in the annual statement required by § 624.424 and any rules adopted under such section, except for those lines identified as accident and health insurance. The annual assessments under this subparagraph shall continue as long as the revenue bonds issued with respect to which the assessment was imposed are outstanding, unless adequate provision has been made for the payment of such bonds pursuant to the documents authorizing issuance of the bonds. An insurer shall not at any time be subject to aggregate annual assessments under this subparagraph of more than 2 percent of premium, except that in the case of a declared emergency, an insurer shall not at any time be subject to aggregate annual assessments under this subparagraph of more than 6 percent of premium, provided, no more than 4 percent may be assessed for any one contract year. Any rate filing or portion of a rate filing reflecting a rate change attributable entirely to the assessment levied under this subparagraph shall be deemed approved when made, subject to the authority of the Department of Insurance to require actuarial justification as to the adequacy of any rate at any time. If the rate filing reflects only a rate change attributable to the assessment under this paragraph, the filing may consist of a certification so stating. The assessments otherwise payable to the corporation pursuant to this subparagraph shall be paid instead to the fund unless and until the Department of Insurance has received from the corporation and the fund a notice, which shall be conclusive and upon which the Department of Insurance may rely without further inquiry, that the corporation has issued bonds and the fund has no agreements in effect with local governments pursuant to paragraph (b). On or after the date of such notice and until such date as the corporation has no bonds outstanding, the fund shall have no right, title, or interest in or to the assessments, except as provided in the fund's agreements with the corporation.

(b) Revenue bond issuance through counties or municipalities.—

1. If the board elects to enter into agreements with local governments for the issuance of revenue bonds for the benefit of the fund, the board shall enter into such contracts with one or more local governments, including agreements providing for the pledge of revenues, as are necessary to effect such issuance. The governing body of a county or municipality is authorized to issue bonds as defined in § 125.013 or § 166.101 from time to time to fund an assistance program, in conjunction with the Florida Hurricane Catastrophe Fund, for the purposes set forth in this section or for the purpose of paying the costs of construction, reconstruction, repair, restoration, and other costs associated with damage to properties of policyholders of covered policies due to the occurrence of a hurricane by assuring that policyholders located in this state are able to recover claims under property insurance policies after a covered event.
2. In order to avoid needless and indiscriminate proliferation, duplication, and fragmentation of such assistance programs, any local government may provide for the payment of fund reimbursements, regardless of whether or

not the losses for which reimbursement is made occurred within or outside of the territorial jurisdiction of the local government.

3. The state hereby covenants with holders of bonds issued under this paragraph that the state will not repeal or abrogate the power of the board to direct the Department of Insurance to levy the assessments and to collect the proceeds of the revenues pledged to the payment of such bonds as long as any such bonds remain outstanding unless adequate provision has been made for the payment of such bonds pursuant to the documents authorizing the issuance of such bonds.
4. There shall be no liability on the part of, and no cause of action shall arise against any members or employees of the governing body of a local government for any actions taken by them in the performance of their duties under this paragraph.

(c) Florida Hurricane Catastrophe Fund Finance Corporation.—

1. In addition to the findings and declarations in subsection (1), the Legislature also finds and declares that:
 - a. The public benefits corporation created under this paragraph will provide a mechanism necessary for the cost-effective and efficient issuance of bonds. This mechanism will eliminate unnecessary costs in the bond issuance process, thereby increasing the amounts available to pay reimbursement for losses to property sustained as a result of hurricane damage.
 - b. The purpose of such bonds is to fund reimbursements through the Florida Hurricane Catastrophe Fund to pay for the costs of construction, reconstruction, repair, restoration, and other costs associated with damage to properties of policyholders of covered policies due to the occurrence of a hurricane.
 - c. The efficacy of the financing mechanism will be enhanced by the corporation's ownership of the assessments, by the insulation of the assessments from possible bankruptcy proceedings, and by covenants of the state with the corporation's bondholders.
2.
 - a. There is created a public benefits corporation, which is an instrumentality of the state, to be known as the Florida Hurricane Catastrophe Fund Finance Corporation.
 - b. The corporation shall operate under a five-member board of directors consisting of the Governor or a designee, the Comptroller or a designee, the Treasurer or a designee, the director of the Division of Bond Finance of the State Board of Administration, and the chief operating officer of the Florida Hurricane Catastrophe Fund.

- c. The corporation has all of the powers of corporations under chapter 607 and under chapter 617, subject only to the provisions of this subsection.
 - d. The corporation may issue bonds and engage in such other financial transactions as are necessary to provide sufficient funds to achieve the purposes of this section.
 - e. The corporation may invest in any of the investments authorized under § 215.47.
 - f. There shall be no liability on the part of, and no cause of action shall arise against, any board members or employees of the corporation for any actions taken by them in the performance of their duties under this paragraph.
- 3.
 - a. In actions under chapter 75 to validate any bonds issued by the corporation, the notice required by § 75.06 shall be published only in Leon County and in two newspapers of general circulation in the state, and the complaint and order of the court shall be served only on the State Attorney of the Second Judicial Circuit.
 - b. The state hereby covenants with holders of bonds of the corporation that the state will not repeal or abrogate the power of the board to direct the Department of Insurance to levy the assessments and to collect the proceeds of the revenues pledged to the payment of such bonds as long as any such bonds remain outstanding unless adequate provision has been made for the payment of such bonds pursuant to the documents authorizing the issuance of such bonds.
- 4. The bonds of the corporation are not a debt of the state or of any political subdivision, and neither the state nor any political subdivision is liable on such bonds. The corporation does not have the power to pledge the credit, the revenues, or the taxing power of the state or of any political subdivision. The credit, revenues, or taxing power of the state or of any political subdivision shall not be deemed to be pledged to the payment of any bonds of the corporation.
- 5.
 - a. The property, revenues, and other assets of the corporation; the transactions and operations of the corporation and the income from such transactions and operations; and all bonds issued under this paragraph and interest on such bonds are exempt from taxation by the state and any political subdivision, including the intangibles tax under chapter 199 and the income tax under chapter 220. This exemption does not apply to any tax imposed by chapter 220 on interest, income, or profits on debt obligations owned by corporations other than the Florida Hurricane Catastrophe Fund Finance Corporation.

b. All bonds of the corporation shall be and constitute legal investments without limitation for all public bodies of this state; for all banks, trust companies, savings banks, savings associations, savings and loan associations, and investment companies; for all administrators, executors, trustees, and other fiduciaries; for all insurance companies and associations and other persons carrying on an insurance business; and for all other persons who are now or may hereafter be authorized to invest in bonds or other obligations of the state and shall be and constitute eligible securities to be deposited as collateral for the security of any state, county, municipal, or other public funds. This sub-subparagraph shall be considered as additional and supplemental authority and shall not be limited without specific reference to this sub-subparagraph.

6. The corporation and its corporate existence shall continue until terminated by law; however, no such law shall take effect as long as the corporation has bonds outstanding unless adequate provision has been made for the payment of such bonds pursuant to the documents authorizing the issuance of such bonds. Upon termination of the existence of the corporation, all of its rights and properties in excess of its obligations shall pass to and be vested in the state.

(d) Protection of bondholders.—

1. As long as the corporation has any bonds outstanding, neither the fund nor the corporation shall have the authority to file a voluntary petition under chapter 9 of the federal bankruptcy code or such corresponding chapter or sections as may be in effect, from time to time, and neither any public officer nor any organization, entity, or other person shall authorize the fund or the corporation to be or become a debtor under chapter 9 of the federal bankruptcy code or such corresponding chapter or sections as may be in effect, from time to time, during any such period.

2. The state hereby covenants with holders of bonds of the corporation that the state will not limit or alter the denial of authority under this paragraph or the rights under this section vested in the fund or the corporation to fulfill the terms of any agreements made with such bondholders or in any way impair the rights and remedies of such bondholders as long as any such bonds remain outstanding unless adequate provision has been made for the payment of such bonds pursuant to the documents authorizing the issuance of such bonds.

3. Notwithstanding any other provision of law, any pledge of or other security interest in revenue, money, accounts, contract rights, general intangibles, or other personal property made or created by the fund or the corporation shall be valid, binding, and perfected from the time such pledge is made or other security interest attaches without any physical delivery of the collateral or further act and the lien of any such pledge or

other security interest shall be valid, binding, and perfected against all parties having claims of any kind in tort, contract, or otherwise against the fund or the corporation irrespective of whether or not such parties have notice of such claims. No instrument by which such a pledge or security interest is created nor any financing statement need be recorded or filed.

(7) Additional powers and duties.—

- (a) The board may procure reinsurance from reinsurers approved under § 624.610 for the purpose of maximizing the capacity of the fund.
- (b) In addition to borrowing under subsection (6), the board may also borrow from, or enter into other financing arrangements with, any market sources at prevailing interest rates.
- (c) Each fiscal year, the Legislature shall appropriate from the investment income of the Florida Hurricane Catastrophe Fund an amount no less than \$10 million and no more than 35 percent of the investment income from the prior fiscal year for the purpose of providing funding for local governments, state agencies, public and private educational institutions, and nonprofit organizations to support programs intended to improve hurricane preparedness, reduce potential losses in the event of a hurricane, provide research into means to reduce such losses, educate or inform the public as to means to reduce hurricane losses, assist the public in determining the appropriateness of particular upgrades to structures or in the financing of such upgrades, or protect local infrastructure from potential damage from a hurricane. Moneys shall first be available for appropriation under this paragraph in fiscal year 1997-1998. Moneys in excess of the \$10 million specified in this paragraph shall not be available for appropriation under this paragraph if the State Board of Administration finds that an appropriation of investment income from the fund would jeopardize the actuarial soundness of the fund.
- (d) The board may allow insurers to comply with reporting requirements and reporting format requirements by using alternative methods of reporting if the proper administration of the fund is not thereby impaired and if the alternative methods produce data which is consistent with the purposes of this section.
- (e) In order to assure the equitable operation of the fund, the board may impose a reasonable fee on an insurer to recover costs involved in reprocessing inaccurate, incomplete, or untimely exposure data submitted by the insurer.

(8) Advisory council.—The State Board of Administration shall appoint a nine-member advisory council that consists of an actuary, a meteorologist, an engineer, a representative of insurers, a representative of insurance agents, a representative of reinsurers, and three consumers who shall also be representatives of other affected professions and industries, to provide the board with information and advice in connection with its duties under this section. Members of the advisory council shall serve at the pleasure of the board and are eligible for per diem and travel expenses under § 112.061.

- (9) Applicability of § 19, art. III of the state constitution.—The Legislature finds that the Florida Hurricane Catastrophe Fund created by this section is a trust fund established for bond covenants, indentures, or resolutions within the meaning of § 19(f)(3), Art. III of the State Constitution.
- (10) Violations.—Any violation of this section or of rules adopted under this section constitutes a violation of the insurance code.
- (11) Legal proceedings.—The board is authorized to take any action necessary to enforce the rules, and the provisions and requirements of the reimbursement contract, required by and adopted pursuant to this section.
- (12) Federal or multistate catastrophic funds.—Upon the creation of a federal or multistate catastrophic insurance or reinsurance program intended to serve purposes similar to the purposes of the fund created by this section, the State Board of Administration shall promptly make recommendations to the Legislature for coordination with the federal or multistate program, for termination of the fund, or for such other actions as the board finds appropriate in the circumstances.
- (13) Reversion of fund assets upon termination.—The fund and the duties of the board under this section may be terminated only by law. Upon termination of the fund, all assets of the fund shall revert to the General Revenue Fund.
- (14) Severability.—If any provision of this section or its application to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of the section which can be given effect without the invalid provision or application, and to this end the provisions of this section are declared severable.
- (15) As used in this section and §§ 627.311 and 627.351, the term “collateral protection insurance” means commercial property insurance of which a creditor is the primary beneficiary and policyholder and which protects or covers an interest of the creditor arising out of a credit transaction secured by real or personal property. Initiation of such coverage is triggered by the mortgagor’s failure to maintain insurance coverage as required by the mortgage or other lending document. Collateral protection insurance is not residential coverage.

NOTE: Also see Appendix 6 for Law on Florida Commission on Hurricane Loss Projection Methodology.

Hawaii Statutes—Insurance Related Laws
Division 2.—Business
TITLE 24—INSURANCE
Chapter 431P—HAWAII HURRICANE RELIEF FUND
Part I. General Provisions

431P-1 Definitions

As used in this chapter, unless the context otherwise requires:

“Board” means the board of directors of the Hawaii hurricane relief fund.

“Commissioner” means the insurance commissioner as defined in section 431:2-102.

“Companion policy” means a policy of property insurance issued by a servicing facility in conjunction with a fund policy of hurricane property insurance that provides, at a minimum, coverage equivalent to a standard fire policy for the peril of fire and windstorm and, after considering all exclusions and endorsements, that provides insurance for wind related losses or damage created by a weather system that has not resulted in the declaration and definition of a hurricane watch or warning.

“Covered event” means each hurricane that directly causes windstorm damage in the State.

“Deductible” or “mandatory deductible” means the amount of loss assumed by the policyholder that is not included in the coverages provided by the fund.

“Department” means the department of commerce and consumer affairs.

“Director” means the director of finance.

“Eligible property” means:

- (1) Real property of one to four units used for residential purposes and which is in insurable condition, and which may include tangible personal property located therein or thereon and other structures at the insured location, as provided in the plan of operation or any manual of rules and rates adopted under the plan of operation;
- (2) Real property used for business, commercial, or industrial purposes which is in insurable condition, and which may include tangible personal property located therein or thereon, as provided in the plan of operation or any manual of rules and rates adopted under the plan of operation;
- (3) Tangible personal property owned by an occupant of and located in or on real property of the types described in paragraph (1), as provided in the plan of operation or any manual of rules and rates adopted under the plan of operation; provided that the owner of the tangible personal property does not own the real property in or on which the tangible personal property is located; and

- (4) Tangible personal property owned by an occupant of and located in or on real property of the types described in paragraph (2) as provided in the plan of operation or any manual of rules and rates adopted under the plan of operation; provided that the owner of the tangible personal property does not own the real property in or on which the tangible personal property is located.

“Fund” means the Hawaii hurricane relief fund established by this chapter.

“Hurricane” means a storm that has been declared and defined by the Central Pacific Hurricane Center of the National Weather Service to be a hurricane.

“Licensed property and casualty insurer” means:

- (1) Any insurer licensed to transact any one or more classes of insurance authorized in section 431:3-204 where premiums written within such authority are required to be reported in the “Exhibit of Premiums and Losses” for this State in the National Association of Insurance Commissioners fire and casualty annual statement convention blank that is required to be filed with the commissioner under section 431:3-302; and
- (2) The Hawaii Property Insurance Association created in article 21 of chapter 431.

“Mortgage” means every transfer of an interest in real property, except fixtures, made as security for the performance of another act or subject to defeasance upon the payment of an obligation, whether the transfer is made in trust or otherwise.

“Plan of operation” means the plan for providing hurricane property insurance as adopted by the board of directors of the Hawaii hurricane relief fund, and any amendments thereto, under section 431P-7.

“Policy of hurricane property insurance” means a policy or endorsement of insurance issued by the fund insuring only against damage or loss to eligible property caused by a covered event in excess of the deductible and up to:

- (1) \$750,000 per risk on real property of one to four units used for residential purposes and the personal property located therein or thereon and other structures at the insured location, subject to the limits defined by the plan of operation or any manual of rules and rates adopted under the plan of operation; and
- (2) \$500,000 per risk on real and personal property used for business, commercial, or industrial purposes, subject to the limits defined by the plan of operation or any manual of rules and rates adopted under the plan of operation; provided that the board may designate an association of property owners or cooperative housing corporation to be a commercial risk; provided that this policy or endorsement shall not include coverage for business interruption and other similar coverages.

“Policy of property insurance” means a policy providing “property insurance” as defined in section 431:1-206. For purposes of this chapter, it includes “basic property insurance” as provided under article 21 of chapter 431.

“Property insurance” means policies, riders, or endorsements of insurance that provide indemnity, in whole or in part, for the loss, destruction, or damage of eligible property.

“Servicing facility” means any insurer engaged in writing direct property insurance in this State and licensed in this State, and any other party authorized to act in like capacity on behalf of the fund.

“Year immediately preceding the year of the covered event” means the twelve-month period ending on the last day of the calendar month immediately preceding the month in which a covered event occurs.

431P-2 Hurricane relief fund

There shall be a Hawaii hurricane relief fund to be placed within the department of commerce and consumer affairs for administrative purposes. The fund shall be a public body and a body corporate and politic.

431P-3 Board of directors of fund

- (a) The board of directors of the fund shall consist of the insurance commissioner as an ex officio voting member and six members appointed by the governor in accordance with section 26-34. The board shall be the policy making body of the fund. As such, the board shall be responsible for establishing policies for the administration and operation of the fund and the performance of other duties and functions assigned to the fund.
- (b) Two members shall, by and with the advice and consent of the senate, be appointed by the governor for a term of four years; provided that of the initial appointees, one shall be appointed for a two-year term. A vacancy on the authority of a seat subject to this subsection shall be filled in accordance with Article V, section 6, of the Constitution of the State of Hawaii.
- (c) Two members shall, by and with the advice and consent of the senate, be appointed by the governor from a list of nominations submitted by the president of the senate. The members appointed from a list of nominations of the president of the senate shall serve for a term of four years; provided that of the initial appointees, one shall be appointed for a two-year term.
- (d) Two members shall, by and with the advice and consent of the senate, be appointed by the governor from a list of nominations submitted by the speaker of the House of Representatives. The members appointed from a list of nominations of the speaker of the House of Representatives shall serve for a term of four years; provided that of the initial appointees, one shall be appointed for a two-year term.
- (e) The governor shall select a chairperson and vice-chairperson from among the members.

- (f) The board shall meet as often as necessary to formulate and implement strategies and plans of operations in furtherance of this chapter. Upon its appointment, the board shall adopt an interim plan of operation within ninety days.
- (g) The appointed directors shall receive no compensation for services, but shall be entitled to reimbursement of necessary expenses, including travel expenses, incurred in the performance of their duties.
- (h) The board may appoint, not subject to chapters 76 and 77, an executive director of the fund whose salary shall be set by the board. The board may employ, not subject to chapters 76 and 77, technical experts and officers, agents, and employees, permanent or temporary, as required. The board may also contract with persons, not subject to chapters 76, 77, and 78 when in the determination of the board, the services to be performed are unique and essential to the execution of the functions of the fund.

431P-4 Powers and duties of fund regarding insurance availability

- (a) The fund shall be responsible for monitoring the availability of property insurance, including insurance for covered events, in this State. If at any time the board determines, in its sole discretion, that the private insurance market is not making such insurance reasonably available to consumers in this State, the fund may offer policies of hurricane property insurance for sale in accordance with this chapter.
- (b) Nothing in subsection (a) shall prohibit the board from exercising its powers to develop plans and procedures for the operation and management of the fund without regard to the determination of the board as to the availability of insurance in the private market.

431P-5 General and specific powers of fund

- (a) The Hawaii hurricane relief fund shall have the following general powers:
 - (1) To sue and be sued;
 - (2) To make and alter policies for its organization and internal administration;
 - (3) To adopt rules in accordance with chapter 91 to effectuate the purposes of this chapter;
 - (4) To borrow monies, including but not limited to monies from state or federal sources and to issue notes or other obligations of the fund for the purposes of providing funds for any of its purposes as authorized by the legislature from time to time;
 - (5) To pledge, assign, or grant a security interest in all or any part of the moneys, rents, charges, assessments, or other revenue and any proceeds thereof derived by the fund; provided that any pledge, assignment, or grant

of security interest shall constitute a lien and security interest on such money, rents, charges, assessments, or other revenue, and any proceeds thereof to the extent and with the priority set forth in the document establishing the pledge, assignment, or security interest, without the necessity for physical delivery, recording, or further act; and provided further that in effectuating any pledge, assignment, or grant of security interest, the fund may do either or both of the following:

- (A) Transfer possession of collateral to its secured parties; or
 - (B) Execute and cause to be filed at the bureau of conveyances of the State of Hawaii, Uniform Commercial Code financing statements for the purpose of providing notice to third parties of a pledge, assignment, or grant security interest; provided that any failure to file a financing statement or the filing of a financing statement that contains incomplete or inaccurate information shall not affect the perfected lien and security interest of the pledge, assignment, or grant of security interest; and
- (6) Enter into contracts as necessary to effectuate the purposes of this chapter.
- (b) In addition to the general powers under subsection (a), the fund shall have the specific power to:
- (1) Adopt and administer a plan of operation in accordance with section 431P-7, and a manual of rules and rates to provide persons having an insurable interest in eligible property with insurance coverage provided by the fund;
 - (2) Authorize the provision of hurricane coverage by the fund for real property and tangible personal property located in or on real property and establish limits of liability for specific coverages within the range of authorized coverage;
 - (3) Adopt actuarially sound rates based on reasonable assumptions relative to expectations of hurricane frequency and severity for all coverage provided under policies or endorsements issued by the fund. Rates adopted shall be subject to approval by the commissioner pursuant to article 14 of chapter 431. Rates adopted shall provide for classification of risks and shall include past and prospective losses and expense experience in this State;
 - (4) Adopt procedures, guidelines, and surcharges applicable to policies of hurricane property insurance issued in connection with an underlying property policy issued by an unauthorized insurer;
 - (5) Adopt any form of insurance policy necessary for providing policies of hurricane property insurance by the fund, with the approval of the commissioner;

- (6) Issue policies of hurricane property insurance and pay claims for coverage over the mandatory deductible or other deductible provided in the plan of operation or any manual of rules and rates adopted under the plan of operation;
- (7) Require every licensed property and casualty insurer transacting direct property insurance business in this State to act as a servicing facility, and by contract with that insurer authorize the insurer to inspect eligible properties, service policies and policyholders of hurricane property insurance, provide claim services, and perform any other duties as authorized by the fund for applicants to the fund and those insured by it;
- (8)
 - (A) Assess all licensed property and casualty insurers the amounts which, together with the other assets of the fund, are sufficient to meet all necessary obligations of the fund. The assessment shall be made on the insurer's gross direct written premiums for property and casualty insurance in this State for the preceding calendar year. The rate of assessment in a year in which a covered event has not occurred shall be 3.75 percent and shall not include the insurer's gross direct written premiums for motor vehicle insurance in this State; provided that following a covered event, the rate of assessment may be increased to an amount not to exceed five percent and may include the insurer's gross direct written premiums for motor vehicle insurance in this State. This increase shall remain in effect until such time as all claims and other obligations, including but not limited to bonds and notes, arising out of a covered event shall have been fully discharged. An insurer authorized to provide comparable coverage under section 431P-10(b) and which is providing hurricane property insurance in the State shall be assessed an amount that excludes gross direct written premiums for property insurance in this State. The assessment for a year in which a covered event has not occurred shall be collected quarterly during each calendar year;
 - (B) In the event of a loss from a covered event the fund, in addition to the assessment in subparagraph (A), shall assess those insurers which acted as servicing facilities during the twelve months ending at the start of the month preceding the month in which the covered event occurs. The total assessment shall be a fixed percentage of the total coverage provided by the fund under its policies of hurricane property insurance during the month preceding the month in which the covered event occurs. The percentage to be used in calculating the total assessment shall be as follows:
 - (i) For calendar year 1998, a percentage as fixed by the board in the plan of operation, but in no event shall the total assessment exceed \$500,000,000;
 - (ii) For calendar year 1999, 1.125 percent;

- (iii) For calendar year 2000, 1.25 percent; and
- (iv) For calendar year 2001, and each calendar year thereafter, 1.5 percent.

A separate total assessment shall be made for each covered event. The total assessment shall be allocated to each servicing facility based on the proportion of the total amount of the fund's gross direct written premiums for policies of hurricane property insurance serviced by each servicing facility to the total amount of the fund's gross direct written premiums for policies of hurricane property insurance, in each case, during the twelve months ending at the start of the month preceding the month in which the covered event occurs. Assessments made under this subparagraph and those under subparagraph (A) in a year in which a covered event has occurred are due from each insurer based on assessment procedures established by the fund to meet its obligations to policyholders in a timely manner; and

- (C) The fund may exempt or defer, in whole or in part, the assessment of any insurer if the assessment would cause the insurer's financial statement to reflect amounts of capital or surplus less than the minimum amounts required for a certificate of authority in this State;
- (9) Develop a program of incentives to encourage insurers to provide policies of hurricane property insurance in the event the commissioner authorizes the provision of comparable insurance pursuant to section 431P-10(b) which may include but are not limited to exemption of the exemption of the insurer's gross direct written premium for property insurance from the assessment pursuant to paragraph (8)(A);
 - (10) Develop a credit based on the difference between premiums written in 1993 and the premiums written in 1992 by each property insurer against the assessment for gross direct written premiums written in 1993;
 - (11) Develop procedures regarding policies written by unauthorized insurers comparable to the assessments, surcharges, and other contributions made by insurers authorized to do business in this State;
 - (12) Accumulate reserves or funds, including the investment income thereon, to be used for paying expenses, making or repaying loans or other obligations of the fund, providing loss mitigation incentives, and paying valid claims for covered events insured by the fund;
 - (13) Collect and maintain statistical and other data as may be required by the commissioner;

- (14) Exempt mortgage transactions from payments of the special mortgage recording fee and provide for maximum limits on or uniform reduction of the special mortgage recording fee, pursuant to rules adopted by the board;
- (15) Impose fines for each incident of nonpayment of amounts due to the fund under this chapter; provided that the fines shall not exceed twenty-five percent of the amount then due; and
- (16) Create loss mitigation incentives, including but not limited to premium credits, premium rebates, loans, or cash payments;
- (17) Enter into claims financing transactions, including but not limited to reinsurance transactions, debt transactions, and other transactions incorporating elements of reinsurance, insurance, debt or equity;
- (18) Establish business and corporate entities or organizations pursuant to the purposes of this chapter; and
- (19) Perform any and all acts reasonably necessary to carry out the purposes of this chapter.

431P-5.5 Rate reductions for hurricane property insurance policies; claims settlement; replenishment of account

NEW AMENDMENTS R—ACT 76 HB 2487

- (a) Upon written confirmation from the insurance commissioner that the director of finance has secured \$500,000,000, in the aggregate, in the form of:
 - (1) Commitments from either the federal government or an agency of the federal government or a financial institution;
 - (2) Revenue bonds; or
 - (3) A combination of the commitments or bonds;

the Hawaii hurricane relief fund shall:

- (1) Control or freeze rates; and
 - (2) Begin accumulating premiums from policies of hurricane property insurance, the special mortgage recording fee, the 3.75 per cent annual assessment on insurance companies' property and casualty premiums, and the interest thereon, net of any required reinsurance payments, operating expenses and funds necessary for the development of a comprehensive loss reduction plan.
- (b) When the balance of the net moneys accumulated totals \$500,000,000, the Hawaii hurricane relief fund shall notify the insurance commissioner of that fact. The

insurance commissioner, in turn, shall order, following the receipt of the notice, a reduction in the rates for policies of hurricane property insurance.

- (c) In the event of a loss from a covered event, the net moneys accumulated shall be used to reduce the commitments and bonds described under subsection (a). The commitments, plus bonds, plus the net moneys accumulated shall be used to settle claims in the event of a covered event in an amount not exceeding \$500,000,000 in the aggregate, per covered event. The net accumulated moneys, commitments, and bonds shall be used only in the event losses from a covered event exceed the assessment pursuant to section 431P-5(b)(8)(B).
- (d) In the event the balance of the net accumulated moneys falls below \$400,000,000, the Hawaii hurricane relief fund shall establish rates, subject to the approval of the insurance commissioner, necessary to replenish the account balance to \$500,000,000. The director of finance shall arrange for additional commitments whenever the account balance falls below \$400,000,000.
- (e) The Hawaii hurricane relief fund shall be exempt from paying all taxes and fees levied by the State on other insurers.

431P-6 Advisory committee

To assist it in implementing this chapter the fund may appoint an advisory committee consisting of:

- (1) Not less than one individual who is employed or trained as a meteorologist and possesses knowledge of the history, trends, and nature of windstorms in the Pacific Ocean;
- (2) Not less than one individual who is a member of the American academy of actuaries; and
- (3) Not less than one individual who is a structural engineer licensed to practice in the State and is knowledgeable about local community building codes.

The fund may establish additional advisory committees as it may deem necessary in furtherance of this chapter.

431P-7 Plan of operation; manual of rules and rates

- (a) The fund shall adopt a plan of operation and a manual of rules and rates necessary or suitable to ensure both the solvency and the reasonable and equitable administration of the fund. The adoption of or amendments to the plan of operation and manual of rules and rates shall not be subject to chapter 91, except that the policy forms for policies of hurricane property insurance shall be adopted pursuant to chapter 91.
- (b) If the fund fails to adopt a plan of operation, or the fund fails to adopt amendments to the plan of operation, the commissioner shall adopt a plan of operation or make amendments necessary to carry out the purposes of this chapter. Any plan of operation, or amendment, adopted by rule of the commissioner, shall continue in full force and effect until the rule is superseded

by a plan of operation, or amendment, adopted by a majority vote of all members of the fund's board, and approved by the commissioner.

- (c) The plan of operation shall:
- (1) Establish procedures for performance of all powers and duties of the fund;
 - (2) Establish procedures for providing notice to all persons with interests insurable by the fund in the State of the type of insurance available from the fund in the event the fund offers insurance;
 - (3) Provide for and adopt all necessary forms, including insurance policies to be used by and on behalf of the fund, for use by the fund and servicing facilities;
 - (4) Adopt actuarially sound rates, based on reasonable assumptions relative to expectations of hurricane frequency and severity, to be charged for insurance provided by the fund, in accordance with article 14 of chapter 431;
 - (5) Publish manuals of rules, rates, and rating and classification plans, which shall address mandatory deductibles, limits of coverage, and the classification of risks and rate modifications based on the exposure of insureds;
 - (6) Establish procedures for receiving and servicing applications to the fund;
 - (7) Establish procedures for processing and maintaining records of the fund relating to its financial transactions, its agents, its employees, its operations, and all transactions with any servicing facility;
 - (8) Establish procedures for the collection and remittance of the premiums and return of unearned premiums where applicable;
 - (9) Establish procedures for the payment of valid claims;
 - (10) Establish procedures for prorating available funds pursuant to section 431P-15;
 - (11) Establish procedures for obtaining reinsurance;
 - (12) Establish procedures to borrow funds; and
 - (13) Develop a plan for the investment of moneys held by the fund subject to the limitations in article 6 of chapter 431.

431P-8 Annual financial report

- (a) The fund shall submit to the commissioner each year, not later than one hundred twenty days after the end of the fund's fiscal year, a financial report in a form approved by the commissioner.
- (b) The commissioner may require other reports concerning risks insured by the fund as the commissioner deems appropriate.

431P-9 Examination by commissioner

- (a) For the purpose of ascertaining the fund's condition or compliance with this chapter, the commissioner shall examine the accounts, records, documents, and transactions of the fund at least once every three years commencing at the time the fund starts issuing policies of hurricane property insurance or more often if the commissioner deems advisable. The fund shall pay all reasonable and actually incurred expenses of the examination in accordance with section 431:2-306(b); provided that a detailed estimate of the expenses to be incurred shall be approved by the board prior to the examination. In the event the actual expenses incurred are in excess of ten per cent of the estimate, the commissioner shall communicate in writing to the board the reason for the excess expenses.
- (b) The commissioner may exercise all of the commissioner's powers provided by law in the supervision and regulation of the fund, any servicing facility, and any other person or entity subject to the jurisdiction of the commissioner.

431P-10 Policies issued by fund: coverage

NEW AMENDMENTS R—ACT 153 HB 2314

- (a) Policies issued by the fund shall provide a maximum aggregate coverage of up to \$750,000 per risk on real property of one to four units used for residential purposes and \$500,000 per risk for real property used for business, commercial, or industrial purposes and shall provide for a mandatory deductible. The deductible amount for residential personal property policies shall be the greater of \$1,000 or one per cent of the insured value or the greater of \$2,000 or two per cent of the insured value; provided that the board may establish higher deductible limits. The deductible amount for commercial property policies shall be the greater of \$5,000 or five per cent of the insured value or an amount equivalent to the all other perils deductibles of the companion policy; provided that the board may establish higher deductible limits.
- (b) Upon the authorization of the commissioner, insurers may provide standard extended coverage endorsements, including coverage of hurricane risks, subject to the fund's program for incentives and credits; provided that in the absence of such authorization no other policy of property insurance or endorsement to a policy of property insurance on eligible property located in this State shall be issued to provide insurance for damages or losses caused by a covered event if such coverage is offered by the fund.

431P-11 Underlying policies of property insurance

- (a) Any eligible property for which coverage is sought from the fund shall already be insured by an underlying policy of property insurance as defined in section 431:1-206 or article 21 of chapter 431 but excluding the covered event. Every underlying policy of property insurance provided by an unauthorized insurer shall be subject to the procedures, guidelines and surcharges as provided in the plan of operation.
- (b) The fund shall not deny any application for hurricane property insurance on any property eligible under subsection (a).
- (c) The fund shall renew any policy provided payment of the applicable renewal premium is received by the fund on or before the expiration date stated in the policy. The fund may nonrenew a policy on the grounds the property is no longer covered by a companion policy. The policy issued by the fund shall not provide coverage in the event that there is no companion policy at the time of loss. In such case, any unearned premiums shall be returned to the policyholder on a pro rata basis. Limits of coverage under a policy issued by the fund shall not exceed the limits of comparable coverages for fire and windstorm under the companion policy. The statute of limitations for actions under a policy of hurricane property insurance shall be one year.

431P-12 Comprehensive loss reduction plan

The fund shall develop a comprehensive loss reduction plan for the hurricane peril. The plan shall include standards for new residential and commercial structures and separate standards for existing residential and commercial structures. The plan shall provide a timetable for implementation of mandatory loss mitigation measures for both new and existing structures.

431P-13 Right to appeal; judicial review

- (a) Any applicant or policyholder adversely affected by a decision of the fund shall have the right to appeal to the fund's board within thirty days after the decision. The application for an appeal shall specify how the person making the appeal was aggrieved and the grounds upon which relief is demanded. The decision of the board shall be deemed final.
- (b) Any final action, decision, or order of the board under this chapter shall be subject to judicial review by the circuit court.

431P-14 Nonliability of fund

There shall be no liability on the part of, and no cause of action of any nature shall arise against, any servicing facility or its authorized insurance agents; the fund or its agents, employees, or board; the State; the commissioner; or the commissioner's representatives for any action taken by them in the performance of their powers and duties under this chapter; provided that this section shall not be construed to prohibit any exercise of the commissioner's power pursuant to this chapter or any other law or rule adopted pursuant to law or chapters 661 and 662, any other

law to the contrary notwithstanding. Nothing in this chapter shall create an obligation, debt, claim, cause of action, claim for relief, charge, or any other liability of any kind whatsoever in favor of any person or entity without regard to whether that person or entity received any benefits under this chapter, against the State, or its officers and employees. The State and its officers and employees shall not be liable for the results of any application, denial of application, claim, loss, or other benefits provided by the fund pursuant to this chapter. Nothing in this chapter shall be construed as authorizing any claim against the State whatsoever, nor shall this chapter be construed as authorizing any claim against the fund in excess of any note, loan, liability, or other obligation incurred by the fund. Nothing in this section shall be construed to alter any obligation to pay assessments or charges authorized to be imposed or levied by the board pursuant to this chapter. The fund shall be subject to chapter 431 only as provided for in this chapter.

431P-15 Applicability of other laws; insufficiency of available funds

Notwithstanding any other provision of law to the contrary, neither the fund nor its policyholders shall be subject to the provisions of, or be eligible for, the benefits provided in sections 431:16-101 to 117 inclusive. If the total amount available at any time to the fund is insufficient to make all necessary payments, the monies available shall be prorated and the unpaid portion shall be paid as soon thereafter as monies become available.

431P-16 Hurricane reserve trust fund

- (a) The fund shall establish outside the state treasury a hurricane reserve trust fund and any accounts thereunder and any other trust fund or account necessary to carry out the purposes of this chapter. Moneys deposited in the hurricane reserve trust fund and any accounts thereunder or any other trust fund or account shall be held by the fund, as trustee, in a depository as defined in section 38-1 or according to a similar arrangement at the discretion of the board, including, but not limited to, trust or custodial accounts created for the benefit of the fund's secured parties under contractual claims financing arrangements. These moneys may be invested and reinvested in accordance with the plan of operation. Disbursements from the trust funds shall not be subject to chapter 103D and shall be made in accordance with procedures adopted by the board.
- (b) The hurricane reserve trust fund shall receive deposits of the special mortgage recording fee established by this chapter. The special mortgage recording fee shall be imposed on each mortgage and each amendment to a mortgage which, in each case, increases the principal amount of the secured debt and which is recorded in the bureau of conveyances of the State under chapter 502 or filed with the assistant registrar of the land court of the State under chapter 501.

The special mortgage recording fee shall be an amount equal to one-tenth of one percent of the stated principal amount of the debt secured by the mortgage or, in the case of an amendment or refinancing of a mortgage, an amount equal to one-tenth of one percent of the amount of the increase of the stated principal amount of the secured debt; provided that the board may establish a lower special mortgage recording fee amount pursuant to section 431P-5(b)(14). With respect to an open end revolving loan, the principal amount of the debt on which the special

mortgage recording fee is calculated shall be the maximum amount which may be outstanding under the loan at any one time. With respect to a mortgage securing a nonmonetary or inchoate obligation, the principal amount of the debt on which the special mortgage recording fee is calculated shall be the monetary amount which the mortgagee attributes to the obligation. If the debt is stated in a foreign currency, it shall be converted to U.S. dollars using an exchange rate published in a newspaper of general circulation in this State within one week prior to recordation of the mortgage or amendment of mortgage.

The special mortgage recording fee shall be in addition to any applicable fees under chapter 501 or 502. The special mortgage recording fee shall be submitted to and collected by the bureau of conveyances or the assistant registrar of the land court of the State and shall be deposited into the hurricane reserve trust fund. The special mortgage recording fee shall be submitted at the time the mortgage or amendment of mortgage is recorded together with any related forms or certifications required by the bureau of conveyances or the assistant registrar of the land court of the State.

- (c) The Hawaii hurricane relief fund shall implement the assessments of all property and casualty insurers as authorized by section 431P-5(b)(8)(A) and (B) and the proceeds from the assessments shall be deposited into the hurricane reserve trust fund or into trust or custodial accounts, created for the benefit of the fund's secured parties, that are held inside or outside the hurricane reserve trust fund.
- (d) If the Hawaii hurricane relief fund offers to issue policies of hurricane property insurance, the premiums for the policies shall be deposited into the hurricane reserve trust fund.
- (e) After each covered event, if the board shall determine that the moneys in the hurricane reserve trust fund, excluding moneys determined by the board to be needed to continue fund operations following that covered event, will be insufficient to pay claims and other obligations of the fund arising out of that covered event, the Hawaii hurricane relief fund is authorized to levy a surcharge not to exceed seven and one-half percent a year on premiums charged for all property and casualty insurance policies issued for risks insured in this State. These moneys may be deposited into the hurricane reserve trust fund or into trust or custodial accounts, created for the benefit of the fund's secured parties, that are held inside or outside the hurricane reserve trust fund. The formula to calculate the amount and period of the surcharge for each covered event and the procedures and methodology for payment of claims and other obligations of the fund shall be provided in the plan of operation and the surcharge may remain in effect until all claims and other obligations of the fund, including but not limited to claims financing transactions, bonds, notes, and other obligations arising out of that covered event, shall have been fully discharged. The amount and reason for any surcharge made pursuant to this subsection shall be separately stated on any billing sent to an insured. The surcharge shall not be considered premiums for any other purpose, including the computation of gross premium tax or the determination of agents' commissions.

- (f) Any proceeds, experience refunds, or other return funds under reinsurance shall be deposited into the hurricane reserve trust fund.
- (g) Any proceeds from loans or other moneys from the federal government, any proceeds from bonds issued pursuant to this chapter loaned by the director to the Hawaii hurricane relief fund, and other moneys as the State may make available from time to time shall be deposited into the hurricane reserve trust fund.
- (h) Moneys in the hurricane reserve trust fund or in trust or custodial accounts, created for the benefit of the fund's secured parties, shall be expended by the Hawaii hurricane relief fund or its authorized designee and used solely for the purposes of this chapter.
- (i) Solely upon dissolution of the Hawaii hurricane relief fund, the net moneys in the hurricane reserve trust fund shall revert to the state general fund, after any payments by the fund on behalf of licensed property and casualty insurers or the State that are required to be made pursuant to any federal disaster insurance program enacted to provide insurance or reinsurance for hurricane risks. In the event such moneys are paid on behalf of licensed property and casualty insurers, payment shall be made in proportion to the premiums from policies of hurricane property insurance serviced by the insurers in the twelve months prior to dissolution of the fund.

431P-17 Discontinuance by insurer

Thirteen months prior to discontinuation of writing property insurance coverage, an insurer shall file an affidavit with the commissioner stating the reasons for the discontinuation.

431P-18 Other sources of insurance

Nothing in this chapter shall prohibit or limit any person from obtaining insurance for property subject to the Hawaiian Homes Commission Act of 1920,* as amended, from any insurer other than the fund if such insurance is deemed sufficient by the commissioner.

*Now part of Hawaii Constitution.

Puerto Rico Statutes—Insurance Laws
Insurance Laws
TITLE 26—INSURANCE
Subtitle 1. Insurance Generally
Chapter 25—RESERVE FOR CATASTROPHIC INSURANCE LOSSES

T.26 § 2501 Purpose of chapter

The purpose of this Chapter is to require native insurers to establish a reserve fund for the payment of losses arising out of the catastrophes to which Puerto Rico is exposed, so that said insurers may have a growing financial capacity to offer the greatest protection to those insurers* exposed to said risks. The provisions of this Chapter also seek that native insurers shall depend less on the capacity of foreign reinsurers, since by purchasing reinsurance for these risks they would only be bound to buy it in excess of the amounts accrued in this reserve. As a result of this, the catastrophic insurance premium rates in Puerto Rico would be affected the least possible by the price demands of the world reinsurance market.

T.26 § 2502 Definitions

As used in this chapter:

- (1) Trust.—Means the trust constituted by each native insurer pursuant to section 2504 of this title.
- (2) Catastrophic insurance losses.—Means the aggregate losses due to an occurrence, as this term is defined in the insurance contract, sustained by a native insurer under a catastrophic insurance coverage or under a combination of said coverages.
- (3) Net direct premiums.—Means the gross direct premiums underwritten in Puerto Rico for catastrophic insurance less the returned premiums or unused or unabsorbed portions of deposit premiums.
- (4) Reserve for catastrophic insurance losses.—Means the reserve established pursuant to section 2503 of this title.
- (5) Catastrophic insurance.—Means the insurance for all types of real estate or personal property, and the interest thereon, against loss or damage caused by an earthquake, hurricane, fire or other catastrophes, and against losses as a result of such loss or damage.

T.26 § 2503 Establishment and computation of reserve; deductions and increases; accounting

- (1) The native insurers who are underwriting catastrophic insurance in Puerto Rico, must establish and accrue a reserve for all their policies that provide catastrophic insurance coverage. Pursuant to the provisions of section 2506 of this title, the assets that secure said reserve shall be used for the payment of catastrophic losses that are covered by said policies.

- (2) Each native insurer shall compute the reserve for catastrophic insurance losses annually applying the proportion that the Commissioner, through regulations to such effect, shall determine from time to time, to its net direct premiums for that year. In order to determine said proportion, the Commissioner shall take into account the aggregate of the reserves for catastrophic insurance losses of the native insurers, the cost and availability of reinsurance, the cost of conducting catastrophic insurance business in Puerto Rico, and any other factor that directly affects the capacity of underwriting catastrophic insurance on the part of the native insurers. The proportion of this reserve for its first year of effectiveness shall be ten (10%) percent.
- (3) If a native insurer pays catastrophic insurance losses in one year, it may deduct the total amount of that payment from the reserve for catastrophic insurance losses corresponding to that year, provided that the payment does not arise from the funds contributed for reinsurance contracts that the insurer might have.
- (4) The reserve for catastrophic insurance losses shall continue to increase until the total thereof reaches a sum that is at least four (4) times the annual average of the insurer's net direct premiums for the preceding three (3) calendar years.
- (5) If a native insurer who is part of a group of insurers as an affiliate or subsidiary, transfers on a specific date or gradually, through a transaction, all or part of the volume of the catastrophic insurance business to another native insurer who is part of said group, the acquirer shall increment its reserve, with the corresponding contribution of funds to the trust, by an amount that shall be equal to the reserve that the transferring insurer had at the time of the transaction, multiplied by the proportion of the volume of business thus transferred.
- (6) The reserve for catastrophic insurance losses shall be part of the liabilities of the native insurer, its nature shall be that of an unpaid loss, and pursuant to section 551 of this title, shall be charged against the assets of the native insurer when determining its financial condition. Therefore, said reserve shall be deductible as a loss when determining the net taxable income under sections 8004 et seq. of Title 13, known as the "Income Tax Act of 1954." The Commissioner shall determine the way that said reserve shall appear in the annual financial statement of the native insurer, ensuring that this determination does not adversely affect the parameters for evaluation used by the National Association of Insurance Commissioners and by the firms that evaluate insurers in order to classify them.

T.26 § 2504 Establishment and audit of trust

- (1) On January 31 of each year, every native insurer who has underwritten catastrophic insurance during the previous year, shall deposit an amount of money equivalent to the reserve for catastrophic insurance losses computed according to section 2503 of this title, for the preceding year, in the trust established pursuant to the provisions of this section. The deposit shall also include the funds on account of transfers made pursuant to section 2503(5) of this title.

- (2) The trust shall be previously approved by the Commissioner and shall meet the following requirements:
 - (a) The trust shall be constituted pursuant to the laws of Puerto Rico.
 - (b) The trust shall credit the income accrued on account of the investment of its assets, to its funds pursuant to the provisions of section 2505 of this title.
 - (c) Except for the provisions of sections 2506(2) and 2507 of this title, the trust shall use its funds solely and exclusively for the payment of catastrophic insurance losses and for the adjustment expenses inherent to said losses.
 - (d) The trustee in charge of managing the trust, who shall be domiciled in Puerto Rico, must also be approved by the Commissioner, and must perform the operation of the trust from this jurisdiction.
- (3) The Commissioner shall audit the operations of the trust to verify its compliance with the applicable laws.

T.26 § 2505 Investment of trust funds

- (1) The trust may invest its funds in securities authorized in sections 601–632 of this title, pursuant to the investment policy dictated by the native insurer.

However, the trust shall not invest its funds in investments whose value is affected by the occurrence of the risks covered by catastrophic insurance in Puerto Rico.
- (2) The revenues obtained from the investment of the funds shall also be a part of the reserve for catastrophic insurance losses.

T.26 § 2506 Charges against reserve

- (1) Except as provided in subsection (2) of this section and by Article 25.060 of this Code, a native insurer may charge its reserve for catastrophic insurance losses, and withdraw the assets that are equivalent to said charges from the trust, exclusively for the payment of said losses and adjustment expenses thereof, in keeping with the catastrophic insurance policies issued by said insurer, provided that the catastrophic insurance losses exceed five (5) percent of the net direct premiums underwritten by the native insurer during the calendar year preceding the year in which these losses occur. Said charges shall not exceed the amount withheld by said insurer pursuant to its reinsurance agreements.
- (2) A native insurer may charge against its reserve for catastrophic insurance losses and withdraw from the trust those assets that are equivalent to said charges for the purpose of increasing its surplus for the policyholders, as defined in section 414 of this title, provided that:
 - (a) The liabilities of the native insurer are greater than its admitted assets, both determined according to sections 501–515 of this title.

- (b) The charge against the reserve will prevent the native insurer from being submitted to a formal collection procedure, pursuant to sections 4001—4024 of this title and,
 - (c) prior authorization is obtained from the Commissioner.
- (3) If a charge against the reserve for catastrophic insurance losses is made pursuant to section 2507(3) of this title, the native insurer shall not renew the underwriting of said insurance unless it complies with section 2507(3) of this title.

T.26 § 2507 Withdrawal from market

- (1) Any native insurer who ceases to underwrite catastrophic insurance in Puerto Rico shall maintain its reserve for catastrophic insurance until six (6) months have elapsed after each and every one of its policies that provide catastrophic insurance coverage have ceased to be in effect or until all the claims that have arisen pursuant to said policies have been settled or closed, whichever of these two periods is the last.
- (2) Once the period stipulated herein has elapsed, the native insurer may eliminate said reserve from its liabilities only with the prior approval of the Commissioner, and through the payment to the Secretary of the Treasury, via the Commissioner, of a special tax of 15% on the paid-in amounts and the taxable income obtained through the investment thereof which are deposited at the moment of the approval in the trust established pursuant to section 2504 of this title, and whose taxation has been deferred pursuant to section 2503(6) of this title. The native insurer may eliminate the reserve for catastrophic insurance losses and withdraw the funds from the trust only after having obtained said approval and having paid the special tax.
- (3) If said insurer wishes to resume underwriting said insurance after the date on which a native insurer has been given the approval to eliminate the reserve for catastrophic insurance losses from its liabilities and has withdrawn or reduced the assets of the trust, pursuant to section 2506(2) of this title, it would then be bound to establish such reserve through contributions of monies to the trust in amounts equal to a proportion of the amount of the reserve that existed at the time of its elimination or reduction. Said proportion shall vary depending on the time elapsed between the date the business is resumed and the date the reserve was eliminated or reduced, as follows:

Time elapsed	Proportion
Less than one (1) year	100%
One (1) year but less than two (2)	80%
Two (2) years but less than three (3)	60%
Three (3) years but less than four (4)	40%
Four (4) years but less than five (5)	20%
Five (5) years or more	0%

T.26 § 2508 Compliance with other provisions

The contents of this Chapter with regard to the establishment of the reserve for catastrophic insurance losses shall not be understood as releasing the native insurer from complying with sections 412, 414, and 415 of this title.

T.26 § 2509 Penalties for violations

If a native insurer does not establish the reserve for catastrophic insurance losses or does not deposit the corresponding amounts of money in the trust pursuant to the requirements of sections 2503 and 2504 of this title, it shall be subject to an administrative fine amounting to the unestablished reserve or the amount of money not deposited in the trust, in addition to complying with said sections.

The second and subsequent violators of this nature shall entail the revoking of the authorization certificate of the native insurer, which shall not be reinstated for a period of at least one year after the date of revocation.

South Carolina
CHAPTER 75.
PROPERTY, CASUALTY AND TITLE INSURANCE GENERALLY
ARTICLE 5.
WIND AND HAIL INSURANCE

SECTION 38-75-310. Definitions.

In this article, unless the context otherwise requires:

- (1) “Essential property insurance” means insurance against direct loss to property as defined and limited in the wind and hail insurance policy and forms approved by the director or his designee; and after January 1, 1995, at the request of the insured, coverage for:
 - (a) actual loss of business income; or
 - (b) additional living expense; or
 - (c) fair rental value loss.

Prior to November 1, 1994, the South Carolina Wind and Hail Underwriting Association must file with the Department for approval additional policy forms defining the terms of and providing coverage for actual loss of business income, additional living expense and fair rental value loss.

- (2) “Association” means the South Carolina Wind and Hail Underwriting Association established pursuant to the provisions of this article.
- (3) “Plan of operation” means the plan of operation of the association approved or promulgated by the department pursuant to the provisions of this article.
- (4) “Insurable property” means immovable property at fixed locations in coastal areas of the State as that term is hereinafter defined, or tangible personal property located therein, which property is determined by the association to be in an insurable condition as determined by reasonable underwriting standards, but not to include farm or manufacturing property, or motor vehicles which are eligible to be licensed for highway use. Any structure commenced on or after September 15, 1971, not built in substantial compliance with the Southern Standard Building Code, including the design-wind requirements therein, is not an insurable risk under the terms of this article. Any structure commenced on or after September 15, 1971, shall comply with any construction and zoning requirements affecting the structure, promulgated or adopted pursuant to the requirements of the Federal Flood Insurance Program.
- (5) “Coastal area” means:
 - (a) all areas in Beaufort County and Colleton County which are east of the west bank of the intracoastal waterway;
 - (b) the following areas in Georgetown County: all areas between the Harrell Siau Bridge and Murrells Inlet which are east of a line paralleling and lying one

hundred fifty feet east of U.S. Highway No. 17 Business, all areas in Murrells Inlet which are east of U.S. Highway No. 17 Business, and Cedar Island, North Island, and South Island;

- (c) all areas in Horry County east of a line paralleling and lying one hundred fifty feet east of U. S. Highway No. 17 Business;
 - (d) the following areas in Charleston County: Edingsville Beach, Kiawah Island, Botany Bay Island, Folly Island, Seabrook Island, Morris Island, and all areas north of the city of Charleston which are east of the west bank of the intracoastal waterway.
- (6) “Net direct premiums” means gross direct premiums excluding reinsurance assumed and ceded written on property other than farm or manufacturing in this State for fire and extended coverage insurance, including the fire and extended coverage components of homeowners policy and commercial multiple peril package policies, less return premiums upon canceled contracts, dividends paid or credited to policyholders, or the unused or unabsorbed portion of premium deposits.
- (7) “Seacoast area” means all areas within Horry, Georgetown, Berkeley, Charleston, Dorchester, Colleton, Beaufort, and Jasper Counties.

SECTION 38-75-320. Declaration of purpose.

The purpose of this article is to provide a method whereby wind and hail insurance may be obtained more easily and equitably in the coastal areas of this State.

SECTION 38-75-330. South Carolina Wind and Hail Underwriting Association created; members.

There is created the South Carolina Wind and Hail Underwriting Association, an unincorporated association whose responsibilities, liability, and regulations are governed and defined by this article, consisting of all private insurers authorized to write and engage in writing property insurance within this State on a direct and statewide basis, but excluding insurers whose writings are limited to property wholly owned by parent, subsidiary, or allied organizations, or insurers whose writings are limited to property wholly owned by religious organizations, provided, however, as a condition of exemption from membership such insurers providing property insurance for insurable property in the coastal area as defined by this article shall also provide essential property insurance for such risks. Every such insurer must be a member of the association and must remain a member of the association so long as the association is in existence as a condition of its authority to continue to transact the business of insurance in this State.

SECTION 38-75-340. Plan of operation.

The association must operate pursuant to a plan of operation which shall set forth the number, qualifications, terms of office, and manner of election of the members of the board of directors and shall provide for the efficient, economical, fair, and nondiscriminatory administration of the association and for the prompt and efficient provision of essential property insurance in the

coastal areas of the State so as to promote orderly community development in those areas and to provide means for the adequate maintenance and improvement of the property in such areas. The plan may include the establishment of necessary facilities, management of the association, plan for the assessment of members to defray losses and expenses, reasonable underwriting standards, commissions to be paid to agents or brokers, procedures for the acceptance and cession of reinsurance, procedures for determining the amounts of insurance to be provided to specific risks, time limits and procedures for processing applications for insurance, and for any other provisions considered necessary by the director or his designee to carry out the purposes of this article.

Insurance effected pursuant to this article shall have limits of liability provided in the plan of operation. The director or his designee shall approve the limits. Excess insurance is not permitted until the maximum available under the plan has been purchased. Thereafter, excess insurance may be purchased and must be included for the purpose of meeting any coinsurance requirement.

The directors of the association may, subject to the approval of the director or his designee, amend the plan of operation at any time. The director or his designee shall review the plan of operation, including the rate structure and loss experience, not less than once in each calendar year. After review of the plan the director or his designee may amend the plan upon approval of the directors of the association.

SECTION 38-75-350. Application for coverage; issuance of policy.

- (a) Any person having an insurable interest in insurable property is entitled to apply to the association for coverage and for an inspection of the property. The application must be made on behalf of the applicant by a licensed broker or agent authorized by him. Applications must be submitted on forms prescribed by the association and approved by the director or his designee. The application shall contain a statement as to whether or not there are any unpaid premiums due from the applicant for fire insurance on the property. The term “insurable interest” as used in this section includes any lawful and substantial economic interest in the safety or preservation of property from loss, destruction, or pecuniary damage.
- (b) If the association determines that the property is insurable and that there is no unpaid premium due from the applicant for prior insurance on the property, the association upon receipt of the premium, or such portion thereof as is prescribed in the plan of operation, shall cause to be issued a policy of essential property insurance for a term of at least one year.
- (c) If the association, for any reason, denies an application and refuses to cause to be issued an insurance policy on insurable property to any applicant or takes no action on an application within the time prescribed in the plan of operation, the applicant may appeal to the director or his designee and the director or a member of his staff designated by him, after reviewing the facts, may direct the association to issue or cause to be issued an insurance policy to the applicant. In carrying out its duties pursuant to this section, the director or his designee may request, and the association shall provide, any information the director or his designee considers necessary to a determination concerning the reasons for the denial or delay of the application.

SECTION 38-75-360. Powers of Association.

The Association, pursuant to the provisions of this article and the plan of operation, and with respect to essential property insurance on insurable property, has the power on behalf of its members:

- (a) To cause to be issued policies of insurance to applicants.
- (b) To assume reinsurance from its members.
- (c) To cede reinsurance to its members and to purchase reinsurance in behalf of its members.

SECTION 38-75-370. Duties of members of Association; limitation on liability.

All members of the association shall participate in its writings, expenses, profits, and losses in the proportion that the net direct premium of the member written in this State during the preceding calendar year bears to the aggregate net direct premiums written in this State by all members of the association, as certified to the association by the department after review of annual statements, other reports, and other statistics which the department considers necessary to provide the information required and which the department is authorized to obtain from a member of the association. After certification by the department, the association may rely on the member company's annual statement in determining the company's participation in profits and losses for each year.

Each member's participation in the association must be determined annually in the same manner as the initial determination. An insurer authorized to write and engage in writing insurance, the writing of which requires the insurer to be a member of the association pursuant to Section 38-75-330, becomes a member of the association on January first immediately following the authorization. The determination of the insurer's participation in the association must be made as of the date of the membership in the same manner as for all other members of the association. Member insurers shall receive credit annually for essential property insurance voluntarily written in the coastal area and their participation in the writings of the association must be reduced accordingly. The board of directors shall authorize the method of determining the credit. In order to receive credit for essential property voluntarily written in the coastal area, each member company shall submit its requests by March thirty-first of the year for which credit is sought.

The assessment of a member insurer after hearing may be ordered deferred in whole or in part upon application by the insurer if, in the opinion of the director or his designee, payment of the assessment would render the insurer insolvent or in danger of insolvency or would otherwise leave the insurer in a condition so that further transaction of the insurer's business would be hazardous to its policyholders, creditors, members, subscribers, stockholders, or the public. If payment of an assessment against a member insurer is deferred by order of the director or his designee in whole or in part, the amount by which the assessment is deferred must be assessed against other member insurers in the same manner as provided in this section. In its order of deferral, or in necessary subsequent orders, the director or his designee shall prescribe a plan by which the assessment so deferred must be repaid to the association by the impaired insurer with interest at the six-month treasury bill rate adjusted semiannually. Profits, dividends, or other funds of the association to which the insurer is otherwise entitled must not be distributed to the impaired insurer but must be applied toward repayment of an assessment until the obligation has

been satisfied. The association shall distribute the repayments, including interest, to the other member insurers on the basis at which assessments were made.

SECTION 38-75-375. Contested assessment or interest levy by association; payment under protest; appeal; exposure to disciplinary procedures.

- (A) If a member company perceives an assessment or interest levied by the association to be unjust or illegal, the company shall pay the assessment or interest under protest in writing within thirty days of the assessment or interest charge. Upon receiving this payment, the association shall pay the money collected into the association account and designate the money as having been paid under protest.
- (B) A member company paying an assessment or interest under protest shall appeal to the association within thirty days after making the payment. If it is determined in that appeal that the assessment or interest was collected unjustly or illegally, the association shall refund the assessment or interest to the payor.
- (C) If a member company fails to pay an assessment or interest within thirty days of the assessment or interest charge by the association, the company is subject to disciplinary procedures pursuant to Section 38-5-120 or 38-5-130.

SECTION 38-75-380. Liability for inspections and statements concerning risk.

There may be no liability on the part of and no cause of action of any nature may arise against the Department or any of its staff or the Association or its agents, employees, or any participating insurer for any inspections made hereunder or any statements made in good faith by them in any reports or communications concerning risk submitted to the Association or at any administrative hearings conducted in connection therewith under the provisions of this article.

SECTION 38-75-385. Liability for acts or omissions under this article.

There is no liability on the part of, and no cause of action of any nature may arise against, any member insurer, the association's agents or employees, the board of directors, or the director, his designees, or his representatives for any act or omission in the performance of their powers and duties under this article. This section does not relieve the association of any of its liability.

SECTION 38-75-386. Essential property insurance; liability for acts and omissions.

No liability on the part of, and no cause of action of any nature may arise against, the director, the Department of Insurance or its staff, the association, any member insurer, the association's agents or employees, its Board of Directors, or the legal representatives of any of the above persons, for any act or omission made in good faith or for any statement made to, or for information provided to, any insurer regarding rates; premiums; classifications; cancellations, determinations, or nonrenewals of coverage; underwriting; inspections; or claims experience history made to facilitate the underwriting of essential property insurance for risks in the coastal area by private insurers or to facilitate competition for the underwriting of essential property insurance for risks in the coastal area among private insurers.

SECTION 38-75-390. Cession of essential property insurance to Association.

Any member of the Association who is designated to receive and write essential property insurance from or through the Association shall one hundred percent cede to the Association that essential property insurance.

SECTION 38-75-400. Rates.

The rates, rating plans, and rating rules applicable to the insurance written by the association are those approved for use of the association by the director or his designee. Surcharges may be used as approved by the director or his designee. Rates may include rules for classification of risks insured hereunder and rate modifications thereof.

SECTION 38-75-410. Appeals; hearings upon appeal.

- (A) A person insured pursuant to this article or his representative or a member company who is aggrieved by an act, ruling, or decision of the association:
- (1) regarding rates, classification of risks, assessments, voluntary credits, cancellation or termination of policies, or underwriting shall appeal to the director or his designee within sixty days after the act, ruling, or decision;
 - (2) other than those specified in item (1), may appeal to the director or his designee within thirty days after the act, ruling, or decision.
- (B) Hearings held by the director or his designee pursuant to this section must be in accordance with the procedures set forth in Chapter 3, Title 38 and Article 3, Chapter 23, Title 1, "Administrative Procedures".

SECTION 38-75-420. Reports of inspection by Association.

All reports of inspection performed by or on behalf of the Association must be made available to the members of the Association, applicants, agent or broker, and the Department.

SECTION 38-75-430. Association shall file statement of transactions and the like; additional information.

The Association shall file with the Department by March thirty-first of each year a statement which summarizes the transactions, conditions, operations, and affairs of the Association during the preceding fiscal year ending October thirty-first. The statement shall contain any matters and information prescribed by the Department and must be in the form required by it. The Department may at any time require the Association to furnish to it any additional information with respect to its transactions or any other matter which it considers material to assist it in evaluating the operation and experience of the Association.

SECTION 38-75-440. Examination into affairs of Association.

The Department may make an examination into the affairs of the Association and in undertaking the examination may hold a public hearing. The expense of the examination must be borne and paid by the Association.

SECTION 38-75-450. Regulations.

The department has authority to make reasonable regulations, not inconsistent with law, to enforce, carry out, and make effective the provisions of this article after notice and hearing before the Administrative Law Judge Division.

SECTION 38-75-460. Authority of director to expand area in which association must provide essential property insurance.

The director or his designee may, by written order, temporarily expand the area in which the association must provide essential property insurance. The area may not be expanded further inland than east of the west bank of the intracoastal waterway and may not be expanded to cover the area for more than twelve months. If the director or his designee issues an order that expands the area in which the association provides essential property insurance, he shall notify the General Assembly of that order and he shall recommend, through the Director of the Department of Insurance, to the General Assembly any appropriate statutory changes in the law concerning the definition of “coastal area” which he believes needs to be enacted.

ARTICLE 8.

ADVISORY COMMITTEE TO THE DIRECTOR AND THE SOUTH CAROLINA BUILDING CODES COUNCIL AND LOSS MITIGATION GRANT PROGRAM

SECTION 38-75-470. Appointment of advisory committee; duties; membership.

The Director of Insurance shall appoint an advisory committee to the director and the South Carolina Building Codes Council to study issues associated with the development of strategies for reducing loss of life and mitigating property losses due to hurricane, earthquake, and fire. The advisory committee also must consider the costs associated with these strategies to individual property owners. The advisory committee must include:

- (1) one representative from Clemson University involved with wind engineering;
- (2) one representative from an academic institution involved with the study of earthquakes;
- (3) one representative from the Department of Insurance;
- (4) one representative from an insurer writing property insurance in South Carolina;
- (5) one representative from the Department of Commerce;
- (6) one representative from the Federal Emergency Management Association;

- (7) one representative from the Homebuilders Association;
- (8) one representative from the Manufactured Housing Institute of South Carolina;
- (9) one representative from the State Fire Marshal's office;
- (10) two at-large members appointed by the director; and
- (11) two at-large members appointed by the Governor.

Members shall serve for terms of two years and shall receive no per diem, mileage, or subsistence. Vacancies must be filled in the same manner as the original appointment.

Within thirty days after its appointment, the advisory committee shall meet at the call of the Director of Insurance. The advisory committee shall elect from its members a chairman and a secretary and shall adopt rules not inconsistent with this chapter. Meetings may be called by the chairman on his own initiative and must be called at the request of three or more members of the advisory committee. All members shall be notified by the chairman of the time and place of the meeting at least seven days in advance of the meeting. All meetings must be open to the public. At least two-thirds vote of those members in attendance at the meeting shall constitute an official decision of the advisory committee.

SECTION 38-75-480. Loss mitigation grant program; establishment; purpose.

- (A) There is established within the Department of Insurance a loss mitigation grant program. Funds may be appropriated to the grant program, and any funds so appropriated shall be used for the purpose of making grants to local governments or for the study and development of strategies for reducing loss of life and mitigating property losses due to hurricane, earthquake, and fire. Grants to local governments shall be for the following purposes:
 - (1) implementation of building code enforcement programs including preliminary training of inspectors; and
 - (2) conducting assessments to determine need for and desirability of making agreements to provide enforcement services pursuant to Section 6-9-60.

Funds may be appropriated for a particular grant only after a majority affirmative vote on each grant by the advisory committee.

- (B) The Department of Insurance may make application and enter into contracts for and accept grants in aid from federal and state government and private sources for the purposes of:
 - (1) implementation of building code enforcement programs including preliminary training of inspectors;
 - (2) conducting assessments to determine need for and desirability of making agreements to provide enforcement services pursuant to Section 6-9-60; and

- (3) study and development of strategies for reducing loss of life and mitigating property losses due to hurricane, earthquake, and fire.

Virgin Islands Statutes—Insurance Laws
TITLE TWENTY-TWO—INSURANCE
Chapter 59—VIRGIN ISLANDS WINDSTORM AND EARTHQUAKE INSURANCE
AUTHORITY

T.22 § 1500 Definitions

As used in this chapter, unless the context clearly requires otherwise:

- (a) “Authority” means the Virgin Islands Windstorm and Earthquake Insurance Authority created by this chapter;
- (b) “Board” means the Board of Directors of the Authority or the Interim Board of Directors, as the case may be;
- (c) “Covered event” means a windstorm or earthquake that directly or indirectly causes damage in the Territory of the Virgin Islands;
- (d) “Earthquake” means any shaking or trembling of the crust of the earth, caused by forces operating within the earth itself, such as underground volcanic forces, or by breaking and shifting of rock beneath the surface and not to mere superficial effects of external forces, such as erosion by run-off rainwater.
- (e) “Earthquake insurance” means a policy issued by the Authority insuring only against damage to eligible property caused by a covered event.
- (f) “Eligible property” means certain property located within the Territory which is determined by the Authority to be insurable in accordance with the Plan of Operation and which is used for residential purposes;
- (g) “Insurance Commissioner” means the same person as that intended by section 51 of chapter 3 of this title;
- (h) “Plan of Operation” means the written plan for providing windstorm and earthquake property insurance, and any amendments thereto, as required to be adopted by this chapter;
- (i) “Property insurance” means the same as is defined in section 454 of chapter 19 of this title;
- (j) “Servicing facility” means any person, agent, or insurer authorized to write windstorm and earthquake property insurance on behalf of the Authority;
- (k) “Windstorm” means tropical storms and hurricanes, as designated by the National Hurricane Center, with sufficient wind velocity to cause property damage in the Territory of the Virgin Islands.
- (l) “Windstorm property insurance” means a policy issued by the Authority insuring only against damage to eligible property caused by a covered event.

T.22 § 1501 “Virgin Islands windstorm and earthquake insurance authority”

There is hereby created a body corporate and politic constituting a public corporation and autonomous governmental instrumentality of the Government of the Virgin Islands, by the name of the “Virgin Islands Windstorm and Earthquake Insurance Authority.” The Authority shall be subject to the control of a Board, as provided in this chapter, but it is a corporation having legal existence and personality separate and apart from the Government. The debts, obligations, contracts, bonds, receipts, expenditures, accounts, funds, facilities and property of the Authority shall be deemed to be those of the Authority and not to be those of the Government of the Virgin Islands, or any office, bureau, department, agency, commission, branch, agent, office or employee thereof. The Authority is deemed a domestic insurer for all purposes of the Insurance Code of the Virgin Islands.

T.22 § 1502 Powers and duties

The Virgin Islands Windstorm and Earthquake Insurance Authority has the following powers and duties:

- (a) to provide the persons having an insurable interest in eligible property with windstorm and earthquake property insurance at reasonable rates;
- (b) to insure government owned properties, properties owned by the Government Employees Retirement System, and properties owned by the independent instrumentalities of the Government of the Virgin Islands;
- (c) to adopt, amend, and administer a Plan of Operation;
- (d) to adopt any form of policy necessary for providing windstorm and earthquake property insurance;
- (e) to perform inspections of eligible properties, issue policies with binding authority, provide policyholder services, provide claim services and any other necessary services for applicants and policyholders, and/or contract with servicing facilities to provide the same;
- (f) to establish reserves to be used for payment of expenses and valid claims for covered events insured by the Authority; provided, however, that no amounts transferred to such reserves from monies on deposit in the Virgin Islands Insurance Guaranty Fund established pursuant to Title 33, section 3061, Virgin Islands Code, shall be expended to pay claims covered by Title 22, section 248, et seq., Virgin Islands Code;
- (g) to collect and maintain statistical and other data as may be required;
- (h) to exercise all such incidental powers as may be necessary or convenient for the purpose of carrying out its powers and duties;
- (i) to have a common seal and to alter the same from time to time;

- (j) to acquire real or personal property by grant, gift, purchase, devise or bequest, and to hold, lease, mortgage and otherwise exercise the rights of ownership of such property, and to dispose of such property, including by sale, lease or other disposition of such property to any person, including the Government of the Virgin Islands or any agency, instrumentality, commission, authority, or political subdivision of the United States Virgin Islands;
- (k) to acquire any property in the settlement or reduction of debts previously contracted or in exchange for investments previously made in the course of its business, where such acquisition is necessary to minimize or avoid loss in connection therewith, and to hold such property for such periods as the Board may deem advisable and to exercise the rights of ownership of and to dispose of the same;
- (l) to establish one or more offices necessary or convenient for the transaction of its business within or without the United States Virgin Islands;
- (m) to purchase or otherwise acquire bonds out of any funds available therefor, subject to such agreements with bondholders as may exist;
- (n) to sue and be sued;
- (o) to appoint, employ and contract for the services of officers, agents, employees, professional assistants and servicing facilities and to pay such compensation for their services as the Board may determine;
- (p) to make contracts and issue guarantees and to execute all instruments necessary or convenient in the exercise of any of its powers, including but not limited to, guarantees, standby agreements or other credit enhancements, interest exchange agreements, agreements in connection with credit enhancement procedures, including letters of credit, guarantees, standby agreements or other credit enhancements and agreements in connection with, without limitation, the private sale of its bonds, the remarketing of its bonds, the repurchase of its bonds, and its guaranty programs;
- (q) to make, and from time to time modify and repeal, bylaws, rules and regulations, not inconsistent with this chapter, providing for the internal organization and management of the Authority, for the administration of its affairs and operations, and for carrying into effect the powers and purposes of the Authority;
- (r) to accept grants, or loans from, and enter into contracts, leases, agreements, or other transactions with the United States, any agency, instrumentality, commission, authority or other political subdivision thereof, the Government of the Virgin Islands or any agency, instrumentality, commission, authority, or political subdivision thereof, and to apply the proceeds of any such grants or loans for any of its corporate purposes; to participate in the programs of the United States or any agency, instrumentality, commission, authority or other political subdivision thereof, and, consistent with this chapter, to do any and all things necessary to secure participation in such programs and the cooperation of such entities in achieving the policies and purposes of this chapter; and to enter into agreements with the Government of the Virgin Islands, the United States or any agency, instrumentality, commission, authority or political subdivision thereof, providing for the

guarantee of the payment of the principal of, or interest on, bonds of the Authority, which guaranty agreements may contain such terms or covenants as the Board shall deem necessary or appropriate; and

- (s) to exercise such other corporate powers, not inconsistent herewith, as are conferred upon corporations by the laws of the United States Virgin Islands and to exercise all its powers within and without the United States Virgin Islands to the same extent as natural persons might or could do.

T.22 § 1503 Members of the board of directors

- (a)
 - (1) The Authority shall be governed by a Board of Directors consisting of seven persons: the Commissioner of Finance and the Director of the Office of Management and Budget (who shall both serve ex-officio), and five other persons appointed by the Governor with the advice and consent of the Legislature. Of the five appointed members: two shall be knowledgeable by education and training of insurance and the insurance industry, one shall be representative of the consumer/insured, and not more than three may be resident of any one island district.
 - (2) A majority of the members shall constitute a quorum of the Board of Directors for the purpose of conducting the business of the Authority and exercising its powers, and for all other purposes notwithstanding the existence of any vacancies, except that a lesser number may adjourn. Unless the Authority in its bylaws requires a greater proportion in any instance, a vote of the majority of members present at any meeting of the Board shall prevail. The Board shall elect its own chairman and such other officers as it may deem appropriate.
 - (3) Members of the Board shall serve terms of four years from the date of their appointment, but may continue to serve until the appointment of their successor. Members who are not employees of the Government of the Virgin Islands shall receive \$50 per day or part thereof spent in the business of the Authority. All members shall be entitled to official travel costs and expenses actually and necessarily incurred in the discharge of their official duties.
 - (4) Members of the Board, while acting within the scope of their authority as directors or officers, shall not be subject to any personal or civil liability resulting from the exercise of any of the Authority's purposes, duties or responsibilities, unless the conduct of the member is determined by a court of competent jurisdiction to constitute willful wrongdoing or gross negligence.
- (b) From the date of enactment of the Act* creating the Authority until the confirmation and appointment of not less than three of the five appointed members of the Board of Directors, the Authority shall be governed by an Interim Board consisting of three persons: the Commissioner of Finance, the Director of the Office of Management and Budget, and the Director of the Bureau of Internal Revenue. The Interim Board shall have all of the powers and duties of the Board of Directors established by subsection (a) of this section, and shall fully govern the Authority pending confirmation and appointment of not less than three of the five appointed members. It is hereby expressly declared that

time is of the essence and that the creation of an Interim Board with full powers is necessary to provide for a fully operational Authority prior to the 1993 hurricane season.

*July 21, 1993.

T.22 § 1504 Plan of operation

- (a) The Authority shall adopt a Plan of Operation and may amend such Plan from time to time as is necessary to assure the fair, reasonable, and equitable provision of windstorm and earthquake property insurance and the operation of the Authority. The Plan of Operation and any amendments thereto shall be reviewed by the Commissioner of Insurance and may be disapproved in whole or in part, at anytime, by the Commissioner. A previously approved Plan, or any part thereof, may be subsequently disapproved by the Commissioner for good reason. The Commissioner shall state any disapproval in writing together with his reasons therefor. Nothing in this chapter shall be construed as diminishing the regulatory authority of the Commissioner under Title 22 of this code.
- (b) The Plan of Operation shall, in addition to any other requirements of law:
 - (1) establish procedures for performance of all the powers and duties of the Authority;
 - (2) provide a method for notifying all owners of residential property located in the Territory of the Virgin Islands of the purposes of the Authority and the requirements for coverage of eligible property;
 - (3) provide for and adopt all necessary forms, including insurance policies to be issued by and on behalf of the Authority, for use by the Authority and servicing facilities;
 - (4) establish reasonable rates, subject to the review provided herein, to be charged for insurance provided by the Authority so that the total premium income from all policies of windstorm and earthquake property insurance, when combined with investment income, shall be sufficient to pay all expenses for operating the Authority (including, but not limited to, processing applications, conducting inspections, issuing and servicing policies and policyholders, paying commissions, paying servicing facilities for expenses, and paying any debt incurred by the Authority), and payment of valid claims;
 - (5) provide for the promulgation of a Manual of Rules and Rates, and rating and classification plans, which shall include deductibles, limits of coverage, and rules for classification of risks and rate modifications based on the exposure insured as determined by regulation, and to maintain the solvency of the Authority;
 - (6) establish reasonable eligibility standards with respect to the insurability of any eligible property. Such eligibility standards may include a requirement that the property is insured by an underlying policy of property insurance and such other requirements as may be established by the Authority;

- (7) establish procedures for receiving and servicing applications to the Authority;
 - (8) establishing procedures for processing and maintaining all records of the Authority, including all financial transactions of the Authority, its agents, its employees, its Board and all transactions with any servicing facility;
 - (9) establish procedures for the collection and remittance of premiums;
 - (10) establish the commission to be paid to agents authorized to write windstorm and earthquake property insurance on behalf of the Authority;
 - (11) establish procedures for the payment of valid claims;
 - (12) provide for obtaining services of an independent certified public accountant to perform an audit of the Authority;
 - (13) provide for obtaining the services of an outside independent actuary to perform and submit a year-end valuation of the Authority's reserves and surplus accounts;
 - (14) establish procedures for reinsuring risks written through the Authority; and
 - (15) provide for the appointment of a manager for the Authority.
- (c) If the Authority fails to adopt a Plan of Operation, or fails to amend an existing Plan of Operation, the Insurance Commissioner may, by rule, adopt a Plan of Operation or an amendment to a Plan of Operation to insure the purposes of this chapter are carried out. Any Plan of Operation, or amendment, adopted by rule of the Insurance Commissioner, shall continue in full force and effect until superseded by a Plan of Operation, or amendment, adopted by the Board of Directors and approved by the Insurance Commissioner, or until superseded by a subsequent Plan of Operation, or amendment, adopted by rule of the Insurance Commissioner.

T.22 § 1505 Policy limits; mandatory deductible; excess coverage

- (a) No claim under a windstorm and earthquake property insurance policy issued by or on behalf of the Authority may exceed \$400,000 increasing annually by an inflation index approved by the Board.
- (b) Every policy issued by or on behalf of the Authority shall have a minimum deductible of \$2,000 or two percent of the sum insured of the claim, whichever is greater.
- (c) A policy issued by or on behalf of the Authority shall insure not less than 80% of the actual cash value of the eligible property or the limits available from the Authority, whichever is less, excluding the value of the land.
- (d) Nothing in this chapter, or in any other provision of law, shall be construed to prohibit any insurer from providing coverage for property damage caused by windstorm or earthquake for any property in the Virgin Islands, which coverage may be apart from, or in addition to, the windstorm and earthquake property insurance issued by the Authority.

- (e) Nothing in this chapter, or in any other provision of law, shall be construed as requiring any person or entity to purchase windstorm and earthquake property insurance from the Authority.

T.22 § 1506 Appeals

Any applicant, current or former policyholder, or other person or entity doing business with the Authority and who is affected by any decision of the Authority may appeal to the Insurance Commissioner in the manner, and by the method, provided for appeals in chapter 7 of this title.

T.22 § 1507 Annual reports; examinations

- (a) The Authority shall submit to the Governor and the Legislature annually, after the close of its fiscal year, a report of the business of the Authority for the preceding fiscal year and two sets of annual statements; one prepared in accordance with National Association of Insurance Commissioner's guidelines and the other prepared in accordance with Generally Accepted Accounting Principles.
- (b) The Board shall submit to the Insurance Commissioner each year, and not later than three months after the Authority's fiscal year-end, two sets of Annual Statements; one prepared in accordance with National Association of Insurance Commissioner's guidelines and the other prepared in accordance with Generally Accepted Accounting Principles.
- (c) The Insurance Commissioner may require other reports concerning risks insured by the Authority as the Insurance Commissioner deems appropriate.
- (d) For the purpose of ascertaining its condition or compliance with this chapter, the Insurance Commissioner, as often as the Insurance Commissioner deems advisable, but at least once every three years, shall examine the accounts, records, documents, and transactions of the Authority. The Authority shall pay all reasonably incurred expenses of the examination.

T.22 § 1508 Issuance and sale of bonds by the authority

- (a) Pursuant to the authority vested in the Government of the Virgin Islands by section 8(b)(i) of the Revised Organic Act of the Virgin Islands, as amended, the Government of the Virgin Islands hereby grants and empowers the Authority to issue and sell bonds from time to time and have outstanding at any one time, exclusive of bonds issued solely for the purpose of exchanging the same in return for the cancellation of bonds either issued by the Authority or assumed by it, bonds not in excess of \$25,000,000, in aggregate principal amount, in addition to all sums that the Legislature of the Virgin Islands has authorized or may authorize separately for particular purposes; provided, however, that refunding bonds of the Authority issued solely for the purpose of applying the proceeds thereof to the payment for, or purchase of, bonds issued by the Authority or assumed by it, shall not be included in computing any such limitation until six (6) months after their sale.
- (b) Payment of the bonds of the Authority may be secured by a pledge of or a mortgage or other lien on all or any part of its real or personal properties, notes, loans, contracts, gross

or net rates, fees, revenues, other income or bond proceeds to which the rights of the Authority then exist or may thereafter come into existence, by pledge of or lien on any bonds, notes, lease or sale obligations or other obligations of the Government of the Virgin Islands or any agency, instrumentality, commission, authority, or political subdivision thereof, or on any loan, guaranty, grant, or contribution, or parts thereof, from the United States, any agency, instrumentality, commission, authority or other political subdivision thereof, the Government of the Virgin Islands or by letter of credit, insurance or other credit enhancement device or any other source. It is the intention hereof that any pledge of revenues or other monies, or of a revenue producing contract or contracts made by the Authority to secure bonds or any other obligation of the Authority shall be valid and binding from the time when the pledge is made; that the revenues, or other monies or proceeds of any contract or contracts so pledged and thereafter received by the Authority shall immediately be subject to the lien of such pledge without any physical delivery thereof or further act; and that the lien of any such pledge shall be valid and binding as against all parties having claims of any kind in tort, contract or otherwise against the Authority irrespective of whether such parties have notice thereof. Neither the resolution nor any other instrument by which a pledge is created need be recorded.

- (c) In accordance with section 8(b) of the Revised Organic Act of the Virgin Islands, as amended, the bonds shall be exempt as to principal and interest from taxation by the Government of the Virgin Islands, or by any political subdivision of the United States Virgin Islands.
- (d) Bonds shall be authorized by resolution or resolutions of the Board, and shall comply with all pertinent provisions of the Revised Organic Act of the Virgin Islands, as amended, or such other provisions of applicable federal law as may be in effect at the time. Except as otherwise provided for by said act or other federal law, bonds may be issued in one or more series and shall bear such date or dates, mature in such amounts and at such time or times, be subject to redemption prior to maturity at such time or times and upon such terms, be in such denomination or denominations, be in such form, either coupon or registered, carry such conversion or registration privileges, have such rank or priority, be issued as serial bonds, sinking fund bonds or term bonds or any combination thereof, be noninterest bearing or bear interest at such rate or rates payable currently or compounded, including rates that vary in accordance with a formula or procedure set forth or referred to in the bonds, be general obligations of the Authority payable out of any revenues of such Authority, subject only to any agreement with the holders of particular bonds, pledging any particular revenues of the Authority, or be revenue bonds secured in such manner as the Authority may determine, be executed by manual or facsimile signature of the chairman of the Authority in such manner, and be payable in such medium of payment, at such place or places, may be declared or become due at such time before the maturity date thereof, may be authenticated in such manner and upon compliance with such conditions, and may contain such other terms and covenants as the Board may provide.
- (e) The bonds shall be sold at public or private sale, as permitted by the Revised Organic Act of the Virgin Islands, as amended, or other applicable federal laws, at such price or prices as the Authority may determine.

- (f) In case any of the members or officers of the Authority whose signatures appear on any bonds or coupons shall cease to be such members or officers before the delivery of such bonds, such signatures shall, nevertheless, be valid and sufficient for all purposes, the same as if such members or officers had remained in office until such delivery. Any provisions of any law to the contrary notwithstanding, any bonds issued by the Authority pursuant to this chapter shall be negotiable for all purposes, subject only to the provisions of bonds for registration.
- (g) Neither the members of the Authority nor any person duly authorized to execute the bonds shall be liable personally on the bonds or be subject to any liability by reason of the issuance thereof.
- (h) In any suit, action, or proceedings involving the validity or enforceability of any bond of the Authority or the security therefor, any such bond reciting in substance that it has been issued by the Authority to aid in financing a designated facility, program or project shall be conclusively deemed to have been issued for such purpose, and the facility, program or project shall be conclusively deemed to have been undertaken or acquired in accordance with the provisions of this chapter.
- (i) Upon the issuance of the bonds, the Authority to issue the bonds, the regularity thereof, the validity of any pledge or lien, in connection therewith, and the validity and legality of the resolution authorizing the bonds and the proceedings so adopted shall be conclusively presumed.
- (j) In any resolution, trust indenture or other contractual commitment authorizing the issuance of bonds, the Authority may contract with the holders of the bonds to undertake and obligate itself by such commitments, as long as the bonds are outstanding and unpaid, as are deemed by the Board to be necessary or appropriate for the protection of the bondholders and the marketability of the bonds, and, specifically in addition to any other provisions, may:
 - (1) covenant as to the disposition of the entire gross or net revenue and present or future income of the Authority, of any loans made or bonds purchased by the Authority or of any other property, real or personal, of the Authority, including the pledging of all or any part thereof to secure payment of the bonds and the interest thereon;
 - (2) covenant against making, permitting or suffering any pledge or other lien on all or any part of its receipts, revenues or other income, or loans made or bonds purchased or other real or personal property to which its right or title then exists or may thereafter come into existence; covenant with respect to limitations on any sale, lease or other disposition of the property of the Authority or any part or parts thereof; and covenant as to what other or additional debts or obligations may be incurred by it;
 - (3) covenant as to the bonds then or thereafter to be issued, as to the issuance of such bonds in escrow or otherwise, as to the use and disposition of the proceeds thereof, and as to the limitations on the issuance of additional bonds; covenant against extending the time for the payment of its bonds or interest thereon; and

covenant for redemption of the bonds and provide for the terms and conditions thereof;

- (4) covenant as to the rates, fees, rentals, and other charges to be fixed and collected, the amount to be raised each year or other period of time thereby, and as to the use and disposition to be made thereof;
- (5) create or authorize the creation of special funds or reserves for moneys held for debt service, reserves, or other purposes; and covenant as to the use, disposition and investment of the moneys held in such funds;
- (6) covenant as to the use, maintenance and replacement of any or all of its real or personal property, the amount and kind of insurance to be carried thereon and the use and disposition of insurance moneys;
- (7) prescribe the procedure, if any, by which the terms of the bonds, resolution, or any other contract with the bondholders may be modified, the amount of bonds, the holders of which must consent thereto, and the manner in which such covenant may be given;
- (8) covenant as to and prescribe the events of default and the terms and conditions upon which any or all of its bonds shall become or may be declared due before maturity, and as to the terms and conditions upon which such declaration and its consequences may be waived;
- (9) covenant as to the rights, liabilities, powers and duties arising upon the nonperformance by the Authority of any of its covenants, conditions, or obligations, including the rights and remedies of bondholders which may be in addition to remedies specified in this chapter;
- (10) vest in a trustee or trustees the right to enforce the payment of the bonds or any covenants securing or relating to the bonds and the right, in the event of a default by the Authority, to take possession of and use, operate and manage the Authority or any part or parts thereof or any funds connected therewith, to enforce the terms and conditions of any loans of the Authority then outstanding, and to collect the rates, fees, revenues, or other income arising therefrom and to dispose of such moneys in accordance with the agreement of the Authority with the holders of the bonds; provide for the powers and duties of such trustee or trustees which may be a national banking association or a bank or trust company organized under the laws of the United States, or of the United States Virgin Islands or any state of the United States, and limit the liabilities thereof; and provide the terms and conditions upon which the holders of the bonds or any proportion of them may enforce any covenant or rights securing or relating to the bonds; and
- (11) exercise all or any part or combination of the powers herein granted; make covenants and do any and all such acts and things not inconsistent with this chapter as may be necessary and desirable in order to secure its bonds, or as may tend to make the bonds more marketable notwithstanding that such covenants, acts or things may not be enumerated herein.

T.22 § 1509 Remedies of bondholders; government obligations; investments; deposits

- (a) Subject to any contractual limitations binding upon the holders of any issue of bonds, or trustees therefor including, but not limited to the restriction of the exercise of any remedy to a specified proportion or percentage of such holders, any holder of bonds, or trustees therefor, shall have the right and power, for the equal benefit and protection of all holders of bonds similarly situated, to exercise such remedies and take such other actions to protect or preserve its rights with respect to any issue of bonds as shall be set forth in the related resolution, trust indenture or other contractual commitment authorizing the issuance of the bonds including, but not limited to the following:
- (1) by mandamus or other suit, action, or proceeding at law or in equity to compel the Authority and its Board, officers, agents or employees to perform and carry out its and their duties and obligations under this chapter and its and their covenants and agreements with bondholders;
 - (2) by action or suit in equity to require the Authority and the Board thereof to account as if they were the trustees of an express trust;
 - (3) to declare the bonds immediately due and payable;
 - (4) by action or suit in equity to enjoin any acts or things which may be unlawful or in violation of the rights of the bondholders; and
 - (5) to bring suit upon the bonds.
- (b) The faith and credit of the Government of the Virgin Islands shall not be pledged for the payment of the principal and interest of the bonds, and there shall be on the face of each bond a statement plainly worded to that effect. The Authority has no taxing power and its obligations are not debts of the Government of the Virgin Islands or any political subdivision of the Virgin Islands. No holder of the bonds shall have the right to compel any exercise of the taxing power of the Government of the Virgin Islands to pay the principal of or interest on the bonds.
- (c) The Government of the Virgin Islands does hereby pledge to, contract and agree with, any person, firm or corporation, or any federal, United States Virgin Islands or state agency, subscribing to or acquiring bonds of the Authority issued for the purpose of this chapter, that it obligates itself not to limit or alter the rights or powers hereby vested in the Authority to fulfill the terms of any agreements made with the holders of the bonds, or in any way impair the rights or remedies of such bondholders until all such bonds at any time issued, together with interest thereon, are fully met and discharged.
- (d) The bonds are hereby made securities in which all public officers and bodies of the United States Virgin Islands and all agencies, instrumentalities, commissions, authorities, and political subdivisions thereof, all insurance companies and associations and other persons carrying on an insurance business, all banks, bankers, trust companies, savings banks and savings associations, including savings and loan associations, building and loan associations, investment companies and other persons carrying on a banking business, and all other persons whatsoever who are now or may hereafter be authorized to

invest in bonds or other obligations of the Authority, may properly and legally invest funds including capital in their control or belonging to them.

- (e) The bonds are also hereby made securities which may be deposited with and shall be received by all public officers and bodies of the United States Virgin Islands and all agencies, instrumentalities, commissions, authorities, and political subdivisions thereof, for any purpose for which the deposit of bonds or other obligations of the Authority is now or may hereafter be authorized.

T.22 § 1510 Purpose; taxes; “Virgin Islands insurance guaranty association”

- (a) The purpose for which the Authority is created, and the exercise of all powers and duties of the Authority, are a public purpose. The Authority is exempt from the payment of any taxes or assessments on any of the property acquired or to be acquired by it, or on its operations or activities, or on the income derived from any of its operations or activities with the exception of premium taxes which it shall pay pursuant to section 603 of chapter 25 of this title.
- (b) The Authority shall participate in the Virgin Islands Insurance Guaranty Association, and is a “member insurer” as that term is used in chapter 10 of this title.

T.22 § 1511 Conditions for dissolution

- (a) The Authority shall be dissolved within six months after a finding by the Board, and ratification by the Legislature of the Virgin Islands, of one or more of the following, provided the requirements of subsection (b) of this section have been met:
 - (1) federal legislation has been enacted that will supersede windstorm and earthquake property insurance as provided by the Authority;
 - (2) insurance companies doing business in the Virgin Islands have sufficient capacity to cover windstorm and earthquake property insurance and are offering policies at reasonable rates;
 - (3) a combination of paragraphs (1) and (2) of this section.
- (b) The Authority may not be dissolved unless all of the following conditions are met:
 - (1) the Insurance Commissioner agrees that dissolution of the Authority is in the public interest and not violative of existing contracts between the Authority and other parties; and
 - (2) the Insurance Commissioner has approved a plan of dissolution as proposed by the Authority; and
 - (3) the policyholders of the Authority have a reasonable opportunity to obtain similar or better coverage from another entity at a competitive rate; and

- (4) there will be no interruption of coverage of the eligible property in the transition from the Authority to another entity; and
- (5) all of the rights and privileges of the bondholders have been met; and
- (6) all of the debts and obligations of the Authority have been or will be paid prior to the dissolution of the Authority; and
- (7) such other requirements as the Insurance Commissioner deems fair and equitable in the dissolution of the Authority; and
- (8) The Legislature of the Virgin Islands has ratified the decision of the Insurance Commissioner to dissolve the Authority.

Appendix 7

FLORIDA COMMISSION ON HURRICANE LOSS PROJECTION METHODOLOGY

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November, 2009

The Honorable Charlie Crist, Chairman
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Plaza Level 02, The Capitol
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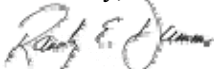
Dear Trustees:

As Chair of the Florida Commission on Hurricane Loss Projection Methodology (Commission), I am pleased to present to you the *Report of Activities as of November 1, 2009*. This report documents the fourteenth year of the Commission's work.

Section 627.0628, F.S., created the Commission as a panel of experts to be administratively housed in the State Board of Administration but requires the Commission to independently exercise its power and duties. The Commission is required to "...adopt revisions to previously adopted actuarial methods, principles, standards, models, or output ranges every odd year." Such revisions were made in compliance with the statute.

If you have any questions or comments regarding the work of the Commission, please call me at (850) 644-7880.

Sincerely,



Randy E. Dumm, Ph.D.

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I. INTRODUCTION

INTRODUCTION

Legislative Findings and Intent

The Florida Commission on Hurricane Loss Projection Methodology (Commission) was established during the 1995 Legislative Session. CS/HB 2619, passed on May 8, 1995, and signed by the Governor on June 14, 1995, created s. 627.0628, Florida Statutes (F.S.). The Legislature specifically determined, in s. 627.0628(1), F.S., that “reliable projections of hurricane losses are necessary to assure that rates for residential insurance are neither excessive nor inadequate,” and that in recent years computer modeling has made it possible to improve on the accuracy of hurricane loss projections. The Legislature found that “it is the public policy of this state to encourage the use of the most sophisticated actuarial methods to ensure that consumers are charged lawful rates for residential property insurance coverage,” s. 627.0628(1)(a), F.S. The Legislature clearly supports and encourages the use of computer modeling as part of the ratemaking process.

The Role of the Commission

Although the statutory section creating the Commission is in the Florida Insurance Code, the Commission is an independent body and is administratively housed in the State Board of Administration of Florida (SBA). The role of the Commission is limited to adopting findings relating to the accuracy or reliability of particular methods, principles, standards, models, or output ranges used to project hurricane losses.

Section 627.0628(3)(c), F.S., states that “to the extent feasible,” the SBA must “employ actuarial methods, principals, standards, models, or output ranges found by the Commission to be accurate or reliable” in formulating reimbursement premiums for the Florida Hurricane Catastrophe Fund (FHCF). Individual insurers are required to use the Commission’s findings in order to support or justify a rate filing. Section 627.0628(3)(d), F.S., provides that “an insurer shall employ and may not modify or adjust actuarial methods, principles, standards, models, or output ranges found by the Commission to be accurate or reliable in determining hurricane loss factors for use in a rate filing” with the Office of Insurance Regulation (OIR), Department of Financial Services. Section 627.0628(3)(d), F.S., also provides that “an insurer shall employ and may not modify or adjust models found by the Commission to be accurate or reliable in determining probable maximum loss levels ... with respect to a rate filing ... made more than 60 days after the Commission has made such findings.”

House Bill 1939 was passed during the 2005 regular Legislative Session and was signed into law by the Governor. This legislation impacted the Commission by creating language related to the definition of and the protection of trade secrets used in designing and constructing a hurricane loss model. In s. 627.0628(3), F.S., the Legislature found that it is a public necessity to protect trade secrets used in designing and constructing hurricane loss models, and therefore, allowed an exemption from the public records law requirements and the public meetings law requirements. The goal of this legislation was to enable the Commission to have access to all aspects of hurricane loss models and to encourage private companies to submit such models for review without concern that trade secrets will be disclosed. Trade secrets, as defined in s. 812.081, F.S., used in the design and construction of a hurricane loss model are exempt pursuant to s. 627.0628(3), F.S., from the requirements of the public records law s. 119.07(1), F.S., including s.

24(a), Article I of the State Constitution and the public meetings law s. 286.011, F.S., including s. 24(b), Article I of the State Constitution.

Section 812.081, F.S., defines trade secrets as follows:

Trade secrets; theft, embezzlement; unlawful copying; definitions; penalty.--

(1) As used in this section:

(c) “Trade secret” means the whole or any portion or phase of any formula, pattern, device, combination of devices, or compilation of information which is for use, or is used, in the operation of a business and which provides the business an advantage, or an opportunity to obtain an advantage, over those who do not know or use it. “Trade secret” includes any scientific, technical, or commercial information, including any design, process, procedure, list of suppliers, list of customers, business code, or improvement thereof. Irrespective of novelty, invention, patentability, the state of the prior art, and the level of skill in the business, art, or field to which the subject matter pertains, a trade secret is considered to be:

1. Secret;
2. Of value;
3. For use or in use by the business; and
4. Of advantage to the business, or providing an opportunity to obtain an advantage, over those who do not know or use it when the owner thereof takes measures to prevent it from becoming available to persons other than those selected by the owner to have access thereto for limited purposes.

The Work of the Commission

The Commission, a panel of experts, was created to evaluate computer models and other recently developed or improved actuarial methodologies for projecting hurricane losses and probable maximum loss levels so as “to resolve conflicts among actuarial professionals” and “to provide both immediate and continuing improvement in the sophistication of actuarial methods used to set rates ...,” s. 627.0628(1)(b), F.S. Sections 627.0628(3)(a) and (b), F.S., define the role of the Commission:

The commission shall consider any actuarial methods, principles, standards, models, or output ranges that have the potential for improving the accuracy of or reliability of the hurricane loss projections used in residential property insurance rate filings. The commission shall, from time to time, adopt findings as to the accuracy or reliability of particular methods, principles, standards, models, or output ranges.

The commission shall consider any actuarial methods, principles, standards, or models that have the potential for improving the accuracy of or reliability of projecting probable maximum loss levels. The commission shall adopt findings as to the accuracy or reliability of particular methods, principles, standards, or models related to probable maximum loss calculations.

The statutory language is clear in that those methods or models that have the potential for improving the accuracy or reliability of hurricane loss projections and probable maximum loss levels are the ones to be considered by the Commission. “Improving” suggests that the methods or models should

be an improvement over the then existing current methods or models used in the residential rate filing process prior to the Commission's enactment.

Section 627.0628(3)(e), F.S., originally established two deadlines for the Commission to take action. No later than December 31, 1995, the Commission was required to "adopt initial actuarial methods, principles, standards, models, or output ranges ..." No later than July 1, 1996, the Commission was required to "adopt revised actuarial methods, principles, standards, models, or output ranges which include specification of acceptable computer models or output ranges derived from computer models." The Commission met both those deadlines. To achieve the requirements of the Florida Statutes, in 1995 the Commission developed the following three-step evaluation process:

Identification of methods or models – models were identified in the following ways: (1) by referral after having been rejected by the Department of Insurance (now OIR); (2) by being submitted directly to the Commission; or (3) by the Commission's soliciting them directly from the sponsor or owner.

Analysis of the method or model – the Commission adopted standards and five modules to assist in its analysis. The modules were as follows:

- Module 1 – Description of the Model
- Module 2 – Background and Professional Credentials of the Modeling Organization
- Module 3 – Tests of the Model
- Module 4 – Professional Team On-Site Review
- Module 5 – Modeling Organization Presentation

Adoption of findings – the Commission may (1) accept a method or model, model specifications, or output ranges derived from computer models; or (2) accept the method or model, model specifications, or output ranges subject to modification; or (3) reject the method or model, model specifications, or output ranges.

In an effort to streamline the model submission and eliminate redundancies, the Commission conducted a complete and thorough reorganization of the Report of Activities in 2003. Part of the reorganization included renaming and incorporating the questions and forms in Modules 1–3 to subsections of the standards called Disclosures and Forms. Module 4 was moved to a separate section called On-Site Review, and Module 5 was moved to the acceptability process. The standards were realigned to facilitate the Commission voting process.

As originally required in s. 627.0628(3)(e), F.S., the Commission adopted revisions to actuarial methods, principals, standards, models, and/or output ranges on an annual basis. The Commission initially adopted standards for the specifications of a computer model on June 3, 1996. Those original standards have subsequently been revised and then adopted on the following dates:

- May 29, 1997
- April 24 & May 21, 1998
- August 17, 1999
- September 14 & 15, 2000
- September 19 & October 15, 2001
- September 18 & 19, 2002
- August 21 & 22, 2003
- October 6 & 7, 2004

September 14 & 15, 2005
August 17 & 18, 2006
September 20 & 21, 2007
September 17 & 18, 2008
September 15 & 16, 2009.

During the 2009 Legislative Session, CS/SB 1758 was passed and signed into law by the Governor. This legislation changed the requirement in s. 627.0628(3)(e), F.S., to adopt revisions to actuarial methods, principles, standards, models, and/or output ranges on an annual basis to “every odd year.” The Commission will again adopt revisions to the standards in 2011.

CS/CS/CS/HB 1495 was also passed during the 2009 Legislative Session and signed into law by the Governor. This legislation added subsection (4) to s. 627.0628, F.S., requiring the Commission to “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.” The Commission is 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, 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 Mission Statement

At the September 21, 1995, Commission meeting, the following mission statement was adopted:

The mission of the Florida Commission on Hurricane Loss Projection Methodology is to assess the efficacy of various methodologies which have the potential for improving the accuracy of projecting insured Florida losses resulting from hurricanes and to adopt findings regarding the accuracy or reliability of these methodologies for use in residential rate filings.

The mission statement closely tracks the statute and restates the critical aspects of the Commission’s work. Minor revisions to the mission statement were adopted on November 30, 1995, and can be found in the Principles section of this report.

The mission statement was revised again on September 15, 2009, to reflect the Commission’s role in reviewing models for their ability for projecting probable maximum loss levels. Thus, the mission statement was modified as follows:

The mission of the Florida Commission on Hurricane Loss Projection Methodology is to assess the effectiveness of various methodologies which have the potential for improving the accuracy of projecting insured Florida losses and probable maximum loss levels resulting from hurricanes and to adopt findings regarding the accuracy or reliability of these methodologies for use in residential rate filings and probable maximum loss calculations.

Overview

To date, the following models have been evaluated by the Commission against the standards for the applicable years listed below and were found acceptable.

Modeling Organization Standards

AIR Worldwide Corporation	1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
Applied Research Associates, Inc.	1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
E.W. Blanch Co.	1998, 1999, 2000
EQECAT, Inc.	1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
Florida Public Hurricane Loss Model	2006, 2007, 2008
Risk Management Solutions, Inc.	1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
Tillinghast–Towers Perrin	1998

II. PRINCIPLES

PRINCIPLES

1. The mission of the Florida Commission on Hurricane Loss Projection Methodology is to assess the effectiveness of various methodologies which have the potential for improving the accuracy of projecting insured Florida losses and probable maximum loss levels resulting from hurricanes and to adopt findings regarding the accuracy or reliability of these methodologies for use in residential rate filings and probable maximum loss calculations. *History-New 9/21/95, rev. 11/30/95, rev. 9/15/09*
2. The Commission shall consider the costs and benefits associated with its review process, including costs and benefits to the State and its citizens, to the insurance industry, and to the modeling organizations. *History-New 8/18/06*
3. The general focus of the Commission shall be on those areas of modeling which produce the most variation in output results and have the most promise of improving the science of modeling. *History-New 8/18/06*
4. The Commission shall pursue and promote research opportunities from time to time when issues need resolution and such research would advance the science of modeling. *History-New 8/18/06*
5. All models or methods shall be theoretically sound. *History-New 9/21/95, rev. 8/18/06*
6. The Commission's review process shall be active and designed to test model output for reasonableness and to test model assumptions. *History-New 8/18/06*
7. Models or methods shall not be biased in a way that overstates or understates results. *History-New 9/21/95, rev. 8/18/06*
8. All sensitive components of models or methods shall be identified. *History-New 9/21/95, rev. 8/18/06*
9. The trade secret aspects of models or methods being reviewed by the Commission shall be protected. *History-New 11/30/95, rev. 5/20/96, rev. 9/14/05, rev. 8/18/06*
10. Commission members shall have sufficient information concerning model assumptions and factors used in model development, whether trade secret or not, to make a finding about a model's acceptability. *History-New 8/18/06*
11. The Commission's review process of models or methods shall not restrict competition in the catastrophe modeling industry or thwart innovation in that industry. *History-New 11/30/95, rev. 5/20/96, rev. 8/18/06*
12. The Commission shall consider how advances in science or technology shall be incorporated in its revision of standards, and, where and when appropriate, develop new standards or revise existing standards to reflect these advances. *History-New 8/18/06, rev. 9/16/09*

13. The Commission shall consider how statutory changes shall be incorporated in its revision of standards, and, where and when appropriate, develop new standards or revise existing standards to reflect these statutory changes. *History-New 8/18/06, rev. 9/16/09*
14. The Commission's review of models or methods for acceptability shall give priority to new standards and standards that have been modified. *History-New 8/18/06, rev. 9/16/09*
15. The output of models or methods shall be reasonable and the modeling organization shall demonstrate its reasonableness. *History-New 9/21/95, rev. 8/22/03, rev. 8/18/06*
16. All adoptions of findings and any other formal action taken by the Commission shall be made at a publicly-noticed meeting, by motion followed by a formal member by member roll call vote, all of which shall be transcribed by a court reporter, such transcription to be made a part of the official record of the proceedings of the Commission. The Commission shall not record a transcript for the portion of a Commission meeting where trade secrets used in the design and construction of the hurricane loss model are discussed. No official action or decision shall be made in a closed meeting. *History-New 11/30/95, rev. 8/22/03, rev. 9/14/05, rev. 8/18/06, rev. 9/15/09*
17. All findings adopted by the Commission are subject to revision at the discretion of the Commission. *History-New 11/30/95*
18. No model or method shall be determined to be acceptable by the Commission until it has been evaluated by the Commission in accordance with the process and procedures which the Commission considers appropriate for that model or method. *History-New 11/30/95, rev. 5/20/96, rev. 8/18/06*
19. The Commission's determination of acceptability of a specific model or method does not constitute determination of acceptability of other versions or variations of that model or method; however, the Commission shall attempt to accommodate routine updating of acceptable models or methods. *History-New 11/30/95, rev. 5/20/96, rev. 8/18/06*
20. The Commission shall consider the educational needs of its members and from time to time implement educational programs that further Commission members' understanding of the science of modeling. *History-New 8/18/06*

III. COMMISSION STRUCTURE

COMMISSION STRUCTURE

Oversight

The Commission was created, pursuant to s. 627.0628, F.S., “to **independently** exercise the powers and duties specified” in that statute. The Commission is administratively housed within the State Board of Administration of Florida (SBA), and as a cost of administration, the Florida Hurricane Catastrophe Fund (FHCF) provides travel reimbursement, expenses, and staff support. The SBA has no governing authority over the Commission; however, the SBA annually appoints one of the Commission members to serve as Chair, appoints one of the Commission members who is the actuary member of the FHCF Advisory Council, and has final approval authority over the Commission’s budget.

Membership and Required Expertise

Section 627.0628(2)(b), F.S., requires that the Commission consist of eleven members with the following qualifications and expertise:

1. The Insurance Consumer Advocate;
2. The senior employee of the State Board of Administration responsible for operations of the Florida Hurricane Catastrophe Fund;
3. The Executive Director of the Citizens Property Insurance Corporation;
4. The Director of the Division of Emergency Management;
5. The actuary member of the Florida Hurricane Catastrophe Fund Advisory Council;
6. An employee of the Florida Department of Financial Services, Office of Insurance Regulation who is an actuary responsible for property insurance rate filings and who is appointed by the Director of the Office of Insurance Regulation;
7. Five members appointed by the Chief Financial Officer, as follows:
 - a. An actuary who is employed full time by a property and casualty insurer which was responsible for at least 1 percent of the aggregate statewide direct written premium for homeowner’s insurance in the calendar year preceding the member’s appointment to the Commission;
 - b. An expert in insurance finance who is a full time member of the faculty of the State University System and who has a background in actuarial science;
 - c. An expert in statistics who is a full time member of the faculty of the State University System and who has a background in insurance;
 - d. An expert in computer system design who is a full time member of the faculty of the State University System;
 - e. An expert in meteorology who is a full time member of the faculty of the State University System and who specializes in hurricanes.

Terms of Members

The Insurance Consumer Advocate, Chief Operating Officer of the FHCF, Executive Director of Citizens Property Insurance Corporation, Director of the Division of Emergency Management, and the actuary member of the FHCF Advisory Council shall serve as a Commission member for as long as the individual holds the position listed.

The member appointed by the Director of the Office of Insurance Regulation shall serve until the end of the term of office of the Director who appointed him or her, unless removed earlier by the Director for cause. The five members appointed by the Chief Financial Officer shall serve until the end of the Chief Financial Officer's term of office, unless the Chief Financial Officer releases them earlier for cause (s. 627.0628(2)(c), F.S.).

Officers

Officers: The officers of the Commission shall be a Chair and a Vice Chair.

Selection: Annually, the SBA shall appoint one of the Commission members to serve as the Chair (s. 627.0628(2)(d), F.S.). After the Chair is appointed, the Commission shall, by majority roll call vote, select a Vice Chair.

Duties of the Chair and Vice Chair:

A. The **CHAIR** shall:

1. Preside at all meetings except during Committee meetings where other Commission members are designated to act as Committee Chairs;
2. Conduct a roll call of members at each meeting;
3. Ensure all procedures established by the Commission are followed;
4. Designate one of the Commission members to act in the role of Chair at any meeting where the Chair and Vice Chair cannot attend;
5. Assign members to serve on Committees.

B. The **VICE CHAIR** shall:

In the absence or request of the Chair, preside at Commission meetings and have the duties, powers, and prerogatives of the Chair.

Member Duties and Responsibilities

The purpose of the Commission is to adopt findings relating to the accuracy or reliability of particular methods, principles, standards, models, or output ranges used to project hurricane losses and probable maximum loss levels. This work is extremely technical and requires specialized expertise. Therefore, the Legislature, in s. 627.0628, F.S., limited membership on the Commission to a careful balance of individuals meeting specific employment, education, and expertise requirements. Thus, each member's contribution cannot be underestimated and each member should make every effort to attend all meetings, in person or by telephone, and be prepared to actively participate. In particular, each member has the following responsibilities and duties:

1. Fully prepare for each Commission meeting and Committee meeting where the member is designated as a Committee member;
2. Attend and participate at each meeting in person or by telephone;
3. Give notice to SBA staff, in advance if possible, when a member must leave a meeting early or cannot attend at all;

4. Abide by the requirements of Florida's Sunshine Law. A summary of the requirements of this law is outlined in this section;
5. Since it is the SBA's responsibility to fund all Commission activities, all communications related directly to Commission activities shall be directed to SBA staff who are responsible for administrative support of the Commission. Directly related to Commission activities, the following communications should not take place:
 - a. Commission members should not contact Professional Team members or modeling organizations directly, except in conjunction with communications during the on-site visit of a Commission member,
 - b. Modeling organizations should not contact Commission members or Professional Team members directly,
 - c. Professional Team members should not contact Commission members or modeling organizations directly;
6. Give notice of "special" conflicts of interest where the member, the member's relative, business associate, or any principal by whom he or she is retained stands to reap a direct financial benefit or suffer a potential loss from the issue being voted on. Financial benefit which is speculative, uncertain, or subject to many contingencies is not a special benefit that would preclude a member from voting. See Attorney General's Opinion 96-63 (September 4, 1996) and Commission on Ethics Opinion 94-18 (April 21, 1994). If a special conflict of interest arises and the special conflict is apparent prior to the meeting, the member must give advance notice to SBA staff. If the special conflict becomes apparent during a meeting, the member should immediately inform the Chair or Vice Chair. The conflicted member shall recuse himself or herself from any activity of the Commission in the area of the special conflict;
7. Commission members are expected to meet the highest standards of ethical behavior. It is understood, given the nature of the expertise held by Commission members, that general conflicts of interest are inherent. The conflicts of interest which are addressed in s. 112.3143, F.S., and the conflicts which would preclude a Commission member from voting on an issue are only those conflicts which are special. Additionally, Commission members should be mindful of situations which may arise that have the potential to give an unfair advantage to any modeling organization or result in a particular Commission member having unique information and being in a position to exercise greater influence than other Commission members.

New Member Orientation and Continuing Education of Existing Members

As part of the SBA's administrative support of the Commission, the SBA staff will be responsible for new member orientation. The SBA staff may also design programs for continuing education at the request of the Commission. The cost of such programs is subject to approval through the state budgetary process as outlined under ***Budget Consideration***.

On-Site Visits to the Modeling Organization by Commission Members

The 2005 legislative changes to s. 627.0628, F.S., specified that the goal was to enable the Commission to have access to all aspects of hurricane loss models. Since both a public records

exemption and a public meetings exemption are provided in the law, Commission members are able to review trade secrets in much more depth and able to inquire into the underlying nature of the models without exposing such trade secret information to modeling organization competitors. Although reliance on the expertise of the Professional Team will continue to be necessary in the Commission's review process, it is anticipated that Commission members may request to have greater access to the model by going to the modeling organization's location for an on-site visit.

The procedure for on-site visits and additional verification review visits will require that the Commission member obtain approval from the Commission and obtain authorization from the SBA for reimbursable travel (due to budget considerations). The deadline for requesting on-site visits, which will include any additional verification review visits, will be seven days prior to the Commission meeting to review modeling organization submissions in order for the requests to be placed on the meeting agenda.

Travel arrangements will be coordinated through SBA staff and in accordance with the SBA's travel policy. Commission members are responsible for their own transportation arrangements to/from and during the on-site visits.

The Commission member's on-site visit shall take place at the same time as the Professional Team's on-site or additional verification review; however, the Commission member's presence shall not disrupt the activities and/or work of the Professional Team. This procedure will limit the Commission member(s) participation to that of an observer during the Professional Team activities and their review process. The Commission member may ask questions of the modeling organization in meetings separate from those of the Professional Team. Given time and resource constraints, all reasonable attempts will be made to schedule meetings between the modeling organization and Commission members, and the modeling organization should make its best effort to be available to answer the Commission member's questions.

If any notes are taken by a Commission member, the notes identified by the modeling organization as trade secret will be placed in a sealed envelope marked "Confidential" with the date, time, and Commission member's signature across the seal. The notes will be kept by the modeling organization and returned to the Commission member during the closed meeting to discuss trade secrets. At the conclusion of the closed meeting, all notes will be returned to the modeling organization.

It should also be noted that the job of the Professional Team while on-site is to review the model rather than to educate Commission members. The education of Commission members by the Professional Team is better accomplished in other settings.

Commission members will refrain from discussing the model among themselves while on-site and will be mindful of the requirements of the public meeting laws of Florida. Since Professional Team members have signed contracts with the SBA that contain a confidentiality clause accepted by each modeling organization and are prohibited from discussing such proprietary information, Commission members cannot be included in any activities, meetings, or deliberations of the Professional Team.

Trade Secret Documents for Review On-Site by Commission Members: The Professional Team reviews the Audit section of the *Report of Activities* while on-site, and a Commission member may have additional questions or prefer a more in-depth discussion about a particular

audit item. In order for the modeling organization to have the necessary personnel and documents available, Commission member(s) shall identify the items from the Audit section of the *Report of Activities* that they are particularly interested in reviewing on-site. Each Commission member may create a prioritized list of items to be provided to SBA staff no later than the Commission meeting to review modeling organization submissions. The list will be provided to the modeling organization with the Professional Team pre-visit letter, in preparation for the member's on-site visit.

All items included in the Audit section are of equal importance since all are required for verification of the standards. Because the time required to review the different audit items will vary, Commission members should prioritize the items they request to review based upon their expertise and interest. Due to time constraints, it will be the responsibility of the member(s) to allocate their time accordingly while on-site.

Documents Containing Trade Secrets Used in the Design and Construction of Hurricane Loss Models

Material Containing Potential Model Trade Secrets to be Visually Displayed or Discussed during Closed Meetings (Trade Secret List): The Commission may develop an additional Trade Secret List of information, documents, and/or presentation materials that contain potential trade secrets used in the design or construction of the hurricane loss model that the Commission wants to see and/or to discuss during the closed portion of the Commission meeting to review models for acceptability. The Trade Secret List is included in the Acceptability Process of the *Report of Activities*. The Trade Secret List is organized under major categories, i.e., general trade secrets, meteorological trade secrets, vulnerability trade secrets, actuarial trade secrets, statistical trade secrets, and computer trade secrets.

The trade secret material shown to the Commission will be under the control of the modeling organization. This information, by law, shall be confidential and exempt from the State's public records requirements.

Closed Meetings for the Purpose of Discussing Trade Secrets Used in the Design and Construction of Hurricane Loss Models

There is an exemption from public meeting requirements for those portions of a Commission meeting where trade secrets, used in the design and construction of hurricane loss models, are discussed. The closed portion of a Commission meeting where trade secrets are reviewed and discussed will be held prior to the public portion of the Commission meeting to review models for acceptability. Voting regarding the acceptability of a model shall only take place during the public portion of the meeting. During any closed meeting, Commission members shall confine their discussions to trade secrets related to that particular model under consideration. Discussions other than those involving trade secrets shall take place during the public portion of the meeting. Only public information that is absolutely essential to the understanding of the trade secret information may be provided along with the trade secret information during the closed meeting. Any such public information discussed must be discussed during the public portion of the meeting to ensure full access of the public to that information.

Attendees: The only authorized attendees of the closed portion of the Commission meeting to review models for acceptability shall include Commission members, Commission staff, Professional Team members, and modeling organization designated personnel, staff, and/or consultants.

Role of Professional Team: The discussion of trade secrets may involve verbal explanations, review of documents, and various types of demonstrations. Although the Professional Team will be present during the discussion of trade secrets, they should be viewed by the Commission members as a resource to confirm that the information being provided is consistent with the information provided on-site. Questions related to modeling organization trade secrets should be addressed directly to the modeling organization rather than to the Professional Team members.

Room Requirements: Before the closed portion of the Commission meeting to review models for acceptability begins, the room will be cleared of all unauthorized persons and all their belongings. No briefcases, cellular phones, laptops, or other electronic devices shall be accessible to the authorized attendees during the closed meeting other than equipment needed by the modeling organization and equipment required by the Commission to accommodate Commission members.

All telephone lines and all microphones will be checked to ensure that discussions cannot be heard, relayed, or recorded beyond the confines of the room. Personnel outside of the meeting room will be asked to move to a distance where discussions cannot be inadvertently overheard or visual presentations seen. No telephone calls shall be made or received from the meeting room during the discussions of trade secrets other than those needed to meet the needs of the modeling organization. Authorized attendees needing to make or receive telephone calls will be required to leave the meeting room to handle such communications. Any notes taken by authorized attendees, other than the modeling organization, will be collected and shredded at the conclusion of the closed meeting and prior to anyone leaving the meeting room. During the closed meeting, internet access may be available where modeling organizations may choose to provide direct access to the model by electronic means to help answer questions of Commission members.

Teleconference: Due to security reasons, a teleconference call-in number will not be available to authorized attendees. If requested by the modeling organization, Commission staff will contact, from the meeting room, additional modeling organization personnel to allow their participation by phone.

Breaks: If a break is taken during a closed meeting, authorized attendees will not discuss any of the proceedings from the time the meeting doors are open until they are closed following the conclusion of the break. No notes or other recorded information may be taken out of the meeting room during a break. Other than authorized attendees, no one will be allowed to enter the meeting room during a break with the exception of building maintenance personnel, food or beverage service personnel, or electronic technicians needed to provide services for the meeting room.

Transcripts: The Commission will not record a transcript for the closed portion of a Commission meeting.

Quorum Requirements: A quorum of Commission members will not be required to conduct the closed portion of the Commission meeting.

Additional Closed Meetings: Once the initial closed portion of the Commission’s meeting has concluded, the public portion of the meeting will begin. Upon a motion and a second and a majority vote, the Commission may decide to go back into a closed meeting. If such a decision is made by the Commission, all meeting security requirements previously outlined will apply.

Commission Meetings

Quorum: A majority of the eleven Commission members, i.e., six members, is required to constitute a quorum. A quorum is the number of members necessary to transact the official business of the Commission. “Presence” shall be defined as either a physical presence or as participation by any other means that allows the Commission member to communicate simultaneously with those members who are present.

Voting Abstentions based on Conflict: For the purpose of determining whether there is a quorum, if a member abstains from voting based on a special conflict of interest (as defined under *Member Duties and Responsibilities*), that member would still be deemed present for purposes of the quorum requirement (Attorney General’s Opinion 75-244; August 29, 1975).

Temporary Absence: “If a member in attendance at a meeting is called away and is unable to return to the meeting, the transcript should reflect the point at which ... [the member] left and - if the remaining members constitute a quorum - the meeting should continue.” If, however, the member is only temporarily absent, and this member is needed to constitute a quorum, the “appropriate procedure would be to recess the meeting until the member can return or, at least, to postpone a vote on any matter before the body until ... [the member’s] return” (Attorney General’s Opinion 74-289; September 20, 1974).

Meeting Notices: Written notice of a meeting of the Commission shall be provided to each member as soon as possible, and at a minimum, except in the event of an emergency meeting, at least 14 days prior to the date scheduled. Section 286.011, F.S., requires public meetings to be noticed, and the notice must contain a time certain, a date, and the location of the meeting. If available, an agenda should be provided. If no agenda is available, it is sufficient if the notice summarizes the subject matter to be covered in the public meeting.

Public Access: Any member of the public shall have access to all Commission meetings that do not involve the discussion of trade secrets used in designing and constructing hurricane loss models. That portion of a Commission meeting where a trade secret is addressed is confidential and exempt according to s. 627.0628(3)(f)2, F.S., and thus will not be open to the public.

Agendas: Agendas listing topics planned for discussion shall be furnished to each member prior to the meeting. However, the agenda is to be used merely as a guide and topics not listed may be raised and discussed and the members may choose not to address an issue or topic listed on the agenda.

Location: Meetings shall be in Tallahassee, Florida, unless special circumstances arise.

Recording: The SBA staff shall be responsible for ensuring that all public portions of Commission meetings are recorded. The transcribed record shall be maintained by SBA staff. The Commission will not record a transcript for any closed portion of a Commission meeting.

Voting Requirement: Except in the case of a special conflict of interest (as defined under *Member Duties and Responsibilities*), no Commission member who is present at any meeting at which an official decision or act is to be taken or adopted by the Commission may abstain from voting (s. 286.012, F.S.).

Designation of an Acting Chair: Depending on the circumstances, the Chair or Vice Chair may temporarily appoint any member to act as Chair in those situations where the physical presence of a Chair is desirable to facilitate conducting the meeting.

Purpose and Conduct of Meetings: The Commission holds six types of meetings: (1) Committee meetings designed to review and revise the Commission's standards, disclosures, forms, acceptability process, and other sections of the *Report of Activities*, (2) Commission meetings for the purpose of adopting revisions to the standards, disclosures, forms, acceptability process, and other sections of the *Report of Activities*, (3) Commission meetings for the purpose of reviewing model submissions, (4) Commission meetings for reviewing model acceptability, (5) Commission meetings to consider an appeal by a modeling organization if a model is not found to be acceptable by the Commission, and (6) planning workshops for the purpose of discussing, studying, and educating Commission members on scientific advances and new developments in the fields of meteorology, engineering, actuarial science, statistics, and computer science. The discussions from these workshops may be used in planning for future standards, disclosures, and forms. The meetings to review model acceptability may involve the discussion of modeling organization trade secrets. The Commission shall conduct the portion of a meeting where trade secrets used in the design and construction of the hurricane loss model are discussed as a closed meeting. Each type of meeting is discussed below.

Committee Meetings

Committee meetings are for the purpose of discussing issues, developing standards, completing necessary groundwork, and reaching a consensus among those present so when the Commission meets later to formally adopt the standards and *Report of Activities*, most of the issues can be easily resolved with less detail and finalizing work required. Committee meetings provide for an informal workshop environment where Commission members, Professional Team members, SBA staff, modeling organizations, insurers, regulators, and the general public are encouraged to participate and provide input. A working draft of proposed revisions to the standards, disclosures, forms, acceptability process, and other portions of the *Report of Activities* is created. A public notice is required, but it is not necessary that a quorum be present since all official business requiring a vote will be conducted at Commission meetings.

The role of the Chair of a Committee is to present the draft of proposed standards and other relevant documents with the aide of the Professional Team and SBA staff. The role of the other Committee members is to thoroughly review the proposed draft and provide input and ideas at the Committee meetings. Committee members have the responsibility of preparing in advance and becoming familiar with all the relevant issues. Such members have the responsibility of reading documents, raising questions, forming opinions, and participating in discussions. The

role of the other Commission members is to participate, at their option, in all or various Committee meetings. In this manner the difficult work will be spread among Commission members and specific expertise will be utilized when reviewing and revising standards. It is beneficial for each Commission member to be fully prepared to participate as an active Committee member and provide quality input and discussion at the Committee stage.

Committee meetings are not Commission meetings. Due to quorum requirements, no formal voting shall take place at Committee meetings, but a consensus among Committee members and others participating is desirable. The Committee Chair is expected to report issues and bring work

products to the Commission at properly scheduled and noticed Commission meetings. It is possible for a Committee to meet with one Commission member (the Chair of the Committee) and other interested parties (non-Commission members), but such Committee meetings shall be publicly noticed and approved by the Commission Chair. The Committee meeting idea works best

when Commission members guide the Committee meetings and there is broad participation by the public, modeling organizations, regulators, or other interested parties. Although Committee meetings can be held with a substantial number of Commission members present, care should be taken to include the public and all interested parties to gain maximum participation and input. Committee Chairs should regularly call upon and solicit input from any and all interested parties present.

The recommended way to conduct a Committee meeting is as follows:

1. Standard

- a. Each standard should be taken in order and read in its entirety or presented visually to the members.
- b. The Committee Chair asks if the standard is located in the appropriate grouping of standards or if it should be moved to a more appropriate section.
- c. The Committee Chair asks if the standard is still relevant, whether it should be eliminated, or if modifications should be made. If modifications are suggested, the Chair should ask for proposed wording, if anything needs to be added, or if anything needs to be deleted in the standard.
- d. Any proposed changes to the standard are then read and explained.
- e. The Committee Chair next asks if there are any objections to the proposed changes and if any further changes are needed.
- f. The Committee Chair asks whether there are wording issues associated with the standard, are there any ambiguities, or are there ways to further clarify the standard by better drafting.

2. Purpose

- a. The Committee Chair reads or visually presents the purpose of the standard and asks if the purpose is clear and if any changes are needed.
- b. The Committee Chair asks if there are any objections or comments regarding the wording in the Purpose section.
- c. The Committee Chair asks if there are any wording or drafting issues associated with the purpose.

3. Disclosures

- a. The Committee Chair reads or visually presents each disclosure and asks if the disclosure is relevant and located with the appropriate standard.

- b. The Committee Chair asks whether any additions, deletions, or other proposed changes are needed to the disclosures.
 - c. The Committee Chair asks if there are any objections to the proposed changes and if any further changes are needed.
 - d. The Committee Chair asks whether there are wording issues or additional instructions that need to be addressed to clarify the disclosure requirements.
4. Audit
- a. The Committee Chair reads or visually presents the audit requirements and asks if it is clear and will be sufficient to help verify if the modeling organization has met the standard.
 - b. The Committee Chair asks whether any additions, deletions, or other proposed changes are needed to the Audit section.
 - c. The Committee Chair asks if there are any objections to the proposed changes and if any further changes are needed.
 - d. The Committee Chair asks whether there are wording issues or additional instructions that need to be addressed to clarify the audit requirements.
5. Forms
- a. The Committee Chair asks whether the forms are appropriate, relevant, and located in the appropriate grouping of standards.
 - b. The Committee Chair asks if there are any proposed changes suggested for the forms and if additional instructions are needed.
 - c. The Committee Chair asks if there are any objections to the proposed changes or if additional wording changes are needed for clarification.
6. Trade Secret List
- The Committee will identify a trade secret list of information, documents, and/or presentation materials that contain potential trade secrets used in the design or construction of the hurricane loss model that the Commission wants the modeling organization to visually display or discuss during the closed portion of a Commission meeting to review models for acceptability.

The meeting of the Acceptability Process Committee will proceed differently, but will follow a similar logical pattern as described above. The Acceptability Process Committee will start by reviewing the “Process for Determination of the Acceptability of a Computer Simulation Model.” All proposed changes will be discussed. Any modifications will be considered. Objections and comments will be solicited from those participating. Finally, any wording or formatting issues will be discussed.

Following the discussion of the acceptability process, the Acceptability Process Committee will take up other various sections of the *Report of Activities* by considering their appropriateness and relevancy, proposed/suggested changes or modifications, any objections, and wording or formatting issues.

As consensus is built and revisions are agreed to, the SBA staff in conjunction with the Professional Team will note the changes/modifications and produce the draft documents that will be distributed in advance of the Commission meetings that will be held for the purpose of adopting the standards and finalizing the *Report of Activities* for the next odd year.

Commission Meetings to Adopt Standards

The Chair of the Commission will open the meeting and ask each Committee Chair, who presided over the revisions to the standards, to comment as to the purpose of each standard and any changes suggested by the Committee under each standard. This will not only include the standard, but the purpose, the disclosures, the audit requirements, the forms, and the Trade Secret List. The Committee Chair along with the Professional Team and SBA staff will discuss and comment on revisions to the standards. The Commission members will ask questions and offer further suggestions if necessary and appropriate. The Chair may also ask for comments from others in attendance including modeling organizations, regulators, insurers, or the general public.

Once the discussion is concluded, the Committee Chair should make a motion that the Commission adopt the standard along with the suggested revisions including those associated with the purpose section, the disclosures, the audit requirements, and the forms. Another Committee member should second the motion. The Commission Chair will then ask if there is any further discussion. The Commission Chair will recognize Commission members for final comments or questions. Once the discussion is completed, the Commission Chair will ask for a roll call vote. Each standard (including its accompanying purpose section, disclosures, audit requirements, and forms) will be voted on separately.

The “Process for Determining the Acceptability of a Computer Simulation Model” will be voted on separately. The Commission Chair will ask the Chair of the Acceptability Process Committee to explain the changes to the acceptability process. Once this is completed and comments are made by the Professional Team and SBA staff, the Committee Chair will make a motion that the Commission adopt the acceptability process as amended. Another Acceptability Process Committee member should second the motion. The Commission Chair will ask if there is any further discussion. After recognizing Commission members for discussion, the Commission Chair will ask for a roll call vote.

The final items to be voted on by the Commission include the remaining sections of the *Report of Activities*. If any of these sections do not change, they can be combined and adopted with one roll call vote. The Acceptability Process Committee will be responsible for these recommendations. The Committee Chair will discuss any changes/modifications and should make a motion to approve each section separately. Another Acceptability Process Committee member should second the motion. The Commission Chair will recognize Commission members for discussion and questions, and then will call for a roll call vote.

As a final consideration, the Commission Chair should consider whether it is appropriate to authorize the SBA staff to make any needed editorial changes consistent with the adopted *Report of Activities*. This would be done by roll call vote after a Commission member makes a motion that is seconded and after discussion.

Once all voting necessary to finalize the *Report of Activities* is completed, the Commission may take up other business or may adjourn.

Commission Meetings to Review Modeling Organization Submissions

The purpose of the meeting to review modeling organization submissions is to identify any “deficiencies” in the submissions, to create a list of “issues” to be addressed by each modeling organization, and to determine the time frame needed to review trade secrets during the closed meeting for each modeling organization.

Modeling organization submissions must be received by the November 15 deadline, and the submissions will have been distributed to each Commission member and the Professional Team for their review. The SBA staff will work with the Professional Team to identify any deficiencies or issues. Prior to the meeting, the Commission Chair working with SBA staff and the Professional Team may request that the modeling organization meet with the Commission (in person or by conference call) or provide additional information to clarify the submission.

Deficiency: A deficiency is defined as a lack of required documentation. A list of deficiencies will be created if the submission is incomplete, unclear, or non-responsive. Failure to adequately provide a required written response or the necessary public documentation expected by the Commission in the submission will result in a deficiency. If necessary, the Commission will attempt to further clarify its expectations by providing additional comments or instructions with the deficiency so that the modeling organization is fully aware of what is expected and will have a reasonable opportunity to correct the deficiency. The Commission will determine the appropriate time frame for correcting deficiencies. Failure to correct the deficiency within the time frame specified will result in the termination of the review process. The Commission Chair will have the discretion to extend the time frame for a modeling organization correcting deficiencies if unusual circumstances are involved.

Issue: Issues are related to the operation and theoretical soundness of the model. Issues should not require a modeling organization to submit additional public documentation that is not required of all modeling organizations. Issues should be addressed by the modeling organization with the Professional Team during the on-site review as well as with the Commission when the modeling organization presents the model to the Commission for acceptability. Should the nature of an issue be such that the Commission feels public documentation is needed, then the documentation should be added to the disclosure requirements and required of all modeling organizations. Otherwise, some modeling organizations might be put in an awkward position and vulnerable to making more information about their model public than other modeling organizations thus resulting in a competitive disadvantage. [See Principle #11 – *The Commission’s review process of models or methods shall not restrict competition in the catastrophe modeling industry or thwart innovation in that industry.*]

In conducting the meeting to review the modeling organization submissions, the Commission Chair will take up one modeling organization submission at a time as indicated on the agenda for the meeting. The Commission Chair will take up each standard grouping and consider all the responses provided under the standard including the modeling organization’s response to compliance with the standard, the information provided in the disclosures, any response provided to the audit requirements, and the completeness of the forms.

The first point of discussion will relate to submission deficiencies. The SBA staff working with the Professional Team will have provided a report to the Commission members regarding

deficiencies that have been identified and that need to be corrected. The Commission will review those deficiencies and add, delete, or modify the list as appropriate. Following a discussion of the deficiencies, the Commission will next discuss the issues identified under each grouping of standards. The SBA staff working with the Professional Team will have provided the Commission members with a list of issues prior to the meeting. The Commission will review those issues associated with each grouping of standards and add, delete, or modify the list as appropriate.

Upon review of each grouping of standards, the Commission Chair will ask if there is a motion and a second to continue the review process subject to the correction of the deficiencies and to approve the list of issues to be addressed in the review process. The motion should include a specific time frame for correcting any deficiencies in the submission. The modeling organization will be expected to resubmit or amend the original submission as specified by the Commission in the Acceptability Process of the *Report of Activities*. The Commission Chair will call for further discussion. After discussion, the Commission Chair will ask for a roll call vote. The next grouping of standards will then be addressed. At any point, the Commission can determine that the modeling organization has not been responsive to the submission requirements and vote to terminate the review process.

After review of each grouping of standards, the Commission will determine the amount of time (one to two hours) that will be allocated for each closed meeting to discuss trade secrets based upon the model submission received.

Commission Meetings to Review Models for Acceptability

The first portion of the Commission's meeting to review a model for acceptability will be closed to the public and will involve the discussion of trade secrets used in the design and construction of the hurricane loss model identified in the Trade Secret List.

At the public meeting to determine the acceptability of a model, once a quorum is present, either in person or by telecommunications, all votes will be by a roll call vote based on the majority vote of those present. No Commission member, who is present at any Commission meeting at which an official decision or act is to be taken or adopted by the Commission, may abstain from voting except when a special conflict of interest exists (s. 286.012, F.S., s. 112.3143, F.S.). For those circumstances in which a standard does not apply to a particular model, the Commission will vote affirmatively that the standard does not apply and such a vote will constitute a determination by the Commission that the standard is not applicable.

The standards will be categorized under six groupings: (1) General Standards, (2) Meteorological Standards, (3) Vulnerability Standards, (4) Actuarial Standards, (5) Statistical Standards, and (6) Computer Standards. The minimum number of vote tallies taken to determine the acceptability of a model would be one for each group of standards. If the Commission determines that the model meets all standards in a grouping, the model is found acceptable with respect to each individual standard in the grouping. Standards with subparts denoted by a notation of A, B, C, etc. are considered one standard. At the request of any Commission member, one or more standards in a grouping may be set aside from the remaining standards in that grouping for a separate vote.

Based upon a motion of any member that is duly seconded, the Commission may review and modify the voting requirements for any model as may be appropriate due to the unique aspects of the model.

At the start of the public portion of the meeting, the Commission Chair will first ask Commission members if the modeling organization responded to all deficiencies identified in the meeting to review modeling organization submissions in the manner specified by the Commission. The Commission Chair may call upon SBA staff or Professional Team members to comment and may also entertain discussion from Commission members or the modeling organization. Failure to provide the information required in the Trade Secret List will result in a deficiency. If the Commission identifies other deficiencies, the Commission may specify a time frame for correction of those deficiencies that may include a review by one or more Professional Team member(s).

The Commission Chair will then call upon the modeling organization to provide an overview presentation as required in the Acceptability Process of the *Report of Activities*. The modeling organization shall make a presentation and Commission members may ask questions during and after the presentation.

The Commission Chair will announce that the Commission is ready to review the model for acceptability. The Commission Chair will read the first standard and will call upon the modeling organization to discuss the compliance of the model with the standard. The Commission Chair will next call upon the Professional Team to comment after which the Commission Chair will ask Commission members for questions or comments. If there are none, or after all questions have been responded to, the Commission Chair will then proceed to begin reading the next standard. Once all the standards in a grouping have been presented and discussed, the Commission Chair will ask the Commission members whether there are any standards that need to be carved out and voted on separately. If no response is heard, the Commission Chair will ask for a motion to accept the model under that grouping of standards. A motion will be made and seconded by Commission members at this time. Prior to voting, the Commission Chair will ask if there is any further discussion. If members have questions or comments, they will be recognized. Once the discussion is completed, the Commission Chair will ask for a roll call vote. Any standards carved out will be separately voted on in a roll call vote.

The Commission Chair will then move to the next grouping of standards and begin to read the first standard in the grouping. The review process will follow as indicated in the paragraph above.

The Commission will have completed its determination of the acceptability of the model when it has completed voting on all standards. This does not preclude the Commission from revisiting a previous vote or revising the voting procedure as noted above. Upon conclusion of voting on all the standards, the Commission Chair will instruct SBA staff to tally the votes. The SBA staff member will indicate whether the model has been found acceptable by noting that the Commission does or does not find the model to have met all the standards. If the Commission finds the model acceptable, the Commission Chair will indicate to the modeling organization that the modeling organization will receive a letter as provided in the Acceptability Process of the *Report of Activities*.

The voting procedure can be changed only if approved by the Commission members, given a quorum is present. This will require a motion, a second, and approval of a majority by roll call vote.

Commission Meetings to Consider an Appeal by a Modeling Organization if a Model is not Found to be Acceptable by the Commission

If a model fails to meet one or more standards and is not found to be acceptable by the Commission, the modeling organization may file an appeal with the Commission and request a meeting with the Commission in open and/or closed session in order to provide additional information and data to the Commission to justify that the model complies with the Commission's standards and other requirements. The appeal process is specified in the Acceptability Process of the *Report of Activities*.

The purpose of the meeting to consider an appeal by a modeling organization is to review the appeal documentation and determine whether or not to reconsider the model.

The Commission Chair will call upon the modeling organization to provide a presentation which would include reasons and justification for reconsideration. Commission members may ask questions during and after the presentation. After discussion, the Commission Chair will ask for a motion to reconsider the model. A motion will be made and seconded by Commission members.

Prior to voting, the Commission Chair will ask if there is any further discussion. Once discussion is complete, the Commission Chair will ask for a roll call vote.

If the motion to reconsider the model is successfully approved by a majority vote, the Commission shall then determine if additional data and information is necessary prior to reconsideration of the model. The Commission may formulate additional questions and/or request additional data and information to be responded to by the modeling organization. Such questions, data, and information may include proprietary information, and if so, may be addressed by the modeling organization in a closed session if requested by the modeling organization. If additional data and information is necessary for reconsideration of the model, the Commission questions, data, and information request shall be provided to the modeling organization in a letter from the Commission Chair no later than ten days after the meeting to consider the appeal request. The Commission may proceed with scheduling a meeting with the modeling organization for reconsideration of the model.

If the Commission does not specify any follow up questions or identify any additional data or information needed, the Commission may proceed with the reconsideration of the model. The Commission shall then determine which standards should be reconsidered. This may include only the standards that were previously not found acceptable or it may include other standards that have come into question as a result of new information and data which cast doubt as to the accuracy or reliability of the model. The Commission shall vote on which standard or standards to be reconsidered prior to reconsideration of the model. The modeling organization may request more time to prepare for reconsideration if it feels that the nature of the review has become more complex and that it needs additional resources, time, and data to respond.

In reconsidering an earlier decision regarding a standard or standards, the Commission shall be guided by new information and data which was not previously provided by the modeling organization. Each standard will be discussed and voted upon separately in a roll call vote. The Commission Chair will read the title of the first standard being reconsidered and will call upon the modeling organization to present new information and data and to discuss the compliance of the model with the standard. The Commission Chair may call upon the Professional Team to comment after which the Commission Chair will ask Commission members for questions or comments. The Commission Chair will ask for a motion as to whether the model meets the standard under reconsideration. A motion will be made and seconded by Commission members at this time. Prior to voting, the Commission Chair will ask if there is any further discussion. If members have questions or comments, they will be recognized. Once the discussion is completed, the Commission Chair will ask for a roll call vote.

The Commission Chair will then move to the next standard being reconsidered, and the review process will follow as indicated in the paragraph above. The Commission will have completed its reconsideration of acceptability of the model when it has completed voting on all standards being reconsidered. This does not preclude the Commission from revisiting a previous vote on reconsideration of a standard or revising the voting procedure as noted above. Upon conclusion of voting on all standards being reconsidered, the Commission Chair will instruct SBA staff to tally the votes. The SBA staff member will indicate whether the model has been found acceptable by noting that the Commission does or does not find the model to have met all the standards being reconsidered. If the Commission finds the model acceptable under the standards reconsidered, the Commission Chair will indicate to the modeling organization that the modeling organization will receive a letter as provided in the Acceptability Process of the *Report of Activities*.

The voting and meeting procedure can be changed only if approved by the Commission members, given a quorum is present. This will require a motion, a second, and approval of a majority by roll call vote.

Planning Workshops

Planning workshops are for the purpose of discussing, studying, and educating Commission members on new scientific developments and advances in the fields of meteorology, engineering, actuarial science, statistics, and computer science. The discussions from the planning workshops will be instrumental in planning for future standards, disclosures, and forms.

The planning workshops will be duly noticed and may require a quorum so that an official vote may be taken on actions resulting from the ideas presented and discussed at the workshop.

The Commission Chair will call the meeting to order and will introduce the ideas for discussion as indicated on the meeting agenda and will solicit any other ideas for discussion from Commission members. The ideas introduced will be discussed, prioritized, and evaluated by the Commission. Included in the discussions will be budget considerations, if any, and further study on the ideas if needed.

Budget Consideration

All new projects that have a fiscal impact should be identified prior to January 1 of the calendar year so that appropriate funding can be obtained through the SBA's budgetary review process.

All new projects will consist of a proposal, an estimated cost, and a time frame for completion. The Commission will vote on all new proposals for projects. The FHCF will include in its budget the funding for on-going projects and anticipate the potential for new model submissions or any fiscal impact that changes to the acceptability process or the standards might have on the Commission's budget. The Commission's budget is subject to approval by the SBA Trustees for the appropriate fiscal year.

Sunshine Law

Section 286.011, F.S., aka "The Sunshine Law" or "open meeting law" applies to the Commission.

Scope of the Sunshine Law: In any place where two or more members of the Commission are present, there is the potential for violating the Sunshine Law.

Any communication, whether in person, by telephone, computer, etc., concerning any information on which *foreseeable action* may be taken by the Commission is a "meeting" that must meet the requirements of Florida's Sunshine Law if the communication takes place between two or more Commission members except as provided in s. 627.0628(3)(e), F.S.

Basic Requirements for Public Meetings: All meetings subject to the Sunshine Law must be –

- Open to the public;
- Noticed;
- Recorded by a court reporter and minutes preserved. The official minutes of the Commission will consist of a verbatim transcript unless special circumstances arise. In addition, SBA staff may prepare a summary of the meeting that will be added to the transcript and together will comprise the minutes of the meeting.

The SBA staff ensures that all scheduled public meetings of the Commission are filed for public notice in the Florida Administrative Weekly and a transcript is taken and preserved.

Penalty for Violating s. 812.081, F.S.: Section 812.081, F.S., provides the following penalty for violating the confidentiality of trade secrets:

(2) Any person who, with intent to deprive or withhold from the owner thereof the control of a trade secret, or with an intent to appropriate a trade secret to his or her own use or to the use of another, steals or embezzles an article representing a trade secret or without authority makes or causes to be made a copy of an article representing a trade secret is guilty of a felony of the third degree, punishable as provided in s. 775.082 or s. 775.083.

(3) In a prosecution for a violation of the provisions of this section, it is no defense that the person so charged returned or intended to return the article so stolen, embezzled, or copied.

IV. FINDINGS OF THE COMMISSION

FINDINGS OF THE COMMISSION

Concerning Model Accuracy and Reliability

Background

Section 627.0628(3)(a), (b), and (e), F.S., instructs the Commission to adopt findings from time to time as to the accuracy or reliability of standards and models, among other things. This section also states that the Commission shall adopt revisions to previously adopted actuarial methods, principles, standards, models, or output ranges every odd year. The following findings address the accuracy or reliability of the standards that the Commission has adopted since 1996 and the accuracy or reliability of the computer simulation models that the Commission has reviewed. The Commission thus far has reviewed computer simulation models exclusively because these constitute the only widely accepted approach to estimate residential loss costs and probable maximum loss calculations.

The Commission finds that the computer simulation models that it has reviewed are stochastic forecasting models. This means that future hurricane events are stochastically generated and the associated loss costs are accumulated and probable maximum loss calculations can be made using the model with the consideration of an insurer's individual or unique exposure data. By generating a sufficient body of hypothetical future events, the sampling uncertainty in the output ranges owing to the random variate generation process becomes negligible. The Commission finds that the accepted models produce accurate or reliable modeled loss costs and probable maximum loss levels for the entire state of Florida given the data and research currently available. Loss costs and probable maximum loss levels based on these models are based on actuarially sound and theoretically appropriate techniques that also incorporate scientific evidence, findings, and principles from the areas of meteorology, engineering, statistics, and computer science.

Accurate and Reliable – Defined

The Commission finds that the computer simulation models that have been reviewed by the Commission and found acceptable include appropriate model representations to simulate hurricanes and the induced damage on residential property in Florida. The basic features of the model construction are reflected in the six sections of standards established and refined since June of 1996:

- General Standards reflecting the professional status of the model designers and testers and generic aspects of the model;
- Meteorological Standards covering all aspects of this infrequent weather phenomenon;
- Vulnerability Standards assessing the impact of the hurricane winds on residential property;
- Actuarial Standards assessing the damage impact in insurance terms;
- Statistical Standards addressing the statistical foundation of the model and the sensitivity and uncertainty assessment of model outputs as a function of model inputs;
- Computer Standards providing the overall design, construction, and execution of the model.

The Commission finds and recognizes that the scientific fields underlying loss projection models continue to evolve providing further insights into property damage and insurance implications. As a direct consequence, the Commission reviews and revises the standards comprising its *Report of Activities* every odd year. Every odd year is defined as every year ending in an odd number, i.e., 2009, 2011, 2013, 2015, 2017, etc. The Commission finds that the standards adopted every odd year represent the current state of actuarial science regarding computer simulation modeling for purposes of producing loss costs and probable maximum loss levels for residential property in Florida that are accurate and reliable.

The words “accurate” and “reliable” are used in s. 627.0628, F.S., but are not defined therein. In the context of computer simulation modeling, “accurate” means that the models meet the standards that have been developed to assure scientifically acceptable loss cost projections and probable maximum loss levels. However, “accurate” cannot necessarily mean that a model conforms exactly to known facts since that contradicts the nature of the modeling process. “Reliable” is defined for computer simulation models as meaning that the model will consistently produce statistically similar results upon repeated use without inherent or known bias.

FINDINGS OF THE COMMISSION

Concerning Trade Secrets

The Commission finds the following with respect to Principle #9 (*The trade secret aspects of models or methods being reviewed by the Commission shall be protected.*):

1. the organizations that produce a computer simulation model may have trade secrets regarding the design and construction of that model;
2. the modeling organizations have been unwilling to reveal those trade secrets to the Commission in the context of the public meetings that the Commission holds because their competitors are part of the audience or can get a copy of the publicly available transcript of the meeting;
3. the modeling organizations have been willing to reveal all of their trade secrets if that information can remain confidential and within their control; since that trade secret information would become publicly available in the context of a meeting in the “Sunshine,” the Commission has authorized:
 - a. a Professional Team to review the models on-site on behalf of the Commission,
 - b. on-site visits to the modeling organizations by Commission members,
 - c. closed meetings for the purpose of discussing trade secrets;

the law allows an exception from the public records law for trade secrets used in the design and construction of hurricane loss models;

the Commission may require that the modeling organization provide certain documents for direct review by Commission members or the modeling organization may voluntarily provide documents containing trade secrets for the Commission’s review;

the law allows for the discussion of trade secrets to be exempt from public meeting requirements.

**V. PROCESS FOR DETERMINING
THE ACCEPTABILITY OF A
COMPUTER SIMULATION
MODEL**

PROCESS FOR DETERMINING THE ACCEPTABILITY OF A COMPUTER SIMULATION MODEL

This section specifies the Commission's process for the determination of acceptability of a computer simulation model (model). The Commission has determined that prior to November 1 of every odd year, it will adopt new standards, revise existing standards, and if necessary, revise this process. The effective date of new or revised standards will be November 1 unless otherwise specified by the Commission. The standards and procedures adopted in the *Report of Activities as of November 1, 2009*, will not be scheduled for change until November 1, 2011.

The Commission has determined that "significant changes" to the standards or to the model are those that either change or have potential to change the loss costs or probable maximum loss levels. On the other hand, any minor revisions, changes to the standards, or any changes to the model by the modeling organization that do not result in changes to loss costs or probable maximum loss levels are not considered significant. The Commission may determine in its judgment whether a change is significant.

The Commission has determined that any modeling organization that desires to have a computer simulation model reviewed for compliance with the standards adopted by the Commission shall notify the Commission in accordance with the requirements set out below by November 15 of the even year following the adoption of each odd year's standards.

The Commission has further determined that the period between November 1, the effective date of new and revised standards, and November 15 of the following year, the deadline for notification by the modeling organization, is a reasonable amount of time (12 months) for any modeling organization to comply with the standards adopted by the Commission. If the Commission determines that twelve months is not sufficient, based on the nature of the changes to the standards or based on other circumstances that might necessitate a longer period of time for compliance, then the Commission will adjust this period of time accordingly. If requested by a modeling organization, the Chair shall have the authority to grant a reasonable extension should the Chair determine that an emergency or unusual situation exists that warrants an extension and is determined to be beyond the control of the modeling organization.

I. Scheduling

The following is an anticipated schedule:

2009 Standards

August 2009	Committee meetings
September 2009	Adopt 2009 Standards and <i>Report of Activities</i>
November 1, 2009	2009 <i>Report of Activities</i> published
November 15, 2010	Deadline for notification by modeling organization
January 2011	Commission meeting to review submissions
January – April 2011	On-site reviews
May – June 2011	Commission meetings to review models for acceptability under 2009 Standards

2011 Standards

August 2011	Committee meetings
September 2011	Adopt 2011 Standards and <i>Report of Activities</i>
November 1, 2011	2011 <i>Report of Activities</i> published
November 15, 2012	Deadline for notification by modeling organization
January 2013	Commission meeting to review submissions
January – April 2013	On-site reviews
May – June 2013	Commission meetings to review models for acceptability under 2011 Standards

II. Notification Requirements

An “existing” organization is defined as an organization whose model was accepted by the Commission under the previous set of standards. All other modeling organizations are considered as “new.”

A. Notification of Readiness for Review. Any modeling organization desiring to have its model reviewed for acceptability by the Commission shall notify the Chair of the Commission in writing by November 15, 2010, that the organization is prepared for review. The notification shall consist of (1) a letter to the Commission; (2) a summary statement of compliance with each individual standard; (3) all required disclosure and form information; and (4) a completed Model Submission Checklist.

Notification to the Commission shall include:

1. A reference to the signed Expert Certification Forms G-1, G-2, G-3, G-4, G-5, G-6, and the Editorial Certification Form G-7, a statement that professionals having credentials and/or experience in the areas of meteorology, engineering, actuarial

- science, statistics, and computer science have reviewed the model for compliance with the standards, and that the model is ready to be reviewed by the Professional Team. Any caveats to the certifications will be noted in the letter and accompanied by a complete explanation.
2. A summary statement of compliance with each standard and the data and analyses required in the disclosures and forms. For existing modeling organizations, the material must be updated as appropriate to reflect compliance with the new or revised standards even though the modeling organization submitted this material as part of a determination of acceptability under the previous set of standards.
 3. A general description of any trade secret information that the modeling organization intends to present to the Professional Team.
 4. Twenty (20) bound copies (duplexed) and twenty (20) CDs of all documentation. The electronic copies of the submission shall be provided in the following manner:
 - a. Form M-1, Form M-3, Form V-2, Form A-3, Form A-4, Form A-5, Form A-6, Form A-7, and Form A-9, shall be provided on CD in Excel format;
 - b. Form A-1 shall be provided on CD in Excel and PDF format;
 - c. Form S-6 shall be provided on CD in ASCII and PDF format;
 - d. The remaining portions of the submission shall be provided on CD in PDF format;
 - e. All data file names shall include the abbreviated name of the modeling organization, the standards year, and the form name (when applicable);
 - f. The PDF submission files shall be highlightable and bookmarked by standard, form, and section.
 5. Format of the Submission:
 - a. Table of Contents shall be included;
 - b. Materials submitted shall be consecutively numbered from the first page (including cover) using a single numbering system from the beginning to the end of the submission;
 - c. All tables, graphs, and other non-text items shall be consecutively numbered using whole numbers, specifically listed in the Table of Contents, and clearly labeled with abbreviations defined;
 - d. State the standard, disclosure, or form in *italics* and give the response in non-italics. **The Purpose and Audit portion should not be restated.** The modeling organization response shall include a statement in support of compliance following each standard. The response to the standard shall explain how the

model meets the requirements of the standard by including 1) a statement in support of compliance

with the standard, and if applicable 2) a reference to a disclosure(s), and/or 3) a general description of trade secret information that will be shown to the Professional Team during the on-site review and how it supports compliance with the standard.

The Disclosure section of each standard is not designed to require trade secret information. Therefore, the response to a disclosure shall not contain a statement similar to “will be shown to the Professional Team” unless a response to the disclosure has been provided and additional test results and documentation will be available for the Professional Team during the on-site review.

If a standard or disclosure has multiple sections, respond to each section separately;

- e. Graphs shall be accompanied by legends and labels for all elements:
 - 1. Individual elements shall be clearly distinguishable, whether presented in original or copy form;
 - 2. For data indexed by latitude and longitude, by county or by ZIP Code, a map with superimposed county and ZIP Code boundaries shall be produced. Additional map specifications will be indicated on individual form instructions;
 - 3. Maps will use three colors – blue, white, and red, including shades of blue and red, with dark blue and dark red designating the lowest and highest quantities, respectively. The color legend and associated map shall be comprised of an appropriate number of intervals to provide readability;
- f. All units of measurement for model inputs and outputs shall be clearly identified;
- g. All model outputs of length, windspeed, and pressure shall be in units of statute miles, statute miles per hour, and millibars, respectively;
- h. Unless otherwise specified, windfields generated by the model shall be used for completing relevant forms and tables in the submission;
- i. A hard copy of each form (with the exception of Forms A-1 and S-6) shall be included in the submission document;
- j. If used, acronyms shall be defined on their first use in the submission;
- k. All column headings shall be shown and repeated at the top of each subsequent page for forms and tables.

6. The modeling organization should contact SBA staff for any needed clarification of submission instructions, especially if the instructions necessitate additional assumptions.
7. All modifications, adjustments, assumptions, or other criteria that are included in producing the information required by the Commission in the submission shall be disclosed and will be reviewed.

B. Revisions to the Standards or the Model – Not Significant. If the Commission does not revise any standards or makes only minor revisions to some standards so that existing models would otherwise be in compliance with all the standards, and the modeling organization subsequently notifies the Commission in writing that there have been no significant changes to the model previously determined acceptable, then the Commission will meet and review the modeling organization's letter and any other documentation provided and determine whether the model will be considered acceptable for an additional two years, whether an on-site review by the Professional Team is warranted, and whether a meeting with the Commission is warranted.

C. Revisions to the Standards or the Model – Significant. If the Commission makes significant changes to any existing standards and/or adopts new standards so that a model already determined to be acceptable is still in compliance with some, but not necessarily all of the standards, then the modeling organization will inform the Commission in writing as to whether it believes it is still in compliance with the standards that have been substantially revised or are new. If an existing modeling organization makes significant changes to the version of the model previously accepted by the Commission, then at the time it notifies the Commission that it is ready to have its model reviewed for acceptability, the modeling organization shall notify the Commission in writing of the change(s) and describe the magnitude of the change(s). The Commission will then meet and review the modeling organization's notification and any other documentation provided and determine whether the model is acceptable for an additional two years or whether an on-site review by the Professional Team is warranted or whether an on-site review is not necessary but that additional documentation must be provided which will then be reviewed at a Commission meeting. The Commission will not review changes made to a previously accepted version of a model at any time other than after the next November 15 notification date.

D. The modeling organization shall notify the Chair of the Commission in writing, as soon as possible, of any unusual situations that may impact the model submission.

III. Review of the Readiness Notification

Once the modeling organization submissions are received by the November 15 deadline, the Commission will hold a meeting to review the submissions as discussed under the Commission Structure section of this *Report of Activities*.

Prior to the Professional Team's on-site review and in accordance with the time frame specified by the Commission, the modeling organization shall submit corrections for the deficiencies identified during this meeting in electronic format via e-mail correspondence to SBA staff. Only revised pages and forms should be provided with revision marks as specified under **V. Submission Revisions**. All revised file names shall include the revision date, the

abbreviated name of the modeling organization, the standards year, and the form name (when applicable) in the file name.

Failure of the modeling organization to correct any deficiencies within the time frame specified will result in the termination of the review process. The modeling organization will be notified in writing that the review process has been terminated. Upon termination of the review

process, the modeling organization shall be required to wait until after the next revision or review of the standards before requesting the Commission to review its model.

In the event that a modeling organization realizes the initial submission has material errors and needs revision prior to the scheduled on-site review, the modeling organization shall immediately notify the Chair of the Commission in writing. The notification shall detail the nature of the errors and changes to the model, why it occurred, what is needed or has been done to correct the problem, the time frame needed for making the corrections, and any other relevant documentation necessary to describe both the errors and the corrections.

The Commission Chair shall (1) review the notification and inform the Commission members as soon as possible, and (2) assess, with at least two members of the Professional Team, the severity of the error and determine whether to postpone the on-site review pending consideration of potential deficiencies and the overall schedule of on-site reviews.

If it is determined to proceed with the originally scheduled on-site review, the modeling organization must submit revised documentation no less than ten days prior to the scheduled on-site review of the Professional Team. If the modeling organization cannot correct the problems and submit revised documentation ten days prior to the scheduled on-site review of the Professional Team, then all associated standards will not be verified during the initial on-site review.

IV. Professional Team On-Site Review

If a determination has been made that a new modeling organization is ready for an on-site review or that an on-site review is necessary for an existing modeling organization, SBA staff will schedule the on-site review of the Professional Team as discussed under the On-Site Review section of this *Report of Activities*.

There are two possible outcomes of the on-site review regarding auditing for compliance with the standards, disclosures, forms, and Trade Secret List.

1. The Professional Team determines that, in its opinion, the model is likely to comply with the standards, disclosures, and forms, and so reports to the Commission. The material described in the Trade Secret List to be presented during the closed meeting portion of the Commission meeting to review models for acceptability shall be presented to the Professional Team for review.
2. The Professional Team determines that, in its opinion, the model is unlikely to comply with the requirements in the disclosures, forms, and Trade Secret List or with one or more standards.

- a. The Professional Team may react to possible corrections proposed by the modeling organization but will not tell the modeling organization how to correct the non-compliance. If the problems can be remedied while the Professional Team is on-site, the Professional Team will review the corrective actions taken, including revisions to the original November 15 submission, before determining verification of a standard.
- b. If the problems cannot be corrected while the Professional Team is on-site, then the modeling organization will have seven days from the final day of the on-site review to notify the Chair in writing that it will be ready for an additional verification review within thirty days of the notification. The modeling organization shall submit all revised documentation as specified under **V. Submission Revisions**.

The SBA staff will assemble the Professional Team or an appropriate subset of the Professional Team for only one additional verification review to ensure that the corrections have been incorporated into the current, running version of the model.

If any problem necessitates the re-generation of the output ranges, the modeling organization must submit revised output ranges to be received by the Commission no less than ten days prior to the initial date of the on-site review. If this is not the case, then Standards A-6 and A-10 will not be verified during the initial on-site review.

In the event that (1) Form A-6 was modified after the initial submission and prior to the on-site review, or (2) an additional verification review is required and Form A-6 must be re-generated, the modeling organization shall provide additional versions of Form A-7 and Form A-8 with the initial submission as the baseline for computing the percentage changes.

- c. If the modeling organization disagrees with the Professional Team as to likelihood of compliance, the modeling organization has two options: (1) it can proceed to the scheduled Commission meeting to review models for acceptability under the 2009 Standards and present its arguments to the Commission to determine acceptability; or (2) it can withdraw its request for review. Such a withdrawal will result in the modeling organization waiting until after the next revision or review of the standards before requesting the Commission review its model.

V. Submission Revisions

Revised documentation shall include the revision date on the submission cover page and the Model Identification page. All revised file names submitted shall include the revision date, the abbreviated name of the modeling organization, the standards year, and the form name (when applicable) in the file name.

Revisions shall be noted with revision marks, i.e. words stricken are deletions (deletions) and words underlined are additions (additions). If revision marks are provided in color, material deleted and stricken shall be in red, and material added and underlined shall be in blue.

Revised documentation shall include a chronological detailed description of each substantive change to the model (whether identified by the modeling organization, the Commission, or the Professional Team) since the current year's initial submission, including all interim changes.

Complete documentation shall be received no less than ten days prior to the Commission meeting to review the model for acceptability.

A note will be posted on the Commission website with instructions for obtaining submission documents. Final submission documents for a model that has been found acceptable by the Commission will be posted on the Commission's website (www.sbafla.com/methodology).

If an additional verification review is requested, complete documentation shall be received within thirty days of the request.

The modeling organization shall provide one (1) CD containing all complete documentation without revision marks. If more than ten (10) pages are revised, twenty (20) bound copies (duplexed) and twenty (20) CDs of all complete documentation with revision marks for all revisions made to the original November 15 submission shall be provided. If ten (10) pages or fewer (exclusive of Form A-6) are revised, only twenty (20) hard copies of the revised pages and Form A-6 (if revised) shall be submitted in addition to the twenty (20) CDs of all complete documentation. The format of the revised documentation shall be as specified under II.A.4 and 5.

VI. Review by the Commission

- A. General Review of a Modeling Organization.** For any modeling organization seeking the Commission's determination of acceptability, the Commission may request a meeting with the modeling organization prior to the Commission's review of the modeling organization's compliance with the standards. The meeting may provide a general discussion about the model or its readiness for review and will also give the Commission and the modeling organization an opportunity to address any other issues. This meeting may be conducted concurrently with the meeting to determine acceptability. If trade secrets used in the design and construction of the hurricane loss model are anticipated to be discussed, such discussions will be in a closed meeting.
- B. Meeting to Determine Acceptability.** The Commission will meet at a properly noticed public meeting to determine the acceptability of a new or existing model once the modeling organization has provided all required material and the Professional Team has concluded its on-site review or any additional verification review. If the Commission Chair determines that more preparation time is needed by Commission members, he/she may reschedule the meeting date to review a model for acceptability, taking into consideration public notice requirements, the availability of a quorum of Commission members, the availability of a meeting room, and the availability of the particular modeling organization.

All materials shall be reviewed by the Professional Team prior to presentation to the Commission.

If the Commission determines that meeting one standard makes it impossible to meet a second standard, the conflict will be resolved by the Commission, and the Commission will

determine which standard will prevail. If at the meeting a unique or unusual situation arises, the Commission will determine the appropriate course of action to handle that situation, using its sound discretion and adhering to the legislative findings and intent as expressed in s. 627.0628(1), F.S.

Each organization's model will be reviewed independently of any other organization's model previously accepted or presently applying for review.

Trade secrets used in the design and construction of the hurricane loss model shall be discussed during a closed meeting prior to the Commission voting on the acceptability of the model. No voting regarding the acceptability of a model will occur during a closed meeting.

C. Modeling Organization Presentation. All modeling organizations shall make a presentation to the Commission with respect to the model as used for residential ratemaking purposes in Florida. The modeling organization presentation is for the purpose of helping the Commission understand outstanding issues as well as how the modeling organization has resolved various issues and to explain the basis as to how the model meets the standards. Various issues may relate to:

1. Informational needs of the Commission as provided in the disclosures and forms;
2. The theoretical soundness of the model;
3. Use of reasonable assumptions;
4. Other related aspects dealing with accuracy or reliability.

A new modeling organization is expected to give a detailed overview presentation to the Commission explaining how the model is designed to be theoretically sound and meets the criteria of being accurate and reliable.

An existing modeling organization is expected to present a general overview of the model (10-15 minutes). This presentation should concentrate on the theoretical basis for the model and highlight the measures taken to ensure the model is accurate and reliable. Then the presentation should focus on changes, including output ranges, from the previously accepted model and the effect those changes have on loss costs.

Closed Meeting Portion

During the closed meeting where trade secrets used in the design and construction of the hurricane loss model are discussed, the modeling organization presentation shall include an explanation of the materials required in the Trade Secret List. All material presented shall be complete, i.e., all axes on graphs labeled. The presentation shall use a medium that is readable by all members of the Commission.

Proprietary comments initially redacted from the Professional Team report shall be made available by the modeling organization to the Commission.

The modeling organization shall have available all trade secret exhibits related to the Trade Secret List used to support the model during the on-site and/or additional verification reviews, excluding items that the modeling organization is precluded from releasing due to third party contracts.

In order to meet the public meeting notice requirements for the public meeting portion, one to two hours shall be scheduled for the closed meeting.

A hard copy of the modeling organization's prepared presentation and Form V-3 shall be provided to the Commission and the Professional Team members (17 copies) at the start of the closed meeting. The hard copies will be returned to the modeling organization at the conclusion of the closed meeting and prior to anyone leaving the meeting room.

Trade Secret List

- Any disclosure related to commercial residential that the modeling organization deems proprietary.

Meteorological

- Proprietary variations, if any, in the model surface windfield from a published windfield, and all source code relevant to the model surface windfield. (Standard M-4)
- Model formulation for the vertical variation of the hurricane windfield including the data, methods, calculations, and procedures used. (Standard M-4, Audit 7)
- The basis for all short- and long-term climatic variations in hurricane frequencies. (Standard M-1, Audit 4)
- Color-coded maps of roughness length and spatial distribution of windspeeds over-land and over-water for Hurricane Dennis (2005) and Hurricane Andrew (1992) at the closest time after landfall. (Standard M-5, Audit 3)

Vulnerability

- Completed Form V-3 with the data, methods, calculations, and procedures used. (Standard V-2, Audit 1)

Actuarial

- Complete description of the data, methods, calculations, and procedures used to develop probable maximum loss levels in the model. (Standard A-11, Audit 1)

Computer

- Supportive design diagrams, equations, and pseudo-code and the associated translations to computer code shall be available for the above items.

Public Meeting Portion

The modeling organization presentation shall include an explanation of corrections made for deficiencies noted by the Commission. The presentation shall be made using a medium that is readable by all members of the Commission and shall include the following:

1. Each standard number and title shall be stated;
2. An explanation of how each standard was met, with reference to any appropriate disclosures or forms that support compliance;

3. If relevant, a description of the material presented to the Professional Team for verification;
4. Any non-trade secret information that can be provided in order to facilitate a general understanding of the trade secret information presented to the Commission during the closed meeting.

Three to five hours shall be scheduled for review of a model not previously submitted and two and a half hours shall be scheduled for review of an existing model during a public meeting.

A hard copy of the modeling organization's prepared presentation shall be provided to the Commission and the Professional Team members (17 copies) at the start of the public meeting.

All materials presented to the Commission during the public portion of the meeting to determine acceptability shall be provided to SBA staff in electronic format.

- D. Acceptability and Notification.** To be determined acceptable, the model shall have been found acceptable for all standards. If the model fails to be found acceptable by a majority vote for any one standard, the model will not be found to be acceptable. However, the modeling organization shall have an opportunity to appeal the Commission's decision (see **F.** below).

Once the Commission has determined that a model is acceptable in accordance with the procedures in this process and that all required documentation as specified in the acceptability process has been provided to the Commission, the Chair of the Commission will provide the modeling organization with a letter confirming the Commission's action.

The letter shall be in the following format.

Date

(Name and Address of Modeling Organization)

Dear _____:

This will confirm the finding of the Florida Commission on Hurricane Loss Projection Methodology on (date), that the (name of modeling organization) computer model has been determined acceptable for projecting hurricane loss costs and probable maximum loss levels for residential rate filings. The determination of acceptability expires on September 1, 2013.

The Commission has determined that the (name and version of model) complies with the standards adopted by the Commission on (date of adoption), and concludes that the (name and version of the model) is sufficiently accurate and reliable for projecting hurricane loss costs and probable maximum loss levels for residential property in Florida.

On behalf of the Commission, I congratulate you and your colleagues. We appreciate your participation and input in this process.

Sincerely,
(Name), Chair

A copy of the letter will be provided to the Commissioner of the Office of Insurance Regulation.

- E. Discovery of Errors and/or Changes to a Model after the Model has been Determined to be Acceptable by the Commission.** If a modeling organization discovers that material errors have been made in the model or the submission, the modeling organization shall immediately notify the Chair of the Commission in writing. The notification shall detail the nature of the error or change to the model, why it occurred, what is needed or has been done to correct the problem, the time frame needed for making the correction, and any other relevant documentation necessary to describe both the error/change and the correction.

The Chair shall (1) review the notification and inform the Commission members as soon as possible; (2) determine the need for a special meeting or whether the issue can be addressed at the next regularly scheduled meeting of the Commission; and (3) assess, with at least two members of the Professional Team, the severity of the error and determine whether the error warrants a temporary suspension of the acceptability of the model until the Commission has had an opportunity to review the matter.

The Chair shall send a letter to the modeling organization as soon as practical notifying the organization of the receipt of the error/change to the model notification and any decisions of the Chair pending review by the Commission.

If a modeling organization intentionally fails to notify or unreasonably delays the notification of the Commission of any errors or changes to a model which has been previously found acceptable by the Commission, the Commission shall review and investigate the circumstances and determine the appropriate course of action.

- F. Appeal Process to be Used by a Modeling Organization if a Model is Not Found to be Acceptable by the Commission.** If a model is not found to be acceptable by the Commission, the modeling organization shall have up to thirty days to file a written appeal of the Commission's finding. The appeal shall specify the reasons for the appeal, identify the specific standard or standards in question, provide appropriate data and information to justify its position, and may request a follow up reconsideration meeting with the Commission to present any relevant or new information and data to the Commission in either a public or closed meeting format.

Within sixty days of receiving the appeal, the Commission shall hold a public meeting for the purpose of reviewing the appeal documentation and formulate additional questions to be responded to by the modeling organization and/or request additional data and information. If the Commission determines additional data and information is necessary for reconsideration of the model, the Commission's questions, data, and information request shall be provided to the modeling organization in a letter from the Chair no later

than ten days after the meeting to consider the appeal request. The modeling organization shall respond to the Commission within ten days of receiving the Commission Chair's letter. Any proprietary responses, data, or information shall be noted by the modeling organization indicating the response will be discussed in a closed session with the Commission.

The Commission will meet at a properly noticed public meeting to determine the acceptability of the model under the standards established by the Commission for reconsideration. If the Commission Chair determines that more preparation time is needed

by Commission members, he/she may reschedule the meeting date to reconsider the model for acceptability, taking into consideration public notice requirements, the availability of a quorum of Commission members, the availability of a meeting room, and the availability of the particular modeling organization.

Once the Commission has completed its reconsideration of acceptability and determined that a model has met all the standards being reconsidered and that all required documentation as specified in the acceptability process has been provided to the Commission, the Chair of the Commission will provide the modeling organization with a letter confirming the Commission's action (see **D.** above).

If the model fails to be found acceptable by a majority vote for any one standard, the model will not be found to be acceptable and the appeal of the modeling organization shall have failed. In this regard, the findings of the Commission shall be final. The modeling organization will be required to wait until after the next revision or review of the standards to make another submission.

G. Expiration of a Model Found Acceptable. The determination of acceptability of a model found acceptable under the standards contained in the *Report of Activities as of November 1, 2009*, expires on September 1, 2013.

Model Submission Checklist

1. Please indicate by checking below that the following has been included in your submission to the Florida Commission on Hurricane Loss Projection Methodology.

Yes	No	Item
		1. Letter to the Commission
		a. Refers to the certification forms and states that professionals having credentials and/or experience in the areas of meteorology, engineering, actuarial science, statistics, and computer science have reviewed the model for compliance with the standards
		b. States model is ready to be reviewed by the Professional Team
		c. Any caveats to the above statements noted with a complete explanation
		2. Summary statement of compliance with each individual standard and the data and analyses required in the disclosures and forms
		3. General description of any trade secret information the modeling organization intends to present to the Professional Team
		4. Model Identification
		5. 20 Bound Copies (duplexed)
		6. 20 CDs containing:
		a. Submission text in PDF format
		b. PDF file highlightable and bookmarked by standard, form, and section
		c. Data file names include abbreviated name of modeling organization, standards year, and form name (when applicable)
		d. Forms A-1 and S-6 in PDF format
		e. Forms M-1, M-3, V-2, A-1, A-3, A-4, A-5, A-6, A-7, and A-9 in Excel format
		f. Form S-6 in ASCII format
		7. Table of Contents
		8. Materials consecutively numbered from beginning to end starting with the first page (including cover) using a single numbering system
		9. All tables, graphs, and other non-text items consecutively numbered using whole numbers
		10. All tables, graphs, and other non-text items specifically listed in Table of Contents
		11. All tables, graphs, and other non-text items clearly labeled with abbreviations defined
		12. All column headings shown and repeated at the top of every subsequent page for forms and tables
		13. Standards, disclosures, and forms in <i>italics</i> , modeling organization responses in non-italics
		14. Graphs accompanied by legends and labels for all elements
		15. All units of measurement clearly identified with appropriate units used
		16. Hard copy of all forms included in submission document except Forms A-1 and S-6

2. Explanation of “No” responses indicated above. (Attach additional pages if needed.)

Model Name

Modeler Signature

Date

VI. ON-SITE REVIEW

ON-SITE REVIEW BY PROFESSIONAL TEAM

General Purpose

The purpose of the on-site review is to evaluate the compliance of the model with the standards, disclosures, forms, and the Trade Secret List. The on-site review is conducted in conjunction with the **Process for Determining the Acceptability of a Computer Simulation Model**. It is not intended to provide a preliminary peer review of the model. The goal of the Professional Team's efforts is to provide the Commission with a clear and thorough report of the model as required in the acceptability process, subject to non-disclosure conditions. All modifications, adjustments, assumptions, or other criteria that were included in producing the information required by the Commission in the submission shall be disclosed and will be reviewed.

The Professional Team will begin the review with a briefing to modeling organization personnel to discuss the review schedule and to describe the subsequent review process.

The on-site review by the Professional Team will involve the following:

1. Due diligence review of information submitted by the modeling organization. For existing modeling organizations, the due diligence review will concentrate on any changes in the disclosures and forms as noted in the Notification of Readiness letter.
2. On-site tests of the model under the control and supervision of the Professional Team. The object is to observe the model in operation and the results it produces during a "real time" run. This is necessary in order to avoid the possibility that the modeling organization could recalibrate the model solely for producing desirable results.
3. Verification that information provided by the modeling organization in the disclosures and forms is valid and is an accurate and fairly complete description of the model.
4. Review for compliance with the standards. The Professional Team will attempt to consider each grouping of standards as a unit.
5. Review of the Trade Secret List.

Feedback regarding compliance of the model with the standards, disclosures, forms, and Trade Secret List will be provided to the modeling organization throughout the review process.

Preparation for On-Site Review

The Professional Team will assist the Commission and the SBA staff in determining if a modeling organization is ready for an on-site review.

The Professional Team will assist the modeling organization in preparing for the on-site review, by providing to the SBA a detailed pre-visit letter (to be sent to the modeling organization) outlining specific issues to be addressed by each modeling organization unique to their model submission. The Professional Team makes every effort to identify substantial issues with the model or submission to allow the modeling organization adequate time to prepare for the on-site

review. However, as the Professional Team continues to prepare for the review, it may discover issues not originally covered in the pre-visit letter prior to the on-site review. Such issues will be introduced at the opening briefing of the on-site review. The discovery of errors in the model by the Professional Team is a possible outcome of the review. It is the responsibility of the modeling organization to assure the validity and correctness of its model.

Telephone Conference Call: After the Commission has determined the modeling organization is ready to continue in the review process and prior to the on-site review, at the request of the Commission or the modeling organization, the SBA staff will arrange a telephone conference call between the modeling organization and the Professional Team or a subset of the Professional Team. The purpose of the call is to review the pre-visit letter, material, data files, and personnel that will need to be on-site during the review. This does not preclude the Professional Team from asking for additional information during the on-site review that was not discussed during the conference call or included in the pre-visit letter. The call will allow the modeling organization and the Professional Team the opportunity to clarify any concerns or ask any questions regarding the upcoming on-site review. This call will be the only scheduled opportunity for the modeling organization to clarify any questions directly with the Professional Team prior to their on-site review.

Scheduling: The SBA staff is responsible for scheduling on-site review dates. Each modeling organization will be notified at least two weeks prior to the scheduled review. The actual length of the review may vary depending on the preparedness of the modeling organization and the depth of the inquiry needed for the Professional Team to obtain an understanding of the model. The Commission expects new models under consideration to be well-prepared for a review by the Professional Team. In particular, it is suggested that a modeling organization conduct a detailed self-audit to assure that it is ready for the Professional Team review.

Presentation of Materials: The modeling organization shall have all necessary materials and data on-site for review. All material referenced in the submission as “will be shown to the Professional Team” and all material that the modeling organization intends to present to the Commission, including the Trade Secret List material, shall be presented to the Professional Team during the on-site review.

All materials, charts, graphs, and maps used in support of the model and the computer code shall be presented in a manner that is readable by all members of the Professional Team.

Professional Team Report

After completing its review of the standards, disclosures, forms, and Trade Secret List, the Professional Team will conduct an exit briefing with the modeling organization. During this briefing, the Professional Team will provide a preliminary draft of the Professional Team report. This offers the modeling organization an opportunity to check for any factual errors and to expunge any trade secret information. The Professional Team will accede to modeling organization suggestions for changes in its draft only to correct factual errors and to remove any trade secret information. If the modeling organization and the Professional Team dispute a particular item as a factual error, then the report will adopt the phrasing, “In the opinion of the Professional Team, ...”

The pre-edited, preliminary draft of the Professional Team report shall be made available to the Commission at the closed meeting where trade secrets used in the design and construction of the hurricane loss model are discussed. Any material deemed proprietary will be designated as trade secret. The pre-edited, preliminary draft will be placed in a sealed envelope marked “Confidential” with the date, time, and Professional Team leader’s signature across the seal. The draft will be kept by the modeling organization and returned to the Professional Team leader during the closed meeting to discuss trade secrets. At the conclusion of the closed meeting, the draft will be returned to the modeling organization.

The report will include:

- A list of participants;
- A summary of significant changes to the model from the previous year;
- Any corrections made to the submission that were reviewed by the Professional Team and will be provided to the Commission in the revised submission at least ten days prior to the Commission meeting to review the model for acceptability;
- A verification that any deficiencies noted by the Commission have been resolved;
- A copy of the pre-visit letter;
- A verification of compliance with the standards, disclosures, and forms;
- A description of material reviewed in support of compliance with the standards, disclosures, and forms;
- A statement indicating where proprietary information has been removed.

After leaving the modeling organization’s premises, the Professional Team, in coordination with SBA staff, will finalize its report and provide it to all Commission members in advance of the meeting to review the model for acceptability. Any disparate opinions among Professional Team members concerning compliance with the standards, disclosures, forms, and Trade Secret List will be noted and explained.

Additional Verification Review

It is possible that a subset of the standards or changes made to the disclosures, forms, and Trade Secret List may require further review by the Professional Team or a subset of the Professional Team. In such cases, the SBA staff will arrange an additional verification review, in accordance with the acceptability process, to verify those standards, disclosures, forms, and/or Trade Secret List.

Trade Secret Information

While on-site, the Professional Team members are expected to have access to trade secret data and information. It is the responsibility of the modeling organization to identify to all Professional Team members what is a trade secret and is not to be made public.

All written documentation provided by the modeling organization to the Commission will be considered a public document with the exception of documents provided during the closed meeting where trade secrets used in the design and construction of the hurricane loss model are discussed.

The modeling organization shall provide any additional information directly to the Commission rather than give it to Professional Team members to be brought back with them. Documents that the modeling organization indicates are trade secret that are viewed by Professional Team members will not be considered public documents and are to be left on-site.

Any notes made by Professional Team members containing trade secrets will be expunged by the modeling organization and placed in a sealed envelope marked “Confidential” with the date, time, and Professional Team member’s signature across the seal. The notes will be kept by the modeling organization and returned to the Professional Team member during the closed meeting to discuss trade secrets. At the conclusion of the closed meeting, all notes will be returned to the modeling organization.

Trade secrets of the modeling organization learned by a Professional Team member will not be discussed with Commission members.

Professional Team members will agree to respect the trade secret nature of the model and not use trade secret information in any way detrimental to the interest of the modeling organization.

Care will be taken by the Professional Team members not to discuss other models being evaluated while they are on-site reviewing a particular model.

On-Site Review Results

The Professional Team will present the results of the on-site review to the Commission and answer questions related to their review.

The job of the Professional Team is to verify information and make observations. It is not part of the Professional Team’s responsibilities to opine or draw conclusions about the appropriateness of a particular model or a component part of a model.

Refer to the **Process for Determining the Acceptability of a Computer Simulation Model** for additional information regarding the on-site review.

PROFESSIONAL TEAM

Composition and Selection of the Professional Team

A team of professional individuals, known as the Professional Team, will conduct on-site reviews of modeling organizations seeking a determination of acceptability by the Commission. The Professional Team will consist of individuals having professional credentials in the following disciplines (each area will be represented by one or more individuals): Actuarial Science, Statistics, Meteorology, Computer Science, and Engineering.

The SBA staff will select the Professional Team members, and the SBA will enter into contracts with each individual selected.

Selection of the Professional Team members will be an aggressive recruiting process to seek out qualified individuals who are capable of working closely with the Commission and who are available during specified time frames in order that the Commission can meet its deadline(s). Consideration will be given to the following factors:

- Professional credentials and experience
- Reasonableness of fees
- Availability
- References

Responsibilities of the Professional Team

Team Leader: The SBA staff will designate one member of the Professional Team as the team leader. The team leader will be responsible for coordinating the activities of the Professional Team and overseeing the development of reports to the Commission.

Team Members:

1. Participate in preparations and discussions with the Commission and SBA staff prior to the on-site review.
2. Study, review, and develop an understanding of responses and materials provided to the Commission by the modeling organizations.
3. Participate with the Commission and SBA staff in developing, reviewing, and revising model tests and evaluations.
4. While on-site, verify, evaluate, and observe the techniques and assumptions used in the model for each member's area of expertise.
5. Identify and observe how various assumptions affect the model so as to identify to the Commission various sensitive components/aspects of the model.

6. Discuss the model with the modeling organization's professional staff to gain a clear understanding and confidence in the operation of the model and its description as provided to the Commission.
7. Participate in the administration of on-site tests.
8. Participate in the preparation of written reports and presentations to the Commission.

Responsibilities of SBA Staff

The Professional Team will report to designated SBA staff. SBA staff will supervise the Professional Team and coordinate their pre-on-site planning activities, on-site reviews and activities, and post-on-site activities.

These responsibilities include:

1. Setting up meetings with Professional Team members individually and as a group. These meetings will include conference calls and other meetings depending on circumstances and needs of the Commission.
2. Coordinating and scheduling on-site reviews.
3. Working with the Commission and Professional Team members in developing, reviewing, and revising model tests and evaluations.
4. Overseeing the supervision and administration of specified on-site tests and evaluations.
5. Working with the modeling organization to determine which professionals at the modeling organization will work with corresponding Professional Team members while on-site.
6. Briefing and de-briefing the Professional Team members prior to, during, and after the on-site review.
7. Coordinating the preparation of written reports and presentations to the Commission.

VII. 2009 STANDARDS, DISCLOSURES, AND FORMS

Florida Commission on Hurricane Loss Projection Methodology

Model Identification

Name of Model and Version: _____

Name of Modeling Organization: _____

Street Address: _____

City, State, ZIP Code: _____

Mailing Address, if different from above: _____

Contact Person: _____

Phone Number: _____ **Fax Number:** _____

E-mail Address: _____

Date: _____

Submission Data

The following input data have been provided to the modeling organization on the enclosed CD.

Input Data

Name	Description
2009FormM1.xls	Hurricanes used for historical frequencies in Form M-1 – Annual Occurrence Rates
FormV1Input09.xls	Windspeeds for 335 ZIP Codes and personal and commercial residential exposure data (construction type and ZIP Codes) for Form V-1 – One Hypothetical Event
FormA1Input09.xls	Personal residential exposure data (construction type and ZIP Codes) for Form A-1 – Personal Residential Loss Costs and Form S-2 – Examples of Loss Exceedance Estimates
hlpm2007.exe	2007 FHCF aggregate personal residential exposure data for Form A-3 – Base Hurricane Storm Set Statewide Loss Costs, Form A-4 – Hurricane Andrew (1992) Percent of Losses, Form A-5 – Cumulative Losses from the 2004 Hurricane Season, Form A-6 – Personal Residential Output Ranges, Form A-7 – Percentage Change in Personal Residential Output Ranges, Form A-8 – Percentage Change in Personal Residential Output Ranges by County, Form A-9 – Probable Maximum Loss for Florida, Form S-2 – Examples of Loss Exceedance Estimates, and Form S-5 – Average Annual Zero Deductible Statewide Loss Costs – Historical versus Modeled
hlpm2007c.exe	2007 FHCF aggregate personal and commercial residential exposure data for Form A-3 – Base Hurricane Storm Set Statewide Loss Costs, Form A-4 – Hurricane Andrew (1992) Percent of Losses, Form A-5 – Cumulative Losses from the 2004 Hurricane Season, Form A-9 – Probable Maximum Loss for Florida, Form S-2 – Examples of Loss Exceedance Estimates, and Form S-5 – Average Annual Zero Deductible Statewide Loss Costs – Historical versus Modeled
2009FormA6.xls	Personal residential output ranges format for Form A-6
FormS6Input09.xls	Input variables for Form S-6 – Hypothetical Events for Sensitivity and Uncertainty Analysis
FormS6Input09Quantiles.xls	Corresponding quantiles for input variables for Form S-6 – Hypothetical Events for Sensitivity and Uncertainty Analysis

Output shall be provided in specified output files as listed below. XXX denotes the abbreviated name of the modeling organization.

Output Data

Name	Description
XXX09FormM1.xls	Output data from Form M-1 – Annual Occurrence Rates
XXX09FormM3.xls	Output data from Form M-3 – Radius of Maximum Winds and Radii of Standard Wind Thresholds
XXX09FormV2.xls	Output data from Form V-2 – Mitigation Measures – Range of Changes in Damage
XXX09FormA1.xls and XXX09FormA1.pdf	Output data from Form A-1 – Personal Residential Loss Costs
XXX09FormA3.xls	Output data from Form A-3 – Base Hurricane Storm Set Statewide

Name	Description
	Loss Costs
XXX09FormA4.xls	Output data from Form A-4 – Hurricane Andrew (1992) Percent of Losses
XXX09FormA5.xls	Output data from Form A-5 – Cumulative Losses from the 2004 Hurricane Season
XXX09FormA6.xls	Output data from Form A-6 – Personal Residential Output Ranges
XXX09FormA7.xls	Output data from Form A-7 – Percentage Change in Personal Residential Output Ranges
XXX09FormA9.xls	Output data from Form A-9 – Probable Maximum Loss for Florida
XXX09Expected Loss Cost.dat and XXX09Expected Loss Cost.pdf	Aggregated loss cost output data from Form S-6 – Hypothetical Events for Sensitivity and Uncertainty Analysis
XXX09Loss Cost Contour.dat and XXX09Loss Cost Contour.pdf	Mean loss cost output data from Form S-6 – Hypothetical Events for Sensitivity and Uncertainty Analysis

The modeling organization shall run various scenario hurricane events through the model on the input exposure data. The referenced output forms shall be completed and loss files provided on CD in ASCII, Excel, and PDF format as specified. The file names shall include the abbreviated name of the modeling organization, the standards year, and the form name.

“*FormAInput09.xls*” data set consists of one \$100,000 structure for each construction type for each ZIP Code in Florida. The data set contains 4,437 records. The following table is a description of the fields in the data set.

<u>No.</u>	<u>Field Name</u>	<u>Description</u>
1.	County Code	Federal Information Processing Standards (FIPS) County Code – see <i>Figure 1</i>
2.	ZIP Code	5-digit ZIP Code
3.	Construction Type	The following codes are used: 1 = Wood Frame, 2 = Masonry, 3 = Mobile Home
4.	Deductible	2% policy deductible for all records
5.	Total Insured Value - Structure	\$100,000 for all records
6.	Total Insured Value - Appurtenant Structures	\$10,000 for all records
7.	Total Insured Value - Contents	\$50,000 for all records
8.	Total Insured Value - Additional Living Expense	\$20,000 for all records

The modeling organization is directed to make the following assumptions with the analysis:

- Each structure is insured 100% to value
- Per Diem = \$150.00/day per policy, if used
- Number of stories = 1
- Occupancy type = Single Family Dwelling
- Year of Construction = 1980
- Tide at landfall is 0 meters
- If the model assumes different construction types other than those provided with the data, map the codes the Commission has provided to the appropriate codes. Provide a copy of this mapping and proper documentation describing the reason for the mapping.
- Verify that only population weighted centroids were used for the location of risks within the ZIP Code, where more specific locations were not available.

All other assumptions that the modeling organization must make with the analysis shall be reviewed with SBA staff. The intent is to keep all assumptions consistent among the modeling organizations.

Figure 1

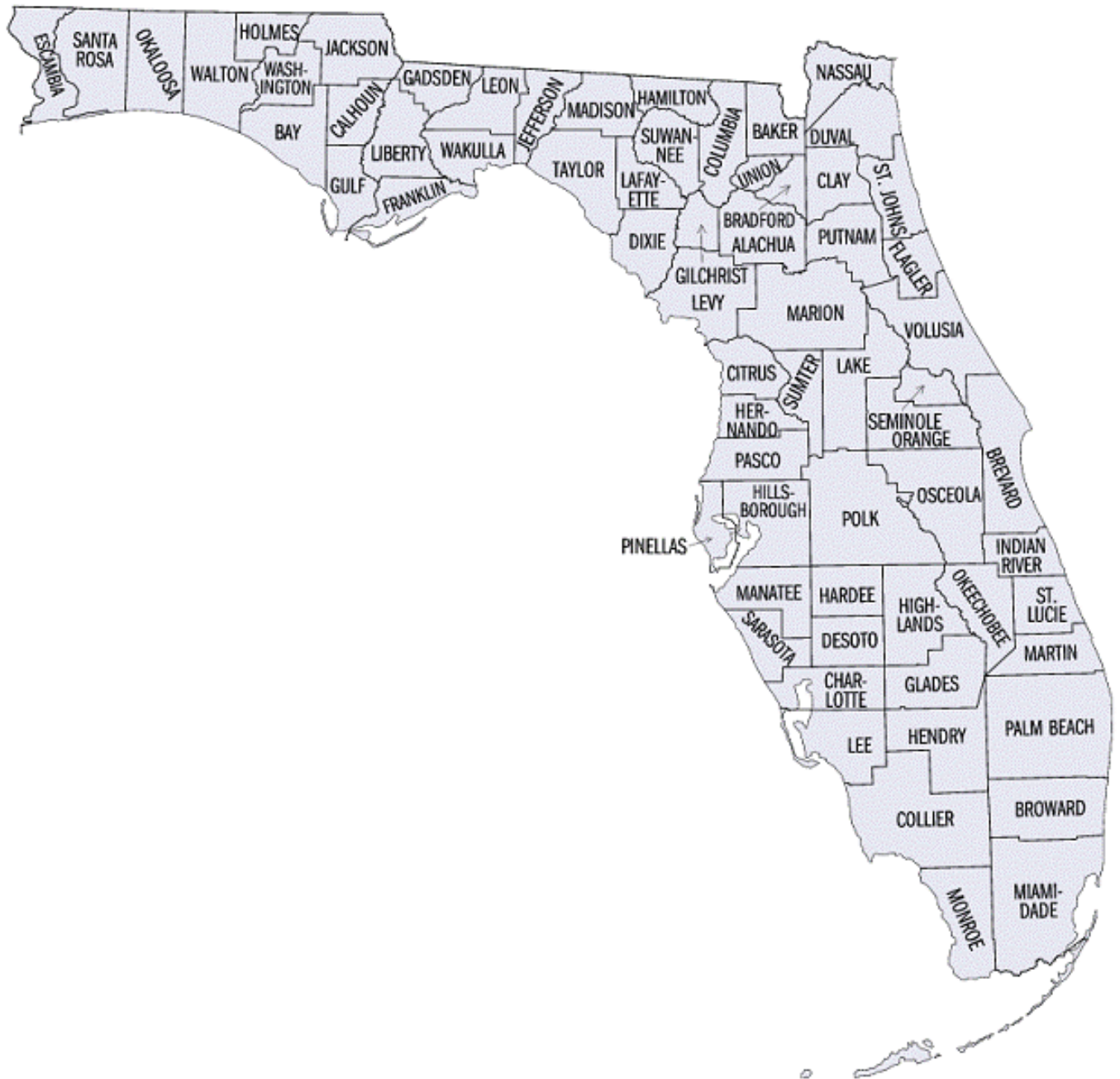
Florida County Codes

County Code	County Name	County Code	County Name	County Code	County Name
001	Alachua	049	Hardee	093	Okeechobee
003	Baker	051	Hendry	095	Orange
005	Bay	053	Hernando	097	Osceola
007	Bradford	055	Highlands	099	Palm Beach
009	Brevard	057	Hillsborough	101	Pasco
011	Broward	059	Holmes	103	Pinellas
013	Calhoun	061	Indian River	105	Polk
015	Charlotte	063	Jackson	107	Putnam
017	Citrus	065	Jefferson	109	St. Johns
019	Clay	067	Lafayette	111	St. Lucie
021	Collier	069	Lake	113	Santa Rosa
023	Columbia	071	Lee	115	Sarasota
027	De Soto	073	Leon	117	Seminole
029	Dixie	075	Levy	119	Sumter
031	Duval	077	Liberty	121	Suwannee
033	Escambia	079	Madison	123	Taylor
035	Flagler	081	Manatee	125	Union
037	Franklin	083	Marion	127	Volusia
039	Gadsden	085	Martin	129	Wakulla
041	Gilchrist	086	Miami-Dade	131	Walton
043	Glades	087	Monroe	133	Washington
045	Gulf	089	Nassau		
047	Hamilton	091	Okaloosa		

Note: These codes are derived from the Federal Information Processing Standards (FIPS) Codes.

Figure 2

State of Florida By County



Comparison of 2009 Standards to 2008 Standards

Standard	Title	Comments
General		
G-1	Scope of the Computer Model and Its Implementation	Significant Revision
G-2	Qualifications of Modeling Organization Personnel and Consultants	
G-3	Risk Location	
G-4	Independence of Model Components	
G-5	Editorial Compliance	
Meteorological		
M-1	Base Hurricane Storm Set	Significant Revision
M-2	Hurricane Parameters and Characteristics	Significant Revision
M-3	Hurricane Probabilities	Significant Revision
M-4	Hurricane Windfield Structure	Significant Revision
M-5	Landfall and Over-Land Weakening Methodologies	Significant Revision
M-6	Logical Relationships of Hurricane Characteristics	
Vulnerability		
V-1	Derivation of Vulnerability Functions	Significant Revision
V-2	Mitigation Measures	
Actuarial		
A-1	Modeled Loss Costs and Probable Maximum Loss Levels	Significant Revision
A-2	Underwriting Assumptions	Significant Revision
A-3	Loss Cost Projections and Probable Maximum Loss Levels	Significant Revision
A-4	Demand Surge	Significant Revision
A-5	User Inputs	
A-6	Logical Relationship to Risk	Significant Revision
A-7	Deductibles, Policy Limits, and Coinsurance	Significant Revision
A-8	Contents	Significant Revision
A-9	Time Element Coverage	Significant Revision
A-10	Output Ranges	Significant Revision
A-11	Probable Maximum Loss	Significant Revision
Statistical		
S-1	Modeled Results and Goodness-of-Fit	
S-2	Sensitivity Analysis for Model Output	Significant Revision
S-3	Uncertainty Analysis for Model Output	Significant Revision
S-4	County Level Aggregation	
S-5	Replication of Known Hurricane Losses	Significant Revision
S-6	Comparison of Projected Hurricane Loss Costs	
Computer		
C-1	Documentation	
C-2	Requirements	Significant Revision
C-3	Model Architecture and Component Design	
C-4	Implementation	
C-5	Verification	
C-6	Model Maintenance and Revision	
C-7	Security	

Note: The Commission has determined that “significant changes” are those that result in or have potential for changes to loss costs or probable maximum loss levels. The Commission may determine, in its judgment, whether a change is significant.

GENERAL STANDARDS

G-1 Scope of the Computer Model and Its Implementation*

(*Significant Revision)

The computer model shall project loss costs and probable maximum loss levels for residential property insured damage from hurricane events.

Purpose: This standard gives a high level view of the scope of the model to be reviewed, namely projecting loss costs and probable maximum loss levels for residential property (personal and commercial) insured damage from hurricane events.

Relevant Form: G-1, General Standards Expert Certification

Disclosures

1. Specify the model and program version number.
2. Provide a comprehensive summary of the model. This summary shall include a technical description of the model including each major component of the model used to produce residential loss costs and probable maximum loss levels in the State of Florida. Describe the theoretical basis of the model and include a description of the methodology, particularly the wind components, the damage components, and the insured loss components used in the model. The description shall be complete and shall not reference unpublished work.
3. Provide a flow diagram that illustrates interactions among major model components.
4. Provide a comprehensive list of complete references pertinent to the submission by standard grouping, according to professional citation standards.
5. Provide the following information related to changes in the model from the previously accepted submission to the initial submission this year:
 - A. A summary description of the significant changes and a list of non-significant changes,
 - B. Percentage difference in average annual zero deductible statewide loss costs for:
 1. All changes combined,
 2. Each significant model component change, and
 - C. Color-coded maps by county reflecting the percentage difference in average annual zero deductible statewide loss costs for each significant model component change.

Audit

1. The main intent of the audit is to determine the capabilities of the model and to assess its implementation for purposes of Florida projected insured loss costs and probable maximum loss levels. Copies of all representative or primary technical papers that describe the underlying model theory shall be made available.
2. All software located within the model, used to compile data used by the model, used to validate the model, and used to project model loss costs and probable maximum loss levels (1) fall within the scope of the Computer Standards, and (2) will be reviewed interactively (viewed simultaneously by all Professional Team members in conjunction with the review of each standard).
3. Maps, databases, or data files relevant to the modeling organization's submission will be reviewed.

G-2 Qualifications of Modeling Organization Personnel and Consultants

- A. Model construction, testing, and evaluation shall be performed by modeling organization personnel or consultants who possess the necessary skills, formal education, and experience to develop the relevant components for hurricane loss projection methodologies.***
- B. The model or any modifications to an accepted model shall be reviewed by either modeling organization personnel or consultants in the following professional disciplines: structural/wind engineering (licensed Professional Engineer), statistics (advanced degree), actuarial science (Associate or Fellow of Casualty Actuarial Society), meteorology (advanced degree), and computer/information science (advanced degree). These individuals shall be signatories on Forms G-1 through G-6 as applicable and shall abide by the standards of professional conduct if adopted by their profession.***

Purpose: Professional disciplines implicitly represented in Commission standards (structural/wind engineering, statistics, actuarial science, meteorology, computer/information science) shall be represented among modeling organization staff and consultants. Academic or professional designations are necessary, but not sufficient requirements of the personnel involved in model development, implementation, and preparation of material for review by the Commission.

Relevant Forms: G-1, General Standards Expert Certification
G-2, Meteorological Standards Expert Certification
G-3, Vulnerability Standards Expert Certification
G-4, Actuarial Standards Expert Certification
G-5, Statistical Standards Expert Certification
G-6, Computer Standards Expert Certification

Disclosures

1. Organization Background

- A.** Describe the ownership structure of the modeling organization. Describe affiliations with other companies and the nature of the relationship, if any. Indicate if your organization has changed its name and explain the circumstances.
- B.** If the model is developed by an entity other than a modeling company, describe its organizational structure and indicate how proprietary rights and control over the model and its critical components is exercised. If more than one entity is involved in the development of the model, describe all involved.

- C. If the model is developed by an entity other than a modeling company, describe the funding source for the model.
 - D. Describe the modeling organization's services.
 - E. Indicate if the modeling organization has ever been involved directly in litigation or challenged by a statutory authority where the credibility of one of its U.S. hurricane model versions for projection of loss costs or probable maximum loss levels was disputed. Describe the nature of each case and its conclusion.
2. Professional Credentials
- A. Provide in a chart format (a) the highest degree obtained (discipline and University), (b) employment or consultant status and tenure in years, and (c) relevant experience and responsibilities of individuals currently involved in the acceptability process or in any of the following aspects of the model:
 - 1. Meteorology
 - 2. Vulnerability
 - 3. Actuarial Science
 - 4. Statistics
 - 5. Computer Science
 - B. Identify any new employees or consultants (since the previous submission) working on the model or the acceptability process.
 - C. Provide visual business workflow documentation connecting all personnel related to model design, testing, execution, maintenance, and decision-making.
 - D. Indicate specifically whether individuals listed in A. and B. are associated with the insurance industry, a consumer advocacy group, or a government entity, as well as their involvement in consulting activities.
3. Independent Peer Review
- A. Provide dates of external independent peer reviews that have been performed on the following components as currently functioning in the model:
 - 1. Meteorology
 - 2. Vulnerability
 - 3. Actuarial Science
 - 4. Statistics
 - 5. Computer Science
 - B. Provide documentation of independent peer reviews directly relevant to the modeling organization's responses to the current standards, disclosures, or forms. Identify any unresolved or outstanding issues as a result of these reviews.
 - C. Describe the nature of any on-going or functional relationship the organization has with any of the persons performing the independent peer reviews.

4. Provide a completed Form G-1, General Standards Expert Certification.
5. Provide a completed Form G-2, Meteorological Standards Expert Certification.
6. Provide a completed Form G-3, Vulnerability Standards Expert Certification.
7. Provide a completed Form G-4, Actuarial Standards Expert Certification.
8. Provide a completed Form G-5, Statistical Standards Expert Certification.
9. Provide a completed Form G-6, Computer Standards Expert Certification.

Audit

1. The professional vitae of modeling organization personnel and consultants responsible for the current model and information on their predecessors if different than current personnel will be reviewed. Background information on individuals providing testimonial letters in the submission shall be provided.
2. Forms G-1, G-2, G-3, G-4, G-5, G-6, and all independent peer reviews of the model under consideration will be reviewed. Signatories on the individual forms will be required to provide a description of their review process.
3. Discuss any incidents where modeling organization personnel or consultants have been found to have failed to abide by the standards of professional conduct adopted by their profession.

G-3 Risk Location

- A. ZIP Codes used in the model shall not differ from the United States Postal Service publication date by more than 24 months at the date of submission of the model. ZIP Code information shall originate from the United States Postal Service.***
- B. ZIP Code centroids, when used in the model, shall be based on population data.***
- C. ZIP Code information purchased by the modeling organization shall be verified by the modeling organization for accuracy and appropriateness.***

Purpose: The ZIP Code information must be updated at least every two years. Interest in specific ZIP Codes arises in the context of logical relationship to risk or in projecting loss costs and probable maximum loss levels.

Relevant Form: G-1, General Standards Expert Certification

Disclosures

1. List the current ZIP Code databases used by the model and the components of the model to which they relate. Provide the effective (official United States Postal Service) date corresponding to the ZIP Code databases.
 - 1.
 2. Describe in detail how invalid ZIP Codes are handled.

Audit

1. Provide geographic displays for all ZIP Codes.
2. Provide geographic comparisons of previous to current locations of ZIP Code centroids.
3. Provide the third party vendor, if applicable, and a complete description of the process used to validate ZIP Code information.
4. The treatment of ZIP Code centroids over water or other uninhabitable terrain will be reviewed.

G-4 Independence of Model Components

The meteorological, vulnerability, and actuarial components of the model shall each be theoretically sound without compensation for potential bias from the other two components.

Purpose: This standard requires that each of the three primary components be individually sound and operate independently. For example, the model shall not allow adjustments to the vulnerability components to compensate for apparent meteorological deficiencies (e.g., inflating damage to counteract for a deflated windfield). In addition to each component of the model meeting its respective standards, the interrelationship of the model components as a whole must be reasonable.

Relevant Form: G-1, General Standards Expert Certification

Audit

1. Demonstrate that the model components adequately portray hurricane phenomena and effects (damage, loss costs, and probable maximum loss levels). Attention will be paid to an assessment of (1) the theoretical soundness of each component and (2) the basis of their integration. For example, a model would not meet this standard if an artificial calibration adjustment had been made to improve the match of historical and model results for a specific hurricane.
2. Describe all changes in the model since the previous submission that might impact the independence of the model components.

G-5 Editorial Compliance

The submission and any revisions provided to the Commission throughout the review process shall be reviewed and edited by a person or persons with experience in reviewing technical documents who shall certify on Form G-7 that the submission has been personally reviewed.

Purpose: This standard requires that the modeling organization maintain a quality control process with regard to creating, maintaining, and reviewing all documentation associated with the model.

Person(s) with experience in reviewing technical documents for grammatical correctness, typographical accuracy, and inaccurate citations, charts, or graphs must have reviewed the submission and certify that the submission is in compliance with the acceptability process.

Relevant Forms: G-1, General Standards Expert Certification
G-2, Meteorological Standards Expert Certification
G-3, Vulnerability Standards Expert Certification
G-4, Actuarial Standards Expert Certification
G-5, Statistical Standards Expert Certification
G-6, Computer Standards Expert Certification
G-7, Editorial Certification

Disclosures

1. Describe the process used for document control of the submission. Describe the process used to ensure that the paper and electronic versions of specific files are identical in content.
2. Describe the process used by the signatories on Forms G-1 through G-6 to ensure that the information contained under each set of standards is accurate and complete.
3. Provide a completed Form G-7, Editorial Certification.

Audit

1. Demonstrate that the person or persons who have reviewed the submission has had experience in reviewing technical documentation and such person or persons is familiar with the submission requirements as set forth in the Commission's *Report of Activities as of November 1, 2009*.
2. Describe all changes to the submission document since the previously accepted submission that might impact the final document submission.
3. Demonstrate that the submission has been reviewed for grammatical correctness, typographical accuracy, completeness, and inclusion of extraneous data or materials.

4. Demonstrate that the submission has been reviewed by the signatories on Forms G-1 through G-6 for accuracy and completeness.
5. The modification history for submission documentation will be reviewed.
6. A flowchart defining the process for form creation will be reviewed.
7. Form G-7 will be reviewed.

Form G-1: General Standards Expert Certification

I hereby certify that I have reviewed the current submission of _____
(Name of Model)
Version _____ for compliance with the 2009 Standards adopted by the Florida
Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the General Standards (G1 – G5);
- 2) The disclosures and forms related to the General Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession;
- 4) My review involved ensuring the consistency of the content in all sections of the submission; and
- 5) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (area of expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories.

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Form G-2: Meteorological Standards Expert Certification

I hereby certify that I have reviewed the current submission of _____
(Name of Model)
Version _____ for compliance with the 2009 Standards adopted by the Florida
Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Meteorological Standards (M1 – M6);
- 2) The disclosures and forms related to the Meteorological Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (area of expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories.

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Form G-3: Vulnerability Standards Expert Certification

I hereby certify that I have reviewed the current submission of _____
(Name of Model)
Version _____ for compliance with the 2009 Standards adopted by the Florida
Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Vulnerability Standards (V1 – V2);
- 2) The disclosures and forms related to the Vulnerability Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (area of expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories.

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Form G-4: Actuarial Standards Expert Certification

I hereby certify that I have reviewed the current submission of _____
(Name of Model)
Version _____ for compliance with the 2009 Standards adopted by the Florida
Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Actuarial Standards (A1 – A11);
- 2) The disclosures and forms related to the Actuarial Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (area of expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories.

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Form G-5: Statistical Standards Expert Certification

I hereby certify that I have reviewed the current submission of _____
(Name of Model)
Version _____ for compliance with the 2009 Standards adopted by the Florida
Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Statistical Standards (S1 – S6);
- 2) The disclosures and forms related to the Statistical Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (area of expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories.

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Form G-6: Computer Standards Expert Certification

I hereby certify that I have reviewed the current submission of _____
(Name of Model)
Version _____ for compliance with the 2009 Standards adopted by the Florida
Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Computer Standards (C1 – C7);
- 2) The disclosures and forms related to the Computer Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (area of expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories.

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Form G-7: Editorial Certification

I/We hereby certify that I/we have reviewed the current submission of _____
(Name of Model)

Version _____ for compliance with the “Process for Determining the Acceptability of a Computer Simulation Model” adopted by the Florida Commission on Hurricane Loss Projection Methodology in its *Report of Activities as of November 1, 2009*, and hereby certify that:

- 1) The model submission is in compliance with the Commission’s Notification Requirements and General Standard G-5;
- 2) The disclosures and forms related to each standards section are editorially accurate and contain complete information and any changes that have been made to the submission during the review process have been reviewed for completeness, grammatical correctness, and typographical errors;
- 3) There are no incomplete responses, inaccurate citations, charts or graphs, or extraneous text or references;
- 4) The current version of the model submission has been reviewed for grammatical correctness, typographical errors, completeness, the exclusion of extraneous data/information and is otherwise acceptable for publication; and
- 5) In expressing my/our opinion I/we have not been influenced by any other party in order to bias or prejudice my/our opinion.

Name

Professional Credentials (area of expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories.

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

METEOROLOGICAL STANDARDS

M-1 Base Hurricane Storm Set*

(*Significant Revision)

- A. Annual frequencies used in both model calibration and model validation shall be based upon the National Hurricane Center HURDAT starting at 1900 as of June 7, 2009 (or later). Complete additional season increments based on updates to HURDAT approved by the Tropical Prediction Center/National Hurricane Center are acceptable modifications to these storm sets. Peer reviewed atmospheric science literature can be used to justify modifications to the Base Hurricane Storm Set.**
- B. Any trends, weighting, or partitioning shall be justified and consistent with currently accepted scientific literature and statistical techniques. Calibration and validation shall encompass the complete Base Hurricane Storm Set as well as any partitions.**

Purpose: The Base Hurricane Storm Set covers the period 1900-2008. The primary use of this Base Hurricane Storm Set is in both calibration and validation of modeled versus historical hurricanes impacting Florida. Failure to update modeled landfall statistics based on changes in the Base Hurricane Storm Set through the 2008 hurricane season is not acceptable.

The National Hurricane Center periodically updates the online version of HURDAT incorporating the latest approved reanalysis updates, including the latest hurricane season, and other modifications to historical storms if an error has been discovered. Since the online database is the source for HURDAT, a freeze date has been specified for the HURDAT version to be used. This freeze date represents the date HURDAT was downloaded from the website.

Relevant Forms:

G-2,	Meteorological Standards Expert Certification
M-1,	Annual Occurrence Rates
A-3,	Base Hurricane Storm Set Statewide Loss Costs
S-1,	Probability and Frequency of Florida Landfalling Hurricanes per Year
S-5,	Average Annual Zero Deductible Statewide Loss Costs – Historical versus Modeled

Disclosures

1. Identify the Base Hurricane Storm Set, the release date, and the time period included to develop and implement landfall and by-passing hurricane frequencies into the model.

2. If the modeling organization has made any modifications to the Base Hurricane Storm Set related to landfall frequency and characteristics, provide justification for such modifications.
3. Where the model incorporates short-term or long-term modification of the historical data leading to differences between modeled climatology and that in the entire Base Hurricane Storm Set, describe how this is incorporated.
4. Provide a completed Form M-1, Annual Occurrence Rates.

2.

Audit

1. The modeling organization's Base Hurricane Storm Set will be reviewed.
 2. Provide a flowchart illustrating how changes in the HURDAT database are used in the calculation of landfall distribution.
 3. Reasoning and justification underlying any modification by the modeling organization to the Base Hurricane Storm Set will be reviewed.
 4. Reasoning and justification underlying any short-term and long-term variations in annual hurricane frequencies incorporated in the model will be reviewed. (Trade Secret List item)
- 3.
5. Modeled probabilities will be compared with observed hurricane frequency using methods documented in currently accepted scientific literature. The goodness-of-fit of modeled to historical hurricane frequencies for the four regions of Florida and overall as provided in Form M-1 will be reviewed.
- 4.
6. Form M-1 will be reviewed for consistency with Form S-1. Changes to the modeling organization's Base Hurricane Storm Set from the previously accepted submission will be reviewed.
- 5.
7. Comparisons of modeled probabilities and characteristics from the complete historical record will be reviewed. Modeled probabilities from any subset, trend, or fitted function will be reviewed, compared, and justified against the complete historical record. In the case of partitioning, modeled probabilities from the partition and its complement will be reviewed and compared with the complete historical record.

M-2 Hurricane Parameters and Characteristics*

(*Significant Revision)

Methods for depicting all modeled hurricane parameters and characteristics, including but not limited to windspeed, radial distributions of wind and pressure, minimum central pressure, radius of maximum winds, strike probabilities, tracks, spatial and time variant windfields, and conversion factors, shall be based on information documented in currently accepted scientific literature.

Purpose: This standard requires that the modeling organization use only scientifically sound information for determining hurricane parameters and characteristics. The stochastic storm set shall include only hurricanes that have realistic hurricane characteristics. Any differences in the treatment of hurricane parameters between historical and stochastic storms shall be justified.

A hurricane parameter is an input (generally stochastic) to the model. Examples of hurricane parameters are radius to maximum wind, maximum wind, profile factor, and instantaneous speed and direction of motion. Hurricane characteristics are outputs of the model. Examples of hurricane characteristics are modeled windspeed at a particular location, track, and intensity variation.

Relevant Form: G-2, Meteorological Standards Expert Certification

Disclosures

1. Identify the hurricane parameters (e.g., central pressure or radius of maximum winds) that are used in the model.
2. Describe the dependencies among variables in the windfield component and how they are represented in the model, including the mathematical dependence of modeled windfield as a function of distance and direction from the center position.
3. Identify whether hurricane parameters are modeled as random variables, as functions, or as fixed values for the stochastic storm set. Provide rationale for the choice of parameter representations.
4. Describe how any hurricane parameters are treated differently in the historical and stochastic storm sets (e.g., has a fixed value in one set and not the other).
5. State whether the model simulates surface winds directly or requires conversion between some other reference level or layer and the surface. Describe the source(s) of conversion factors and the rationale for their use. Describe the process for converting the modeled vortex winds to surface winds including the treatment of the inherent uncertainties in the conversion factor with respect to location of the site compared to the radius of maximum winds over time. Justify the variation in the surface winds

conversion factor as a function of hurricane intensity and distance from the hurricane center.

6. Describe how the windspeeds generated in the windfield model are converted from sustained to gust and identify the averaging time.
7. Describe the historical data used as the basis for the model's hurricane tracks. Discuss the appropriateness of the model stochastic hurricane tracks with reference to the historical hurricane database.
8. If the historical data are partitioned or modified, describe how the hurricane parameters are affected.
9. Describe how the coastline is segmented (or partitioned) in determining the parameters for hurricane frequency used in the model. Provide the hurricane frequency distribution by intensity for each segment.
10. Describe any evolution of the functional representation of hurricane parameters during an individual storm life cycle.

Audit

1. All hurricane parameters used in the model will be reviewed.
2. Prepare graphical depictions of hurricane parameters as used in the model. Describe and justify:
 - The data set basis for the fitted distributions,
 - The modeled dependencies among correlated parameters in the windfield component and how they are represented,
 - The asymmetric nature of hurricanes,
 - The fitting methods used and any smoothing techniques employed.
3. The treatment of the inherent uncertainty in the conversion factor used to convert the modeled vortex winds to surface winds will be reviewed and compared with currently accepted scientific literature. Treatment of conversion factor uncertainty at a fixed time and location within the windfield for a given hurricane intensity will be reviewed.
4. All cited scientific literature provided in Standard G-1 will be reviewed to determine applicability.
5. All external data sources that affect model generated windfields will be identified and their appropriateness will be reviewed.
6. Describe the value(s) of the far-field pressure used in the model and approximate its sensitivity on the average annual zero deductible statewide loss costs.

M-3 Hurricane Probabilities*

*(*Significant Revision)*

- A. Modeled probability distributions of hurricane parameters and characteristics shall be consistent with historical hurricanes in the Atlantic basin.**
- B. Modeled hurricane landfall strike probabilities shall reflect the Base Hurricane Storm Set used for category 1 to 5 hurricanes and shall be consistent with those observed for each coastal segment of Florida and neighboring states (Alabama, Georgia, and Mississippi).**
- C. Models shall use maximum one-minute sustained 10-meter windspeed when defining hurricane landfall intensity. This applies both to the Base Hurricane Storm Set used to develop landfall strike probabilities as a function of coastal location and to the modeled winds in each hurricane which causes damage. The associated maximum one-minute sustained 10-meter windspeed shall be within the range of windspeeds (in statute miles per hour) categorized by the Saffir-Simpson Scale.**

Saffir-Simpson Hurricane Scale:

Category	Winds (mph)	Damage
1	74 – 95	Minimal
2	96 – 110	Moderate
3	111 – 130	Extensive
4	131 – 155	Extreme
5	Over 155	Catastrophic

Purpose: This standard requires that the modeled probability distributions of hurricane parameters and characteristics be consistent with those documented in currently accepted scientific literature. Consistent means that spatial distributions of modeled hurricane probabilities accurately depict those of vulnerable coastlines in Florida and adjacent states.

The probability of occurrence of hurricanes shall reasonably reflect the historical record with respect to intensities and geographical locations. Extension beyond Florida’s boundaries demonstrates continuity of methodology.

Relevant Forms: G-2, Meteorological Standards Expert Certification
M-1, Annual Occurrence Rates
A-3, Base Hurricane Storm Set Statewide Loss Costs

- S-1, Probability and Frequency of Florida Landfalling Hurricanes per Year
- S-3, Distributions of Stochastic Hurricane Parameters

Disclosures

1. List assumptions used in creating the hurricane characteristic databases.
2. Provide a brief rationale for the probability distributions used for all hurricane parameters and characteristics.

Audit

1. Demonstrate that the quality of fit extends beyond the Florida border by showing results for appropriate coastal segments in Alabama, Georgia, and Mississippi.
2. Describe and support the method of selecting stochastic storm tracks.
3. Describe and support the method of selecting storm track strike intervals. If strike locations are on a discrete set, show the landfall points for major metropolitan areas in Florida.
4. Provide any modeling organization specific research performed to develop the functions used for simulating model variables or to develop databases.
5. Form S-3 will be reviewed for the probability distributions and data sources.

M-4 Hurricane Windfield Structure*

*(*Significant Revision)*

- A. Windfields generated by the model shall be consistent with observed historical storms affecting Florida.**
- B. The translation of land use and land cover or other source information into a surface roughness distribution shall be consistent with current state-of-the-science and shall be implemented with appropriate geographic information system data.**
- C. With respect to multi-story structures, the model windfield shall account for the effects of the vertical variation of winds if not accounted for in the vulnerability functions.**

Purpose: This standard requires that the windfield model be implemented consistently with the land use and land cover distribution and with the vertical distribution of the hurricane boundary layer windfield where applicable. The resulting surface windfield shall be representative of historical storms in Florida and adjacent states.

The methodology for treating both historical and stochastic storm sets is to be documented, including any variations between these storm sets.

Relevant Forms: G-2, Meteorological Standards Expert Certification
M-2, Maps of Maximum Winds

Disclosures

1. Provide a rotational windspeed (y-axis) versus radius (x-axis) plot of the average or default symmetric wind profile used in the model and justify the choice of this wind profile.
- 9.
2. If the model windfield has been modified in any way from the previous submission, provide a rotational windspeed (y-axis) versus radius (x-axis) plot of the average or default symmetric wind profile for both the new and old functions. The choice of average or default shall be consistent for the new and old functions.
3. If the model windfield has been modified in any way from the previous submission, describe variations between the new and old windfield functions with reference to historical storms.
4. Describe how the vertical variation of winds is accounted for in the model where applicable. Document and justify any difference in the methodology for treating historical and stochastic storm sets.
5. Describe the relevance of the formulation of gust factor(s) used in the model.

6. Identify all non-meteorological variables that affect windspeed estimation (e.g., surface roughness, topography, etc.).
7. Provide the collection and publication dates of the land use and land cover data used in the model and justify their timeliness for Florida.
8. Describe the methodology used to convert land use and land cover information into a spatial distribution of roughness coefficients in Florida and adjacent states.
9. Demonstrate the consistency of the spatial distribution of model-generated winds with observed windfields for hurricanes affecting Florida.
10. Describe how the model's windfield is consistent with the inherent differences in windfields for such diverse hurricanes as Hurricane Charley (2004), Hurricane Katrina (2005), and Hurricane Wilma (2005).
11. Describe any variations in the treatment of the model windfield for stochastic versus historical storms and justify this variation.
12. Provide a completed Form M-2, Maps of Maximum Winds. Explain the differences between the spatial distributions of maximum winds for open terrain and actual terrain for historical storms.

Audit

1. Provide any modeling organization-specific research performed to develop the windfield functions used in the model. Identify the databases used.
2. Provide any modeling organization-specific research performed to derive the roughness distributions for Florida and adjacent states.
3. The spatial distribution of surface roughness used in the model will be reviewed.
4. Identify other variables in the model that affect over-land surface windspeed estimation.
5. Provide detailed comparisons of the model windfield with Hurricane Charley (2004), Hurricane Katrina (2005), and Hurricane Wilma (2005).
6. For windfield and/or pressure distributions not previously reviewed, present time-based contour animations (capable of being paused) to demonstrate scientifically reasonable windfield characteristics.
7. The effects of vertical variation of winds as used in the model where applicable will be reviewed. (Trade Secret List item)
8. Form M-2 will be reviewed.

M-5 Landfall and Over-Land Weakening Methodologies*

*(*Significant Revision)*

- A. The hurricane over-land weakening rate methodology used by the model shall be consistent with historical records and with current state-of-the-science.**
- B. The transition of winds from over-water to over-land within the model shall be consistent with current state-of-the-science.**

Purpose: This standard ensures that the required evaluation of intensity at landfall, weakening of hurricanes over-land, and the transition of winds from ocean to land is consistent with up-to-date depictions of appropriate surface characteristics.

Relevant Form: G-2, Meteorological Standards Expert Certification

Disclosures

1. Describe and justify the functional form of hurricane decay rates used by the model.
2. Provide a graphical representation of the modeled decay rates for Florida hurricanes over time compared to wind observations.
3. Describe the transition from over-water to over-land boundary layer simulated in the model.
4. Describe any changes in hurricane parameters, other than intensity, resulting from the transition from over-water to over-land.
5. Describe the representation in the model of passage over non-continental U.S. land masses on hurricanes affecting Florida.
6. Document any differences in the treatment of decay rates in the model for stochastic hurricanes compared to historical hurricanes affecting Florida.

Audit

1. Describe the variation in over-land decay rates used in the model.
2. Comparisons of the model's weakening rates to weakening rates for historical Florida hurricanes will be reviewed.
3. Transition of winds from over-water to over-land (i.e., landfall) will be reviewed. Provide color-coded snapshot maps of roughness length and spatial distribution of windspeeds over-land and over-water for Hurricane Dennis (2005) and Hurricane Andrew (1992) at the closest time after landfall. (Trade Secret List item)

M-6 Logical Relationships of Hurricane Characteristics

A. The magnitude of asymmetry shall increase as the translation speed increases, all other factors held constant.

B. The mean windspeed shall decrease with increasing surface roughness (friction), all other factors held constant.

Purpose: This standard requires the modeling organization to demonstrate physical consistency of the model windfield.

Relevant Forms: G-2, Meteorological Standards Expert Certification
M-3, Radius of Maximum Winds and Radii of Standard Wind Thresholds

Disclosures

1. Describe how the asymmetric structure of hurricanes is represented in the model.
2. Provide a completed Form M-3, Radius of Maximum Winds and Radii of Standard Wind Thresholds.
3. Discuss the radii values for each wind threshold in Form M-3 with reference to available hurricane observations.

Audit

1. Form M-3 and the modeling organization's sensitivity analyses provide the information used in auditing this standard.
2. Justify the relationship between central pressure and radius of maximum winds.
3. Justify the variation of the asymmetry with the translation speed.

Form M-1: Annual Occurrence Rates

- A. Provide annual occurrence rates for landfall from the data set defined by marine exposure that the model generates by hurricane category (defined by maximum windspeed at landfall in the Saffir-Simpson scale) for the entire state of Florida and selected regions as defined in *Figure 3*. List the annual occurrence rate per hurricane category. Annual occurrence rates shall be rounded to two decimal places. The historical frequencies below have been derived from the Base Hurricane Storm Set as defined in Standard M-1.
- B. Describe model variations from the historical frequencies.
- C. Provide vertical bar graphs depicting distributions of hurricane frequencies by category by region of Florida (*Figure 3*) and for the neighboring states of Alabama/Mississippi and Georgia. For the neighboring states, statistics based on the closest milepost to the state boundaries used in the model are adequate.
- D. If the data are partitioned or modified, provide the historical annual occurrence rates for the applicable partition (and its complement) or modification as well as the modeled annual occurrence rates in additional copies of Form M-1.
- E. List all hurricanes added, removed, or modified from the previously accepted submission version of the Base Hurricane Storm Set.
- F. Provide this form on CD in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form M-1 shall be included in the submission.

Modeled Annual Occurrence Rates

Category	Entire State				Region A – NW Florida			
	Historical		Modeled		Historical		Modeled	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1	25	0.23			15	0.14		
2	14	0.11			4	0.04		
3	18	0.17			4	0.04		
4	8	0.07			0	0.00		
5	2	0.02			0	0.00		

Category	Region B – SW Florida				Region C – SE Florida			
	Historical		Modeled		Historical		Modeled	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1	8	0.07			7	0.06		
2	1	0.01			5	0.05		
3	8	0.07			6	0.06		
4	3	0.03			5	0.05		
5	1	0.01			1	0.01		

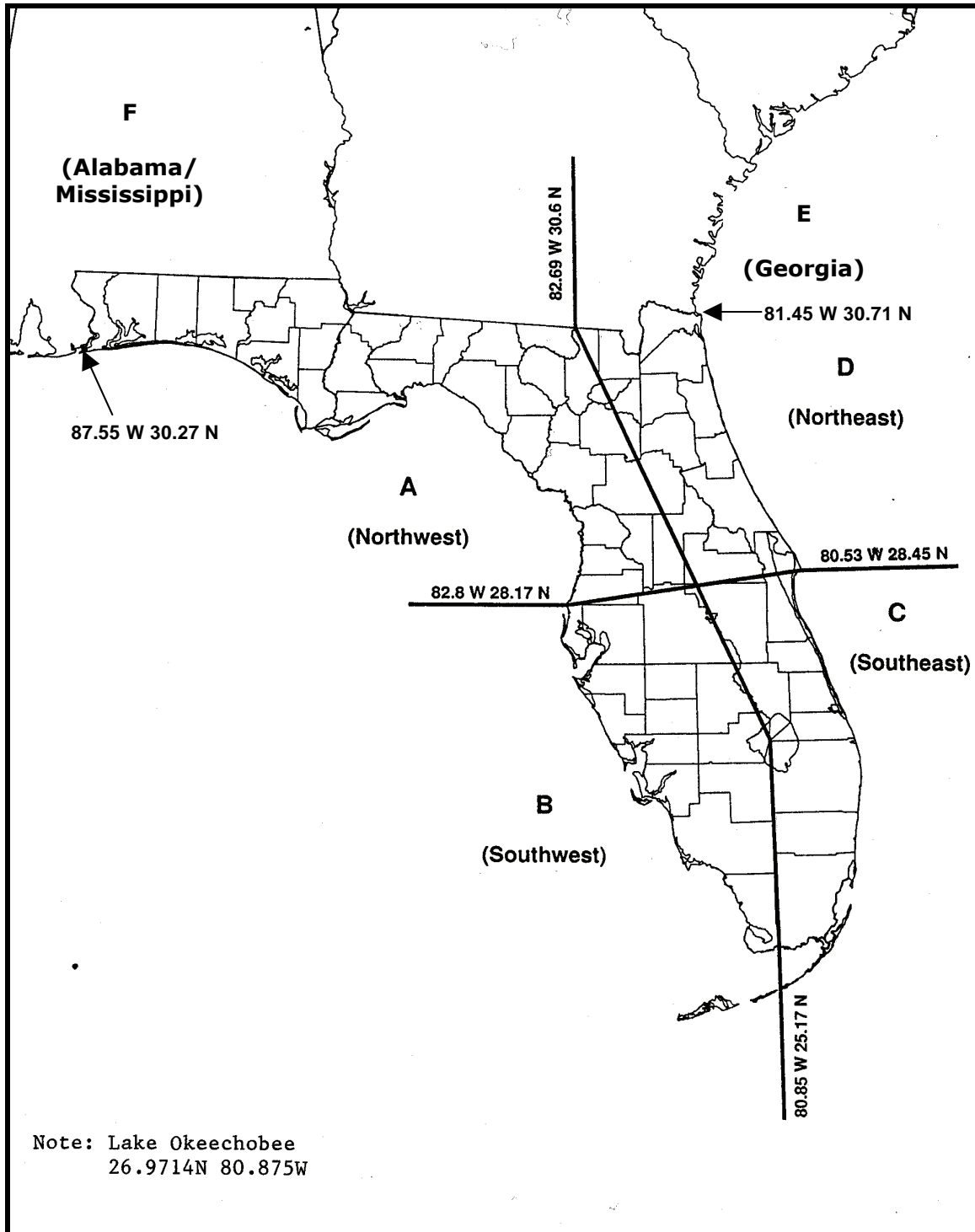
	Region D – NE Florida				Florida By-Passing Hurricanes			
	Historical		Modeled		Historical		Modeled	
Category	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1	1	0.01			5	0.05		
2	2	0.02			6	0.06		
3	0	0.00			5	0.05		
4	0	0.00			0	0.00		
5	0	0.00			0	0.00		

	Region E – Georgia				Region F – Alabama/Mississippi			
	Historical		Modeled		Historical		Modeled	
Category	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1	4	0.04			8	0.07		
2	0	0.00			3	0.03		
3	0	0.00			5	0.05		
4	0	0.00			1	0.01		
5	0	0.00			1	0.01		

Note: Except where specified, Number of Hurricanes does not include By-Passing Hurricanes. Each time a hurricane goes from water to land (once per region) it is counted as a landfall in that region. However, each hurricane is counted only once in the Entire State totals. Hurricanes recorded for adjacent states need not have reported damaging winds in Florida.

Figure 3

State of Florida and Neighboring States By Region



Form M-2: Maps of Maximum Winds

- A. Provide color maps of the maximum winds for the modeled version of the Base Hurricane Storm Set for both open terrain and actual terrain.
- B. Provide color maps of the maximum winds for a 100-year and a 250-year return period from the stochastic storm set for both open terrain and actual terrain.
- C. Provide the maximum winds plotted on each contour map and plot their location.

Actual terrain is the roughness distribution used in the standard version of the model. Open terrain uses the same roughness value of 0.03 meters at all land points.

All maps shall be color coded at the ZIP Code level.

Maximum winds in these maps are defined as the maximum one-minute sustained winds over the terrain as modeled and recorded at each location.

The same color scheme and increments shall be used for all maps.

Use the following seven isotach values and interval color coding:

(1)	50 mph	Blue
(2)	65 mph	Medium Blue
(3)	80 mph	Light Blue
(4)	95 mph	White
(5)	110 mph	Light Red
(6)	125 mph	Medium Red
(7)	140 mph	Red

Contouring in addition to these isotach values may be included.

Form M-3: Radius of Maximum Winds and Radii of Standard Wind Thresholds

- A. For the central pressures in the table below, provide the minimum and maximum values for 1) the radius of maximum winds (Rmax) used by the model to create the stochastic storm set, and the minimum and maximum values for the outer radii (R) of 2) Category 3 winds (>110 mph), 3) Category 1 winds (>73 mph), and 4) gale force winds (>40 mph). This information should be readily calculated from the windfield formula input to the model and does not require running the stochastic storm set. Describe the procedure used to complete this form.
- B. Identify the other variables that influence Rmax.
- C. Provide a box plot and histogram of Central Pressure (*x*-axis) versus Rmax (*y*-axis) to demonstrate relative populations and continuity of sampled hurricanes in the stochastic storm set.
- D. Provide this form on CD in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form M-3 shall be included in the submission.

Central Pressure (mb)	Rmax (mi)		Outer Radii (>110 mph) (mi)		Outer Radii (>73 mph) (mi)		Outer Radii (>40 mph) (mi)	
	Min	Max	Min	Max	Min	Max	Min	Max
990								
980								
970								
960								
950								
940								
930								
920								
910								
900								

VULNERABILITY STANDARDS

V-1 Derivation of Vulnerability Functions*

(*Significant Revision)

- A. Development of the vulnerability functions is to be based on a combination of the following: (1) historical data, (2) tests, (3) structural calculations, (4) expert opinion, or (5) site inspections. Any development of the vulnerability functions based on structural calculations or expert opinion shall be supported by tests, site inspections, and historical data.**
- B. The method of derivation of the vulnerability functions and associated uncertainties shall be theoretically sound.**
- C. Building height, construction type, and construction characteristics shall be used in the derivation and application of vulnerability functions.**
- D. In the derivation and application of vulnerability functions, assumptions concerning building code revisions and building code enforcement shall be justified.**
- E. Vulnerability functions shall be separately derived for building structures, mobile homes, appurtenant structures, contents, and time element coverages.**
- F. The minimum windspeed that generates damage shall be reasonable.**
- G. Vulnerability functions shall include damage due to hurricane hazards such as windspeed and wind pressure, water infiltration, and missile impact. Vulnerability functions shall not include explicit damage due to flood, storm surge, or wave action.**

Purpose: The development of vulnerability functions shall not be based exclusively on structural calculations or expert opinion. Use of structural calculations or expert opinion shall be supported by site inspections, tests, and historical data, and their use shall be appropriate.

The development of vulnerability functions shall be documented with respect to the sources, including data and calculations derived from site inspections and engineering judgment.

The effects of building codes and their enforcement that affect the vulnerability functions shall be considered and be reasonably represented in the model.

Separate vulnerability functions are required for building structures, mobile homes, appurtenant structures, contents, and time element coverages.

Damage certainly occurs above the hurricane threshold of 74 mph, but can also occur for windspeeds well below this threshold.

Relevant Forms: G-3, Vulnerability Standards Expert Certification V-1, One Hypothetical Event

Disclosures

1. Provide a flow chart documenting the process by which the vulnerability functions are derived and implemented.
2. Describe the nature and extent of actual insurance claims data used to develop the model's vulnerability functions. Describe in detail what is included, such as, number of policies, number of insurers, date of loss, and number of units of dollar exposure, separated into personal residential, commercial residential, and mobile home.
3. Summarize site inspections, including the source, and provide a brief description of the resulting use of these data in development, validation, or verification of vulnerability functions.
4. Describe the research used in the development of the model's vulnerability functions.
5. Describe the categories of the different vulnerability functions. Specifically, include descriptions of the structure types and characteristics, building height, year of construction, and coverages in which a unique vulnerability function is used.
6. Describe the process by which local construction and building code criteria are considered in the model.
7. Identify the one-minute average sustained windspeed at which the model begins to estimate damage.
8. Describe how the duration of windspeeds at a particular location over the life of a hurricane is considered.
9. Provide a completed Form V-1, One Hypothetical Event.

Audit

1. Historical data shall be available in the original form with explanations for any changes made and descriptions of how missing or incorrect data were handled. To the extent that historical data are used to develop vulnerability functions, demonstrate the goodness-of-fit of the data to fitted models. Complete reports detailing loading conditions and damage suffered are required for any test data used. Complete structural calculations shall be presented so that a variety of different structure types

and construction characteristics may be selected for review. The basis for expert opinion and original site inspection reports shall be available for review.

2. Copies of any papers, reports, and studies used in the development of the vulnerability functions shall be available for review. Copies of all public record documents used may be requested for review.
3. Multiple samples of vulnerability functions for building structures, mobile homes, appurtenant structures, contents, and time element coverages shall be available. The magnitude of logical changes among these items for a given windspeed shall be explained and validation materials shall be available.
4. Justify the construction types and characteristics used.
5. Provide validation of the mean vulnerability functions and associated uncertainties.
6. Document and justify all modifications to the vulnerability functions due to building codes and their enforcement. If age of building is used as a surrogate for building code and code enforcement, provide complete supporting information for the number of age groups used as well as the year(s) of construction that separates particular group(s).
7. Provide validation material for the disclosed minimum windspeed. Provide the computer code showing the inclusion of the minimum windspeed at which damage occurs.
8. The effects on building vulnerability from local and regional construction characteristics and building codes will be reviewed.
9. Form V-1 will be reviewed.

V-2 Mitigation Measures

A. Modeling of mitigation measures to improve a structure's wind resistance and the corresponding effects on vulnerability shall be theoretically sound. These measures shall include fixtures or construction techniques that enhance:

- **Roof strength**
- **Roof covering performance**
- **Roof-to-wall strength**
- **Wall-to-floor-to-foundation strength**
- **Opening protection**
- **Window, door, and skylight strength.**

B. Application of mitigation measures shall be empirically justified both individually and in combination.

Purpose: Florida Statutes require rate filings to include, but not be limited to, the fixtures or construction techniques listed in this standard. Subsequent Florida Office of Insurance Regulation Informational Memorandum 02-0470M refers to a public domain study and further defines the items required:

1. Enhanced roof strength. Example: Braced gable end roof.
2. Enhanced roof covering performance. Example: Roof covering materials that comply with the Florida Building Code (110 mph rated shingle).
3. Enhanced roof-to-wall strength. Example: Hurricane clips or straps, increased size or decreased spacing of nails in roof deck attachment.
4. Enhanced wall-to-floor-to-foundation strength. Example: Stronger anchor bolts or closer spacing of anchors.
5. Opening protection. Example: Shutter products.
6. Window, door, and skylight strength. Example: Impact resistant glazing.

Also listed are items that shall be considered:

1. Roof shape – hip roof (sloping ends and sloping sides down to the roof eaves line).
2. Wall construction – wood frame, unreinforced or reinforced masonry.
3. Opening protection for non-glazed openings – doors and garage doors.
4. Gable end bracing for roof shapes other than hip roof.

It is necessary to account for the total impact that the use of multiple mitigation measures will have on damage. When multiple mitigation measures are used, the effect on damage may not be the sum of the effects of the individual measures.

Relevant Forms: G-3, Vulnerability Standards Expert Certification
V-2, Mitigation Measures – Range of Changes in Damage
V-3, Mitigation Measures – Mean Damage Ratio (Trade Secret List)

Disclosures

1. Provide a completed Form V-2, Mitigation Measures – Range of Changes in Damage.
2. Provide a description of the mitigation measures used by the model that are not listed in Form V-2.
3. Describe how mitigation is implemented in the model. Identify any assumptions.
4. Describe the process used to ensure that multiple mitigation factors are correctly combined in the model.

Audit

1. Forms V-2 and V-3 (Trade Secret List item) provide the information used in auditing this standard.
2. Individual mitigation measures as well as their effect on damage due to use of multiple mitigation measures will be reviewed. Any variation in the change over the range of windspeeds for individual and multiple mitigation measures will be reviewed.
3. Mitigation measures used by the model that are not listed as required in this standard will be disclosed and shown to be theoretically sound and reasonable.

Form V-1: One Hypothetical Event

- A. Windspeeds for 335 ZIP Codes and sample personal and commercial residential exposure data are provided in the file named “*FormV1Input09.xls.*” The windspeeds and ZIP Codes represent a hypothetical hurricane track. Model the sample personal and commercial residential exposure data provided in the file against these windspeeds at the specified ZIP Codes and provide the damage ratios summarized by windspeed (mph) and construction type.

The windspeeds provided are one-minute sustained 10-meter windspeeds. The sample personal and commercial residential exposure data provided consists of four structures (one of each construction type – wood frame, masonry, mobile home, and concrete) individually placed at the population centroid of each of the ZIP Codes provided. Each ZIP Code is subjected to a specific windspeed. For completing Part A, Estimated Damage for each individual windspeed range is the sum of ground up loss to all structures in the ZIP Codes subjected to that individual windspeed range, excluding demand surge and storm surge. Subject Exposure is all exposures in the ZIP Codes subjected to that individual windspeed range. For completing Part B, Estimated Damage is the sum of the ground up loss to all structures of a specific type (wood frame, masonry, mobile home, or concrete) in all of the windspeed ranges, excluding demand surge and storm surge. Subject Exposure is all exposures of that specific type in all of the ZIP Codes.

One reference structure for each of the construction types shall be placed at the population centroid of the ZIP Codes. Do not include contents, appurtenant structures, or time element coverages.

<p><u>Reference Frame Structure:</u></p> <ul style="list-style-type: none"> One story Unbraced gable end roof Normal shingles (55mph) ½” plywood deck 6d nails, deck to roof members Toe nail truss to wall anchor Wood framed exterior walls 5/8” diameter anchors at 48” centers for wall/floor/foundation connections No shutters Standard glass windows No door covers No skylight covers Constructed in 1980 	<p><u>Reference Masonry Structure:</u></p> <ul style="list-style-type: none"> One story Unbraced gable end roof Normal shingles (55mph) ½” plywood deck 6d nails, deck to roof members Toe nail truss to wall anchor Masonry exterior walls No vertical wall reinforcing No shutters Standard glass windows No door covers No skylight covers Constructed in 1980
<p><u>Reference Mobile Home Structure:</u></p> <ul style="list-style-type: none"> Tie downs Single unit Manufactured in 1980 	<p><u>Reference Concrete Structure:</u></p> <ul style="list-style-type: none"> Reinforced concrete moment-resisting frame Twenty story Constructed in 1980

- B. Confirm that the structures used in completing the form are identical to those in the above table. If additional assumptions are necessary to complete this form (for example, regarding structural characteristics, duration, or surface roughness), provide the reasons why the assumptions were necessary as well as a detailed description of how they were included.
- C. Provide a plot of the Form V-1, Part A data.

Form V-1: One Hypothetical Event

Part A

Windspeed (mph)	Estimated Damage/ Subject Exposure
41 – 50	_____
51 – 60	_____
61 – 70	_____
71 – 80	_____
81 – 90	_____
91 – 100	_____
101 – 110	_____
111 – 120	_____
121 – 130	_____
131 – 140	_____
141 – 150	_____
151 – 160	_____
161 – 170	_____

Part B

Construction Type	Estimated Damage/ Subject Exposure
Wood Frame	_____
Masonry	_____
Mobile Home	_____
Concrete	_____

Form V-2: Mitigation Measures – Range of Changes in Damage

- A. Provide the change in the zero deductible personal residential reference structure damage rate (not loss cost) for each individual mitigation measure listed in Form V-2 as well as for the combination of the four mitigation measures provided for the Mitigated Frame Structure and the Mitigated Masonry Structure below.
- B. If additional assumptions are necessary to complete this form (for example, regarding duration or surface roughness), provide the rationale for the assumptions as well as a detailed description of how they are included.
- C. Provide this form on CD in Excel format without truncation. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form V-2 shall be included in the submission.

<p><u>Reference Frame Structure:</u></p> <ul style="list-style-type: none"> One story Unbraced gable end roof Normal shingles (55mph) ½” plywood deck 6d nails, deck to roof members Toe nail truss to wall anchor Wood framed exterior walls 5/8” diameter anchors at 48” centers for wall/floor/foundation connections No shutters Standard glass windows No door covers No skylight covers Constructed in 1980 	<p><u>Reference Masonry Structure:</u></p> <ul style="list-style-type: none"> One story Unbraced gable end roof Normal shingles (55mph) ½” plywood deck 6d nails, deck to roof members Toe nail truss to wall anchor Masonry exterior walls No vertical wall reinforcing No shutters Standard glass windows No door covers No skylight covers Constructed in 1980
<p><u>Mitigated Frame Structure:</u></p> <ul style="list-style-type: none"> Rated shingles (110mph) 8d nails, deck to roof members Truss straps at roof Plywood Shutters 	<p><u>Mitigated Masonry Structure:</u></p> <ul style="list-style-type: none"> Rated shingles (110mph) 8d nails, deck to roof members Truss straps at roof Plywood Shutters

Reference and mitigated structures are \$100,000 fully insured structures with a zero deductible policy as indicated under “Owners” Policy Type for Form A-6.

Place the reference structure at the population centroid for ZIP Code 33921 located in Lee County.

Windspeeds used in the form are one-minute sustained 10-meter windspeeds.

Form V-2: Mitigation Measures – Range of Changes in Damage

INDIVIDUAL MITIGATION MEASURES		PERCENTAGE CHANGES IN DAMAGE ((REFERENCE DAMAGE RATE - MITIGATED DAMAGE RATE) / REFERENCE DAMAGE RATE) * 100									
		FRAME STRUCTURE					MASONRY STRUCTURE				
		WINDSPEED (MPH)					WINDSPEED (MPH)				
		60	85	110	135	160	60	85	110	135	160
ROOF STRENGTH	REFERENCE STRUCTURE		—	—	—	—	—	—	—	—	—
	BRACED GABLE ENDS										
	HIP ROOF										
ROOF COVERING	METAL										
	RATED SHINGLES (110 MPH)										
	MEMBRANE										
	NAILING OF DECK	8d									
ROOF-WALL STRENGTH	CLIPS										
	STRAPS										
WALL- FLOOR STRENGTH	TIES OR CLIPS										
	STRAPS										
WALL-FOUNDATION STRENGTH	LARGER ANCHORS OR CLOSER SPACING						—	—	—	—	—
	STRAPS						—	—	—	—	—
	VERTICAL REINFORCING		—	—	—	—	—				
OPENING PROTECTION	WINDOW SHUTTERS	PLYWOOD									
		STEEL									
		ENGINEERED									
	DOOR AND SKYLIGHT COVERS										
WINDOW, DOOR, SKYLIGHT STRENGTH	WINDOWS										
		LAMINATED									
		IMPACT GLASS									
MITIGATION MEASURES IN COMBINATION		PERCENTAGE CHANGES IN DAMAGE ((REFERENCE DAMAGE RATE - MITIGATED DAMAGE RATE) / REFERENCE DAMAGE RATE) * 100									
		FRAME STRUCTURE					MASONRY STRUCTURE				
		WINDSPEED (MPH)					WINDSPEED (MPH)				
		60	85	110	135	160	60	85	110	135	160
STRUCTURE	MITIGATED STRUCTURE										

Form V-3: Mitigation Measures – Mean Damage Ratio
Trade Secret List Item

- A. Provide the mean damage ratio (prior to any insurance considerations) to the reference structure for each individual mitigation measure listed in Form V-3 as well as the percent damage for the combination of the four mitigation measures provided for the Mitigated Frame Structure and the Mitigated Masonry Structure below.
- B. If additional assumptions are necessary to complete this form (for example, regarding duration or surface roughness), provide the rationale for the assumptions as well as a detailed description of how they are included.
- C. Provide a graphical representation of the vulnerability curves for the reference structure and the fully mitigated structure.

<p><u>Reference Frame Structure:</u> One story Unbraced gable end roof Normal shingles (55mph) ½” plywood deck 6d nails, deck to roof members Toe nail truss to wall anchor Wood framed exterior walls 5/8” diameter anchors at 48” centers for wall/floor/foundation connections No shutters Standard glass windows No door covers No skylight covers Constructed in 1980</p>	<p><u>Reference Masonry Structure:</u> One story Unbraced gable end roof Normal shingles (55mph) ½” plywood deck 6d nails, deck to roof members Toe nail truss to wall anchor Masonry exterior walls No vertical wall reinforcing No shutters Standard glass windows No door covers No skylight covers Constructed in 1980</p>
<p><u>Mitigated Frame Structure:</u> Rated shingles (110mph) 8d nails, deck to roof members Truss straps at roof Plywood Shutters</p>	<p><u>Mitigated Masonry Structure:</u> Rated shingles (110mph) 8d nails, deck to roof members Truss straps at roof Plywood Shutters</p>

Reference and mitigated structures are \$100,000 fully insured structures with a zero deductible policy as indicated under “Owners” Policy Type for Form A-6.

Place the reference structure at the population centroid for ZIP Code 33921 located in Lee County.

Windspeeds used in the form are one-minute sustained 10-meter windspeeds.

Form V-3: Mitigation Measures – Mean Damage Ratio

Trade Secret List Item

INDIVIDUAL MITIGATION MEASURES		MEAN DAMAGE RATIO											
		FRAME STRUCTURE					MASONRY STRUCTURE						
		WINDSPEED (MPH)					WINDSPEED (MPH)						
		60	85	110	135	160	60	85	110	135	160		
ROOF STRENGTH	REFERENCE STRUCTURE												
	BRACED GABLE ENDS												
	HIP ROOF												
ROOF COVERING	METAL												
	RATED SHINGLES (110 MPH)												
	MEMBRANE												
	NAILING OF DECK	8d											
ROOF-WALL STRENGTH	CLIPS												
	STRAPS												
WALL-FLOOR STRENGTH	TIES OR CLIPS												
	STRAPS												
WALL-FOUNDATION STRENGTH	LARGER ANCHORS OR CLOSER SPACING						—	—	—	—	—		
	STRAPS						—	—	—	—	—		
	VERTICAL REINFORCING		—	—	—	—	—						
OPENING PROTECTION	WINDOW SHUTTERS	PLYWOOD											
		STEEL											
		ENGINEERED											
	DOOR AND SKYLIGHT COVERS												
WINDOW, DOOR, SKYLIGHT STRENGTH	WINDOWS												
		LAMINATED											
		IMPACT GLASS											
MITIGATION MEASURES IN COMBINATION		MEAN DAMAGE RATIO											
		FRAME STRUCTURE					MASONRY STRUCTURE						
		WINDSPEED (MPH)					WINDSPEED (MPH)						
		60	85	110	135	160	60	85	110	135	160		
STRUCTURE													
	MITIGATED STRUCTURE												

ACTUARIAL STANDARDS

A-1 Modeled Loss Costs and Probable Maximum Loss Levels*

*(*Significant Revision)*

Modeled loss costs and probable maximum loss levels shall reflect all insured wind related damages from storms that reach hurricane strength and produce minimum damaging windspeeds or greater on land in Florida.

Purpose: Loss costs and probable maximum loss levels shall only include insured wind related damages in Florida resulting from an event modeled as a hurricane consistent with Florida Statutes. The event shall include all such insured wind related damage caused by a hurricane that makes landfall in Florida as a hurricane or by-passes Florida as a hurricane but comes close enough to cause damaging winds in Florida.

Relevant Forms: G-4, Actuarial Standards Expert Certification
A-3, Base Hurricane Storm Set Statewide Loss Costs

Disclosures

1. Describe how damage from model generated storms (landfalling and by-passing) is excluded or included in the calculation of loss costs and probable maximum loss levels for the state of Florida.
2. Describe how damage resulting from concurrent or preceding flood or hurricane storm surge is treated in the calculation of loss costs and probable maximum loss levels for the state of Florida.

Audit

1. The model will be reviewed to determine that the definition of an event in the model is consistent with Standard A-1.
2. The model will be reviewed to determine that by-passing storms and their effects are considered in a manner that is consistent with Standard A-1.
3. The model will be reviewed to determine whether (if so, how) the model takes into account flood or hurricane storm surge.

A-2 Underwriting Assumptions*

*(*Significant Revision)*

- A. When used in the modeling process or for verification purposes, adjustments, edits, inclusions, or deletions to insurance company input data used by the modeling organization shall be based upon accepted actuarial, underwriting, and statistical procedures.**
- B. For loss cost and probable maximum loss level estimates derived from or validated with historical insured hurricane losses, the assumptions in the derivations concerning (1) construction characteristics, (2) policy provisions, (3) claim payment practices, (4) coinsurance, (5) contractual provisions, and (6) relevant underwriting practices underlying those losses, as well as any actuarial modifications, shall be appropriate.**

Purpose: Insurance company data used in model development may include appropriate insurer or modeling organization adjustments that do not diminish the usefulness of the data.

Loss costs and probable maximum loss levels may be significantly impacted by the way in which insurers pay claims following a hurricane event. To appropriately use historical insurer claims data to verify modeled loss costs and probable maximum loss levels it is important that insurer claim practices are understood and that the effects of insurer claim practices on the loss costs and probable maximum loss levels are explained.

The determination of insurance coverage for a commercial residential policy is dependent upon the contractual responsibility of the unit owner and that of the condominium association or the renter and the building owner. It is important that these responsibilities be appropriately accounted for in modeling loss cost projections and commercial residential probable maximum loss levels.

Relevant Form: G-4, Actuarial Standards Expert Certification

Disclosures

1. Identify the assumptions used to develop loss costs for unknown residential construction types.
2. Identify the assumptions used to develop loss costs for commercial residential construction types.
3. Identify the assumptions used to account for the effects of coinsurance on commercial residential construction loss costs.

4. Describe the assumptions included in model development and validation concerning insurance company claim payment practices including the effects of contractual obligations on the claim payment process.
5. Identify depreciation assumptions and describe the methods and assumptions used to reduce insured losses on account of depreciation. Provide a sample calculation for determining the amount of depreciation and the actual cash value (ACV) losses.
6. Identify insurance-to-value assumptions and describe the methods and assumptions used to determine the true property value and associated losses. Provide a sample calculation for determining the property value and guaranteed replacement cost losses.
7. Describe how loss adjustment expenses are considered within the loss cost and probable maximum loss level estimates.

Audit

1. Demonstrate how the claim practices of insurance companies are accounted for when claims data for those insurance companies are used to develop or to verify model calculations. For example, the level of damage the insurer considers a loss to be a total loss, claim practices of insurers with respect to concurrent causation, or the impact of public adjusting.
2. Provide the percentage of loss at or above which the model assumes a total loss.

A-3 Loss Cost Projections and Probable Maximum Loss Levels*

*(*Significant Revision)*

- A. Loss cost projections and probable maximum loss levels shall not include expenses, risk load, investment income, premium reserves, taxes, assessments, or profit margin.**
- B. Loss cost projections and probable maximum loss levels shall not make a prospective provision for economic inflation.**
- C. Loss cost projections and probable maximum loss levels shall not include any provision for direct hurricane storm surge losses.**
- D. Loss cost projections and probable maximum loss levels shall be capable of being calculated at a geocode (latitude-longitude) level of resolution.**

Purpose: Loss costs represent the expected annual loss per \$1,000 exposure. Other “expense and profit loads” such as those listed in the standard are included in rate filings and are calculated outside the scope of the Commission.

Loss severity is influenced by general economic inflation applicable to material and labor. Amounts of insurance may also be influenced (although perhaps differently) by economic inflation. Economic inflation is an element of past insurance experience that has been used to construct and validate hurricane loss projection models.

Hurricane storm surge is covered by the National Flood Insurance Program or in some cases by other policies, but normally not covered by private insurance market personal residential property policies that cover the wind peril.

Relevant Form: G-4, Actuarial Standards Expert Certification

Disclosures

1. Describe the method or methods used to estimate annual loss costs and probable maximum loss levels needed for ratemaking. Identify any source documents used and research performed.
2. Identify the highest level of resolution for which loss costs and probable maximum loss levels can be provided. Identify all possible resolutions available for the reported output ranges.

Audit

1. Describe how the model handles expenses, risk load, investment income, premium reserves, taxes, assessments, profit margin, and economic inflation.

A-4 Demand Surge*

*(*Significant Revision)*

- A. Demand surge shall be included in the model's calculation of loss costs and probable maximum loss levels using relevant data.**
- B. The methods, data, and assumptions used in the estimation of demand surge shall be actuarially sound.**

Purpose: Demand surge is recognized as an important element for modeling and due to recent hurricanes there are sufficient data for this standard to be met.

Relevant Form: G-4, Actuarial Standards Expert Certification

Disclosures

1. Describe how the model incorporates demand surge in the calculation of loss costs and probable maximum loss levels.
2. Provide citations to published papers, if any, that were used to develop how the model estimates demand surge.

Audit

1. Provide the data and methods used to incorporate individual aspects of demand surge on personal and commercial residential coverages, inclusive of the effects from building material costs, labor costs, contents costs, repair time, etc.
2. All referenced literature will be reviewed to determine applicability.

A-5 User Inputs

All modifications, adjustments, assumptions, inputs and/or input file identification, and defaults necessary to use the model shall be actuarially sound and shall be included with the model output report. Treatment of missing values for user inputs required to run the model shall be actuarially sound and described with the model output report.

Purpose: Hurricane loss projection models may rely on certain insurer assumptions. Implicit assumptions may or may not be appropriate for use by a given insurer, depending on the circumstances.

Relevant Form: G-4, Actuarial Standards Expert Certification

Disclosures

1. Describe the methods used to distinguish among policy form types (e.g., homeowners, dwelling property, mobile home, tenants, condo unit owners).
2. Disclose, in a model output report, the specific type of input that is required to use the model or model output in a residential property insurance rate filing. Such input includes, but is not limited to, optional features of the model, type of data to be supplied by the model user and needed to derive loss projections from the model, and any variables that a model user is authorized to set in using the model. Include the model name and version number on the model output report. All items included in the output form submitted to the Commission shall be clearly labeled and defined.
3. Provide a copy of the input form used by a model user to provide input criteria to be used in the model. Describe the process followed by the user to generate the model output produced from the input form. Include the model name and version number on the input form. All items included in the input form submitted to the Commission shall be clearly labeled and defined.
4. Describe actions performed to ensure the validity of insurer data used for model inputs or validation/verification.

Audit

1. Quality assurance procedures shall include methods to assure accuracy of insurance data. Compliance with this standard will be readily demonstrated through documented rules and procedures.
2. All model inputs and assumptions will be reviewed to determine that the model output report appropriately discloses all modifications, adjustments, assumptions, and defaults used to produce the loss costs.

A-6 Logical Relationship to Risk*

*(*Significant Revision)*

- A. Loss costs shall not exhibit an illogical relation to risk, nor shall loss costs exhibit a significant change when the underlying risk does not change significantly.**
- B. Loss costs produced by the model shall be positive and non-zero for all valid Florida ZIP Codes.**
- C. Loss costs cannot increase as the quality of construction type, materials and workmanship increases, all other factors held constant.**
- D. Loss costs cannot increase as the presence of fixtures or construction techniques designed for hazard mitigation increases, all other factors held constant.**
- E. Loss costs cannot increase as the quality of building codes and enforcement increases, all other factors held constant.**
- F. Loss costs shall decrease as deductibles increase, all other factors held constant.**
- G. The relationship of loss costs for individual coverages, (e.g., structures and appurtenant structures, contents, and time element) shall be consistent with the coverages provided.**

Purpose: Modeled loss costs shall vary according to risk. If the risk of loss due to hurricanes is higher for one area or structure type, then the loss costs shall also be higher. Likewise, if there is no difference in risk there shall be no difference in loss costs. Loss costs not having these properties have an illogical relation to risk.

Relevant Forms: G-4, Actuarial Standards Expert Certification
A-1, Personal Residential Loss Costs
A-2, Zero Deductible Personal Residential Loss Costs by ZIP Code
A-3, Base Hurricane Storm Set Statewide Loss Costs
A-4, Hurricane Andrew (1992) Percent of Losses
A-5, Cumulative Losses from the 2004 Hurricane Season
S-5, Average Annual Zero Deductible Statewide Loss Costs –
Historical versus Modeled

Disclosures

1. Demonstrate that loss cost relationships by type of coverage (structures, appurtenant structures, contents, time element) are consistent with actual insurance data.
2. Demonstrate that loss cost relationships by construction type are consistent with actual insurance data.
3. Demonstrate that loss cost relationships among coverages, territories, and regions are consistent and reasonable.
4. Explain any anomalies or special circumstances that might preclude any of the above conditions from occurring.
5. Provide a completed Form A-1, Personal Residential Loss Costs.
6. Provide a completed Form A-2, Zero Deductible Personal Residential Loss Costs by ZIP Code.
7. Provide a completed Form A-3, Base Hurricane Storm Set Statewide Loss Costs.
8. Provide a completed Form A-4, Hurricane Andrew (1992) Percent of Losses.
9. Provide a completed Form A-5, Cumulative Losses from the 2004 Hurricane Season.

Audit

1. Graphical representations of loss costs by ZIP Code and county will be reviewed.
2. Color-coded maps depicting the effects of land friction on loss costs by ZIP Code will be reviewed.
3. The procedures used by the modeling organization to verify the individual loss cost relationships will be reviewed. Forms A-1, A-2, A-3, A-4, and A-5 will be used to assess coverage relationships.

A-7 Deductibles, Policy Limits, and Coinsurance*

(*Significant Revision)

- A. The methods used in the development of mathematical distributions to reflect the effects of deductibles, policy limits, and coinsurance shall be actuarially sound.**
- B. The relationship among the modeled deductible loss costs shall be reasonable.**
- C. Deductible loss costs shall be calculated in accordance with s. 627.701(5)(a), F.S.**
- D. The effects of coinsurance on commercial residential loss costs produced by the model shall be actuarially sound.**

Purpose: For a given windspeed and structure type, there is a range of possible results. Some losses may fall completely below the deductible. The distribution of losses is therefore important to the determination of the effects of deductibles and policy limits. It is important that coinsurance effects produced by the model appropriately account for the expected impact of coinsurance.

Relevant Form: G-4, Actuarial Standards Expert Certification

Disclosures

1. Describe the methods used in the model to treat deductibles (both flat and percentage), policy limits, replacement costs, and insurance-to-value when projecting loss costs.
2. Provide an example of how insurer loss (loss net of deductibles) is calculated. Discuss data or documentation used to confirm or validate the method used by the model.

Example:

(A)		(B)	(C)	(D)=(A)*(C)	(E)=(D)-(B)
Structure Value	Policy Limit	Deductible	Damage Ratio	Zero Deductible Loss	Loss Net of Deductible
100,000	90,000	500	2%	2,000	1,500

3. Describe how the model calculates annual deductibles.
4. Describe the methods used in the model to account for coinsurance.

Audit

1. Describe the process used to determine the accuracy of the insurance-to-value criteria in data used to develop or validate the model results.
2. To the extent that historical data are used to develop mathematical depictions of deductibles, policy limit, and coinsurance functions, demonstrate the goodness-of-fit of the data to fitted models.
3. Justify changes from the previously accepted submission in the relativities among corresponding deductible amounts for the same coverage.

A-8 Contents*

*(*Significant Revision)*

- A. The methods used in the development of contents loss costs shall be actuarially sound.**
- B. The relationship between the modeled structure and contents loss costs shall be reasonable, based on the relationship between historical structure and contents losses.**

Purpose: A reasonable representation of contents losses is necessary in order to address policies that principally cover contents, such as tenants and condo unit owners policies.

Relevant Form: G-4, Actuarial Standards Expert Certification

Disclosure

1. Describe the methods used in the model to calculate loss costs for contents coverage associated with personal and commercial residential structures.

Audit

1. To the extent that historical data are used to develop mathematical depictions of contents functions, demonstrate the goodness-of-fit of the data to fitted models.
2. Justify changes from the previously accepted submission in the relativities between loss costs for structures and the corresponding loss costs for contents.

A-9 Time Element Coverage*

*(*Significant Revision)*

- A. The methods used in the development of time element coverage loss costs shall be actuarially sound.**
- B. Time element loss cost derivations shall consider the estimated time required to repair or replace the property.**
- C. The relationship between the modeled structure and time element loss costs shall be reasonable, based on the relationship between historical structure and time element losses.**
- D. Time element loss costs produced by the model shall appropriately consider time element claims arising from indirect loss.**

Purpose: Policies can provide varying types of time element coverage and insurance policies may pay for time element claims irrespective of damage to the insured property.

Relevant Form: G-4, Actuarial Standards Expert Certification

Disclosures

1. Describe the methods used to develop loss costs for time element coverage. State whether the model considers both direct and indirect loss to the insured property. For example, direct loss could be for expenses paid to house policyholders in an apartment while their home is being repaired. Indirect loss could be for expenses incurred for loss of power (e.g., food spoilage).
2. State the minimum threshold at which time element loss is calculated (e.g., loss is estimated for structure damage greater than 20% or only for category 3, 4, 5 events). Provide documentation of validation test results to verify the approach used.
3. Describe how modeled time element loss costs take into consideration the damage (including damage due to storm surge, flood, and wind) to local and regional infrastructure.

Audit

1. Documentation and justification of the following will be reviewed:
 - a. The method of derivation and data on which the time element vulnerability functions are based;
 - b. Validation data specifically applicable to time element coverages;

- c. Assumptions regarding the coding of time element losses by insurers;
 - d. The effects of demand surge on time element for Hurricane Andrew (1992) and the 2004 and 2005 hurricane seasons;
 - e. Assumptions regarding the variability of time element losses by size of property;
 - f. Statewide application of time element coverage assumptions;
 - g. Assumptions regarding time element coverage for mobile homes, tenants, and condo unit owners exposure;
 - h. The methods used to incorporate the estimated time required to repair or replace the property;
 - i. The methodology and available validation for determining the extent of infrastructure damage and its effect on time element costs.
2. To the extent that historical data are used to develop mathematical depictions of time element functions, demonstrate the goodness-of-fit of the data to fitted models.

A-10 Output Ranges*

*(*Significant Revision)*

- A. Output ranges shall be logical and any deviations supported.**
- B. All other factors held constant, output ranges produced by the model shall reflect lower loss costs for:**
 - 1. masonry construction versus frame construction,**
 - 2. personal residential risk exposure versus mobile home risk exposure,**
 - 3. in general, inland counties versus coastal counties, and**
 - 4. in general, northern counties versus southern counties.**

Purpose: Updates or revisions to the model lead to changes in the output ranges which shall be reasonable. This standard requires that the impacts on the loss costs are actually attributable to the updates or revisions.

Relevant Forms: G-4, Actuarial Standards Expert Certification
A-6, Personal Residential Output Ranges
A-7, Percentage Change in Personal Residential Output Ranges
A-8, Percentage Change in Personal Residential Output Ranges by County

Disclosures

1. Provide an explanation for all anomalies in the loss costs that are not consistent with the requirements of this standard.
2. Provide an explanation of the differences in the personal residential output ranges using the 2007 Florida Hurricane Catastrophe Fund aggregate personal residential exposure data between the previously accepted submission and the current submission.
3. Provide a completed Form A-6, Personal Residential Output Ranges using the 2007 Florida Hurricane Catastrophe Fund aggregate personal residential exposure data.
4. Provide a completed Form A-7, Percentage Change in Personal Residential Output Ranges using the 2007 Florida Hurricane Catastrophe Fund aggregate personal residential exposure data.
5. Provide a completed Form A-8, Percentage Change in Personal Residential Output Ranges by County using the 2007 Florida Hurricane Catastrophe Fund aggregate personal residential exposure data.

6. Provide a sample output range report produced by the model for commercial residential loss costs.

Audit

1. Forms A-6, A-7, and A-8 will be reviewed. The sample output range report produced by the model for commercial residential loss costs will be reviewed.
2. Justify all changes from the previously accepted submission using the 2007 Florida Hurricane Catastrophe Fund aggregate personal residential exposure data.
3. Output ranges will be reviewed to ensure appropriate differentials among deductibles, coverage, and construction types.
4. Anomalies in the output range data will be reviewed and shall be justified.

A-11 Probable Maximum Loss*

(*Significant Revision)

The methods, data, and assumptions used in the estimation of probable maximum loss levels shall be actuarially sound.

Purpose: Reinsurance and other capital market products pricing, retention levels and limits for catastrophe reinsurance treaties, and rating agency capital adequacy determinations are frequently based upon probable maximum loss levels. This standard is to ensure that probable maximum loss levels are based on an actuarially sound methodology.

Relevant Forms: G-4, Actuarial Standards Expert Certification
A-9, Probable Maximum Loss for Florida
S-2, Examples of Loss Exceedance Estimates

Disclosures

1. Describe how the model produces probable maximum loss levels.
2. Provide citations to published papers, if any that were used to estimate probable maximum loss levels.
3. Provide a completed Form A-9, Probable Maximum Loss for Florida.
4. Describe how the probable maximum loss levels produced by the model include the effects of personal and commercial residential insurance coverage.
5. Explain any differences between the values provided on Form A-9 and those provided on Form S-2.

Audit

1. Provide the data and methods used for probable maximum loss levels for Form A-9. (Trade Secret List item)
2. All referenced literature will be reviewed to determine applicability.

Form A-1: Personal Residential Loss Costs

- A. Provide the expected annual personal residential loss costs by construction type and coverage for each ZIP Code in the sample data set named “*FormA1Input09.xls*.” Refer to assumption information for “*FormA1Input09.xls*” provided under **Submission Data**. Loss costs shall be rounded to six decimal places. There are 1,479 ZIP Codes and three construction types; therefore, the completed file should have 4,437 records in total. The following is a description of the requested file layout. Follow the instructions on Form A-1 below and in the **Submission Data** description. Note that fields 2-9 are the exposure fields from the sample data set. Fields 10-13 are for the loss costs (net of deductibles).
- B. If there are ZIP Codes in the sample data set that the model does not recognize as “valid,” provide a list in the submission document of such ZIP Codes and provide either a) the new ZIP Code to which the original one was mapped, or b) an indication that the insured values from this ZIP Code were not modeled.

Loss cost data shall be provided for all ZIP Codes given in the sample data set. That is, if no losses were modeled, the record should still be included in the completed file with loss cost of zero, and if a ZIP Code was mapped to a new one, the resulting loss costs should be reported with the original ZIP Code.

- C. Provide the results on CD in Excel and PDF format using the following file layout. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. The first row of the file shall contain the field names below.

No.	Field Name	Description
1	Analysis Date	Date of Analysis – YYYY/MM/DD
Exposure Fields from Sample Data Set		
2	County Code	FIPS County Code
3	ZIP Code	5-digit ZIP Code
4	Construction Type	1 = Wood Frame, 2 = Masonry, 3 = Mobile Home
5	Annual Deductible	2% (of the Structure Value) policy deductible for each record (i.e., 0.02*\$100,000)
6	Structure Value	\$100,000 for each record
7	Appurtenant Structures Value	\$10,000 for each record
8	Contents Value	\$50,000 for each record
9	Additional Living Expense Value	\$20,000 for each record
Loss Costs (net of deductibles)		
10	Structure Loss Cost	Projected expected annual loss cost for structure divided by the structure value modeled for each record (\$100,000)
11	Appurtenant Structures Loss Cost	Projected expected annual loss cost for appurtenant structures divided by the appurtenant structures value modeled for each record (\$10,000)
12	Contents Loss Cost	Projected expected annual loss cost for contents divided by the contents value modeled for each record (\$50,000)
13	Additional Living Expense Loss Cost	Projected expected annual loss cost for additional living expense divided by the additional living expense value modeled for each record (\$20,000)

All deductibles are a percentage of the Structure Value and are policy-level deductibles; however, for reporting purposes, the policy deductible shall be pro-rated to the individual coverage losses in proportion to the loss. The default all-other perils deductible is \$500.

Example

Assume that a model analyzing wood frame properties in ZIP Code 33102 (Miami-Dade County) estimated the following:

Field Name	Value
Analysis Date	1999/11/15
County Code	Miami-Dade County = 86
ZIP Code	33102
Construction Type	Wood Frame = 1
Annual Deductible	2% = 0.02*\$100,000 = \$2,000
Structure Value	\$100,000
Appurtenant Structures Value	\$10,000
Contents Value	\$50,000
Additional Living Expense Value	\$20,000
Structure Loss Cost*	\$10,000
Appurtenant Structures Loss Cost*	\$1,000
Contents Loss Cost*	\$2,500
Additional Living Expense Loss Cost*	\$500

**Represents first dollar losses (i.e., prior to application of deductibles)*

The \$2,000 hurricane deductible would be applied as follows:

Annual Deductible	2% = 0.02*\$100,000=\$2,000
Structure Loss Cost	$\$10,000 - [(\$10,000 \div \$14,000) \times \$2,000] = \$8,571.43$
Appurtenant Structures Loss Cost	$\$1,000 - [(\$1,000 \div \$14,000) \times \$2,000] = \$857.14$
Contents Loss Cost	$\$2,500 - [(\$2,500 \div \$14,000) \times \$2,000] = \$2,142.86$
Additional Living Expense Loss Cost	$\$500 - [(\$500 \div \$14,000) \times \$2,000] = \$428.57$

The reported Form A-1 data are shown below:

Field Name	Value
Analysis Date	1999/11/15
County Code	Miami-Dade County = 86
ZIP Code	33102
Construction Type	Wood Frame = 1
Annual Deductible	2% = 0.02
Structure Value	\$100,000
Appurtenant Structures Value	\$10,000
Contents Value	\$50,000
Additional Living Expense Value	\$20,000
Structure Loss Cost	$\$8,571.43 \div \$100,000 = 0.085714$
Appurtenant Structures Loss Cost	$\$857.14 \div \$10,000 = 0.085714$
Contents Loss Cost	$\$2,142.86 \div \$50,000 = 0.042857$
Additional Living Expense Loss Cost	$\$428.57 \div \$20,000 = 0.021429$

Based on the above information, the data shall be reported in the following format:

1999/11/15,86,33102,1,0.02,100000,10000,50000,20000,0.085714,0.085714,0.042857,0.021429

**Form A-2: Zero Deductible Personal Residential Loss Costs
by ZIP Code**

Provide a map color-coded by ZIP Code (with a minimum of 6 value ranges) displaying zero deductible personal residential loss costs for frame, masonry, and mobile home.

Form A-3: Base Hurricane Storm Set Statewide Loss Costs

- A. Provide the total insured loss and the dollar contribution to the average annual loss assuming personal residential zero deductible policies from each specific hurricane in the Base Hurricane Storm Set, as defined in Standard M-1, for the 2007 Florida Hurricane Catastrophe Fund’s aggregate personal residential exposure data found in the file named *“hlpm2007.exe.”*
- B. Provide the total insured loss and the dollar contribution to the average annual loss assuming commercial residential zero deductible policies from each specific hurricane in the Base Hurricane Storm Set, as defined in Standard M-1, for the 2007 Florida Hurricane Catastrophe Fund’s aggregate personal and commercial residential exposure data, type of business 1, found in the file named *“hlpm2007c.exe.”*

The table below contains the minimum number of hurricanes from HURDAT to be included in the Base Hurricane Storm Set. Each hurricane has been assigned an ID number. Additional hurricanes included in the model’s Base Hurricane Storm Set shall be added to the table below and assigned an ID number as the hurricane falls within the given ID numbers.

- C. Provide this form on CD in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form A-3 shall be included in the submission.

ID	Landfall/ Closest Approach Date	Year	Name	Total Personal Residential Insured Losses (\$)	Dollar Contribution	Total Commercial Residential Insured Losses (\$)	Dollar Contribution
005	09/12/1903	1903	NoName3-1903				
010	10/17/1904	1904	NoName3-1904				
015	06/18/1906	1906	NoName2-1906				
020	10/17/1906	1906	NoName8-1906				
025	10/11/1909	1909	NoName10-1909				
030	10/17/1910	1910	NoName5-1910				
035	08/01/1915	1915	NoName1-1915				
040	09/04/1915	1915	NoName4-1915				
045	10/18/1916	1916	NoName14-1916				
050	09/29/1917	1917	NoName4-1917				
055	09/10/1919	1919	NoName2-1919				
060	10/25/1921	1921	NoName6-1921				
065	09/15/1924	1924	NoName5-1924				
070	10/21/1924	1924	NoName10-1924				
075	12/01/1925	1925	NoName4-1925				
080	07/28/1926	1926	NoName1-1926				
085	09/18/1926	1926	NoName6-1926				
090	08/08/1928	1928	NoName1-1928				
095	09/17/1928	1928	NoName4-1928				

ID	Landfall/ Closest Approach Date	Year	Name	Total Personal Residential Insured Losses (\$)	Dollar Contribution	Total Commercial Residential Insured Losses (\$)	Dollar Contribution
100	09/28/1929	1929	NoName2-1929				
105	07/30/1933	1933	NoName5-1933				
110	09/04/1933	1933	NoName12-1933				
115	09/03/1935	1935	NoName2-1935				
120	11/04/1935	1935	NoName6-1935				
125	07/31/1936	1936	NoName5-1936				
130	08/11/1939	1939	NoName2-1939				
135	10/06/1941	1941	NoName5-1941				
140	10/19/1944	1944	NoName11-1944				
145	06/24/1945	1945	NoName1-1945				
150	09/16/1945	1945	NoName9-1945				
155	10/08/1946	1946	NoName5-1946				
160	09/17/1947	1947	NoName4-1947				
165	10/12/1947	1947	NoName8-1947				
170	09/22/1948	1948	NoName7-1948				
175	10/05/1948	1948	NoName8-1948				
180	08/27/1949	1949	NoName2-1949				
185	09/05/1950	1950	Easy-1950				
190	10/18/1950	1950	King-1950				
195	09/26/1953	1953	Florence-1953				
200	09/25/1956	1956	Flossy-1956				
205	09/10/1960	1960	Donna-1960				
210	08/27/1964	1964	Cleo-1964				
215	09/10/1964	1964	Dora-1964				
220	10/14/1964	1964	Isbell-1964				
225	09/08/1965	1965	Betsy-1965				
230	06/09/1966	1966	Alma-1966				
235	10/04/1966	1966	Inez-1966				
240	10/19/1968	1968	Gladys-1968				
245	06/19/1972	1972	Agnes-1972				
250	09/23/1975	1975	Eloise-1975				
255	09/04/1979	1979	David-1979				
260	09/13/1979	1979	Frederic-1979				
265	09/02/1985	1985	Elena-1985				
270	11/21/1985	1985	Kate-1985				
275	10/12/1987	1987	Floyd-1987				
280	08/24/1992	1992	Andrew-1992				
285	08/02/1995	1995	Erin-1995				
290	10/04/1995	1995	Opal-1995				
295	09/03/1998	1998	Earl-1998				
300	09/28/1998	1998	Georges-1998				
305	10/15/1999	1999	Irene-1999				
310	08/13/2004	2004	Charley-2004				
315	09/05/2004	2004	Frances-2004				
320	09/16/2004	2004	Ivan-2004				
325	09/26/2004	2004	Jeanne-2004				

ID	Landfall/ Closest Approach Date	Year	Name	Total Personal Residential Insured Losses (\$)	Dollar Contribution	Total Commercial Residential Insured Losses (\$)	Dollar Contribution
330	0710/2005	2005	Dennis-2005				
335	08/26/2005	2005	Katrina-2005				
340	09/21/2005	2005	Rita-2005				
345	10/24/2005	2005	Wilma-2005				
Other hurricanes included:							
			Total				

Note: Total dollar contributions should agree with the total average annual zero deductible statewide loss costs provided in Form S-5 for current year.

Form A-4: Hurricane Andrew (1992) Percent of Losses

- A. Provide the percentage of personal residential zero deductible losses, rounded to four decimal places, from Hurricane Andrew (1992) for each affected ZIP Code. Include all ZIP Codes where losses are equal to or greater than \$500,000.
- B. Provide the percentage of commercial residential zero deductible losses, rounded to four decimal places, from Hurricane Andrew (1992) for each affected ZIP Code. Include all ZIP Codes where losses are equal to or greater than \$500,000.
- C. Provide a map color-coded by ZIP Code depicting the percentage of total personal residential losses from Hurricane Andrew (1992) below latitude 27°N using the following interval coding:

Red	Over 5%
Light Red	2% to 5%
Pink	1% to 2%
Light Pink	0.5% to 1%
Light Blue	0.2% to 0.5%
Medium Blue	0.1% to 0.2%
Blue	Below 0.1%

- D. Provide a map color-coded by ZIP Code depicting the percentage of total commercial residential losses from Hurricane Andrew (1992) below latitude 27°N using the following interval coding:

Red	Over 5%
Light Red	2% to 5%
Pink	1% to 2%
Light Pink	0.5% to 1%
Light Blue	0.2% to 0.5%
Medium Blue	0.1% to 0.2%
Blue	Below 0.1%

- E. Provide this form on CD in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form A-4 shall be included in the submission.

Rather than using directly a published windfield for Hurricane Andrew (1992), the winds underlying the loss cost calculations must be produced by the model being evaluated and should be the same hurricane parameters as used in completing Form A-3. Use the 2007 Florida Hurricane Catastrophe Fund's aggregate personal residential exposure data found in the file named "*hlpm2007.exe*" for personal residential losses and the 2007 Florida Hurricane Catastrophe Fund's aggregate personal and commercial residential exposure data, type of business 1, found in the file named "*hlpm2007c.exe*" for commercial residential losses.

Form A-5: Cumulative Losses from the 2004 Hurricane Season

- A. Provide the percentage of personal residential zero deductible cumulative losses, rounded to four decimal places, from Hurricane Charley (2004), Hurricane Frances (2004), Hurricane Ivan (2004), and Hurricane Jeanne (2004) for each affected ZIP Code. Include all ZIP Codes where losses are equal to or greater than \$500,000.
- B. Provide the percentage of commercial residential zero deductible cumulative losses, rounded to four decimal places, from Hurricane Charley (2004), Hurricane Frances (2004), Hurricane Ivan (2004), and Hurricane Jeanne (2004) for each affected ZIP Code. Include all ZIP Codes where losses are equal to or greater than \$500,000.
- C. Provide maps color-coded by ZIP Code depicting the percentage of total personal residential losses from each hurricane, Hurricane Charley (2004), Hurricane Frances (2004), Hurricane Ivan (2004), and Hurricane Jeanne (2004) and for the cumulative losses using the following interval coding:

Red	Over 5%
Light Red	2% to 5%
Pink	1% to 2%
Light Pink	0.5% to 1%
Light Blue	0.2% to 0.5%
Medium Blue	0.1% to 0.2%
Blue	Below 0.1%

- D. Provide maps color-coded by ZIP Code depicting the percentage of total commercial residential losses from each hurricane, Hurricane Charley (2004), Hurricane Frances (2004), Hurricane Ivan (2004), and Hurricane Jeanne (2004) and for the cumulative losses using the following interval coding:

Red	Over 5%
Light Red	2% to 5%
Pink	1% to 2%
Light Pink	0.5% to 1%
Light Blue	0.2% to 0.5%
Medium Blue	0.1% to 0.2%
Blue	Below 0.1%

- E. Provide this form on CD in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form A-5 shall be included in the submission.

Rather than using directly a specific published windfield, the winds underlying the loss cost calculations must be produced by the model being evaluated and should be the same hurricane parameters as used in completing Form A-3. Use the 2007 Florida Hurricane Catastrophe Fund's aggregate personal residential exposure data found in the file named "*hlpm2007.exe*" for personal residential losses and the 2007 Florida Hurricane Catastrophe Fund's aggregate personal and commercial residential exposure data, type of business 1, found in the file named "*hlpm2007c.exe*" for commercial residential losses.

Form A-5: Cumulative Losses from the 2004 Hurricane Season

ZIP Code	Personal Residential Monetary Contribution (\$)	Percent of Losses (%)	Commercial Residential Monetary Contribution (\$)	Percent of Losses (%)

Form A-6: Personal Residential Output Ranges

- A. Provide personal residential output ranges in the format shown in the file named **“2009FormA6.xls”** by using an automated program or script. A hard copy of the personal residential output range spreadsheets shall be included in the submission. Provide the personal residential output ranges on CD in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name.
- B. Provide loss costs by county. Within each county, loss costs shall be shown separately per \$1,000 of exposure for personal residential, tenants, condo unit owners, and mobile home; for each major deductible option; and by construction type. For each of these categories using ZIP Code centroids, the personal residential output range shall show the highest loss cost, the lowest loss cost, and the weighted average loss cost based on the 2007 Florida Hurricane Catastrophe Fund aggregate personal residential exposure data provided in the file named **“hlpm2007.exe.”** The aggregate personal residential exposure data for this form shall be developed from the information in the file named **“hlpm2007.exe,”** except for insured value and deductibles information. Insured values shall be based on the personal residential output range specifications on the following pages. Deductible amounts prescribed in **“2009FormA6.xls”** for each column will be assumed to be uniformly applied to all risks. When calculating the weighted average loss costs, weight the loss costs by the total insured value calculated above. Include the statewide range of loss costs (i.e., low, high, and weighted average). For each of the loss costs provided, identify what that loss cost represents by line of business, deductible option, construction type, and coverages included, i.e., structure, contents, appurtenant structures, or additional living expenses as specified.
- C. If a modeling organization has loss costs for a ZIP Code for which there is no exposure, give the loss costs zero weight (i.e., assume the exposure in that ZIP Code is zero). Provide a list in the submission document of those ZIP Codes where this occurs.
- D. If a modeling organization does not have loss costs for a ZIP Code for which there is some exposure, do not assume such loss costs are zero, but use only the exposures for which there are loss costs in calculating the weighted average loss costs. Provide a list in the submission document of the ZIP Codes where this occurs.
- E. All anomalies in loss costs that are not consistent with the requirements of Standard A-10 and have been explained in Disclosure A-10.1 shall be shaded.

Indicate if per diem is used in producing loss costs for Coverage D (ALE) in the personal residential output ranges. If a per diem rate is used in the submission, a rate of \$150.00 per day per policy shall be used.

Personal Residential Output Range Specifications Owners Policy Type

Coverage A: Structure

- Amount of Insurance = \$100,000
- Replacement Cost included subject to Coverage A limit
- Ordinance or Law not included

Coverage B: Appurtenant Structures

- Amount of Insurance = 10% of Coverage A amount
- Replacement Cost included subject to Coverage B limit
- Ordinance or Law not included

Coverage C: Contents

- Amount of Insurance = 50% of Coverage A amount
- Replacement Cost included subject to Coverage C limit

Coverage D: Additional Living Expense

- Amount of Insurance = 20% of Coverage A amount
 - Time Limit = 12 months
 - Per Diem = \$150.00/day per policy, if used
- Loss costs per \$1,000 shall be related to the Coverage A amount.
 - Loss costs for the various deductibles shall be determined based on annual deductibles.
 - All-other perils deductible shall be \$500.
 - Explain any deviations and differences from the prescribed format above.
 - Specify the model name and version number reflecting the release date as a footnote on each page of the output.

Personal Residential Output Range Specifications Tenants Policy Type

Coverage C: Contents

- Amount of Insurance = \$25,000
- Replacement Cost included subject to Coverage C limit

Coverage D: Additional Living Expense

- Amount of Insurance = 40% of Coverage C amount
 - Time Limit = 12 months
 - Per Diem = \$150.00/day per policy, if used
-
- Loss costs per \$1,000 shall be related to the Coverage C amount.
 - Loss costs for the various deductibles shall be determined based on annual deductibles.
 - All-other perils deductible shall be \$500.
 - Explain any deviations and differences from the prescribed format above.
 - Specify the model name and version number reflecting the release date as a footnote on each page of the output.

Personal Residential Output Range Specifications Condo Unit Owners Policy Type

Coverage A: Structure

- Amount of Insurance = 10% of Coverage C amount
- Replacement Cost included subject to Coverage A limit

Coverage C: Contents

- Amount of Insurance = \$50,000
- Replacement Cost included subject to Coverage C limit

Coverage D: Additional Living Expense

- Amount of Insurance = 40% of Coverage C amount
 - Time Limit = 12 months
 - Per Diem = \$150.00/day per policy, if used
- Loss costs per \$1,000 shall be related to the Coverage C amount.
 - Loss costs for the various deductibles shall be determined based on annual deductibles.
 - All-other perils deductible shall be \$500.
 - Explain any deviations and differences from the prescribed format above.
 - Specify the model name and version number reflecting the release date as a footnote on each page of the output.

Personal Residential Output Range Specifications Mobile Home Owners Policy Type

Coverage A: Structure

- Amount of Insurance = \$50,000
- Replacement Cost included subject to Coverage A limit

Coverage B: Appurtenant Structures

- Amount of Insurance = 10% of Coverage A amount
- Replacement Cost included subject to Coverage B limit

Coverage C: Contents

- Amount of Insurance = 50% of Coverage A amount
- Replacement Cost included subject to Coverage C limit

Coverage D: Additional Living Expense

- Amount of Insurance = 20% of Coverage A amount
 - Time Limit = 12 months
 - Per Diem = \$150.00/day per policy, if used
- Loss costs per \$1,000 shall be related to the Coverage A amount.
- Loss costs for the various deductibles shall be determined based on annual deductibles.
- All-other perils deductible shall be \$500.
- Explain any deviations and differences from the prescribed format above.
- Specify the model name and version number reflecting the release date as a footnote on each page of the output.

Form A-7: Percentage Change in Personal Residential Output Ranges

- A. Provide the percentage change in the weighted average loss costs using the 2007 Florida Hurricane Catastrophe Fund's aggregate personal residential exposure data found in the file named "*hlpm2007.exe*" from the personal residential output ranges from the previously accepted submission for the following:
- Statewide (overall percentage change),
 - By region, as defined in *Figure 4* – North, Central and South,
 - By county, as defined in *Figure 5* – Coastal and Inland.
- B. Provide this form on CD in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form A-7 shall be included in the submission.

Figure 4

State of Florida by North/Central/South Regions

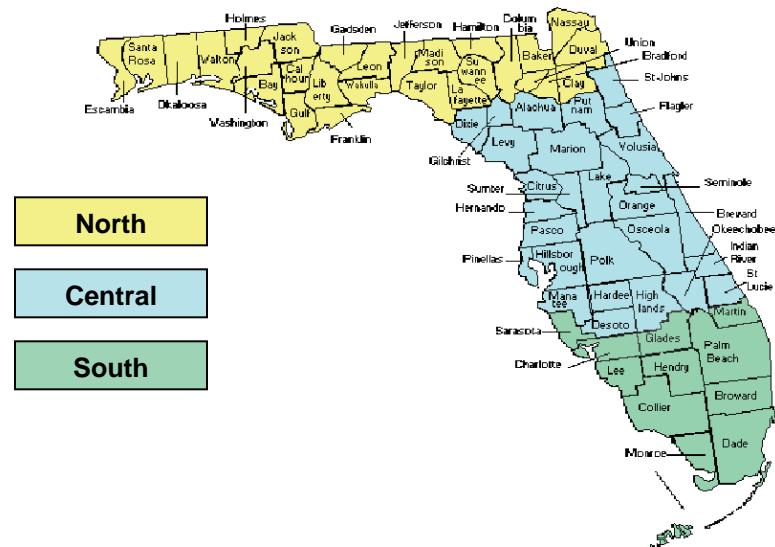
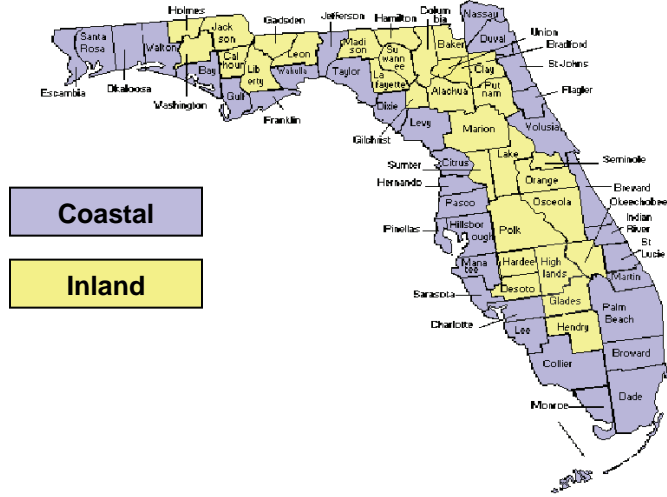


Figure 5

State of Florida by Coastal/Inland



Coastal

Inland

Counties

Form A-7: Percentage Change in Personal Residential Output Ranges

		\$0 Deductible									
		Structure	Contents	Appurtenant Structure	Additional Living Expense	\$500 Deductible Total	\$1,000 Deductible Total	\$2,500 Deductible Total	1% Deductible Total	2% Deductible Total	5% Deductible Total
Frame Owners	Coastal										
	Inland										
	North										
	Central										
	South										
	Statewide										
Masonry Owners	Coastal										
	Inland										
	North										
	Central										
	South										
	Statewide										
Mobile Homes	Coastal										
	Inland										
	North										
	Central										
	South										
	Statewide										
Frame Renters	Coastal										
	Inland										
	North										
	Central										
	South										
	Statewide										
Masonry Renters	Coastal										
	Inland										
	North										
	Central										
	South										
	Statewide										
Frame Condos	Coastal										
	Inland										
	North										
	Central										
	South										
	Statewide										
Masonry Condos	Coastal										
	Inland										
	North										
	Central										
	South										
	Statewide										

Form A-8: Percentage Change in Personal Residential Output Ranges by County

Provide color-coded maps by county reflecting the percentage changes in the weighted average 2% deductible loss costs for frame owners, masonry owners, mobile homes, frame renters, masonry renters, frame condos, and masonry condos from the personal residential output ranges from the previously accepted submission using the 2007 Florida Hurricane Catastrophe Fund's aggregate personal residential exposure data found in the file named "*hlpm2007.exe*."

Counties with a negative percentage change (reduction in loss costs) shall be indicated with shades of blue; counties with a positive percentage change (increase in loss costs) shall be indicated with shades of red; and counties with no percentage change shall be white. The larger the percentage change in the county, the more intense the color-shade.

Form A-9: Probable Maximum Loss for Florida

- A. Provide a detailed explanation of how the Expected Annual Hurricane Losses and Return Periods are calculated.
- B. Complete Form A-9, Part A showing the personal residential probable maximum loss for Florida. For the Expected Annual Hurricane Losses column, provide personal residential, zero deductible statewide loss costs based on the 2007 Florida Hurricane Catastrophe Fund's aggregate personal residential exposure data found in the file named "*hlpm2007.exe.*"
- C. Complete Form A-9, Part C showing the personal and commercial residential probable maximum loss for Florida. For the Expected Annual Hurricane Losses column, provide personal and commercial residential, zero deductible statewide loss costs based on the 2007 Florida Hurricane Catastrophe Fund's aggregate personal and commercial residential exposure data found in the file named "*hlpm2007c.exe.*"

In the column, Return Period (Years), provide the return period associated with the average loss within the ranges indicated on a cumulative basis.

For example, if the average loss is \$4,705 million for the range \$4,501 million to \$5,000 million, provide the return period associated with a loss that is \$4,705 million or greater.

For each loss range in millions (\$1,001-\$1,500, \$1,501-\$2,000, \$2,001-\$2,500) the average loss within that range should be identified and then the return period associated with that loss calculated. The return period is then the reciprocal of the probability of the loss equaling or exceeding this average loss size.

The probability of equaling or exceeding the average of each range should be smaller as the ranges increase (and the average losses within the ranges increase). Therefore, the return period associated with each range and average loss within that range should be larger as the ranges increase. Return periods shall be based on cumulative probabilities.

A return period for an average loss of \$4,705 million within the \$4,501-\$5,000 million range should be lower than the return period for an average loss of \$5,455 million associated with a \$5,001- \$6,000 million range.

- D. Provide a graphical comparison of the current submission Personal Residential Return Periods to the previously accepted submission Personal Residential Return Periods. Personal Residential Return Period (Years) shall be shown on the y -axis on a log 10 scale with Losses in Billions shown on the x -axis. The legend shall indicate the corresponding submission with a solid line representing the current year and a dotted line representing the previously accepted submission.
- E. Provide the estimated loss for each of the Personal Residential Return Periods given in Part B. Describe how the uncertainty intervals were derived.

F. Provide the estimated loss for each of the Personal and Commercial Residential Return Periods given in Part D.

G. Provide this form on CD in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form A-9 shall be included in the submission.

Part A – Personal Residential Probable Maximum Loss for Florida

LOSS RANGE (MILLIONS)			TOTAL LOSS	AVERAGE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES*	RETURN PERIOD (YEARS)
\$ -	to	\$ 500					
\$ 501	to	\$ 1,000					
\$ 1,001	to	\$ 1,500					
\$ 1,501	to	\$ 2,000					
\$ 2,001	to	\$ 2,500					
\$ 2,501	to	\$ 3,000					
\$ 3,001	to	\$ 3,500					
\$ 3,501	to	\$ 4,000					
\$ 4,001	to	\$ 4,500					
\$ 4,501	to	\$ 5,000					
\$ 5,001	to	\$ 6,000					
\$ 6,001	to	\$ 7,000					
\$ 7,001	to	\$ 8,000					
\$ 8,001	to	\$ 9,000					
\$ 9,001	to	\$ 10,000					
\$ 10,001	to	\$ 11,000					
\$ 11,001	to	\$ 12,000					
\$ 12,001	to	\$ 13,000					
\$ 13,001	to	\$ 14,000					
\$ 14,001	to	\$ 15,000					
\$ 15,001	to	\$ 16,000					
\$ 16,001	to	\$ 17,000					
\$ 17,001	to	\$ 18,000					
\$ 18,001	to	\$ 19,000					
\$ 19,001	to	\$ 20,000					
\$ 20,001	to	\$ 21,000					
\$ 21,001	to	\$ 22,000					
\$ 22,001	to	\$ 23,000					
\$ 23,001	to	\$ 24,000					
\$ 24,001	to	\$ 25,000					
\$ 25,001	to	\$ 26,000					
\$ 26,001	to	\$ 27,000					
\$ 27,001	to	\$ 28,000					
\$ 28,001	to	\$ 29,000					
\$ 29,001	to	\$ 30,000					
\$ 30,001	to	\$ 35,000					
\$ 35,001	to	\$ 40,000					
\$ 40,001	to	\$ 45,000					
\$ 45,001	to	\$ 50,000					
\$ 50,001	to	\$ 55,000					
\$ 55,001	to	\$ 60,000					
\$ 60,001	to	\$ 65,000					

LOSS RANGE (MILLIONS)			TOTAL LOSS	AVERAGE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES*	RETURN PERIOD (YEARS)
\$ 65,001	to	\$ 70,000					
\$ 70,001	to	\$ 75,000					
\$ 75,001	to	\$ 80,000					
\$ 80,001	to	\$ 90,000					
\$ 90,001	to	\$ 100,000					
\$ 100,001	to	\$ Maximum					
Total							

*Personal residential zero deductible statewide loss using 2007 FHCF personal residential exposure data – file name: *hlpm2007.exe*.

Part B – Personal Residential Probable Maximum Loss for Florida

Return Period (Years)	Estimated Loss Level	Uncertainty Interval
Top Event		
1,000		
500		
250		
100		
50		
20		
10		
5		

Part C – Personal and Commercial Residential Probable Maximum Loss for Florida

LOSS RANGE (MILLIONS)			TOTAL LOSS	AVERAGE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES*	RETURN PERIOD (YEARS)
\$ -	to	\$ 500					
\$ 501	to	\$ 1,000					
\$ 1,001	to	\$ 1,500					
\$ 1,501	to	\$ 2,000					
\$ 2,001	to	\$ 2,500					
\$ 2,501	to	\$ 3,000					
\$ 3,001	to	\$ 3,500					
\$ 3,501	to	\$ 4,000					
\$ 4,001	to	\$ 4,500					
\$ 4,501	to	\$ 5,000					
\$ 5,001	to	\$ 6,000					
\$ 6,001	to	\$ 7,000					
\$ 7,001	to	\$ 8,000					
\$ 8,001	to	\$ 9,000					
\$ 9,001	to	\$ 10,000					
\$ 10,001	to	\$ 11,000					

LOSS RANGE (MILLIONS)			TOTAL LOSS	AVERAGE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES*	RETURN PERIOD (YEARS)
\$ 11,001	to	\$ 12,000					
\$ 12,001	to	\$ 13,000					
\$ 13,001	to	\$ 14,000					
\$ 14,001	to	\$ 15,000					
\$ 15,001	to	\$ 16,000					
\$ 16,001	to	\$ 17,000					
\$ 17,001	to	\$ 18,000					
\$ 18,001	to	\$ 19,000					
\$ 19,001	to	\$ 20,000					
\$ 20,001	to	\$ 21,000					
\$ 21,001	to	\$ 22,000					
\$ 22,001	to	\$ 23,000					
\$ 23,001	to	\$ 24,000					
\$ 24,001	to	\$ 25,000					
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\$ 26,001	to	\$ 27,000					
\$ 27,001	to	\$ 28,000					
\$ 28,001	to	\$ 29,000					
\$ 29,001	to	\$ 30,000					
\$ 30,001	to	\$ 35,000					
\$ 35,001	to	\$ 40,000					
\$ 40,001	to	\$ 45,000					
\$ 45,001	to	\$ 50,000					
\$ 50,001	to	\$ 55,000					
\$ 55,001	to	\$ 60,000					
\$ 60,001	to	\$ 65,000					
\$ 65,001	to	\$ 70,000					
\$ 70,001	to	\$ 75,000					
\$ 75,001	to	\$ 80,000					
\$ 80,001	to	\$ 90,000					
\$ 90,001	to	\$ 100,000					
\$ 100,001	to	\$ Maximum					
Total							

*Personal and commercial residential zero deductible statewide loss using 2007 FHCF personal and commercial residential exposure data – file name: *hlp2007c.exe*.

Part D – Personal and Commercial Residential Probable Maximum Loss for Florida

Return Period (Years)	Estimated Loss Level	Uncertainty Interval
Top Event		
1,000		
500		
250		
100		
50		
20		
10		
5		

STATISTICAL STANDARDS

S-1 Modeled Results and Goodness-of-Fit

- A. The use of historical data in developing the model shall be supported by rigorous methods published in currently accepted scientific literature.***
- B. Modeled and historical results shall reflect agreement using currently accepted scientific and statistical methods in the appropriate disciplines.***

Purpose: Many aspects of model development and implementation involve fitting a probability distribution to historical data for use in generating stochastic storms. Such fitted models shall be checked to ensure that the distributions are reasonable. The chi-square goodness-of-fit test may not be a rigorous methodology for demonstrating the reasonableness of models of historical data.

This standard explicitly requires the modeling organization to have the results of data fitting with probability distributions available for the model assessments. Also, this standard requires the production of graphical and numerical statistical summaries by the modeling organization in advance of an audit (which could have the desirable effect in a self-audit of identifying potential problem areas).

Relevant Forms: G-5, Statistical Standards Expert Certification
M-1, Annual Occurrence Rates
S-1, Probability and Frequency of Florida Landfalling Hurricanes per Year
S-2, Examples of Loss Exceedance Estimates
S-3, Distributions of Stochastic Hurricane Parameters
S-4, Validation Comparisons
S-5, Average Annual Zero Deductible Statewide Loss Costs – Historical versus Modeled

10. Disclosures

1. Identify the form of the probability distributions used for each function or variable, if applicable. Identify statistical techniques used for the estimates and the specific goodness-of-fit tests applied. Describe whether the p -values associated with the fitted distributions provide a reasonable agreement with the historical data. Provide a completed Form S-3, Distributions of Stochastic Hurricane Parameters.
2. Describe the nature and results of the tests performed to validate the windspeeds generated.

3. Provide the date of loss of the insurance company data available for validation and verification of the model.
4. Provide an assessment of uncertainty in loss costs for output ranges using confidence intervals or other accepted scientific characterizations of uncertainty.
5. Justify any differences between the historical and modeled results using current accepted scientific and statistical methods in the appropriate disciplines.
6. Provide graphical comparisons of modeled and historical data and goodness-of-fit tests. Examples include hurricane frequencies, tracks, intensities, and physical damage.
7. Provide a completed Form S-1, Probability and Frequency of Florida Landfalling Hurricanes per Year.
8. Provide a completed Form S-2, Examples of Loss Exceedance Estimates.

Audit

1. Forms S-1, S-2, and S-3 will be reviewed. Provide justification for the distributions selected including, for example, citations to published literature or analyses of specific historical data.
2. The modeling organization's characterization of uncertainty for windspeed, damage estimates, annual loss, and loss costs will be reviewed.

S-2 Sensitivity Analysis for Model Output*

*(*Significant Revision due to requirement of Form S-6)*

The modeling organization shall have assessed the sensitivity of temporal and spatial outputs with respect to the simultaneous variation of input variables using currently accepted scientific and statistical methods in the appropriate disciplines and have taken appropriate action.

Purpose: Sensitivity analysis goes beyond mere quantification of the magnitude of the output (e.g., windspeed, loss cost, etc.) by identifying and quantifying the input variables that impact the magnitude of the output when the input variables are varied simultaneously. The simultaneous variation of all input variables enables the modeling organization to detect interactions and to properly account for correlations among the input variables. Neither of these goals can be achieved by using one-factor-at-a-time variation, hence such an approach to sensitivity analysis does not lead to an understanding of how the input variables jointly affect the model output. The simultaneous variation of the input variables is an important diagnostic tool and provides needed assurance of the robustness and viability of the model output.

Relevant Forms: G-5, Statistical Standards Expert Certification
S-6, Hypothetical Events for Sensitivity and Uncertainty Analysis

Disclosures

1. Identify the most sensitive aspect of the model and the basis for making this determination. Provide a full discussion of the degree to which these sensitivities affect output results and illustrate with an example.
2. Describe how other aspects of the model may have a significant impact on the sensitivities in output results and the basis for making this determination.
3. Describe actions taken in light of the sensitivity analyses performed.
4. Provide a completed Form S-6, Hypothetical Events for Sensitivity and Uncertainty Analysis.

Audit

1. The modeling organization's sensitivity analysis will be reviewed in detail. Statistical techniques used to perform sensitivity analysis shall be explicitly stated. The results of the sensitivity analysis displayed in graphical format (e.g., contour plots with temporal animation) will be reviewed.
2. Form S-6 will be reviewed.

S-3 Uncertainty Analysis for Model Output*

(*Significant Revision due to requirement of Form S-6)

The modeling organization shall have performed an uncertainty analysis on the temporal and spatial outputs of the model using currently accepted scientific and statistical methods in the appropriate disciplines and have taken appropriate action. The analysis shall identify and quantify the extent that input variables impact the uncertainty in model output as the input variables are simultaneously varied.

Purpose: Modeling organizations have traditionally quantified the magnitude of the uncertainty in the output (e.g., windspeed, loss cost, etc.) through a variance calculation or by use of confidence intervals. While these statistics provide useful information, uncertainty analysis goes beyond a mere quantification of these statistics by quantifying the expected percentage reduction in the variance of the output that is attributable to each of the input variables. Identification of those variables that contribute to the uncertainty is the first step that can lead to a reduction in the uncertainty in the output. It is important to note that the input variables identified in an uncertainty analysis are not necessarily the same as those in a sensitivity analysis nor are they necessarily in the same relative order. As with sensitivity analysis, uncertainty analysis is an important diagnostic tool and provides needed assurance of the robustness and viability of the model output.

Relevant Forms: G-5, Statistical Standards Expert Certification
S-6, Hypothetical Events for Sensitivity and Uncertainty Analysis

Disclosures

1. Identify the major contributors to the uncertainty in model outputs and the basis for making this determination. Provide a full discussion of the degree to which these uncertainties affect output results and illustrate with an example.
2. Describe how other aspects of the model may have a significant impact on the uncertainties in output results and the basis for making this determination.
3. Describe actions taken in light of the uncertainty analyses performed.
4. Form S-6 disclosed under Standard S-2 will be used in the verification of Standard S-3.

Audit

1. The modeling organization's uncertainty analysis will be reviewed in detail. Statistical techniques used to perform uncertainty analysis shall be explicitly stated. The results of the uncertainty analysis displayed in graphical format (e.g., contour plots with temporal animation) will be reviewed.
2. Form S-6 will be reviewed.

S-4 County Level Aggregation

At the county level of aggregation, the contribution to the error in loss cost estimates attributable to the sampling process shall be negligible.

Purpose: The intent of this standard is to ensure that sufficient runs of the simulation have been made or a suitable sampling design invoked so that the contribution to the error of the loss cost estimates due to its probabilistic nature is negligible. To be negligible, the standard error of each output range shall be less than 2.5% of the loss cost estimate.

Relevant Form: G-5, Statistical Standards Expert Certification

Disclosure

1. Describe the sampling plan used to obtain the average annual loss costs and output ranges. For a direct Monte Carlo simulation, indicate steps taken to determine sample size. For an importance sampling design, describe the underpinnings of the design.

Audit

1. Provide a graph assessing the accuracy associated with a low impact area such as Nassau County. We would expect that if the contribution error in an area such as Nassau County is small, the error in the other areas would be small as well. Assess where appropriate, the contribution of simulation uncertainty via confidence intervals.

S-5 Replication of Known Hurricane Losses*

(*Significant Revision)

The model shall estimate incurred losses in an unbiased manner on a sufficient body of past hurricane events from more than one company, including the most current data available to the modeling organization. This standard applies separately to personal residential and, to the extent data are available, to commercial residential. Personal residential experience may be used to replicate structure-only and contents-only losses. The replications shall be produced on an objective body of loss data by county or an appropriate level of geographic detail.

Purpose: Each model shall reasonably replicate past known events for hurricane frequency and severity. The Meteorological Standards assess the model's hurricane frequency projections and hurricane tracks. This standard applies to severity or the combined effects of windfield, vulnerability functions, and insurance loss limitations. To the extent possible, each of the three functions of windfield, vulnerability, and insurance shall be separately tested and verified.

Given a past hurricane event and a book of insured properties at the time of the hurricane, the model shall be able to provide expected losses.

Relevant Forms: G-5, Statistical Standards Expert Certification
S-4, Validation Comparisons

Disclosures

1. Describe the nature and results of the analyses performed to validate the loss projections generated by the model. Include analyses for the 2004 hurricane season.
2. Provide a completed Form S-4, Validation Comparisons.

Audit

1. The following information for each insurer and hurricane will be reviewed:
 - a. The validity of the model assessed by comparing expected losses produced by the model to actual observed losses incurred by insurers at both the state and county level,
 - b. The version of the model used to calculate modeled losses for each hurricane provided,
 - c. A general description of the data and its source,

- d. A disclosure of any material mismatch of exposure and loss data problems, or other material consideration,
 - e. The date of the exposures used for modeling and the date of the hurricane,
 - f. An explanation of differences in the actual and modeled hurricane parameters,
 - g. A listing of the departures, if any, in the windfield applied to a particular hurricane for the purpose of validation and the windfield used in the model under consideration,
 - h. The type of property used in each hurricane to address:
 - (1) Personal versus commercial
 - (2) Residential structures
 - (3) Mobile homes
 - (4) Commercial residential
 - (5) Condominiums
 - (6) Structures only
 - (7) Contents only,
 - i. The inclusion of demand surge, storm surge, loss adjustment expenses, or law and ordinance coverage in the actual losses or the modeled losses.
2. The following documentation will be reviewed:
 - a. Publicly available documentation referenced in the submission,
 - b. The data sources excluded from validation and the reasons for excluding the data from review by the Commission (if any),
 - c. An analysis that identifies and explains anomalies observed in the validation data,
 - d. User input sheets for each insurer and hurricane detailing specific assumptions made with regard to exposed property.
 3. The confidence intervals used to gauge the comparison between historical and modeled losses will be reviewed.
 4. Form S-4 will be reviewed.
 5. The results of one hurricane event for more than one insurance company and the results from one insurance company for more than one hurricane event will be reviewed to the extent data are available.

S-6 Comparison of Projected Hurricane Loss Costs

The difference, due to uncertainty, between historical and modeled annual average statewide loss costs shall be reasonable, given the body of data, by established statistical expectations and norms.

Purpose: This standard requires various demonstrations that the differences between historical and modeled annual average statewide loss costs are plausible from a statistical perspective.

Relevant Forms: G-5, Statistical Standards Expert Certification
S-5, Average Annual Zero Deductible Statewide Loss Costs –
Historical versus Modeled

Disclosures

1. Describe the nature and results of the tests performed to validate the expected loss projections generated. If a set of simulated hurricanes or simulation trials was used to determine these loss projections, specify the convergence tests that were used and the results. Specify the number of hurricanes or trials that were used.
2. Identify and justify differences, if any, in how the model produces loss costs for specific historical events versus loss costs for events in the stochastic hurricane set.
3. Provide a completed Form S-5, Average Annual Zero Deductible Statewide Loss Costs – Historical versus Modeled.

Audit

1. Form S-5 will be reviewed for consistency with Standard G-1, Disclosure 5.
2. Justify the following:
 - a. Meteorological parameters,
 - b. The effect of by-passing hurricanes,
 - c. The effect of actual hurricanes that had two landfalls impacting Florida,
 - d. The departures, if any, from the windfield, vulnerability functions, or insurance functions applied to the actual hurricanes for the purposes of this test and those used in the model under consideration,
 - e. Exposure assumptions.

Form S-1: Probability and Frequency of Florida Landfalling Hurricanes per Year

Complete the table below showing the probability and modeled frequency of landfalling Florida hurricanes per year. Modeled probability shall be rounded to four decimal places. The historical probabilities and frequencies below have been derived from the Base Hurricane Storm Set as defined in Standard M-1.

If the data are partitioned or modified, provide the historical probabilities and frequencies for the applicable partition (and its complement) or modification as well as the modeled probabilities and frequencies in additional copies of Form S-1.

Model Results Probability and Frequency of Florida Landfalling Hurricanes per Year

Number Of Hurricanes Per Year	Historical Probabilities	Modeled Probabilities	Historical Frequencies	Modeled Frequencies
0	0.5872		64	
1	0.2569		28	
2	0.1193		13	
3	0.0275		3	
4	0.0092		1	
5	0.0000		0	
6	0.0000		0	
7	0.0000		0	
8	0.0000		0	
9	0.0000		0	
10 or more	0.0000		0	

Form S-2: Examples of Loss Exceedance Estimates

Provide projections of the insured loss for various probability levels using the hypothetical data set provided in the file named *“FormA1Input09.xls”* and using the 2007 Florida Hurricane Catastrophe Fund aggregate personal residential exposure data set provided in the file named *“hlp2007.exe”* and using the 2007 Florida Hurricane Catastrophe Fund aggregate personal and commercial residential exposure data set provided in the file named *“hlp2007c.exe.”* Provide the total average annual loss for the loss exceedance distribution using each data set. If the methodology of your model does not allow you to produce a viable answer, please state so and why.

Part A

Return Period (years)	Probability of Exceedance	Estimated Loss Hypothetical Data Set	Estimated Personal Residential Loss FHCF Data Set	Estimated Personal and Commercial Residential Loss FHCF Data Set
Top Event	N/A	_____	_____	_____
10,000	0.01%	_____	_____	_____
5,000	0.02%	_____	_____	_____
2,000	0.05%	_____	_____	_____
1,000	0.10%	_____	_____	_____
500	0.20%	_____	_____	_____
250	0.40%	_____	_____	_____
100	1.00%	_____	_____	_____
50	2.00%	_____	_____	_____
20	5.00%	_____	_____	_____
10	10.00%	_____	_____	_____
5	20.00%	_____	_____	_____

Part B

Mean (Total Average Annual Loss)	_____	_____	_____
Median	_____	_____	_____
Standard Deviation	_____	_____	_____
Interquartile Range	_____	_____	_____
Sample Size	_____	_____	_____

Form S-3: Distributions of Stochastic Hurricane Parameters

Provide the probability distribution functional form used for each stochastic hurricane parameter in the model. Provide a summary of the rationale for each functional form selected for each general classification.

Stochastic Hurricane Parameter (Function or Variable)	Functional Form of Distribution	Data Source	Year Range Used	Justification for Functional Form						

Form S-4: Validation Comparisons

- A. Provide five validation comparisons of actual personal residential exposures and loss to modeled exposures and loss. These comparisons must be provided by line of insurance, construction type, policy coverage, county or other level of similar detail in addition to total losses. Include loss as a percent of total exposure. Total exposure represents the total amount of insured values (all coverages combined) in the area affected by the hurricane. This would include exposures for policies that did not have a loss. If this is not available, use exposures for only those policies that had a loss. Specify which was used. Also, specify the name of the hurricane event compared.
- B. Provide a validation comparison of actual commercial residential exposures and loss to modeled exposures and loss. Use and provide a definition of the model's relevant commercial residential classifications.
- C. Provide scatter plot(s) of modeled vs. historical losses for each of the required validation comparisons. (Plot the historical losses on the *x*-axis and the modeled losses on the *y*-axis.)

Rather than using directly a specific published hurricane windfield, the winds underlying the modeled loss cost calculations must be produced by the model being evaluated and should be the same hurricane parameters as used in completing Form A-3.

Example Formats for Personal Residential:

Hurricane = _____
 Exposure = Total exposure or loss only (please specify) _____

Construction	Company Actual Loss / Exposure	Modeled Loss / Exposure	Difference
Wood Frame			
Masonry			
Other (specify)			
Total			

Hurricane = _____
 Exposure = Total exposure or loss only (please specify) _____

Coverage	Company Actual Loss / Exposure	Modeled Loss / Exposure	Difference
A			
B			
C			
D			
Total			

Example Format for Commercial Residential:

Hurricane = _____

Exposure = Total exposure or loss only (please specify) _____

Construction	Company Actual Loss / Exposure	Modeled Loss / Exposure	Difference
Total			

**Form S-5: Average Annual Zero Deductible Statewide Loss Costs –
Historical versus Modeled**

- A. Provide the average annual zero deductible statewide personal residential loss costs produced using the list of hurricanes in the Base Hurricane Storm Set as defined in Standard M-1 based on the 2007 Florida Hurricane Catastrophe Fund’s aggregate personal residential exposure data found in the file named “*hlpm2007.exe*.”

Average Annual Zero Deductible Statewide Personal Residential Loss Costs

Time Period	Historical Hurricanes	Produced by Model
Current Submission		
Previously Accepted Submission		
Second Previously Accepted Submission		
Percentage Change Current Submission/Previously Accepted Submission		
Percentage Change Current Submission/Second Previously Accepted Submission		

- B. Provide a comparison with the statewide personal residential loss costs produced by the model on an average industry basis.
- C. Provide the 95% confidence interval on the differences between the mean of the historical and modeled personal residential loss.
- D. If the data are partitioned or modified, provide the average annual zero deductible statewide personal residential loss costs for the applicable partition (and its complement) or modification as well as the modeled average annual zero deductible statewide personal residential loss costs in additional copies of Form S-5.
- E. Provide the average annual zero deductible statewide personal and commercial residential loss costs produced using the list of hurricanes in the Base Hurricane Storm Set as defined in Standard M-1 based on the 2007 Florida Hurricane Catastrophe Fund’s aggregate personal and commercial residential exposure data found in the file named “*hlpm2007c.exe*.”

**Average Annual Zero Deductible Statewide Personal and
Commercial Residential Loss Costs**

Time Period	Historical Hurricanes	Produced by Model
Current Submission		

- F. Provide a comparison with the statewide personal and commercial residential loss costs produced by the model on an average industry basis.
- G. Provide the 95% confidence interval on the differences between the mean of the historical and modeled personal and commercial residential loss.
- H. If the data are partitioned or modified, provide the average annual zero deductible statewide personal and commercial residential loss costs for the applicable partition (and its complement) or modification as well as the modeled average annual zero deductible statewide personal and commercial residential loss costs in additional copies of Form S-5.

Form S-6: Hypothetical Events for Sensitivity and Uncertainty Analysis

Specifications

The Excel file “*FormS6Input09.xls*” contains nine worksheets which are to be used by the modeling organization in performing sensitivity and uncertainty analyses for their model. The first eight worksheets are classified as follows:

Sensitivity Analysis	Uncertainty Analysis
1. Sen Anal all Variables	2. Unc Anal for CP 3. Unc Anal for Rmax 4. Unc Anal for VT 5. Unc Anal for Shape Parameter 6. Unc Anal for CF 7. Unc Anal for FFP 8. Unc Anal for Quantile

The first worksheet (“Sen Anal all Variables”) contains three sets of 100 random combinations of the following seven model input variables for each of three categories of hurricanes (1, 3, and 5):

- CP = central pressure (in millibars)
- Rmax = radius of maximum winds (in statute miles)
- VT = translational velocity (forward speed in miles per hour)
- Model shape parameter such as the Holland B parameter
- CF = conversion factor for converting the modeled gradient winds to surface winds
- FFP = far field pressure (in millibars)
- Quantiles for possible additional input variable (use is optional)

These model input variables are based on the probability distributions given in *Figure 6*.

These model input variables may or may not exactly match those used by the modeling organization. A second input file “*FormS6Input09Quantiles.xls*” has been provided that contains the corresponding quantiles for the seven model input variables above, hence there is a one-to-one correspondence between these two files. Modeling organizations may use the quantiles in “*FormS6Input09Quantiles.xls*” in lieu of the specific values in “*FormS6Input09.xls*.” Note that the values of CP and Rmax, and the corresponding quantiles, have been produced with a rank correlation of 0.3 in the case of the Category 5 hurricane. No other variables or quantiles are correlated. The modeling organization shall disclose how quantiles were used. If any model input variables are modified, provide the modified input files corresponding to those in the worksheet “Sen Anal all Variables.”

The values of CP and FFP in the Excel file can either be used as the basis for calculating pressure difference, which would then be used as a single model input, or both CP and FFP can be used as model inputs. Disclose whether CP and FFP were used as the basis for calculating pressure difference or as direct model inputs.

Rmax, VT, and CF (as appropriate to the model) are to be used as direct model inputs where applicable. An example of CF implementation is presented below.

Figure 6

	Category	Distribution	Parameters
CP	Cat 1	Triangular	a=975, b=982.5, c=990
	Cat 3	Triangular	a=945, b=952.5, c=960
	Cat 5	Triangular	a=900, b=910, c=920
Rmax	Cat 1	Triangular	a=12, b=22, c=40
	Cat 3	Triangular	a=8, b=20, c=40
	Cat 5	Triangular	a=5, b=12, c=25
VT	Cat 1	Triangular	a=10, b=15, c=20
	Cat 3	Triangular	a=10, b=15, c=20
	Cat 5	Triangular	a=10, b=15, c=20
Hol B	Cat 1	Quantile provided	
	Cat 3	Quantile provided	
	Cat 5	Quantile provided	
CF	Cat 1	Uniform	(0.8, 0.95)
	Cat 3	Uniform	(0.8, 0.95)
	Cat 5	Uniform	(0.8, 0.95)
FFP	Cat 1	Uniform	(1006, 1020)
	Cat 3	Uniform	(1006, 1020)
	Cat 5	Uniform	(1006, 1020)
No. 7	Cat 1	Quantile provided	
	Cat 3	Quantile provided	
	Cat 5	Quantile provided	

The fourth model input variable in the above list specifies quantiles ($0 \leq p \leq 1$) to be used with the modeling organization’s distribution for the shape of the wind profile parameter, for example the Holland B profile parameter (or suitable alternative). Quantiles from 0 to 1 have been provided in the Excel input file *“FormS6Input09Quantiles.xls”* rather than specific values since modeling organizations may use different ranges and distributions for the Holland B profile parameter.

As an illustration, if the quantile has been specified as 0.345 in the Excel input file, input the specific value of x into the model such that $P(X \leq x) = 0.345$ where X is a random variable representing the modeling organization’s distribution for the Holland B profile parameter or other shape parameter used by the modeling organization.

If the last quantile input variable is used, describe how it was used and provide the specific values that correspond to the quantiles in Form S-6. That is, this quantile variable would be treated in the same manner as the Holland B profile parameter. Note that the fourth and seventh

input variables appear as quantiles in both “*FormS6Input09.xls*” and “*FormS6Input09Quantiles.xls*.”

The CF variable is used to implement uncertainty in the conversion of modeled gradient winds to surface winds CF as a function of the radius (r) from the center of the hurricane to a given point in the hurricane windfield. The following example is provided to illustrate how CF could be implemented based on the following three intervals:

CASE 1: $r < R_{max}$

The value of the random variable CF from the Excel input file “*FormS6Input09.xls*” is multiplied by r/R_{max} in this interval. This ratio varies from 0 at the center of the eye to 1 at $r = R_{max}$ so CF increases linearly from the center of the eye to its maximum at R_{max} . As an example, suppose the value of CF in a particular input vector in the Excel file is 0.84, then the value of CF is zero at the center of the hurricane and $0.84(1) = 0.84$ at R_{max} . In between these two positions, the value of CF is based on linear interpolation using multiplication by r/R_{max} .

CASE 2: $R_{max} < r < 3 * R_{max}$

Within this interval, the value of the random variable CF is decreased from its maximum at $r = R_{max}$ by the following amount:

$$[(r - R_{max}) / (3 * R_{max} - R_{max})] * (0.1)$$

Thus, at $r = R_{max}$, CF is not decreased. At $r = 3 * R_{max}$, CF is decreased by 0.1. This calculation is simple linear interpolation between R_{max} and $3 * R_{max}$.

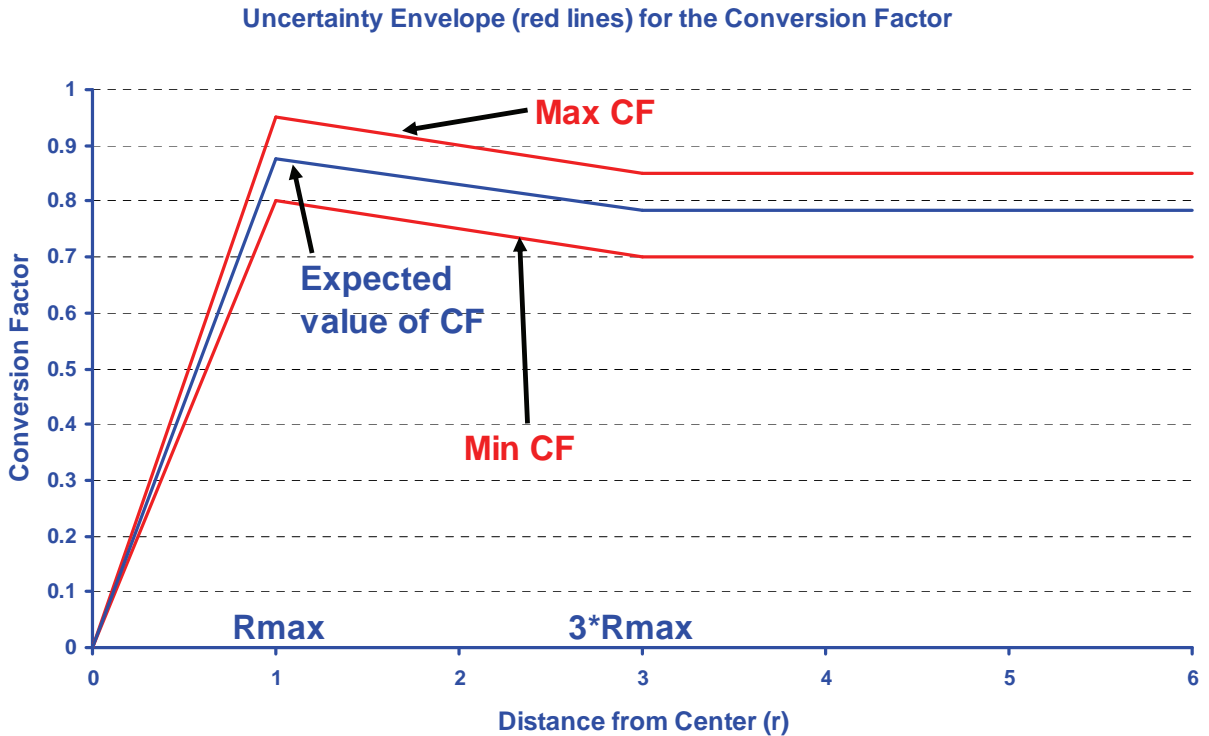
CASE 3: $r > 3 * R_{max}$

The value of the random variable CF at $3 * R_{max}$ is used for the remainder of the outer region, i.e. beyond $r = 3 * R_{max}$.

In summary, CF ramps up from its minimum value of 0 at the center of the hurricane to its maximum at R_{max} and then ramps down in a linear fashion to $3 * R_{max}$, where it achieves its maximum decrease of 0.1 from its value at R_{max} . CF then remains at this value beyond $3 * R_{max}$. As an example, the previous value of $CF = 0.84$ would occur at R_{max} and then decrease in a linear fashion to $0.84 - 0.1 = 0.74$ at $3 * R_{max}$ and remain at this value beyond $3 * R_{max}$.

Figure 7 shows an “Uncertainty Envelope” for CF using the methodology in this example. The horizontal axis in this graph is in units of R_{max} . Thus, $r = 0 * R_{max}$ represents the center of the hurricane, $r = 1 * R_{max}$ represents R_{max} and $r = 3 * R_{max}$ represents the start of the outer region. Two red lines have been added in *Figure 7* to show the minimum and maximum possible values of CF from the input vectors in the Excel file “*FormS6Input09.xls*” over the region of the hurricane. The blue line represents the expected value of CF when the distribution is uniform between 0.80 and 0.95. Thus, the minimum value of CF at $r = R_{max}$ is 0.8 and the maximum is 0.95. At $r = 3 * R_{max}$, these minimum and maximum values are decreased by 0.1 to 0.7 and 0.85, respectively. This description of CF is meant to be illustrative and serve as a guide for the modeling organization to adapt CF to their model.

Figure 7



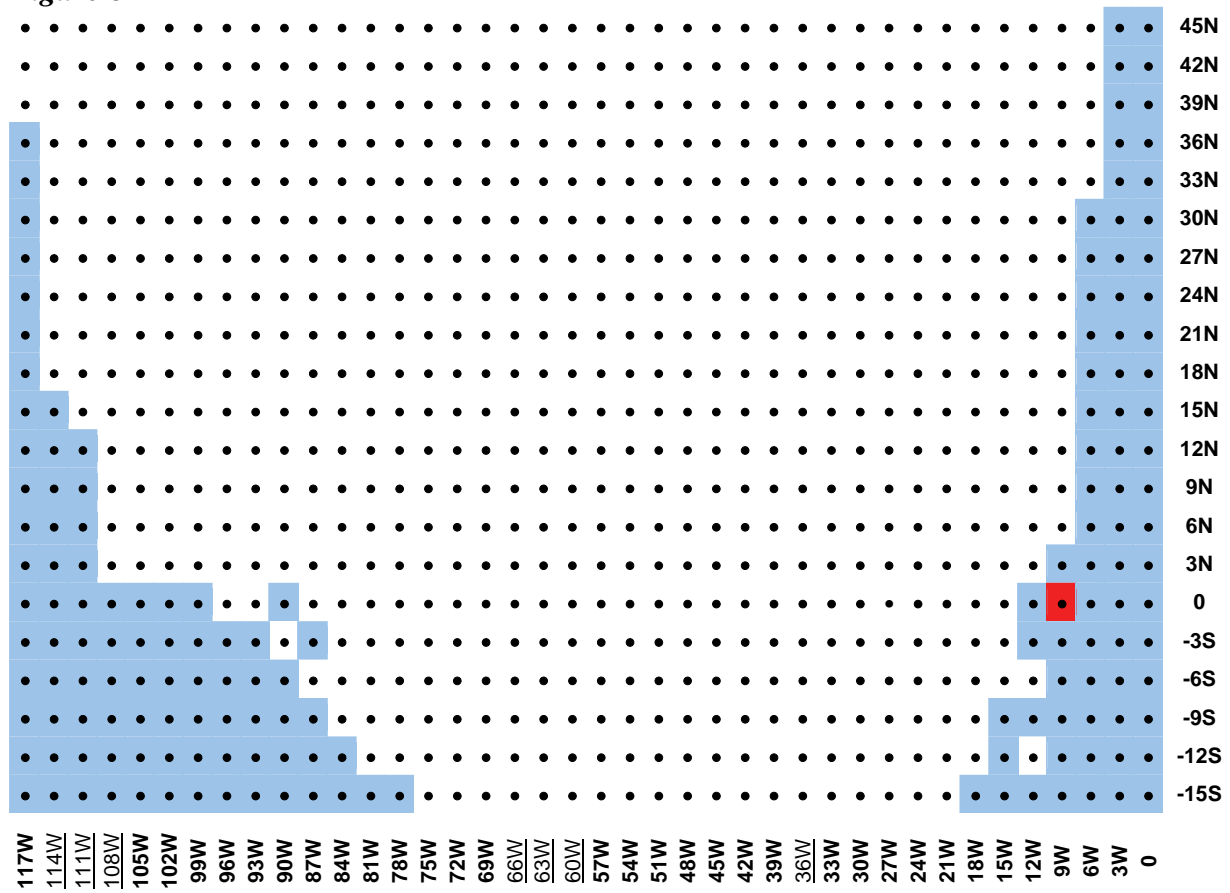
Uncertainty Envelope for the Conversion Factor

The 100 combinations of these seven model input variables represent different initial conditions for each of three categories of hurricanes (1, 3, and 5) given in the Excel input file. These hurricanes follow a straight due west track passing through the point (24.8611N, 80.1196W).

The 21×40 grid illustrated in *Figure 8* for southern Florida uses an approximate 3 statute mile spacing. For purposes of hurricane decay, use existing terrain consistent with the grid in *Figure 8* or *Figure 9* (map version with grid identified as a rectangular region).

The point (0, 0) is the location of the center of the hurricane at time 0, and is 9 miles east of the landfall location (25.8611N, 80.1196W), identified by the red rectangle in *Figure 8*. The hurricane is to be modeled for 12 hours starting at time 0. The approximate latitudes and longitudes for the 840 vertices in the 21x40 grid are given in the ninth worksheet of the Excel input file.

Figure 8



Hurricane Path from (0, 0) to (117W, 0)

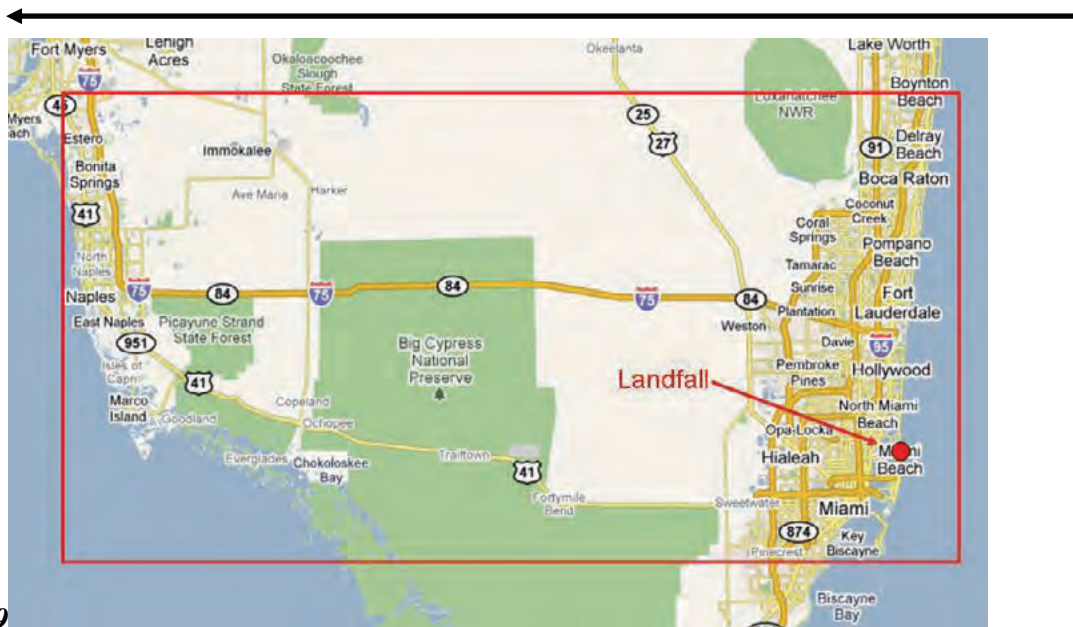


Figure 9

Loss Cost

Successful completion of Form S-6 demonstrates that the modeling organization is capable of running an insurance portfolio at a latitude/longitude level directly and at a street address level indirectly with appropriate conversion to latitude/longitude.

Loss costs are to be determined using a \$100,000 insured structure with a zero deductible policy, not to include contents, time element, or appurtenant structures coverages, at each of the 682 land-based vertices in *Figure 8*. The Excel input file contains a ninth worksheet (Land-Water ID) that lists the 840 grid coordinates with an indicator variable defined as follows:

- 0 = coordinate is over-water
- 1 = coordinate is over-land

The following house is assumed at each of the land-based grid points designated by the indicator variable.

- Single family
- Single story
- Masonry walls
- Truss anchors
- Gable end roof
- No shutters
- Shingles with one layer 15# felt
- 1/2" plywood roof deck with 8d nails at 6" edge and 12" field
- House constructed in 1980

Produce loss costs for each hurricane category in two forms:

1. Aggregated loss costs over the 682 land-based vertices in the grid in *Figure 8* for each input vector and each hurricane category ($100 \times 3 = 300$ values).
2. The mean loss cost at each of the 682 land-based vertices in the grid in *Figure 8* over all 100 input vectors for each hurricane category ($682 \times 3 = 2,046$ means).

1. Calculate the total loss cost over the 682 land-based vertices in the grid for each of the 100 input vectors and then divide this sum by \$68,200,000 to get the expected loss cost as a percent of total exposure. The results for each input vector should be reported on a single row with the following information:

- Hurricane category (1, 3, or 5)
- Input vector number
- Total loss cost over the 682 land-based vertices in the grid
- The expected loss cost as a percent of total exposure to two decimal places (i.e., 15.42 for 15.42%)

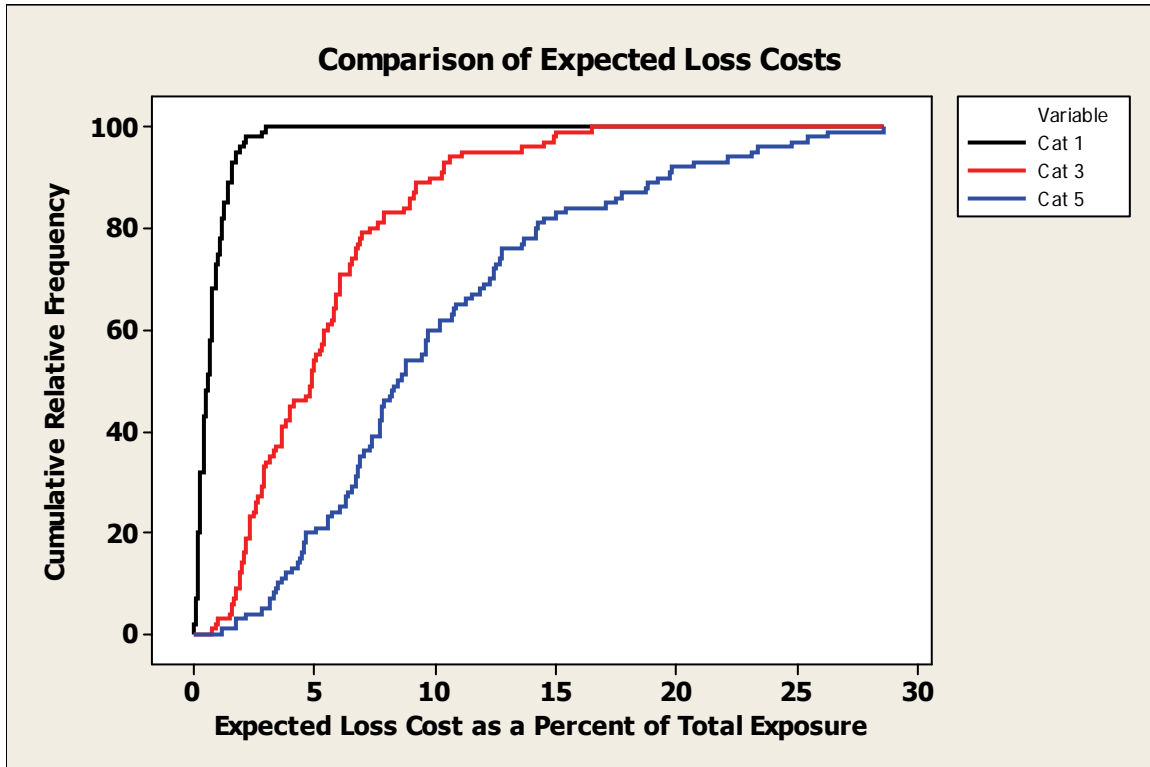
Thus, the entries in this file for input vectors 35-37 for the Category 5 hurricane will appear as in the following format:

```
5 35 4767326. 6.99
5 36 4365003. 6.40
5 37 2531948. 3.71
```

Provide the results on CD in an ASCII file and a PDF file named “**XXX09Expected Loss Cost**” where XXX denotes the abbreviated name of the modeling organization. The ASCII file will have 300 rows.

Display these results as cumulative empirical distribution functions as shown in *Figure 10* or its equivalent.

Figure 10



Comparison of CDFs of Lost Costs for all Hurricane Categories

2. Report the mean loss cost at each of the 682 land-based vertices in the grid over all 100 input vectors for each hurricane category. The results should be reported with the following information:

- Hurricane category (1, 3, or 5)
- E-W grid coordinate (0, 3, 9, 12, ..., 120)
- N-S grid coordinate (-15, -12, -9, -6, ..., 45)
- Loss cost as a percent of the exposure (\$100,000) at each land-based coordinate to four decimal places (i.e., 0.1207 for 12.07%)

Thus, the entries in this file for the land-based vertices (12,18), (15,18), and (18,18) for the Category 5 hurricane will appear as in the following format:

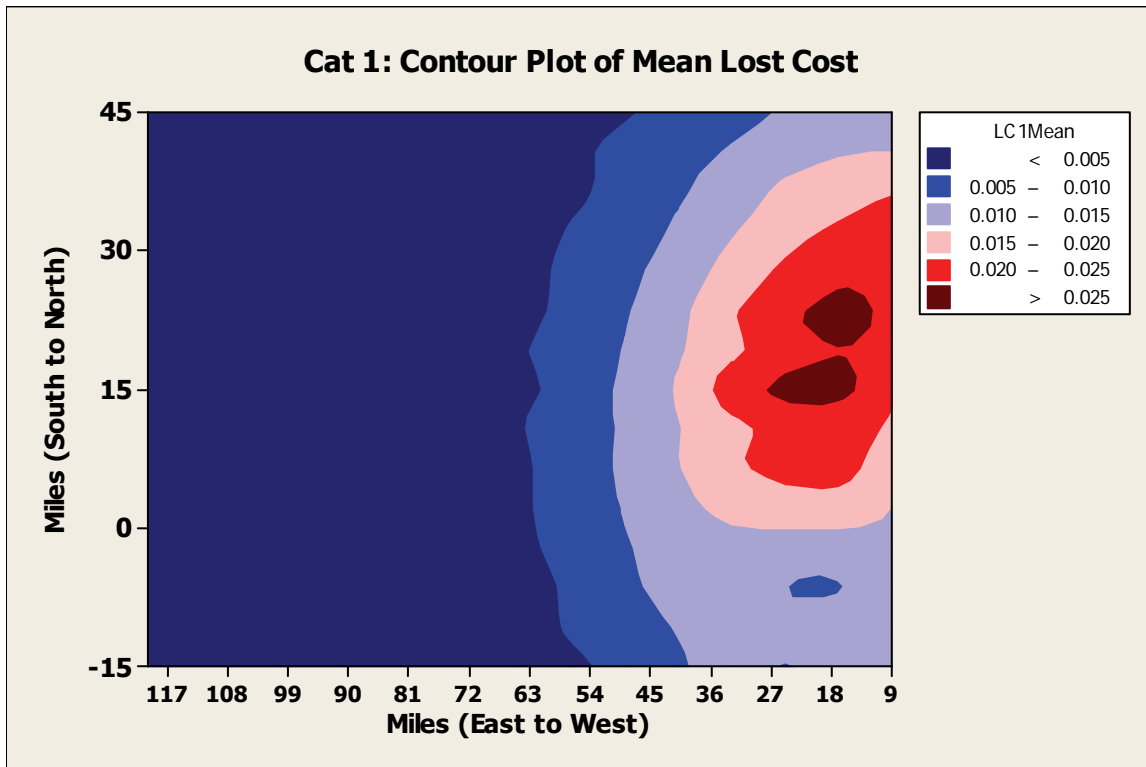
```
5 12 18 0.5142
5 15 18 0.4533
5 18 18 0.3872
```

Provide the results on CD in an ASCII file and a PDF file named “*XXX09Loss Cost Contour*” where XXX denotes the abbreviated name of the modeling organization. The ASCII file will have $3 \times 682 = 2,046$ rows.

Display the mean of the 100 input vectors as contour plots for each hurricane category as shown in *Figures 11 to 13* (use the suggested contour levels in these figures).

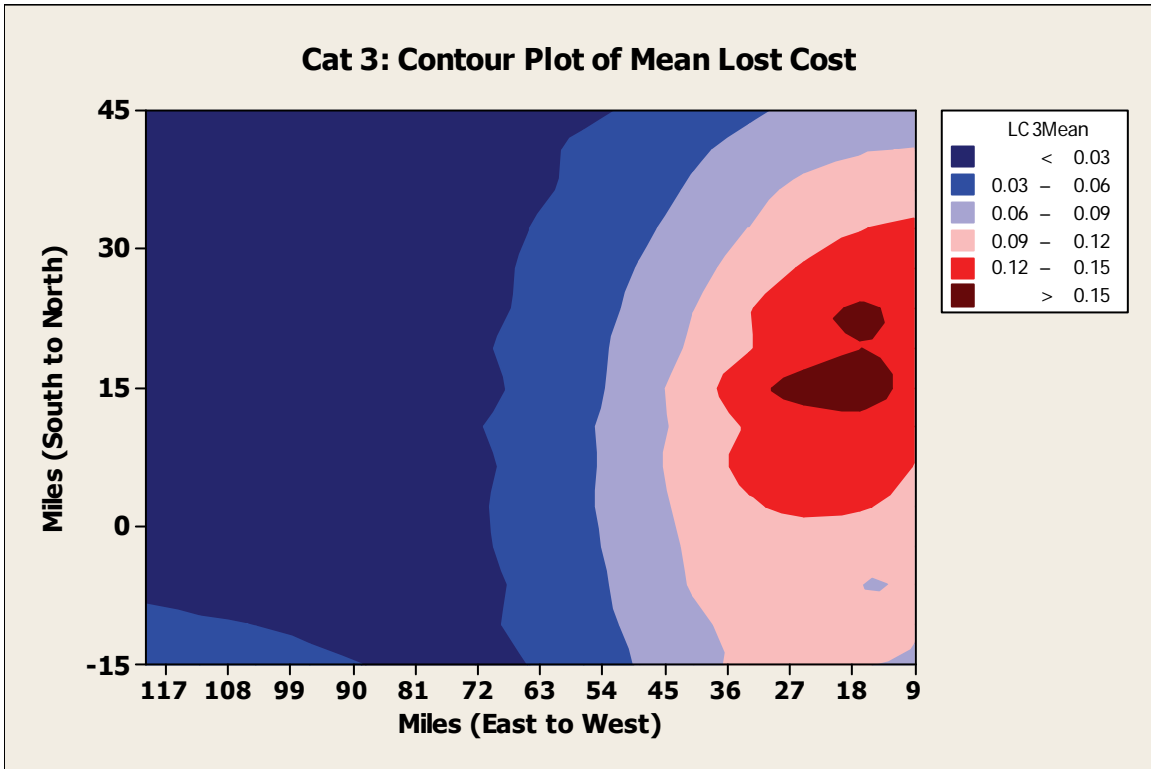
Note for contour plotting. The grid coordinates are written from east to west, but most contour plot software will have the origin in the lower left-hand corner (i.e., west to east). Thus, the X coordinates 18, 15, and 12 in the above example will need to be plotted as $120-18=12$, $120-15=15$, and $120-12=108$ to avoid having a mirror image plot. Labels on the east-west axis will then have to be added to reflect the east to west grid as in *Figures 11 to 13*.

Figure 11



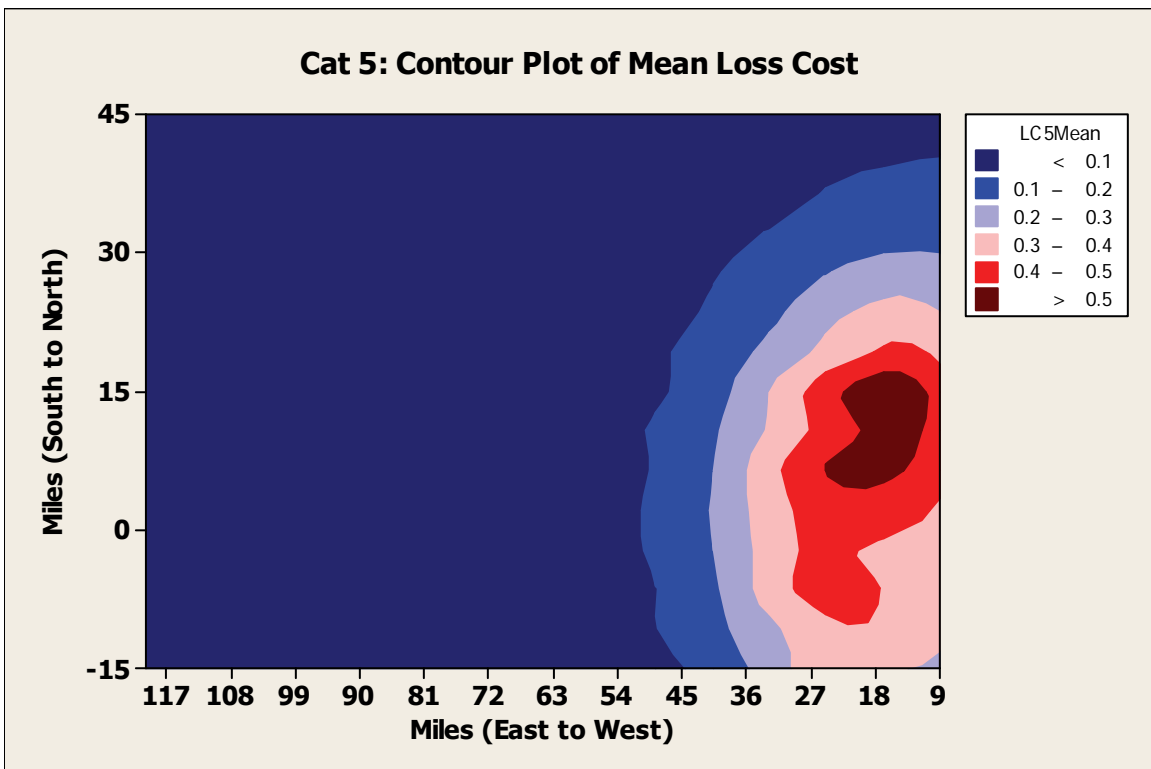
Contour Plot of Loss Cost for a Category 1 Hurricane

Figure 12



Contour Plot of Loss Cost for a Category 3 Hurricane

Figure 13



Contour Plot of Loss Cost for a Category 5 Hurricane

Uncertainty and Sensitivity Analysis for Loss Cost

The modeling organization shall perform uncertainty and sensitivity analyses for expected loss cost as outlined below. The Professional Team will perform uncertainty and sensitivity analyses based on the modeling organization’s expected loss cost calculations as part of its preparation prior to reviewing the modeling organization’s internal uncertainty and sensitivity analyses (using the model’s actual damage functions) during the on-site reviews. The modeling organization shall present to the Professional Team their uncertainty and sensitivity analyses of their model using the model’s vulnerability functions.

Sensitivity analyses will be based on standardized regression coefficients (SRC) for each model input variable in the Excel input file. The calculation of the SRCs is explained on page 22 of the *Professional Team Demonstration Uncertainty/Sensitivity Analysis* by R.L. Iman, M.E. Johnson, and T.A. Schroeder, September 2001, available at: www.sbafla.com/methodology/pdf/meetings/2001/materials/demo%20ua-sa.pdf.

Loss costs used in these sensitivity analyses were based on the Professional Team’s surrogate damage function. If the SRC is positive for a given model input variable, then loss cost increases as the variable increases while negative SRC values indicate that loss cost decreases as the variable increases. The SRCs in these sensitivity analyses are summarized as follows:

<u>Category</u>	<u>CP</u>	<u>Rmax</u>	<u>VT</u>	<u>Holland B</u>	<u>CF</u>	<u>FFP</u>
1	-0.3924	0.4350	0.0692	0.5995	0.3633	0.0944
3	-0.2342	0.6996	-0.0488	0.3755	0.4265	0.1181
5	-0.1328	0.9397	-0.0373	0.1129	0.3372	0.0599

Figure 14 presents graphs of these SRCs for all six input variables for each category of hurricane. This figure shows that the Holland B profile parameter has the most influence on the magnitude of loss cost for a Category 1 hurricane and this relationship is positive. Rmax has the second most influence on the magnitude of loss cost (positive) followed closely by CP (negative relationship) and CF (positive). FFP and VT had slight influence.

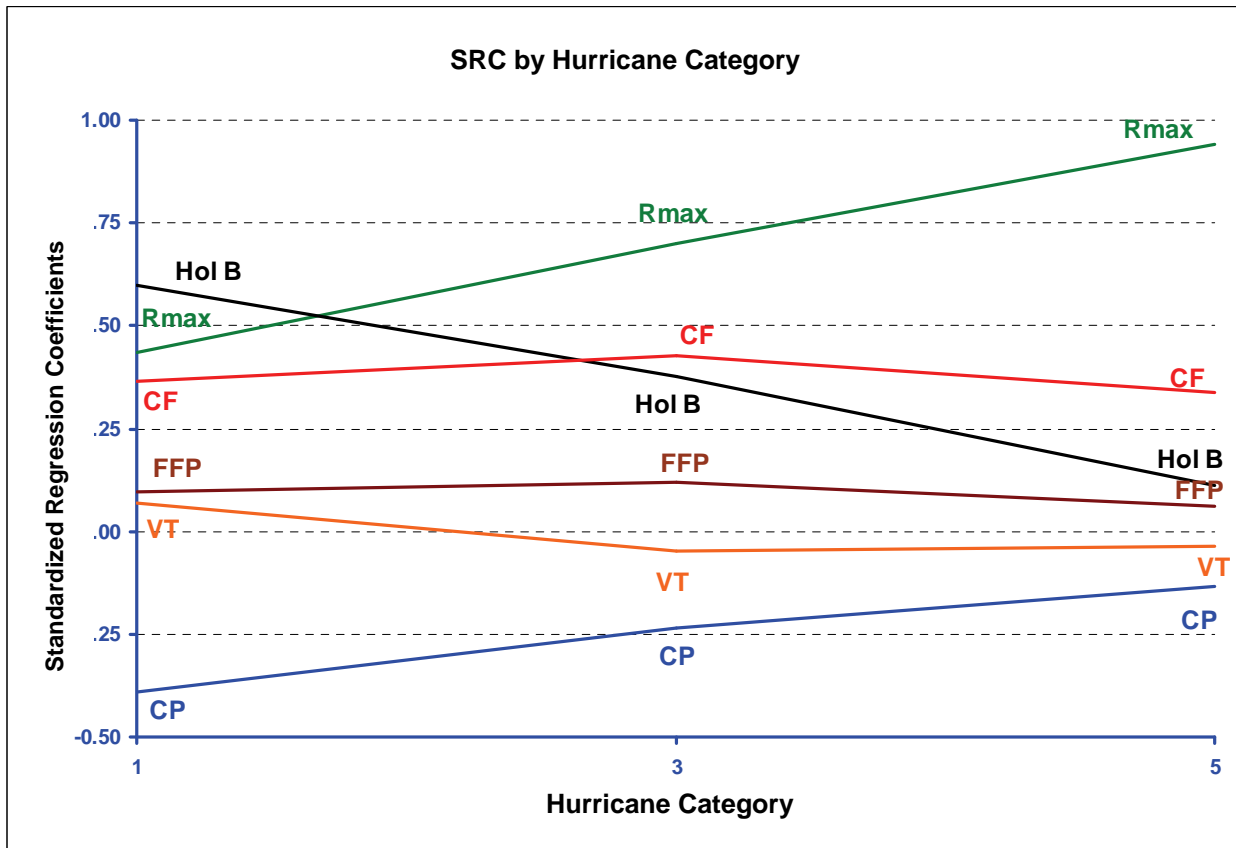
The Category 3 results in *Figure 14* show that Rmax now has the most influence on the magnitude of loss costs followed by CF and then Holland B and CP. FFP and VT again had the least influence.

The SRCs for Category 5 in *Figure 14* have the same ordering as for a Category 3 with the exception that Holland B and CP interchanged in the middle two positions.

Over all hurricane categories, Rmax, CF, and Holland B have the most influence on the magnitude of loss cost followed in fourth place by CP and then FFP and VT.

Note: Individual modeling organization results may differ significantly from the demonstration results shown here.

Figure 14



SRCs for Expected Loss Cost for all Input Variables for all Hurricane Categories

Uncertainty analyses will be based on expected percentage reduction (EPR) for each model input variable in the Excel input file. The calculation of the EPRs is explained on page 22 of the *Professional Team Demonstration Uncertainty/Sensitivity Analysis* by R. L. Iman, M. E. Johnson, and T. A. Schroeder, September 2001, available at: www.sbafla.com/methodology/pdf/meetings/2001/materials/demo%20ua-sa.pdf.

If the EPR is large for a given input variable, that variable makes a large contribution to the uncertainty in loss cost while a small EPR indicates that the variable contributes much less to the uncertainty in loss cost. The EPRs in these uncertainty analyses are summarized as follows:

Category	CP	Rmax	VT	Holland B	CF	FFP
1	14.2%	16.9%	0.6%	37.6%	15.0%	1.4%
3	5.3%	43.7%	0.1%	12.1%	15.7%	0.8%
5	2.8%	88.7%	0.0%	1.7%	12.8%	0.7%

Figure 15 presents graphs of these EPRs for all six input variables for each category of hurricane. This figure shows that the Holland B profile parameter makes the largest contribution to the uncertainty (37.6%) in loss cost for a Category 1 hurricane. Rmax makes the next largest contribution (16.9%) followed closely by CF (15.0%) and then CP (14.2%). FFP (1.4%) and VT (0.6%) made very little contribution to the uncertainty in loss cost.

The Category 3 results in *Figure 15* show that Rmax makes the largest contribution to the uncertainty (43.7%) in loss cost followed by CF (15.7%) and Holland B (12.1%) while CP drops (5.3%). FFP (0.8%) and VT (0.1%) again make very little contribution to the uncertainty in loss cost.

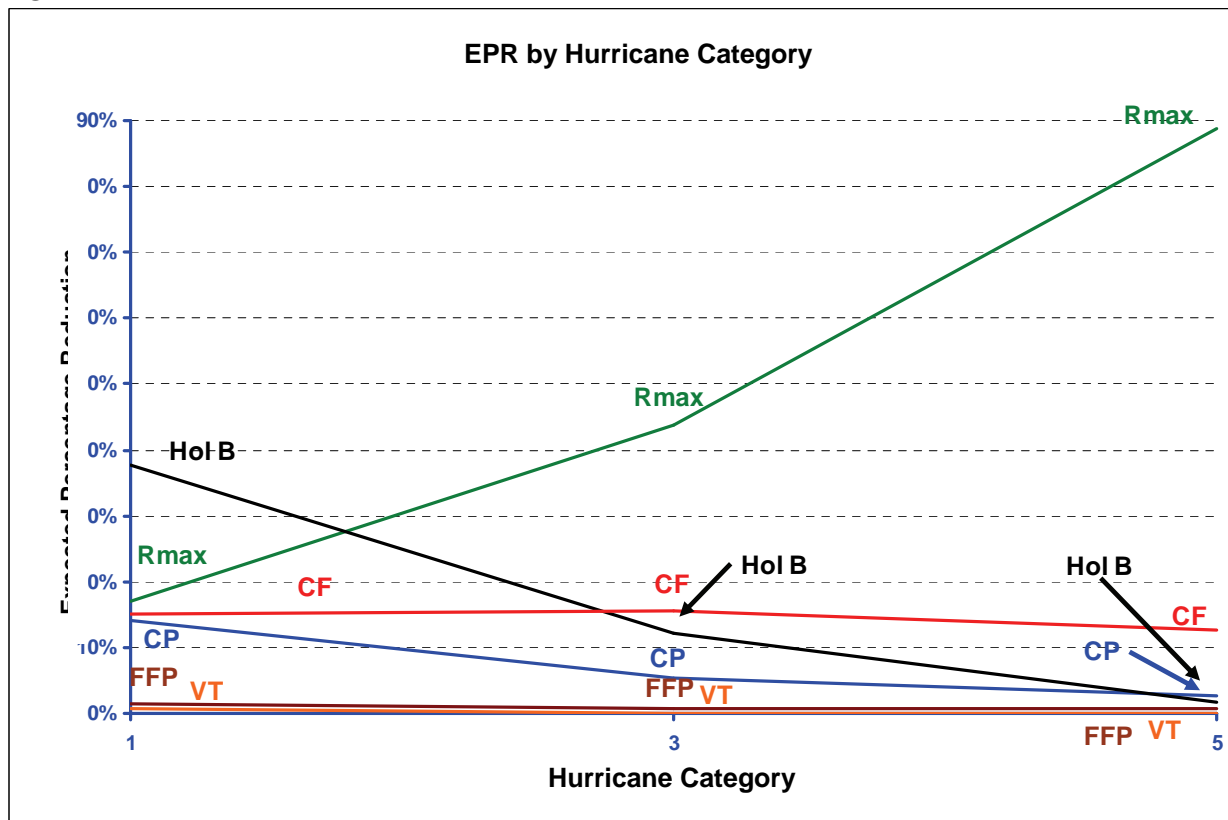
The EPRs for Category 5 in *Figure 15* have the same ordering as for a Category 3 with the exception that Holland B and CP are interchanged in the middle two positions. It is important to note that Holland B dominates the uncertainty in loss cost for smaller hurricanes and then decreases in influence for larger hurricanes while just the opposite is true for Rmax. CF is in second place for Category 3 and 5 and in third place for Category 1.

Over all hurricane categories, Rmax, CF, and Holland B make the largest contributions to the uncertainty in loss cost followed in fourth place by CP and then FFP and VT.

The EPRs in the above summary do not necessarily sum to 100% unless the underlying model is linear. In this case, the sums for Category 1, 3, and 5 are 86%, 78%, and 107%.

Note: Individual modeling organization results may differ significantly from the demonstration results shown here.

Figure 15



EPRs for Expected Loss Cost for all Input Variables for all Hurricane Categories

COMPUTER STANDARDS

C-1 Documentation

- A. The modeling organization shall maintain a primary document binder, containing a complete set of documents specifying the model structure, detailed software description, and functionality. Development of each section shall be indicative of accepted software engineering practices.***
- B. All computer software (i.e., user interface, scientific, engineering, actuarial, data preparation, and validation) relevant to the submission shall be consistently documented and dated.***
- C. The modeling organization shall maintain (1) a table of all changes in the model from the previously accepted submission to the initial submission this year and (2) a table of all substantive changes since this year's initial submission.***
- D. Documentation shall be created separately from the source code.***

Purpose: The primary document binder shall contain all the elements of the model and its development. This binder shall consist of several sub-binders, and the organization and relationships among them will admit accessibility through a hierarchical referencing scheme.

In some cases, a user may be offsite, and in others, the users may be modeling organization personnel. In either case, clearly written documentation is necessary to maintain the consistency and survivability of the code, irrespective of specific modeling organization personnel.

Relevant Form: G-6, Computer Standards Expert Certification

Audit

1. The primary document binder, in either electronic or physical form, and its maintenance process will be reviewed. The binder shall contain fully documented sections for each Computer Standard.
2. All documentation shall be easily accessible from a central location.
3. Complete user documentation, including all recent updates, will be reviewed.
4. Modeling organization personnel, or their designated proxies, responsible for each aspect of the software (i.e., user interface, quality assurance, engineering, actuarial, verification) shall be present when the Computer Standards are being audited. Internal users of the software will be interviewed.

5. Provide verification that documentation is created separately from and is maintained consistently with the source code.
6. The tables specified in C-1.C that contain the items listed in Standard G-1, Disclosure 5 will be reviewed. The tables shall contain the item number in the first column. The remaining five columns shall contain specific document or file references for affected components or data relating to the following Computer Standards: C-2, C-3, C-4, C-5, and C-6.
7. Trace the model changes specified in Standard G-1, Disclosure 5 through all Computer Standards.

C-2 Requirements*

(*Significant Revision)

The modeling organization shall maintain a complete set of requirements for each software component as well as for each database or data file accessed by a component. Requirements shall be updated whenever changes are made to the model.

Purpose: Software development begins with a thorough specification of requirements for each component, database, or data file accessed by a component. These requirements are frequently documented informally in natural language, with the addition of diagrams and other illustrations that aid both users and software engineers in specifying components, databases, or data files accessed by a component for the software product and process.

A typical division of requirements into categories would include:

1. **Interface:** For example, use the web browser Internet Explorer, with ActiveX technology, to show county and ZIP Code maps of Florida. Allow text search commands for browsing and locating counties.
2. **Human Factors:** For example, ZIP Code boundaries, and contents, can be scaled to the extent that the average user can visually identify residential home exposures marked with small circles.
3. **Functionality:** For example, make the software design at the topmost level a dataflow diagram containing the following components: HURRICANES, WINDFIELD, DAMAGE, and LOSS COSTS. Write the low-level code in Java.
4. **Documentation:** For example, use Acrobat PDF for the layout language, and add PDF hyperlinks in documents to connect the sub-documents.
5. **Data:** For example, store the vulnerability data in an Excel spreadsheet using a different sheet for each construction type.
6. **Human Resources:** For example, task individuals for the six-month coding of the windfield simulation. Ask others to design the user-interface by working with the Quality Assurance team.
7. **Security:** For example, store tapes off-site, with incremental daily backups. Password-protect all source files.
8. **Quality Assurance:** For example, filter insurance company data against norms and extremes created for the last project.

Relevant Form: G-6, Computer Standards Expert Certification

Disclosure

1. Provide a description of the documentation for interface, human factors, functionality, documentation, data, human and material resources, security, and quality assurance.

Audit

1. Provide confirmation that a complete set of requirements for each software component, as well as for each database or data file accessed by a component, has been maintained and documented.

C-3 Model Architecture and Component Design

The modeling organization shall maintain and document (1) detailed control and data flow diagrams and interface specifications for each software component, and (2) schema definitions for each database and data file. Documentation shall be to the level of components that make significant contributions to the model output.

Purpose: Component-based design is essential in creating software that reduces errors and promotes comprehension of the role for each component. Moreover, the component network needs to be shown to operate “as a whole.” Example components include HURRICANES, WINDFIELD, DAMAGE, and LOSS COSTS, and the major components of each. The purpose of each example component is as follows:

1. HURRICANES accepts historical hurricane sets and generates historical and stochastic storm trajectories;
2. WINDFIELD accepts the output from HURRICANES and produces site-specific winds;
3. DAMAGE accepts the output from WINDFIELD and generates damage to structure;
4. LOSS COSTS accepts the output from DAMAGE and generates loss costs.

Relevant Form: G-6, Computer Standards Expert Certification

Audit

1. The following will be reviewed:
 - a. Detailed control and data flow diagrams, completely and sufficiently labeled for each component,
 - b. Interface specifications for all components in the model,
 - c. Documentation for schemas for all data files, along with field type definitions,
 - d. Each network diagram including components, sub-component diagrams, arcs, and labels.
2. A model component custodian, or designated proxy, shall be available for the review of each component.

C-4 Implementation

- A. The modeling organization shall maintain a complete procedure of coding guidelines consistent with accepted software engineering practices.**
- B. The modeling organization shall maintain a complete procedure used in creating, deriving, or procuring and verifying databases or data files accessed by components.**
- C. All components shall be traceable, through explicit component identification in the flow diagrams, down to the code level.**
- D. The modeling organization shall maintain a table of all software components affecting loss costs, with the following table columns: (1) Component name, (2) Number of lines of code, minus blank and comment lines; and (3) Number of explanatory comment lines.**
- E. Each component shall be sufficiently and consistently commented so that a software engineer unfamiliar with the code shall be able to comprehend the component logic at a reasonable level of abstraction.**
- F. The modeling organization shall maintain the following documentation for all components or data modified by items identified in Standard G-1, Disclosure 5:**
 - 1. A list of all equations and formulas used in documentation of the model with definitions of all terms and variables.**
 - 2. A cross-referenced list of implementation source code terms and variable names corresponding to items within F.1.**

Purpose: A high-level graphical view of a program promotes understanding and maintenance. All compositions shall be made clear through explicit textual or interactively supported reference within each graphical component. Each component is refined into subcomponents, and at the end of the component tree there are blocks of code. All documentation and binder identifications shall be referenced within this tree. This creates a traceable design from aggregate components down to the code level.

Relevant Form: G-6, Computer Standards Expert Certification

Disclosure

- 1. Specify the hardware, operating system, other software, and all computer languages required to use the model.

Audit

1. The interfaces and the coupling assumptions will be reviewed.
2. Provide the documented coding guidelines and confirm that these guidelines are uniformly implemented.
3. The procedure used in creating, deriving, or procuring and verifying databases or data files accessed by components will be reviewed.
4. The traceability among components at all levels of representation will be reviewed.
5. The following information shall be available and will be reviewed for each component, either in a header comment block, source control database, or the documentation:
 - a. Component name,
 - b. Date created,
 - c. Dates modified and by whom,
 - d. Purpose or function of the component,
 - e. Input and output parameter definitions.
6. The table of all software components as specified in C-4.D will be reviewed.
7. Model components and the method of mapping to elements in the computer program will be reviewed.
8. Comments within components will be examined for sufficiency, consistency, and explanatory quality.

C-5 Verification

A. General

For each component, the modeling organization shall maintain procedures for verification, such as code inspections, reviews, calculation crosschecks, and walkthroughs, sufficient to demonstrate code correctness. Verification procedures shall include tests performed by modeling organization personnel other than the original component developers.

B. Component Testing

- 1. The modeling organization shall use testing software to assist in documenting and analyzing all components.***
- 2. Unit tests shall be performed and documented for each component.***
- 3. Regression tests shall be performed and documented on incremental builds.***
- 4. Aggregation tests shall be performed and documented to ensure the correctness of all model components. Sufficient testing shall be performed to ensure that all components have been executed at least once.***

C. Data Testing

- 1. The modeling organization shall use testing software to assist in documenting and analyzing all databases and data files accessed by components.***
- 2. The modeling organization shall perform and document integrity, consistency, and correctness checks on all databases and data files accessed by the components.***

Purpose: Tests shall be run by varying component inputs to ensure correct output. Invariants are one method of achieving verification, where one brackets a block of code to ensure that data values do not stray from their required ranges. Other methods of verification include hand-calculations or parallel coding efforts (using a different language or tool, but with the same requirements).

Relevant Form: G-6, Computer Standards Expert Certification

Disclosures

1. State whether two executions of the model with no changes in input data, parameters, code, and seeds of random number generators produce the same loss costs and probable maximum loss levels.
2. Provide an overview of the component testing procedures.

Audit

1. The components will be reviewed for containment of sufficient logical assertions, exception-handling mechanisms, and flag-triggered output statements to test the correct values for key variables that might be subject to modification.
2. The testing software used by the modeling organization will be reviewed.
3. The component (unit, regression, aggregation) and data test processes and documentation will be reviewed including compliance with independence of the verification procedures.
4. Flowcharts defining the processes used for manual and automatic verification will be reviewed.
5. The response to Disclosure 1 will be reviewed.

C-6 Model Maintenance and Revision

- A. The modeling organization shall maintain a clearly written policy for model revision, including verification and validation of revised components, databases, and data files.***
- B. A revision to any portion of the model that results in a change in any Florida residential hurricane loss cost shall result in a new model version number.***
- C. The modeling organization shall use tracking software to identify all errors, as well as modifications to code, data, and documentation.***
- D. The modeling organization shall maintain a list of all model versions since the initial submission for this year. Each model description shall have a unique version identification, and a list of additions, deletions, and changes that define that version.***

Purpose: The Commission will determine to be acceptable only those models for which the owners have a clearly written policy for model revision with respect to methodologies and data.

Once the software is constructed, it is essential to track and maintain all source code, data, and documentation through a unique version identification system.

Relevant Form: G-6, Computer Standards Expert Certification

Disclosures

1. Identify procedures used to maintain code, data, and documentation.
2. Describe the rules underlying the model and code revision numbering systems.

Audit

1. All policies and procedures used to maintain the code, data, and documentation will be reviewed. For each component in the system decomposition, provide the installation date under configuration control, the current version number, and the date of the most recent change(s).
2. The policy for model revision will be reviewed.
3. The tracking software will be reviewed.
4. The list of all model revisions as specified in C-6.D will be reviewed.

C-7 Security

The modeling organization shall have implemented and fully documented security procedures for: (1) secure access to individual computers where the software components or data can be created or modified, (2) secure operation of the model by clients, if relevant, to ensure that the correct software operation cannot be compromised, (3) anti-virus software installation for all machines where all components and data are being accessed, and (4) secure access to documentation, software, and data in the event of a catastrophe.

Purpose: Security procedures are necessary to maintain an adequate, secure, and correct base for code, data, and documentation. The modeling organization is expected to have a secure location supporting all code, data, and documentation development and maintenance. Necessary measures include, but are not limited to, (1) virus protection, (2) limited access protocols for software, hardware, and networks, and (3) backup and redundancy procedures.

Relevant Form: G-6, Computer Standards Expert Certification

Disclosure

1. Describe methods used to ensure the security and integrity of the code, data, and documentation.

Audit

1. The written policy for all procedures and methods used to ensure the security of code, data, and documentation will be reviewed. Specify all security procedures.
2. Documented security procedures for access, client model use, anti-virus software installation, and off-site procedures in the event of a catastrophe will be reviewed.

**WORKING DEFINITIONS
OF TERMS USED IN THE
*REPORT OF ACTIVITIES***

Working Definitions of Terms Used in the *Report of Activities*

(These terms are meant to be specific to the *Report of Activities*)

Actual Cash Value (ACV):

Cost of replacing damaged or destroyed property with comparable new property minus depreciation.

Actuary:

A highly specialized professional with mathematical and statistical sophistication trained in the risk aspects of insurance, whose functions include the calculations involved in determining proper insurance rates, evaluating reserves, and various aspects of insurance research; a member of the Casualty Actuarial Society.

Acyclic Graph:

A graph containing no cycles.

Additional Living Expense (ALE):

If a home becomes uninhabitable due to a covered loss, ALE coverage pays for the extra costs of housing, dining expenses, etc. up to the limits for ALE in the policy.

Aggregated Data:

Summarized data sets or data summarized by using different variables. For example, data summarizing the exposure amounts by line of business by ZIP Code is one set of aggregated data.

Aggregation Test:

A test to ensure the correctness of all components when operating as a whole.

Annual Aggregate Loss Distributions:

For the Commission's purposes, the aggregate losses which are expected to occur for all hurricane events in any one year. Another way to state it is the aggregate probable maximum loss. See below for Probable Maximum Loss (PML).

Appurtenant Structures:

Coverage for detached buildings and other structures located on the same property as the principal insured building, e.g., detached garage, fences, swimming pools, patios, etc.

Assertion:

A logical expression specifying a program state that must exist or a set of conditions that program variables must satisfy at a particular point during program execution. Types include input assertion, loop assertion, output assertion. Assertions may be handled specifically by the programming language (i.e., with an "assert" statement) or through a condition (i.e., "if") statement.

Atlantic Basin:

The area including the entire North Atlantic Ocean, the Caribbean Sea, and the Gulf of Mexico.

Average:

Arithmetic average or arithmetic mean.

Base Hurricane Storm Set:

The storm set used to calibrate and validate modeled hurricane frequency impacting Florida against historical hurricanes as defined in Standard M-1.

By-Passing Hurricane:

A hurricane which does not make landfall, but still causes damage in Florida.

Calibration:

Process of adjusting values of model input parameters in an attempt to fit appropriate target data sets.

Catastrophe:

A natural or man-made event that causes more than \$25 million in insured losses as defined by Property Claims Services.

Center:

The point inside the eye of a hurricane where the wind is calm and about which the vortex winds rotate.

Code:

In software engineering, computer instructions and data definitions expressed in a programming language or in a form output by an assembler, compiler, or other translator.
Synonym: Program.

Coding Guidelines:

Organization, format, and style directives in the development of programs and the associated documentation.

Coinsurance:

A specific provision used in a property insurance policy in which an insurer assumes liability only for a proportion of a loss.

Commercial Residential Property Insurance:

The type of coverage provided by condominium association, cooperative association, apartment building, and similar policies, including covering the common elements of a homeowners' association; see s. 627.4025, F.S.

Component:

One of the parts that make up a system. A component may be subdivided into other components. The terms “module,” “component,” and “unit” are often used interchangeably or defined to be sub-elements of one another in different ways depending on the context. For non-object oriented software, a component is defined as the main program, a subprogram, or a subroutine. For object-oriented software, a component is defined as a class characterized by its attributes and component methods.

Component Tree:

An acyclic graph depicting the hierarchical decomposition of a software system or model. *See also: System Decomposition.*

Components and Cladding:

Elements of the building envelope that do not qualify as part of the main wind-force resisting system.

Computer Model:

A comprehensive set of formal structures used to capture the dynamic behavior of hurricanes, their impacts on residential structures and insured losses, including the associated data. The structures are: (1) defined in one of several forms such as formulas, equations, pseudo-codes, and diagrams; and (2) translated into computer code and data to enable model execution.

Control Flow:

The sequence in which operations are performed during the execution of a computer program. *Synonym: Flow of Control. Contrast with: Data Flow.*

Control Flow Diagram:

A diagram that depicts the set of all possible sequences in which operations may be performed during the execution of a system or program. Types include box diagram, flowchart, input-process-output chart, state diagram. *Contrast with: Data Flow Diagram.*

Conversion Factor:

Either the ratio of the 10-meter wind to upper level wind, or a constant used to convert one unit of measure to another (as in 1 knot = 1.15 mph).

Correctness:

(1) The degree to which a system or component is free from faults in its specification, design, and implementation; (2) the degree to which software, documentation, or other items comply with specified requirements.

Current State-of-the-Science:

A technique, methodology, process, or data that clearly advances or improves the science and may or may not be of a proprietary nature. Such advancement or improvement shall be agreed upon and/or acceptable to the Commission. Includes currently accepted scientific literature.

Currently Accepted Scientific Literature:

Published in a refereed or peer reviewed journal specific to the academic discipline involved and recognized by the academic community as an advancement or significant contribution to the literature which has not been superseded or replaced by more recent literature.

Damage:

The Commission recognizes that the question, “What is the damage to the house?” may be answered in a number of ways. In constructing their models, the modeling organizations assess “losses” in more than one way, depending on the use to which the information is to be put in the model. A structural engineer might determine that a house is 55% damaged and consider it still structurally sound. A claims adjuster might look at the same house and determine that 55% damage translates into a total loss because the house will be uninhabitable for some time, and further, because of a local ordinance relating to damage exceeding 50%, will have to be completely rebuilt according to updated building requirements. Since the Commission is reviewing models for purposes of residential rate filings in Florida, loss costs must be a function of insurance damage rather than engineering damage.

Damage Ratio:

Percentage of a property damaged by an event relative to the total cost to rebuild or replace the property of like kind and quality.

Data Flow:

The sequence in which data transfer, use, and transformation are performed during the execution of a computer program. *Contrast with:* **Control Flow**.

Data Flow Diagram:

A diagram that depicts data sources, data sinks, data storage, and processes performed on data as nodes, a flow of data as links between the nodes. *Contrast with:* **Control Flow Diagram**.

Data Validation:

Techniques to assure the needed accuracy, required consistency, and sufficient completeness of data values used in model development and revision.

Decay Rate:

The rate at which surface windspeeds decrease and central pressure increases in a tropical cyclone. Tropical cyclones weaken or decay as central pressure rises. Once tropical cyclones move over land, their rate of decay is affected not only because of the removal

of their warm water energy source, but also because of surface roughness. The surface roughness contribution to filling is expected to vary spatially. *See also: Weakening.*

Demand Surge:

A sudden and generally temporary increase in the cost of claims due to amplified payments following a hurricane or a series of hurricane events.

Depreciation:

The decrease in the value of property over time.

Economic Inflation:

With regards to insurance, the trended long-term increase in the costs of coverages brought about by the increase in costs for the materials and services.

Event:

For purposes of modeling hurricane losses, an event is any hurricane that makes landfall in Florida as a hurricane or by-passes Florida as a hurricane but comes close enough to cause damaging winds in Florida.

Exception:

A state or condition that either prevents the continuation of program execution or initiates, on its detection, a pre-defined response through the provision of exception-handling capabilities.

Exposure:

The unit of measure of the amount of risk assumed. Rates and loss costs are expressed as dollars per exposure. Sometimes the number of houses is used in homeowner's insurance as a loose equivalent.

Far-Field Pressure:

Baseline pressure in the cyclone environment that may be used to relate maximum wind to minimum central pressure.

Filling Rate:

Synonym: Decay Rate.

Flag-Triggered Output Statements:

Statements that cause intermediate results (output) to be produced based on a Boolean-valued flag. This is a common technique for program test.

Flow Chart:

A control flow diagram in which suitably annotated geometrical figures are used to represent operations, data, or equipment, and arrows are used to indicate the sequential flow from one to another.

Flow Diagram:

See: Control Flow Diagram and Data Flow Diagram.

Forward Speed:

The forward speed at which a tropical cyclone is moving along the earth's surface. This is not the speed at which winds are circulating around the tropical cyclone. A forward speed of 3 mph is slow; a forward speed of 10-15 mph is average; a forward speed of 20-30 mph is fast.

Function:

- (1) In programming languages, a subprogram, usually with formal parameters, that produces a data value that it returns to the place of the invocation. A function may also produce other changes through the use of parameters. (2) A specific purpose of an entity, or its characteristic action.

Functionality:

The degree to which the intended function of an entity is realized. *See also: Function.*

Geocoding:

Assignment of a location to geographic coordinates.

Ground Up Loss:

Loss to a structure or location prior to the application of a deductible, policy limit, coinsurance penalty, depreciation, exclusion or other policy provision.

Guaranteed Replacement Cost:

A policy provision in which the insurer agrees to pay losses on a replacement cost basis even if in excess of the policy limit.

Gust Factor:

Ratio of the strongest windspeed within a specified interval of time (such as 3-second or 10-second) to the mean windspeed.

Homeowner's Policy:

A package policy for the homeowner that typically combines protection on the structure and contents, additional living expense protection, and personal liability insurance. Homeowner's policies were first developed in the 1950's. Prior to that time, homeowners wishing coverage for fire, theft, and liability had to purchase three separate policies. Homeowner's policies do not cover earthquake or flood. These are sold separately.

Human Factors:

Study of the interrelationships between humans, the tools they use, and the environment in which they live and work. *See also: User Interface.*

Hurricane:

A tropical cyclone in which the maximum one-minute average windspeed at 10-meters height is 74 miles per hour or greater.

Hurricane Characteristic:

An output of the model. Examples are modeled windspeed at a particular location, track, and intensity variation.

Hurricane Parameter:

An input (generally stochastic) to the model. Examples are radius of maximum wind, maximum wind, profile factor, and instantaneous speed and direction of motion.

Hurricane Strike Probabilities:

The probability in percent that a hurricane eye will pass within 50 miles to the right or 75 miles to the left of the listed location within the indicated time period when looking at the coast in the direction of the hurricane's movement.

Implementation:

The process of transforming a design specification into a system realization with components in hardware, software and "humanware." *See also:* **Code**.

Incremental Build:

A system development strategy that begins with a subset of required capabilities and progressively adds functionality through a cyclical build and test approach.

Independent:

An independent characteristic or event is one which is unaffected by the existence of another characteristic or by whether or not another event occurs.

Insurance Policy:

A contractual document which defines the amount and scope of insurance provided by the insurer resulting in a transfer of risk.

Insurance to Value:

The relationship of the amount of insurance to replacement cost. 100% insurance to value means that the amount of insurance equals the replacement cost.

Insured Loss:

The cost to repair/restore property after an insured event, including ALE, payable by the insurance company after the application of policy terms and limits.

Intensity:

The maximum one-minute sustained surface (i.e., 10-meter) winds measured near the center of a tropical storm.

Interface Specification:

An unambiguous and complete description of the meaning, type, and format of data exchanges among system components (software, hardware, and “humanware”). *See also:* **User Interface.**

Invariant:

A logical expression that remains true within the context of a code segment.

Isotach:

A line of constant windspeed.

Landfall:

A hurricane in which the center of circulation (the eye) crosses the coast. Only storms which make landfall while classified as a hurricane are of interest here.

Loss Adjustment Expenses (LAE):

The expenses incurred by an insurer to adjust a claim by a policyholder. These expenses are divided into allocated loss adjustment expenses (ALAE) and unallocated loss adjustment expenses (ULAE). Allocated loss adjustment expenses are specific amounts attributable to individual claims such as attorney’s fees and court costs. Unallocated loss adjustment expenses are all other types of LAE.

Loss Costs:

In calculating loss costs, losses shall be expressed as insured losses.

Loss Exceedance Estimate:

The loss amount which would be exceeded at a given level of probability based on a specific exposure data set.

Mapping of ZIP Codes:

Either a point estimate or a physical geographic area.

Maximum Windspeed:

The peak one-minute, 10-meter winds in a hurricane. Depending on context, maximum windspeed may also refer to the strongest gradient wind.

Mean Windspeed:

The time average surface (10-meter) windspeed at a location. The averaging period shall not be less than one-minute.

Miles Per Hour (mph):

Miles per hour. Standard unit of windspeed measurement.

Millibar (mb):

Unit of air pressure. *See also:* **Minimum Central Pressure.**

Minimum Central Pressure:

The minimum surface pressure at the center of a tropical cyclone. The atmosphere exerts a pressure force measured in millibars. Average sea level pressure is 1013.25 millibars. Tropical cyclones have low pressure at the center of the cyclone. For a tropical cyclone of a given radius, lower central pressure corresponds to stronger surface windspeeds and storm surge height. The lowest pressure ever measured in a hurricane in the Atlantic basin was 882 mb in Hurricane Wilma (2005).

Mitigation Measure:

A factor or function that improves a structure's wind resistance.

Model:

See: Computer Model.

Model Architecture:

The structure of components in a program/system, their interrelationships, and the principles and guidelines governing their design and evolution over time.

Model Component Custodian:

The individual who can explain the functional behavior of the component and is responsible for changes (revisions in code, documentation, or data) to that component.

Model Revision:

The process of changing a model to correct discovered faults, add functional capability, respond to technology advances, or prevent invalid results or unwarranted uses. *See also: Regression Testing.*

Model Validation:

A comparison between model behavior and empirical (i.e., physical) behavior.

Model Verification:

Assuring that the series of transformations, initiating with requirements and concluding with an implementation, follow the prescribed software development process.

Modification Factor:

A scalar adjustment to a vulnerability function that may increase or decrease the amount of change.

Modification Function:

Adjusts a vulnerability function and may vary over its range.

Network Diagram:

See: Flow Diagram.

Peak Gust:

Highest surface (i.e., 10-meter) wind recorded. Generally in a 2- to 3-second interval.

Peak Hurricane Intensity:

The peak intensity over the lifetime of a hurricane estimated as the maximum one-minute sustained surface (i.e., 10-meter) winds near the center of the hurricane. *See also: Intensity.*

Personal Residential Property Insurance:

The type of coverage provided by homeowner's, mobile home owner's, dwelling, tenant's, condominium unit owner's, cooperative unit owner's, and similar policies; see s. 627.4025, F.S.

Position:

The position of a hurricane is the latitude and longitude of its center.

Premium:

The consideration paid or to be paid to an insurer for the issuance and delivery of any binder or policy of insurance; see s. 626.014(2), F.S. Premium is the amount charged to the policyholder and includes all taxes and commissions.

Probable Maximum Loss (PML):

Given an annual probability, the loss that is likely to be exceeded on a particular portfolio of residential exposures in Florida.

Profile Factor:

A hurricane parameter input to the model that controls the radial structure of the cyclone winds independently of Rmax and Vmax.

Program:

See: Code.

Property Insurance:

Insurance on real or personal property of every kind, whether the property is located on land, on water, or in the air, against loss or damage from any and all perils (hazards or causes); see s. 624.604, F.S.

Quality Assurance:

The responsibility and consequent procedures for achieving the targeted levels of quality in the model and the continual improvement of the model development process.

Radius of Maximum Winds (Rmax):

Distance from the center of a hurricane to the strongest winds.

Rate:

The amount by which the exposure is multiplied to determine the premium; see s. 627.041(1), F.S. Rate times exposure equals premium.

Recurvature:

A change in the track of a storm that causes the storm to move continuously from west to east (rather than from east to west as in the tropics), usually also increasing in forward speed. Recurvature happens when the storm moves into the subtropical westerlies.

Regression Test:

A procedure that attempts to identify new faults that might be introduced in the changes to remove existing deficiencies (correct faults, add functionality, or prevent user errors). A regression test is a test applied to a new version or release to verify that it performs the intended functions without introducing new faults or deficiencies. This procedure is not to be confused with ordinary least squares as used in statistics. *See also:* **Model Revision.**

Reinsurance:

An arrangement by which one insurer (the ceding insurer) transfers all or a portion of its risk under a policy or group of policies to another insurer (the reinsurer). Thus reinsurance is insurance purchased by an insurance company from another insurer, to reduce risk for the ceding insurer.

Replacement Cost:

The cost to replace damaged property with a new item of like kind and quality.

Residential Property Insurance:

See s. 627.4025, F.S. *See also:* **Commercial Residential Property Insurance** and **Personal Residential Property Insurance.**

Requirements Specification:

A document that specifies the requirements for a system or component. Typically included are functional requirements, performance requirements, interface requirements, design requirements, quality requirements, and development standards.

Return Period:

The reciprocal of an annual exceedance probability of a given loss or set of events.

Roughness:

Surface characteristics capable of disrupting airflow. Roughness elements may be natural (e.g., mountains, trees, grasslands) or man-made (e.g., buildings, bridges).

Saffir-Simpson Scale:

A scale ranging from one to five based on the hurricane's present intensity. This scale can be used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane. In practice, windspeed is the parameter that determines category since storm surge is strongly dependent on the slope of the continental shelf. *Reference:* Saffir-Simpson Scale provided in Standard M-3.

Schema:

(1) A complete description of the structure of a database pertaining to a specific level of consideration; (2) The set of statements, expressed in a data definition language, that completely describes the structure of a database.

Sensitivity:

The effect that a change in the value of an input variable will have on the output of the model.

Sensitivity Analysis:

Determination of the magnitude of the change in response of a model to changes in model inputs and specifications.

Significant Change:

Those changes to the standards or any changes to the model that result in changes to loss costs or have potential for changes to the loss costs. The Commission may determine in its judgment whether a change is significant.

Software Engineering:

The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software.

Statistical Terms:

Definitions of statistical terms are available in: [A Dictionary of Statistical Terms, Fifth Edition, F.H.C. Marriott, John Wiley & Sons, 1990.](#)

Storm Heading:

The direction towards which a storm is moving. Angle is measured clockwise from north (0°) so that east is 90°, etc.

Storm Surge:

An abnormal rise in sea level accompanying a hurricane, and whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the hurricane. Storm surge is usually estimated by subtracting the normal or astronomical tide from the observed storm tide.

Storm Track:

The path along that a tropical cyclone has already moved.

Sub-Component:

A component that is encapsulated within another component. *See also:* **Component Tree.**

System Decomposition:

The hierarchical division of a system into components. *See also:* **Component Tree.**

Terrain:

Terrain or terrain roughness for structures or a site is determined by the surface area surrounding the site including other structures (height and density) and topographic features such as ground elevation, vegetation or trees, and bodies of water.

Test:

A phase in the software (model) development process that focuses on the examination and dynamic analysis of execution behavior. Test plans, test specifications, test procedures, and test results are the artifacts typically produced in completing this phase.

Testing:

Software testing involves executing an implementation of the software with test data and examining the outputs of the software and its operational behavior to check that it is performing as required. Testing is a dynamic technique of verification and validation because it works with an executable representation of the system. Typical testing approaches include (1) unit, (2) aggregation, (3) regression, and (4) functional testing.

Time Element Coverage:

Insurance for a covered incident resulting in loss of use of property for a period of time. The loss is considered to be time lost, not actual property damage. Examples of time element coverage are business interruption, extra expense, rents and rental value, additional living expenses, and leasehold interest coverage.

Tropical Cyclone:

A generic term for a non-frontal synoptic-scale cyclone originating over tropical or subtropical waters with organized convection and definite cyclonic surface wind circulation.

Tropical Storm:

A tropical cyclone in which the maximum one-minute average windspeed at 10-meters height ranges from 39 to 73 miles per hour inclusive.

Uncertainty Analysis:

Determination of the variation or imprecision in model output resulting from the collective variation in the model inputs.

Underwriting:

The process of identifying and classifying the potential degree of risk represented by a proposed exposure unit. Potential insureds that satisfy an insurer's underwriting standards are offered insurance or are offered a renewal while others are declined or non-renewed.

Unit:

Synonym: **Component.**

Unit Test:

Each component is tested on its own, isolated from the other components in the system.

User:

A person who uses a computer to execute code, provide the code with input through a user interface, and/or obtain textual or visual output.

User Documentation:

Documentation describing a way in which a system or component is to be used to obtain desired results. *See also:* **User Manual.**

User Interface:

An interface that enables information to be passed between a human user and hardware or software components of a computer system. *See also:* **Interface Specification.**

User Manual:

A document that presents the information necessary to employ a system or component to obtain desired results. Typically described are system or component capabilities, limitations, options, permitted inputs, expected outputs, possible error messages, and special instructions.

Vmax (or maximum wind):

The peak one-minute, 10-meter winds in a hurricane. Depending upon the context, Vmax may also refer to the strongest gradient wind.

Validation:

The process of determining the degree to which a model or simulation is an accurate representation of the real-world from the perspective of the intended uses of the model or simulation.

Verification:

The process of determining that a model representation accurately represents the developer's conceptual description, specification, and requirements. Verification also evaluates the extent to which the model development process is based on sound and established software engineering techniques. Testing, inspections, reviews, calculation crosschecks and walkthroughs, applied to design and code, are examples of verification techniques. *See also:* **Walkthrough.**

Version:

(1) An initial release or re-release of a computer software configuration item, associated with a complete compilation or recompilation of the computer software configuration item; (2) An initial release or complete re-release of a document, as opposed to a revision resulting from issuing change pages to a previous release; (3) An initial release or re-release of a database or file.

Vertical Wind Profile:

The continuous variation of hurricane windspeed with height.

Visualization:

A two or three-dimensional graphical display, chart, or plot meant to augment or replace a numerical table.

Vortex:

The circularly symmetric rotating wind and pressure fields of the hurricane.

Vulnerability Assessment:

A determination as to how likely a particular insured structure is to be damaged by a hurricane and an estimate of the loss potential.

Vulnerability Functions:

The curve that represents the damage ratios expected at various windspeeds for a given structural type.

Walkthrough:

A static analysis technique in which a designer or programmer leads members of the development team and other interested parties through a segment of the documentation or code, and the participants ask questions and make comments about possible errors, violation of development standards, and other problems.

Weakening:

A reduction in the maximum one-minute sustained 10-meter winds. *See also: Decay Rate.*

Windfield:

The area of winds associated with a tropical cyclone. Winds are typically asymmetric in a moving tropical cyclone with winds in the right front quadrant, relative to motion, being strongest.

ZIP Code Centroid: Two types of centroids:

Geographic Centroid:

The geographic center of a ZIP Code.

Population Weighted Centroid:

The center determined by weighting the distribution of population over the ZIP Code.

REFERENCES

REFERENCES

For the purposes of the standards, disclosures, and forms for model specification adopted in this document, the following references or published data sets are listed. Subsequent revisions to these documents and data sets shall supersede the versions listed below.

1. **1994 South Florida Building Code** (available at www.miamidade.gov/buildingcode/ordinances.asp).
2. **A Dictionary of Statistical Terms**, Fifth Edition, F.H.C. Marriott, John Wiley & Sons, 1990.
3. **Florida Building Code** (available at www.floridabuilding.org/BCISOld/bc/default.asp).
4. **Florida Statutes** (available at www.flsenate.gov/statutes/).
5. **Hurricane Best Track Files (HURDAT), Atlantic Tracks File** (available at www.nhc.noaa.gov/pastall.shtml).
6. Iman, Ronald L., Johnson, Mark E., and Schroeder, Tom A., “Assessing Hurricane Effects. Part I. Sensitivity Analysis,” **Reliability Engineering & System Safety**, Vol. 78, 131-145, 2002.
7. Iman, Ronald L., Johnson, Mark E., and Schroeder, Tom A., “Assessing Hurricane Effects. Part 2. Uncertainty Analysis,” **Reliability Engineering & System Safety**, Vol. 78, 147-155, 2002.
8. Iman, Ronald L., “Latin Hypercube Sampling,” **Encyclopedia of Statistical Sciences**, Update Volume 3, 1999.
9. Iman, Ronald L., Johnson, Mark E., and Schroeder, Tom A., “Professional Team Demonstration Uncertainty/Sensitivity Analysis” (available at www.sbafla.com/methodology/pdf/meetings/2001/materials/demo%20ua-sa.pdf).
10. Kaplan, John and DeMaria, Mark, “A Simple Empirical Model for Predicting the Decay of Tropical Cyclone Winds After Landfall,” **Journal of Applied Meteorology**, Volume 34, #11, November, 1995, pages 2499-2512.
11. Tropical Prediction Center/National Hurricane Center (TPC/NHC), **Tropical Cyclones of the North Atlantic Ocean, 1871-1998**, with updates.

VIII. INQUIRIES OR INVESTIGATIONS

INQUIRIES OR INVESTIGATIONS

The Commission finds that since its activities are ongoing, it is appropriate to set out, as it did at the end of its previous year of inquiry and investigation, a list of matters which the Commission determines are subjects for further inquiry and investigation. This list is not intended to be all-inclusive. The Commission anticipates that other matters will be added as they are identified. The Commission also notes that these matters as set out below imply no particular order of importance and no particular order regarding timing.

Inquiries or investigations will be reported on by the Professional Team prior to the Committee meetings.

Storm Surge

(Note: Report was provided to the Commission July 2009, and is available at www.sbafla.com/methodology/pdf/2009/Inquiries%20Report%20July%202009.pdf.)

How do modeling organizations look at storm surge in different areas? Should there be a storm surge standard similar to the demand surge standard?

Previous Inquiries or Investigations

Acceptability Process and Standards for Future Consideration

(Note: Report was provided to the Commission July 2009, and is available at www.sbafla.com/methodology/pdf/2009/Inquiries%20Report%20July%202009.pdf.)

The Commission incorporated in the *Report of Activities as of November 1, 2008*, a section entitled “Acceptability Process and Standards for Future Consideration.” The section contained potential new standards, public disclosures, audit requirements, and procedures that were discussed during the Committee meetings on August 12 & 13, 2008. The Commission sought public comments on the contents of the section in order to fully understand the implications of the various proposed changes.

The Commission incorporated the potential new standards, public disclosures, audit requirements, and procedures deemed appropriate in the *Report of Activities as of November 1, 2009*.

ALE/Storm Surge/Infrastructure

(Note: Report was provided to the Commission July 2005, and is available at www.sbafla.com/methodology/pdf/meetings/2005/PT%20Issues%20Report%20July%202005.pdf.)

The Commission has studied how ALE claim payments are affected by storm surge damage to the infrastructure.

The Commission determined that ALE loss costs produced by a model should appropriately consider ALE claims as a result of damage to the infrastructure.

Commercial Residential Property

(Note: Reports were provided to the Commission:

July 2002, available at:

www.sbafla.com/methodology/pdf/meetings/2002/materials/commercial%20residential%207%202002.pdf

July 2005, available at:

www.sbafla.com/methodology/pdf/meetings/2005/PT%20Issues%20Report%20July%202005.pdf

July 2006, available at:

www.sbafla.com/methodology/pdf/2006/PT%20Issues%20Report%20July%202006.pdf

and July 2009, available at:

www.sbafla.com/methodology/pdf/2009/Inquiries%20Report%20July%202009.pdf.)

The Commission has studied commercial residential to determine (1) if the Commission should expand its scope to include commercial residential property in the modeling process, (2) if sufficient data are available for validation purposes, (3) if the Acceptability Process would include personal residential and commercial residential as a whole or separately, (4) what changes would be involved in the Meteorology and Vulnerability Standards, and (5) if separate standards should be created for commercial residential.

The Commission determined that after the 2004 and 2005 hurricane seasons there is information on which reasonable commercial residential loss costs can be modeled and validated, and that commercial residential standards will be adopted.

Demand Surge

(Note: Report was provided to the Commission July 2003, and is available at www.sbafla.com/methodology/pdf/meetings/2003/materials/Pro%20Team%20White%20Paper.pdf)

The Commission has studied demand surge to determine (1) if there is information on which reasonable demand surge estimations can be made, (2) how demand surge is incorporated in model calculations, (3) what the scientific basis is for those calculations, and (4) whether it is appropriate for demand surge to be included or excluded.

The Commission determined that after the 2004 and 2005 hurricane seasons there is sufficient information on which reasonable demand surge estimations can be made and to incorporate demand surge into the standards.

HURDAT Data Revisions

(Note: Reports were provided to the Commission:

July 2003, available at: www.sbafla.com/methodology/pdf/meetings/2003/materials/Pro%20Team%20White%20Paper.pdf

July 2005, available at: www.sbafla.com/methodology/pdf/meetings/2005/PT%20Issues%20Report%20July%202005.pdf)

The Commission has assessed adopting HURDAT as the Base Hurricane Storm Set and determined that all models should be based upon the complete HURDAT with the June 1, 2008 release.

The Commission provided a multiple-year buffer for the transition between the existing Base Hurricane Storm Set and the complete North Atlantic HURDAT.

Hurricane Force Winds

(Note: Reports were provided to the Commission:

July 2005, available at: www.sbafla.com/methodology/pdf/meetings/2005/PT%20Issues%20Report%20July%202005.pdf

July 2006, available at: www.sbafla.com/methodology/pdf/2006/PT%20Issues%20Report%20July%202006.pdf.)

The Commission has assessed the extent to which modeled hurricanes match the observed radius of hurricane force winds.

The Commission recognizes the importance of the spatial distribution of winds, but is sensitive to the inadequacies associated with radius of hurricane force winds data.

Hurricane Season Impact

(Note: Report was provided to the Commission July 2006, and is available at

www.sbafla.com/methodology/pdf/2006/PT%20Issues%20Report%20July%202006.pdf.)

The Commission has assessed if any potential bias is entered into the model results by the inclusion or exclusion of a year's hurricane season, whether the season be active or inactive.

The Commission determined it is prudent to maintain the requirement to update the hurricane frequency annually to reduce any potential bias entered in the model results by the inclusion or exclusion of a year's hurricane season.

Impact on Modeling Organizations

(Note: Report was provided to the Commission July 2003, and is available at www.sbafla.com/methodology/pdf/meetings/2003/materials/Pro%20Team%20White%20Paper.pdf.)

The Commission has investigated the cost factor involved with meeting the standards and the acceptability process, the impact changes have on this cost, and ideas for cutting the cost to modeling organizations.

The Commission considers the costs and benefits associated with the review process and continually monitors its impact on modeling organizations.

Interactions of Hurricanes

(Note: Report was provided to the Commission July 2005, and is available at: www.sbafla.com/methodology/pdf/meetings/2005/PT%20Issues%20Report%20July%202005.pdf)

The Commission has investigated the assumptions used by the models regarding whether the damage caused by multiple hurricanes impacting the same exposure during a season is independent and how it impacts loss costs.

The Commission determined that models should calculate deductible loss costs on an annual deductible basis.

Multi-Decadal Variability and Its Impact on Expected Loss

(Note: Reports were provided to the Commission

July 2006, and are available at:

www.sbafla.com/methodology/pdf/2006/PT%20Issues%20Report%20July%202006.pdf

www.sbafla.com/methodology/pdf/2006/Multidecadal%20Report%20July%202006.pdf

July 2009, available at:

www.sbafla.com/methodology/pdf/2009/Inquiries%20Report%20July%202009.pdf)

A body of literature has accumulated since 1990 that focuses on multi-decadal variability of hurricanes. The hypothesis is that we are in an enhanced period of activity that can be expected to last another 10-15 years and then decrease to activity levels like the low frequency and landfall times of the 1980s. The Commission has assessed if the models should take this into account.

The Commission determined that its procedures are sufficient to review a model submitted to account for multi-decadal variability.

Retrofit or Remodeled Structures

(Note: Report was provided to the Commission July 2009, and is available at

www.sbafla.com/methodology/pdf/2009/Inquiries%20Report%20July%202009.pdf)

The Commission investigated how retrofit or remodeled buildings are treated in a model and what information is reflected in year built data provided by insurance companies.

The Commission recognizes that the current methods used by models to incorporate year built data is satisfactory and is sensitive to the inadequacies associated with the exposure data.

Risk Location

(Note: Report was provided to the Commission July 2006, and is available at

www.sbafla.com/methodology/pdf/2006/PT%20Issues%20Report%20July%202006.pdf)

The Commission has investigated the use of latitude/longitude based exposure data sets rather than ZIP Code based where the exposure is placed at the population centroid and how this would impact loss costs.

The Commission determined that ZIP Code based exposure data is appropriate.

Transition of Hurricanes

(Note: Report was provided to the Commission July 2005, and is available at

www.sbafla.com/methodology/pdf/meetings/2005/PT%20Issues%20Report%20July%202005.pdf)

The Commission has assessed the need to account for the transition of hurricanes from over-water to over-land using currently acceptable meteorological science.

The Commission determined that the current methods used by models are adequate to capture the transition effects of hurricane weakening and friction and that the models should be validated using published wind observations as substantial data for hurricane windfields over-land are being collected and published in the atmospheric science and engineering literature.

IX. APPENDICES

Florida Statutes, 2009

627.0628 Florida Commission on Hurricane Loss Projection Methodology; public records exemption; public meetings exemption.--

(1) LEGISLATIVE FINDINGS AND INTENT.--

- (a) Reliable projections of hurricane losses are necessary in order to assure that rates for residential property insurance meet the statutory requirement that rates be neither excessive nor inadequate. The ability to accurately project hurricane losses has been enhanced greatly in recent years through the use of computer modeling. It is the public policy of this state to encourage the use of the most sophisticated actuarial methods to assure that consumers are charged lawful rates for residential property insurance coverage.
- (b) The Legislature recognizes the need for expert evaluation of computer models and other recently developed or improved actuarial methodologies for projecting hurricane losses, in order to resolve conflicts among actuarial professionals, and in order to provide both immediate and continuing improvement in the sophistication of actuarial methods used to set rates charged to consumers.
- (c) It is the intent of the Legislature to create the Florida Commission on Hurricane Loss Projection Methodology as a panel of experts to provide the most actuarially sophisticated guidelines and standards for projection of hurricane losses possible, given the current state of actuarial science. It is the further intent of the Legislature that such standards and guidelines must be used by the State Board of Administration in developing reimbursement premium rates for the Florida Hurricane Catastrophe Fund, and, subject to paragraph (3)(d), must be used by insurers in rate filings under s. 627.062 unless the way in which such standards and guidelines were applied by the insurer was erroneous, as shown by a preponderance of the evidence.
- (d) It is the intent of the Legislature that such standards and guidelines be employed as soon as possible, and that they be subject to continuing review thereafter.
- (e) The Legislature finds that the authority to take final agency action with respect to insurance ratemaking is vested in the Office of Insurance Regulation and the Financial Services Commission, and that the processes, standards, and guidelines of the Florida Commission on Hurricane Loss Projection Methodology do not constitute final agency action or statements of general applicability that implement, interpret, or prescribe law or policy; accordingly, chapter 120 does not apply to the processes, standards, and guidelines of the Florida Commission on Hurricane Loss Projection Methodology.

(2) COMMISSION CREATED.--

- (a) There is created the Florida Commission on Hurricane Loss Projection Methodology, which is assigned to the State Board of Administration. For the purposes of this section, the term “commission” means the Florida Commission on Hurricane Loss Projection Methodology. The commission shall be administratively housed within the State Board of Administration, but it shall independently exercise the powers and duties specified in this section.
- (b) The commission shall consist of the following 11 members:
1. The insurance consumer advocate.
 2. The senior employee of the State Board of Administration responsible for operations of the Florida Hurricane Catastrophe Fund.
 3. The Executive Director of the Citizens Property Insurance Corporation.
 4. The Director of the Division of Emergency Management of the Department of Community Affairs.
 5. The actuary member of the Florida Hurricane Catastrophe Fund Advisory Council.
 6. An employee of the office who is an actuary responsible for property insurance rate filings and who is appointed by the director of the office.
 7. Five members appointed by the Chief Financial Officer, as follows:
 - a. An actuary who is employed full time by a property and casualty insurer which was responsible for at least 1 percent of the aggregate statewide direct written premium for homeowner’s insurance in the calendar year preceding the member’s appointment to the commission.
 - b. An expert in insurance finance who is a full-time member of the faculty of the State University System and who has a background in actuarial science.
 - c. An expert in statistics who is a full-time member of the faculty of the State University System and who has a background in insurance.
 - d. An expert in computer system design who is a full-time member of the faculty of the State University System.
 - e. An expert in meteorology who is a full-time member of the faculty of the State University System and who specializes in hurricanes.
- (c) Members designated under subparagraphs (b)1.-5. shall serve on the commission as long as they maintain the respective offices designated in subparagraphs (b)1.-5. The member appointed by the director of the office under subparagraph (b)6. shall serve on the commission until the end of the term of office of the director who appointed him or her, unless removed earlier by the director for cause. Members appointed by the Chief Financial Officer under subparagraph (b)7. shall serve on the commission until the end of the term of office of the Chief Financial Officer who appointed them, unless earlier removed by the Chief Financial Officer for cause. Vacancies on the commission shall be filled in the same manner as the original appointment.
- (d) The State Board of Administration shall annually appoint one of the members of the commission to serve as chair.
- (e) Members of the commission shall serve without compensation, but shall be reimbursed for per diem and travel expenses pursuant to s. 112.061.

- (f) The State Board of Administration shall, as a cost of administration of the Florida Hurricane Catastrophe Fund, provide for travel, expenses, and staff support for the commission.
- (g) There shall be no liability on the part of, and no cause of action of any nature shall arise against, any member of the commission, any member of the State Board of Administration, or any employee of the State Board of Administration for any action taken in the performance of their duties under this section. In addition, the commission may, in writing, waive any potential cause of action for negligence of a consultant, contractor, or contract employee engaged to assist the commission.

(3) ADOPTION AND EFFECT OF STANDARDS AND GUIDELINES.--

- (a) The commission shall consider any actuarial methods, principles, standards, models, or output ranges that have the potential for improving the accuracy of or reliability of the hurricane loss projections used in residential property insurance rate filings. The commission shall, from time to time, adopt findings as to the accuracy or reliability of particular methods, principles, standards, models, or output ranges.
- (b) The commission shall consider any actuarial methods, principles, standards, or models that have the potential for improving the accuracy of or reliability of projecting probable maximum loss levels. The commission shall adopt findings as to the accuracy or reliability of particular methods, principles, standards, or models related to probable maximum loss calculations.
- (c) In establishing reimbursement premiums for the Florida Hurricane Catastrophe Fund, the State Board of Administration must, to the extent feasible, employ actuarial methods, principles, standards, models, or output ranges found by the commission to be accurate or reliable.
- (d) With respect to a rate filing under s. 627.062, an insurer shall employ and may not modify or adjust actuarial methods, principles, standards, models, or output ranges found by the commission to be accurate or reliable in determining hurricane loss factors for use in a rate filing under s. 627.062. An insurer shall employ and may not modify or adjust models found by the commission to be accurate or reliable in determining probable maximum loss levels pursuant to paragraph (b) with respect to a rate filing under s. 627.062 made more than 60 days after the commission has made such findings.
- (e) The commission shall adopt revisions to previously adopted actuarial methods, principles, standards, models, or output ranges every odd year.
- (f) 1. A trade secret, as defined in s. 812.081, that is used in designing and constructing a hurricane loss model and that is provided pursuant to this section, by a private company, to the commission, office, or consumer advocate appointed pursuant to s. 627.0613, is confidential and exempt from s. 119.07(1) and s. 24(a), Art. 1 of the State Constitution.
2. That portion of a meeting of the commission or of a rate proceeding on an insurer's rate filing at which a trade secret made confidential and exempt by this paragraph is discussed is exempt from s. 286.011 and s. 24(b), Art. 1 of the State Constitution.

3. This paragraph is subject to the Open Government Sunset Review Act in accordance with s. 119.15, and shall stand repealed on October 2, 2010, unless reviewed and saved from repeal through reenactment by the Legislature.

(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.

History.--s. 6, ch. 95-276; s. 6, ch. 96-194; s. 3, ch. 97-55; s. 4, ch. 2000-333; s. 1066, ch. 2003-261; s. 79, ch. 2004-390; s. 4, ch. 2005-111; s. 3, ch. 2005-264; s. 12, ch. 2006-12; s. 145, ch. 2008-4; s. 11, ch. 2008-66; s. 83, ch. 2009-21; s. 10, ch. 2009-70; s. 16, ch. 2009-87.

Meeting Schedule and Topics of Discussion

1995

July 14	Organizational Meeting
August 10	Discussion of the Problem
August 24	Discussion on Mission, Goals, and Objectives
September 7	Meeting with Modeling Organizations
September 21	Development of Work Plan
October 5	Canceled Due to Hurricane Opal
October 19	Development of Descriptive Criteria and Tests of the Model
November 2	The Evaluation Process
November 16	Meeting with Modeling Organizations to provide input for the Evaluation Process
November 30	Adoption of Initial Standards and Guidelines

1996

January 8	Review of Modeling Organization Responses for Modules 1 and 2
January 29	Comparison of Models
February 12	Tests and Evaluations
February 26	Tests and Evaluations
April 1	Professional Team Report
April 15	Module 3 Phase 2 Test Results
April 19	AIR Presentation
April 20	EQE Presentation
April 26	Tillinghast Presentation
April 27	RMS Presentation
May 6	Committee Meetings B Session 1 Adopting Standards
May 20	Committee Meetings B Session 2 Adopting Standards
June 3	Adopting a Specification of Acceptable Computer Models or Output Ranges
August 26	Planning and Update as to Modeling Organization Progress
November 13	Vulnerability Standards Committee Meeting
December 11	Actuarial Standards Committee Meeting

1997

February 7	Review of Standards and Procedures; Vulnerability Standards Committee Meeting
April 11	Review of AIR Model
May 6	Meteorology Standards Committee Meeting
May 7	General Standards Committee Meeting
May 16	Review of AIR Model (Continued); Computer Standards Committee Meeting

May 22	Vulnerability Standards Committee Conference Call Meeting
May 29	Review of AIR Model (Continued); Adoption of 1997 Standards
September 29	Planning for Calendar Year and Review of Models
October 23	Vulnerability Committee Meeting
October 24	Review of AIR Model
December 11 & 12	Review of EQE Model
December 16	Review of RMS Model
1998	
April 23	Committee Meetings
April 24	Committee Meetings; Adoption of 1998 Standards
May 21	Modules and Acceptability Process Adopted
November 17 & 18	Review of Tillinghast Model
November 19 & 20	Review of E.W. Blanch Model
December 8	Review of RMS Model
December 9	Review of EQE Model
December 10	Review of AIR Model
1999	
March 19	Commission Workshop; New Timeframe for Model Review
July 15 & 16	Committee Meetings
July 28	Meteorology Standards Committee Meeting
August 17	Adoption of 1999 Standards and <i>Report of Activities</i>
2000	
March 15	Discussion of Model Submissions and Determination of On-Site Reviews
May 9	Review of AIR Model – Suspended Consideration; E.W. Blanch and RMS Models Determined Acceptable under the 1999 Standards
May 10	EQE Model Determined Acceptable under the 1999 Standards; Review of Risk Engineering Model
May 11	Review of Risk Engineering Model (Continued) – Suspended Consideration
May 12	Review of AIR Model (Continued) – Postponement Approved
July 25 & 26	ARA Model Determined Acceptable under the 1999 Standards
July 27	Committee Meetings
July 28	Committee Meetings; AIR Model Determined Acceptable under the 1999 Standards
September 14 & 15	Adoption of 2000 Standards and <i>Report of Activities</i>
2001	
March 27	Discussion of Model Submissions and Determination of On-Site Reviews
May 10	EQE and E.W. Blanch Models Determined Acceptable under the 2000 Standards
May 11	AIR and ARA Models Determined Acceptable under the 2000 Standards

July 30	RMS Model Determined Acceptable under the 2000 Standards; Committee Meetings
July 31	Committee Meetings
September 18	Canceled due to World Trade Center Bombings
September 19	Adoption of 2001 Standards and <i>Report of Activities</i>
October 15	Adoption of 2001 Standards and <i>Report of Activities</i> (Continued)
2002	
March 27	Discussion of Model Submissions and Determination of On-Site Reviews
May 29	RMS Model Determined Acceptable under the 2001 Standards
May 30	EQE and AIR Models Determined Acceptable under the 2001 Standards
May 31	ARA Model Determined Acceptable under the 2001 Standards
July 23 & 24	Committee Meetings
September 18 & 19	Adoption of 2002 Standards and <i>Report of Activities</i>
2003	
February 20 Methodologies	Continuing Education and Training Workshop – Overview of used in Catastrophe Computer Simulation Models
April 1	Discussion of Model Submissions and Determination of On-Site Reviews
May 29	AIR and ARA Models Determined Acceptable under the 2002 Standards
May 30	EQE and RMS Models Determined Acceptable under the 2002 Standards
July 22 & 23	Committee Meetings
August 21 & 22	Adoption of 2003 Standards and <i>Report of Activities</i>
2004	
March 18	Discussion of Model Submissions and Determination of On-Site Reviews
May 12	RMS and ARA Models Determined Acceptable under the 2003 Standards
May 13	AIR and EQE Models Determined Acceptable under the 2003 Standards
July 27 & 28	Committee Meetings
September 15 & 16	Canceled due to Hurricane Ivan
October 6 & 7	Adoption of 2004 Standards and <i>Report of Activities</i>
2005	
March 10 & 11	Discussion of Model Submissions and Determination of On-Site Reviews
June 1	Review of RMS Model
June 2	RMS, AIR, and EQE Models Determined Acceptable under the 2004 Standards
June 3	ARA Model Determined Acceptable under the 2004 Standards
July 15	Acceptability Process Committee Meeting
July 26 - 28	Committee Meetings
August 10	Actuarial Standards and Acceptability Process Committee Meetings
September 14 & 15	Adoption of 2005 Standards and <i>Report of Activities</i>

2006

January 25 & 26 Study	Workshop to Discuss Modeling Commercial Residential Exposure, Simplification of the Commission's Review Process, and to Review the "An Assessment of Computer Generated Loss Costs in Florida"
March 16	Discussion of Model Submissions and Determination of On-Site Reviews
May 16	AIR Model Determined Acceptable under the 2005 Standards; Review of RMS Model
May 17	RMS and ARA Models Determined Acceptable under the 2005 Standards
May 18	EQE Model Determined Acceptable under the 2005 Standards
June 30	Promulgating Rules Conference Call Meeting
July 26 & 27	Committee Meetings and Rule Workshop
August 17 & 18	Adoption of 2006 Standards and <i>Report of Activities</i> ; Approval to file Notice of Proposed Rulemaking for Rule 19-16.001
September 26	Discussion of Rule Hearing comments received on Rule 19-16.001
October 23	Withdrawal of Rule 19-16.001

2007

March 13	Discussion of Model Submissions and Determination of On-Site Reviews
May 8	ARA Model Determined Acceptable under the 2006 Standards
May 9	EQE and AIR Models Determined Acceptable under the 2006 Standards
June 21	RMS Model Determined Acceptable under the 2006 Standards
August 15 & 16	Committee Meetings
August 17	Florida Public Model Determined Acceptable under the 2006 Standards
September 20 & 21	Adoption of 2007 Standards and <i>Report of Activities</i>
November 5	Approval of Report to the Florida House of Representatives, Comparison of Hurricane Loss Projection Models
December 18	Adoption of an addendum to the <i>Report of Activities</i>

2008

March 12	Discussion of Model Submissions and Determination of On-Site Reviews
March 21	Discussion of Model Submission and Determination of On-Site Review
May 20	AIR and RMS Models Determined Acceptable under the 2007 Standards
May 21	ARA Model Determined Acceptable under the 2007 Standards
June 23	EQE and Florida Public Model Determined Acceptable under the 2007 Standards
July 28	Public Testimony and Discussion of CS/CS/SB 2860 passed during the 2007 Legislative Session
August 12 & 13	Committee Meetings
September 17 & 18	Adoption of 2008 Standards and <i>Report of Activities</i>

2009

January 29 & 30	Workshop to Discuss Modeling of Commercial Residential Exposure and Short Term Frequency
March 19	Discussion of Model Submissions and Determination of On-Site Reviews
May 19	AIR Model Determined Acceptable under the 2008 Standards
June 2	ARA and Florida Public Model Determined Acceptable under the 2008 Standards
June 3	EQE Model Determined Acceptable under the 2008 Standards; RMS Model Not Determined Acceptable under the 2008 Standards
July 23 & 24	Workshop to Discuss Modeling of Commercial Residential Exposure, Short Term Frequency, and Storm Surge; Discussion of RMS Request to Reconsider Denial of the RMS Model under the 2008 Standards; Adoption of an Addendum to the <i>Report of Activities</i> ; RMS Model Determined Acceptable under the 2008 Standards
August 11	Committee Meetings
August 12	Windstorm Mitigation Committee Meeting
August 13	Committee Meetings
September 15 & 16	Adoption of 2009 Standards and <i>Report of Activities</i>
September 17	Windstorm Mitigation Committee Meeting
October 29	Windstorm Mitigation Committee Meeting

Transcript Information

All meetings of the Florida Commission on Hurricane Loss Projection Methodology are transcribed by a Court Reporter. The meetings are not put on videotape or audiotape. If you would like to purchase copies of any transcript, contact the Court Reporter for the date of the meeting.

July 14, 1995	Amy Gonter, Habershaw Reporting Service, 850-385-9426
August 10, 1995	Amy Gonter, Habershaw Reporting Service, 850-385-9426
August 24, 1995	Sue Habershaw, Habershaw Reporting Service, 850-385-9426
September 7, 1995	Sue Habershaw, Habershaw Reporting Service, 850-385-9426
September 21, 1995	Nancy Vetterick, Accurate Stenotype Reporters, Inc., 850-878-2221
October 19, 1995	Christine Wheeler, Habershaw Reporting Service, 850-385-9426
November 2, 1995	Cathy Webster, C & N Reporters, 850-926-2020
November 16, 1995	Cathy Webster, C & N Reporters, 850-926-2020
November 30, 1995	Lori Dezell, Kirkland & Associates, 850-222-8390
January 8, 1996	Cathy Webster, C & N Reporters, 850-926-2020
January 29, 1996	Cathy Webster, C & N Reporters, 850-926-2020
February 12, 1996	Cathy Webster, C & N Reporters, 850-926-2020
February 26, 1996	Cathy Webster, C & N Reporters, 850-926-2020
April 1, 1996	Cathy Webster, C & N Reporters, 850-926-2020
April 15, 1996	Cathy Webster, C & N Reporters, 850-926-2020
April 19 & 20, 1996	Cathy Webster, C & N Reporters, 850-926-2020
April 26 & 27, 1996	Cathy Webster, C & N Reporters, 850-926-2020
May 6, 1996	Cathy Webster, C & N Reporters, 850-926-2020
May 20, 1996	Cathy Webster, C & N Reporters, 850-926-2020
June 3, 1996	Nancy Metzke, C & N Reporters, 850-926-2020
August 26, 1996	Cathy Webster, C & N Reporters, 850-926-2020
November 13, 1996	Cathy Webster, C & N Reporters, 850-926-2020
December 11, 1996	Cathy Webster, C & N Reporters, 850-926-2020
February 7, 1997	Cathy Webster, C & N Reporters, 850-926-2020
April 11, 1997	Cathy Webster, C & N Reporters, 850-926-2020
May 6, 1997	Nancy Metzke, C & N Reporters, 850-926-2020
May 7, 1997	Lisa G. Eslinger, C & N Reporters, 850-926-2020
May 16, 1997	Cathy Webster, C & N Reporters, 850-926-2020
May 22, 1997	Cathy Webster, C & N Reporters, 850-926-2020
May 29, 1997	Nancy Metzke, C & N Reporters, 850-926-2020

September 29, 1997	Lisa Girod Jones, Registered Merit Reporter, 850-894-2277
October 23 & 24, 1997	Cathy Webster, C & N Reporters, 850-926-2020
December 11 & 12, 1997	Nancy Metzke, C & N Reporters, 850-926-2020
December 16, 1997	Nancy Metzke, C & N Reporters, 850-926-2020
April 23 & 24, 1998	Nancy Metzke, C & N Reporters, 850-926-2020
May 21, 1998	Cathy Webster, C & N Reporters, 850-926-2020
November 17 - 20, 1998	Cathy Webster, C & N Reporters, 850-926-2020
December 8, 1998	Cathy Webster, C & N Reporters, 850-926-2020
December 9, 1998	Nancy Metzke, C & N Reporters, 850-697-8314
December 10, 1998	Cathy Webster, C & N Reporters, 850-926-2020
March 19, 1999	Cathy Webster, C & N Reporters, 850-926-2020
July 15 & 16, 1999	Nancy Metzke, C & N Reporters, 850-697-8314
July 28, 1999	Nancy Metzke, C & N Reporters, 850-697-8314
August 17, 1999	Debra Krick, Premier Reporting, 850-894-0828
March 15, 2000	Nancy Metzke, C & N Reporters, 850-697-8314
May 9 - 12, 2000	Nancy Metzke, C & N Reporters, 850-697-8314
July 25 - 28, 2000	Nancy Metzke, C & N Reporters, 850-697-8314
September 14 & 15, 2000	Nancy Metzke, C & N Reporters, 850-697-8314
March 27, 2001	Nancy Metzke, C & N Reporters, 850-697-8314
May 10 & 11, 2001	Nancy Metzke, C & N Reporters, 850-697-8314
July 30 & 31, 2001	Nancy Metzke, C & N Reporters, 850-697-8314
September 19, 2001	Nancy Metzke, C & N Reporters, 850-697-8314
October 15, 2001	Mindy Martin, Catherine Wilkinson & Associates, 850-224-0127
March 27, 2002	Mindy Martin, Catherine Wilkinson & Associates, 850-224-0127
May 29 - 31, 2002	Catherine Wilkinson, Catherine Wilkinson & Associates, 850-224-0127
July 23 & 24, 2002	Catherine Wilkinson, Catherine Wilkinson & Associates, 850-224-0127
September 18, 2002	Christine Wheeler, Accurate Stenotype Reporters, Inc., 850-878-2221
September 19, 2002	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
April 1, 2003	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
May 29 & 30, 2003	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
July 22 & 23, 2003	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
August 21 & 22, 2003	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
March 18, 2004	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
May 12 & 13, 2004	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
July 27 & 28, 2004	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
October 6 & 7, 2004	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221

March 10 & 11, 2005	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 1 - 3, 2005	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
July 15, 2005	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
July 26 - 28, 2005	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
August 10, 2005	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
September 14 & 15, 2005	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
March 16, 2006	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
May 16 - 18, 2006	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 30, 2006	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
July 26 & 27, 2006	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
August 17, 2006	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
August 18, 2006	Danielle Freeze, Accurate Stenotype Reporters, Inc., 850-878-2221
September 26, 2006	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
October 23, 2006	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
March 13, 2007	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
May 8 & 9, 2007	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 21, 2007	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
August 15 - 17, 2007	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
September 20 & 21, 2007	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
November 5, 2007	Jo Langston, Accurate Stenotype Reporters, Inc., 850-878-2221
December 18, 2007	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
March 12, 2008	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
March 21, 2008	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
May 20 & 21, 2008	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 23, 2008	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
July 28, 2008	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
August 12 & 13, 2008	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
September 17 & 18, 2008	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
January 29 & 30, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
March 19, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
May 19, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 2 & 3, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
July 23 & 24, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
August 11 - 13, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
September 15 - 17, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
October 29, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221

Commission Documentation

The State Board of Administration, in its responsibility as administrator for the Commission, maintains documentation for all meetings of the Commission. This information may be obtained by writing to:

Donna Sirmons
Florida Commission on Hurricane Loss Projection Methodology
c/o State Board of Administration
P. O. Box 13300
Tallahassee, Florida 32317-3300

There is a \$0.15 charge per page per s. 119.07(4)(a), F.S.

This publication is available for a charge of \$10.05.

Appendix 8

FLORIDA DEPARTMENT INSURANCE COMPUTER MODEL LETTER OF INQUIRY As of February 11, 1999

HURRICANE MODEL ISSUES

1. Provide sufficient information for the Department of Insurance to obtain a basic understanding of the components of the model and how these components interrelate within the model and with the model input items.
2. Provide the historical data used in developing the model and establishing model parameters.
3. Provide detailed support for the model including a listing of all variables, equations, functions, assumptions, logic, algorithms etc.
4. Do any significant differences of opinion exist among meteorological, engineering, or other applicable experts concerning material aspects of the model? If so, state and provide supporting information for each opinion. Have there been any improvements or advancements in applicable fields of expertise that may materially affect the appropriateness of the model? If so, provide relevant information concerning the evaluation of the potential impact.
5. State whether or not you used any other approaches or models to try to determine hurricane loadings for this filing. If so, provide the results along with appropriate supporting information.
6. State your conclusion concerning the accuracy and reliability of this model for the book of business covered by this filing and provide all supporting data and information that you examined in reaching your conclusion. Describe the methods used to test or validate this model for ratemaking application.
7. State whether or not the version of the model incorporated in this filing is IDENTICAL to the version of the model accepted by the Florida Commission on Hurricane Loss Projection Methodology and provide confirmation directly from the modeler.
8. Provide the detailed input that you gave to the modeler along with a list of all adjustments, made by you prior to giving the input to the modeler or made by the modeler, necessary to conform this input to the model's data input requirements. Provide confirmation directly from the modeler for any adjustments made by the modeler.
9. Provide the output ranges by policy type in the format specified by the Florida Commission on Hurricane Loss Projection Methodology and the distributions of exposures used as weights.

10. Provide an explanation with appropriate supporting information showing how the output (see 9. above) was included in the rate level indications. Include a list of any and all adjustments made to this output along with appropriate supporting data.
11. State and provide complete support for the credibility you have assigned to the output of the model by policy type and by territory within policy type.
12. Describe the fields of expertise that were used in developing and updating the model. Provide statements from appropriate experts that the model is based on generally accepted practices within the applicable fields of expertise.
13. Provide a comparison of model results with actual historical observations for your company.
14. Provide an analysis of the sensitivity of the model output to variations in assumptions or quality of input.
15. Describe the extent to which the responses to these inquiries are constrained by the proprietary nature of any requested information.

Appendix 9

LOUISIANA INSURANCE RATING COMMISSION COMPUTER MODEL INTERROGATORIES

BULLETIN LIRC 99-02

DATE: April 21, 1999
TO: ALL PROPERTY AND CASUALTY INSURANCE COMPANIES
RE: Computer Model Interrogatories

Actuarial Standards of Practice set forth principals and considerations for an actuary estimating costs associated with the transfer of risk. Of particular relevance are principles 1, 2, and 3 from Actuarial Standard of Practice No. 9:

Principle 1: A rate is an estimate of the expected value of future costs.

Principle 2: A rate provides for all costs associated with the transfer of risk.

Principle 3: A rate provides for the costs associated with an individual risk transfer.

These three principles, when followed, should lead to property rates which are reasonable, not excessive, not inadequate, and not unfairly discriminatory.

Louisiana statutes allow for the consideration of a wide variety of data and analysis methods when establishing property premiums. LRS. 22:1404(1) states, in part, that ...

All rates shall be made in accordance with the following provisions:

- (1) *Due consideration shall be given to past and prospective loss experience within and outside this state, to catastrophe hazards, if any, ... and to all other relevant factors within and outside this state.*

The Louisiana Insurance Rating Commission (LIRC) recognizes that the “catastrophe hazard” is significant in Louisiana and that “due consideration” implies that accurate, sound actuarial analysis must underly the costing of property premiums. The LIRC expects insurers will utilize the most accurate, reliable, and reasonable methods available to estimate Louisiana property premiums.

Modeling is an actuarial tool available to all property insurance companies. Specifically, modeling addresses the difficulties inherent in catastrophe pricing, particularly for the hurricane component. Difficulties faced by the actuary include predictability of low frequency, high severity events and lack of relevant historical data. Modeling is a recognized tool in the costing of property insurance, costing of reinsurance treaties, and managing an insurer’s coastal exposure.

Though modeling may improve the accuracy and stability of catastrophe cost estimations, the LIRC recognizes that catastrophe modeling is not a perfect science and estimates from one model to another, or one company to another, may vary significantly. Catastrophe models are complex computer algorithms used to represent the catastrophic phenomena and require

expertise in the actuarial, engineering, meteorological, and computer sciences. As such, these models are not easily understood and are difficult to benchmark against established norms. The term “black box” has been used to describe a model’s inner-workings. This Bulletin is designed to identify and document what goes on within this “black box” as it relates to Louisiana property ratemaking. Each insurance company that files a rate that includes a provision generated by a catastrophe model must provide information about the model, its input, its output, and how the output was used to produce the proposed rates. This information will allow the LIRC to see how individual insurers use a model’s output in proposed Louisiana property premiums, compare models across vendors at any point in time, and, as a model from a single vendor evolves, monitor the import of model revisions.

LRS 22:1407.A gives the LIRC authority to require an insurer or rating organization to provide relevant information and data necessary to determine whether a filing meets the requirements of Part XXX of the Louisiana Insurance Code. To expedite the review of a filing which utilizes computer modeling, the LIRC is advising insurers and insurance rating organizations of the information which it needs to make a determination as to whether said filing meets the requirements of Louisiana statutes and can be approved, i.e., modeled rates are reasonable, adequate, not excessive, and not unfairly discriminatory. Since the amount of information needed is lengthy, please follow the instructions carefully. In the event that there is insufficient room on the form, attach separate sheets.

These forms should be used only when modeled loss provisions are included in the filed rates.

- **Sections Insurer Certificate and Insurance Information of Part A must be completed by an insurer or insurance rating organization when any type of computer modeling is used to support filed rates for any peril.**
- **Section Modeled Provision in the Rates of Part A and all Sections of Part B must be completed when computer modeling supports the hurricane provision in the filed rates. If a model only supports non-hurricane perils, these forms do not need to be completed.**
- **If a company is filing to adopt loss costs which include modeled loss provisions (hurricane or any other peril), completion of Part A and Part B forms is not required.**

The following table summarizes the filing requirements by Part and Section:

<u>Part and Section</u>	<u>When to File?</u>
Part A—Insurer Certification	File when rates are supported by a model for any type of peril
Part A—Insurer Information	File when rates are supported by a model for any type of peril
Part A—Modeled Provision in the Rates	File only when rates are supported by a model for the hurricane peril
Part B—Modeler Certification	File only when rates are supported by a model for the hurricane peril
Part B—Model Evaluation	File only when rates are supported by a model for the hurricane peril
Part B—Model Validation	File only when rates are supported by a model for the hurricane peril
Part B—Model Sensitivity	File only when rates are supported by a model for the hurricane peril

In this Bulletin, a “model release” means a version of the model that contains any change from the immediately preceding model version on file with the LIRC. Changes include but are not limited to revision of source code, revisions of required and optional model input, revision of

model formulas, a “bug” fix, report format revisions, model enhancements, model tuning, or similar additions, deletions and enhancements to model features, performance, or accuracy.

For a given model release, if the above forms and related exhibits have been previously filed with the LIRC, an insurance company using that release of the model may refer to the modeler’s forms and exhibits already on file and does not have to resubmit them with their filing packet. In this case, the company should clearly identify the model release and state that these forms and exhibits are on file with the LIRC.

If more than one model was used by an insurer to set rates, all modelers responsible for the models utilized must submit Part B of the Interrogatories.

To expedite the filing process, a modeler may pre-file Part B of these Interrogatories so that they are on file with the LIRC and immediately available to an insurer.

Pursuant to LRS 22:1407.A.(2)(e), a filing and all information pertaining thereto is public record and open to inspection. If any of the information requested by this Bulletin is considered confidential by the insurance company or the modeler, these Interrogatories may be submitted under separate cover and not as part of filing packet. Clearly label all confidential material as such. The LIRC will work with the company or modeler to resolve any confidentiality issues.

Use of these forms is not mandatory but submission of the information in such a format will expedite the review process. Regardless of the format used, sufficient information must be provided to allow the LIRC to determine if the filing is in compliance with LRS 22, Part XXX. If data cannot be provided in the formats requested, the LIRC will work with the company to determine whether an alternate format will be acceptable.

Note that providing completed Interrogatories and the inclusion of model output in approved rates for an insurance company is not an “approval” of a specific model. LIRC approval of filed rates which include support from a model is merely approval of the filed rates and should not be construed as approval of the supporting model.

This Bulletin is not a directive, regulation, or rule. This Bulletin is issued by the LIRC to provide assistance to insurers filing rates with the LIRC and using catastrophe models to support proposed Louisiana property rates.

If you have questions regarding this Bulletin, please contact Richard Piazza (225-342-4690).

CHRIS FASER, III
Deputy Commissioner/LIRC

Appendix 10

CALIFORNIA EARTHQUAKE AUTHORITY

In 1996, the California Legislature established the California Earthquake Authority³ as a privately financed, publicly managed entity to help California residents protect themselves against earthquake loss.

Today, the CEA is the world's largest residential earthquake insurer. Acting through its participating insurers, the CEA sells earthquake policies to homeowners, mobilehome owners, condominium owners and renters throughout California and provides retrofit assistance to help people protect their houses against earthquakes.

Key dates in the CEA's history:

- January 1994: The Northridge earthquake hits Southern California, registering 6.7 on the Richter scale. Insured residential damage ultimately totals \$12.5 billion.⁴
- January 1995: Fearing potential insolvency from another huge earthquake, insurers representing about 93 percent of the homeowners insurance market in California severely restrict—or refuse to write altogether—new homeowner policies because of the mandate that they also offer earthquake insurance. This triggers a crisis that by mid-1996 seriously threatens the vitality of the state's housing market and stalls the state's recovery from recession.
- September 1995: The State Legislature designs a catastrophic residential earthquake insurance policy known as the “mini-policy,” effectively setting a new minimum standard for coverage that must be offered to every residential policyholder.
- September 1996: The State Legislature establishes the California Earthquake Authority.
- December 1996: The CEA begins to write earthquake policies.
- July 1997: The Department of Insurance reports that more companies are offering homeowners insurance with fewer underwriting restrictions than even before the Northridge earthquake—a dramatic market recovery.
- August 1997: The CEA becomes the world's largest residential earthquake insurer.⁵
- June 1998: The CEA pilots a retrofit program in two California counties.
- July 1999: The CEA begins to offer higher, supplemental coverage limits to its policyholders.
- October 1999: The CEA launches SAFER (State Assistance for Earthquake Retrofits) in nine Bay Area counties. It generates more than 15,000 calls, making it the first residential catastrophe retrofitting program to generate a high level of public response.

Contact CEA:

California Earthquake Authority
300 Capitol Mall, Suite 1230
Sacramento, California 95814
Phone: (Toll-Free) 1-877-797-4300

³ The enabling legislation can be found in the California Insurance Code, primarily in Sections 10089.5 through 10089.54.

⁴ Source: California Department of Insurance.

⁵ Measured both by total premiums and by number of policies.

Appendix 11

FLORIDA DEPARTMENT OF INSURANCE NON-DISCLOSURE AGREEMENT

Sample

This Non-Disclosure Agreement (“Agreement”) is entered into as of _____ (the “Effective Date”) by A Modeling Company (“AMC”), with its principal place of business located at 423 Aptakistic Road, Springfield, Illinois 68922 and Florida Department of Insurance, with its principal place of business located at 200 East Gaines Street, Tallahassee, FL 32399.

WHEREAS, Florida Department of Insurance wishes to use certain confidential information that is the property of AMC, for the purpose as described below and AMC wishes to protect certain confidential information set forth below which is disclosed to Florida Department of Insurance:

Any materials or information relating to AMC proprietary technology, including but not limited to, its Catastrophe Modeling Software™ (CMS™), as well as values, limits, average annual loss, 100 and 250 year return period losses for hurricane, earthquake, and tornado/hail perils for both personal and commercial lines of business on a statewide basis, and other information and material identified by AMC as confidential (the “Confidential Information”). Confidential Information may be in any of the following forms: written, oral, or on magnetic media. Information provided to Florida Department of Insurance by AMC under separate contract or arrangement shall not be restricted by the terms of this Agreement.

NOW, THEREFORE, in consideration of access to said information, Florida Department of Insurance agrees that, upon the Effective Date of this Agreement, Florida Department of Insurance shall use the Confidential Information internally for the sole purpose of furthering Florida Department of Insurance’s understanding of such information (“Purpose”).

Florida Department of Insurance acknowledges that said Confidential Information is confidential and proprietary to, and owned by AMC. Florida Department of Insurance shall not disclose the Confidential Information to any third party.

Florida Department of Insurance agrees to take all reasonable actions, by instruction, agreement or otherwise, to cause such employees to comply with the confidentiality obligations of this Agreement. Florida Department of Insurance agrees that it will not use the Confidential Information except as provided herein and will not release or disclose the Confidential Information to any other person or entity or use the Confidential Information, except as permitted herein, without the prior written consent of AMC, or as required by court order. Florida Department of Insurance agrees to use at least the same degree of care and precaution in protecting the Confidential Information as Florida Department of Insurance uses to protect its own proprietary information and trade secrets. Florida Department of Insurance further agrees not to use the Confidential Information, directly or indirectly, to develop a product or service for sale or license in competition with AMC.

Confidential Information shall not include information that is: (a) at the time of the disclosure becomes publicly known through no act of Florida Department of Insurance; (b) subsequently lawfully received from a third party; (c) information independently developed by Florida

Department of Insurance without reference to the Confidential Information; or (d) independently developed results from licensed use of AMC technology.

The confidentiality obligations set forth in this Agreement shall remain in full force and effect until such time as AMC makes such Confidential Information publicly available. Upon written request by AMC, Florida Department of Insurance agrees to promptly return to AMC all copies of Confidential Information obtained by Florida Department of Insurance hereunder.

No liability shall attain in favor of AMC as against any officer, director, member, agent or employee of Florida Department of Insurance, but AMC will look solely to the assets of Florida Department of Insurance for satisfaction of this Agreement.

It is understood and agreed that breach of the provisions of this Agreement by Florida Department of Insurance will, entitle AMC to obtain injunctive relief to protect its rights under this Agreement, in addition to any and all remedies available at law.

No alteration, amendment, or other change in any provision of this Agreement shall be valid or binding on either party unless mutually agreed to in writing by both parties. This Agreement shall be governed by the laws of the State of Illinois, without reference to conflict of laws principles.

IN WITNESS WHEREOF, the parties by their duly authorized representatives have caused this Agreement to be executed as of the Effective Date set forth above.

A MODELING COMPANY

Florida Department of Insurance

Signature

Signature

Name

Name

Title

Title

Appendix 12

PART A - INSURER OR RATING ORGANIZATION INTERROGATORIES - HURRICANE

This form should be completed by the rating organization or independently-filing insurer if requested by the regulator and must accompany any filing for rates or rating values based in whole or in part on results from modeling.

Completion date for this form: _____, _____.
(Month) (Day) (Year)

1. Filing reference for which model results are used:
Company(ies): _____
Line or Sublines: _____
Filing Title: _____
Filing Identifier: _____

2. Name of organization that provided the model: _____
Name of Model: _____
Model Release Reference: _____

3. Has someone in your company run the model? _____ Yes _____ No
If 'Yes,' could this person replicate the model results? _____ Yes _____ No

4. Provide a contact person in your company who is familiar with the model used:
Name: _____
Title: _____

5. Which perils were included in the model used to establish rates for this filing?
_____ Hurricane _____ Water Damage Including Flood
_____ Other Wind Damage _____ Other (specify)

6. a. What type of data did your company supply for input to the model?
Exposure data: ___ In-force ___ policy-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/_____.
Expense data: ___ policy-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/_____.
Loss data: ___ policy-year ___ accident-year ___ calendar-year ___ other: _____
for _____ (years) valued as of ___/___/_____.
Describe any other data supplied by your company:

b. Describe the level of geographical detail of your company input data:
_____ Address _____ Zip Code _____ County _____ Other: _____
c. Did you project your company input data to a future period? ___ Yes ___ No

Briefly describe your trending method and give the projected date or period:
_____; _____/_____/_____
(MM) (DD) (YYYY)

d. If you did not supply company input data, describe the input data used to generate model results for your company and how the data were projects:

_____; _____/_____/_____ (projected date)
(MM) (DD) (YYYY)

7. **Regional Interpretation of the Model** (If you relied on the modeler to run the model with the adaptation to this region, please obtain and attach responses to the following from the modeler)

a. Attach a map for this region indicating the coastal or source zones included in the model.

What is the maximum magnitude possible in this region? _____

What is your estimate of your maximum gross insured loss? \$ _____ as of ____ / ____
(MM) (YYYY)

b. How have damage patterns been adjusted for building environments and codes in this region?

8. List independent experts that you have contracted to provide written reviews for the model in use:

a. Meteorologist: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

b. Structural Engineer: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

c. Casualty Actuary: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

d. Other: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

PART B
MODELER INTERROGATORIES - HURRICANE

This form should be completed by the modeler and supplied to the insurer or rating organization if requested by the regulator to accompany any filing for rates or rating values based in whole or in part on results from modeling.

Completion date for this form: _____, _____.
(Month) (Day) (Year)

1. Name of Modeler: _____
Name of Model: _____ Model Release Reference: _____
Date of Model Release or Latest Revision: ____/____/_____
(MM) (DD) (YYYY)
This form is provided to: _____ (NAME OF
INSURER OR RATING ORGANIZATION)

2. a. Provide an overview of how the model operates: _____

b. Attach a sample step-by-step calculation for a representative structure, such as a single-family dwelling, showing formulas and definitions of variables.

3. Hurricane Hazard Model Components
- a. Describe the relationship between frequency and category assumed by the model:

- b. Describe how the model considers decay rate over distances: _____
- c. Does the model consider terrain roughness or land cover? _____
- d. How detailed is the soil analysis? _____
- e. What is the source of the data? _____

4. Structural Engineering Model Components
- a. What types of building classifications does the model use? _____
- b. Are damage predictions based solely on Florida studies? ___ Yes ___ No

5. Describe scientific studies incorporated into the latest model version and provide specific source references: _____

6. Describe how the model parameters can be altered for specific clients:

7. Mark the insurance considerations below for which this model is capable of adjusting loss estimates for a specific client on request:

- Distribution of different policy forms and endorsements
- Distribution of policy deductibles
- Distribution of amounts of insurance (policy limits)
- Effects of existing or proposed reinsurance contracts
- Multi-storied structures
- Appurtenant structure loss
- Contents loss
- Additional living expenses
- Business interruption coverage
- Replacement cost coverage
- Underinsured property and coinsurance provisions
- Uninsured property
- Losses attributable to public structures
- Pooling arrangements (e.g., FAIR plans)
- Non-property losses: liability, life, health, workers' compensation, etc.
- Demand surges in construction costs
- Debris removal

8. Describe the source of exposure input data used in this model: _____

9. Explain how and how far this model projects exposure or loss data to a future date:

10. Describe the geographic detail at which this model is capable of distinguishing insured exposure locations:

___ Address ___ ZIP Code ___ County ___ Other: _____

11. List your principal technical staff persons who developed and tested this model and their years of experience with modeling for insurance ratemaking:

12. List the independent experts you have contracted to provide written reviews for your current model release:

a. Meteorologist: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

b. Structural Engineer: _____ Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

c. Casualty Actuary: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

d. Other: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

13. As of the date this form is completed, are there any unresolved or outstanding problems remaining from peer reviews? ___ Yes ___ No; If 'Yes,' please describe: _____

14. Provide a contact person for the modeler who is familiar with this model:

Name: _____

Title: _____

Toll-free phone or e-mail address: _____ Fax: _____

Appendix 13

PART A INSURER OR RATING ORGANIZATION INTERROGATORIES - EARTHQUAKE

This form should be completed by the rating organization or independently-filing insurer if requested by the regulator and must accompany any filing for rates or rating values based in whole or in part on results from modeling.

Completion date for this form: _____, _____.
(Month) (Day) (Year)

1. Filing reference for which model results are used:
Company(ies): _____
Line or Sublines: _____
Filing Title: _____
Filing Identifier: _____
2. Name of organization that provided the model: _____
Name of Model: _____
Model Release Reference: _____
3. Has someone in your company run the model? _____ Yes _____ No
If 'Yes,' could this person replicate the model results? _____ Yes _____ No
4. Provide a contact person in your company who is familiar with the model used:
Name: _____
Title: _____
5. Which perils were included in the model used to establish rates for this filing?

_____ Earthquake	_____ Tsunami
_____ Fire Following Earthquake	_____ Volcanic Action
_____ Other: (specify) _____	_____ Hurricane
_____ Tornado	_____ Hail
6. a. What type of data did your company supply for input to the model?
Exposure data: ___ In-force ___ policy-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/_____.
Expense data: ___ policy-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/_____.
Loss data: ___ policy-year ___ accident-year ___ calendar-year ___ other: _____
for _____ (years) valued as of ___/___/_____.
Describe any other data supplied by your company:

- b. Describe the level of geographical detail of your company input data:
_____ Address _____ Zip Code _____ County _____ Other: _____
- c. Did you project your company input data to a future period? ___ Yes ___ No

Briefly describe your trending method and give the projected date or period:

_____ ; _____/_____/_____
(MM)(DD) (YYYY)

d. If you did not supply company input data, describe the input data used to generate model results for your company and how the data were projects:

_____ ; ____/____/____ (projected date)
(MM) (DD) (YYYY)

7. **Regional Interpretation of the Model** (If you relied on the modeler to run the model with the adaptation to this region, please obtain and attach responses to the following from the modeler)

a. Attach a map for this region indicating the faults or source zones included in the model.

What is the maximum magnitude possible in this region? _____

What is your estimate of your maximum gross insured loss? \$ _____ as of ____/____
(MM) (YYYY)

b. How have damage patterns been adjusted for building environments and codes in this region?

8. List independent experts that you have contracted to provide written reviews for the model in use:

a. Seismologist/Geologist: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

b. Structural Engineer: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

c. Casualty Actuary: _____ Phone or e-

mail address: _____ Date of review: (mm/yyyy) _____

d. Other: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

PART B
MODELER INTERROGATORIES - EARTHQUAKE

This form should be completed by the modeler and supplied to the insurer or rating organization if requested by the regulator to accompany any filing for rates or rating values based in whole or in part on results from modeling.

Completion date for this form: _____, _____.
(Month) (Day) (Year)

1. Name of Modeler: _____

Name of Model: _____ Model Release Reference: _____

Date of Model Release or Latest Revision: ____/____/____
(MM) (DD) (YYYY)

This form is provided to: _____ (NAME OF
INSURER OR RATING ORGANIZATION)

2. a. Provide an overview of how the model operates: _____

b. Attach a sample step-by-step calculation for a representative structure, such as a single-family dwelling, showing formulas and definitions of variables.

3. Earthquake Hazard Model Components

a. Describe the relationship between frequency and magnitude assumed by the model:

b. Describe how the model considers attenuation over distances: _____

c. What soil condition does the model use? _____

How detailed is the soil data? _____

What is the source of the data? _____

4. Structural Engineering Model Components

a. What types of building classifications does the model use? _____

b. Are damage predictions based solely on California studies? ___ Yes ___ No

5. Describe scientific studies incorporated into the latest model version and provide specific source references: _____

6. Describe how the model parameters can be altered for specific clients:

7. Mark the insurance considerations below for which this model is capable of adjusting loss estimates for a specific client on request:

- Distribution of different policy forms and endorsements
- Distribution of policy deductibles
- Distribution of amounts of insurance (policy limits)
- Effects of existing or proposed reinsurance contracts
- Multi-storied structures
- Appurtenant structure loss
- Contents loss
- Additional living expenses
- Business interruption coverage
- Replacement cost coverage
- Underinsured property and coinsurance provisions
- Uninsured property
- Losses attributable to public structures
- Pooling arrangements (e.g., FAIR plans)
- Non-property losses: liability, life, health, workers' compensation, etc.
- Demand surges in construction costs
- Debris removal

8. Describe the source of exposure input data used in this model: _____

9. Explain how and how far this model projects exposure or loss data to a future date:

10. Describe the geographic detail at which this model is capable of distinguishing insured exposure locations:

____ Address ____ ZIP Code ____ County ____ Other: _____

11. List your principal technical staff persons who developed and tested this model and their years of experience with modeling for insurance ratemaking:

12. List the independent experts you have contracted to provide written reviews for your current model release:

a. Seismologist/Geologist: _____

Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

b. Structural Engineer: _____ Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

c. Casualty Actuary: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____
d. Other: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

13. As of the date this form is completed, are there any unresolved or outstanding problems remaining from peer reviews? ___ Yes ___ No; If 'Yes,' please describe: _____

14. Provide a contact person for the modeler who is familiar with this model:
Name: _____
Title: _____
Toll-free phone or e-mail address: _____ Fax: _____

Appendix 14

ACT 1343 (HB 1835) ESTABLISH ARKANSAS EARTHQUAKE AUTHORITY

Eff. 7-30-99 This Act creates the Arkansas Earthquake Authority and establishes a two step process for maintaining a viable and orderly market for earthquake insurance in Arkansas. Step 1 involves the creation and implementation of a Market Assistance Program (MAP) to help consumers find earthquake insurance from private sector insurers. Step 2, having the Arkansas Earthquake Authority actually issue insurance policies, will be taken only if there are no insurers willing to write earthquake insurance as a MAP participant or if the MAP rates substantially exceed the rates that could be offered by the Authority.

Questions concerning this act should be directed to Becky Harrington, Royce Wigley or Lenita Blasingame in the Property and Casualty Division of the Department at 501-371-2800.

Appendix 15

STATE OF NEW YORK
INSURANCE DEPARTMENT
25 BEAVER STREET
NEW YORK, NEW YORK 10004

New York Circular Letter No. 7 (1998)
April 30, 1998

To: All Property/Casualty Insurers Authorized to Write Homeowners' Insurance and All Rate Service Organizations

Re: The Use of Computer Simulation Models in Homeowners' Insurance Rate Development

The Department is engaged in an ongoing study of computer simulation models in response to some insurers' desire to incorporate this methodology into their rate filings. This is consistent with the findings of the 1997-1998 Temporary Panel on Homeowners' Insurance Coverage. In its February 1, 1998 report, the Panel recommended that the Department consider permitting computer simulation modeling to be used by insurers and rate service organizations as another acceptable actuarial technique for the development of appropriate rates and deductibles.

To date, the Department has not permitted the inclusion of computer simulation modeling results in the ratemaking process. Due to the proprietary nature of the model's components and assumptions, as well as the difficulty in determining the reasonableness of certain assumptions, the Department has encountered difficulty in reviewing all of a model's components and assumptions. Accordingly, the inclusion of the results of computer simulation modeling precludes the Department from determining whether an insurer's proposed rates meet the standards set forth in Article 23 of the New York State Insurance Law.

In order to assist the Department in its study, those insurers and rate service organizations which use computer simulation modeling as part of their homeowners insurance rate review and development process in this state, may provide, at their option, a comparison of the indicated rates and rate changes by form and territory. The comparison should include the rates and rate changes developed using the results of computer simulation modeling as well as those developed using more traditional ratemaking methodology.

The computer simulation modeling information will not be considered as part of the actual rate submission. However, any comparisons submitted by insurers and rate service organizations will help the Department gain perspective and familiarity with computer simulation modeling, and will assist us in making a future determination on the appropriateness of the use of this methodology in the ratemaking process for homeowners insurance rate filings. Upon request by the insurer, such information would be considered confidential to the extent permitted by Section 87(2) of the Freedom of Information Law.

Very truly yours,
MARK PRESSER
Assistant Deputy Superintendent and Bureau Chief
Property Bureau

Appendix 15a

New York Miscellaneous Regulatory Material DEPARTMENT OF INSURANCE CIRCULAR LETTERS

Cross Reference citation indexing has been translated to conform to the 1984 recodification of the New York Insurance Laws. Textual citations may refer to prior law.

Circular Letter 1993-11 Guidelines for homeowners insurance along New York coastal areas and special report pursuant to section 308 of the insurance law

September 14, 1993

In the wake of recent natural disasters, all insurers should assess what might happen if a great hurricane ever strikes New York's coastal areas, particularly Long Island, in the future. Without denying that possibility, insurers need to appreciate not only New York's considerably lower hurricane risk relative to other areas, but, as recognized by the Federal Emergency Management Agency, the quality of construction and code enforcement that characterizes New York. Windstorm fears notwithstanding, it is vital that the insurance industry continue to provide proper protection for sound structures, including the many homes that make up New York's shore communities, especially Long Island.

This Circular Letter sets forth the Insurance Department's windstorm recommendations and guidelines, designed to enable homeowners insurers in New York to protect consumers as well as industry solvency. These guidelines have been developed in light of a wide range of Department communications and meetings with concerned public officials, consumers, producers and insurers, plus special Department surveys. For example, the Insurance Department participated in an August 25, 1993 community meeting at the Long Beach City Hall, where, on September 30, 1993, a public hearing by the New York State Assembly Insurance Committee and Long Island Barrier Beaches Subcommittee is scheduled to be held. Supplements to this Circular Letter may be issued to provide further guidance or refinements on this subject.

Our objectives are to maximize consumer protection, to encourage risk management, to emphasize responsible underwriting, and to facilitate voluntary insurance market coverage, through the following approaches to homeowners insurance for shore communities that insurers should apply and follow:

- A. **NO CANCELLATIONS**—No insurer, because Insurance Law §3425 prohibits it, can cancel any homeowners insurance policy mid-term due to windstorm exposure, anywhere in New York, including Long Island.
- B. **3-YR. GUARANTEE**—Every insurer must honor the 3-year period of homeowners policyholder protection, guaranteed by Insurance Law §3425, everywhere in New York, including Long Island.
- C. **LONG-TERM PROTECTION**—Virtually every insurer is renewing its Long Island homeowners policies now in force, even beyond the 3-year guaranteed period. Moreover, a homeowners policy should not be nonrenewed due to a few minor claims in the past.

- D. WINDSTORM DEDUCTIBLES—Insurers can forthwith make windstorm deductible filings, which will receive expeditious review and approval if they meet Attachment I criteria.
- E. WRAP-AROUND PROTECTION—Where appropriate for a specific risk, fire and extended (including windstorm) coverage for dwelling and structures up to actual cash value (ACV) can be placed with NYPIUA, while covering any difference between replacement cost and ACV as well as liability, contents, theft, and vandalism and malicious mischief (V&MM) on a voluntary market basis, by using a special Windstorm Wrap-Around HO Endorsement, consistent with Attachment II criteria.
- F. COASTAL MAP—Special §308 survey results reflected in Attachment III show that, even before facilitation through D, E or F and even within 1,000 feet of shore, a significant number of insurers are actively writing new homeowners business for New York’s shore communities, including Long Island, subject to their underwriting guidelines. However, consumers and producers may not know how, or might not be in a position, to identify or access these insurers.

Therefore, a Coastal Market Assistance Program (C-MAP) is created under Insurance Department auspices, to be administered with the assistance of the Professional Insurance Agents of New York (PIANY) and Independent Insurance Agents of New York (IIANY), to serve as a clearinghouse and referral mechanism, in order to assist homeowners living in shore communities and to match those seeking coverage with voluntary market homeowners insurers, in accordance with a C-MAP Plan of Operations now being designed.

In order to consider placements, subject to appropriate underwriting guidelines, insurers open to new business are asked to join C-MAP. Consumers and producers seeking coverage for homes in shore communities can call the Insurance Department, using the following special C-MAP numbers:

1-212-602-0541—or—TOLL-FREE: 1-800-522-4370

In view of New York’s strong insurance market and consumer safeguards embodied in A, B and C, most homeowners throughout Long Island should not encounter homeowners insurance problems.

Equally important, D, E and F should facilitate underwriting by insurers and effectively address those problems, principally with new business, that do arise for consumers.

Appropriate policy form filings should be submitted as soon as possible. In addition, homeowners insurers can and should insist (and then assist) that a consumer whose home is situated in a flood plain carry federal flood insurance, whenever mandated by federal law or required by the mortgage lender.

Give the competitive and resilient nature of New York’s homeowners insurance market, aided by these facilitating approaches, almost every insurer should be able to underwrite new applicants seeking to buy and thus insure homes situated close to shore and, second, those homeowners previously insured with the relatively few insurers confronting capacity constraints and over-concentration of Long Island business.

As a result, we expect that insurers will be able not only to retain business already in force, but to write new business, even on homes within 1000 feet of shore, in New York. Indeed, with the ability

of insurers to utilize the above approaches, any insurer that fails in material respects to do so will be subject to investigation for possible unfair trade practices and appropriate sanctions under the Insurance Law.

Pursuant to §308 of the Insurance Law, the chief underwriting officer of each licensed insurer is hereby directed to:

- (a) describe in detail the extent to which, and manner in which, the insurer adheres to, or departs from, each of A through E, since 1/1/93 to 9/14/93, and then how it plans to do so from this point forward;
- (b) indicate, in connection with F, whether it will participate in the coastal MAP, if so, designating a C-MAP contact for the insurer and, if not, explaining the reasons for declining to participate;
- (c) identify with particularity the ways in which insurer management communicates its underwriting and marketing intentions about homeowners insurance in New York's shore communities, using each of the above approaches, to its relevant personnel, sales offices or agents, and to the public, attaching copies of these communiqués; and
- (d) specify telephone numbers and addresses of the insurer's sales offices or agents that consumers seeking coverage for homes in New York's shore communities (for each of the areas specified in Attachment A) can use to access the insurer for coverage.

This §308 Report must be received by Insurance Examiner John Owens (T:212-602-0371 & F:212-602-8825), in the Property & Casualty Insurance Bureau, at the above address, no later than Thursday, September 23, 1993.

Failure to respond fully and in a timely manner to this §308 required report, or to the preceding August 9, 1993 §308 required report, will subject the insurer and its representative to penalties under the Insurance Law.

On September 23, 1993, the Insurance Department will hold a follow-up industry session, for the purposes of further discussing relevant issues and determining industry progress and performance. Representatives of concerned insurers, reinsurers and producers are invited to attend this September 23rd session, to commence at 10 A.M. in the 22nd Floor Hearing Room, at our New York City offices.

Insurers are urged, in the best interests of both the public and the insurance industry, to do everything they can to maximize homeowners insurance policy writings in the voluntary market for homeowners who live in New York's shore communities, including Long Island.

Time is of the essence, and immediate action is imperative. If insurers do not take advantage of the opportunity to respond voluntarily, it can be anticipated that the Insurance Department will recommend measures to the Governor and Legislature to insist, by whatever means necessary, that the insurance industry act responsibly.

Salvatore R. Curiale
Superintendent of Insurance

ATTACHMENT I

NEW YORK STATE INSURANCE DEPARTMENT GUIDELINES FOR WINDSTORM DEDUCTIBLES

Windstorm deductibles represent a partnership between insurer and insured, protecting the policyholder from catastrophic loss while creating incentives for the policyholder to apply risk management measures to mitigate the windstorm peril. Subject to review and prior approval of specific applications, the Insurance Department will expeditiously approve for use, in specified areas only, windstorm deductibles meeting the following criteria:

1. The risk must be located in one of the following counties: Kings, Queens, Nassau and Suffolk (Long Island), Richmond County (Staten Island), Westchester, and the Bronx.
2. The insurer must commit to underwrite homeowners insurance policies (and, where appropriate, dwelling fire) for new and renewal business on a voluntary market basis.
3. An approved windstorm deductible can be applied, on a per incident basis, to homeowners insurance policies newly issued or upon renewal after the three-year period of policyholder protection required by §3425 of the New York Insurance Law, as follows:
 - a. A non-catastrophic windstorm deductible (see Point 4) applied whenever winds do not attain Force 2 (sustained winds of 96 miles per hour or more) status, as determined by the National Weather Service (NWS), at landfall anywhere in New York State.
 - b. A catastrophic windstorm deductible (see Point 5) activated only in the event that Force 2 status, or higher, as determined by NWS, is experienced at landfall anywhere in New York State.
4. For non-catastrophic situations, involving any distance from shore in the specified areas, insurers may require a windstorm deductible of no more than \$500 on a mandatory basis, with an accompanying premium reduction of up to 3% and, on a purely optional basis, may offer a windstorm deductible of no more than \$1,000, with an accompanying premium reduction of up to 5%.
5. The catastrophic windstorm deductible should be graduated on a percentage basis, so that it is highest nearest the shore, fades with distance from shore, and disappears beyond a mile from shore. The maximum catastrophic windstorm deductible that an insurer can require on a mandatory basis is:
 - a. For Long Island's South Shore and areas along the shore of Brooklyn, Queens, Staten Island, and Long Island's Forks:

Distance from Shore	Maximum % Deductible	Premium Reduction
Up to 1000 feet	3%	6%
Over 1000 to 2500 ft	2%	4%
Over 2500 ft to 1 mile	1%	2%

- b. For Long Island’s North Shore, the Bronx and Westchester along the Long Island Sound:

Distance from Shore	Maximum % Deductible	Premium Reduction
Up to 1000 feet	2%	4%
Over 1000 feet	0%	0%

- c. Beyond one mile from shore, a maximum dollar deductible, not to exceed \$500, with an accompanying premium reduction of up to 1%, may be required on a mandatory basis.
- d. The term “shore” refers only to salt-water ocean, sound or bay, with distance measured from normal high-tide mark. A data base technology to determine distance from shore is available via the Geographic Underwriting System (GUS), developed by the Insurance Services Office (ISO).
- e. Windstorm deductibles should not be imposed indiscriminately or across-the-board. An insurer need not impose any windstorm deductible at all, or may require a windstorm deductible lower than these maxima.
- f. Insurers may also offer homeowners policyholders, whether living within or beyond 1 mile from shore, an optional catastrophic windstorm deductible of no more than 5%, with an accompanying premium reduction of up to 10%, where the choice is entirely the policyholder’s.
- g. If selected by the policyholder, an optional windstorm deductible can attach upon annual renewal (rather than only after the 3-year guaranteed policyholder protection period).
- h. For homes whose replacement cost value is at least \$500,000, insurers may offer, on an optional basis, higher windstorm deductibles not to exceed 10% of that replacement cost value, with an accompanying premium reduction of no more than 15%.

6. The non-catastrophic and catastrophic windstorm deductible premium reductions are added, with the summed reduction percentage applied to the total homeowners insurance policy premium.

7. No windstorm deductible of any kind or level will be permitted at this time elsewhere in New York State, even on an optional basis, outside of the areas specified above.
8. Buy-back of a windstorm deductible will not be required, except where the insured, at his or her expense, can demonstrate that the insured home is built or reinforced with special risk management measures, such as wind-resistant architectural or construction techniques. In that event, the insured should have the opportunity to buy back all or at least part of the windstorm deductible.
9. The basis for application of the percentage windstorm deductible is the dwelling's insured value (replacement cost or actual cash value, depending on type of policy) at the beginning of the policy period covering the loss.
10. All losses (coverages A+B+C) caused by the windstorm peril should be counted in determining whether the windstorm deductible has been reached.
11. Loss adjustment costs should be borne by the insurer, even if the loss does not exceed the windstorm deductible.
12. The windstorm deductible does not apply to loss-of-use coverage (D).
13. The insurer remains responsible for all expenses of underwriting normally performed by insurers. Thus inspection and engineering costs that the insurer normally incurs to underwrite a homeowners risk (e.g., type of construction, occupancy, protection and exposure) should continue to be borne by the insurer.
14. Upon filing for approval of a windstorm deductible, the insurer should submit supporting documentation regarding the level and location, by ZIP Code and with maps, of its past and present books of business within the affected areas.
15. In the event of loss due to windstorm, the windstorm deductible is not to be combined with any other deductible to which the homeowners insurance policy is subject. In the rare instance where the general deductible exceeds the windstorm deductible, the general deductible would be applied before the insurer would cover the loss.
16. Insurers should submit for approval disclosure forms, clearly and conspicuously describing and explaining what is and is not covered by the particular homeowners policy in terms of windstorm and flood perils, including the steps the policyholder can take to secure protection for these perils to the extent not covered by the policy.
17. No hail deductible will be approved at this time.
18. An insurer may, with sufficient support, submit for Insurance Department consideration a windstorm deductible filing that differs from the articulated criteria.

ATTACHMENT II

NEW YORK STATE INSURANCE DEPARTMENT GUIDELINES FOR WINDSTORM WRAP-AROUND

Proximity to shore and type of construction may combine to make a particular property, after considered underwriting, truly a residual risk in regard to windstorm peril. Thus, even were windstorm deductibles to be applied, a comprehensive homeowners insurance policy would be inappropriate for such a risk. Under these circumstances, insurers and producers should assist the homeowner in obtaining modified homeowners coverage issued on a voluntary market basis wrapped around New York Property Insurance Underwriting Association (NYPIUA) or FAIR Plan coverage, using the special Windstorm Wrap-Around HO Endorsement, annexed to this Attachment II as an Exhibit and approved for use effective immediately, subject to the following criteria:

1. Any kind of HO policy (as selected by the policyholder) can be so endorsed, thereby eliminating coverage gaps as well as redundancies, with liability, contents, theft, and V&MM, as any difference between replacement cost and ACV covered on a voluntary market basis, while fire and extended (including windstorm) coverage on the dwelling and structures, to the extent of ACV, are provided through the FAIR Plan.
2. This special endorsement in conjunction with FAIR Plan coverage can be used only in the specified areas (see Attachment I), and should be applied only to a truly residual risk situated within 2500 feet of shore.
3. If this special endorsement is used in conjunction with FAIR Plan coverage, then no windstorm deductible can attach to the HO policy.
4. As a result of this special endorsement, the appropriate HO premium discount is 65%, subject to the insurer's approved minimum premium rules.
5. Appropriate disclosure and explanation should be provided to the insured, including specific risk management and loss control measures (such as renovations conforming to post-FIRM [FEMA Flood Insurance Rate Map] standards) that the insured could apply in order to become able to obtain a comprehensive homeowners insurance policy, without the need for FAIR Plan coverage, on a voluntary market basis.
6. The insurer should inform its underwriters, sales offices or agents that this partnership approach between the voluntary and residual markets should be used, if practicable, in lieu of nonrenewing or denying coverage to a risk.
7. The FAIR Plan will revise its policy application to advise consumers of the availability of a Windstorm Wrap-Around HO Endorsement from a voluntary market homeowners insurer.
8. Even though this special endorsement has been approved for use, insurers should make a policy form filing as soon as possible; any variations from this endorsement require prior approval.

WINDSTORM WRAP-AROUND HO ENDORSEMENT

Coverage for Dwelling and Additional Structures will be provided by the New York Property Insurance Underwriting Association (NYPIUA) or FAIR Plan under its DP-1 Policy with Extended Coverage Endorsement up to Actual Cash Value (ACV), and this Homeowners Policy will apply in excess of ACV, up to the Replacement Cost or Homeowners Policy limit. In consideration of a premium reduction and in view of the FAIR Plan coverage which must be maintained in force, we do not cover direct loss up to ACV to property, whether described in Coverage A—Dwelling or Coverage B—Other Structures, if caused by the following perils as defined by the DP-1 Policy: 1A. Fire or Lightning; 1B. Internal Explosion; 2. Windstorm or Hail; 3. Explosion; 4. Riot or Civil Commotion; 5. Aircraft; 6. Vehicles; 7. Smoke; or 8. Volcanic Eruption.

The “Other Insurance” Condition of the Homeowners Policy is amended by adding the following:

1. If a loss is not covered under the DP-1 Policy with Extended Coverage Endorsement, coverage will be provided under this Homeowners Policy in accordance with the Homeowners Policy conditions.
2. If a loss is covered under the DP-1 with Extended Coverage Endorsement and is also covered under the Homeowners Policy, and the loss is more than ACV under the DP-1 Policy with Extended Coverage Endorsement, then the Homeowners Policy will be excess over the DP-1 Policy with Extended Coverage Endorsement in accordance with the Homeowners Policy conditions.

The following Conditions are added to Homeowners Policy:

1. Any ambiguity in the language of the DP-1 Policy with Extended Coverage Endorsement as to which policy will provide coverage is resolved by this Homeowners Policy providing the disputed coverage.
2. If you fail to maintain the DP-1 Policy with Extended Coverage Endorsement, this Homeowners Policy is still valid. However, we will pay only the amount we would have paid if you had maintained the DP-1 Policy with Extended Coverage Endorsement.
3. In the event of a loss, the insured must notify both NYPIUA and us.
4. All applicable deductibles apply in accordance with their terms.
5. If there is a loss in excess of ACV and ACV cannot be agreed upon or determined, either NYPIUA or we may demand an appraisal, of the loss to determine the amount of loss, ACV and replacement cost.

All other provisions of the Homeowners Policy apply.

New York Miscellaneous Regulatory Material
DEPARTMENT OF INSURANCE CIRCULAR LETTERS

Cross Reference citation indexing has been translated to conform to the 1984 recodification of the New York Insurance Laws. Textual citations may refer to prior law.

Circular Letter 1993-11 Supplement 1 Revised guidelines for New York coastal area homeowners insurance and special report pursuant to section 308 of the insurance law

October 27, 1993

Since issuance of Circular Letter No. 11 on September 14, 1993, the Insurance Department has continued to analyze data and input from a wide range of sources, including concerned public officials, consumers, producers and insurers plus special Department surveys. The Department presented testimony before the New York State Assembly's Insurance Committee and Long Island Barrier Beaches Subcommittee, at a public hearing held on September 30, 1993. That comprehensive presentation (see Attachments H & I, testimony and original Circular Letter No. 11 (without their other exhibits), respectively) explains the Insurance Department's approach and details the Department's proactive steps to ensure both ongoing insurer solvency and continuing homeowners coverage in New York's coastal areas. We ask all concerned to read it closely. Both insurer solvency and consumer protection are imperatives.

As a result of these developments, the Department has revised its windstorm guidelines and recommendations. These refinements are set forth in this Supplement, which, to aid understanding, should be compared to the original Circular. To reiterate our objectives, we seek to maximize consumer protection, encourage risk management, emphasize responsible underwriting, and facilitate voluntary market homeowners insurance coverage in shore communities in this State.

From our surveys, we have established that homeowners insurers, rather than cancelling coverage in coastal areas, are generally retaining their books of business in Long Island and other coastal areas in this State. Instead of looking to nonrenew due to a few minor claims, virtually all insurers are renewing coverage in New York's shore communities, beyond simply honoring the 3-year period of homeowners policyholder protection guaranteed by §3425 of the Insurance Law. As stated in Circular Letter No. 11, it is also sensible for homeowners insurers to insist that consumers whose homes are situated in a flood plain maintain federal flood insurance, whenever mandated by federal law or required by the mortgage lender.

Insurers should be commended for providing—notwithstanding heightened concerns over catastrophic windstorm potential—reliable long-term protection for New York State homeowners.

That is why, despite repeated announcements, only a relatively small number of calls (230 total to date, since inception last month) have come into our special Hotlines—212-602-0541 & 800-522-4370—and, equally important, why our staff handling Hotline calls have been able to help almost all who have called so far, aided by the emergence of C-MART (Coastal Market Assistance Reference Table) and responsible insurers and producers. While some insurers in Long Island may be overconcentrated, the homeowners insurance market as a whole is responding to consumer needs.

As set forth in Circular Letter No. 11, and further explained in the September 30, 1993 testimony, a number of measures have been designed to facilitate voluntary market response. In order to enhance workability, these approaches have now been refined, in the following manner:

- A. **WINDSTORM DEDUCTIBLES**—The Insurance Department is receiving and expeditiously reviewing windstorm deductible filings from different insurers. The windstorm deductible criteria contained in Circular Letter No. 11 permit mandatory as well as optional deductibles, on both non-catastrophic and catastrophic bases.

These windstorm guidelines are hereby revised in certain aspects, including optional dollar deductibles and in the following key respect: instead of 3% (which would have applied to risks within 1000 feet of shore), the maximum mandatory windstorm deductible for risks within 2500 feet of Long Island's South Shore will be no more than 2%.

This change, cutting back the mandatory windstorm deductible from 3% to 2% at the most, is based upon concerns from the secondary mortgage securities market and, most important, about the consumer's ability to pay, particularly when on fixed income or of limited means. In terms of shared responsibility between insurer and insured, a 2% windstorm deductible is still quite meaningful. For convenient reference, Attachment A to this Supplement integrates this change into revised windstorm deductible guidelines.

We urge insurers, once windstorm deductibles become available for use in the market, to modify their underwriting guidelines to accommodate homeowner risks in coastal communities.

The Insurance Services Office (ISO) is preparing an amendment, in order to become compatible with our refined windstorm deductible guidelines, to its multistate Windstorm or Hail Optional Deductible Program filing. We understand that this ISO amendment will address optional (not mandatory) windstorm (not hail) deductibles in the specified coastal counties, and contain the appropriate coverage products with related rules and rating factors.

- B. **WRAP-AROUND PROTECTION**—Even with special windstorm deductibles in an insurer's underwriting portfolio, sound underwriting may indicate that a comprehensive Homeowners insurance policy is inappropriate for a particular property, due to proximity to shore and type of construction in combination, making it truly a residual risk with regard to windstorm peril.

Under such circumstances, in order to provide the coastal homeowner with coverages comparable to a standard Homeowners form (including windstorm), the Wrap-Around concept has been developed. Under Wrap-Around, companion policies are issued by the voluntary market insurer and the New York Property Insurance Underwriting Association (NYPIUA), where insurer and producer should assist the consumer in obtaining contemporaneous voluntary and NYPIUA policies, adjusted to eliminate coverage gaps as well as redundancies.

The Wrap-Around approach should be applied only to a truly residual windstorm risk situated within 2500 feet of shore, and only in the specified areas where windstorm deductibles (see Attachment A) can be used.

Whenever Wrap-Around is applied, no windstorm deductible applicable to Coverage A (Dwelling) or B (Other Structures) should be attached to the Homeowners policy. Under Wrap-Around, the NYPIUA policy should not be endorsed for personal property (contents).

With Wrap-Around, depending upon the specific circumstances, three alternative approaches can be used:

1. In the first approach, a Wrap-Around endorsement is added to the standard Homeowners policy forms. In effect, this endorsement provides coverage over and above that provided by the standard DP-1 form, under which NYPIUA provides fire and extended (including windstorm) coverage on the dwelling and structures, to the extent of Actual Cash Value (ACV).

Since under the first approach the NYPIUA policy is on an ACV basis, this endorsement enables replacement cost coverage on the dwelling and other building structures. By issuing a broad (HO-2) or special (open or HO-3) perils Homeowners policy with this Wrap-Around endorsement, the voluntary insurer thus covers:

- (a) the difference between replacement cost and ACV for the perils covered under the NYPIUA policy for the dwelling and other building structures (with non-building structures subject to ACV loss settlement under both NYPIUA and Homeowners policies); and
- (b) from first dollar of coverage, but subject to the Homeowners policy's generic deductible:
 - (1) Buildings and other structures for Vandalism & Malicious Mischief (V&MM), Theft and, if purchased, the broad or special perils;
 - (2) Personal Property for all insured perils; and
 - (3) Liability.

Under this first Wrap-Around approach, the NYPIUA policy should be written at 100% of ACV, and the Homeowners policy at 100% of replacement cost, as of policy inception.

In the Department's view, the appropriate Homeowners insurance premium reduction for this Wrap-Around endorsement is 55%, subject to the insurer's approved minimum premium rules. An insurer is free to submit support for any proposed different premium reduction, which is subject to prior approval as a classification.

Attachment B to this Supplement is a revised Wrap-Around (NYPIUA ACV) endorsement, improved in technical aspects from the one annexed to Circular Letter No. 11. Although it must be filed by insurers, this Wrap-Around Endorsement (as revised) supersedes the endorsement attached to Circular Letter No. 11 and is approved for use effective immediately at the state premium reduction.

2. Under the second Wrap-Around approach, the NYPIUA policy provides for replacement cost loss settlement, by use of the DP-1 policy form so endorsed. This alternative approach minimizes potential dual loss adjustment problems raised by the first approach.

At the Department's request, NYPIUA's plan of operations will be amended to provide for replacement cost coverage on the dwelling and other building structures, restricted to homes meeting the following criteria:

- (a) the prior policy was issued on a broad (HO-2) or special (open or HO-3) perils replacement cost (on buildings) basis, unless new construction or new purchase;
- (b) there has been at least six-months continuous occupancy, unless new construction or new purchase;
- (c) year-round owner-occupancy is intended;
- (d) the home is located within the specified areas;
- (e) if new construction, the home meets governing building codes; and
- (f) windstorm exposure is why, to extent that sufficient information is available, voluntary market coverage cannot be obtained.

Under this second Wrap-Around approach, both Homeowners and NYPIUA policies should be written at 100% of replacement cost as of policy inception.

Attachment C is the Wrap-Around (NYPIUA RC) endorsement to the voluntary market broad (HO-2) or special (open or HO-3) perils Homeowners policy form, when used in conjunction with the NYPIUA DP-1 policy endorsed to provide replacement cost coverage, for which NYPIUA should charge an additional \$25 in premium above the DP-1 premium. This DP-1 Repair or Replacement Cost Endorsement (Attachment D) is approved for NYPIUA use effective immediately. In the Department's view, the appropriate Homeowners insurance premium reduction for this endorsement is 65%. Again, an insurer is free to submit support for any proposed different premium reduction, which is subject to prior approval as a classification.

3. The third Wrap-Around approach is for the voluntary market insurer to issue the homeowner a Tenants/Renters (HO-4) policy, which would insure personal property for the broad perils (including theft) and liability, while NYPIUA issues its DP-1 policy for the dwelling and other building structures on an ACV basis or (under the criteria stated with respect to the second Wrap-Around approach) endorsed on a replacement cost basis. To Wrap-Around, Building Additions & Alterations (ISO form Additional Coverage 9) should be deleted from the Tenants/Renters (HO-4) policy, and an endorsement (Attachment E) for this purpose is approved for use effective immediately.

Because current Tenants/Renters (HO-4) policy rates may not be appropriate for this homeowners (as opposed to tenants) class of business, each insurer should verify whether its rates on file are appropriate or if a different rate for a separate class should be filed. The

Insurance Department will approve a Tenants/Renters (HO-4) policy adjusted rate of up to 25% more, when applied in this particular context.

NYPIUA will revise its policy application to advise consumers of the availability of a Windstorm Wrap-Around Endorsement from a voluntary market homeowners insurer and, since both NYPIUA and the Wrap-Around insurer need to know of each other's policy, to provide for a tear-off sheet that the consumer or producer can conveniently provide to the voluntary Homeowners insurer providing Wrap-Around protection.

When Wrap-Around is used, the Homeowners insurer should provide disclosure and explanation to the insured, including specific risk management and loss control measures (e.g., renovations conforming to post-FIRM [FEMA Flood Insurance Rate Map] standards) that the insured could apply in order to become able to obtain a comprehensive homeowners insurance policy, without the need for NYPIUA coverage, on a voluntary market basis.

This disclosure form should be filed with the Insurance Department, and a copy of the disclosure statement, signed by the insured, should be placed in the underwriting file.

The Homeowners insurer should inform its underwriters, sales offices or agents that the Wrap-Around approach should be used, if practicable, in lieu of nonrenewing or denying coverage to a risk.

- C. COASTAL MAP—The Coastal Market Assistance Program (C-MAP) is a network, made up of participating insurers and insurance producers, acting on a voluntary basis, operating under the auspices of the Superintendent of Insurance and state action of the New York State Insurance Department, to assist homeowners living in New York's coastal areas in obtaining proper insurance protection for their homes.

We urge homeowner insurers to join C-MAP. A number of insurers have already had the foresight to join C-MAP. However, a larger number of insurers, in considering whether to participate, have asked for more time and more information about C-MAP.

Accordingly, insurers should carefully consider the following pertinent propositions:

1. C-MAP is designed to act as a backstop to C-MART, which serves as a voluntary market-matching mechanism. In essence, C-MART is simply a current list of insurers willing and able to consider new homeowners business in coastal areas. Pertinent information, including distance-from-shore indications and specific ways to access C-MART insurers, are furnished to consumers and producers who contact the Hotlines seeking homeowners insurance in coastal communities.

Attachment F is a revised C-MART listing, current as of the date of this Supplement. Accuracy of the C-MART list is also crucial. C-MART listings should grow in terms of length, specificity and proximity to shore, as insurers begin to apply windstorm deductibles and the Wrap-Around approach in appropriate settings. As planned, C-MART is proving successful in matching up insureds with insurers. Given this deliberate progression from Hotline help, next to C-MART referrals and then to C-MAP, we expect C-MAP to receive only a limited number of applications, rather than a deluge.

2. Any application eligible for C-MAP will be subject to the respective underwriting guidelines of participating C-MAP insurers, supplemented by underwriting and risk management recommendations developed by the C-MAP Steering Committee, which consists of participating insurer and producer expert representatives. Upon Steering Committee analysis, some risks may have to follow specific risk management recommendations in order to secure coverage. No C-MAP insurer will be compelled to cover what the C-MAP Steering Committee considers a truly residual market risk, much less an uninsurable risk. The purpose of C-MAP is to ensure that eligible C-MAP applicants receive a hard look, rather than short shrift.
3. While C-MART declinations act as a prerequisite to C-MAP eligibility under the C-MAP Plan of Operations, they function primarily to demonstrate best efforts at voluntary market placement on the part of the consumer or producer in question.
4. Likewise, rotation among participating C-MAP insurers envisioned by the C-MAP Plan of Operations is neither a forced rotation nor mandatory acceptance, but merely is a simple method for equitable and serious consideration of C-MAP applications that might have received short shrift in the voluntary market.
5. Administered by NYPIUA (assisted by PIANY and IIAANY), C-MAP will to the extent feasible recognize different marketing methods and respect different distribution systems on the part of different insurers. Thus participating C-MAP insurers should include direct writers as well as agency companies.

For purposes of further informing every insurer's decision regarding whether or not to join C-MAP, Attachment G is the revised C-MAP Plan of Operations, subject to refinement based upon input from the C-MAP Steering Committee and other sources.

- D. Homeowners Rate Filings—Under Article 23 of the Insurance Law, Homeowners insurance rate filings are subject to a file-and-use system. We ask that Homeowners rate filings be submitted for Department review at least two weeks before the intended effective date of any upward rate change.

Filings that are not submitted in advance as requested are more likely to be disapproved or objected to by the Department, especially if the insurer's filing is discovered to have significant changes in methodology or assumptions pertaining to catastrophic loading or similar issues. Any significant change in such regard should be identified, explained and supported by the insurer.

As a result of the range of facilitating measures refined in this Supplement, we expect that most Homeowners insurers will be able not only to retain business already in force, but to write new business, even on homes within 1000 feet of shore, on a prudent and profitable basis in New York—without going overboard or becoming overconcentrated.

These measures should help consumers obtain vital coverage and, at the same time, help insurers manage coastal exposures. Indeed, with the ability to utilize these approaches, any insurer that fails in material respects to engage in conscientious coastal underwriting will be

subject to investigation for possible unfair trade practices and appropriate sanctions under the Insurance Law.

Cooperation is critical. This Supplement provides all the additional time and information the Insurance Department can give for insurers to make intelligent decisions to cooperate or not in the Department's efforts to balance legitimate needs and valid concerns of consumers as well as insurers about Homeowners insurance in coastal areas.

Under separate cover, many insurers will receive a special form (referring to this Supplement) to complete and submit, no later than November 11, 1993, pursuant to §308 of the Insurance Law. Failure to respond fully and in a timely manner to this §308 required report will subject both the insurer and its chief underwriting officer to penalties under the Insurance Law.

Because time is of the essence, appropriate policy form and rules filings should be submitted as soon as possible. Once approvals become effective for windstorm deductibles or Wrap-Around endorsements, insurers should communicate information about their availability and appropriate use to pertinent underwriting and marketing personnel and to the public. Pursuant to §308, copies of all such communiqués must be submitted to the Insurance Department, to the attention of Robert Miller, Associate Insurance Examiner, Property & Casualty Insurance Bureau, at the above address.

All our efforts, dedicated to constructive voluntary measures and mechanisms such as C-MAP, C-MART, Hotlines, Wrap-Around and windstorm deductibles, will work to provide full and meaningful homeowners coverage at reasonable prices to all consumers, without subjecting any insurer to improvident financial risk. Failure to diligently pursue this course will likely result in an unnecessary and undesirable expansion of the involuntary market that would not be in the long-term interests of either insurers or the public.

Salvatore R. Curiale
Superintendent of Insurance

ATTACHMENT A

NEW YORK STATE INSURANCE DEPARTMENT GUIDELINES FOR WINDSTORM DEDUCTIBLES

Windstorm deductibles represent a partnership between insurer and insured, protecting the policyholder from catastrophic loss while creating incentives for the policyholder to apply risk management measures to mitigate the windstorm peril. Subject to review and prior approval of specific applications, the Insurance Department will expeditiously approve for use, in specified areas only, windstorm deductibles meeting the following criteria:

1. The risk must be located in one of the following counties: Kings, Queens, Nassau and Suffolk (Long Island), Richmond County (Staten Island), Westchester, and the Bronx.
2. The insurer must commit to underwriting Homeowners insurance policies (and, where appropriate, dwelling fire) for new and renewal business on a voluntary market basis.
3. An approved windstorm deductible can be applied, on a per incident basis, to Homeowners insurance policies newly issued or upon renewal after the three-year period of policyholder protection required by §3425 of the New York Insurance Law, as follows:
 - a. A non-catastrophic windstorm deductible (see Point 4) applied whenever winds do not attain Category 2 (sustained winds of 96 miles per hour or more) status, as determined by the National Weather Service (NWS), at landfall anywhere in New York State.
 - b. A catastrophic windstorm deductible (see Point 5) activated only in the event that Category 2 status, or higher, as determined by NWS, is experienced at landfall anywhere in New York State.
4. For non-catastrophic situations, involving any distance from shore in the specified areas, insurers may require a windstorm deductible of no more than \$500 on a mandatory basis, with an accompanying premium reduction of up to 2%.
5. The catastrophic windstorm deductible should be graduated on a percentage basis, so that it is highest nearest the shore, fades with distance from shore, and disappears beyond a mile from shore. The maximum catastrophic windstorm deductible that an insurer can require on a mandatory basis is:
 - a. For Long Island's South Shore and areas along the shore of Brooklyn, Queens, Staten Island, and Long Island's Forks:

Distance from Shore	Maximum % Deductible	Premium Reduction
Up to 2500 ft	2%	4%
Over 2500 ft to 1 mile	1%	2%
Beyond 1 mile	0%	0%

- b. For Long Island’s North Shore, the Bronx and Westchester along the Long Island Sound:

Distance from Shore	Maximum % Deductible	Premium Reduction
Up to 1000 feet	2%	4%
Beyond 1000 feet	0%	0%

- c. Beyond one mile from South Shore, and beyond 1000 feet from North Shore, a maximum dollar deductible, not to exceed \$500, with an accompanying premium reduction of up to 1%, may be required on a mandatory basis.
- d. The term “shore” refers only to salt-water ocean, sound or bay, with distance measured from normal high-tide mark. A data base technology to determine distance from shore is available via the Geographic Underwriting System (GUS), developed by the Insurance Services Office (ISO).
- e. Windstorm deductibles should not be imposed indiscriminately or across-the-board. An insurer need not impose any windstorm deductible at all, or may require a windstorm deductible lower than these maxima.
- f. Insurers may also offer homeowners policyholders, whether living within or beyond 1 mile from shore, an optional catastrophic windstorm deductible of no more than 5% (regardless of dollar amount), with an accompanying premium reduction of up to 10% where the choice is entirely the policyholder’s.
- g. In lieu of percentage windstorm deductibles, an insurer may choose to offer homeowners policyholders, whether living within or beyond 1 mile from shore, optional dollar windstorm deductibles of different levels, not to exceed \$5,000, with an accompanying premium reduction of up to 7%. Dollar deductibles over \$2,000 should not be offered, except on a catastrophic basis and unless the dwelling’s insured value is over \$150,000.
- h. If selected by the policyholder, an optional windstorm deductible can attach upon annual renewal (rather than only after the 3-year guaranteed policyholder protection period).
- i. For homes whose replacement cost value is at least \$500,000, insurers may offer, on an optional basis, higher windstorm deductibles not to exceed 10% of that replacement cost value, with an accompanying premium reduction of no more than 15%.
6. The non-catastrophic and catastrophic windstorm deductible premium reductions are added, with the summed reduction applied in the same manner as the policy’s generic deductible is applied in calculating the homeowners insurance policy premium.
7. No windstorm deductible of any kind or level will be permitted at this time elsewhere in New York State, even on an optional basis, outside of the areas specified in point 1 above.

8. Buy-back of a windstorm deductible will not be required, except where the insured, at his or her expense, can demonstrate that the insured home is built or reinforced with special risk management measures, such as wind-resistant architectural or construction techniques. In that event, the insured should have the opportunity to buy back all or at least part of the windstorm deductible.
9. The basis for application of the percentage windstorm deductible is the dwelling's insured value (replacement cost or actual cash value, depending on type of policy) at the beginning of the policy period covering the loss.
10. All losses (coverages A+B+C) caused by the windstorm peril should be counted in determining whether the windstorm deductible has been reached.
11. Loss adjustment costs should be borne by the insurer, even if the loss does not exceed the windstorm deductible.
12. The windstorm deductible does not apply to loss-of-use coverage (D).
13. The insurer remains responsible for all expenses of underwriting normally performed by insurers. Thus inspection and engineering costs that the insurer normally incurs to underwrite a homeowners risk (e.g., type of construction, occupancy, protection and exposure) should continue to be borne by the insurer.
14. Upon filing for approval of a windstorm deductible, the insurer should submit supporting documentation regarding the level and location, by ZIP Code and with maps, of its past and present books of business within the affected areas.
15. In the event of loss due to windstorm, the windstorm deductible is not to be combined with any other deductible to which the homeowners insurance policy is subject. In the rare instance where the general deductible exceeds the windstorm deductible, the general deductible would be applied before the insurer would cover the loss.
16. Insurers should submit for approval disclosure forms, clearly and conspicuously describing and explaining what is and is not covered by the particular homeowners policy in terms of windstorm and flood perils, including the steps the policyholder can take to secure protection for these perils to the extent not covered by the policy.
17. No hail deductible will be approved at this time.
18. An insurer may, with sufficient support, submit for Insurance Department consideration a windstorm deductible filing that differs from the articulated criteria.

ATTACHMENT B

WINDSTORM WRAP-AROUND (NYPIUA ACV) ENDORSEMENT

In consideration of a premium reduction and in view of the coverage which is being provided by the New York Property Insurance Underwriting Association (NYPIUA), as indicated in the Schedule below, we do not provide that part of the Homeowners Insurance for which a limit of liability is stated in the Schedule. For that insurance, NYPIUA is providing a separate policy, with its own premium, terms and limits of liability.

With respect to loss to property described in Coverage A or B, and the endorsements to Coverage B shown in the Schedule, the following Section I Conditions are amended:

1. Condition 2.a. Your Duties After Loss provisions are deleted and replaced by the following:

a. give prompt notice to:

1. NYPIUA; and
2. us or our agent.

2. Condition 6. Appraisal provisions are amended by adding the following language:

If you, NYPIUA or we fail to agree on the actual cash value or the cost to repair or replace the lost or damaged property, you, NYPIUA or we may demand an appraisal of the loss to determine the actual cash value and repair or replacement cost of the lost or damaged property, subject to the other provisions described in this Condition 6.

3. Condition 7. Other Insurance of this Homeowners Policy provisions are deleted and replaced by the following:

- a. You agree not to obtain insurance, other than that provided by NYPIUA or the Federal Flood Insurance Program, on the property described in Coverage A and B or the endorsements shown in the Schedule. However, insurance may be obtained for perils insured against not shown in the Schedule.
- b. If a loss is covered under the other insurance indicated in the Schedule below, this Homeowners Policy will be liable for the excess, if any, of any loss over the lesser of the applicable limit of liability shown in the Schedule or the actual cash value of the damaged property.
- c. We will not be liable for loss for more than the difference between the limits of liability in this Homeowners Policy and the limits of liability indicated in the attached Schedule.
- d. In no event will the total limit of liability in any one loss under both policies exceed the corresponding limit of liability specified in this Homeowners policy.

With respect to loss to property described in Coverage A or B, and the endorsements to coverage B shown in the Schedule, the following apply:

1. The provisions of this Homeowners Policy determine coverage under this Policy, regardless of the provisions of the NYPIUA policy.
2. If you fail to maintain the Insurance provided by NYPIUA as shown in the Schedule, this Homeowners Policy is still valid. However, we will pay only the amount we would have paid if you had maintained the Insurance unchanged as shown in the Schedule.
3. If the Insurance shown in the Schedule is increased or broadened after the effective date of this Endorsement, we will pay only the amount we would have paid if the increase or broadening had been shown in the Schedule.
4. All applicable deductibles in this Policy will be applied to the loss payable under this Policy. Please refer to the NYPIUA policy in order to determine any deductibles applicable under that policy.

SCHEDULE OF COVERAGES PROVIDED BY NYPIUA

Policyholder: *

NYPIUA Policy No.: *

Policy Period: *

Property Insured: *

1. Perils Insured Against:

Fire or Lightning
Internal Explosion
Windstorm or Hail
Explosion
Riot or Civil Commotion
Aircraft
Vehicles
Smoke
Volcanic Eruption

2. The NYPIUA Limits of Liability for:

A.	Coverage A—Dwelling	*\$ _____
B.	Coverage B—Other Structures	
	(1) Buildings Blanket Limit	*\$ _____
	(2) Buildings specifically insured under Endorsement HO-48	*\$ _____
	(3) Buildings rented to others, specifically insured under Endorsement HO-40	*\$ _____

* Entries may be left blank if shown elsewhere in this Policy.

All other provisions of this Homeowners Policy apply.

ATTACHMENT C

WINDSTORM WRAP-AROUND (NYPIUA RC) ENDORSEMENT

In consideration of a premium reduction and in view of the coverage which is being provided by the New York Property Insurance Underwriting Association (NYPIUA), as indicated in the Schedule below, we do not provide that part of the Homeowners Insurance for which a limit of liability is stated in the Schedule. For that insurance, NYPIUA is providing a separate policy, with its own premium, terms and limits of liability.

With respect to loss to property described in Coverage A or B, and the endorsements to Coverage B shown in the Schedule, the following Section I Conditions are amended:

1. Condition 2.a. Your Duties After Loss provisions are deleted and replaced by the following:

a. give prompt notice to:

1. NYPIUA; and
2. us or our agent.

2. Condition 6. Appraisal provisions are amended by adding the following language:

If you, NYPIUA or we fail to agree on the actual cash value or the cost to repair or replace the lost or damaged property, you, NYPIUA or we may demand an appraisal of the loss to determine the actual cash value and repair or replacement cost of the lost or damaged property, subject to the other provisions described in this Condition 6.

3. Condition 7. Other Insurance of this Homeowners Policy provisions are deleted and replaced by the following:

- a. You agree not to obtain insurance, other than that provided by NYPIUA or the Federal Flood Insurance Program, on the property described in Coverage A and B or the endorsements shown in the Schedule. However, insurance may be obtained for perils insured against not shown in the Schedule.
- b. If a loss is covered under the other insurance indicated in the Schedule below, this Homeowners Policy will be liable for the excess, if any, of any loss over the applicable limit of liability shown in the Schedule.
- c. In no event will the total limit of liability in any one loss under both policies exceed the corresponding limit of liability specified in this Homeowners policy.

With respect to loss to property described in Coverage A or B, and the endorsements to Coverage B shown in the Schedule, the following apply:

1. The provisions of this Homeowners Policy determine coverage under this Policy, regardless of the provisions of the NYPIUA policy.

2. If you fail to maintain the Insurance provided by NYPIUA as shown in the Schedule, this Homeowners Policy is still valid. However, we will pay only the amount we would have paid if you had maintained the Insurance unchanged as shown in the Schedule.
3. If the Insurance shown in the Schedule is increased or broadened after the effective date of this Endorsement, we will pay only the amount we would have paid if the increase or broadening had been shown in the Schedule.
4. All applicable deductibles in this Policy will be applied to the loss payable under this Policy. Please refer to the NYPIUA policy in order to determine any deductibles applicable under that policy.

SCHEDULE OF COVERAGES PROVIDED BY NYPIUA

Policyholder: *
 Policy Period: *

NYPIUA Policy No.: *
 Property Insured: *

1. Perils Insured Against:

- Fire or Lightning
- Internal Explosion
- Windstorm or Hail
- Explosion
- Riot or Civil Commotion
- Aircraft
- Vehicles
- Smoke
- Volcanic Eruption

2. The NYPIUA Limits of Liability for:

- | | | |
|-----|--|------------|
| A. | Coverage A—Dwelling | * \$ _____ |
| B. | Coverage B—Other Structures | |
| (1) | Buildings Blanket Limit | * \$ _____ |
| (2) | Buildings specifically insured under Endorsement HO-48 | * \$ _____ |
| (3) | Buildings rented to others, specifically insured under Endorsement HO-40 | * \$ _____ |

* Entries may be left blank if shown elsewhere in this Policy.

All other provisions of this Homeowners Policy apply.

ATTACHMENT D

REPAIR OR REPLACEMENT COST ENDORSEMENT

Form DP 00 01 Only

For the premium charged for this policy, Condition 5. Loss Settlement is amended to read as follows:

5. Loss Settlement. Covered property losses are settled as follows:

- a. (1) Awnings, carpeting, household appliances, outdoor antennas and outdoor equipment, attached to buildings; and
- (2) Structures that are not buildings;

at actual cash value at the time of loss but not more than the amount required to repair or replace.

b. Buildings under Coverage A or B at replacement cost without deduction for depreciation, subject to the following:

- (1) If, at the time of loss, the amount of insurance in this policy on the damaged building is 80% or more of the full replacement cost of the building immediately before the loss, we will pay the cost to repair or replace, after application of deductible and without deduction for depreciation, but not more than the least of the following amounts:

- (a) the limit of liability under this policy that applies to the building;
- (b) the replacement cost of that part of the building damaged for like construction and use on the same premises; or
- (c) the necessary amount actually spent to repair or replace the damaged building.

- (2) If, at the time of loss, the amount of insurance in this policy on the damaged building is less than 80% of the full replacement cost of the building immediately before the loss, we will pay the greater of the following amounts, but not more than the limit of liability under this policy that applies to the building.

- (a) the actual cash value of that part of the building damaged; or
- (b) that proportion of the cost to repair or replace, after application of deductible and without deduction for depreciation, that part of the building damaged, which the total amount of insurance in this policy on the damaged building bears to 80% of the replacement cost of the building.

- (3) To determine the amount of insurance required to equal 80% of the full replacement cost of the building immediately before the loss, do not include the value of:
 - (a) excavations, foundations, piers or any supports which are below the undersurface of the lowest basement floor;
 - (b) those supports in (a) above which are below the surface of the ground inside the foundation walls, if there is no basement; and
 - (c) underground flues, pipes, wiring and drains.
- (4) We will pay no more than the actual cash value of the damage unless:
 - (a) actual repair or replacement is complete; or
 - (b) the cost to repair or replace the damage is both:
 - (i) less than 5% of the amount of insurance in this policy on the building; and
 - (ii) less than \$2,500.
- (5) You may disregard the replacement cost loss settlement provisions and make claim under this policy for loss or damage to buildings on an actual cash value basis. You may then make claim within 180 days after loss for any additional liability on a replacement cost basis.

All other provisions of this policy apply.

ATTACHMENT E

WINDSTORM WRAP-AROUND (NYPIUA HO-4 BA&A) ENDORSEMENT

For the premium charged, Additional Coverage 9. Building Additions & Alterations is deleted, when this Policy is issued in conjunction with a New York Property Insurance Underwriting Association (NYPIUA) DP-1 policy or an NYPIUA DP-1 policy with a Repair or Replacement Cost Endorsement.

All other provisions of this Homeowners Policy apply.

ATTACHMENT F

Attachment F is not included because of its state/company specific nature.

ATTACHMENT G

COASTAL MARKET ASSISTANCE PROGRAM

C-MAP Plan of Operations

A. C-MAP Defined.

1. The Coastal Market Assistance Program (C-MAP) represents a network, made up of participating insurers and insurance producers, acting on a voluntary basis, operating under the auspices of the Superintendent of Insurance and state action of the New York State Insurance Department, to assist homeowners living in New York's coastal areas in obtaining proper insurance protection for their homes.
2. C-MAP is designed to act as a clearinghouse and referral mechanism, preceded by a Coastal Market Access Reference Table (C-MART) procedure, with a stand-by plan for submission, when necessary and appropriate, of eligible C-MAP applications to participating C-MAP insurers.
3. All licensed insurers writing homeowners insurance in New York State are encouraged to join C-MART and C-MAP.

B. Structure.

1. C-MAP Steering Committee. C-MAP operations will be overseen by the C-MAP Steering Committee, chaired by the Superintendent of Insurance or the Superintendent's designee, and consisting of:
 - (a) two (2) members representing C-MAP participating insurers using the American agency system of market distribution;
 - (b) two (2) members representing C-MAP participating insurers using alternate or direct distribution methods;
 - (c) one (1) member representing the New York Property Insurance Underwriting Association (NYPIUA);
 - (d) one (1) member representing the Professional Insurance Agents of New York State, Inc. (PIANY); and
 - (e) one (1) member representing the Independent Insurance Agents Association of New York (IIAANY).

More than one individual may represent an insurer or producer member at C-MAP Steering Committee meetings, but each such member will be entitled to one (1) vote in any business proceeding.

2. C-MAP Administration. C-MAP Administrator shall be NYPIUA, assisted by PIANY and IIAANY. As C-MAP Administrator, NYPIUA shall be responsible for:

- (a) distribution of C-MAP application materials to consumers and producers;
- (b) coordination of C-MAP rotation procedures; and
- (c) periodic reports to the Superintendent of Insurance, with copies to the C-MAP Steering Committee, on C-MAP application status and dispositions.

PIANY and IIAANY shall aid in distributing C-MART information and, when necessary and appropriate, C-MAP application materials to consumers and insurance producers.

C. C-MART Procedures.

1. C-MART lists insurers that indicate, in response to Insurance Law §308 inquiries by the Insurance Department, that they are actively writing homeowners business for New York's shore communities in the voluntary insurance market, subject to their respective underwriting guidelines, specifying:
 - (a) telephone numbers and addresses of their agent(s) or sales office(s) that consumers or insurance producers seeking coverage for homes in New York's shore communities can contact to access the insurer for coverage;
 - (b) names of agents or individuals who are authorized by the insurer to make underwriting decisions and prepared to communicate with consumers or producers contacting an insurer's agents or sales office(s) as a result of C-MART;
 - (c) whether the insurer will entertain brokerage business;
 - (d) any underwriting criteria that would exclude broad segments of the general public;
 - (e) any underwriting restrictions about distance from shore; and
 - (f) such other information to help potential applicants understand the extent to which they might meet the insurer's underwriting guidelines.
2. The Insurance Department shall compile and update listings of C-MART insurers and their consumer access information, to be designated the "Coastal Market Access Reference Table."
3. C-MART information shall be available to consumers and insurance producers, and shall be accompanied by a notice, in a form acceptable to the Insurance Department, describing:
 - (a) policyholder protections under the Insurance Law;

- (b) the steps taken by the Insurance Department to facilitate voluntary insurance market coverage for homeowners in shore communities, including windstorm deductibles and Wrap-Around protection;
- (c) how to use C-MART to seek coverage; and
- (d) how to make a C-MAP application, in the event coverage is not obtained by using C-MART.

D. C-MAP Eligibility.

1. To be eligible for C-MAP placement, a homeowner must:
 - (a) have received notice that an existing homeowners insurance policy is being or has been nonrenewed or cancelled for a reason other than premium non-payment;
 - (b) in the case of property newly acquired or to be acquired, be currently without homeowners insurance for that property; or
 - (c) be currently covered (including for the windstorm peril) only through NYPIUA.
2. Eligible C-MAP risks must be one-to-four family dwellings located in the counties of the Bronx, Kings (Brooklyn), Nassau, Queens, Richmond (Staten Island), Suffolk, or Westchester, where the dwelling is situated:
 - (a) for Long Island's South Shore and areas along the shore of Brooklyn, Queens, Staten Island and Long Island's Forks, within one mile of the shore; or
 - (b) for Long Island's North Shore, the Bronx and Westchester, within 2500 feet of the shore along the Long Island Sound.

If a C-MAP insurer only writes three and four family owner-occupied dwellings under the Dwelling Fire program, that insurer is authorized to write the risk through C-MAP using the Dwelling Fire program.

3. The term "shore" refers only to salt-water ocean, sound or bay, with distance measured from the normal high-tide mark.
4. To be eligible for C-MAP placement, applicants shall have received declinations from at least five (5) C-MART insurers whose underwriting guidelines, as set forth in C-MART listings, indicate they will consider risks at the distance from shore where the risk is situated and do not exclude broad categories of the general public that include the applicant.

E. C-MAP Submissions.

1. Insurance producers or consumers without a broker of record may contact the Hotlines (212-602-0541 & 800-522-4370), PIANY (T:518-434-3111 & F:518-434-2342), IIAANY (T:800-962-7950 & F:315-432-9111), or NYPIUA (T:212-208-9700 & F:212-344-9879) to obtain C-MAP application materials.
2. The C-MAP application (ACORD #80) shall be accompanied by:
 - (a) names of at least five (5) C-MART agents or sales office access individuals who declined the risk with the date declined;
 - (b) in the case of nonrenewal or cancellation of existing coverage, a copy of the termination notice from the insurer that gave such notice;
 - (c) in the case of newly acquired or to be acquired property, the name of the insurer (if any) currently or formerly writing homeowners coverage on the property; and
 - (d) a C-MAP broker of record form signed by the applicant and by the broker of record (if designated).
3. The completed and signed C-MAP application, with the designated items, shall be submitted to NYPIUA, at the following address:

New York Property Insurance Underwriting Association
100 William Street
New York, New York 10038-4599
4. Incomplete C-MAP submissions will be returned to the broker of record or to the applicant (if no broker is designated) for completion.
5. Applications for risks documented by an insurer to be ineligible to submit a C-MAP application by reason of location (i.e., situated too far from shore) shall be returned with an explanation. Disputes over distance of the property from shore shall be referred to the C-MAP Steering Committee.

F. C-MAP Rotation.

1. NYPIUA shall coordinate an equitable rotation plan of risks among participating C-MAP insurers, in the following manner:
 - (a) C-MAP applications will be transmitted by fax for consideration by the C-MAP insurer;
 - (b) Each participating C-MAP insurer will designate an individual to receive such applications;

- (c) That designated individual will cause the application to be seriously considered by the C-MAP insurer for underwriting purposes and, as promptly as possible, indicate the insurer's decision to accept the risk (with or without a windstorm deductible), write a Wrap-Around policy, or reject it (if so, explaining why).
- (d) Insurers will be expected to accept on average at least one out of every three applications assigned under the rotation plan, subject to its underwriting guidelines, as modified by its application of approved windstorm deductibles and/or windstorm Wrap-Around endorsements.

For example, insurer ABC does not normally write within 1000 feet from shore. Upon approval of its windstorm deductible filing, if a risk otherwise meets the underwriting guidelines except for "distance from shore", insurer ABC should be able and willing to write this risk.

2. In designing, implementing and adjusting an equitable C-MAP rotation plan, consideration should be given to:
 - (a) voluntary market coverage reported by a participating C-MAP insurer that elects to continue coverage on a coastal area home when sold by its existing policyholder to a new buyer;
 - (b) the nature of marketing and distribution systems of different participating C-MAP insurers, in order to be as consistent as possible with the nature of the particular C-MAP applicant and producer, if any; and
 - (c) such other factors as the Superintendent of Insurance determines workable, in order to enhance C-MAP equity and efficacy.
3. Loss history showing a demonstrable pattern of significant losses may be a valid basis for declining C-MAP placement of an eligible C-MAP applicant.
4. NYPIUA shall keep an accurate record of assignments and placement activity, and shall prepare and present a bi-weekly status report on C-MAP activity to the Superintendent of Insurance, who may require reports on a more frequent basis. The C-MAP Steering Committee shall receive copies of such reports.
5. Risks that have been rejected by three (3) C-MAP insurers under the rotation plan shall be referred to the C-MAP Steering Committee, which shall analyze any such application in order to recommend appropriate treatment.
6. Where appropriate, the C-MAP Steering Committee may recommend specific underwriting or risk management steps, such as wind-resistant architectural or construction techniques which, if complete by the homeowner, could enhance the dwelling's insurability.
7. If the C-MAP Steering Committee finds that it cannot place a risk in the voluntary market, it shall so inform the broker of record or the applicant (where no broker of record is designated), with a written explanation.

8. In the event that voluntary market placement cannot be achieved for a particular risk, coverage should be placed with NYPIUA, subject to its plan of operations.

G. C-MAP Policies.

1. A participating C-MAP insurer, when accepting a C-MAP applicant for placement, shall offer one of its filed and approved homeowners insurance contracts, except when appropriate to write a Dwelling Fire policy under this C-MAP Plan of Operations.
2. A participating C-MAP insurer may apply one of the following windstorm loss control procedures to a specific property:
 - (a) coverage may be subject to non-catastrophic or catastrophic windstorm deductibles, pursuant to a deductible plan filed with and approved by the Insurance Department; or
 - (b) coverage may be modified using a special Windstorm Wrap-Around endorsement, filed with and approved by the Insurance Department.

H. Commissions & Fees.

1. Except as provided in (2) herein, every C-MAP insurer accepting an application from a producer not recognized by the insurer shall pay the producer as broker a commission in conformity with the insurer's filed rates for Homeowners (or Dwelling Fire) insurance.
2. If a participating C-MAP insurer is precluded by contract or internal practice from paying a commission pursuant to (1) herein, that insurer shall as an alternative pay a reasonable C-MAP servicing fee to NYPIUA, as C-MAP Administrator, within 15 days of accepting the application, in an amount equivalent to the insurer's customary commission that would have been so paid.
3. In the event of (2) herein, NYPIUA, as C-MAP Administrator, shall pay over the C-MAP servicing fee to the broker of record.
4. As C-MAP Administrator, NYPIUA may charge an insurer electing (2) herein for NYPIUA's reasonable expenses in passing through the C-MAP servicing fee and issuing on the insurer's behalf tax information (i.e., Form 1099) to the broker of record pursuant to (3) herein.

I. Fiscal Arrangement.

1. NYPIUA shall absorb the expenses of administering C-MAP.
2. NYPIUA shall reimburse the reasonable expenses of PIANY and IIAANY in connection with C-MART and C-MAP activities, to the extent such expenses are documented and approved by the Superintendent of Insurance.

J. Term of C-MAP Operations.

1. C-MAP is established as a temporary market assistance program, which shall function only so long as deemed necessary by the Superintendent of Insurance.
2. The C-MAP Steering Committee shall at six-month intervals evaluate the need for continuing C-MAP and may recommend C-MAP dissolution to the Superintendent of Insurance, explaining the reasons justifying dissolution.
3. C-MAP dissolution shall be ordered only after written assent granted by the Superintendent of Insurance.

ATTACHMENT H

TESTIMONY BY SALVATORE R. CURIALE, SUPERINTENDENT OF INSURANCE
NEW YORK STATE INSURANCE DEPARTMENT

ON

HOMEOWNERS INSURANCE FOR COASTAL AREAS

AT

JOINT PUBLIC HEARING BEFORE NEW YORK STATE ASSEMBLY
STANDING COMMITTEE OF INSURANCE
HON. PETE GRANNIS, CHAIR

AND

NYS ASSEMBLY SUBCOMMITTEE ON LONG ISLAND BARRIER BEACHES
HON. HARVEY WEISENBERG, CHAIR

LONG BEACH, LONG ISLAND
LONG BEACH CITY HALL
SEPTEMBER 30, 1993

This Long Beach City Hall hearing room presents panoramic views of the Atlantic Ocean as well as Broad and Reynolds Channels together with Brosewere, Hewlett and Middle Bays behind. From this vantage, one can easily appreciate the natural beauty of Long Beach and other shore communities—and quickly understand their unsheltered vulnerability to the forces of nature. Long Beach, like Long Island itself, are both embraced by nature, as each is surrounded by water. Obviously, in terms of human nature, the residents of our shore communities have homes on or near the beach that they love and need to protect.

A. Nature v. Human Nature

The insurance industry must continue to provide vital protection for homeowners in New York's coastal areas—confronting, with intelligence and vision, uncharted depths of risk raised by more profound respect for Nature's power and fury, in the recent wake of Hurricanes Andrew, Hugo and Iniki. We think the insurance industry will respond in a positive fashion to coastal civilization. And, if it fails to do so, the industry should understand that it would not be uncivilized for this State to respond in a different, yet creative manner through coordinated executive and legislative actions.

What are the realities? No other industry could have paid over \$25 billion—living up to its promises to policyholders—and survived. No industry, not even the rigorously regulated insurance industry, can pay out multi-billions again and again, and expect to survive. The December 1992 Nor'easter (Beth) and the March 1993 Blizzard (Josh) prove heightened concerns over windstorm perils in this region are not merely hypothetical. Everyone out on Long Island's barrier beaches held their collective breath, before Hurricane Emily veered out to sea. We need to account for insurer solvency concerns in striving to achieve the best balance for the consumer's ultimate benefit.

Based upon the Insurance Department's aggressive efforts and active evaluation, and with the Legislature's concerned vigilance, we think that the insurance industry will perform and protect homeowners of sound homes in New York's shore communities. In general, homeowners insurance is and should remain readily available and affordable on Long Island and in other coastal areas of this State.

B. The Real Problem

Apart from what may be said by or about insurers, progress is vital and performance crucial. Special market surveys and extensive meetings conducted by the Insurance Department show that:

- Virtually all insurers are retaining and renewing their Long Island homeowners business, providing comprehensive coverage to well over one million insureds well beyond the 3-year policyholder protection guaranteed consumers by the New York Insurance Law (§3425(a)(7)); and
- A significant number of insurers are ready and willing to underwrite and continue to actively write new homeowners business in New York's shore communities, so that those seeking to buy or sell homes on Long Island can, unimpeded by insurance problems, proceed to do so.

All insurers are compelled—by catastrophic potential and common sense—to consider what might happen were a great hurricane ever to strike Long Island. Due to capacity constraints and reinsurance restrictions, a number of insurers have been forced to limit particularly new coastal area homeowners writings. As a result, some consumers as well as insurance agents have had to scramble to find coverage from other carriers.

Hundreds of homeowners insurers do business in this State, generating a highly competitive and resilient homeowners marketplace. Business that some insurers cannot handle should prove attractive to other insurers, since there is a voluntary market for coastal area homeowners insurance, which appropriate actions can strengthen.

C. Realistic Solutions

Our objectives are to engage, enliven and enlarge the voluntary coastal area homeowners insurance market for the protection and benefit of consumers. The options presented in Circular Letter No. 11 (Attachment A), issued by the Insurance Department on September 14, 1993, should stimulate capacity and result in more insurance companies becoming able to write more coastal homeowners insurance protection in a stable and reliable manner.

Due to market flux, however, homeowners and insurance producers searching for coverage of homes in shore communities may not be aware of existing or emerging market opportunities and, even if knowledgeable, might not be in a position to access these carriers. For those coastal area homeowners who encounter difficulties in finding homeowners coverage, the Insurance Department has instituted special Hotlines—800-522-4370 & 212-602-0541—that consumers and insurance producers can call for swift and specific assistance. Consumers thus have a central place to complain and, more important, a source to get prompt help.

Our approach is multi-level, as the particular situation warrants. To address particular coastal homeowners cases requiring further assistance, the Insurance Department is establishing C-MART

and C-MAP—with the goal of bringing consumers, producers and insurers together—to serve as special clearinghouse and referral mechanisms:

- C-MART, signifying Coastal Market Assistance Reference Table, which will provide specific information to enable consumers and insurance producers to approach available voluntary markets; and
- C-MAP, standing for Coastal Market Assistance Program, which will exert specific placement efforts on behalf of the consumer, to the extent that Hotline and C-MART efforts prove unavailing.

Aided by our Hotlines, C-MART, C-MAP, and other facilitating measures carefully crafted by the Insurance Department: the insurance industry should become better able to be truly receptive to coastal area homeowners business; market opportunities for insurance producers should grow; and market access for consumers should be enhanced.

Circular Letter No. 11 contains a listing of homeowners insurers, actively writing coastal area homes, subject to their respective underwriting guidelines, based upon special reports required by the Insurance Department.

As we compile and integrate responses from supplemental reports and other sources of information, the lists will be updated, refined and expanded, noting specific ways or particular individuals authorized by these insurers through which consumers or insurance producers seeking coverage may make contact and communicate. In turn, these lists (see Attachment B) form the foundation for C-MART.

D. Building Strong Structures

These market assistance mechanisms rely on voluntary participation by responsible insurers and insurance producers. The success of these mechanisms depend on constructive cooperation, which the Insurance Department is already receiving from the Professional Insurance Agents of New York (PIANY) and the Independent Insurance Agents Association of New York (IIAANY), which will help the Insurance Department administer C-MART and C-MAP.

Development of these market-making and market-matching mechanisms is in active process, in order to make them as workable for insurers and as effective for consumers as possible. Attachment C is the present working draft of the C-MAP Plan of Operations, dealing with critical issues of structure, mechanics and administration.

Enlistment in C-MAP is also in progress. For example, Allstate may be overconcentrated in Long Island and unable to join C-MAP at this time, while State Farm has stated that it will participate in C-MAP and serve on the C-MAP Steering Committee. While State Farm is to be commended for cooperation in our C-MAP efforts, Allstate should not be criticized for declining to participate at this stage, since it is the largest writer of Long Island homeowners business, covering about 27% of that market, meaning that Allstate has more than one out of every four homeowner policyholders on Long Island.

And, of course, the FAIR Plan, technically known as the New York Property Insurance Underwriting Association (NYPIUA), acts as the residual market and stands ready to provide

affordable and meaningful protection in appropriate cases, where the risks involved are higher than an insurer in the voluntary market can tolerate on its own.

For generations, the FAIR Plan has served to protect property owners, meet lender needs, and support the real estate market. Attachment D reflects the exact extent and precise location of new business the FAIR Plan has received this year to date.

Our C-MAP development efforts are aimed at reconciling different distribution systems, in order to respect the varying marketing approaches utilized by participating insurers, so as to maximize insurer cooperation and consumer coverage.

Equally important, the facilitating mechanisms created under Insurance Department auspices are designed to emphasize, not eliminate, sound underwriting on the part of the insurance industry. Just as it would be improper and untenable for homeowners insurers to abandon coastal areas to oblivion, so would it be imprudent and impossible for insurers, at least acting individually, to write any or all shoreline risks in an unseen or unthinking manner.

Instead, we strive to stress the underwriter's ability to evaluate and consider coastal area homes, seriously and sincerely, on a risk-by-risk basis. This thoughtful approach is remarkably different from, and superior to, thoughtless all-or-nothing propositions.

If, however, insurers fail to grasp this opportunity to participate in these voluntary mechanisms that recognize underwriting flexibility, they should not be surprised if that underwriting discretion is lost and they then find themselves forced by legislation to provide coverage on demand.

Insurers ought to weight the future possibility of catastrophic windstorm striking Long Island against the much more immediate prospective from the sure fury of public policymakers aimed at the insurance industry.

E. Shared Responsibilities

Balance is imperative, when overreaction is so easy. Insurers should not be allowed to overreact to the perceived windstorm peril, by catapulting catastrophe into cataclysm. Nor, if we can help it, should consumers or other concerned parties overreact or ignore relevant factors and forces, especially the forces of Nature beyond anyone's control.

Naturally, no one wishes to think about risks or wants to talk about costs. To do so is unpleasant and unpopular. Whenever risks or costs are mentioned, consumers understandably tend to assume that risks are nil and costs are none. In contrast, as they contemplate dread concepts of potential maximum loss (PML) and normal foreseeable loss (NFL) with extrapolation and supercomputers, insurers and reinsurers are prone to assert the risks are overwhelming and the costs staggering.

Neither hyperbole nor hysteria is helpful. While insurers must be concerned about worst-case analysis—having witnessed devastation elsewhere—they must still do their best to provide vital coverages. In the face of catastrophic windstorm potential, we all must realize there are heightened risks and, in turn, elevated costs.

Growing realization of the havoc a major hurricane could wreak should lead to fair and feasible methods of shared responsibility on the part of all parties concerned—federal and state governments,

local communities, businesses, homeowners, as well as the insurance industry—to manage and minimize that catastrophic risk. What means are appropriate and effective:

- In the first instance, and as a strong public policy preference, insurers are urged to continue to write complete and comprehensive homeowners insurance policies, both on a renewal and new business basis, on sound structures in shore communities;
- But, if the preferred approach is unacceptable, following actual underwriting analysis of a specific risk, the insurer should next consider still writing a comprehensive homeowners insurance policy, applying as appropriate an approved windstorm deductible, in covering that risk;
- If it is justified in light of the windstorm peril posed by a particular risk after the insurer’s underwriting analysis (in terms of shore proximity coupled with dwelling construction and condition), the windstorm peril along with fire coverage should be written in the FAIR Plan, with the insurer providing Wrap-Around coverage for liability and theft on a voluntary market basis, for such risks;
- In the event underwriting analysis reveals that the particular risk is truly residual in nature, making a Wrap-Around inappropriate, that risk should properly be placed in the FAIR Plan, subject to NYPIUA approved rules.

Annexed to Circular Letter No. 11 are detailed criteria for windstorm deductibles, as developed by the Insurance Department. The characteristics and consequences of a windstorm deductible turn upon whether it is mandatory or optional and whether it is non-catastrophic or catastrophic in nature, triggered by a Category 2 storm declared by the National Weather Service (see Attachment E, explaining NWS storm categories). Recognizing that windstorm vulnerability is greater the closer to shore a home is situated, a key equitable concept is that any mandatory windstorm deductible should be highest nearest shore, diminishing with distance from shore.

In the event of any windstorm deductible, the policyholder will receive a premium reduction, not simply on the windstorm portion of the policy, but on the entire homeowners policy premium. With windstorm deductibles, homeowners should have more incentives to secure and strengthen their homes against future windstorms.

We think the “Wrap-Around” approach, described in Circular Letter No. 11, is a practical solution for a risk with acute windstorm peril, in a partnership between the voluntary insurer and the FAIR Plan. This partnership approach is better than the theoretical extremes of putting purely the windstorm peril or the entire homeowners policy into the residual market. While the FAIR Plan provides fire and extended property coverages (including windstorm), the insurer provides voluntary market coverage for liability and theft, under a modified homeowner policy endorsement, approved by the Insurance Department for immediate use, to “wrap-around” the FAIR Plan policy. We are actively working to improve this “Wrap-Around” approach, again to make it as workable as possible for insurers and as effective as possible for consumers.

F. Opportunity & Obligation

While considering catastrophic potential, insurers need to appreciate not only New York’s considerably lower hurricane risk relative to other areas, but, as recognized by the Federal

Emergency Management Agency, the quality of construction and code enforcement that characterizes New York. Everyone should consider that Long Islanders generally have the advantage of ample warning about approaching storms, so that precautionary steps can be taken to minimize bodily injury as well as property damage.

We should take advantage of our advantages. Before the great storm heads our way, homeowners and shore communities have the opportunity and obligation to apply realistic risk management and loss mitigation programs, through:

- proper land use planning, flood plain management, and utilization of the federal flood insurance program;
- intelligent architecture and smart construction techniques;
- improved building code content and boosted code enforcement efforts; and
- disaster preparedness and strategic planning against catastrophe.

Therefore, it is wise to establish official evacuation plans for shore communities and to take actions to halt barrier beach erosion—as Long Beach citizens are attempting to do with Assemblyman Weisenberg’s leadership and foresight.

G. Time & Opportunity

Because of our strong consumer safeguards already in place in New York, the problems encountered in New York should be mostly confined to new homeowners insurance applications, as insurance agents attempt to identify markets and real estate agents try to make sales. Insurance can facilitate the real estate market, which, however, may be inhibited or, indeed, depressed by non-insurance factors.

For the same reasons, we have the time to determine whether the facilitating measures developed by the Insurance Department will work to address these problems. At bottom, we need to test whether or not the insurance industry does perform to protect coastal area homeowners, as we think it will. As a practical matter, some time is needed for insurers to absorb, assimilate and apply the different facilitating measures, in order to produce beneficial impact in the marketplace.

While the principal purposes of our Hotlines is to help consumers, the number and nature of Hotline calls and complaints we receive will aid us in monitoring and measuring the dimensions of actual problems and in shaping practical solutions to those problems. Since the Hotlines were publicized earlier this month, the Insurance Department has received 144 calls, averaging about 16 per day, with the number of calls declining since inception. Of those calls, 45 involved new business situations. A number of calls concerned flood insurance.

Hotline experience to this point shows that, by answering questions or providing pertinent information, our dedicated examiners handling Hotline calls can immediately respond to a high proportion of the Hotline inquiries. Our examiners pointedly ask such callers to call back if their problems persist; so far, less than a dozen call-backs have come in from a consumer or insurance producer who called earlier. Equally important, we find that most of the small percentage of Hotline calls that entail follow-up can be readily addressed.

The Insurance Department is scrutinizing every rate filing made by insurers for homeowners insurance, submitted on a file-and-use basis pursuant to Article 23 of the Insurance Law. Our actuaries and examiners are analyzing each homeowners insurance rate filing, and will reject catastrophic loading methodologies we consider unjustified or overblown.

As show by Attachment F displaying relevant rate filings, recent homeowners insurance rate adjustments (both up and down) have been quite moderate, including for Long Island. When there has been a rate increase, it has been predicated upon relatively poor loss experience, set forth on Attachment G, essentially unrelated to, and independent of, past or projected catastrophic exposure.

H. Opportunities & Options for Action

We are working with state emergency management agencies and insurance regulators across the country (including Hawaii, California, Texas, Florida and South Carolina) through the NAIC (National Association of Insurance Commissioners), in efforts to achieve a national catastrophic stop-loss reinsurance mechanism that stresses disaster mitigation and which requires Congressional action—recognizing that no insurer, no industry and no jurisdiction, acting alone, can survive repeated catastrophes and their consequences.

Bills proposing the Natural Disaster Protection Act have now been introduced in both the U.S. Senate (S.1350) and House of Representatives (H.R.2873). New York should seriously consider urging support for these bills or similar federal legislation.

In order to maintain market viability, states such as North Carolina and South Carolina with elevated hurricane exposure have had to establish coastal windstorm pools. States like Florida and Hawaii with still greater hurricane vulnerability have been forced, in the aftermath of Hurricanes Andrew and Iniki, toward imposing moratoria on insurer withdrawals and creating special state funds, coupled with such unappealing and controversial features as state liability, state bonding, and statewide premium surcharges.

While evidently necessary in those jurisdictions, these types of extreme measures are both unnecessary and undesirable in New York, which, fortunately, need not and should not replicate here.

Since it did not have provision comparable to §3425 consumer safeguards, the Florida Insurance Commissioner had no choice but to try to invoke an emergency moratorium, because insurers there had the right simply to terminate homeowners policies. Because of our consumer safeguards, that cannot be done in New York.

I. Recommendations & Conclusion

Through Insurance Department initiatives, working with concerned public officials and responsible insurance industry representatives, New York State is taking the actions we believe are appropriate and will be effective to protect the public, especially homeowners living in New York's shore communities. If these initiatives—designed to strengthen consumer safeguards and to emphasize voluntary market response—prove successful, it may well be that the Governor and Legislature need not take further action.

Certainly, public policymakers ought to reserve all options if it turns out that, despite our initiatives, the insurance industry fails to perform and protect coastal area homeowners.

What are the kinds of measures that may merit consideration?

- Some might suggest changing, to prior approval by the Department, the current file-and-use rate review system applicable to homeowners insurance. At this time, we do not believe that this change would improve availability or affordability of homeowners insurance.
- The Superintendent of Insurance could be given emergency authority to suspend the ability of insurers to terminate a policy during declared disasters or to control the ability to terminate coverages, if it is determined that a significant number of insurance consumers cannot obtain desired coverage.
- A better alternative may be to consider, at least under emergency circumstances caused by a declared disaster, combining a percentage limitation rule (similar to the §3425 2% percent nonrenewal rule applicable to private passenger auto insurance) with the three-year guaranteed policyholder protection period already applicable to homeowners insurance.
- Perhaps the Superintendent of Insurance should be given the statutory authority to activate NYPIUA to write the entire homeowners policy, since currently NYPIUA can only write fire and extended (including windstorm) coverages.

If necessary, the Insurance Department will recommend measures to the Governor and the Legislature to insist, by whatever effective means, that the insurance industry act responsibly.

Under all the circumstances, we do not think draconian measures would be desirable or, equally important, will prove necessary in New York.

We pledge to work with you toward strengthening New York's already sound homeowners insurance market (see Attachment H) to meet and withstand the windstorm challenges that face Long Island and other coastal areas.

New York Miscellaneous Regulatory Material
DEPARTMENT OF INSURANCE CIRCULAR LETTERS

Cross Reference citation indexing has been translated to conform to the 1984 recodification of the New York Insurance Laws. Textual citations may refer to prior law.

Circular Letter 1993-11 Supplement 2 Coastal homeowners insurance—new approaches and modifications of existing guidelines

June 15, 1995

For the past two years the Department has been closely monitoring the homeowners insurance situation on Long Island as well as other coastal areas. We have taken various steps to facilitate voluntary market homeowners insurance coverage while still responding to insurers' concerns regarding concentration in these areas prone to catastrophic hurricane loss.

The Department's Circular Letter No. 11, issued on September 14, 1993 and supplemented on October 27, 1993, delineated various guidelines and recommendations meant to facilitate insurers' ability to write coastal business.

While the guidelines and recommendations contained in Circular Letter No. 11 continue to be workable, they may not be suitable to meet the unique needs of some insurers. The Department recognizes that there may be other innovative approaches that would enable an insurer to write business and/or retain existing business in coastal areas. For example, responses to a recent request to the industry regarding the use of catastrophe modeling in rate-making are presently being analyzed.

The Department is also contemplating modifications to the guidelines in Circular Letter 11, such as increasing the amount of the windstorm deductible and more closely coupling the deductible with hazard mitigation on the part of the insured and, under the wrap-around concept, having NYPIUA instead of the voluntary insurer provide contents coverage.

The Department wants to continue this dialogue and encourages insurers to discuss with and submit to the Department any new approaches, including modifications to the existing windstorm deductibles or wrap-around protection, that would meet the needs of the homeowner while still protecting insurer solvency. Any new approaches and modifications will be reviewed on an individual basis depending on the unique needs of the insurer and its policyholders.

Any new approaches or modifications should be submitted to:

Mr. Gerald Scattaglia, Supervising Examiner
New York State Insurance Department
Property & Casualty Bureau
160 West Broadway, 13th Floor
New York, New York 10013

Edward J. Muhl
Superintendent of Insurance

Appendix 16

Puerto Rico Miscellaneous Regulatory Material SELECTED CIRCULAR LETTERS OF THE OFFICE OF THE COMMISSIONER OF INSURANCE

Circular Letter AC-II-1-1366-95

CATASTROPHIC INSURANCE LOSS RESERVE

January 25, 1995

Article 25.030 of the Insurance Code of Puerto Rico contains provisions pursuant to which the domestic insurers shall establish the catastrophic insurance loss reserve. Said article requires, among other things, that each domestic insurer annually calculates the catastrophic insurance loss reserve applying to its direct net premiums for that year that proportion that the Commissioner determines from time to time. The reserve thus computed shall be added to those established in previous years.

Pursuant to clause (2) of Article 25.030 of the Insurance Code of Puerto Rico, we have established that for the second year of effectiveness of the reserve for catastrophic insurance, said proportion shall be ten (10) percent.

The amount of the reserve corresponding to the year 1994, shall be computed on the basis of a ten percent of the direct net premiums underwritten for catastrophic insurance by the insurer for said year. The information to determine the amount of money to which this proportion shall be applied, shall proceed from the information to be included in page 14 of the annual report of the insurer corresponding to 1994. To determine said direct net premiums, the following proportions shall be used according to the corresponding insurance coverage:

Coverage	% of the premium underwritten in 1993
1. Fire	100%
2. Earthquake	100%
3. Commercial Multiple Risks (Non-Liability)	100%
4. Home Owners Multiple Risks	85%
5. Other Allied Lines	75%
6. Physical Damages to Automobiles	2%
7. Land-Transportation	85%

Shall be the total of the amounts obtained when applying the preceding percents to the respective amounts of premiums underwritten, to which a ten (10) percent shall be applied, which shall constitute the second reserve, and the second deposit of assets with the trustee.

Pursuant to clause (1) of Article 25.040 of the Insurance Code of Puerto Rico, the domestic insurers are required to establish said reserve and deposit with the trustee the moneys equivalent to said reserve no later than January 31, 1995.

Strict compliance with the provisions of this circular letter is hereby directed.

Juan Antonio Garcia
Commissioner of Insurance

Appendix 16a

Puerto Rico Miscellaneous Regulatory Material Selected Circular Letters of The Office of The Commissioner of Insurance

Circular Letter AC-II-9-1360-94

ACT NO. 73 OF AUGUST 12, 1994

October 14, 1994

Act No. 73 of August 12, 1994 added Chapter XXV to the Insurance Code of Puerto Rico in order to solve on intermediate and long term and in a definite manner the problem caused by the scarcity of capacity in the reinsurance coverage of catastrophic risks.

Said Act promotes the internal creation of capacity by means of requiring the domestic insurers to establish a reserve for the payment of losses of catastrophic insurance.⁶ The objective of this reserve is to assure that said insurers have an ever-growing financial capacity in order to offer adequate protection to those insured in Puerto Rico exposed to said risks. The creation of said reserve also pursues that the insurers of the country reduce their dependency regarding foreign reinsurers so that the rates of catastrophic insurance premiums in Puerto Rico are affected the least possible due to the demands of world reinsurance market price.

Article 25.030 of the Insurance Code of Puerto Rico contains the provisions under which the domestic insurers may establish the catastrophic insurance loss reserve. Said Article provides, among other things, the followings:

1. The domestic insurers that are underwriting catastrophic insurance in Puerto Rico, shall establish and accumulate a reserve for all their policies that provide catastrophic insurance coverage. The assets that back said reserve shall be used for the payment of catastrophic losses that are covered by said policies.
2. Each of the country's insurers shall annually compute the reserve of catastrophic insurance losses by applying to their direct net premiums⁷ for that year that proportion that the Commissioner, through regulations to such effect, determines from time to time. The reserve thus computed shall be added to those established in preceding years. For the first year of effectiveness of this reserve, the proportion shall be ten (10) percent.
3. The catastrophic insurance loss reserve shall be incremented until the total thereof reaches a sum that is at least four (4) times the annual average of direct net premiums of the insurer for at least three (3) preceding calendar years.

⁶Pursuant to Article 25.020 (5) of the Insurance Code of Puerto Rico, "catastrophic insurance" means the insurance of all types of real estate or personal property, and interest on it, against all losses or damages caused by earthquakes, storms, hurricanes, fire or other catastrophes, and against losses as consequence of said losses or damages.

⁷Pursuant to Article 25.020 (3) of the Insurance Code of Puerto Rico, "direct net premiums" shall mean direct gross premiums underwritten in Puerto Rico for catastrophic insurance, subtracting the premiums returned or unused or unabsorbed portion of deposit premiums.

4. The catastrophic loss insurance reserve shall be part of the liabilities of the domestic insurers, shall be of the nature of an unpaid loss and, pursuant to Article 5.030 of said Code, shall be charged against the assets of the insurer when determining the financial situation thereof. Thus, the reserve shall be deductible as a loss when determining the net taxable income under Act No. 91 of June 29, 1954, as amended, known as the "Income Tax Act of 1954."

On the other hand, Article 25.040 of said Code contains the conditions under which a trust shall be established to administer the assets that back the catastrophic insurance loss reserve. Said trust shall be previously approved by the Insurance Commissioner and must meet a series of requirements specified in said article. Among said requirements is that the trustee in charge of the administration of the trust shall also be approved by the Insurance Commissioner. To such respect, we enclose a model trust deed we have designed for the purpose of it being used as a guide to create the trust that shall administer the funds of the reserve.

Clause (1) of said Article 25.040 establishes that on January 31 of each year, all domestic insurers who have underwritten catastrophic insurance during the preceding year, shall deposit in said trust a sum of money equal to the catastrophic insurance loss reserve computed according to Article 25.030 of said Code for the preceding year.

The amount corresponding to the first deposit to the trust shall be computed on the basis of a ten (10) percent of the direct net premiums underwritten for catastrophic insurance by the insurer in 1993. The information to determine the amount of money to which this proportion shall be applied, shall proceed from page 14 of the Annual Report of the insurer. To determine said direct net premiums, the following proportions shall be used, according to the corresponding insurance coverage:

Coverage	% of the premium underwritten in 1993
1. Fire	100%
2. Earthquake	100%
3. Commercial Multiple Risks (Non-Liability)	100%
4. Home Owners Multiple Risks	85%
5. Other Allied Lines	75%
6. Physical Damages to Automobiles	2%
7. Land-Transportation	85%

Shall be the total of the amounts obtained when applying the preceding percents to the respective amounts of premiums underwritten, to which a ten (10) percent shall be applied, which shall constitute the first reserve, and the first deposit of assets with the trustee.

As to the manner in which the reserve shall appear in the annual statement of financial situation of the insurer, this Office will soon be issuing its determination to such respect.

Pursuant to Article 2 of said Act No. 73, and the powers conferred by the law, the domestic insurers are required to create said trust *no later than November 15, 1994*. On said date, the loss reserve should have also been established as well as the money equal to said reserve should have been deposited in the trust, all corresponding to the year 1993. In order to consider and approve the trust

deed in due time, the insurers of the country, as well as the trustee, should submit said deeds and notify the name of the proposed trustee *no later than November 4, 1994*.

Strict compliance with the provisions of this circular letter is hereby directed.

Juan Antonio Garcia
Commissioner of Insurance

Appendix 17

South Carolina Miscellaneous Regulatory Material INSURANCE DEPARTMENT BULLETINS

Cross reference citation indexing has been translated to conform to the 1987 recodification of the South Carolina Insurance Laws. Textual citations may refer to prior law.

Bulletin 96-5

COASTAL PROPERTY INSURANCE [1996 STATE LEGISLATION]

December 20, 1996

In recent years, increased hurricane and earthquake activity has caused large catastrophe losses to insurers and reinsurers transacting business both nationally and internationally. These recent, high-dollar catastrophe losses, in turn, have raised insurer concerns over reinsurance capacity and pricing and have focused insurer attention upon coastal rating, catastrophe modeling, reinsurance availability and affordability, and inflexible state regulation. During the 1996 State of South Carolina Legislative Session, various changes were made to the insurance laws of this State which were designed to begin to address those concerns.

On May 29, 1996, upon the signature of the Governor of this State, 1996 S.C. Act Number 378 became law. That Act, which has since become commonly-known as the Coastal Issues Insurance Act, was offered to this State's General Assembly by the Department of Insurance based, in part, upon recommendations made by an *ad hoc* task force of insurer and insurance industry personnel. The purpose of the Act was to provide greater flexibility to insurers both in underwriting and in developing insurance premium rates for property insurance policies—including, but not limited to, homeowners', mobile homeowners', dwelling fire, and commercial property insurance policies—along the coast of this State.

Thirty Day File-and-Use and Rate Filing Threshold. The Act, a copy which is attached to this Bulletin, first provides that, within the coastal territory where insurers can now refuse to underwrite wind and hail coverage and that coverage can be underwritten by the South Carolina Wind and Hail Underwriting Association, insurers marketing wind and hail coverage may file and use, after a 30-day waiting period, insurance premium rates which result in rates of 90 percent or less of that Association's then-approved rates.

By allowing insurers to file and use such rating tiers, the wind and hail coverages of fewer insureds will be placed into the Association. Depopulation of the Association will reduce its claims potential, thereby reducing the possible assessment ultimately imposed against each insurer transacting that business within this State. Naturally, even at the highest possible voluntary rate of 90 percent of the South Carolina Wind and Hail Underwriting Association's rate, the insurance premiums of non-preferred insureds will be reduced.

Six-Month Rate Changes Allowed. It is important to note that the Act also allows insurers filing such coastal property insurance premium rates to request rate changes which may result in increases every six months rather than only once per year as previously required. This consideration will allow insurers to quickly adjust their coastal premium rates in order to meet time-sensitive changes in their reinsurance premiums or benefits.

Association Depopulation. In order to take advantage of the Association's current voluntary credit program designed to reduce assessments, insurers which file new nonstandard rate tiers may acquire directly from the Association individual risk information including rates, premiums, classifications, inspections, and claims experience.

Modeling and Reinsurance Expenses. Since the cost of reinsurance clearly is a factor for insurers when deciding whether or not to underwrite coastal property coverage, the Act also provides that, when developing rates for that coverage, insurers may consider past and prospective expenses for, and recoveries from, catastrophe reinsurance and may consider past and prospective loss experience including insurer experience projected from windstorm catastrophe models and simulations.

Loss Mitigation Credits. Additionally, in order to encourage insurers to consider the risk characteristics of individual properties within their marketing and underwriting plans, the Coastal Issues Insurance Act provides that all insurers underwriting property coverage within the coastal counties of this State may include credits and discounts for characteristic factors including, but not limited to, storm shutters, roof tie-downs, construction standards, building codes, distance from water, elevation, flood insurance, and policy deductibles. Further, pursuant to the Act's consent-to-rate reminder, any insurer may contract with any individual risk to deviate, as a result of special circumstances, from that insurer's filed and approved manual rate.

Currently, this State's insurance law permits the industry-wide practice of *consent-to-rate*. S.C. Code Ann. Section 38-73-1060 (Supp. 1995). Under that Statute, any insured and any insurer may agree upon an insurance premium rate level which is different than that insurer's approved manual rate. In order for any insurer to underwrite a consent-to-rate policy, the insurer must provide the following information to the Department of Insurance: the insurer's name and address, the licensed insurance agent's name and address, the insured's name and address, the type of policy to be issued, the policy limits, the filed and approved manual rate, the consent rate, the reason or reasons for the rate differential, and a written statement from the insured agreeing to pay the consent rate. The insurer form is subject to prior approval. However, policies may be bound before Department of Insurance approval is returned to the insurer.

Invitation to Provide Input. Clearly, the Coastal Issues Insurance Act will not resolve all coastal property insurance availability and affordability issues; no state can legislate how and when a hurricane will make landfall. However, this Act is an important step toward allowing insurers to address certain of their concerns. The Department of Insurance and the *ad hoc* coastal issues task force are continuing to consider new ideas, potential legislation, and alternative, voluntary reinsurance mechanisms. Any suggestion or proposed alternative approach should be forwarded to this Department to Dean F. Kruger, Director, Property and Casualty Division, at the above address.⁸ Director Kruger's office telephone number is (803) 737-5774; his office telecopier facsimile transmission number is (803) 737-6233; and his E-mail address is DKRUGER@DOI.STATE.SC.US. All such suggestions and approaches will be considered.

Lee P. Jedziniak
Director of Insurance

⁸State of South Carolina, Department of Insurance, 1612 Marion Street, Post Office Box 100105, Columbia, South Carolina, 29201-3105.

**STATE OF SOUTH CAROLINA
COASTAL ISSUES INSURANCE ACT
1996 S.C. ACT NUMBER 378 (EFFECTIVE UPON MAY 29, 1996)**

[THIRTY-DAY FILE-AND-USE AND
RATE FILING THRESHOLD]

Section 38-73-1095.

- (A) Any private insurer licensed to underwrite “ essential property insurance” as defined by Section 38-75-310(1), notwithstanding any limitations included within this title, may file and use any rates for the coverages detailed within Section 38-75-310(1) which result in insurance premium rates of ninety percent, or less, of the insurance premium rates then approved for the South Carolina Wind and Hail Underwriting Association for use within the coastal area of South Carolina as defined by Section 38-75-310(5). Filings for these insurance premium rates must be made upon forms prescribed by the director or his designee and must apply only to essential property insurance premium rates for the coastal area. Within thirty days after the filing of the rates, the director or his designee must notify the insurer or rating organization filing the rates of his approval or his disapproval of those rates. If the rates are disapproved, then the director or his designee must notify the insurer or the rating organization of the specific reason for disapproval. The director or his designee may extend for up to an additional thirty days the period within which he must approve or disapprove the rates. Any rates received, which are neither approved nor disapproved by the director, must be deemed approved at the expiration of the thirty-day period or, if that period has been extended, at the expiration of the extended period. However, no insurer or rating organization may use rates considered approved under the provisions of this section unless and until the insurer or rating organization has filed a written notice of its intent to use the rates. The notice must be filed with the director or his designee at least ten days before the insurer’s or rating organization’s use of the deemed rates.

[CATASTROPHE MODELING AND
REINSURANCE EXPENSES]

- (B) In considering any rate filing for insurance premium rates for essential property insurance in the coastal area or in the seacoast area, the director or his designee, in addition to other factors considered under this title, may consider past and prospective expenses and recoveries associated with catastrophe reinsurance and past and prospective loss experience including windstorm catastrophe models and simulations.

[LOSS MITIGATION CREDITS]

- (C) Rating plans for essential property insurance in the coastal area or in the seacoast area, may include discounts and credits or surcharges and debits calculated upon the following rating factors:
- (1) use of storm shutters;
 - (2) use of roof tie downs;

- (3) construction standards;
- (4) building codes;
- (5) distance from water;
- (6) elevation;
- (7) flood insurance;
- (8) policy deductibles;
- (9) other applicable factors requested by the insurer or rating organization or selected by order of the director involving the risk or hazard.

[CONSENT-TO-RATE]

- (D) This section does not preclude any insurer from using consent-to-rate pursuant to Section 38-73-1060 for any essential property insurance risk in the coastal area or the seacoast area of this State.

[ASSOCIATION DEPOPULATION]

Section 38-75-386. No liability on the part of, and no cause of action of any nature may arise against, the director, the Department of Insurance or its staff, the association, any member insurer, the association's agents or employees, its Board of Directors, or the legal representatives of any of the above persons, for any act or omission made in good faith or for any statement made to, or for information provided to, any insurer regarding rates; premiums; classifications; cancellations, determinations, or nonrenewals of coverage; underwriting; inspections; or claims experience history made to facilitate the underwriting of essential property insurance for risks in the coastal area by private insurers or to facilitate competition for the underwriting of essential property insurance for risks in the coastal area among private insurers.

Section 38-75-310. (7) "Seacoast area" means all areas within Horry, Georgetown, Berkeley, Charleston, Dorchester, Colleton, Beaufort, and Jasper Counties.

Section 38-73-910 [amended, by adding at the end]. However, a private insurer licensed to underwrite essential property insurance as defined by Section 38-75-310(1), notwithstanding any limitations included within this title, may file and use, pursuant to the provisions of Section 38-73-1095, any rates which result in insurance premium rates of ninety percent, or less, of the insurance premium rates then approved for the South Carolina Wind and Hail Underwriting Association for use within the coastal area of South Carolina as defined by Section 38-75-310(5).

[SIX-MONTH RATE CHANGES ALLOWED]

Section 38-73-920 [amended, by adding at the end]. However, a private insurer licensed to underwrite essential property insurance as defined by Section 38-75-310(1), notwithstanding any limitations included within this title, may file and use, pursuant to the provisions of Section 38-73-1095, any rates which result in insurance premium rates of ninety percent, or less, of the insurance

premium rates then approved for the South Carolina Wind and Hail Underwriting Association which result in an insurance premium increase for any policyholder situated within a coastal area of South Carolina as defined by Section 38-75-310(5) not more than once in any six-month period.

Appendix 18

Texas Miscellaneous Regulatory Material SELECTED BULLETINS OF THE STATE BOARD OF INSURANCE

Bulletin B-0037-00 Use of catastrophe models in ratemaking

June 9, 2000

The purpose of this bulletin is to advise interested parties of the current position of the Texas Department of Insurance (Department) on the use of mathematical catastrophe simulation models (models) in property insurance ratemaking. It is also intended to describe the steps the Department is currently taking to study the reasonability and conditions of their use. This bulletin replaces Commissioner's Bulletin No. B-0015-98, dated February 19, 1998.

Because of the increasing industry reliance on the use of models, the Department has been examining their use in property insurance ratemaking. The Department has identified two areas of concern at this time. First, it is clear from examining the results of the models that have been submitted to the Department that the resulting catastrophe provisions, and hence the rates, may differ significantly depending on both the specific model selected and the insurer inputs to that model. The second area of concern is that models of which the Department is aware are proprietary models, and the details of their inner workings have not generally been available. Given the uncertainties surrounding the models, it is difficult for the Department to determine that rates with catastrophe provisions produced solely or largely from models meet the standards set forth in Texas Insurance Code, Article 5.101 (that rates be just, reasonable, adequate and not excessive for the risks to which they apply) or Article 5.13-2 (that rates not be excessive, inadequate, or unfairly discriminatory and not be unreasonable).

The Department has, therefore, convened an internal working group to study the use of catastrophe modeling in property insurance ratemaking. This group is reviewing the broad issues raised by the use of models as well as determining the type of information to which the Department would need to have access to assure that statutory standards are met. The Department has retained outside experts in the areas of meteorology and engineering to assist it in its efforts. The Department may also seek input from interested parties.

It should be clear that nothing prevents an individual company making a rate filing under Art. 5.101 or Art. 5.13-2 from including with its filing whatever data, including models, it considers appropriate to support the rate filing. In the interim, before the uncertainties and issues are finally resolved, the Department may request certain additional information from companies that use models in property insurance rate filing in order to assist staff in evaluating the reasonability of the rate filing. Staff may request information that includes: (1) indicated catastrophe provision based on traditional actual historical experience data methodology and a comparison of the two provisions; (2) an explanation of the reasons for any differences; and (3) information on the model simulations, including, for example, the number of simulated storms by intensity, and a description of the company-supplied inputs to the model.

Questions on the internal working group and other aspects of the study may be directed to Joe Palermo, Chief Economist of the Department, at (512) 305-7194, who is heading the project.

Questions regarding rate filings should be directed to the Property and Casualty Actuarial Unit at (512) 475-3017.

C. H. Mah
Senior Associate Commissioner, Property and Casualty

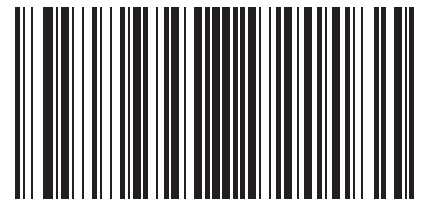


National Association of Insurance Commissioners

Formed in 1871, the National Association of Insurance Commissioners (NAIC) is a voluntary organization of the chief insurance regulatory officials of the 50 states, the District of Columbia and five U.S. territories. The NAIC has three offices: Executive Office, Washington, D.C.; Central Office, Kansas City, Mo.; and Securities Valuation Office, New York City.

The NAIC serves the needs of consumers and the industry, with an overriding objective of supporting state insurance regulators as they protect consumers and maintain the financial stability of the insurance marketplace.

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