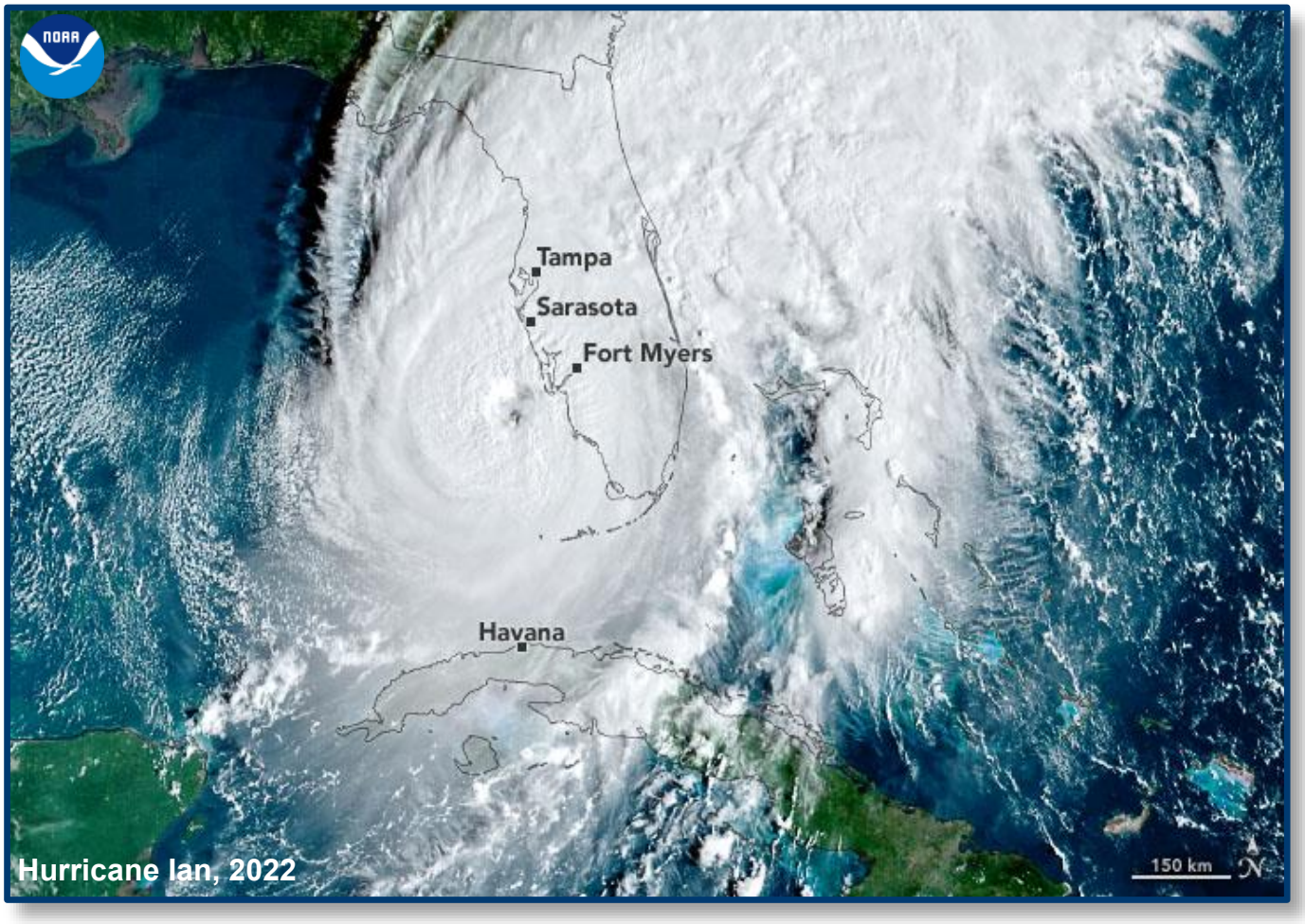
Hurricane Standards Report of Activities as of November 1, ~~2023~~2025



Florida Commission on Hurricane Loss Projection Methodology

FLORIDA COMMISSION ON HURRICANE LOSS PROJECTION METHODOLOGY

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Dear Trustees:

As Acting Chair of the Florida Commission on Hurricane Loss Projection Methodology (Commission), I am pleased to present to you the *Hurricane Standards Report of Activities as of November 1, ~~2023~~2025*. This report documents the ~~twenty-eighth year of the~~ Commission's work relating to the development and adoption of hurricane standards and subsequent revisions.

Section 627.0628, Florida Statutes, 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-numbered year for hurricane loss projections." 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) 644-4419~~(850) 410-6633.

Sincerely,

~~Steve Paris~~Sean Martin, Acting Chair
Florida Commission on Hurricane Loss Projection Methodology

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INTRODUCTION

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Legislative Findings and Intent

In 1995, the Florida Legislature enacted section (s.) 627.0628, Florida Statutes (F.S.), creating the Florida Commission on Hurricane Loss Projection Methodology (Commission).[1] The Legislature specifically determined 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."[2] The Legislature clearly supports and encourages the use of computer modeling as part of the ratemaking process.

In 2014, the Florida Legislature expanded the role of the Commission by passing CS/CS/CS/Senate Bill (SB) 542 creating s. 627.715, F.S., which allowed for authorized insurers in Florida to write flood insurance. Additionally, several existing statutes were amended including the statute creating the Commission, s. 627.0628, F.S., and the insurance rating law statutory section, s. 627.062, F.S., dealing with rate filings. The new legislation tasked the Commission with adopting "actuarial methods, principles, standards, models, or output ranges for personal lines residential flood loss no later than July 1, 2017." The Commission started the process in 2014, and published *Discussion Flood Standards as of December 1, 2015*, which also provided for various types of feedback leading up to the July 1, 2017, statutory deadline for adopting flood standards. The Commission adopted principles, standards, and output ranges for personal lines residential flood loss in June 2017.

Where appropriate, this *Hurricane Standards Report of Activities* refers to flood and attempts to incorporate the references to flood in the context of the Commission's duties, but the report does not contain any specific flood standards, nor does it specifically address the process for reviewing flood models. The flood standards and process for reviewing flood models are published in the *Flood Standards Report of Activities as of November 1, ~~2021~~2025*. Flood models will be reviewed separately from hurricane models using their respective standards as adopted by the Commission. The adoption of flood standards and the acceptability process for flood models is accomplished in parallel with the Commission's role regarding hurricane models.

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

[1] Committee Substitute/House Bill (CS/HB) 2619 (Chapter (Ch.) 95-276, Laws of Florida).
[2] Section 627.0628(1)(a), F.S.

output ranges used to project hurricane losses, flood losses, and probable maximum loss calculations.

Section 627.0628(3)(c), F.S., states that "to the extent feasible," the SBA must "employ actuarial methods, principles, 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). Under s. 627.0628(3)(d), F.S., individual insurers are required to use the Commission's findings in order to support or justify a rate filing with the Office of Insurance Regulation (OIR) as follows, "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 and probable maximum loss levels for use in a rate filing under s. 627.062. An insurer may employ a model in a rate filing until 120 days after the expiration of the commission's acceptance of that model and may not modify or adjust models found by the commission to be accurate or reliable in determining probable maximum loss levels."

The Legislature addressed the definition of and the protection of trade secrets used in designing and constructing a hurricane model in 2005 and 2010, and for a flood model in 2014. In s. 627.0628(3)(g), F.S.,[3] the Legislature found that it is a public necessity to protect trade secrets "used in designing and constructing a hurricane or flood loss model," 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 and flood models and to encourage private companies to submit such models for review without concern that trade secrets will be disclosed. The exemption applies to "a trade secret, as defined in s. ~~812.081~~688.002, F.S., which is used in designing and constructing a hurricane loss model" being exempt pursuant to s. 627.0628(3)(g), 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.

In 2010 the Legislature revised the scope of the public records exemption by providing that the definition of "trade secret" in the Uniform Trade Secrets Act would apply in place of the definition in s. 812.081, F.S.[4] The effect of this change was to make the public records exemption for trade secrets consistent with other similar exemptions.

The 2010 legislation also required that all portions of a closed Commission meeting be recorded. No portion of the closed meeting may be off the record. The bill also created a public records exemption for the recordings of closed meetings.

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[3] Created in 2005 by HB 1939 (Ch. 2005-264, Laws of Florida).

[4] HB 7119 (Ch. 2010-90, Laws of Florida). The language in s. 812.081, F.S., defines trade secrets which relate to theft, robbery, and related crimes. Under s. 688.002(4), F.S., "trade secret" means information, including a formula, pattern, compilation, program, device, method, technique, or process that:

(a) Derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use; and

(b) Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

In 2014 the Legislature expanded the definition of trade secret and the related protection to include those used in designing and constructing a "flood loss model."[5]

In 2019 the Legislature removed the scheduled repeal of the trade secret exemptions making them permanent.[6]

The Work of the Commission

The Commission was created as a panel of experts to evaluate computer models and other recently developed or improved actuarial methodologies for projecting hurricane losses, flood 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."[7]

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 and flood loss projections used in rate filings for personal lines residential flood insurance coverage. 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, flood 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)(f), 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,

[5] SB 1262 (Ch. 2014-98, Laws of Florida).
[6] HB 7091 (Ch. 2019-35, Laws of Florida).
[7] Section 627.0628(1)(b), F.S.

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:

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

2. 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

3. 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 ~~s~~Submission and eliminate redundancies, the Commission conducted a complete and thorough reorganization of the *Hurricane Standards Report of Activities* in 2003. Part of the reorganization included renaming and incorporating the questions and forms in Modules 1–3 to sub-sections of the standards called disclosures and forms. Module 4 was moved to a separate chapter called On-Site Review, and Module 5 was moved to the acceptability process chapter. The standards were realigned to facilitate the Commission voting process.

As originally required in s. 627.0628(3)(f), F.S., the Commission adopted revisions to actuarial methods, principles, standards, models, 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
September 17 & 18, 2008
September 15 & 16, 2009
October 19, 20 & November 16, 2011
September 24 & 25, 2013
October 13 & 14, 2015
October 25, 2017
October 29, 2019
October 26 & 27, 2021
October 25 & 26, 2023

August 17 & 18, 2006
September 20 & 21, 2007

October 28, 2025

The Commission has operated on a biennial cycle since 2009. In 2009 the Legislature amended s. 627.0628(3)(f), F.S., to require the Commission to adopt revisions to "actuarial methods, principles, standards, models, or output ranges every odd-numbered year."[8] Under the prior law, these were adopted annually. The standards in this *Hurricane Standards Report of Activities* were revised and adopted on October ~~25~~ 28~~& 26~~, ~~2023~~2025. The Commission will again adopt revisions to the standards in ~~2025~~2027.

Also in 2009, the Legislature 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."[9] The legislation further required the Commission to present a report to the Governor, the Cabinet, the President of the Senate, and the Speaker of the House of Representatives by February 1, 2010, on its recommendations for "improving the process of assessing, determining, and applying windstorm mitigation discounts, credits, other rate differentials, and appropriate reductions in deductibles pursuant to s. 627.0629."

The Commission held six public meetings for the purpose of receiving testimony and data regarding the implementation of windstorm mitigation discounts. The input and data received during the process, as well as other information gathered by the Commission, resulted in the *Windstorm Mitigation Discounts Report* available at *https://fchlpm.sbafla.com/media/tqrotm13/20100201_mitigationdiscountreport.pdf*). The report includes the Commission's findings and recommendations designed to improve the mitigation discount process.

In 2014, the Legislature revised s. 627.0628(3)(e), F.S., establishing a new deadline for the Commission to take action. No later than July 1, 2017, "the Commission shall adopt actuarial methods, principles, standards, models, or output ranges for personal lines residential flood loss."[10] To achieve the requirements of the new statutory mandate, the Commission, in 2014, created a Flood Standards Development Committee. The committee met monthly to develop a set of "discussion flood standards" which were published December 1, 2015. After receiving input during on-site modeling organization feedback visits and further refinement through committee meetings, the Commission adopted flood standards ~~in~~ on June 15 & 16, 2017. ~~The Commission~~Those original standards have subsequently ~~adopted revisions to the flood standards and procedures on October 26 & 27, 2021, which are published in the *Flood Standards Report of Activities as of November 1, 2021*~~been revised and then adopted on the following dates:~~.~~

October 25, 2017

[8] CS/SB 1758 (Ch. 2009-81, Laws of Florida).
[9] CS/CS/CS HB 1495 (Ch. 2009-87, Laws of Florida).
[10] CS/CS/CS/SB 542 (Ch. 2014-80, Laws of Florida).

October 26 & 27, 2021
October 28, 2025

In 2022, the Legislature created in s. 627.7154, F.S., a Property Insurer Stability Unit within the OIR.[11] The statute specifies that the insurer stability unit is to cooperate with the Commission to select the hurricane scenarios that are used in the annual catastrophe stress testing. The Commission held public meetings to determine how best to meet the needs of the OIR.

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.

The mission statement was revised on September 15, 2009, to reflect the Commission's role in reviewing models for their ability to project 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.

The mission statement was revised again on October 13, 2015, to reflect the Commission's role in reviewing models for their ability to project flood losses used in rate filings for personal lines residential flood insurance coverage. 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 floods and to adopt findings regarding the accuracy or reliability of these methodologies for use in

[11] SB 2-A (Ch. 2022-271, Laws of Florida).

residential rate filings (hurricane loss projections), personal lines residential rate filings (flood loss projections), and probable maximum loss calculations.

Overview

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

Modeling Organization	**Standards**
Applied Research Associates, Inc.	1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2013, 2015, 2017, 2019, 2021
E.W. Blanch Company	1998, 1999, 2000
~~CoreLogic~~Cotality, Inc. (formerly CoreLogic, Inc.; EQECAT, Inc.)	1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2013, 2015, 2017, 2019, 2021, 2023
Florida Public Hurricane Loss Model	2006, 2007, 2008, 2009, 2011, 2013, 2015, 2017, 2019, 2021, 2023
Impact Forecasting	2019, 2021, 2023
Karen Clark & Company	2017, 2019, 2021, 2023
Moody's Corporation ~~RMS~~ (formerly Moody's RMS; Risk Management Solutions, Inc.)	1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2013, 2015, 2017, 2019, 2021, 2023
Tillinghast–Towers Perrin	1998
Verisk (formerly AIR Worldwide Corporation; Applied Insurance Research, Inc.)	1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2013, 2015, 2017, 2019, 2021, 2023

PRINCIPLES

PRINCIPLES

(These principles are applicable to the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities*.)

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 floods and to adopt findings regarding the accuracy or reliability of these methodologies for use in residential rate filings (hurricane loss projections), personal lines residential rate filings (flood loss projections), and probable maximum loss calculations.
   History-New 9/21/95, rev. 11/30/95, rev. 9/15/09, rev. 10/13/15

2. The Commission shall recognize that a modeling organization may develop either a hurricane model, a flood model, or both. As a result, the Commission's adoption of standards and the review of each respective model shall be independent and separate of the other type of model. The acceptability or failure of one type of model shall not have an immediate impact on the acceptability or failure of another type of model from the same modeling organization. Although the review process is similar in context for all types of models, the Commission shall recognize the unique process applicable to a hurricane model review and the unique process applicable to a flood model review. Only one type of model shall be submitted at a time by a modeling organization for review for that type of model (hurricane or flood) except as provided for in the Acceptability Process of its most recent *Hurricane Standards Report of Activities* or *Flood Standards Report of Activities*.
   History-New 6/16/17

3. 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

4. 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

5. 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

6. All models or methods shall be theoretically sound.
   History-New 9/21/95, rev. 8/18/06

7. 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

8. Models or methods shall not be biased in a way that overstates or understates results.
History-New 9/21/95, rev. 8/18/06

9. All ~~sensitive~~ trade secret components of models or methods shall be identified.
History-New 9/21/95, rev. 8/18/06, rev. 10/28/25

10. 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

11. 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~~ the ~~model's~~ acceptability of a model or method.
History-New 8/18/06, rev. 10/28/25

12. 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

13. 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

14. 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

15. 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

16. 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

17. 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 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, rev. 10/13/15

18. All findings adopted by the Commission are subject to revision at the discretion of the Commission.
    History-New 11/30/95

19. 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

20. 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

21. 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

COMMISSION STRUCTURE

COMMISSION STRUCTURE

(The Commission Structure is applicable to the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities*.)

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 twelve 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 or the Executive Director's designee who must be a full-time employee of the corporation and have actuarial science experience,

4. The Director of the Division of Emergency Management or the Director's designee who must be a full-time employee of the division,

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,

8. A licensed professional structural engineer who is a full-time faculty member in the State University System and who has expertise in wind mitigation techniques. This appointment shall be made by the Governor.

The licensed professional structural engineer was added by virtue of CS/SB 1770, which was enacted and became law in 2013. This legislation amended the requirements in s. 627.0628(2)(b), F.S., and enhanced the expertise immediately available to the Commission by increasing the membership to provide for the appointment of an additional member with special qualifications and attributes.

In 2023 the Florida Legislature passed CS/CS/CS/SB 418 amending s. 627.0628(2)(b), F.S. to provide that, in lieu of themselves, the Executive Director of the Citizens Property Insurance Corporation and the Director of the Division of Emergency Management, may appoint a designee to be a member of the Commission. The Executive Director of the Citizens Property Insurance Corporation designee must have actuarial science experience.

Terms of Members

The Insurance Consumer Advocate, FHCF Chief Operating Officer, 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 the member, 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 removes them earlier for cause (s. 627.0628(2)(c), F.S.).

Officers

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

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, elect a Vice Chair.

Duties of the Chair and Vice Chair:

1. The **CHAIR** shall:

    a. Preside at all meetings except during committee meetings where other Commission members are designated to act as committee chairs,

    b. Conduct a roll call of members at each meeting,

    c. Ensure all procedures established by the Commission are followed,

    d. Designate one of the Commission members to act in the role of Chair at any meeting where the Chair and Vice Chair cannot attend, and

    e. Assign members to serve on committees and appoint committee chairs.

2. The **VICE CHAIR** shall:

    a. In the absence or by 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, flood 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 shall make every effort to attend all meetings, in person, virtually, 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, virtually, or by telephone.

3. Give advance notice to SBA staff, 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 the law is outlined in this section.

5. Since it is the SBA's responsibility to fund all Commission activities, ~~direct~~ all communications related directly to Commission activities shall be referred to SBA staff who are responsible for administrative support of the Commission.

   The following communications, directly related to Commission activities, shall not take place:

   a. Commission members shall not contact Professional Team members or modeling organizations directly, except in conjunction with participation in the on-site visit of a Commission member,

   b. Modeling organizations shall not contact Commission members or Professional Team members directly, except in conjunction with remote participation in a virtual review, and

   c. Professional Team members shall not contact Commission members or modeling organizations directly.

   A committee chair or the Commission Chair may, in conjunction with SBA staff, contact a modeling organization or outside party for the purpose of clarifying or refining input or suggested revisions to the *Hurricane Standards Report of Activities* or *Flood Standards Report of Activities*.

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 shall immediately inform the Commission 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. Commission members may be subject to the Code of Ethics for Public Officers and Employees, ss. 112.311-112.3261, F.S., including, but not limited to, s. 112.313(7), F.S., relating to conflicting employment or contractual relationships; s. 112.3143, F.S., relating to voting conflicts; and s. 112.3145, F.S., relating to disclosure of financial interests.

   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 shall 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.

8. No one Commission member shall speak on behalf of the Commission. Members are free to give statements as their own opinion.

New Member Orientation and Continuing Education of Existing Members

As part of the SBA's administrative support of the Commission, the SBA staff is 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 and 2014 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 and flood 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 are able to inquire into the underlying nature of the hurricane and flood models without exposing such trade secret information to modeling organization competitors.

Although reliance on the expertise of the Professional Team continues to be necessary in the Commission's review process, Commission members may request to have greater access to the hurricane and flood models by going to the modeling organization~~'s~~ location for an on-site visit. The procedure for on-site visits and additional verification review visits requires that the Commission member obtain approval from the Commission and obtain authorization from the SBA for reimbursable travel (due to budget considerations). Commission members requesting to attend on-site visits, which includes any additional verification review visits, shall submit their request to SBA staff seven days prior to the Commission meeting to review modeling organization hurricane model or flood model ~~s~~Submissions in order for the requests to be

placed on the meeting agenda. This does not preclude members from requesting to attend on-site visits during the Commission meeting.

Travel arrangements are 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. The Commission member's presence shall not disrupt the activities or work of the Professional Team. This procedure will limit Commission members' 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 shall make its best effort to be available to answer the Commission member's questions.

If any notes are taken by a Commission member, they shall be made in an on-site visit workbook provided by SBA staff or on the digital or hard copy materials provided by the modeling organization. The modeling organization shall review the workbooks for any notes deemed by the modeling organization as trade secret information. Any workbook pages containing notes considered by the modeling organization as trade secret information shall be removed from the workbook by the modeling organization.

Commission members shall refrain from discussing the hurricane or flood model among themselves while on-site and shall be mindful of the requirements of the public meeting laws of Florida. Professional Team members have signed contracts with the SBA that contain a confidentiality clause accepted by the modeling organizations and are prohibited from discussing proprietary information with Commission members.

Trade Secret Documents for Review On-Site by Commission Members: A Commission member may have questions or prefer a more in-depth discussion about a particular standard, disclosure, or audit requirement. In order for the modeling organization to have the necessary personnel and documents available, Commission members shall identify items from the *Hurricane Standards Report of Activities* or from the *Flood Standards Report of Activities* that they are particularly interested in reviewing on-site. Each Commission member may create a prioritized list of items that shall be provided to SBA staff no later than the Commission meeting to review modeling organizations hurricane or flood model ~~s~~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 sections are of equal importance since all are required for verification of the hurricane and flood standards. Because the time needed to review the different audit requirements will vary, Commission members shall prioritize the items they

request to review based upon their expertise and interest. Due to time constraints, it will be the responsibility of the members to allocate their time accordingly while on-site.

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

Material Containing Potential Hurricane or Flood Model Trade Secrets to be Visually Displayed or Discussed during Closed Meetings (Trade Secret Items): The Commission may develop a list of information, documents, and presentation materials that contain potential trade secrets used in the design ~~or~~ and construction of the hurricane or flood model that the Commission wants to review during the closed portion of the Commission meeting to review hurricane or flood models for acceptability in addition to the trade secret items identified in the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities*.

The trade secret material shown to the Commission shall 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 or Flood 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 or flood models, are discussed and reviewed. 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 and vote on hurricane or flood models for acceptability. Voting regarding the acceptability of a hurricane or flood 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 hurricane or flood 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~~ shall be discussed during the public portion of the meeting to ensure full access of the public to that information.

In accordance with s. 627.0628(3)(g), F.S., the closed portion of a Commission meeting shall be recorded electronically as per SBA policies and procedures. The recording is exempt from s. 119.07(1), F.S., and s. 24(a), Article 1 of the State Constitution. The Commission Chair shall announce at the beginning of each closed trade secret session that the meeting is being recorded.

Attendees: The only authorized attendees of the closed portion of the Commission meeting to review hurricane or flood models for acceptability shall include Commission members, Commission staff, Professional Team members, and modeling organization designated personnel, staff, and 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 shall 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 shall be addressed directly to the modeling organization rather than to Professional Team members.

Room Requirements: Before the closed portion of the Commission meeting to review hurricane or flood models for acceptability begins, the room shall 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 and Professional Team members participating virtually.

All telephone lines and all microphones shall be checked to ensure that discussions cannot be heard, relayed, or recorded beyond the confines of the room. Personnel outside of the meeting room shall 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 shall be required to leave the meeting room to handle such communications.

Any notes taken by authorized attendees, other than the modeling organization, shall be collected, along with the presentation hard copies, and given to the modeling organization at the conclusion of the closed meeting and prior to anyone leaving the meeting room.

Teleconference: Due to security reasons, a teleconference call-in number shall only be available to authorized attendees participating virtually.

Breaks: If a break is taken during a closed meeting, authorized attendees shall 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 shall be taken out of the meeting room during a break. Other than authorized attendees, no one shall 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.

Transcript~~s~~: The Commission will not record a written transcript for the closed portion of a Commission meeting.

Quorum Requirements: A quorum of Commission members is not required to conduct the closed portion of ~~the~~ a Commission meeting.

Additional Closed Meetings: Once the initial closed portion of a Commission meeting has concluded, the public portion of the meeting shall begin. Upon a motion, 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 shall apply.

Commission Meetings

Quorum: A majority of the twelve Commission members (i.e., seven 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 Notice~~s~~: Written notice of a Commission 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 seven 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 shall 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 or flood models. That portion of a Commission meeting where a trade secret is addressed is confidential and exempt pursuant to s. 627.0628(3)(g)2, F.S., and thus will not be open to the public.

Agenda~~s~~: An ~~A~~agenda~~s~~ listing topics planned for discussion shall be furnished to each member prior to the meeting. 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: SBA staff shall be responsible for ensuring that all Commission meetings are recorded. The Commission Chair shall announce at the beginning of all Commission meetings that the meeting is being recorded. A written transcribed record shall be taken for all public portions of Commission meetings and an electronic recording shall be taken for all closed portions of Commission meetings. Commission meeting records shall be maintained by SBA staff in accordance with SBA policies and procedures. ~~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 Commission 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 to review and revise the hurricane and flood standards, disclosures, audit requirements, forms, acceptability process, and other chapters of the *Hurricane Standards Report of Activities* and the *Flood Standards Report of Activities*,

2. Commission meetings to adopt revisions to the hurricane and flood standards, disclosures, audit requirements, forms, acceptability process, and other chapters of the *Hurricane Standards Report of Activities* and the *Flood Standards Report of Activities*,

3. Commission meetings to review hurricane or flood model ~~s~~Submissions,

4. Commission meetings to review hurricane or flood models for acceptability,

5. Commission meetings to consider an appeal by a modeling organization if a hurricane or flood model is not found acceptable by the Commission, and

6. Planning workshops for the purpose of discussing, studying, and educating Commission members on new scientific developments and advances in the fields of meteorology, hydrology, hydraulics, structural engineering, coastal engineering, actuarial science, statistics, and computer/information science.

   The discussions from the planning workshops will be instrumental in planning for future hurricane and flood standards, disclosures, audit requirements, and forms.

Each type of meeting is discussed below.

Committee Meetings to Review and Revise Hurricane and Flood Standards

Committee meetings are for the purpose of discussing issues, developing hurricane and flood standards, completing necessary groundwork, and reaching a consensus among those present so when the Commission meets later to formally adopt the hurricane and flood standards, the *Hurricane Standards Report of Activities*, and the *Flood Standards 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 hurricane and flood standards, disclosures, audit requirements, forms, acceptability process, and other portions of the *Hurricane Standards Report of Activities* and the *Flood Standards 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 a Commission meeting~~s~~.

Committee meetings are also for the purpose of reviewing, determining the scope, and establishing priorities for any ideas, issues, and concepts new or previously presented at Commission meetings, committee meetings, or workshops. The committee may make a recommendation to the Commission on those that could be subjects for current consideration or for future inquiries or investigations.

The role of the committee chair is to present the draft of proposed hurricane or flood standards and other relevant documents with the aid 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 hurricane and flood 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 work best when Commission members guide the committee meetings and there is broad participation by the public, modeling organizations, regulators, or other interested parties. Committee chairs shall regularly call upon and solicit input from all interested parties present. A consensus among committee members and others participating is desirable.

The recommended way to conduct a committee meeting for hurricane and flood standards is as follows~~:~~. For the intent of this section on committee meetings, "standard" includes the standard, purpose, disclosure, audit requirements, and forms.

1. ~~Standard~~
   ~~a.~~ Each standard shall be taken in order and read in its entirety or presented visually to the members.
   ~~b. The committee chair asks if the standard is relevant and located in the appropriate group of standards.~~

~~c.~~ 2. The committee chair shall read~~s~~ and explain~~s any~~ the proposed changes with assistance from the Professional Team and SBA staff ~~to the standard and asks if there are any objections or if further changes are needed~~.

3. The committee shall determine if:

   a. ~~t~~The standard is relevant and located in the appropriate group of standards, and

   b. Further changes are needed to clarify or eliminate wording issues or ambiguities

   ~~d. 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 reads and explains any proposed changes to the purpose and asks if there are any objections, 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 reads and explains any proposed changes to the disclosures and asks if there are any objections, if additional wording changes are needed, or if additional instructions are needed to clarify the disclosure requirements.~~
   ~~c. The committee chair asks whether any additions, deletions, or other proposed changes to the disclosures are needed.~~

~~4. Audit~~
   ~~a. The committee chair reads or visually presents each audit requirement 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 reads and explains any proposed changes to the audit requirements and asks if there are any objections, if additional wording changes are needed, or if additional instructions are needed to clarify the audit requirements.~~
   ~~c. The committee chair asks whether any additions, deletions, or other proposed changes to the audit requirements are needed.~~

~~5. Forms~~
   ~~a. The committee chair asks whether the forms are appropriate, relevant, and located in the appropriate group of standards.~~

~~b. The committee chair reads and explains any proposed changes to the forms and asks if there are any objections, if additional wording changes are needed, or if additional instructions are needed for clarification.~~

~~c. The committee chair asks whether any additions, deletions, or other proposed changes to the forms are needed.~~

~~6. Trade Secret Items~~

~~a~~4. The committee will identify trade secret information, documents, and presentation materials that contain potential trade secrets used in the design ~~or~~ and construction of the hurricane or flood models that the Commission wants the modeling organization to visually display ~~or~~ and discuss during the closed portion of a Commission meeting to review hurricane or flood models for acceptability.

~~7. Consideration of Ideas, Issues, Concepts, Inquiries, and Investigations~~

~~a~~5. The committee will discuss, evaluate, and prioritize any ideas, issues, concepts, inquiries, or investigations presented at prior Commission meetings, committee meetings, or workshops. The committee will consider the associated costs and time constraints.

The meeting of the Acceptability Process Committee will ~~proceed differently but will~~ follow a similar logical pattern as described above. The committee chair will read or present visually ~~Acceptability Process Committee will start by reviewing~~ the "Process for Determining the Acceptability of a Computer Simulation Hurricane Model," or the "Process for Determining the Acceptability of a Computer Simulation Flood Model~~.~~" to the members and explain the proposed changes. The committee ~~chair reads and explains any proposed revisions and asks if there are any objections,~~ will determine if additional wording changes ~~are needed,~~ or ~~if additional~~ instructions are needed for clarification.

Following the discussion of the acceptability process, the Acceptability Process Committee will take up other various chapters of the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities* by considering their appropriateness and relevancy, proposed revisions, and if any modifications or additional wording changes are needed.

As consensus is built and revisions are agreed to, the SBA staff in conjunction with the Professional Team will note the revisions and 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 hurricane and flood standards and finalizing the *Hurricane Standards Report of Activities* for the next odd-numbered year and the *Flood Standards Report of Activities* every four years.

Commission Meetings to Adopt Hurricane and Flood Standards

The Commission Chair will open the meeting and ask each committee chair, who presided over the revisions to the hurricane and flood standards, to ~~comment as to the purpose of each~~

~~hurricane and flood standard and any~~lead the Commission through the suggested revisions by the committee under each hurricane and flood standard. This will not only include the hurricane and flood standard, but also the purpose, the disclosures, the audit requirements, and the forms. The committee chair, along with the Professional Team and SBA staff, will discuss and comment on revisions to the hurricane and flood standards. The Commission members will ask questions and offer further suggestions if necessary and appropriate. The Commission Chair may also ask for comments from others in attendance including modeling organizations, regulators, insurers, or the general public.

Once the discussion is concluded for a group of hurricane or flood standards, the committee chair shall make a motion that the Commission adopt the group of hurricane or flood standards along with the suggested revisions including those associated with the purpose, list of relevant forms, disclosures, audit requirements, and forms. Another committee member shall second the motion. The Commission Chair will then ask if there is any further discussion. Once the discussion is completed, the Commission Chair will ask for a roll call vote. Each hurricane and flood standards group shall be voted on separately. At the request of any Commission member, one or more hurricane or flood standards in a group may be designated for a separate vote.

The "Process for Determining the Acceptability of a Computer Simulation Hurricane Model" and the "Process for Determining the Acceptability of a Computer Simulation Flood Model" will each be voted on separately. The Commission Chair will ask the committee chair to explain the revisions to the acceptability process. Once this is completed and comments are made by the Professional Team and SBA staff, the committee chair shall make a motion that the Commission adopt the acceptability process as amended. Another Acceptability Process Committee member shall 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 chapters of the *Hurricane Standards Report of Activities* and the *Flood Standards Report of Activities*. If any of these chapters 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 revisions and modifications and shall make a motion to adopt each chapter separately. Another Acceptability Process Committee member shall second the motion. The Commission Chair will recognize Commission members for discussion and questions, and then will ask for a roll call vote.

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

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

Commission Meetings to Review Hurricane or Flood Model Submissions

The purpose of the meeting to review modeling organization hurricane or flood model ~~s~~Submissions is to identify any deficiencies in the hurricane or flood model ~~s~~Submissions and to create a list of issues to be addressed by each modeling organization.

Modeling organization hurricane or flood model ~~s~~Submissions shall be received by the applicable November 1 deadline. The hurricane or flood model ~~s~~Submissions will have been ~~distributed~~ provided electronically to each Commission member and the Professional Team for their review. 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 hurricane or flood model ~~s~~Submission.

Deficiency: A deficiency is defined as a lack of required documentation. A list of deficiencies shall be created if the hurricane or flood model ~~s~~Submission is incomplete, unclear, or non-responsive. Some common deficiencies include failure to respond to all portions of a standard, disclosure, or form; failure to update to the current *Hurricane Standards Report of Activities* language or *Flood Standards Report of Activities* language; omission of supporting scientific references; errors and contradictory material in the ~~s~~Submission; and insufficient detail for review of methodology. Failure to adequately provide a required written response or the necessary public documentation expected by the Commission in the hurricane or flood model ~~s~~Submission shall result in a deficiency. Failure to follow the acceptability process requirements shall 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 shall determine the appropriate time frame for correcting deficiencies. Failure to ~~correct~~ respond to the deficiency within the time frame specified shall result in the termination of the review process. The Commission Chair has the discretion to extend the time frame for a modeling organization correcting deficiencies if unusual circumstances are involved.

Revised ~~s~~Submission documentation provided to correct deficiencies shall include an annotated list of revisions, including the revision dates, and updated Expert Certification forms as applicable.

Upon receipt and review of the revisions to the ~~s~~Submission to correct deficiencies, an addendum to the pre-visit letter may be sent to the modeling organization on the nature of the corrections, if needed.

Issue: Issues are related to the operation and theoretical soundness of the hurricane or flood model. Issues shall not require a modeling organization to submit additional public documentation that is not required of all modeling organizations.

Issues shall 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 hurricane or flood model to the Commission for acceptability.

If the nature of an issue is such that the Commission feels public documentation is needed, then the documentation shall 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 hurricane or flood model public than other modeling organizations thus resulting in a competitive disadvantage. [See Principle #12: *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 organizations hurricane or flood model ~~s~~Submissions, the Commission Chair will take up one modeling organization hurricane or flood model ~~s~~Submission at a time as indicated on the agenda for the meeting. The Commission Chair will take up each hurricane or flood standards group and consider all the responses provided under the hurricane or flood standards, including the modeling organization's response to comply with the hurricane or flood standards, 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 hurricane or flood model ~~s~~Submission deficiencies. 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 shall 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 group of hurricane or flood standards. SBA staff working with the Professional Team will have provided the Commission members with a list of issues prior to the meeting. The Commission shall review those issues associated with each group of hurricane or flood standards and add, delete, or modify the list as appropriate.

Upon review of all hurricane or flood 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. The motion shall include a specific time frame for correcting any deficiencies in the hurricane or flood model ~~s~~Submissions. The Commission Chair will call for further discussion. After discussion, the Commission Chair will ask for a roll call vote. At any point, the Commission can determine that a modeling organization has not been responsive to the hurricane or flood model ~~s~~Submission requirements and vote to terminate the review process.

The Commission Chair will next ask if there is a motion and a second to approve the list of issues to be addressed by the modeling organizations during the review process. The Commission Chair will call for further discussion. After discussion, the Commission Chair will ask for a roll call vote.

Following a discussion of the issues, the Commission will next determine an approximate time frame needed for the closed portion of the Commission meeting to review and discuss trade secrets based upon the information provided in the hurricane or flood model ~~s~~Submission.

~~The Commission Chair~~ SBA staff shall provide a letter to each modeling organization listing:

1. Deficiencies identified in the hurricane or flood model ~~s~~Submission with the time frame assigned for correcting the deficiencies,

2. Issues to be addressed with the Professional Team during the on-site review and with the Commission during the meeting to review the hurricane or flood model for acceptability,

3. Inquiries and investigations to be addressed with the Professional Team during the on-site review, and

4. An approximate time frame for the closed portion of the meeting to review the hurricane or flood model for acceptability.

Commission Meetings to Review Hurricane or Flood Models for Acceptability

The Commission meeting to review a hurricane or flood model for acceptability will begin with the Commission Chair calling upon the modeling organization to provide an overview presentation as required in the acceptability process of the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities*. The modeling organization shall make a presentation and Commission members may ask questions during and after the presentation.

The next portion of the meeting will be closed to the public and will involve the discussion of trade secrets used in the design and construction of the hurricane or flood model identified in the acceptability process of the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities*, and identified by the Professional Team during the on-site or additional verification reviews ~~and~~ as listed in the Professional Team report to the Commission.

At the public meeting to determine the acceptability of a hurricane or flood model, once a quorum is present, either in person, virtually, or by telephone, all votes shall 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 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 hurricane or flood standard does not apply to a particular hurricane or flood model, if the Commission votes affirmatively that the hurricane or flood standard does not apply, then such a vote shall constitute a determination by the Commission that the hurricane or flood standard is not applicable.

The hurricane standards are categorized under six groups:

1. General Hurricane Standards,
2. Meteorological Hurricane Standards,
3. Statistical Hurricane Standards,
4. Vulnerability Hurricane Standards,
5. Actuarial Hurricane Standards, and
6. Computer/Information Hurricane Standards.

The flood standards are categorized under seven groups:

1. General Flood Standards,
2. Meteorological Flood Standards,
3. Hydrologic~~al~~ and Hydraulic Flood Standards,
4. Statistical Flood Standards,
5. Vulnerability Flood Standards,
6. Actuarial Flood Standards, and
7. Computer/Information Flood Standards.

The minimum number of vote tallies from a single vote taken to determine the acceptability of a hurricane or flood model shall be one for each group of hurricane or flood standards. If the Commission determines that the hurricane or flood model meets all hurricane or flood standards in a group, the hurricane or flood model is found acceptable with respect to each individual hurricane or flood standard in the group. Hurricane or flood standards with subparts denoted by a notation of A, B, C, etc. are considered one hurricane or flood standard. At the request of any Commission member, one or more hurricane or flood standards in a group may be designated 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 hurricane or flood model as may be appropriate due to the unique aspects of the hurricane or flood model.

Failure of a modeling organization to provide the trade secret information required in the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities* shall result in a deficiency. If the Commission identifies other deficiencies, the Commission shall specify a time frame for correction of those deficiencies that may include a review by one or more Professional Team members. The corresponding standards will not be voted on by the Commission until the deficiencies have been satisfactorily addressed and reviewed by one or more Professional Team members.

The Commission Chair will read the first hurricane or flood standard title and will call upon the modeling organization to discuss the compliance of the hurricane or flood model with the hurricane or flood 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 hurricane or flood standard title. Once all the

hurricane or flood standards in a group have been presented and discussed, the Commission Chair will ask the Commission members whether there are any hurricane or flood standards that need to be designated for a separate vote. If no response is heard, the Commission Chair will ask for a motion to find the hurricane or flood model acceptable under that group of hurricane or flood standards. A motion will be made and seconded by Commission members. 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 hurricane or flood standards designated for a separate vote will be voted on separately in a roll call vote.

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

The Commission will have completed its determination of the acceptability of the hurricane or flood model when it has completed voting on all hurricane or flood 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 hurricane or flood standards, the Commission Chair will state that the Commission does or does not find the hurricane or flood model to have met all the hurricane or flood standards. If the Commission finds the hurricane or flood model acceptable, the Commission Chair will indicate to the modeling organization that the modeling organization will receive a letter of acceptability as provided in the acceptability process of the *Hurricane Standards Report of Activities* or the *Flood Standards 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 Hurricane or Flood Model is not Found Acceptable by the Commission

If a hurricane or flood model fails to meet one or more hurricane or flood 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 order to provide additional information and data to the Commission to justify that the hurricane or flood model complies with the hurricane or flood standards and other requirements. The appeal process is specified in the acceptability process of the *Hurricane Standards Report of Activities* and the *Flood Standards 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 hurricane or flood model.

The Commission Chair will call upon the modeling organization to provide a presentation which ~~would~~ shall 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 hurricane or flood 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 completed, the Commission Chair will ask for a roll call vote.

If the motion to reconsider the hurricane or flood 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 hurricane or flood model. The Commission may formulate additional questions and 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 meeting if requested by the modeling organization. If additional data and information is necessary for reconsideration of the hurricane or flood 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 hurricane or flood 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 hurricane or flood model. The Commission shall then determine which hurricane or flood standards are to be reconsidered. This may include only the hurricane or flood standards that were previously not found acceptable, or it may include other hurricane or flood 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 hurricane or flood model. The Commission shall vote on which hurricane or flood standards are to be reconsidered prior to reconsideration of the hurricane or flood 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 hurricane or flood standards, the Commission shall be guided by new information and data which was not previously provided by the modeling organization. Each hurricane or flood standard will be discussed and voted upon separately in a roll call vote. The Commission Chair will read the title of the first hurricane or flood standard being reconsidered and will call upon the modeling organization to present new information and data and to discuss the compliance of the hurricane or flood model with the hurricane or flood 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 hurricane or flood model meets the hurricane or flood standard under reconsideration. A motion will be made and seconded by Commission members. 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 hurricane or flood 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 hurricane or flood model when it has completed voting on all hurricane or flood standards being reconsidered. This does not preclude the Commission from revisiting a previous vote on reconsideration of a hurricane or flood standard or revising the voting procedure as noted above. Upon conclusion of voting on all hurricane or flood standards being reconsidered, the Commission Chair will state that the Commission does or does not find the hurricane or flood model to have met all the hurricane or flood standards being reconsidered. If the Commission finds the hurricane or flood model acceptable under the hurricane or flood standards reconsidered, the Commission Chair will indicate to the modeling organization that the modeling organization will receive a letter of acceptability as provided in the acceptability process of the *Hurricane Standards Report of Activities* or the *Flood Standards 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, hydrology, hydraulics, structural engineering, coastal engineering, actuarial science, statistics, and computer/information science. The discussions from the planning workshops will be instrumental in planning for future hurricane and flood standards, disclosures, audit requirements, 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.

Outside Party Input Regarding Hurricane and Flood Standards, Disclosures, Audit Requirements, Forms, or Other Processes Adopted by the Commission

From time to time, parties other than Commission members, Professional Team members, and SBA staff assigned to the Commission make recommendations for the Commission to consider. For the Commission to fully and adequately consider input from outside parties, the following process and organizational framework is established for reviewing such input.

The Commission has a clearly defined statutory responsibility to act as a panel of experts to provide the most actuarially sophisticated guidelines and standards for projection of hurricane and flood losses possible, given the current state of actuarial science. The Commission's role is also narrowly defined as to its scope and purpose. As such, input provided by outside parties shall be considered by the Commission at its sole discretion. Subjects that go beyond the purview of the Commission's jurisdiction shall be rejected without consideration based on a decision by the Commission Chair. The Commission Chair may bring the matter to a vote by the Commission.

In order to enable the Commission and the appropriate committees to evaluate recommended changes, the Commission requires that each recommendation be in the form of an amendment to specific language in the hurricane or flood standard, disclosure, audit requirement, form, or process. The specific amendatory language ~~must~~ shall be accompanied by a brief statement of the problem being addressed ~~by the amendment~~ and ~~an explanation of~~ how the amendment solves the problem. The problem statement~~, explanation,~~ and amendatory language shall be received by the Commission at least ten business days prior to the committee or Commission meeting at which the outside party wishes the amendment to be considered.

Problem Statement: A brief statement of the problem being addressed and justification for the modification shall be provided with all proposed amendatory language.

Amendatory Language: Proposed amendatory language will assure that all recommended revisions to hurricane and flood standards, disclosures, audit requirements, forms, and processes suggested by outside parties are in a form that allows the Commission and its committee structure to give appropriate consideration to the substance of a particular proposal with minimum time spent resolving ambiguities, drafting questions, and similar issues.

Consideration of any proposed amendment is at the discretion of the committee chair when the input is provided for committee consideration. The proposed amendment may later be accepted or rejected for review by the Commission Chair prior to such input being brought before the Commission for a vote.

While comments and recommendations of a more general nature may be provided by outside parties, such recommendations shall be in the form described above in order to be considered at a committee or Commission meeting called for the purpose of adopting or revising hurricane and flood standards, disclosures, audit requirements, forms, or processes. Nothing in this paragraph prevents a Commission member from proposing alternative language to address an issue raised by an outside party.

Any topics for general discussion shall be addressed to the Commission Chair who will decide, in his or her sole discretion, whether the topic merits discussion by Commission members, when and how the topic will be discussed, and whether or not to accept public comment. The Commission Chair shall reject any topic for discussion that is beyond the scope of the Commission's purview.

~~**Problem Statement:** A brief statement of the problem being addressed shall be provided with all proposed amendatory language.~~

~~**Explanation:** The explanation shall classify the proposal as general, technical, or editorial and include justification for the modification.~~

~~**Amendatory Language:** Proposed amendatory language will assure that all recommended revisions to hurricane and flood standards, disclosures, audit requirements, forms, and processes suggested by outside parties are in a form that allows the Commission and its committee structure to give appropriate consideration to the substance of a particular proposal with minimum time spent resolving ambiguities, drafting questions, and similar issues.~~

This framework does not restrict the scope of proposals and allows outside parties the flexibility to present the arguments for their proposal in whatever form and at whatever length they desire.

Budget Consideration

All new projects that have a fiscal impact shall 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 shall consist of a proposal, an estimated cost, and a time frame for completion. The Commission shall 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 hurricane and flood model ~~s~~Submissions or any fiscal impact that revisions to the acceptability process or the hurricane and flood 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., also known as 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. This includes the entirety of Commission meetings, encompassing the structured discussions, breaks, and any incidental time around the formal start and end of a Commission meeting.

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)(g), F.S.

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

1. Open to the public,

2. Noticed,

3. Recorded by a court reporter, and

4. Minutes preserved.

The official minutes of the Commission ~~will~~ consists of a verbatim transcript unless special circumstances arise. In addition, SBA staff may prepare a summary of the meeting that will be ~~added to~~included with the transcript ~~and together will~~to comprise the minutes of the meeting.

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

Trade Secret Violations: s. 688.002, F.S., defines misappropriation as "disclosure or use of a trade secret of another without express or implied consent by a person who at the time of disclosure or use, knew or had reason to know that her or his knowledge of the trade secret was acquired under circumstances giving rise to a duty to maintain its secrecy or limit its use."

Section 688.004, F.S., provides for damages as a result of a trade secret violation, "a complainant is entitled to recover damages for misappropriation. Damages can include both the actual loss caused by misappropriation and the unjust enrichment caused by misappropriation that is not taken into account in computing actual loss."

If a trade secret also meets the definition of a trade secret in s. 812.081, F.S., the following penalty provided in ~~s. 812.081, F.S.,~~that section for violating the confidentiality of trade secrets could still apply:

> *"(2) It is unlawful for a person to willfully and without authorization, obtain or use, or endeavor to obtain or use, a trade secret with the intent to either temporarily or permanently:*
>
> *(a) Deprive or withhold from the owner thereof the control or benefit of a trade secret; or*
> *(b) Appropriate a trade secret to his or her own use or to the use of another person not entitled to the trade secret.*
>
> *A person who violates this subsection commits theft of a trade secret, a felony of the third degree, punishable as provided in s. 775.082, s. 775.083, or s. 775.084.*

(3) A person who traffics in, or endeavors to traffic in, a trade secret that he or she knows or should know was obtained or used without authorization commits trafficking in trade secrets, a felony of the second degree, punishable as provided in s. 775.082, s. 775.083, or s. 775.084."

FINDINGS OF THE COMMISSION

FINDINGS OF THE COMMISSION

(These findings are applicable to the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities*.)

CONCERNING MODEL ACCURACY AND RELIABILITY

Background

Sections 627.0628(3)(a), (b), and (f), 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, related to hurricane loss projections used in residential property insurance rate filings, flood loss projections used in rate filings for personal lines residential flood insurance coverage, and probable maximum loss calculations. This section also states that the Commission shall revise previously adopted actuarial methods, principles, standards, models, or output ranges every odd-numbered year for hurricane loss projections and no less than every four years for flood loss projections.

The following findings address the accuracy or reliability of the hurricane standards that the Commission has adopted since 1996 and the flood standards that the Commission has adopted since 2017, 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 hurricane loss costs, personal residential flood loss costs, and probable maximum loss levels.

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

Accurate and Reliable – Defined

The Commission finds that the computer simulation hurricane 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 hurricane model construction are reflected in the six groups of hurricane standards established and refined since June of 1996.

1. General Hurricane Standards ~~reflecting~~ addressing the professional status of the hurricane model designers, implementers, and testers, and generic aspects of the hurricane model.

2. Meteorological Hurricane Standards covering all aspects of this infrequent weather phenomenon.

3. Statistical Hurricane Standards addressing the statistical foundation of the hurricane model and the sensitivity and uncertainty assessment of hurricane model outputs as a function of hurricane model inputs.

4. Vulnerability Hurricane Standards assessing the impact of the hurricane winds on residential property.

5. Actuarial Hurricane Standards assessing the damage impact in insurance terms.

6. Computer/Information Hurricane Standards ~~providing~~ addressing the overall design, construction, and execution of the hurricane model.

The Commission finds and recognizes that the scientific fields underlying hurricane models continue to evolve providing further insights into property damage and insurance implications. As a direct consequence, the Commission reviews and revises the hurricane standards comprising its *Hurricane Standards Report of Activities* every odd-numbered year. Every odd-numbered year is defined as every year ending in an odd number (e.g., ~~2017, 2019,~~ 2021, 2023, 2025, 2027, 2029). The Commission finds that the hurricane standards adopted every odd-numbered year represent the current state of actuarial science regarding computer simulation hurricane modeling for purposes of producing hurricane loss costs and hurricane probable maximum loss levels for residential property in Florida that are accurate and reliable.

The Commission finds that the computer simulation flood models that have been reviewed by the Commission and found acceptable include appropriate model representations to simulate floods and the induced damage on personal residential property in Florida. The basic features of the flood model construction are reflected in the seven groups of flood standards established and refined since June of 2017.

1. General Flood Standards ~~reflecting~~ addressing the professional status of the flood model designers, implementers, and testers, and generic aspects of the flood model.

2. Meteorological Flood Standards covering all aspects of coastal and compound flooding including wind and other meteorological elements that drive storm surge and waves.

3. Hydrologic~~al~~ and Hydraulic Flood Standards covering all aspects of inland flooding including riverine, lacustrine, ~~and~~ surface water, and compound flooding.

4. Statistical Flood Standards addressing the statistical foundation of the flood model and the sensitivity and uncertainty assessment of flood model outputs as a function of flood model inputs.

5. Vulnerability Flood Standards assessing the impact of the coastal, ~~and~~ inland, and compound flooding on personal residential property.

6. Actuarial Flood Standards assessing the damage impact in insurance terms.

7. Computer/Information Flood Standards ~~providing~~ addressing the overall design, construction, and execution of the flood model.

The Commission finds and recognizes that the scientific fields underlying flood models continue to evolve providing further insights into property damage and insurance implications. As a direct consequence, the Commission reviews and revises the flood standards comprising its *Flood Standards Report of Activities* no less than every four years. No less than every four years is defined as every other year ending in an odd number (e.g., ~~2017,~~ 2021, 2025, 2029, 2033). The Commission finds that the flood standards adopted no less than every four years represent the current state of actuarial science regarding computer simulation flood modeling for purposes of producing flood loss costs and flood probable maximum loss levels for personal 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 hurricane and flood modeling, accurate means that the hurricane and flood models meet the applicable standards that have been developed and adopted to assure scientifically acceptable hurricane and flood loss cost projections and hurricane and flood probable maximum loss levels. However, accurate cannot necessarily mean that a hurricane or flood model conforms exactly to known facts since that contradicts the nature of the hurricane and flood modeling process. Reliable is defined for computer simulation hurricane and flood models as meaning that the hurricane or flood model will consistently produce statistically similar results upon repeated use without inherent or known bias.

CONCERNING TRADE SECRETS

The Commission finds the following with respect to Principle #10, *The trade secret aspects of models or methods being reviewed by the Commission shall be protected*.

1. Modeling organizations that produce a computer simulation hurricane or flood model may have trade secrets regarding the design and construction of that model.

2. 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 obtain a copy of the publicly available transcript of the meeting.

3. Modeling organizations have been willing to reveal all of their trade secrets if that information can remain confidential and within their control.

4. 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 of experts to review the hurricane and flood models on-site at the modeling organization on behalf of the Commission,

    b. On-site visits to the modeling organizations by Commission members, and

    c. Closed meetings for the purpose of discussing and reviewing trade secrets.

5. The law allows an exception from the public records law for trade secrets used in the design and construction of hurricane and flood models.

6. 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.

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

CONCERNING LAND USE AND LAND COVER DATABASE

The Commission finds that the hurricane models to be submitted under the 2025 hurricane standards ~~are anticipated to~~shall make use of a land use and land cover (LULC) database consistent with National Land Cover Database (NLCD) 2021 or later. Going forward, it is anticipated that the LULC database shall not differ from the NLCD by more than 5 years of the database validation date.

The Commission finds that the coastal storm surge and inland flood components of flood models to be submitted under the 2025 flood standards shall make use of a LULC database consistent with NLCD 2023 or later. Going forward, it is anticipated that the LULC database shall not differ from the NLCD by more than 5 years of the database validation date.

CONCERNING FHCF EXPOSURE DATA

The Commission finds that the FHCF exposure data shall be updated with the 2025 hurricane standards and is anticipated to be updated on a regular cycle or when additional data fields are included that warrant an update.

CONCERNING PROFESSIONAL ENGINEER EXPERT CERTIFICATION

The Commission finds that the hurricane models to be submitted under the 2025 hurricane standards ~~will~~ shall require that the professional engineer certification expert be a Florida licensed professional engineer.

The Commission finds that the flood models to be submitted under the 2025 flood standards shall require that the vulnerability professional engineer certification expert be a Florida licensed professional engineer.

CONCERNING LOSS COMPARISONS BETWEEN A CURRENT ACCEPTED FLOOD MODEL AND A FLOOD MODEL UNDER REVIEW

The Commission finds that the flood models to be submitted under the 2025 flood standards shall provide loss comparisons to the current accepted flood model by County and by Hydrologic Unit Code (HUC). For the 2029 flood standards and going forward, the comparisons shall be by HUC only.

CONCERNING FORM S-6, HYPOTHETICAL EVENTS FOR SENSITIVITY AND UNCERTAINTY ANALYSIS

The Commission finds that a modeling organization shall submit a Form S-6 related to the wind peril under the 2027 hurricane standards, and going forward, not less than every other revision of the hurricane standards (e.g., 2031, 2035, 2039).

The Commission finds that a sensitivity and uncertainty analysis form, analogous to Form S-6, shall be developed for the 2029 flood standards.

CONCERNING INTERACTIVE TRACEABILITY WITHIN SOFTWARE

The Commission finds that interactive traceability within software shall be considered for the 2027 hurricane standards and the 2029 flood standards. It is anticipated that this requirement shall apply to newly developed code and not required for all existing code or research code.

Interactive traceability in the context of computer software auditing and review refers to the dynamic ability to trace and verify the relationships between software artifacts (such as requirements, design elements, code, and test cases) in real-time or through user-driven interactions during an audit or review process.

PROCESS FOR DETERMINING THE ACCEPTABILITY OF A COMPUTER SIMULATION HURRICANE MODEL

PROCESS FOR DETERMINING THE ACCEPTABILITY OF A COMPUTER SIMULATION HURRICANE MODEL (ACCEPTABILITY PROCESS)

INTRODUCTION

This chapter specifies the Commission's process for the determination of acceptability of a computer simulation hurricane model (model), and provides guidance to modeling organizations for preparing and submitting required documentation.

Due to the complex and unique nature of hurricane and flood perils and recognizing that a modeling organization may submit only a hurricane model or only a flood model, the Commission has determined that the review of hurricane and flood models for acceptability shall be independent of each other. ~~Hence~~Therefore, a hurricane model and a flood model shall be submitted separately and reviewed separately.

The Commission has determined, if a model is found acceptable or fails under one group of standards applicable to hurricane or flood, it shall have no bearing or impact on the other type of model's acceptability or failure under the respective group of standards. A modeling organization submitting both a hurricane model and a flood model shall have each model reviewed separately and independently under the respective unique group of standards applicable to hurricane or flood.

It should be understood that if a modeling organization submits both a hurricane model and a flood model, if an error is found~~and~~ in the course of a review (e.g., internal review, Professional Team on-site review, Commission review) ~~of~~ in either the hurricane model or the flood model, ~~an error is discovered~~ that is also likely to co-exist in the ~~flood model or the hurricane~~other model, then it is incumbent on the modeling organization to report this error in accordance with ~~section III.~~either the Commission Review of Submission Documentation and Resolution of Deficiencies~~the Readiness Notification~~ or the ~~section IX.~~ Discovery of Differences in a Model after a Model has been Determined to be Acceptable by the Commission, as appropriate. Consequently, the onus is on the modeling organization to make ~~this~~ the correction ~~if it exists~~in both models as appropriate, in keeping with the independence of the two model reviews.

~~This chapter specifies the Commission's process for the determination of acceptability of a computer simulation hurricane model (model).~~

STANDARDS IMPLEMENTATION SCHEDULE

The Commission has determined that prior to November 1 of every odd-numbered year~~, it will adopt~~ new hurricane standards, ~~revise~~ revisions to existing hurricane standards, and ~~if necessary, revise this~~revisions to the acceptability process will be adopted. The effective date of new or revised hurricane standards (standards) will be November 1 of that year unless otherwise specified by the Commission.

The standards and procedures published in the *Hurricane Standards Report of Activities as of November 1, ~~2023~~2025*, will not be scheduled for revision until ~~2025~~2027.

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

The Commission has further determined that the period between the effective date of new and revised standards and November 1 of the following year (the deadline for notification by the modeling organization) is a reasonable length of time for any modeling organization to comply with the standards adopted by the Commission.

If the Commission determines that this time frame is not sufficient, based on the nature of the revisions 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 Commission Chair shall have the authority to grant a reasonable extension should the Commission 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.

The Commission has determined that the Acceptability Process adopted and published in the *Hurricane Standards Report of Activities as of November 1, 2025,* shall apply to reporting and review of:

1. Editorial errors and differences discovered in models determined acceptable under the 2023 hurricane standards,

2. Interim model and platform updates, and

3. Updates for consistency of hurricane and flood models.

MODEL SUBMISSION DOCUMENTATION: SCHEDULE, GUIDELINES, AND NOTIFICATION REQUIREMENTS

~~The Commission has determined that any~~A modeling organization that desires to have a model reviewed for compliance with the 2025 hurricane standards ~~adopted by the Commission~~ shall notify the Commission in accordance with the requirements set out below by November 1, ~~2024~~2026.

If any deadline provided for within this chapter falls on a Saturday, Sunday, or on a legal State of Florida or federal holiday, then the actual due date shall be the day immediately following the applicable due date which is not a Saturday, Sunday, or legal State of Florida or federal holiday.

~~The Commission has further determined that the period between the effective date of new and revised standards and November 1 of the following year (the deadline for notification by the modeling organization) is a reasonable length of time for any modeling organization to comply with the standards adopted by the Commission.~~

~~If the Commission determines that this time frame is not sufficient, based on the nature of the revisions 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 Commission Chair shall have the authority to grant a reasonable extension should the Commission 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.~~

The modeling organization shall generate a Submission for model review providing evidence-based information (e.g., discussion, data, figures, tables, references) that clearly demonstrates compliance with each individual standard, disclosure, and form listed in the *Hurricane Standards Report of Activities*.

Final ~~s~~Submission documentation for a model that has been found acceptable by the Commission is ~~posted~~ available on the Commission website at~~, https://fchlpm.sbafla.com/~~ *https://fchlpm.sbafla.com/model-submissions/*. A note is posted on the web~~site~~ page with instructions for submitting a public records request to obtain~~ing~~ a copy of initial ~~s~~Submission documentation.

~~I.~~ ***Schedule***

~~The following is an anticipated schedule:~~

September ~~2023~~2025	Committee meetings for the ~~2023~~ 2025 Standards
October ~~2023~~2025	Adopt ~~2023~~ 2025 Standards and the *Hurricane Standards Report of Activities*
November ~~2023~~2025	~~*2023*~~ *2025 Hurricane Standards Report of Activities* published
November 1, ~~2024~~2026	Deadline for notification by modeling organization
January ~~2025~~2027	Commission meeting to review ~~s~~Submissions
January – April ~~2025~~2027	On-site reviews
April – ~~June 2025~~May 2027	Additional verification reviews, if necessary

May – July ~~2025~~2027	Commission meetings to review models for acceptability under the ~~2023~~ 2025 Standards

~~The Commission will endeavor to expedite the review of a model if the Professional Team is able to verify all standards during the initial on-site review~~.

~~II. Notification Requirements~~
Guidelines

An existing modeling organization is defined as an organization whose model was found acceptable by the Commission under the ~~most recent group of~~2023 hurricane 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 Commission Chair in writing by November 1, 2024, that the modeling organization is prepared for review.~~

The modeling organization shall contact SBA staff for any needed clarification of ~~s~~Submission instructions and requirements, especially if the instructions necessitate additional assumptions.

All modifications, adjustments, assumptions, or other criteria that are included in producing the information required by the Commission in the ~~s~~Submission shall be disclosed and will be reviewed.

Failure to follow the requirements as set forth below shall result in a Deficiency. (See definitions and further details under *Commission Meetings to Review Hurricane or Flood Model Submissions* in the "Commission Structure" chapter.)

~~B. Notification of Unusual Circumstances.~~ The modeling organization shall notify the Commission Chair in writing, as soon as possible, of any unusual circumstances that may impact the model or the model Submission.

~~The notification shall consist of:~~

Notification Requirements

1. A notification letter, which shall include:

   a. The name and version of the model ready for review and the name and version of each platform, with the primary platform designated, on which the model is implemented;

   b. ~~A reference to the signed Expert Certification Forms G-1 through G-7.~~ A detailed explanation of any caveats to the expert certifications (i.e., Forms G-1 through G-7) ~~shall be noted in the letter and accompanied by a detailed explanation~~; and

c. A statement that the model is ready to be reviewed by the Professional Team.

2. A Submission document, which shall include:

a. A statement in support of compliance with each standard and each standard subpart (see *Text Formatting Guidelines, page 61*). For existing modeling organizations, the material shall be updated as appropriate to reflect compliance with the new or revised standards even if the modeling organization submitted this material as part of a determination of acceptability under the previous group of standards.; and

3b. All required disclosure and form information. Four duplexed, bound copies and a link emailed to SBA staff where all required documentation can be downloaded from a single ZIP file.

3. FourFive duplexed, bound copies of the Submission document.

4. Aand a link emailed to SBA staff where providing access to and download capabilities of the complete electronic Submission with all required documentation can be downloaded from as a single ZIPcompressed file.

A complete electronic Submission documentation shall be include: provided electronically in the following manner.

a. Form M-1, Form M-3, Form M-4, Form V-2, Form V-4, Form A-2, Form A-4, Form A-5, and Form A-8, shall be provided in Excel format.;

b. Form A-1 and Form A-3 shall be provided in both Excel and PDF format.;

c. Form S-6, for a new modeling organization only or an existing modeling organization that has made changes to the windfield formulation that could affect the conclusions of the sensitivity analysis, shall be provided in ASCII and PDF format.;

d. Form V-3, Form V-5, and Form A-6, if not considered as trade secret by the modeling organization, shall be provided in Excel format.; and

e. The remaining portions of the sSubmission document shall be provided in PDF format which shall support highlighting and hyperlinking, and shall be bookmarked by standard, form, and chapter.

f. All data Submission file names shall include the abbreviated name of the modeling organization, the standards year, and the form name (when applicable).

g. The PDF submission file shall support highlighting and hyperlinking, and shall be bookmarked by standard, form, and chapter.

SUBMISSION ORGANIZATION AND FORMATTING GUIDELINES

~~4. Format of the Submission:~~

The Submission shall be organized as follows:

a. Table of Contents ~~shall be included.~~;

b. ~~Submission document shall be~~Pages consecutively numbered from the first page (including cover) using a single numbering system from the beginning to the end of the ~~s~~Submission;

~~b.~~c. ~~, and shall include the~~ Document date in a ~~footnote~~footer; ~~.~~

d. The modeling organization name in a header or footer;

~~c.~~e. All tables, graphs, equations, 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 ~~.~~;

~~a.~~ 6. All forms ~~shall be~~ included in a Submission appendix except for Form A-1, Form A-3, and forms designated as a Trade Secret Item. If forms designated as a Trade Secret Item are not considered trade secret by the modeling organization, those forms shall be included in a Submission appendix.

Failure to provide the forms in a Submission appendix will result in a ~~d~~Deficiency.

~~A hyperlink to the location of each form in the Submission appendix shall be provided in the corresponding disclosure.~~

~~i~~7. ~~Acronyms shall be defined on their first use in the Submission.~~ A complete list of all acronyms used in the Submission shall be ~~listed~~ included and defined in a Submission appendix. Acronyms shall be defined on their first use in the Submission.

Text Formatting Guidelines

~~d. State the~~ Each standard, disclosure, or form shall be stated in *italics* ~~and give the response~~ directly followed by the response ~~below~~ in non-italics text, following the order as they appear in the *Report of Activities*. The Purpose, Relevant Forms, and Audit portions shall not be restated. Portions of form instructions that do not require a response (e.g., Hurricane Output Range Specifications) shall not be restated.

The modeling organization response shall include a statement in support of compliance following each standard, including each standard subpart. The response to the standard shall not be a restatement of the standard, but shall rather explain how the model meets the requirements of the standard by including (as appropriate):

(1) a statement in support of compliance with the standard,

(2) a reference to applicable disclosures, or

(3) a general description of applicable trade secret information that will be shown to the Professional Team during the on-site review, and how ~~it~~ the trade secret information supports compliance with the standard.

If a standard, ~~or~~ disclosure, or form has multiple parts, respond to each part separately.

Failure to provide a response to a standard, ~~or~~ disclosure, or form, and failure to provide a response for each part separately for standards, ~~and~~ disclosures, and forms with multiple parts, ~~will~~ shall result in a ~~d~~Deficiency.

The disclosures are 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, assumptions, and documentation will be available for the Professional Team during the on-site review.

Data Formatting Guidelines

~~e.~~1. Graphs and colormaps shall be accompanied by legends and labels for all elements.

~~1.~~a. Individual elements shall be clearly distinguishable, whether presented in original or copy form.

b. For graphs using a log scale ~~on any~~ axis or axes, ~~provide the axis values for the~~annotate significant data points on the graph with their specific axes values.

~~2.~~c. Map~~s~~-based data figures shall use color scales with ~~a minimum of seven~~ appropriate increments to ensure sufficient gradation across the color legend. Map data colors ~~used on maps~~ shall be easily discernable from ~~readable on~~ map backgrounds ~~used~~. Color schemes and scales shall be selected to facilitate comparison among colormaps showing similar information. ~~The color legend and associated map shall be comprised of an appropriate number of intervals to yield a gradation of color across each map.~~

For colormaps that depict a change or difference (e.g., anomalies, deltas), a diverging colormap ~~with grey designating~~ centered on zero shall be used with grey at the midpoint ~~when applicable~~.

For other types of data, colormaps shall be logically aligned with the variable type being visualized and selected to facilitate comparison as needed (e.g., sequential colormaps for continuous unidirectional variables (e.g., windspeed), categorical colormaps for discrete classifications).

d. Relevant geographic boundaries (e.g., counties, ZIP (Zone Improvement Plan) Codes) shall be ~~provided on~~ included in all map~~s~~-based data figures for which they are relevant.

e. ~~When applicable, the m~~Minimum and maximum data values and their ~~point~~ physical locations shall be plotted on the map~~s~~-based data figures, when applicable.

~~3. 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 are indicated on individual disclosures or form instructions.

~~4.~~1. ~~For graphs using a log scale on any axis, provide the axis values for the significant points on the graph.~~

~~g.~~2. NA shall be used ~~in cells~~with tabular data to signify no exposure.

~~h.~~3. All units of measurement for model inputs and outputs shall be clearly identified.

~~i.~~4. All model outputs of length, windspeed, and pressure shall be ~~in~~ quantified using English standard units of measurement, as appropriate.

~~j. All equations shall be uniquely numbered within the submission document.~~

~~k.~~5. Unless otherwise specified, windfields generated by the model shall be used for completing relevant forms and tables in the ~~s~~Submission.

~~b.k. All forms shall be included in a submission appendix except for Form A-1, Form A-3, and forms designated as a Trade Secret Item. If forms designated as a Trade Secret Item are not considered trade secret by the modeling organization, those forms shall be included in a submission appendix.~~

~~Failure to provide the forms in a submission appendix will result in a deficiency.~~

~~A hyperlink to the location of each form shall be provided in the corresponding disclosure.~~

~~l. Acronyms shall be defined on their first use in the submission. A complete list of all acronyms used in the submission shall be listed and defined in a submission appendix.~~

~~m~~2. All column headings shall be shown and repeated at the top of each subsequent page for forms and tables that span multiple pages.

3. All storm name references shall include the year of the storm.

~~The modeling organization shall contact SBA staff for any needed clarification of submission instructions, especially if the instructions necessitate additional assumptions.~~

~~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. Notification of Unusual Circumstances.** The modeling organization shall notify the Commission Chair in writing, as soon as possible, of any unusual circumstances that may impact the model or the model submission.~~

~~III.~~ COMMISSION REVIEW OF ~~the Readiness Notification~~SUBMISSION DOCUMENTATION AND RESOLUTION OF DEFICIENCIES

~~Once~~ For modeling organization ~~s~~Submissions ~~are~~ received by the November 1, 2026, deadline, the Professional Team shall review the Submissions and report to the Commission any deficiencies identified in the Submissions. The Commission ~~will~~ shall hold a meeting to review the Submissions and deficiencies identified by the Professional Team ~~submissions~~ as discussed under the "Commission Structure" chapter of the *Hurricane Standards Report of Activities*.

Prior to the Professional Team on-site review and in accordance with the time frame specified by the Commission during the meeting to review the Submissions, the modeling organization shall submit, in electronic format via email ~~correspondence~~ to SBA staff, corrections for the deficiencies identified during the meeting. An annotated list of revisions, including the revision dates, shall be provided along with the corrections to the deficiencies ~~shall be electronically provided~~.

In response to the deficiencies identified, ~~only~~ revised pages and forms shall be provided ~~with~~ using revision marks as specified under ~~section V.~~ Submission Revisions.

If more than twenty pages (exclusive of forms in a ~~s~~Submission appendix) are impacted by ~~the~~ corrections ~~to~~ for the deficiencies, then an entire ~~s~~Submission document shall be submitted (~~four~~ five duplexed, bound copies) in addition to the electronic documentation~~along with a link~~ emailed to SBA staff ~~where all required documentation can be downloaded from a single ZIP file in accordance with the time frame specified by the Commission~~.

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.

Revised ~~s~~Submission documentation provided to correct deficiencies shall include updated Expert Certification forms as applicable.

In addition to responding to deficiencies specifically, the modeling organization may opt to make further minor corrections elsewhere in the ~~s~~Submission document. Modeling organizations shall also correct editorial issues noted in the Professional Team pre-visit letter.

~~An annotated list of revisions, including the revision dates, along with the corrections to the deficiencies shall be electronically provided.~~

Failure of the modeling organization to correct any deficiencies within the time frame specified shall 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 the model.

SUBMISSION OR MODEL REVISIONS NECESSARY PRIOR TO AN ON-SITE REVIEW

If a modeling organization realizes the initial ~~s~~Submission or the model has material errors and needs revision prior to the scheduled on-site review, the modeling organization shall immediately notify the Commission Chair in writing. The notification shall detail:

1. ~~the~~ The nature of the error and revisions to the ~~s~~Submission or the model,

2. ~~w~~When and how the error was discovered,

3. ~~w~~Why the error occurred,

4. ~~h~~How the error was corrected,

5. ~~h~~How the modeling organization plans to mitigate against future errors of the sort, and

6. ~~a~~Any other relevant documentation necessary to describe both the error and the corrections.

The Commission Chair shall:

~~(1)~~1. ~~r~~Review the notification and inform the Commission members as soon as possible~~;~~,

~~(2)~~2. ~~a~~Assess, with at least three Professional Team members, the severity of the error~~;~~, and

~~(3)~~3. ~~d~~Determine whether to postpone the scheduled 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 shall submit revised documentation no less than fourteen calendar days prior to the scheduled on-site review by the Professional Team. The revised documentation shall include an annotated list of the revisions, including the revision dates, and updated Expert Certification forms as applicable. If the modeling organization cannot correct the problems and submit revised documentation fourteen calendar days prior to the scheduled on-site review, then all associated standards shall not be verified during the scheduled on-site review.

~~IV.~~ PROFESSIONAL TEAM ON-SITE REVIEW: FINDINGS AND RESOLUTION PROCESS

~~If a determination has been made that a modeling organization is ready for an on-site review, SBA staff will schedule the Professional Team on-site review as discussed under the "On-Site Review of a Computer Simulation Hurricane Model by the Professional Team" chapter of the *Hurricane Standards Report of Activities*.~~

~~Trade secret items that are 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.~~

The Professional Team on-site review process is discussed in detail in the "On-Site Review" chapter of the *Hurricane Standards Report of Activities*.

There are two possible outcomes of the Professional Team on-site review regarding auditing for compliance with the standards.

1. The Professional Team determines that, in its opinion, the model ~~is likely to comply~~complies with the standards, and so reports to the Commission.

2. The Professional Team determines that, in its opinion, the model ~~is unlikely to~~does not comply with the requirements in one or more standards.

~~a.~~The Professional Team may react to possible corrections proposed by the modeling organization but ~~will~~ shall 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~~ shall review the corrective actions taken, including revisions to the ~~original November 1~~ initial ~~s~~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 shall ~~have~~ submit to the Commission Chair in writing a request for an additional verification review within seven calendar days from the final day of the on-site review ~~to notify the Commission Chair in writing that it will be ready for an additional verification review within thirty calendar days of the notification~~.

The modeling organization shall submit all revised documentation as specified under ~~section V.~~ Submission Revisions~~,~~ within ~~thirty~~ sixty calendar days of the ~~notification~~request for an additional verification review, but no later than seven calendar days prior to the additional verification review.

SBA staff ~~will~~ shall assemble the Professional Team, or an appropriate subset of the Professional Team, for ~~only one~~an additional verification review to ensure that the corrections have been incorporated into the version of the model under review.

~~c.~~ If the modeling organization disagrees with the Professional Team as to ~~likelihood of~~ compliance with one or more standards, the modeling organization has two options:

1. It can proceed to the scheduled Commission meeting to review models for acceptability under the ~~2023~~ 2025 Hurricane Standards and present its arguments to the Commission to determine acceptability, or

2. It can withdraw its request for review. Such a withdrawal shall result in the modeling organization waiting until after the next revision or review of the standards before requesting the Commission review its model.

Discrepancy Discovered after Completion of On-Site Review

~~c.~~ If a discrepancy in the model or model ~~s~~Submission is discovered by the modeling organization after the Professional Team has completed its on-site review, then the modeling organization shall without delay notify the Commission Chair in writing providing:

1. ~~a~~A detailed description of the discrepancies,

2. A request~~ing~~ for an additional verification review, and

3. An ~~indicating~~ indication of when the modeling organization will be ready for the additional verification review.

The modeling organization shall submit all revised documentation as specified under ~~section V.~~ Submission Revisions.

If an additional verification review has not been conducted, SBA staff ~~will~~ shall assemble the Professional Team, or an appropriate subset of the Professional Team, for an additional verification review to ensure that the corrections have been incorporated into the version of the model under review.

If an additional verification review has been previously conducted, the Commission Chair shall place the modeling organization's request for another additional verification review on the agenda for a special or regularly scheduled Commission meeting~~ of the Commission~~.

Regeneration of Form A-4

~~d.~~ If any problem necessitates the re~~-~~generation of the hurricane output ranges in Form A-4, the modeling organization shall submit a revised ~~hurricane output ranges in~~ Form A-4, to be received by the Commission no less than fourteen calendar days prior to the initial date of the on-site review or additional verification review. If this is not the case, then ~~Hurricane~~ Standard A-~~6~~8 (along with other related standards depending on the nature of the revision) shall not be verified during the initial on-site review or additional verification review.

In the event that Form A-4 was modified after the initial ~~s~~Submission, the modeling organization shall provide a newly completed Form A-5 using the initial ~~s~~Submission of Form A-4~~,~~ as the baseline for computing the percentage changes.

~~e. 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 2023 Hurricane Standards and present its arguments to the Commission to determine acceptability, or~~

~~2. It can withdraw its request for review. Such a withdrawal shall 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 a distinct notification letter with an annotated list of revisions, including the revision dates.

If revisions are the result of an error in the model or the ~~s~~Submission document, the letter shall detail:

1. ~~t~~The nature of the error and revisions to the model or the Submission,
2. ~~w~~When and how the error was discovered,
3. ~~w~~Why the error occurred,
4. ~~h~~How the error was corrected, ~~and~~
5. ~~h~~How the modeling organization plans to mitigate against future errors of the sort~~.~~, and
6. Any other relevant documentation to describe both the error and the corrections.

Updated Expert Certification forms ~~are to~~shall be provided as applicable.

The revision date shall be included on the ~~s~~Submission document cover page and the Model Identification page.~~, and in each revised page footnote if~~ If only revised pages are required to be submitted, the revision date shall be included in each revised page footer. ~~or in the submission document footnote if~~ If a complete ~~s~~Submission document is required to be submitted, the revision date shall be included in the Submission document footer.

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.

The modeling organization shall avoid the practice of marking whole paragraphs, tables, or sections as deletions, and including whole paragraphs, tables, or sections as replacements or additions, when only portions have been revised. Instead, the modeling organization shall identify the specific words that have been deleted or added.

Revisions in the Submission document shall be all inclusive, showing changes made to the initial Submission in a revised or final Submission. Multiple edits to the same text, figures, etc. need not be reflected.

The Professional Team and the Commission Chair will review the new material upon receipt for deficiencies. The Commission Chair shall notify the modeling organization of any ~~d~~Deficiencies and the time frame for correction. An additional verification review will not be held until all deficiencies have been addressed.

The Professional Team may provide the modeling organization a second pre-visit letter outlining specific issues and items to be addressed during the additional verification review.

If an additional verification review is requested, revised documentation shall be received within thirty calendar days of the request, but no later than seven calendar days prior to the additional verification review.

Once the on-site review or additional verification review by the Professional Team has concluded, complete final revised documentation shall be provided by the modeling organization to be received no less than ten calendar days prior to the Commission meeting to review the model for acceptability. The modeling organization shall email to SBA staff a link where complete electronic final revised documentation, including the revised ~~s~~Submission document with and without revision marks, and all required forms can be downloaded from a single ~~ZIP~~ compressed file.

If more than twenty pages are revised (exclusive of forms in a ~~s~~Submission appendix), ~~four~~ five duplexed, bound copies of the ~~s~~Submission document with revision marks for all revisions made to the ~~original November 1~~ initial ~~s~~Submission shall be provided. If twenty pages or fewer (exclusive of forms in a ~~s~~Submission appendix) are revised, only ~~four~~ five duplexed, bound copies of the revised pages and forms ~~(if revised)~~ shall be submitted.

The format of the revised documentation shall be as specified under ~~subsection A. Notification of Readiness for Review, Items 3 and 4 of section II. Notification Requirements~~Submission Organization and Formatting Guidelines.

~~VI.~~ COMMISSION MODEL REVIEW ~~BY THE COMMISSION~~FOR ACCEPTABILITY

~~**A. General Review of a Model.** 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 model's compliance with the standards. The meeting would provide for a general discussion about the model or its readiness for review and would also provide an opportunity for the Commission and the modeling organization 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 model are discussed, such discussions shall be held in a closed meeting.~~

~~**B. Meeting to Determine Acceptability.**~~

The Commission shall meet at a properly noticed public meeting to determine the acceptability of a 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, the Commission Chair 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 trade secret information to be presented to the Commission shall have been reviewed by the Professional Team during the on-site review or additional verification review, and shall not be significantly different from what was reviewed by the Professional Team. If the trade secret information is ~~substantially~~ significantly different from what the Professional Team reviewed during the on-site review or additional verification review, then the Commission shall suspend review of the model until the new information can be thoroughly reviewed by the Professional Team, and the Professional Team can make an informed recommendation to the Commission. If the Commission determines that meeting one standard makes it impossible to meet a second standard, the conflict shall be resolved by the Commission, and the Commission shall determine which standard shall prevail. If at the meeting a unique or unusual situation arises, the Commission shall determine the appropriate course of action to address that situation, using its sound discretion and adhering to the legislative findings and intent as expressed in s. 627.0628(1), F.S.

Each modeling organization's model ~~will~~ shall be reviewed independently of any other modeling organization's model currently accepted or presently applying for review.

Trade secrets used in the design and construction of the 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 shall occur during a closed meeting.

~~1.~~ ***Modeling Organization Model Overview and Changes Presentation***

All modeling organizations shall make a presentation to the Commission with respect to the model as used for residential property ratemaking purposes in Florida. The presentation shall use a medium that is readable by all Commission members ~~of the Commission~~. The modeling organization presentation is ~~for the purpose of~~to help~~ing~~ the Commission understand outstanding issues, how the modeling organization has resolved various issues, and to explain the basis ~~as to~~for how the model ~~meets~~ complies with the standards. Various issues may relate to:

~~a~~1. Informational needs of the Commission as ~~provided~~ requested in the disclosures and forms,
~~b~~2. The theoretical soundness of the model,
~~c~~3. Use of reasonable assumptions, and
~~d~~4. Other related aspects dealing with accuracy ~~or~~ and reliability.

~~For a new model, the modeling organization shall give a detailed overview presentation to the Commission (approximately one hour) explaining how the model is designed to be theoretically sound, meets the criteria of being accurate and reliable, and indicate which parts of the model are considered proprietary.~~

~~For an existing model, t~~The modeling organization shall present:

1. ~~a~~ A general, high-level overview of the model (no more than 20 minutes), and

2. An explanation of revisions to the current accepted model and their effect on hurricane loss costs and hurricane probable maximum loss levels. ~~This presentation shall concentrate on the theoretical basis for the model, highlight the measures taken to ensure the model is accurate and reliable, and indicate which parts of the model are considered proprietary.~~

For a new model that has not previously been determined acceptable, the modeling organization shall give a detailed overview presentation to the Commission (approximately one hour) explaining:

1. ~~h~~How the model is designed to be theoretically sound,

2. ~~m~~Meets the criteria of being accurate and reliable, and

3. ~~i~~Indicate which parts of the model are considered proprietary.

The modeling organization shall provide electronic copies of the model overview and changes presentation, in both PowerPoint and PDF format, to SBA staff to be received no later than close of business the day prior to the Commission meeting.

Modeling organization personnel shall distribute eighteen color, duplexed hard copies of the model overview and changes presentation to the Commission and Professional Team members at the start of the meeting. If, due to special circumstances, the meeting is held virtually, the modeling organization shall provide eighteen color, duplexed hard copies of the model overview and changes presentation to SBA staff to be received no less than two business days prior to the Commission meeting.

Following the model overview and changes presentation, the Commission shall hold a closed meeting where trade secrets used in the design and construction of the model will be discussed and reviewed. Modeling organizations that do not utilize the trade secret session shall cover the prescribed material during the public meeting portion.

~~2.~~ ***Closed Meeting Portion***

During the closed meeting where trade secrets used in the design and construction of the model are discussed and reviewed, the modeling organization shall present and discuss the audit slides used during the Professional Team on-site review for the following:

1. Standard G-3: Audits 2 and 4,

~~a.~~ 2. ~~Hurricane~~ Standard M-1: Audits 1, 2, ~~3, and 5~~6 and 9,

~~b.~~ 3. ~~Hurricane~~ Standard M-2: Audits ~~2~~1 and 3,

~~c.~~ 4. ~~Hurricane~~ Standard M-4: Audit ~~4~~5,

~~d.~~ 5. ~~Hurricane~~ Standard M-5: Audit 3,

6. Standard S-2: Audit 1.C if Form S-6 is not provided in the Submission, or Audit 2 if Form S-6 is provided in the Submission,

7. Standard S-3: Audit 1.C if Form S-6 is not provided in the Submission,

8. Standard S-5: Audit 1,

~~e.~~ 9. ~~Hurricane~~ Standard V-1: Audits 1, 8, 9, ~~3, 4, 10, 11, and~~ 18, and 22,

~~f.~~ 10. ~~Hurricane~~ Standard V-2: Audits 1 and 6~~9~~, ~~10, and 11,~~

~~g.~~ 11. ~~Hurricane~~ Standard V-3: Audits 1 and 7~~8 and 9~~,

~~h.~~ 12. ~~Hurricane~~ Standard V-4: Audits 1 and 10~~8~~,

13. Standard A-1: Audit 1,

~~i.~~ 14. ~~Hurricane~~ Standard A-~~3~~6: Audit 2,

~~j.~~ 15. Trade secret items, including audit items and responses to pre-visit letter ~~questions~~requests, identified and recommended by the Professional Team during the on-site and additional verification reviews to be shown to the Commission which will be documented in the Professional Team's report to the Commission,

~~k.~~ 16. In support of acceptability of ~~Hurricane~~ Standard V-4, a detailed discussion of Form V-3 and Form V-5, including but not limited to:

~~1.~~a. Individual hurricane mitigation measures for each windspeed and hurricane loss costs exhibiting logical mitigation impacts within categories and across structure types,

~~2.~~b. The fully mitigated building results relative to the contributions of the various hurricane mitigation measures,

~~3.~~c. Omission of any individual hurricane mitigation measures, and

~~4.~~d. An explanation of the relativities in Form V-3 and an explanation of Form V-5,

~~l.~~ 17. In support of acceptability of ~~Hurricane~~ Standard A-~~6~~8, a detailed discussion of Form A-6~~.~~, and

18. Issues identified by the Commission at the Meeting to Review Model Submissions that involve trade secret information.

Modeling organization personnel shall distribute eighteen comprehensive color, duplexed hard copies, numbered 1 through 18, of the modeling organization's prepared closed meeting presentation and the trade secret forms to the Commission and Professional Team members at the start of the closed meeting. The trade secret forms shall be printed separately from the presentation. For Form A-6, only the graphical summaries, the color-coded contour map, and the scatter plot shall be printed.

Modeling organization personnel shall collect the hard copies at the conclusion of the closed meeting and prior to anyone leaving the meeting room. If the meeting is held virtually due to special circumstances, the modeling organization is not required to provide hard copies of the prepared closed meeting presentation or trade secret forms.

All material presented in the closed meeting shall be complete, (e.g., all axes on graphs labeled).

Items that the modeling organization is precluded from ~~releasing~~ disclosing due to third party contracts ~~may~~ shall be excluded.

~~3.~~ ***Public Meeting Portion***

At the conclusion of the closed meeting, the Commission will resume the public meeting to continue the review of the model for acceptability. The modeling organization's presentation for this portion of the meeting shall ~~P~~provide an explanation of how the model ~~meets~~complies with the standards:

~~a. Provide an explanation of revisions to the current accepted model and their effect on hurricane loss costs and hurricane probable maximum loss levels, and~~

~~b. Provide an explanation of how the model meets the standards:~~

1. Each standard number and title shall be stated.

2. Explanation and demonstration of how the model complies with each standard ~~is met~~, exhibiting appropriate figures, graphs, or tables from the disclosures or forms that support compliance~~,~~.

   In support of acceptability of ~~Hurricane~~ Standard M-1, Forms M-1, ~~S-1~~M-4, and A-2 ~~are to~~shall be presented, and the consistency of the Model Base Hurricane Set across the forms ~~is to~~shall be explained.

   Asserting that the model complies with a standard ~~has been met~~ without providing substantive evidence is not acceptable.

   Stating what was reviewed on-site by the Professional Team is unnecessary ~~as~~ since that information is documented in the Professional Team report.

3. If relevant and non-proprietary, material not provided in the ~~s~~Submission which was presented to the Professional Team during the on-site review or additional~~for~~ verification review.~~, and~~

4. Any non-trade secret information that was provided during the closed meeting in order to facilitate a general understanding of the trade secret information presented to the Commission. That is, if a figure from the Submission document is shown in the trade secret session, the same figure shall be shown on the corresponding standard slides.

The modeling organization shall provide electronic copies of the standards presentation, in both PowerPoint and PDF format, to SBA staff to be received no later than close of business the day prior to the Commission meeting.

Modeling organization personnel shall distribute eighteen color, duplexed hard copies of the modeling organization's ~~prepared~~ public meeting presentation to the Commission and Professional Team members at the start of the public meeting. If the meeting is held virtually due to special circumstances, the modeling organization shall provide eighteen color, duplexed hard copies of the ~~prepared~~ public meeting presentation to SBA staff to be received no less than two business days prior to the Commission meeting.

~~All materials presented to the Commission during the public portions of the meeting to determine acceptability shall be electronically provided to SBA staff.~~

~~C.~~ 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 shall not be found acceptable. The modeling organization shall have an opportunity to appeal the Commission's decision as specified in ~~section VII.~~ Appeal Process to be Used by a Modeling Organization if a Model is Not Found to be Acceptable by the Commission.

Once the Commission has determined that a model is acceptable in accordance with the procedures in the acceptability process and that all required documentation as specified in the acceptability process has been provided to the Commission, the Commission Chair shall 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) model has been determined acceptable for projecting hurricane loss costs and hurricane probable maximum loss levels for residential property insurance rate filings in Florida. The determination of acceptability expires on November 1, ~~2027~~2029.

The Commission has determined that the (model name and version identification) on the (platform identification) (*primary platform*), and on the (additional platform identifications) (*functionally equivalent platform*), limited to the specific options acceptable for use in a Florida residential property insurance rate filing identified in ~~Hurricane~~ Standard A-~~1~~5~~,~~ Disclosure 6, as selected in the input form provided in Disclosure 4, and as reported in the output report provided in Disclosure 5:

~~a~~1. complies with the hurricane standards adopted by the Commission on ~~(date of adoption)~~October 28, 2025, and

~~b~~2. is sufficiently accurate and reliable for projecting hurricane loss costs and hurricane 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 shall be provided to the Commissioner of the Office of Insurance Regulation.

~~VII.~~ 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 calendar days to file a written appeal of the Commission's finding. The appeal shall:

1. ~~s~~Specify the reasons for the appeal,

2. ~~i~~Identify the specific standard or standards in question,

3. ~~p~~Provide appropriate data and information to justify its position, and

4. ~~m~~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 calendar days of receiving the appeal, the Commission shall hold a public meeting ~~for the purpose of~~to review~~ing~~ the appeal documentation, formulate additional questions to be responded to by the modeling organization, and request additional data and information if necessary.

If the Commission determines additional data and information are necessary for reconsideration of the model, the Commission's questions and request for additional data and information shall be provided to the modeling organization in a letter from the Commission Chair no later than ten calendar days after the meeting to consider the appeal request. The modeling organization shall respond to the Commission within ten calendar 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 meeting with the Commission.

The Commission ~~will~~ shall meet at a properly noticed public meeting to reconsider the acceptability of the model under the 2025 hurricane standards~~ established by the Commission~~.

If the Commission Chair determines that more preparation time is needed by Commission members, the Commission Chair 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 modeling organization.

Once the Commission has completed its reconsideration of acceptability and determined that the model ~~has met~~complies with all the standards being reconsidered and that all required documentation as specified in the acceptability process has been provided to the Commission, the Commission Chair shall provide the modeling organization with a letter confirming the Commission's action as specified under~~ subsection C.~~ Acceptability and Notification~~ of section VI. Review by the Commission~~.

If the model fails to be found acceptable by a majority vote for any one standard, the model shall not be found 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 shall be required to wait until after the next revision or review of the standards before requesting the Commission to review its model.

~~VIII.~~ DISCOVERY OF EDITORIAL ERRORS OR DISCREPANCIES IN A SUBMISSION AFTER A MODEL HAS BEEN DETERMINED TO BE ACCEPTABLE BY THE COMMISSION

If editorial errors or discrepancies are discovered in a current accepted model ~~s~~Submission, the modeling organization shall immediately notify the Commission Chair in writing. The notification shall include:

1. ~~a~~An errata detailing the nature of the editorial errors or discrepancies,

2. ~~t~~The corresponding revisions to the ~~s~~Submission, and

3. ~~u~~Updated Expert Certification forms as applicable.

The Commission Chair, in consultation with at least three Professional Team members, shall verify the corrections to the current accepted model ~~s~~Submission. Once the Commission Chair determines that the documentation and explanations provided by the modeling organization are sufficient, no further review by the Commission will be necessary. The Commission Chair shall provide a letter to the modeling organization acknowledging the notification of editorial errors or discrepancies and noting that the Commission accepts the modeling organization's errata and revisions to the current accepted ~~s~~Submission.

~~IX.~~ DISCOVERY OF DIFFERENCES IN A MODEL AFTER A MODEL HAS BEEN DETERMINED TO BE ACCEPTABLE BY THE COMMISSION

If the modeling organization discovers any differences between the model as found acceptable by the Commission and the model as used by its clients, the modeling organization shall without delay notify the Commission in writing describing the differences and the impact on hurricane loss costs and hurricane probable maximum loss levels.

The notification shall indicate:

1. ~~t~~The date the differences were discovered,

2. ~~h~~How the differences were discovered,

3. ~~t~~The underlying cause of the differences,

4. ~~a~~A description of the subsequent revisions to the model, and

5. ~~p~~Plans to mitigate against future differences of the sort.

Additionally, the modeling organization shall state the level of the differences based on the classification scheme below as either Type I, Type II, or Type III differences.

The notification shall be accompanied by:

1. Form V-2,
2. Form A-1,
3. Form A-4 using the applicable FHCF exposure data,
4. Form A-8 using the applicable FHCF exposure data, and
5. Form S-5 using the applicable FHCF exposure data~~,~~.

Each form shall be completed for both the current accepted version of the model in which the differences were discovered, and the revised version of the model after correction of the differences.~~, and a~~A percentage change comparison between the two versions shall also be provided.

Differences in hurricane loss costs or hurricane probable maximum loss levels within spreadsheets shall be computed without explicit rounding or truncation of floating-point values prior to generating the documentation specified above.

For purposes of complying with this requirement, a difference is anything that results in a model not being exactly the same as the model found acceptable by the Commission ~~for the standards as adopted in this *Hurricane Standards Report of Activities*~~. It does not include (1) interim model updates ~~as~~ addressed in ~~section X.~~ Interim Model Updates after a Model has been Determined to be Acceptable by the Commission, ~~section XI.~~ (2) interim platform updates addressed in Interim Platform Updates after the Florida Hurricane Model has been Determined to be Acceptable by the Commission, and (3) model updates ~~as~~ addressed in ~~section XIII.~~ Model Update for Consistency of Hurricane and Flood Models after the Model has been Determined to be Acceptable by the Commission~~, or other developmental revisions to the model that are listed under Hurricane Standard G-1, Disclosure 8~~.

Upon receipt of the modeling organization's notification and documentation as specified above, the Commission Chair shall consult with at least three Professional Team members to investigate, determine, and verify the impact of the differences as reported by the modeling organization.

~~Differences in hurricane loss costs or hurricane probable maximum loss levels within spreadsheets shall be computed without explicit rounding or truncation of floating-point values prior to generating the documentation specified above.~~

The type of differences noted shall be classified as falling into one of the following categories:

Type I: The model is not the exact same model as found acceptable, but there are no differences in hurricane loss costs for any five-digit ZIP Code area, and there are no differences in hurricane probable maximum loss levels for any return period.

Type II: There are differences in one or more hurricane loss costs for a five-digit ZIP Code area, but such differences do not exceed ±1%, or there are changes in hurricane probable maximum loss levels for one or more return periods, but such differences do not occur at the rounded third significant digit of the hurricane probable maximum loss number.

Type III: There are differences in one or more hurricane loss costs for a five-digit ZIP Code area or there are changes in hurricane probable maximum loss levels for one or more return periods that exceed the thresholds set in Type II.

~~A.~~ ***Type I Differences~~.~~***

~~1.~~ The modeling organization's notification and response related to differences noted at the Type I level shall only involve providing adequate documentation and shall not involve any further revisions to the model.

1. The modeling organization shall submit an addendum to the Submission for the current accepted model ~~thereby~~ documenting the reasons, causes, and explanations for the differences. The addendum shall also encompass a discussion of why hurricane loss costs and hurricane probable maximum loss levels remain valid and have not changed from the current accepted model. The addendum shall include:

   a. ~~a~~An annotated list of corrections and revisions to the Submission documentation, including the revision dates, and

   b. ~~u~~Updated Expert Certification forms as applicable.

2. The Commission Chair, in consultation with at least three Professional Team members, shall verify the impact of the differences as reported by the modeling organization and identify any additional documentation needed by the Commission. In its investigation and review of the issue, the Commission Chair and the Professional Team members shall focus solely on the need for documentation explaining and describing the differences and ensuring that there is no impact on hurricane loss costs or hurricane probable maximum loss levels.

~~The modeling organization shall submit an addendum to the submission for the current accepted model thereby documenting the reasons, causes, and explanations for the differences. The addendum shall also encompass a discussion of why hurricane loss costs and hurricane probable maximum loss levels remain valid and have not changed from the current accepted model. The addendum shall include an annotated list of corrections and revisions to the submission documentation, including the revision dates, and updated Expert Certification forms as applicable.~~

~~2~~3. If the Commission Chair determines that the documentation and explanations provided by the modeling organization are sufficient, no further review is necessary by the Commission. The Commission Chair shall provide a letter to the modeling organization acknowledging the notification of differences and noting that the Commission accepts the modeling organization's addendum to its previous ~~s~~Submission and that the same acceptability expiration date shall apply. ~~The letter shall note that the model's acceptability shall expire as originally provided for in section XIV. Expiration of a Model Found Acceptable, unless additional differences are discovered prior to expiration.~~

~~3.~~ If the Commission Chair determines that a new model version identification may be needed or that complexity of the reported differences needs to be addressed by the Commission at a special or regularly scheduled meeting, the Commission Chair shall provide the Commission with detailed recommendations, such as the need for additional documentation or the need for further investigation, the potential need for a revised model version identification, or other appropriate recommendations given the circumstances. Additionally, the Commission Chair shall propose what would constitute adequate documentation and when such documentation shall be provided to the Commission.

~~At the Commission meeting, the Commission Vice Chair or, if not available to chair the meeting, a committee Chair appointed by the Commission Chair, shall preside at the meeting. The Commission Chair shall make a motion for approval of the recommendations which shall require a second. The Commission shall then vote on the recommendations of the Commission Chair, and any other alternative recommendations or amendments that are raised in the form of a motion that has been duly made and seconded by another Commission member.~~

~~If backup documentation required is of a proprietary nature involving trade secrets, the Commission shall discuss only such items in a closed meeting. All votes shall be taken in a public meeting.~~

4. The acceptability of the model shall not be suspended on the basis of Type I differences as long as appropriate documentation is provided to the Commission in a timely fashion. No additional actions or revisions to the model shall be required by the modeling organization with respect to Type I differences.

5. If the modeling organization fails to provide documentation that the Commission deems satisfactory within a time frame specified by the Commission, the acceptability of the model shall be suspended pending ~~submission~~ receipt and review of the necessary documentation. The Commission Chair shall notify the modeling organization by letter of such suspension.

   Once ~~the~~ satisfactory documentation is provided by the modeling organization, the Commission Chair shall review the documentation with at least three Professional Team members, and if the Commission Chair determines that the documentation is appropriate, the Chair shall send a letter to the modeling organization indicating that the documentation is acceptable, and the suspension is lifted.

~~B.~~ ***Type II Differences~~.~~***

1. If the model has been revised or can be revised within ~~the~~ fourteen calendar ~~-~~days ~~time frame~~ of notifying the Commission of the discovery of Type II differences, the modeling organization shall submit an addendum to the ~~s~~Submission for the current accepted model ~~thereby~~ documenting the revisions, explaining the reasons for the differences, and providing any necessary backup documentation. The addendum shall include:

   a. ~~a~~An annotated list of corrections and revisions to the ~~s~~Submission documentation, including the revision dates, and

   b. ~~u~~Updated Expert Certification forms as applicable.

   If trade secret information is involved, the modeling organization shall include this fact in its notification to the Commission.

2. The Commission Chair, in consultation with at least three Professional Team members, shall determine whether the modeling organization has already revised the model to address the differences to conform to the standards or is capable of addressing the differences within the fourteen-day time frame ~~calendar days after notifying the Commission of the discovery of Type II differences~~.

   ~~If the model has been revised or can be revised within the fourteen-day time frame, the modeling organization shall submit an addendum to the submission for the current accepted model thereby documenting the revisions, explaining the reasons for the differences, and providing any necessary backup documentation. The addendum shall include an annotated list of corrections and revisions to the submission documentation, including the revision dates, and updated Expert Certification forms as applicable.~~

   ~~If trade secret information is involved, the modeling organization shall include this fact in its notification to the Commission.~~

~~2~~3. The Commission Chair shall place the modeling organization's notification on the agenda for a special or regularly scheduled meeting of the Commission. The scheduling of the Commission meeting shall depend on the nature of the differences and the time frame for appropriate revisions to be made. The Commission Chair shall provide Commission members with a copy of the modeling organization's notification and report on the status ~~related to~~of the modeling organization's revision plan if ongoing actions are required.

~~3. If the modeling organization has not made the necessary revisions to the model to conform to the standards, the Commission Chair shall provide in advance of the meeting a proposed plan of action for the Commission's consideration. The Commission Vice Chair or, if not available to chair the meeting, a committee Chair appointed by the Commission Chair, shall preside at the meeting. The Commission shall consider the Commission Chair's proposal and, upon the proposal being moved and seconded, vote on the plan of action of the Commission Chair, and any other alternative recommendations or amendments that are~~

~~raised in the form of a motion that has been duly made and seconded by another Commission member. All plans of action shall include specific time frames including deadlines and the required documentation regarding the necessary revisions to conform to the standards.~~

~~4. Once the modeling organization has made the appropriate revisions within the Commission's specified time frames, as verified by the Commission Chair in consultation with at least three Professional Team members, the Commission Chair shall call a special meeting or include an agenda item on the Commission's next regularly scheduled meeting for the purpose of reviewing the revisions to the model needed in order for the model to comply with the standards.~~

~~The Commission shall review the model as it deems necessary and may go into a closed meeting for discussion of trade secrets. The Commission shall conduct a minimum of six votes (one for each group of standards) with the option of any member being allowed to request one or more standards in a group be designated for a separate vote (without the requirement for a second to such motion).~~

4. The basic process adopted in the current *Hurricane Standards Report of Activities* chapter "Process for Determining the Acceptability of a Computer Simulation Hurricane Model" ~~under subsections A. General Review of a Model, B. Meeting to Determine Acceptability, and C. Acceptability and Notification in section VI. Review by the Commission,~~ will be followed.

   The Commission letter of acceptability shall be revised to acknowledge the type of differences discovered and the revisions made to the current accepted model ~~version~~. The new model version identification as assigned by the modeling organization shall be noted~~,~~. ~~and t~~The revised model shall supersede the current accepted model~~.~~, and ~~T~~the same acceptability expiration date shall apply ~~of~~ for the revised model ~~shall expire at the end of the current cycle as provided for in section XIV. Expiration of a Model Found Acceptable, unless additional differences are discovered prior to expiration~~.

5. If the modeling organization fails to make the appropriate revisions within the ~~Commission's~~ specified time frame, the model shall be suspended until the appropriate revisions are made ~~to conform the model such that it meets~~ and the revised model can be reviewed and is found to be in compliance with the standards.

   The Commission Chair shall send a letter to the modeling organization indicating that the acceptability of the model has been suspended until the Commission votes on the acceptability of the revised model and a new model version identification has been assigned by the modeling organization.

   Once the Commission has determined acceptability of the revised model ~~following the process above~~, the revised model shall supersede the current accepted model and shall have the same acceptability expiration date. ~~The acceptability of the revised model shall~~

~~expire at the end of the current cycle as provided for in section XIV. Expiration of a Model Found Acceptable, unless additional differences are discovered prior to expiration.~~

~~C.~~ ***Type III Differences~~.***

1. The acceptability of the model shall be suspended upon receipt of the notification of Type III differences or at any time during a Commission review where the magnitude of such differences is discovered and can be documented. The Commission Chair shall send the modeling organization a letter indicating that the acceptability of the model has been suspended immediately and shall remain suspended until the Commission investigates and takes action regarding the modeling organization's steps necessary to address the differences in order to bring the model in compliance with the standards ~~as adopted in this *Hurricane Standards Report of Activities*~~.

2. If the model has been revised or can be revised within ~~the fourteen-~~sixty calendar days ~~time frame~~ of notifying the Commission of the discovery of Type III differences, the modeling organization shall submit an addendum to the Submission for the current accepted model thereby documenting the revisions, explaining the reasons for the differences, and providing any necessary backup documentation. The addendum shall include:

   a. ~~a~~An annotated list of corrections and revisions to the Submission documentation, including the revision dates, and

   b. ~~u~~Updated Expert Certification forms as applicable.

   If trade secret information is involved, the modeling organization shall include this fact in its notification to the Commission.

3. The Commission Chair, in consultation with at least three Professional Team members, shall determine whether the modeling organization has already revised the model to address the differences necessary to conform the model to the standards or is capable of addressing the differences within ~~fourteen-~~sixty calendar days of notifying the Commission, or the discovery of the differences by the Professional Team or Commission during the review cycle.

   ~~If the model has been revised or can be revised within the fourteen-day time frame, the modeling organization shall submit an addendum to the submission for the current accepted model thereby documenting the revisions, explaining the reasons for the differences, and providing any necessary backup documentation. The addendum shall include an annotated list of corrections and revisions to the submission documentation, including the revision dates, and updated Expert Certification forms as applicable.~~

   ~~If trade secret information is involved, the modeling organization shall include this fact in its notification to the Commission.~~

~~3~~4. The Commission Chair shall place the modeling organization's notification, or discovery by the Professional Team or Commission during the review cycle, on the agenda for a special or regularly scheduled meeting of the Commission. The scheduling of the Commission meeting shall depend on the nature of the differences and the time frame for appropriate revisions to be made. The Commission Chair shall provide Commission members with a copy of the modeling organization's notification and report on the status ~~related to~~of the modeling organization's revision plan if ongoing actions are required.

~~4. If the modeling organization has not made any revisions to the model to conform to the standards, the Commission Chair shall provide in advance of the meeting a proposed plan of action for the Commission's consideration. The Commission Vice Chair or, if not available to chair the meeting, a committee Chair appointed by the Commission Chair, shall preside at the meeting. The Commission shall consider the Commission Chair's proposal and, upon the proposal being moved and seconded, vote on the proposed plan of action, and any other alternative recommendations or amendments that are raised in the form of a motion that has been duly made and seconded by another Commission member. All plans of action shall include specific time frames, including documentation and deadlines regarding the needed revisions in order for the model to conform to the standards.~~

~~5. If the modeling organization has already revised the model or once the modeling organization has made the appropriate revisions within the Commission's specified time frames, as verified by the Commission Chair in consultation with at least three Professional Team members, the Commission Chair shall call a special meeting or include an agenda item on the Commission's next regularly scheduled meeting for the purpose of reviewing the revisions to the model needed in order for the model to comply with the standards. The Commission shall review the model as it deems necessary and may go into a closed meeting for discussion of trade secrets. The Commission shall conduct a minimum of six votes (one for each group of standards) with the option of any member being allowed to request one or more standards in a group be designated for a separate vote (without the requirement for a second to such motion).~~

5. The basic process adopted in the current *Hurricane Standards Report of Activities~~,~~* chapter "Process for Determining the Acceptability of a Computer Simulation Hurricane Model" ~~under subsections A. General Review of a Model, B. Meeting to Determine Acceptability, and C. Acceptability and Notification in section VI. Review by the Commission,~~ will be followed.

The Commission letter of acceptability shall be revised to acknowledge the type of differences discovered and the revisions made to the current accepted model version. The new model version identification as assigned by the modeling organization shall be noted.~~,~~ ~~and t~~ The revised model shall supersede the current accepted model, and the same acceptability expiration date shall apply for the revised model. ~~The acceptability of the revised model shall expire at the end of the current cycle as provided for in section XIV. Expiration of a Model Found Acceptable, unless additional differences are discovered prior to expiration.~~

6. If the modeling organization fails to make the appropriate revisions within sixty calendar days of the Commission being notified, or the date ~~where~~when the Commission or Professional Team discovered the Type III differences, the acceptability of the model shall be withdrawn subject to the appeal process as specified in ~~section VII.~~ Appeal Process to be Used by a Modeling Organization if a Model is Not Found to be Acceptable by the Commission. If there is no appeal or the appeal is unsuccessful, 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 ~~review cycle as determined by time frames established in the current *Hurricane Standards Report of Activities*~~.

~~X.~~ INTERIM MODEL UPDATES AFTER A MODEL HAS BEEN DETERMINED TO BE ACCEPTABLE BY THE COMMISSION

~~A.~~ If a modeling organization makes interim updates to the model where (1) the model update scope and utility is unrelated to Florida hurricane loss costs or Florida hurricane probable maximum loss levels and does not include the current accepted Florida hurricane model component, or (2) there are no changes to the Florida hurricane loss costs or Florida hurricane probable maximum loss levels in the current accepted Florida hurricane model, but the hurricane model version identification has changed, then the following procedure applies.

1. The modeling organization shall notify the Commission Chair detailing the nature of the interim model updates. The ~~letter~~ notification shall include:

   a. The name and version of the updated model,

   b. A statement that the interim model update~~s~~ ~~has~~ have been duly tested and ~~has~~ have no impact on the current accepted Florida hurricane model,

   c. A description of the changes in the model,

   d. A description of internal testing,

   e. An acknowledgement that Forms A-1, A-4, A-8, and S-5~~,~~ completed using the applicable FHCF exposure data for the current accepted model, the updated version of the model, and a percentage change comparison between the two versions to demonstrate no change to the Florida hurricane loss costs or Florida hurricane probable maximum loss levels, will be provided upon request of the Commission Chair, and

   f. A completed Interim Model Update Certification Form.

2. The Commission Chair, in consultation with at least three Professional Team members, shall review the interim model update~~s~~ ~~letter~~ notification and Interim Model Update Certification Form. If the Commission Chair concurs with the modeling organization that the proposed interim model update~~s~~ appear~~s~~ functionally equivalent to the current accepted Florida hurricane model based on the certifications by the modeling organization, then the Commission Chair shall send a letter notifying the status of the interim model update~~s~~ and

that the same acceptability expiration date shall apply as for the current accepted Florida hurricane model.

A copy of the Commission letter and Interim Model Update Certification Form shall be provided to the Commissioner of the Office of Insurance Regulation.

3. In the event that the Commission Chair, in consultation with at least three Professional Team members, does not concur with the modeling organization that the proposed interim model updates appears functionally equivalent to the current accepted Florida hurricane model, the Commission Chair shall request the modeling organization submit the completed forms listed in A.1.e. above for review by the Professional Team.

4. The Commission reserves the right to review any and all interim model updates in detail, even if the review of the interim model updates letter notification and Interim Model Update Certification Form was found favorable.

Geographic Location Data Update

B. 1. If a modeling organization updates geographic location data within the model, the modeling organization shall notify the Commission Chair in writing, detailing the updates, the effect on the modeled results, and include:

1a. Maps showing ZIP Code centroids (current and updated) for the entire state of Florida,

2b. A sorted list of all ZIP Code centroid movements of one mile or more,

3c. The top ten movements (if fewer than ten move at least one mile),

4d. A list of new and retired ZIP Codes,

5e. The corresponding primary county for each ZIP Code listed,

6f. A list of all ZIP Code related databases used by the model, and a description of the impact to these databases due to the updated ZIP Codes (including roughness factors, building construction, and ZIP Code specific hurricane vulnerability functions),

g. Updated Standard A-3 provided with track changes that identifies all changes to the standard and disclosures between the current accepted model and the updated version of the model,

7h. Form A-1 completed for the current accepted model, the updated version of the model, and a percentage change comparison between the two versions to demonstrate no change, and a narrative confirming a logical relationship between the geographic location data changes and any Form A-1 loss cost changes exceeding ± 1% at a ZIP resolution,

~~8~~i. Form A-4 completed for the current accepted model, the updated version of the model, and a percentage change comparison between the two versions ~~to demonstrate no change~~,

~~9~~j. Form A-8 completed for the current accepted model, the updated version of the model, and a percentage change comparison between the two versions ~~to demonstrate no change~~,

~~10~~k. Form S-5 completed for the current accepted model, the updated version of the model, and a percentage change comparison between the two versions ~~to demonstrate no change~~, and

~~11~~l. Updated Expert Certification forms as applicable.

~~C. In situations involving other data updates as indicated in response to Hurricane Standard G-1, Disclosure 8, the modeling organization shall describe the impact of the data updates on Florida hurricane loss costs and Florida hurricane probable maximum loss levels and indicate why such interim data updates are considered necessary. The modeling organization shall provide a list of all databases used by the model related to the data updates and describe the impact to these databases due to the updates.~~

~~The Commission shall not consider other interim data updates unless such possible updates have been disclosed by the modeling organization in the submission response to Hurricane Standard G-1, Disclosure 8.~~

If backup documentation required is of a proprietary nature involving trade secrets, the ~~Commission shall discuss only such items in a closed meeting. If trade secret information is involved, the~~ modeling organization shall include this fact in its notification to the Commission.

2. The Commission Chair shall review the notification and assess, with at least three Professional Team members, the geographic location data updates and the regression test results. If there is no change in the underlying acceptable model and ~~no~~ changes in ~~the modeled results~~ hurricane loss costs follow a logical, reasonable, and justifiable relationship to the changes in the geographic location data at a ZIP resolution, the Commission Chair shall send an updated acceptability letter to the modeling organization denoting that the interim geographic location data~~model~~ update~~s~~ does not produce significant differences in Florida hurricane loss costs and Florida hurricane probable maximum loss levels from the current accepted model and the same acceptability expiration date shall apply as for the current accepted model. As applicable, the new model version identification or the same version identification with a distinction made for the interim geographic location data update~~s~~ as assigned by the modeling organization shall be noted.

3. If the Commission Chair, in consultation with at least three Professional Team members, determines there is a change in the underlying acceptable model or ~~a~~ changes in ~~the modeled results~~hurricane loss costs do not follow a logical, reasonable, and justifiable

relationship to the changes in the geographic location data at a ZIP resolution, then the Commission Chair shall send a letter to the modeling organization as soon as practical notifying the modeling organization of a pending review by the Commission. The Commission Chair shall determine the need for a special meeting or whether the issue can be addressed at the next regularly scheduled meeting of the Commission. The ~~purpose of the special~~ Commission ~~meeting~~ shall ~~be to~~ review the interim ~~model~~ geographic location data update~~s~~ and any other aspect of the model which might have changed in order to ensure that the model continues to comply with the standards. ~~The Commission shall conduct a minimum of six votes (one for each group of standards) with the option of any member being allowed to request one or more standards in a group be designated for a separate vote (without the requirement for a second to such motion).~~

4. The basic process adopted in the current *Hurricane Standards Report of Activities~~,~~* chapter "Process for Determining the Acceptability of a Computer Simulation Hurricane Model" ~~under subsections A. General Review of a Model, B. Meeting to Determine Acceptability, and C. Acceptability and Notification in section VI. Review by the Commission,~~ will be followed.

   The Commission letter of acceptability shall be revised to acknowledge the interim ~~model~~ geographic location data update~~s~~ to the current accepted model. The new model identification as assigned by the modeling organization shall be noted. Once the Commission has determined acceptability of the revised model, the revised model shall supersede the current accepted model, and the same acceptability expiration date shall apply for the revised model. ~~The acceptability of the revised model shall expire at the end of the current cycle as provided for in section XIV. Expiration of a Model Found Acceptable.~~

5. If the proposed interim ~~model~~ geographic location data update~~s are~~ is not found to be acceptable by the Commission, the Commission Chair shall send a letter to the modeling organization noting such and that the current accepted model shall continue to be acceptable with the original acceptability expiration date ~~and expires as originally provided for in section XIV. Expiration of a Model Found Acceptable~~.

   The appeal process as specified in ~~section VII.~~ Appeal Process to be Used by a Modeling Organization if a Model is Not Found to be Acceptable by the Commission shall not be applicable. This will require the modeling organization to make any contemplated interim ~~model~~ geographic location data updates for the Commission's consideration in the next review cycle as determined by time frames established in the current *Hurricane Standards Report of Activities*.

~~XI.~~ INTERIM PLATFORM UPDATES AFTER THE FLORIDA HURRICANE MODEL HAS BEEN DETERMINED TO BE ACCEPTABLE BY THE COMMISSION

If a modeling organization makes interim platform updates that have no bearing on the current accepted Florida hurricane model, but the hurricane model platform name and identification are changed, then the following procedure applies.

1. The modeling organization shall notify the Commission Chair detailing the nature of the interim platform update. The ~~letter~~ notification shall include:

   a. The name and version of the updated platform,

   b. A statement that the interim platform update has been duly tested and has no impact on the current accepted Florida hurricane model,

   c. A description of the platform update,

   d. A description of internal testing,

   e. An acknowledgement that Forms A-1, A-4, A-8, and S-5~~,~~ completed using the applicable FHCF exposure data for the current accepted model, the version of the model on the updated platform, and a percentage change comparison between the two versions to demonstrate no change to the Florida hurricane loss costs or Florida hurricane probable maximum loss levels, will be provided upon request of the Commission Chair, and

   f. A completed Interim Platform Update Certification Form.

2. Upon notification to the Commission Chair of an interim platform update, the interim platform update may be used up to sixty calendar days as acceptable and functionally equivalent to the current accepted model prior to receiving a letter of acceptability from the Commission Chair.

3. The Commission Chair, in consultation with at least two Professional Team members, shall review the interim platform update~~s~~ ~~letter~~ notification and Interim Platform Update Certification Form. If the Commission Chair concurs with the modeling organization that the proposed interim platform update~~s~~ appear~~s~~ functionally equivalent to the current accepted Florida hurricane model based on the certifications by the modeling organization, then the Commission Chair shall send a letter notifying the status of the interim platform update~~s~~ and that the same acceptability expiration date shall apply as for the current accepted Florida hurricane model.

   A copy of the Commission letter and Interim Platform Update Certification Form shall be provided to the Commissioner of the Office of Insurance Regulation.

4. In the event that the Commission Chair, in consultation with at least two Professional Team members, does not concur with the modeling organization that the proposed interim platform updates appears functionally equivalent to the current accepted Florida hurricane model, the Commission Chair shall request the modeling organization to submit the completed forms listed in 1.e. above for review by the Professional Team.

5. The Commission reserves the right to review any and all interim platform updates in detail, even if the review of the interim platform updates letter notification and Interim Platform Update Certification Form was found favorable.

XII. REVIEW AND ACCEPTANCE CRITERIA FOR FUNCTIONALLY EQUIVALENT MODEL PLATFORMS

If a modeling organization has designed its model to operate on two or more platforms, the Commission may find the model as run on the various platforms acceptable under the following circumstances and procedures.

1. The various model platforms shall be submitted for review at one the same time by the designated sSubmission deadline and shall be capable of being reviewed concurrently by the Commission, including the Professional Team's on-site review, such that all platforms can be reviewed as to their functional equivalence.

2. Functional equivalence shall be recognized as long as no hurricane loss costs differ with regard to any platform at the rounded third decimal place (thus there shall be no changes in the published Form A-1, Form A-4, and Form S-5), and hurricane probable maximum loss does not differ by more than ±0.5% for any hurricane probable maximum loss level (Form A-8).

3. The model as implemented on the various platforms shall have the same model version identification with a notation to designate the specific model platforms. The modeling organization shall specify which platform is the primary platform and which platforms are the functionally equivalent platforms. This information shall be disclosed in response to Hurricane Standard G-1, Disclosure 1.

4. The modeling organization shall not be allowed to make separate sSubmissions during a review cycle and any difference between model platforms shall be required to be fully described in the modeling organization's initial sSubmission.

5. The only differences in modeled results shall be demonstrated to be solely due to the nature of the model platforms or any other technological constraint that would account for no more than the designated variations noted above.

The Commission will shall determine functional equivalence of the model platforms during the review of the model for acceptability. The letter of acceptability specifically designates which model platforms were found to be functionally equivalent and acceptable by the Commission.

~~XIII.~~ MODEL UPDATE FOR CONSISTENCY OF HURRICANE AND FLOOD MODELS AFTER THE MODEL HAS BEEN DETERMINED TO BE ACCEPTABLE BY THE COMMISSION

1. If the modeling organization proposes to update a current accepted hurricane or flood model as a result of changes to the other model, the modeling organization shall notify the Commission Chair in writing. The notification shall detail:

    a. ~~t~~The nature of the proposed updates, and

    b. ~~t~~The effect on the modeled results (i.e., the impact on hurricane or flood loss costs and hurricane or flood probable maximum loss levels)~~, and~~.

The notification shall also include all ~~s~~Submission materials that are impacted. If trade secret information is involved, the modeling organization shall include this fact in the notification to the Commission.

2. Depending on the nature of the updates, the Commission Chair in consultation with at least three Professional Team members, will review the notification and materials provided to determine whether to process the proposed updates immediately or defer until the next scheduled model review cycle. Depending on the nature of the updates, the Commission Chair may recommend that the Professional Team conduct an on-site review, or a virtual review provided the modeling organization is in agreement and can provide access to full modeling material.

~~1.~~3. If the Commission Chair, in consultation with at least three Professional Team members, determines that the documentation and explanations provided by the modeling organization are sufficient, no further review is necessary by the Commission. The Commission Chair shall provide an updated acceptability letter to the modeling organization acknowledging the update notification and noting that the model update produces minor differences in hurricane loss costs and hurricane probable maximum loss levels from the current accepted model, that the Commission accepts the modeling organization's addendum to its previous ~~s~~Submission, and that the same acceptability expiration date shall apply as for the current accepted model.

4. If the Commission Chair, in consultation with at least three Professional Team members, determines there are significant differences in the underlying acceptable model or there are significant differences in the modeled results, then the Commission Chair shall send a letter to the modeling organization as soon as practical notifying the modeling organization of a pending review by the Commission. The Commission Chair shall determine the need for a special meeting or whether the issue can be addressed at the next regularly scheduled meeting of the Commission. The ~~purpose of the special~~ Commission ~~meeting~~ shall ~~be to~~ review the model update and any other aspect of the model which might have changed in order to ensure that the model continues to comply with the standards. ~~The Commission shall conduct a minimum of six votes (one for each group of standards) with the option of any member being allowed to request one or more standards in a group be designated for a separate vote (without the requirement for a second to such motion).~~

5. The basic process adopted in the current *Hurricane Standards Report of Activities*~~,~~ chapter "Process for Determining the Acceptability of a Computer Simulation Hurricane Model" ~~in subsections A. General Review of a Model, B. Meeting to Determine Acceptability, and C. Acceptability and Notification under section VI. Review by the Commission,~~ will be followed.

   The Commission letter of acceptability shall be revised to acknowledge the model update to the current accepted model. The new model identification as assigned by the modeling organization shall be noted. Once the Commission has determined acceptability of the revised model, the revised model shall supersede the current accepted model, and the same acceptability expiration date shall apply for the revised model~~. The acceptability of the revised model shall expire at the end of the current cycle as provided for in section XIV. Expiration of a Model Found Acceptable~~.

6. If the proposed model update is not found to be acceptable by the Commission, the Commission Chair shall send a letter to the modeling organization noting such and that the current acceptable model shall continue to be acceptable with the original acceptability expiration date ~~and expires as originally provided for in section XIV. Expiration of a Model Found Acceptable~~.

   The appeal process as specified in ~~section VII.~~ Appeal Process to be Used by a Modeling Organization if a Model is Not Found to be Acceptable by the Commission shall not be applicable. This will require the modeling organization to make any contemplated model update for the Commission's consideration in the next review cycle as determined by time frames established in the current *Hurricane Standards Report of Activities*.

~~XIV.~~ EXPIRATION OF A MODEL FOUND ACCEPTABLE

The determination of acceptability of a model found acceptable for the standards contained in the *Hurricane Standards Report of Activities as of November 1, ~~2023~~2025,* expires on November 1, ~~2027~~2029.

Interim Model Update Certification Form

Name and Version Identification of Current Accepted Florida Hurricane Model:

~~Current Accepted Florida Hurricane Model Version Identification:~~

Current Accepted Florida Hurricane Model Primary Platform Name and Identification:

Updated Name and Version Identification of Florida Hurricane Model:

~~Updated Florida Hurricane Model Version Identification:~~

We hereby certify that the aforementioned interim model update has been reviewed and conclude that there are no differences, other than as described in the interim model update notification letter, from the current accepted Florida hurricane model and as certified in this form. Hence, we deem this interim model update to be functionally equivalent to the current accepted Florida hurricane model as given above.

Further we hereby certify that:

1. The interim model update meets all the hurricane standards for which the current Florida hurricane model was found acceptable,

2. The interim model update has been duly tested and has no impact on the current accepted Florida hurricane model,

3. Forms A-1, A-4, A-8, and S-5 using the applicable FHCF exposure data have been generated and agree with their counterparts in the current acceptable Florida hurricane model,

4. Our review was completed in accordance with the professional standards and code of ethical conduct for our respective professions, and

5. In expressing our opinion, we have not been influenced by any other party to bias or prejudice our opinion.

Interim Model Update Certification Form

Catastrophe Model Senior Officer	Professional Credentials and Title
Signature	Date
Actuary	Professional Credentials
Signature	Date
Statistician	Professional Credentials
Signature	Date
Computer Information Scientist	Professional Credentials
Signature	Date

Interim Platform Update Certification Form

Name and Version Identification of Current Accepted Florida Hurricane Model:

~~Current Accepted Florida Hurricane Model Version Identification:~~

Current Accepted Florida Hurricane Model Platform Names and Identifications:

Updated Florida Hurricane Model Platform Names and Identifications:

We hereby certify that the aforementioned interim platform update has been reviewed and conclude that there are no differences, other than as described in the interim platform update notification letter, from the current accepted Florida hurricane model and as certified in this form. Hence, we deem this interim platform update to be functionally equivalent to the current accepted Florida hurricane model as given above.

Further we hereby certify that:

1. The interim platform update meets all the hurricane standards for which the current Florida hurricane model was found acceptable,

2. The interim platform update has been duly tested and has no impact on the current accepted Florida hurricane model,

3. Forms A-1, A-4, A-8, and S-5 using the applicable FHCF exposure data have been generated and agree with their counterparts in the current acceptable Florida hurricane model,

4. Our review was completed in accordance with the professional standards and code of ethical conduct for our respective professions, and

5. In expressing our opinion, we have not been influenced by any other party to bias or prejudice our opinion.

Interim Platform Update Certification Form

Catastrophe Model Senior Officer	Professional Credentials and Title
Signature	Date
Actuary	Professional Credentials
Signature	Date
Statistician	Professional Credentials
Signature	Date
Computer Information Scientist	Professional Credentials
Signature	Date

ON-SITE REVIEW OF A COMPUTER SIMULATION HURRICANE MODEL BY THE PROFESSIONAL TEAM

ON-SITE REVIEW OF A COMPUTER SIMULATION HURRICANE MODEL BY THE PROFESSIONAL TEAM

GENERAL PURPOSE

The purpose of the on-site review is to evaluate the compliance of the hurricane model with the hurricane standards. The on-site review is conducted in conjunction with the "Process for Determining the Acceptability of a Computer Simulation Hurricane Model." It is not intended to provide a preliminary peer review of the hurricane model. The goal of the Professional Team's efforts is to provide the Commission with a clear and thorough report of the hurricane model as required in the acceptability process, subject to non-disclosure conditions.

All aspects of the hurricane model described in the disclosures shall be available for review. All trade secret material, modifications, adjustments, assumptions, or other criteria that were included in producing the information required by the Commission in the ~~hurricane model s~~Submission shall be disclosed to the Professional Team to be reviewed.

A hurricane model component custodian, or designated proxy, shall be available for the review of each component during the on-site review.

The Professional Team ~~will~~ shall begin the review with a briefing to modeling organization personnel to discuss the review schedule and to describe the review process.

The on-site review by the Professional Team involves the following:

1. Due diligence review of information submitted by the modeling organization. For existing modeling organizations, the due diligence review concentrates on (1) any changes in the disclosures and forms from the current accepted hurricane model, and (2) selected parts of the hurricane model that have not been updated.

2. On-site tests of the hurricane model under the control and supervision of the Professional Team. The objective is to observe the hurricane 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 hurricane model solely for producing desirable results.

3. Data and code review which shall be readily available in an agreeable time frame when ~~being~~ requested for review~~ed~~ by the Professional Team ~~in an agreeable time frame~~.

4. 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 hurricane model.

5. Review for compliance with the hurricane standards.

6. Review of trade secret data and information.

Feedback regarding compliance of the hurricane model with the hurricane standards ~~will~~ shall be provided to the modeling organization throughout the review process.

PREPARATION FOR ON-SITE REVIEW

The Professional Team assists the Commission and SBA staff in determining if a modeling organization is ready for an on-site review.

The Professional Team assists the modeling organization in preparing for the on-site review by providing ~~to SBA staff~~ a detailed pre-visit letter ~~(to be sent to the modeling organization)~~with requests outlining specific issues to be addressed by the modeling organization unique to the ~~hurricane model s~~Submission. The Professional Team makes every effort to identify substantial issues with the hurricane model or the ~~hurricane model s~~Submission to allow the modeling organization adequate time to prepare for the on-site review.

As the Professional Team continues to prepare for the on-site review, it may discover issues not originally covered in the pre-visit letter prior to the on-site review. Such issues may be addressed in an addendum to the pre-visit letter, or will be introduced at the opening briefing of the on-site review.

The discovery of errors in the hurricane 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 the hurricane model and the ~~hurricane model s~~Submission.

Telephone Conference Call: Prior to the on-site review, at the request of the modeling organization, 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 answer any questions the modeling organization has regarding the upcoming on-site review, the pre-visit letter, and the material, data files, and personnel that need to be available during the on-site review. The pre-visit conference call 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 conference call is the only scheduled opportunity for the modeling organization to clarify any questions directly with the Professional Team prior to the on-site review.

Scheduling: SBA staff is responsible for scheduling on-site review dates. Each modeling organization will be notified at least two months 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 hurricane model. The Commission expects the modeling organization 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~~ensure that it is ready for the Professional Team review.

Electronic Material Access Testing: A test session shall be conducted with the modeling organization, the Professional Team, ~~and~~ SBA staff, and Commission members attending the on-site review prior to the deadline for providing access to electronic materials. SBA staff is responsible for scheduling the test session with the modeling organization.

Materials: The modeling organization shall have all necessary materials and data on-site for review. All material referenced in the ~~hurricane model s~~Submission as "will be shown to the Professional Team" and all material that the modeling organization intends to present to the Commission, including trade secret data and information, shall be presented to the Professional Team during the on-site review.

All documentation shall be easily accessible from a central location in order to be reviewed.

All primary scientific literature and technical literature, including modeling organization specific publications cited, that describes the underlying hurricane model theory and implementation (where applicable) shall be available if requested in the course of the on-site review, in electronic form, or hard copy if not available electronically.

The modeling organization shall ~~be prepared to~~ have available for the Professional Team's consideration, all insurance claims data received or newly processed since the previous ~~hurricane model s~~Submission, and be prepared to describe any processes used to amend or validate the data as it impacts the hurricane model ~~that incorporates this data~~.

The modeling organization shall ~~be prepared to~~ have available for the Professional Team's review, all engineering data (e.g., post-event site investigations, laboratory~~,~~ or field-testing results) received since the previous review by the Professional Team, and be prepared to describe any processes used to develop, amend, or validate the hurricane model that incorporates this data.

Printed Materials: The modeling organization shall provide upon arrival of the Professional Team, and ***before the review can officially commence***, ~~four~~ six printed copies of the following materials:

1. The modeling organization's presentations printed two slides per page and duplexed, and

2. The Form A-6 graphical summaries for the hurricane model under review demonstrating the ~~sensitivities~~sensitivity for each Notional Set, the ~~color-coded~~ contour colormap of the hurricane loss costs for strong owners frame buildings (Notional Set 5), and the scatter plot of the hurricane loss costs (*y*-axis) against distance to closest coast (x-axis) for strong owners frame buildings (Notional Set 5).

Presentations: A new modeling organization shall first provide a high-level overview of each hurricane model component. The next set of presentations shall be organized by standards group starting with detailed explanations of the model component followed by responses to the pre-visit letter ~~items~~ requests and ~~followed by responses to~~ each audit item. Pre-visit letter

requests and audit items requiring details on the meteorological, vulnerability, and actuarial components do not need to be repeated.

An existing ~~The~~ modeling organization shall first provide a presentation with a high-level overview ~~detailed explanations~~ of the model changes listed in ~~Hurricane~~ Standard G-1~~,~~ Disclosure ~~7~~6. The next set of presentations shall be organized by standards group starting with detailed explanations of the model changes followed by responses to the pre-visit letter requests and each audit item. Pre-visit letter requests and audit items requiring details on changes to the meteorological, vulnerability, and actuarial components do not need to be repeated.

If changes are made in any part of the model or the modeling process from the descriptions as provided in the ~~s~~Submission document, the presentation shall also include a complete and detailed explanation of those changes, the reasons for the changes (e.g., an error was discovered), and any revised disclosures and forms. For each revised form, an additional form with cell-by-cell differences between the revised and the original submitted values is to be provided electronically.

~~The next set of presentations shall be organized by standards group starting with responses to the pre-visit letter items followed by responses to each audit item.~~

Electronic Materials: The modeling organization shall provide electronic files as follows:

1. The modeling organization's presentations,

2. The tables required in ~~Hurricane~~ Standard CI-~~1~~3~~,~~ Audit ~~6~~4,

3. All figures with scales for the *x*- and *y*- axes labeled that are not so labeled in the ~~hurricane model s~~Submission document. The figures shall be identified with the same figure number as given in the ~~hurricane model s~~Submission document,

4. Form V-3 for the hurricane model under review and for the current accepted hurricane model,

5. Form V-5 for the hurricane model under review and for the current accepted hurricane model,

6. The Excel spreadsheet required in Standard A-1 Audit 4,

~~6.~~7. Form A-6 for the hurricane model under review and for the current accepted hurricane model, including:

   a. the Excel worksheets,

   b. the graphical summaries demonstrating the ~~sensitivities~~ sensitivity for each Notional Set,

c. the color ~~-coded~~ map of the hurricane loss costs for strong owners frame buildings (Notional Set 5), and

d. the scatter plot of the hurricane loss costs (*y*-axis) against distance to closest coast (*x*-axis) for strong owners frame buildings (Notional Set 5),

~~7.~~8. Flowchart standard documents if internally developed, or references to published standards,

~~8.~~9. Software engineering practice and coding guidelines if internally developed, or references to published standards,

~~9.~~10. List of all externally acquired hurricane model-specific software and data assets required in ~~Hurricane~~ Standard CI-~~1~~3~~,~~ Audit ~~5~~3,

~~10.~~11. Requirements documentation that specifically relates to each model change identified in ~~Hurricane~~ Standard G-1~~,~~ Disclosure ~~7~~6 required in ~~Hurricane~~ Standard CI-~~2~~4~~,~~ Audit 2, ~~and~~

~~11.~~12. Complete and thorough verification procedures and output from the model changes identified in ~~Hurricane~~ Standard G-1~~,~~ Disclosure ~~7~~ 6 required in ~~Hurricane~~ Standard CI-~~5~~7~~,~~ Audit ~~8~~9~~.~~, and

13. Artificial Intelligence Software Engineering (AI-SWE) policy and procedures required in CI-2 Audits 1 and 2.

The modeling organization shall provide electronic spreadsheets of all forms. Spreadsheets containing numbers shall be populated with the maximum precision allowed in the hurricane model implementation. This procedure shall hold even if the ~~generation of~~requested format for some forms specify a limited number of decimal places.

The electronic files shall be provided to SBA staff and designated Professional Team members, in a ~~medium as specified~~ location provided by the modeling organization, to be received no later than close of business two business days prior to the start of the on-site review (e.g., 5pm modeling organization time on Thursday before the start of the on-site review on Monday). The Professional Team and SBA staff shall attest at the end of the on-site review that all trade secret material and digital notes ~~that was analyzed~~ on their personal computers ~~has~~ have been deleted and that the recycle bin or its equivalent has been emptied.

~~**Electronic Material Access Testing:** A test session shall be conducted with the modeling organization, the Professional Team, and SBA staff prior to the deadline for providing access to electronic materials. SBA staff is responsible for scheduling the test session with the modeling organization.~~

Internet Access: The Professional Team shall be provided access to the internet through the Professional Team members' personal computers.

REMOTE REVIEW

If government-mandated travel-related restrictions are imposed at the time of the on-site review, then the review shall be held remotely and shall abide by the on-site review process as detailed above. For other unique scenarios that would limit or restrict travel, the Commission shall consider holding the on-site review remotely. For situations unique to a remote review, the following procedures shall apply.

A test session shall be conducted prior to the deadline for providing access to electronic materials, to familiarize participants with the functionality of the software to be used during the remote review. This test session shall include, at a minimum, members of the modeling organization team, the Professional Team, SBA staff, and any Commission members who will be participating in the remote review.

Physical hard copy documents provided by a modeling organization to the Professional Team containing trade secret data and information shall be clearly designated on each page as trade secret through watermarks, ~~footnotes~~footers, stamping, or other means as appropriate.

The modeling organization shall provide electronic trade secret data and information on an electronic storage location as specified by the modeling organization.

The modeling organization shall provide all necessary materials and data for review, whether in physical hard copy, electronic format, or virtually, as agreed upon with the Professional Team and SBA staff. All materials and data provided by the modeling organization directly to SBA staff, a Professional Team member, or a Commission member shall not be reproduced, recorded, copied, or duplicated in any manner by SBA staff, a Professional Team member, or a Commission member.

The modeling organization shall provide to SBA Staff and each Professional Team and Commission member~~,~~ as designated by SBA staff, one set of physical hard copy materials and the required electronic data (via an electronic storage ~~medium as specified or~~ location provided by the modeling organization) to be received no later than close of business two business days prior to the start of the remote review (e.g., 5pm modeling organization time on Thursday before the start of the remote review on Monday). The objective is for Professional Team members to receive the required materials prior to the start of the remote review to facilitate officially commencing the review on time, rather than to start the remote review one business day earlier.

Within one business day after completion of the remote review, SBA staff, Professional Team members, and Commission members shall ship to the modeling organization via overnight delivery all physical hard copy materials provided and made available by the modeling organization and the remote review workbook provided by SBA staff.

SBA staff, Professional Team members, and Commission members shall thoroughly review all physical hard copy and electronic storage locations that were utilized during the remote review to ensure that all materials provided by the modeling organization are being returned or

destroyed and that no record, copy, duplicate, derivative, or compilation of the information is within their possession.

Each Professional Team member, ~~and~~ Commission member, and SBA staff shall provide a written confirmation to the Commission Chair via email to SBA staff stating that (1) a comprehensive review has been performed of all physical hard copy and electronic storage locations utilized during the remote review process, (2) all materials and information provided by the modeling organization in support of the remote review have been shipped to the modeling organization via overnight delivery or destroyed, and (3) ~~verifies that~~ the materials and data provided by the modeling organization have not been reproduced, recorded, copied, or duplicated in any manner or stored on any medium including personal computers or other devices. SBA staff shall provide a copy of each signed written confirmation to the modeling organization.

PROFESSIONAL TEAM REPORT

After completing its review of the hurricane model for compliance with the hurricane standards, the Professional Team ~~will~~ shall conduct an exit briefing with the modeling organization. During this briefing, the Professional Team ~~will~~ shall provide a preliminary draft of the Professional Team report.

If the on-site review is held remotely, a preliminary draft of the Professional Team report ~~will~~ shall be emailed by SBA staff to the modeling organization. The email shall include the SBA disclosure, “This communication may contain confidential, proprietary, and/or privileged information. It is intended solely for the use of the addressee. If you are not the intended recipient, you are strictly prohibited from disclosing, copying, distributing or using any of this information. If you received this communication in error, please contact the sender immediately and destroy the material in its entirety, whether electronic or hard copy. Additionally, please note that Florida has a very broad public records law. This communication (including your email address, any attachments and other email contents) may be subject to disclosure to the public and media.”

The modeling organization has the right to expunge any trade secret information. The modeling organization ~~will~~ shall also have the opportunity to check for any factual errors. The Professional Team ~~will~~ shall consider modeling organization suggestions for changes in its draft to correct factual errors. If the modeling organization and the Professional Team dispute a particular item as a factual error, then the report ~~would~~ shall adopt the phrasing, “In the opinion of the Professional Team….”

Any information within the preliminary draft of the Professional Team report deemed proprietary by the modeling organization shall be noted and expunged from the final Professional Team report. If there is a disagreement between the modeling organization and the Professional Team over the proprietary nature of the expunged information, then the expunged information shall be placed in a sealed envelope labeled “Contains Content

Designated as Trade Secret Information by (Name of Modeling Organization)" with the date, time, and Professional Team leader's signature across the seal.

If the on-site review is held remotely, SBA staff shall print and place the expunged information in a sealed envelope labeled "Contains Content Designated as Trade Secret Information by (Name of Modeling Organization)" with the date, time, and SBA staff's signature across the seal.

The sealed envelope shall be retained by SBA staff in accordance with Florida Public Records Law in a secure location. SBA staff shall bring the sealed envelope to the Commission closed meeting to discuss trade secrets where it will be unsealed and distributed for use during the closed meeting. At the conclusion of the closed meeting, the information shall be placed in an envelope labeled "Contains Content Designated as Trade Secret Information by (Name of Modeling Organization)" and sealed. The sealed envelope shall be retained by SBA staff in a secure location until the records retention schedule has been met at which time the sealed envelope shall be destroyed and the modeling organization informed.

The Professional Team report ~~will~~ shall include:

1. A list of participants,

2. A summary of significant revisions in the hurricane model under review from the current accepted hurricane model,

3. A verification that all deficiencies identified by the Commission have been resolved,

4. A copy of the pre-visit letter,

5. A verification of compliance with the hurricane standards, making note under any standards where issues or concerns were worked through in order to be verified,

6. A description of material reviewed in support of compliance with the hurricane standards that gave the Professional Team confidence in making the decision to verify compliance with the hurricane standards,

7. A list of trade secret data and information, audit items, and pre-visit letter ~~item~~ request responses ~~to facilitate the Commission's understanding of the hurricane model under review~~ that the Professional Team recommends be presented to the Commission during the closed meeting portion of the Commission meeting to review the hurricane model for acceptability, to facilitate the Commission's understanding of the hurricane model under review,

8. Any recommended change to the time duration of the closed meeting established by the Commission during the Commission meeting to review ~~hurricane model s~~Submissions, and

9. A statement indicating where proprietary information has been removed, if applicable.

The Professional Team report shall not include information deemed as trade secret by the modeling organization.

After leaving the modeling organization's premises, the Professional Team, in coordination with SBA staff, will finalize its report and provide it to Commission members in advance of the meeting to review the hurricane model for acceptability.

Any disparate opinions among Professional Team members concerning compliance with the hurricane standards will be duly noted and explained in the final report.

ADDITIONAL VERIFICATION REVIEW

It is possible that a subset of the hurricane standards or changes made to the hurricane model, disclosures, forms, ~~and~~ or trade secret data and information may require further review by the Professional Team or a subset of the Professional Team. In such cases, SBA staff will arrange an additional verification review, in accordance with the acceptability process, to verify those hurricane standards.

Non-trade secret materials shall be received by SBA staff within ~~thirty~~ sixty calendar days of the request for an additional verification review, and no later than seven calendar days prior to the additional verification review.

Electronic ~~T~~trade secret materials shall be provided to SBA staff and designated Professional Team members, in a ~~medium as specified~~ location provided by the modeling organization, to be received no later than close of business two business days prior to the start of the additional verification review (e.g., 5pm modeling organization time on Thursday before the start of the additional verification review on Monday). Additional materials may be requested on-site by the Professional Team in order to verify the hurricane standards. The Professional Team members and SBA staff shall attest at the end of the additional verification review, that all trade secret material ~~that was analyzed~~ and digital notes on their personal computers ~~has~~ have been deleted and that the recycle bin or its equivalent has been emptied.

If an additional verification review is held remotely, the same procedures shall apply as during the initial verification review. The modeling organization shall provide to SBA staff and each Professional Team member, as designated by SBA staff, one set of physical hard copy materials prepared for the additional verification review, along with the physical hard copy materials~~,~~ and the electronic data~~, and the remote review workbook~~ from the initial remote review, to be received no later than close of business two business days prior to the start of the remote additional verification review (e.g., 5pm modeling organization time on Thursday before the start of the additional verification review on Monday). New or revised electronic data shall be added to the electronic data ~~(via an~~on the electronic storage ~~medium as specified or~~ location provided by the modeling organization~~)~~ that was utilized during the initial ~~verification~~ remote review.

If a Commission member approved to attend the initial on-site review elects to attend the remote additional verification review, then the modeling organization shall provide to the Commission member one set of physical hard copy materials prepared for the additional verification review, along with the physical hard copy materials ~~and the remote review workbook~~ from the initial verification review, to be received no later than close of business two business days prior to the start of the remote additional verification review (e.g., 5pm modeling organization time on Thursday before the start of the additional verification review on Monday).

Within one business day after completion of the remote additional verification review, SBA staff, Professional Team members, and Commission members shall ship to the modeling organization via overnight delivery all physical hard copy materials provided by the modeling organization (the set of physical hard copy materials from the initial and the additional verification reviews) and the remote review workbooks.

SBA staff, Professional Team members, and Commission members shall thoroughly review all physical hard copy and electronic storage locations that were utilized during the remote additional verification review to ensure that all materials provided by the modeling organization are being returned or destroyed and that no record, copy, duplicate, derivative, or compilation of the information is within their possession. Each Professional Team member, ~~and~~ Commission member, and SBA staff shall provide a written confirmation to the Commission Chair via email to SBA staff stating that (1) a comprehensive review has been performed of all physical hard copy and electronic storage locations utilized during the remote additional verification review process, (2) all materials and information provided by the modeling organization in support of the remote additional verification review have been shipped to the modeling organization via overnight delivery or destroyed, and (3) ~~verifies that~~ the materials and data provided by the modeling organization have not been reproduced, recorded, copied, or duplicated in any manner or stored on any medium including personal computers or other devices. SBA staff shall provide a copy of each signed written confirmation to the modeling organization.

TRADE SECRET DATA AND INFORMATION

While on-site or during a remote review, 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 and SBA staff what is a trade secret and is not to be made public.

All written documentation provided by the modeling organization to the Commission is considered a public ~~document~~ record with the exception of documents provided during the closed meeting where trade secrets used in the design and construction of the hurricane model are discussed and reviewed.

The modeling organization shall provide any additional information directly to the Commission rather than give it to Professional Team members or SBA staff to be brought back with them. Documents that the modeling organization indicates are trade secret that are viewed by Professional Team members, Commission members, and SBA staff are ~~not public documents~~confidential and exempt from Florida's public records law.

Professional Team members, Commission members, and SBA staff shall ~~restrict any note taking to~~ use a workbook provided by SBA staff, or ~~on~~ the digital or hard copy materials provided by the modeling organization, for notes. The modeling organization shall review the workbooks for notes the modeling organization deems as trade secret information. Any workbook pages containing notes considered by the modeling organization as trade secret information shall be removed from the workbook by the modeling organization. SBA staff shall place the removed workbook pages in a sealed envelope labeled "Contains Content Designated as Trade Secret Information by (Name of Modeling Organization)" with the date, time, and Professional Team leader's signature across the seal. The sealed envelope shall be retained by SBA staff in accordance with Florida Public Records Law in a secure location. SBA staff shall bring the sealed envelope to the Commission closed meeting to discuss trade secrets where it will be unsealed and distributed for use during the closed meeting.

Professional Team members, Commission members, and SBA staff shall attest at the end of the on-site review that all trade secret material and digital notes on their personal computers have been deleted and that the recycle bin or its equivalent has been emptied.

Trade secrets of the modeling organization learned by a Professional Team member or SBA staff shall not be discussed with Commission members.

Professional Team members and SBA staff shall agree to respect the trade secret nature of the hurricane model and not use trade secret information in any way detrimental to the interest of the modeling organization.

Professional Team members shall not discuss other hurricane and flood models being evaluated while they are on-site or remotely reviewing a particular hurricane model.

During a remote review, Professional Team members, Commission members, and SBA staff shall ~~restrict any note taking to~~use a workbook prepared and provided by SBA staff, or ~~on~~ the digital or hard copy materials provided by the modeling organization, for notes. At the completion of the remote review, the workbooks shall be shipped to the modeling organization with the materials provided in advance of the remote review by the modeling organization. The modeling organization shall review the remote review workbooks for notes the modeling organization deems as trade secret information and remove those pages from the workbook.

ON-SITE REVIEW RESULTS

The Professional Team shall present the results of the on-site reviews to the Commission and answer questions related to their reviews.

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 hurricane model or a component part of a hurricane model.

Refer to the chapter "Process for Determining the Acceptability of a Computer Simulation Hurricane Model" for additional information regarding the on-site review.

PROFESSIONAL TEAM

COMPOSITION AND SELECTION OF THE PROFESSIONAL TEAM

A team of professional ~~individuals~~experts, known as the Professional Team, conducts on-site reviews ~~of~~ at modeling organizations seeking a determination of acceptability for their hurricane model by the Commission. The Professional Team consists of ~~individuals~~ experts having professional credentials in the following disciplines with each area represented by one or more individuals:

- Meteorology
- Statistics
- Structural Engineering
- Actuarial Science
- Computer/Information Science

SBA staff selects the Professional Team members in accordance with the SBA's procurement policy for contractual services. The SBA enters into contracts with each individual selected.

Selection of the Professional Team members is an aggressive recruiting process to seek out highly qualified ~~individuals~~ experts who are capable of working closely with the Commission and who are available during specified time frames in order for the Commission to meet its deadlines. Consideration is given to the following factors:

- Professional credentials, qualifications, and specialized experience
- Ability to provide the scope of services
- Reasonableness of fees
- Availability and commitment to the Commission
- ~~References~~
- Lack of conflicts of interest

RESPONSIBILITIES OF THE PROFESSIONAL TEAM

Team Leader: SBA staff designates one member of the Professional Team as the team leader. The team leader is responsible for coordinating the activities of the Professional Team and overseeing the development of reports to the Commission. The team leader also:

1. Provides leadership, support, and guidance to team members fostering collaboration, developing team strengths, and creating a supportive team environment.

2. Leads the on-site review and conducts the opening and exit briefings.

3. Helps ensure compliance with the Commission's processes and the Professional Team's audit guidelines.

4. Assists and collaborates with designated SBA staff responsible for managing the Professional Team.

5. Leads the review of interim hurricane model and platform updates.

6. Coordinates and prepares responses to modeling organization questions regarding the hurricane standards, disclosures, forms, and audit requirements.

Team Members: Responsibilities of Professional Team members include:

1. Participate in preparations and discussions with the Commission and SBA staff prior to the on-site reviews.

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 hurricane model tests and evaluations.

4. ~~While~~ Participate in the on-site review to~~,~~ verify, evaluate, and observe the data, methodologies, techniques, and assumptions used in the hurricane model for each member's area of expertise.

5. Identify and observe how various assumptions affect the hurricane model so as to identify to the Commission various sensitive components and aspects of the hurricane model.

6. Discuss the hurricane model with the modeling organization's professional staff to gain a clear understanding and confidence in the operation of the hurricane model and its description as provided to the Commission.

~~7. Participate in the administration of on-site tests.~~

~~8~~7. Participate in the preparation of written reports and presentations to the Commission.

8. Participate in Commission meetings.

RESPONSIBILITIES OF SBA STAFF

The Professional Team reports to designated SBA staff. SBA staff ~~supervises~~ manages the Professional Team and coordinates 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 include conference calls and ~~other~~ virtual meetings depending on circumstances and needs of the Commission.

2. Coordinating and scheduling on-site reviews and additional verification reviews, including remote reviews.

3. Coordinating and scheduling pre-on-site review conference calls.

4. Coordinating and scheduling electronic material access testing prior to on-site reviews.

5. Working with the Commission and Professional Team members in developing, reviewing, and revising hurricane model tests and evaluations.

6. Overseeing the supervision and administration of specified on-site tests and evaluations.

7. Working with the modeling organization to determine which professionals with the modeling organization shall be available during the on-site review.

8. Briefing and de-briefing the Professional Team members prior to, during, and after the on-site review.

9. Coordinating the preparation of written reports and presentations to the Commission.

10. Coordinating the reimbursement of expenses per s. 112.061, F.S., for Professional Team members, Commission members, and SBA staff.

~~2023~~ 2025 HURRICANE STANDARDS, DISCLOSURES, AUDIT ~~REQUIREMENTS~~ITEMS, AND FORMS

Florida Commission on
Hurricane Loss Projection Methodology

Hurricane Model Identification

Name of Hurricane Model: _____

Hurricane Model Version Identification: _____

Hurricane Model Platform Names and Identifications with Primary Hurricane Model Platform and Identification Listed First:

_____

_____

Name of Modeling Organization: _____

Street Address: _____

City, State, ZIP Code: _____

Mailing Address, if different from above: _____

_____

Contact Person: _____

Phone Number: _____

Email Address: _____

Date: _____

Hurricane Model Submission Data

The following input data ~~will~~ shall be made available to modeling organizations.

Input Data

Name	Description
hlpm2023c.zip	2023 FHCF personal and commercial residential ~~zero deductible~~ exposure data for Forms S-2, S-5, A-2, A-3, A-4, and A-8, and G-1 Disclosure 6 and Audits 3-4
2025hlpm.zip	2025 FHCF personal and commercial residential exposure data for Forms S-2, S-5, A-2, A-3, A-4, and A-8, and G-1 Audit 5
~~NotionalInput23~~NotionalInput25.xlsx	Notional structures and Grid A and Grid B location points for Forms S-2~~, A-1,~~ and A-6
~~2023FormM1~~2025FormM1.xlsx	Hurricanes used for Reference Hurricane Set frequencies in Form M-1
~~2023FormM3~~2025FormM3.xlsx	Radius of Maximum Winds (Rmax) and Radii format for Form M-3
FormS6Input~~23~~.xlsx	Input variables for Form S-6
FormS6Input~~23~~Quantiles.xlsx	~~Corresponding q~~Quantiles for input variables for Form S-6
~~hlpm2017c.zip~~	~~2017 FHCF personal and commercial residential zero deductible exposure data for Forms S-2, S-5, A-2, A-3, A-4, and A-8~~
FormV1Input~~23~~.xlsx	Windspeeds for 96 ZIP Codes and sample personal and commercial residential exposure data ~~(construction type and ZIP Codes)~~ for Form V-1
~~2023FormA1~~2025FormA1.xlsx	Hurricane loss cost data format for Form A-1
2025FormA3.xlsx	Hurricane loss data format for Form A-3
~~2023FormA4~~2025FormA4.xlsx	Hurricane output ranges format for Form A-4 using the ~~2017 and~~ 2023 and 2025 FHCF exposure data
~~2023FormA5~~2025FormA5.xlsx	Percentage change in ~~average~~ hurricane ~~loss cost~~ output ranges ~~data~~ format for Form A-5
~~2023FormA6~~2025FormA6.xlsx	Logical relationship to hurricane risk exhibits format for Form A-6

Output ~~is to~~shall be provided electronically in specified output files as listed below. XXX denotes the abbreviated name of the modeling organization.

Output Data

Name	Description
XXX~~23~~25FormM1.xlsx	Output data from Form M-1
XXX~~23~~25FormM3.xlsx	Output data from Form M-3
XXX25FormM4.xlsx	Output data from Form M-4
XXX~~23~~25Expected-Hurricane-Loss Cost.dat and XXX~~23~~25Expected-Hurricane-Loss Cost.pdf	Hurricane loss cost output data from Form S-6
XXX~~23~~25Hurricane-Loss-Cost Contour.dat and XXX~~23~~25Hurricane-Loss-Cost Contour.pdf	Mean hurricane loss cost output data from Form S-6
XXX~~23~~25SA.dat and XXX~~23~~25SA.pdf	Hurricane loss cost output data for the sensitivity analysis portion of Form S-6
XXX~~23~~25UA.dat and XXX~~23~~25UA.pdf	Hurricane loss cost output data for the uncertainty analysis portion of Form S-6
XXX~~23~~25FormV2.xlsx	Output data from Form V-2
XXX~~23~~25FormV3.xlsx	Output data from Form V-3
XXX~~23~~25FormV4.xlsx	Output data from Form V-4
XXX~~23~~25FormV5.xlsx	Output data from Form V-5
XXX~~23~~25FormA1.xlsx and XXX~~23~~25FormA1.pdf	~~Underlying h~~Hurricane loss cost data from Form A-1
XXX~~23~~25FormA2.xlsx	Output data from Form A-2 using the ~~2017 and~~ 2023 and 2025 FHCF exposure data
XXX~~23~~25FormA3.xlsx and XXX~~23~~25FormA3.pdf	Output data from Form A-3 using the ~~2017 and~~ 2023 and 2025 FHCF exposure data
XXX~~23~~25FormA4.xlsx	Hurricane output ranges from Form A-4 using the ~~2017 and~~ 2023 and 2025 FHCF exposure data
XXX~~23~~25FormA5.xlsx	Output data from Form A-5
XXX~~23~~25FormA6.xlsx	Output data from Form A-6
XXX~~23~~25FormA8.xlsx	Output data from Form A-8 using the ~~2017 and~~ 2023 and 2025 FHCF exposure data

The modeling organization ~~is to~~shall run various scenario hurricane events through the hurricane model on the input exposure data. The referenced output forms ~~are to~~shall be completed, and hurricane loss files provided in ASCII, Excel, or PDF format as specified.

Forms designated as a Trade Secret Item ~~are to~~shall be provided in a ~~s~~Submission appendix if not considered as ~~T~~ttrade ~~S~~secret by the modeling organization.

The file names shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Revised files shall also include the revision date.

Notional Sets

Notional Set 1 – Deductible Sensitivity

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	$500	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	1% A	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	2% A	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	5% A	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	10% A	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	$500	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	1% A	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	2% A	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	5% A	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	10% A	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	$500	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	1% A	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	2% A	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	5% A	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	10% A	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	$500	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	1% C	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	2% C	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	5% C	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	10% C	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	$500	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	1% C	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	2% C	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	5% C	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	10% C	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	$500	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	1% C	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	2% C	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	5% C	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	10% C	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	$500	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	1% C	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	2% C	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	5% C	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	10% C	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	2% A	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	3% A	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	5% A	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	10% A	Unknown	Unknown	Unknown	Unknown	Unknown

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Frame Owners	Owners	Frame	1989	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10,000	50,000	20,000	500	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10,000	50,000	20,000	1,000	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10,000	50,000	20,000	2,000	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10,000	50,000	20,000	5,000	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10,000	50,000	20,000	10,000	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10,000	50,000	20,000	500	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10,000	50,000	20,000	1,000	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10,000	50,000	20,000	2,000	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10,000	50,000	20,000	5,000	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10,000	50,000	20,000	10,000	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	5,000	25,000	10,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	5,000	25,000	10,000	500	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	5,000	25,000	10,000	1,000	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	5,000	25,000	10,000	2,500	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	5,000	25,000	10,000	5,000	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	20,000	500	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	20,000	1,000	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	20,000	2,500	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	20,000	5,000	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	20,000	500	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	20,000	1,000	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	20,000	2,500	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	20,000	5,000	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	5,000	-	50,000	20,000	500	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	5,000	-	50,000	20,000	1,000	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	5,000	-	50,000	20,000	2,500	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	5,000	-	50,000	20,000	5,000	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	5,000	-	50,000	20,000	500	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	5,000	-	50,000	20,000	1,000	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	5,000	-	50,000	20,000	2,500	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	5,000	-	50,000	20,000	5,000	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	1,250,000	5,000,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	1,250,000	5,000,000	500,000	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	1,250,000	5,000,000	750,000	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	1,250,000	5,000,000	1,250,000	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	1,250,000	5,000,000	2,500,000	Unknown	Unknown	Unknown	Unknown	Unknown

Notional Set 2 – ~~Policy Form Sensitivity~~Reserved for Future Use

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Owners	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown

Notional Set 3 – ~~Coverage Sensitivity~~Reserved for Future Use

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown

Notional Set 4 – Year Built Sensitivity

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Frame Owners	Owners	Frame	1980	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1998	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	2004	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	2019	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1980	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1998	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	2004	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	2019	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1972	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1992	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	2004	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	2019	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1980	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1998	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	2004	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	2019	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1980	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1998	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	2004	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	2019	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1980	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1998	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	2004	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	2019	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1980	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1998	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	2004	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	2019	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1980	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1998	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	2004	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	2019	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Frame Owners	Owners	Frame	1980	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1998	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	2004	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	2019	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1980	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1998	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	2004	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	2019	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1972	1	50,000	5,000	25,000	10,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1989	1	50,000	5,000	25,000	10,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	1992	1	50,000	5,000	25,000	10,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	2004	1	50,000	5,000	25,000	10,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Manufactured Homes	Manufactured Homes	Manufactured Homes	2019	1	50,000	5,000	25,000	10,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1980	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1998	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	2004	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	2019	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1980	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1998	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	2004	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	2019	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1980	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1989	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	1998	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	2004	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Condo Unit	Condo Unit	Frame	2019	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1980	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1989	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	1998	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	2004	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Condo Unit	Condo Unit	Masonry	2019	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1980	20	25,000,000	-	1,250,000	5,000,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	1,250,000	5,000,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1998	20	25,000,000	-	1,250,000	5,000,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	2004	20	25,000,000	-	1,250,000	5,000,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	2019	20	25,000,000	-	1,250,000	5,000,000	0	Unknown	Unknown	Unknown	Unknown	Unknown

Notional Set 5 – Building Strength Sensitivity

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Weak Frame Owners	Owners	Frame	1980	1	100,000	10% A	50% A	20% A	0%	Gable	Shingle	6d nails	Toe Nail	No
Medium Frame Owners	Owners	Frame	1998	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Frame Owners	Owners	Frame	2007	1	100,000	10% A	50% A	20% A	0%	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Masonry Owners	Owners	Masonry	1980	1	100,000	10% A	50% A	20% A	0%	Gable	Shingle	6d nails	Toe Nail	No
Medium Masonry Owners	Owners	Masonry	1998	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Masonry Owners	Owners	Masonry	2007	1	100,000	10% A	50% A	20% A	0%	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Manufactured Homes	Manufactured Homes	Untied Foundation	1974	1	50,000	10% A	50% A	20% A	0%	Gable	Shingle	Unknown	Unknown	No
Medium Manufactured Homes	Manufactured Homes	Unknown	1992	1	50,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Manufactured Homes	Manufactured Homes	Tied Foundation	2004	1	50,000	10% A	50% A	20% A	0%	Gable	ASTM D7158 Class H Shingles	Unknown	Unknown	Yes
Weak Frame Renters	Renters	Frame	1980	1	-	-	50,000	40% C	0%	Gable	Shingle	6d nails	Toe Nail	No
Medium Frame Renters	Renters	Frame	1998	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Frame Renters	Renters	Frame	2007	1	-	-	50,000	40% C	0%	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Masonry Renters	Renters	Masonry	1980	1	-	-	50,000	40% C	0%	Gable	Shingle	6d nails	Toe Nail	No
Medium Masonry Renters	Renters	Masonry	1998	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Masonry Renters	Renters	Masonry	2007	1	-	-	50,000	40% C	0%	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Frame Condo Unit	Condo Unit	Frame	1980	3	10% C	-	50,000	40% C	0%	Gable	Shingle	6d nails	Toe Nail	No
Medium Frame Condo Unit	Condo Unit	Frame	1998	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Frame Condo Unit	Condo Unit	Frame	2007	3	10% C	-	50,000	40% C	0%	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Masonry Condo Unit	Condo Unit	Masonry	1980	3	10% C	-	50,000	40% C	0%	Gable	Shingle	6d nails	Toe Nail	No
Medium Masonry Condo Unit	Condo Unit	Masonry	1998	3	10% C	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Masonry Condo Unit	Condo Unit	Masonry	2007	3	10% C	-	50,000	40% C	0%	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Commercial Residential	Condo Association	Concrete	1980	20	25,000,000	-	5% A	20% A	0%	Flat	Unknown	Unknown	Unknown	No
Medium Commercial Residential	Condo Association	Concrete	1998	20	25,000,000	-	5% A	20% A	0%	Flat	Unknown	Unknown	Unknown	Unknown
Strong Commercial Residential	Condo Association	Concrete	2007	20	25,000,000	-	5% A	20% A	0%	Flat	Unknown	Unknown	Unknown	Yes

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Weak Frame Owners	Owners	Frame	1980	1	100,000	10,000	50,000	20,000	0	Gable	Shingle	6d nails	Toe Nail	No
Medium Frame Owners	Owners	Frame	1998	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Frame Owners	Owners	Frame	2007	1	100,000	10,000	50,000	20,000	0	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Masonry Owners	Owners	Masonry	1980	1	100,000	10,000	50,000	20,000	0	Gable	Shingle	6d nails	Toe Nail	No
Medium Masonry Owners	Owners	Masonry	1998	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Masonry Owners	Owners	Masonry	2007	1	100,000	10,000	50,000	20,000	0	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Manufactured Homes	Manufactured Homes	Untied Foundation	1974	1	50,000	5,000	25,000	10,000	0	Gable	Shingle	Unknown	Unknown	No
Medium Manufactured Homes	Manufactured Homes	Unknown	1992	1	50,000	5,000	25,000	10,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Manufactured Homes	Manufactured Homes	Tied Foundation	2004	1	50,000	5,000	25,000	10,000	0	Gable	ASTM D7158 Class H Shingles	Unknown	Unknown	Yes
Weak Frame Renters	Renters	Frame	1980	1	-	-	50,000	20,000	0	Gable	Shingle	6d nails	Toe Nail	No
Medium Frame Renters	Renters	Frame	1998	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Frame Renters	Renters	Frame	2007	1	-	-	50,000	20,000	0	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Masonry Renters	Renters	Masonry	1980	1	-	-	50,000	20,000	0	Gable	Shingle	6d nails	Toe Nail	No
Medium Masonry Renters	Renters	Masonry	1998	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Masonry Renters	Renters	Masonry	2007	1	-	-	50,000	20,000	0	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Frame Condo Unit	Condo Unit	Frame	1980	3	5,000	-	50,000	20,000	0	Gable	Shingle	6d nails	Toe Nail	No
Medium Frame Condo Unit	Condo Unit	Frame	1998	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Frame Condo Unit	Condo Unit	Frame	2007	3	5,000	-	50,000	20,000	0	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Masonry Condo Unit	Condo Unit	Masonry	1980	3	5,000	-	50,000	20,000	0	Gable	Shingle	6d nails	Toe Nail	No
Medium Masonry Condo Unit	Condo Unit	Masonry	1998	3	5,000	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Strong Masonry Condo Unit	Condo Unit	Masonry	2007	3	5,000	-	50,000	20,000	0	Hip	ASTM D7158 Class H Shingles	8d nails	Straps	Yes
Weak Commercial Residential	Condo Association	Concrete	1980	20	25,000,000	-	1,250,000	5,000,000	0	Flat	Unknown	Unknown	Unknown	No
Medium Commercial Residential	Condo Association	Concrete	1998	20	25,000,000	-	1,250,000	5,000,000	0	Flat	Unknown	Unknown	Unknown	Unknown
Strong Commercial Residential	Condo Association	Concrete	2007	20	25,000,000	-	1,250,000	5,000,000	0	Flat	Unknown	Unknown	Unknown	Yes

Notional Set 6 – Number of Stories Sensitivity

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Frame Owners	Owners	Frame	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	2	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	2	100,000	10% A	50% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	2	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	2	-	-	50,000	40% C	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	5	8,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	10	15,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	5% A	20% A	0%	Unknown	Unknown	Unknown	Unknown	Unknown

Name	Policy Form/ Occupancy	Construction	Year Built	Number of Stories	Limit A	Limit B	Limit C	Limit D	Deductible	Roof Geometry	Roof Covering	Roof Deck Attachment	Roof Wall Anchorage	Opening Protection
Frame Owners	Owners	Frame	1989	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Owners	Owners	Frame	1989	2	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	1	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Owners	Owners	Masonry	1989	2	100,000	10,000	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Frame Renters	Renters	Frame	1989	2	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	1	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Masonry Renters	Renters	Masonry	1989	2	-	-	50,000	20,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	5	8,000,000	-	400,000	1,600,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	10	15,000,000	-	750,000	3,000,000	0	Unknown	Unknown	Unknown	Unknown	Unknown
Commercial Residential	Condo Association	Concrete	1989	20	25,000,000	-	1,250,000	5,000,000	0	Unknown	Unknown	Unknown	Unknown	Unknown

Comparison of ~~2023~~ 2025 Hurricane Standards to ~~2021~~ 2023 Hurricane Standards

Hurricane Standard	Title	Comments
General		
G-1	Scope of the Hurricane Model and Its Implementation	Significant Revision
G-2	Qualifications of Modeling Organization Personnel and Consultants Engaged in Development and Implementation of the Hurricane Model	Significant Revision
G-3	Artificial Intelligence Use	New Standard
~~G-3~~	~~Insured Exposure Location~~	~~Significant Revision~~
~~G-4~~	~~Independence of Hurricane Model Components~~	
G-~~5~~4	Editorial Compliance	Significant Revision
Meteorological		
M-1	Model Base Hurricane Set	Significant Revision
M-2	Hurricane Model Meteorological Overview and Parameters (Inputs)	Significant Revision
M-3	Hurricane Probability Distributions	Significant Revision
M-4	Hurricane Windfield Structure	Significant Revision
M-5	Hurricane Intensity Change Methodologies	Significant Revision
M-6	Logical Relationships of Hurricane Characteristics	Significant Revision
Statistical		
S-1	Modeled Results and Goodness-of-Fit	~~Significant Revision~~
S-2	Sensitivity Analysis for Hurricane Model Output	Significant Revision
S-3	Uncertainty Analysis for Hurricane 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	~~Significant Revision~~
Vulnerability		
V-1	Development of Hurricane Building ~~Hurricane~~ Vulnerability Functions	Significant Revision
V-2	Development of Hurricane Contents ~~Hurricane~~ Vulnerability Functions	Significant Revision
V-3	Development of Hurricane Time Element ~~Hurricane~~ Vulnerability Functions	Significant Revision
V-4	Hurricane Mitigation Measures and Secondary Characteristics	Significant Revision
Actuarial		
A-~~4~~1	Modeled Hurricane Loss Cost and Hurricane Probable Maximum Loss Level Considerations	Significant Revision
~~G-4~~A-2	Independence of Hurricane Model Components	Significant Revision
~~G~~A-3	Insured Exposure ~~Location~~	Significant Revision
A-~~2~~4	Hurricane Events Resulting in Modeled Hurricane Losses	Significant Revision
A-~~1~~5	Hurricane Model Input Data and Output Reports	Significant Revision
A-~~3~~6	Hurricane Coverages	Significant Revision
~~A-4~~	~~Modeled Hurricane Loss Cost and Hurricane Probable Maximum Loss Level Considerations~~	~~Significant Revision~~
A-~~5~~7	Hurricane Policy ~~Conditions~~Limits and Deductibles	Significant Revision
A-~~6~~8	Hurricane Loss Outputs and Logical Relationships to Risk	Significant Revision
Computer/Information		
CI-1	General System Traceability and Change Tracking	New Standard
CI-2	Artificial Intelligence-Based Software Engineering	New Standard
CI-~~1~~3	Hurricane Model Documentation	Significant Revision

Hurricane Standard	Title	Comments
CI-~~2~~4	Hurricane Model Requirements	~~Significant Revision~~
CI-~~3~~5	Hurricane Model Organization and Component Design	Significant Revision
CI-~~4~~6	Hurricane Model Implementation	Significant Revision
CI-~~5~~7	Hurricane Model Implementation Verification	Significant Revision
CI-~~6~~8	Human-Computer Interaction	Significant Revision
CI-~~7~~9	Hurricane Model Maintenance and Revision	Significant Revision
CI-~~8~~10	Hurricane Model Security	Significant Revision

Note: *Significant revisions are those that include new or revised (non-editorial) standard requirements, disclosures, forms, or audit items.*

GENERAL HURRICANE STANDARDS

G-1 Scope of the Hurricane Model and Its Implementation*

*(*Significant Revision)*

A. The hurricane model shall project accurate and reliable loss costs and probable maximum loss levels for damage to insured residential property from hurricane events.

B. A documented process shall be maintained to ~~assure~~ ensure continual agreement and correct correspondence of databases, data files, and computer source code to presentation materials, current scientific literature, current technical literature, and modeling organization documents.

C. All software, data, and flowcharts (1) located within the hurricane model, (2) used to validate the hurricane model, (3) used to project modeled hurricane loss costs and hurricane probable maximum loss levels, and (4) used to create forms required by the Commission in the Hurricane Standards Report of Activities shall ~~fall within the scope of~~comply with the Computer/Information Hurricane Standards.

~~D. All meteorological forms, statistical Forms S-1, S-2, and S-6, and all actuarial forms with the exception of Form A-2 shall be produced through an automated procedure or procedures as indicated in the form instructions.~~

~~E.~~D. Vintage of data, code, scientific literature, and technical literature used shall be ~~justifiable~~justified.

Purpose: This standard yields a high-level view ~~of the scope~~ of the hurricane model ~~to be reviewed, namely projecting~~ that projects loss costs and probable maximum loss levels for damage to insured residential property (personal and commercial) from hurricane events, including time element losses.

Relevant Forms:
- G-1, General Hurricane Standards Expert Certification
- M-1, Annual Occurrence Rates
- M-3, Radius of Maximum Wind~~s~~ and Radii of Standard Wind Thresholds
- ~~S-1~~M-4, Probability and Frequency of Florida Landfalling Hurricanes per Year
- S-2, Examples of Hurricane Loss Exceedance Estimates
- A-1, Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code
- A-2, Model Base Hurricane Set Statewide Hurricane Losses
- A-3, Hurricane Losses
- A-4, Hurricane Output Ranges

A-5, Percentage Change in Hurricane Output Ranges
A-6, Logical Relationships to Hurricane Risk (Trade Secret Item)
A-8, Hurricane Probable Maximum Loss for Florida

Disclosures

1. Specify the hurricane model name and version identification. If the hurricane model is implemented on more than one platform, specify each hurricane model platform identifying the primary platform and the distinguishing aspects of each platform.

2. Provide an ~~comprehensive~~ executive summary of the hurricane model. This summary shall include an ~~technical description~~overview of each major component ~~of the hurricane model~~(meteorological, vulnerability, actuarial)~~, including each major component of the hurricane model~~ used to project loss costs and probable maximum loss levels for damage to insured residential property from hurricane events causing damage in Florida. ~~Describe the theoretical basis of the hurricane model and include a description of the methodology, particularly the wind components, the vulnerability components, and the insured loss components used in the hurricane model. The description shall be complete and shall not reference unpublished work.~~ The executive summary shall not take the place of providing detailed information in the disclosures of relevant subsequent standards.

3. Provide a fully labeled flowchart, concept map, or semantic network that illustrates interactions among, and the network organization of, major hurricane model components.

~~4. Provide a diagram defining the network organization in which the hurricane model is designed and operates.~~

~~5.~~4. ~~Provide detailed information on~~ If the hurricane model is ~~implementation~~ implemented on ~~more than one~~multiple platforms, ~~if applicable~~provide detailed information for each platform. ~~In particular, s~~Submit Forms S-5, A-1, A-4, and A-8 from each platform, including additional calculations showing ~~no~~ differences between implementations.

~~6.~~5. Provide in a Submission appendix a comprehensive list of ~~complete~~ all references pertinent to the hurricane model under review by standards group. Each reference shall be complete and provided using professional citation standards. Provide a hyperlink here to the location of the references.

~~7.~~6. Provide the following information related to changes in the hurricane model from the current accepted hurricane model to the initial ~~s~~Submission ~~this year~~under the 2025 Hurricane Standards.

A. Hurricane model changes:

1. A summary description of changes that affect the personal or commercial residential hurricane loss costs or hurricane probable maximum loss levels,

2. A list of all other changes, and

3. The rationale for each change.

B. Percentage difference in average annual zero deductible statewide hurricane loss costs based on the ~~2017~~ 2023 FHCF exposure data for:

1. All changes combined, and

2. Each individual hurricane model component change.

C. Color-coded maps by county reflecting the percentage difference in average annual zero deductible statewide hurricane loss costs based on the ~~2017~~ 2023 FHCF exposure data for each hurricane model component change.

D. Color-coded map by county reflecting the percentage difference in average annual zero deductible statewide hurricane loss costs based on the ~~2017~~ 2023 FHCF exposure data for all hurricane model component changes combined.

~~8. Provide a list and description of any potential interim updates to underlying data relied upon by the hurricane model. State whether the time interval for the update has a possibility of occurring during the period of time the hurricane model could be found acceptable by the Commission under the review cycle in this *Hurricane Standards Report of Activities*.~~

Audit

1. Compliance with the requirements in ~~Hurricane~~ Standard G-1.B ~~in all stages of the modeling process~~ will be reviewed.

2. Maps, databases, and data files relevant to the ~~s~~Submission will be reviewed ~~in the course of the on-site review~~as encountered.

~~3. Justification for the vintage of data, code, scientific literature, and technical literature used will be reviewed in the course of the on-site review.~~

~~4. Supporting material for the hurricane model changes in Disclosure 7 will be reviewed.~~

~~5.~~3. For any changes made in the hurricane model since the initial ~~s~~Submission, color-coded maps by county reflecting the percentage difference in average annual zero deductible statewide hurricane loss costs based on the ~~2017~~ 2023 FHCF exposure data for each hurricane model component change, between the initial ~~s~~Submission and the revised ~~s~~Submission, and between any intermediate revisions and the revised ~~s~~Submission, will be reviewed.

~~6.~~4. For any modifications to Form A-4 using the ~~2017~~ 2023 FHCF exposure data resulting from changes in the hurricane model since the initial ~~s~~Submission, a newly completed Form A-5 with the initial ~~s~~Submission as the baseline for computing the percentage changes, and with any intermediate revisions as the baseline for computing the percentage changes, will be reviewed.

~~7.~~5. If the output ranges in Form A-4 using the ~~2023~~ 2025 FHCF exposure data are regenerated since the initial ~~s~~Submission, a Form A-5 based on the output range percentage changes using the ~~2023~~ 2025 FHCF exposure data with the initial ~~s~~Submission as the baseline for computing the percentage changes, and with any intermediate revisions as the baseline for computing the percentage changes, will be reviewed.

G-2 Qualifications of Modeling Organization Personnel and Consultants Engaged in Development and Implementation of the Hurricane Model*

*(*Significant Revision)*

A. Hurricane model ~~construction~~development, 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 hurricane model and ~~hurricane model~~ submission documentation shall be reviewed by modeling organization personnel or consultants with requisite experience in the following professional disciplines ~~with requisite experience~~: structural/wind engineering (current licensed Florida professional engineer), statistics (advanced degree or equivalent experience), actuarial science (Associate or Fellow of Casualty Actuarial Society or Society of Actuaries), meteorology (advanced degree in a relevant discipline), and computer/information science (advanced degree or equivalent experience and certifications). These individuals shall certify Expert Certification Forms G-1 through G-6 as applicable.

Purpose: Professional disciplines with requisite experience necessary to develop the hurricane model ~~are to~~shall be represented among relevant modeling organization staff and consultants. Academic or professional designations are required but not necessarily sufficient for the personnel involved in hurricane model development, implementation, and preparation of material for review by the Commission.

Relevant Forms:
G-1, General Hurricane Standards Expert Certification
G-2, Meteorological Hurricane Standards Expert Certification
G-3, Statistical Hurricane Standards Expert Certification
G-4, Vulnerability Hurricane Standards Expert Certification
G-5, Actuarial Hurricane Standards Expert Certification
G-6, Computer/Information Hurricane Standards Expert Certification

Disclosures

1. Modeling Organization Background

   A. Describe the ownership structure of the modeling organization engaged in the development of the hurricane model. Describe affiliations with other companies and the nature of the relationship, if any. Indicate if the modeling organization has changed its name and explain the circumstances.

   B. If the hurricane model is developed by an entity other than the modeling organization, describe its organizational structure and indicate how proprietary rights and control

over the hurricane model and its components are exercised. If more than one entity is involved in the development of the hurricane model, describe all involved.

C. If the hurricane model is developed by an entity other than the modeling organization, describe the funding source for the development of the hurricane model.

D. Describe any services other than hurricane modeling provided by the modeling organization.

E. Indicate if the modeling organization has ever been involved directly in litigation or challenged by a governmental authority where the credibility of one of its U.S. hurricane model versions for projection of hurricane loss costs or hurricane probable maximum loss levels was disputed. Describe the nature of each case and its conclusion.

2. Professional Credentials

A. Provide in a tabular 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 hurricane model:

1. Meteorology
2. Statistics
3. Vulnerability
4. Actuarial Science
5. Computer/Information Science
6. Editorial

B. Identify any new employees or consultants (since the previous ~~s~~Submission) engaged in the development or implementation of the hurricane model or the acceptability process.

C. Provide visual business workflow documentation connecting all personnel related to hurricane model design, testing, execution, maintenance, and decision-making.

3. Independent Peer Review

A. Provide reviewer names and dates of external independent peer reviews that have been performed on the following components as currently functioning in the hurricane model:

1. Meteorology
2. Statistics
3. Vulnerability
4. Actuarial Science
5. Computer/Information Science

B. Provide documentation of independent peer reviews directly relevant to the modeling organization responses to the ~~current~~ 2025 hurricane 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 modeling organization has with any of the persons performing the independent peer reviews.

4. Provide completed Expert Certification Forms G-1 through G-6 in a Submission appendix. Provide a hyperlink here to the location of the forms ~~in the submission appendix [insert hyperlink here]~~.

~~5. Provide completed Form G-2. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~6. Provide completed Form G-3. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~7. Provide completed Form G-4. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~8. Provide completed Form G-5. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~9. Provide completed Form G-6. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

Audit

1. The professional vitae of new employees and consultants (since the previous ~~s~~Submission) engaged in the development or implementation of the hurricane model under review and responsible for the ~~s~~Submission will be reviewed.

~~2. 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 will be discussed.~~

G-3 Artificial Intelligence Use*

*(*New Standard)*

A. The modeling organization policy on the use of Artificial Intelligence (AI) shall be documented as it relates to projecting Florida hurricane loss costs and hurricane probable maximum loss levels.

B. The use of AI in model development and implementation shall be documented.

1. The categories of AI models (e.g., in-house, proprietary, open source) shall be documented.

2. The use cases of AI models, including data collection, training procedures, inference procedures, and measures of effectiveness, shall be documented.

Purpose: To provide an overview of the modeling organization AI use policy and uses of AI in the meteorology, vulnerability, and actuarial components of the hurricane model.

Relevant Forms: G-1, General Hurricane Standards Expert Certification
G-2, Meteorological Hurricane Standards Expert Certification
G-3, Statistical Hurricane Standards Expert Certification
G-4, Vulnerability Hurricane Standards Expert Certification
G-5, Actuarial Hurricane Standards Expert Certification
G-6, Computer/Information Hurricane Standards Expert Certification

Audit

1. The modeling organization AI use policy will be reviewed.

2. The use of AI in hurricane model development and implementation will be reviewed.

3. AI model category documentation will be reviewed.

4. AI model use cases will be reviewed.

~~G-3 Insured Exposure Location*~~

~~*(*Significant Revision)*~~

~~***A.** ZIP Codes used in the hurricane model shall not differ from the United States Postal Service publication date by more than 24 months at the date of submission of the hurricane model. ZIP Code information shall originate from the United States Postal Service.~~

~~***B.** ZIP Code centroids, when used in the hurricane 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.~~

~~***D.** If any hurricane model components are dependent on ZIP Code databases, a logical process shall be maintained for ensuring these components are consistent with the recent ZIP Code database updates.~~

~~***E.** Geocoding methodology shall be justified.~~

~~Purpose: 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 hurricane loss costs and hurricane probable maximum loss levels.~~

~~Accurate insured exposure locations are necessary for projecting hurricane loss costs and hurricane probable maximum loss levels. Hurricane model outputs, including hurricane loss costs, are sensitive to insured exposure locations. Appropriate methods must be used when converting street addresses to geocode locations (latitude and longitude).~~

~~Relevant Form: G-1, General Hurricane Standards Expert Certification~~

~~**Disclosures**~~

~~1. Provide a description of the geographic information system (GIS) software and tools used for geocoding.~~

~~2. List the current ZIP Code databases used by the hurricane model and the hurricane model components to which they relate. Provide the effective (official United States Postal Service) dates corresponding to the ZIP Code databases.~~

~~3. Describe in detail how invalid ZIP Codes are handled.~~

4. Describe the data, methods, and process used in the hurricane model to convert among street addresses, geocode locations (latitude and longitude), and ZIP Codes.

5. List and provide a brief description of each hurricane model ZIP Code-based database (e.g., ZIP Code centroids).

6. Describe the process for updating hurricane model ZIP Code-based databases.

Audit

1. Geographic displays for all ZIP Codes will be reviewed.

2. Geographic comparisons of previous to current locations of ZIP Code centroids will be reviewed.

3. Third-party vendor information, if applicable, and a complete description of the process used to validate ZIP Code information will be reviewed.

4. The treatment of ZIP Code centroids over water or other uninhabitable terrain will be reviewed.

5. Examples of geocoding for complete and incomplete street addresses will be reviewed.

6. Examples of latitude and longitude to ZIP Code conversions will be reviewed.

7. Hurricane model ZIP Code-based databases will be reviewed.

~~G-4 Independence of Hurricane Model Components~~

~~The meteorology, vulnerability, and actuarial components of the hurricane model shall each be theoretically sound without compensation for potential bias from other components.~~

~~Purpose: The primary components of the hurricane model shall be individually sound and operate independently. In other words, the hurricane model shall not allow adjustments to one component to compensate for deficiencies in other components (compensation which could inflate or reduce hurricane loss costs and hurricane probable maximum loss levels). A hurricane model would not meet this standard if an unjustifiable calibration or adjustment has been made to improve the match between hurricane model output and the Model Base Hurricane Set for a specific hurricane.~~

~~In addition to each component of the hurricane model meeting its respective standards, the interrelationship of the hurricane model components as a whole shall be reasonable, logical, and justifiable.~~

~~Relevant Form: G-1, General Hurricane Standards Expert Certification~~

~~Audit~~

~~1. The hurricane model components will be reviewed for adequately portraying hurricane phenomena and effects (damage, hurricane loss costs, and hurricane probable maximum loss levels) in the course of the on-site review. Attention will be paid to an assessment of (1) the theoretical soundness of each component, (2) the basis of the integration of each component into the hurricane model, and (3) consistency between the results of one component and another.~~

~~2. All changes in the hurricane model since the previous submission that might impact the independence of the hurricane model components will be reviewed.~~

G-~~5~~4 Editorial Compliance*

*(*Significant Revision)*

The ~~s~~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 ~~s~~Submission has been personally and rigorously reviewed, and is editorially correct.

Purpose: A quality control process with regard to creating, maintaining, and reviewing all documentation associated with the hurricane model ~~is to~~shall be maintained.

Persons with experience in reviewing technical documents for grammatical correctness, typographical accuracy, and accurate citations, charts, or graphs shall have reviewed the ~~s~~Submission and certify that the ~~s~~Submission is in compliance with the acceptability process.

Relevant Forms:
G-1, General Hurricane Standards Expert Certification
G-2, Meteorological Hurricane Standards Expert Certification
G-3, Statistical Hurricane Standards Expert Certification
G-4, Vulnerability Hurricane Standards Expert Certification
G-5, Actuarial Hurricane Standards Expert Certification
G-6, Computer/Information Hurricane Standards Expert Certification
G-7, Editorial Review Expert Certification

Disclosures

1. Describe the process used for document control of the ~~s~~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 Expert Certification Forms G-1 through G-6 to ensure that the information contained under each group of hurricane standards is accurate and complete.

3. Provide completed Form G-7 in a Submission appendix. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

Audit

1. An assessment that the person who has reviewed the ~~s~~Submission has experience in reviewing technical documentation and that such person is familiar with the ~~s~~Submission requirements as set forth in the *Hurricane Standards Report of Activities as of November 1, ~~2023~~2025*, will be made.

~~2. Attestation that the submission has been reviewed for grammatical correctness, typographical accuracy, completeness, and no inclusion of extraneous data or materials will be assessed.~~

~~3.~~2. Confirmation that the ~~s~~Submission has been rigorously reviewed by the signatories on the Expert Certification Forms G-1 through G-~~6~~7 for editorial compliance will be assessed.

~~4.~~3. The modification history for ~~s~~Submission documentation will be reviewed.

~~5. A flowchart defining the process for form creation will be reviewed.~~

Form G-1: General Hurricane Standards Expert Certification

Purpose: This form identifies the signatory or signatories who have reviewed the current ~~s~~Submission for compliance with the General Hurricane Standards (G-1–G-~~5~~4) in accordance with the stated provisions.

I hereby certify that I have reviewed the current ~~s~~Submission of _____
(Name of Hurricane Model)
Version _____ for compliance with the ~~2023~~ 2025 Hurricane Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology, and hereby certify that:

1. The hurricane model meets the General Hurricane Standards (G-1–G-~~5~~4)~~,~~;
2. The disclosures and forms related to the General Hurricane Standards 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. ~~My review involved ensuring the consistency of the content in all sections of the submission, and~~

Rationale: To align with moving details on the model components and changes under each respective group of standards

~~5.~~4. In expressing my opinion, I have not been influenced by any other party to bias or prejudice my opinion.

Name	Professional Credentials (Area of Expertise)
Signature (initial ~~s~~Submission)	Date
Signature (response to ~~d~~Deficiencies, if any)	Date
Signature (revisions to ~~s~~Submission, if any)	Date

Signature (final ~~s~~Submission) Date

An updated signature and form are required following any modification of the hurricane model and any revision of the initial ~~s~~Submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary ~~with~~ using the following format:

Signature (revisions to ~~s~~Submission) Date

Note: A facsimile or any properly reproduced signature ~~will~~ shall be acceptable to meet this requirement.

Include Form G-1 in a ~~s~~Submission appendix.

Form G-2: Meteorological Hurricane Standards Expert Certification

Purpose: This form identifies the signatory or signatories who have reviewed the current ~~s~~Submission for compliance with the Meteorological Hurricane Standards (M-1–M-6) in accordance with the stated provisions.

I hereby certify that I have reviewed the current ~~s~~Submission of _____
(Name of Hurricane Model)
Version _____ for compliance with the ~~2023~~ 2025 Hurricane Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology, and hereby certify that:

1. The hurricane model meets the Meteorological Hurricane Standards (M-1–M-6)~~,~~;
2. The disclosures and forms related to the Meteorological Hurricane Standards 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 to bias or prejudice my opinion.

Name	Professional Credentials (Area of Expertise)
Signature (initial ~~s~~Submission)	Date
Signature (response to ~~d~~Deficiencies, if any)	Date
Signature (revisions to ~~s~~Submission, if any)	Date
Signature (final ~~s~~Submission)	Date

An updated signature and form are required following any modification of the hurricane model and any revision of the initial ~~s~~Submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary ~~with~~ using the following format:

Signature (revisions to ~~s~~Submission)	Date

Note: A facsimile or any properly reproduced signature ~~will~~ shall be acceptable to meet this requirement.

Include Form G-2 in a ~~s~~Submission appendix.

Form G-3: Statistical Hurricane Standards Expert Certification

Purpose: This form identifies the signatory or signatories who have reviewed the current ~~s~~Submission for compliance with the Statistical Hurricane Standards (S-1–S-6) in accordance with the stated provisions.

I hereby certify that I have reviewed the current ~~s~~Submission of _____
(Name of Hurricane Model)
Version _____ for compliance with the ~~2023~~ 2025 Hurricane Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology, and hereby certify that:

1. The hurricane model meets the Statistical Hurricane Standards (S-1–S-6)~~,~~;
2. The disclosures and forms related to the Statistical Hurricane Standards 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 to bias or prejudice my opinion.

Name	Professional Credentials (Area of Expertise)
Signature (initial ~~s~~Submission)	Date
Signature (response to ~~d~~Deficiencies, if any)	Date
Signature (revisions to ~~s~~Submission, if any)	Date
Signature (final ~~s~~Submission)	Date

An updated signature and form are required following any modification of the hurricane model and any revision of the initial ~~s~~Submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary ~~with~~ using the following format:

Signature (revisions to ~~s~~Submission)	Date

Note: A facsimile or any properly reproduced signature ~~will~~ shall be acceptable to meet this requirement.

Include Form G-3 in a ~~s~~Submission appendix.

Form G-4: Vulnerability Hurricane Standards Expert Certification

Purpose: This form identifies the signatory or signatories who have reviewed the current ~~s~~Submission for compliance with the Vulnerability Hurricane Standards (V-1–V-4) in accordance with the stated provisions.

I hereby certify that I have reviewed the current ~~s~~Submission of _____
(Name of Hurricane Model)
Version _____ for compliance with the ~~2023~~ 2025 Hurricane Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology, and hereby certify that:

1. The hurricane model meets the Vulnerability Hurricane Standards (V-1–V-4)~~,~~;
2. The disclosures and forms related to the Vulnerability Hurricane Standards 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 to bias or prejudice my opinion.

Name	Professional Credentials (Area of Expertise) ~~State: _____ Expiration Date: _____~~ Florida Professional Engineer License ~~Type~~Number: _____ Expiration Date: _____
Signature (initial ~~s~~Submission)	Date
Signature (response to ~~d~~Deficiencies, if any)	Date
Signature (revisions to ~~s~~Submission, if any)	Date

Signature (final ~~s~~Submission) Date

An updated signature and form are required following any modification of the hurricane model and any revision of the initial ~~s~~Submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary ~~with~~ using the following format:

Signature (revisions to ~~s~~Submission) Date

Note: A facsimile or any properly reproduced signature ~~will~~ shall be acceptable to meet this requirement.

Include Form G-4 in a ~~s~~Submission appendix.

Form G-5: Actuarial Hurricane Standards Expert Certification

Purpose: This form identifies the signatory or signatories who have reviewed the current ~~s~~Submission for compliance with the Actuarial Hurricane Standards (A-1–A-~~6~~8) in accordance with the stated provisions.

I hereby certify that I have reviewed the current ~~s~~Submission of _____
(Name of Hurricane Model)
Version _____ for compliance with the ~~2023~~ 2025 Hurricane Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology, and hereby certify that:

1. The hurricane model meets the Actuarial Hurricane Standards (A-1–A-~~6~~8)~~,~~;
2. The disclosures and forms related to the Actuarial Hurricane Standards are editorially and technically accurate, reliable, unbiased, and complete~~,~~;
3. My review was completed in accordance with the Actuarial Standards of Practice and Code of Conduct~~,~~; and
4. In expressing my opinion, I have not been influenced by any other party to bias or prejudice my opinion.

Name	Professional Credentials (Area of Expertise)
Signature (initial ~~s~~Submission)	Date
Signature (response to ~~d~~Deficiencies, if any)	Date
Signature (revisions to ~~s~~Submission, if any)	Date
Signature (final ~~s~~Submission)	Date

An updated signature and form are required following any modification of the hurricane model and any revision of the initial ~~s~~Submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary ~~with~~ using the following format:

Signature (revisions to ~~s~~Submission)	Date

Note: A facsimile or any properly reproduced signature ~~will~~ shall be acceptable to meet this requirement.

Include Form G-5 in a ~~s~~Submission appendix.

Form G-6: Computer/Information Hurricane Standards Expert Certification

Purpose: This form identifies the signatory or signatories who have reviewed the current ~~s~~Submission for compliance with the Computer/Information Hurricane Standards (CI-1–CI-~~8~~10) in accordance with the stated provisions.

I hereby certify that I have reviewed the current ~~s~~Submission of _____
(Name of Hurricane Model)
Version _____ for compliance with the ~~2023~~ 2025 Hurricane Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology, and hereby certify that:

1. The hurricane model meets the Computer/Information Hurricane Standards (CI-1–CI-~~8~~10)~~,~~;
2. The disclosures and forms related to the Computer/Information Hurricane Standards 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 to bias or prejudice my opinion.

Name	Professional Credentials (Area of Expertise)
Signature (initial ~~s~~Submission)	Date
Signature (response to ~~d~~Deficiencies, if any)	Date
Signature (revisions to ~~s~~Submission, if any)	Date
Signature (final ~~s~~Submission)	Date

An updated signature and form are required following any modification of the hurricane model and any revision of the initial ~~s~~Submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary ~~with~~ using the following format:

Signature (revisions to ~~s~~Submission)	Date

Note: A facsimile or any properly reproduced signature ~~will~~ shall be acceptable to meet this requirement.

Include Form G-6 in a ~~s~~Submission appendix.

Form G-7: Editorial Review Expert Certification

Purpose: This form identifies the signatory or signatories who have reviewed the current ~~s~~Submission for compliance with the Notification Requirements in the ~~a~~Acceptability ~~p~~Process chapter ~~Notification Requirements~~ and ~~General Hurricane~~ Standard G-~~5~~4 in accordance with the stated provisions.

I hereby certify that I have reviewed the current ~~s~~Submission of _____
(Name of Hurricane Model)
Version _____ for compliance with the "Process for Determining the Acceptability of a Computer Simulation Hurricane Model" adopted by the Florida Commission on Hurricane Loss Projection Methodology in ~~its~~ the *Hurricane Standards Report of Activities as of November 1, ~~2023~~2025*, and hereby certify that:

1. The hurricane model ~~s~~Submission is in compliance with the Notification Requirements in the ~~a~~Acceptability ~~p~~Process chapter ~~Notification Requirements~~ and ~~General Hurricane~~ Standard G-~~5~~4~~,~~;

2. The disclosures and forms related to each hurricane standards group are editorially accurate and contain complete information, and any changes that have been made to the ~~s~~Submission during the review process have been reviewed for completeness, grammatical correctness, the exclusion of extraneous data/information, and typographical errors~~,~~;

3. There are no incomplete responses, charts or graphs, inaccurate citations, or extraneous text or references~~,~~; and

~~4. The current version of the hurricane 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.~~4. In expressing my opinion, I have not been influenced by any other party to bias or prejudice my opinion.

Name	Professional Credentials (Area of Expertise)
Signature (initial ~~s~~Submission)	Date
Signature (response to ~~d~~Deficiencies, if any)	Date

Signature (revisions to ~~s~~Submission, if any) Date

Signature (final ~~s~~Submission) Date

An updated signature and form are required following any modification of the hurricane model and any revision of the initial ~~s~~Submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary ~~with~~ using the following format:

Signature (revisions to ~~s~~Submission) Date

Note: A facsimile or any properly reproduced signature ~~will~~ shall be acceptable to meet this requirement.

Include Form G-7 in a ~~s~~Submission appendix.

METEOROLOGICAL HURRICANE STANDARDS

M-1 Model Base Hurricane Set*

*(*Significant Revision)*

A. The Model Base Hurricane Set shall be one of the following: (1) Reference Hurricane Set, (2) Model Adjusted Hurricane Set, or (3) Model Climate-Adjusted Hurricane Set, and shall be ~~justifiable~~justified.

B. A climate-adjusted hurricane model shall use one of the hurricane sets listed in A as its Model Base Hurricane Set and shall be ~~justifiable~~justified.

C. Annual frequencies used in the hurricane model validation shall be based upon the Model Base Hurricane Set.

Purpose: The Model Base Hurricane Set is used in both calibration and validation of modeled versus historical hurricanes impacting Florida.

The Model Base Hurricane Set is to be developed by the modeling organization as the most appropriate interpretation of the historical hurricane record for use in modeling hurricane wind hazard.

Differences in statewide and regional storm counts and landfall intensities relative to the Reference Hurricane Set shall be justified.

Relevant Forms: G-2, Meteorological Hurricane Standards Expert Certification
M-1, Annual Occurrence Rates
~~S-1~~M-4, Probability and Frequency of Florida Landfalling Hurricanes per Year
S-5, Average Annual Zero Deductible Statewide Hurricane Loss Costs
A-2, Model Base Hurricane Set Statewide Hurricane Losses
A-3, Hurricane Losses

Disclosures

1. Identify the basis for the Model Base Hurricane Set as listed in ~~Hurricane~~ Standard M-1.A.

2. Describe the process used to develop the Model Base Hurricane Set. Specify:

   A. The HURDAT2 (Hurricane Data 2nd Generation) release date used,

   B. Additional data, databases, and modifications, including intensity classification adjustments, excluding any climate ~~change~~adjustment~~,~~ used, ~~if relevant,~~ and

C. Additional data, databases, and modifications related to a climate ~~change~~ adjustment used, including intensity classification adjustments~~if relevant~~.

3. Justify the Model Base Hurricane Set based upon current scientific literature and current technical literature.

4. Describe and justify any changes made to the Model Base Hurricane Set in the hurricane model under review that are not reflected in changes to the distributions in Form S-~~3~~2. ~~Describe the methodology used to make such changes.~~

5. ~~If the modeling organization has accounted for climate change in the hurricane model development (other than a change to the Model Base Hurricane Set), justify its use in modeling Florida hurricane rates from current scientific literature and current technical literature.~~ If the Model Base Hurricane Set includes climate adjustments, ~~D~~describe the ~~analysis and its~~ impact~~s~~ of the climate adjustments on Florida hurricane ~~rates~~landfall frequencies relative to the Reference Hurricane Set.

~~4.~~6. Provide completed Form M-1(s) in a Submission appendix. Provide a hyperlink here to the location of the form(s) ~~in the submission appendix [insert hyperlink(s) here]~~.

7. Provide completed Form M-4(s) in a Submission appendix. Provide a hyperlink here to the location of the form(s).

~~5.~~8. Describe the process for incorporating the Model Base Hurricane Set consistently into Forms M-1, ~~S-1~~M-4, and A-2.

Audit

1. The Model Base Hurricane Set, and its justification will be reviewed.

2. If the Model Base Hurricane Set includes climate adjustments, justification of the applicability of those adjustments and the methods used to model Florida hurricanes based on current scientific literature and current technical literature will be reviewed.

3. Statewide and regional Model Base Hurricane Set landfall counts by Saffir-Simpson Hurricane Wind Scale category will be compared to the Reference Hurricane Set. Any storms in the Model Base Hurricane Set with adjusted Saffir-Simpson Hurricane Wind Scale categories will be reviewed.

4. A plot of the Model Base Hurricane Set landfall intensities versus the corresponding values of the Reference Hurricane Set (including a 1:1 reference line) will be reviewed. Using the differences in landfall intensity, a histogram plot of the differences will be reviewed along with the computed bias and root-mean-square (rms) differences. Any bias shown in general or for specific storms based on current scientific literature, current technical literature, or observational evidence will be reviewed.

~~2.~~5. A flowchart or other illustration of how changes in the Reference Hurricane Set are used in the calculation of the Model Base Hurricane Set landfall distribution will be reviewed.

~~3.~~6. Changes to the Model Base Hurricane Set from the current accepted hurricane model ~~used~~ will be reviewed.

~~4.~~7. Modeled probabilities will be compared with observed hurricane frequency using methods documented in current scientific literature and current technical literature. ~~The goodness-of-fit of modeled to the Reference Hurricane Set statewide and regional hurricane frequencies as provided in Form M-1 will be reviewed.~~

8. The statistical goodness-of-fit extending beyond the Florida border will be reviewed by evaluating results for appropriate coastal segments in Alabama, Georgia, and Mississippi.

~~5.~~9. If the model is a climate-adjusted model, changes in hurricane intensity, frequency, and track, if applicable, will be reviewed.

10. The treatment of bypassing hurricanes and hurricanes with multiple landfalls impacting Florida will be reviewed.

M-2 Hurricane Model Meteorological Overview and Parameters (Inputs)*

*(*Significant Revision)*

A. Methods for depicting all modeled hurricane parameters shall be based on information documented in current scientific literature and current technical literature.

B. Differences in the treatment of hurricane parameters between the Model Base Hurricane Set and the stochastic storm set shall be justified.

Purpose: Scientifically ~~sound~~ defensible information is to be used for determining hurricane parameters relevant to the modeled hazard. Potential hurricane parameters may include windspeed, radial distributions of wind and pressure, minimum central pressure, radius of maximum wind~~s~~, landfall frequency, tracks, spatial and time variant windfields, and conversion factors.

Relevant Forms: G-2, Meteorological Hurricane Standards Expert Certification
S-3, Distributions of Stochastic Hurricane Parameters

Disclosures

1. Provide a high-level flowchart of the hurricane model meteorological component for modeling hurricane events.

2. Provide a comprehensive technical description of the hurricane model meteorological component, including theoretical basis, assumptions, data, methods, and processes used in the development of the meteorological component.

~~1.~~3. Provide details of modifications to the meteorological component of the hurricane model since the current accepted hurricane model, excluding changes reported in Standard M-1 Disclosure 4.

4. If the modeling organization has developed methods accounting for climate adjustment in the hurricane model, other than those applied to the Model Base Hurricane Set, describe the applicability to modeling Florida hurricanes based on current scientific literature and current technical literature.

~~2.~~5. Identify and justify the hurricane parameters (e.g., central pressure, radius of maximum wind~~s~~, rainfall) that are used in the hurricane model.

~~3~~6. Describe and justify the dependencies among parameters in the windfield component and how they are represented in the hurricane model, including the mathematical dependence of modeled winds~~field~~ as a function of distance and direction from the center position.

4.7. Identify whether hurricane parameters are modeled as random variables, functions, or fixed values for the stochastic storm set. Provide rationale for the choice of parameter representations.

5.8. Describe if and how any hurricane parameters are treated differently in the Model Base Hurricane Set and the stochastic storm set, and provide rationale.

69. Describe any evolution of the functional representation of hurricane parameters during an individual storm life cycle.

~~7. If the modeling organization has accounted for climate change in the hurricane model development (other than a change to the Model Base Hurricane Set), justify its use in modeling Florida hurricane rates from current scientific literature and current technical literature. Describe the analysis and its impacts on Florida hurricane rates.~~

8.10. Provide plots of distance along the coast of Florida and adjacent states (*x*-axis) versus modeled annual landfall occurrence rates (*y*-axis) in two intensity bands, (Saffir-Simpson Hurricane Wind Scale categories 1-2 and 3-5). Any set of coastal segments may be used for this purpose, as long as they are not greater than 100 miles in length. If the modeling organization has a current accepted hurricane model, provide the current accepted hurricane model's rates on the same axes. Also provide on the same axes the modeled annual landfall occurrence rates computed directly from the Model Base Hurricane Set. For a climate-adjusted hurricane model ~~that uses either the Reference Hurricane Set or a Model Adjusted Hurricane Set for the Model Base Hurricane Set~~, a modeling organization shall provide two plots, one completed with climate-adjusted modeled rates and one completed without climate-adjusted modeled rates.

Audit

1. Supporting material for the meteorological component changes in Disclosure ~~1~~3 will be reviewed.

2. All hurricane parameters used in the hurricane model, including any climate-adjusted parameters ~~for climate change~~, will be reviewed.

3. If the modeling organization has developed methods accounting for climate adjustments in the hurricane model, other than those applied to the Model Base Hurricane Set, justification of the applicability of those adjustments and the methods used to model Florida hurricanes based on current scientific literature and current technical literature will be reviewed.

4. The vintage of meteorological-related data, code, scientific literature, and technical literature used in development and implementation of the meteorological component will be reviewed as encountered.

5. A detailed flowchart of the hurricane model meteorological component for modeling hurricane events will be reviewed.

~~3.~~6. Graphical depictions (e.g., histogram, scatter plot, schematic) of hurricane parameters as used in the hurricane model will be reviewed. Descriptions and justification of the following will be reviewed:

a. The dataset basis for the fitted distributions, the methods used, and any smoothing techniques employed,

b. The modeled dependencies among correlated parameters in the windfield component and how they are represented, and

c. The parameters affecting asymmetric structure of hurricanes.

M-3 Hurricane Probability Distributions*

*(*Significant Revision)*

A. Modeled probability distributions of hurricane parameters shall be consistent with the Model Base Hurricane Set. Any differences shall be ~~justifiable~~justified.

B. Modeled hurricane landfall frequency distributions shall reflect the Model Base Hurricane 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). Any differences shall be ~~justifiable~~justified.

C. The hurricane model shall use maximum one-minute sustained 10-meter windspeed when defining hurricane landfall intensity. This applies both to the Model Base Hurricane Set used to develop landfall frequency distributions 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 Hurricane Wind Scale.

Purpose: The modeled probability distributions of hurricane parameters are to be consistent with those documented in current scientific literature and current technical literature. Consistent means that spatial distributions of modeled hurricane probabilities accurately depict those in Florida and neighboring states.

Relevant Forms:
- G-2, Meteorological Hurricane Standards Expert Certification
- M-1, Annual Occurrence Rates
- ~~S-1~~M-4, Probability and Frequency of Florida Landfalling Hurricanes per Year
- S-3, Distributions of Stochastic Hurricane Parameters
- A-2, Model Base Hurricane Set Statewide Hurricane Losses
- A-3, Hurricane Losses

Disclosure~~s~~

1. Provide a brief rationale for each of the probability distributions used for assigning all hurricane parameters, including any assumptions that go into the use or interpretation of the distributions.

~~2. Describe and justify any changes made to the Model Base Hurricane Set in the hurricane model under review that are not reflected in changes to the distributions in Form S-3. Describe the methodology used to make such changes.~~

Audit

~~1. The statistical goodness-of-fit extending beyond the Florida border will be reviewed by evaluating results for appropriate coastal segments in Alabama, Georgia, and Mississippi.~~

~~2.~~1. The method and supporting material for selecting stochastic storm tracks will be reviewed.

~~3.~~2. The method and supporting material for selecting storm track landfall statistics will be reviewed. If landfall positions are on a discrete set, the hurricane landfall points for major metropolitan areas in Florida will be reviewed.

~~4.~~3. Any modeling-organization-specific research performed to develop the functions used for simulating hurricane model variables or to develop databases will be reviewed.

M-4 Hurricane Windfield Structure*

*(*Significant Revision)*

A. Windfields generated by the hurricane model shall be consistent with observed historical storms affecting Florida.

B. All conversions of hurricane windfield parameters and characteristics to account for variations in space and time shall be consistent with current scientific literature and theory.

~~B.~~C. The land use and land cover (LULC) database shall be consistent with the National Land Cover Database (NLCD) ~~2016~~ 2021 or later. Use of alternate datasets shall be justified.

~~C~~D. 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.

~~D. With respect to multi-story buildings, the hurricane model shall account for the effects of the vertical variation of winds.~~

Purpose: The windfield model is to be implemented consistently with a contemporary land use and land cover distribution and with the vertical distribution of the hurricane boundary layer winds where applicable. The resulting surface windfield snapshots and footprints ~~is required to~~shall be representative of historical storms in Florida and neighboring states, with consideration given to differences that result from the choices made in creating the Model Base Hurricane Set (when applicable).

Relevant Forms: G-2, Meteorological Hurricane Standards Expert Certification
M-2, Maps of Maximum Sustained Windspeed
A-2, Model Base Hurricane Set Statewide Hurricane Losses
A-3, Hurricane Losses

Disclosures

1. Provide a tangential windspeed (*y*-axis) versus radius (*x*-axis) plot of the average or default symmetric wind profile used in the hurricane model. Justify the choice of this wind profile. If the windfield represents a modification from the current accepted hurricane model, plot the previous and modified wind profiles on the same figure using consistent axes. Describe variations between the previous and modified wind profiles with references to historical storms.

2. Describe the general process for calculating hurricane surface winds.

3. Describe how the vertical variation of winds is accounted for in the hurricane model where applicable.

4. Describe the procedure for validating modeled hurricane surface winds against observations. Describe the process for ensuring consistency between modeled and observed quantities, including location, roughness determined from upstream fetch, height above the surface, and averaging time.

~~4.~~5. Describe the relevance of the formulation of gust factor(s) used in the hurricane model.

~~5.~~6. Identify all non-meteorological variables (e.g., surface roughness, topography) that affect windspeed estimation.

~~6.~~7. Provide the collection and publication dates of the land use and land cover data used in the hurricane model and justify their timeliness for Florida.

~~7.~~8. Describe the methodology used to convert land use and land cover information into a spatial distribution of roughness coefficients in Florida and neighboring states.

9. Describe and justify the treatment of marine surface roughness in the hurricane model.

~~13.~~10. Describe how the windspeeds are generated in the windfield model. Describe and justify the averaging times assigned to windspeeds, and if applicable, how the winds are converted ~~from~~to maximum one-minute sustained winds~~to~~ and gust windspeeds ~~and identify the averaging time.~~

~~8.~~11. Demonstrate the consistency of the spatial distribution of model-generated winds with observed windfields for hurricanes affecting Florida. Describe and justify the appropriateness of the databases used in the windfield validations.

~~9.~~12. Describe how the ~~hurricane model~~ windfield model is consistent with the inherent differences in windfields for such diverse hurricanes as Hurricane Charley (2004), Hurricane Wilma (2005), Hurricane Irma (2017), and Hurricane Michael (2018).

~~10.~~13. Describe any variations in the treatment of the hurricane model windfield for stochastic versus Model Base Hurricane Set storms and justify ~~this~~ the variation.

~~11.~~14. Provide completed Form M-2 in a Submission appendix. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

~~12.~~15. State whether the hurricane model simulates surface winds directly or requires conversion between some other reference level or layer and the surface.

A. Describe the source(s) of conversion factors.

B. ~~and~~Describe the rationale for the~~ir~~ use of conversion factor source(s).

C. Describe the process for converting the modeled winds to surface winds, including the treatment of the inherent uncertainties in the conversion factors with respect to location of the site compared to the radius of maximum winds over time.

D. Justify the variation in the surface winds conversion factors as a function of hurricane intensity and distance from the hurricane center.

~~13. Describe how the windspeeds generated in the windfield model are converted from sustained to gust and identify the averaging time.~~

16. ~~Description of and justification for~~ Describe and justify the value(s) of the far-field pressure used in the hurricane model ~~will be reviewed~~.

Audit

1. Any modeling-organization-specific research performed to develop the spatial profile of the windfield ~~functions~~ used in the hurricane model will be reviewed. ~~The databases used will be reviewed.~~

2. Any modeling-organization-specific research performed to develop conversion factors for winds in space and time in the hurricane model will be reviewed.

~~2.~~3. Any modeling-organization-specific research performed to derive the roughness distributions for Florida and neighboring states will be reviewed.

~~3.~~4. The spatial distribution of surface roughness used in the hurricane model will be reviewed. The value(s) of roughness in marine areas close to shore (within 5 miles) will be reviewed in offshore and onshore flow.

~~4.~~5. A flowchart or other illustration depicting the process and order of operations in the surface wind calculation ~~for calculating hurricane surface winds~~ will be reviewed. Justification for the order of the calculation and whether the steps, if applicable, account for averaging time and storm translation, whether reduction factors are based on axisymmetric or storm-relative data, when friction factors are applied (with the corresponding averaging time), and when gust factors are applied (with the corresponding averaging times) will be reviewed.

6. The procedure for validating modeled hurricane surface winds against observations will be reviewed. The process for ensuring the wind observations are adjusted to a common framework for comparison to the hurricane model will be reviewed.

~~5.~~7. Comparison between the current accepted hurricane model and the hurricane model under review of (1) wind footprints and (2) windfield snapshots at landfall ~~The previous and current hurricane parameters used in calculating the hurricane loss costs~~ for the LaborDay03 (1935) and NoName09 (1945) hurricanes ~~landfalls~~ will be reviewed. Justification for the hurricane parameters~~choices~~ used to generate each storm's windfield will be reviewed. ~~The resulting spatial distribution of winds will be reviewed with Form A-2.~~

~~6.~~8. ~~For windfields not previously reviewed, d~~Detailed comparisons of the hurricane model wind~~field~~ footprints and landfall windfield snapshots to observations for~~with~~ Hurricane Charley (2004), Hurricane Wilma (2005), Hurricane Irma (2017), and Hurricane Michael (2018) will be reviewed.

~~7. Representation of vertical variation of winds in the hurricane model, where applicable, will be reviewed.~~

~~8. Description of and justification for the value(s) of the far-field pressure used in the hurricane model will be reviewed.~~

9. The treatment of the inherent uncertainty in the conversion factors used to convert the modeled winds to surface winds will be reviewed and compared with current scientific literature and current technical literature. Treatment of conversion factor uncertainty at a fixed time and location within the windfield for a given hurricane intensity will be reviewed.

10. All external data sources that affect model-generated windfields will be identified, and their appropriateness will be reviewed.

11. Examples of how wind observations are adjusted to a common framework for comparison to the hurricane model will be reviewed.

M-5 Hurricane Intensity Change Methodologies*

*(*Significant Revision)*

A. The hurricane intensity change methodology used by the hurricane model shall be consistent with current state- of- the- science.

B. The transition of winds from over water to over land within the hurricane model shall be consistent with current state- of- the- science.

C. Intensity change of hurricanes that pass from over land to over water shall be consistent with current state- of- the- science.

Purpose: To evaluate the methodologies used to represent the impact of interaction with land on hurricane intensity.

Relevant Form: G-2, Meteorological Hurricane Standards Expert Certification

Disclosures

1. Describe and justify the functional form of hurricane ~~decay rates~~intensity change ~~for hurricanes moving onshore~~during the lifecycle of a hurricane, including (1) over the sea, (2) moving onshore and subsequently, over land, and (3) moving offshore and subsequently, over the sea.

~~2. Describe and justify the functional form of hurricane intensity change for hurricanes moving offshore.~~

~~3~~2. Provide a graphical representation of the modeled and observed temporal decay rates of wind or central pressure for Florida hurricanes.

~~4~~3. Describe any changes in hurricane parameters, other than intensity, resulting from the transition from over water to over land.

~~5~~4. Describe the representation in the hurricane model of passage over non-continental United States (U.S.) land masses on hurricanes affecting Florida.

~~6~~5. Describe any differences in the treatment of decay rates in the hurricane model for stochastic hurricanes compared to historical hurricanes affecting Florida.

Audit

1. The ~~variation in~~ overland decay rates used in the hurricane model will be reviewed.

2. The transition of modeled and observed storm intensity from over water to over land to over water will be reviewed. Provide time series plots of modeled and observed storm intensity for four Florida landfalling hurricanes from 6 hours prior to landfall to 24 hours after the storm exits back out over open sea. The plots shall indicate vertical lines for the times of landfall and exit to sea, and depict intensity in terms of marine or open terrain as applicable.

3. Comparisons of the hurricane model weakening rates to weakening rates for historical Florida hurricanes will be reviewed.

4. The detailed transition of winds from over water to over land (i.e., hurricane landfall, boundary layer) will be reviewed. The region within 5 miles of the coast will be emphasized. Color-coded snapshots ~~maps~~ of roughness length and spatial distribution of over land and over water windspeeds for Hurricane Charley (2004), Hurricane Michael (2018), and Hurricane Ian (2022) at the closest time after landfall will be reviewed.

M-6 Logical Relationships of Hurricane Characteristics*

*(*Significant Revision)*

A. The magnitude of windfield asymmetry shall increase as the translation speed increases, all other factors held constant.

B. ~~The mean w~~Windspeeds shall decrease with increasing surface roughness (friction), all other factors held constant.

Purpose: Logical relationships demonstrate physical consistency of the hurricane model windfield.

Relevant Forms: G-2, Meteorological Hurricane Standards Expert Certification
M-2, Maps of Maximum Sustained Windspeed
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 hurricane model.

2. Provide completed Form M-3 in a Submission appendix. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

3. Explain the radii ranges for each central pressure band in Form M-3 in the context of available hurricane observations. Justify the appropriateness of the databases used in the radii validations.

~~4. Describe the dependencies among parameters in the windfield component and how they are represented in the hurricane model.~~

Audit

1. The logical relationship between windspeed and surface roughness will be reviewed.

2. Justification for the relationship between intensity and radius of maximum winds will be reviewed.

3. The mathematical dependence of the modeled windfield as a function of distance and direction from the center position will be reviewed.

4. Justification for the variation of the asymmetry with the translation speed will be reviewed.

5. Methods (including any software) used in verifying logical relationships of hurricane characteristics will be reviewed.

6. Contour animations of windfield ~~distributions~~ evolution over time demonstrating scientifically reasonable windfield characteristics and logical relationships will be reviewed. At least one animation shall denote Hurricane Andrew (1992) making landfall, progressing over land and exiting over open sea, and shall include both the radius of tropical storm force winds and a contour representing the radius of maximum wind, defined either as (a) a circle circumscribing the radius of maximum wind, or (b) a contour tracing the location of maximum sustained wind at each radial position.

7. How the radius-height dependence (tilt) of the radius of maximum wind (Rmax) is treated in the hurricane model will be reviewed. If it is not taken into account, justification will be reviewed.

8. The evolution of Rmax and the radius of tropical storm force winds during landfall, during procession of the storm over land, and after exiting over open sea, and whether such behavior is physically or empirically modeled, will be reviewed.

Form M-1: Annual Occurrence Rates

Purpose: This form illustrates the differences among statewide and regional frequencies of landfalling and by-passing Florida hurricanes from the Reference Hurricane Set, the Model Base Hurricane Set, and modeled hurricanes.

A. One or more automated programs or scripts shall be used to generate and ~~arrange~~ format the data in Form M-1.

B. Provide a table of annual occurrence rates for hurricane landfall from the dataset defined by marine exposure that the hurricane model generates by hurricane category (defined by maximum sustained windspeed at hurricane landfall in the Saffir-Simpson Hurricane Wind Scale) for the entire state of Florida and additional regions as defined in *Figure 1*. ~~List~~ Provide the annual occurrence rates per hurricane category~~. Annual occurrence rates shall be~~ rounded to three decimal places.

As defined, a by-passing (ByP) hurricane ~~(ByP)~~ is a hurricane which does not make landfall on Florida, but produces minimum damaging windspeeds or greater on Florida. For the by-passing hurricanes included in the table only, the intensity entered is the maximum sustained windspeed at closest approach to Florida as a hurricane, not the windspeed over Florida.

C. For a climate-adjusted hurricane model that uses either the Reference Hurricane Set or a Model Adjusted Hurricane Set ~~for~~ as the Model Base Hurricane Set, ~~a modeling organization shall~~ provide two Form M-1s, one completed with climate-adjusted modeled rates and one completed without climate-adjusted modeled rates.

D. Describe hurricane model variations from the Reference Hurricane Set frequencies.

E. Provide vertical bar graphs depicting distributions of hurricane frequencies by category by region of Florida (*Figure 1*), for the neighboring states of Alabama/Mississippi and Georgia, and for by-passing hurricanes. For the neighboring states, statistics based on the closest coastal segment to the state boundaries used in the hurricane model are adequate.

F. List all hurricanes added, removed, or modified from the current accepted hurricane model.

G. Provide this form in Excel format. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also include Form M-1 in a ~~s~~Submission appendix.

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 hurricane landfall in that region. However, each hurricane is counted only once in the Entire State totals. Hurricanes recorded for neighboring states need not have reported damaging winds in Florida.

Annual Occurrence Rates

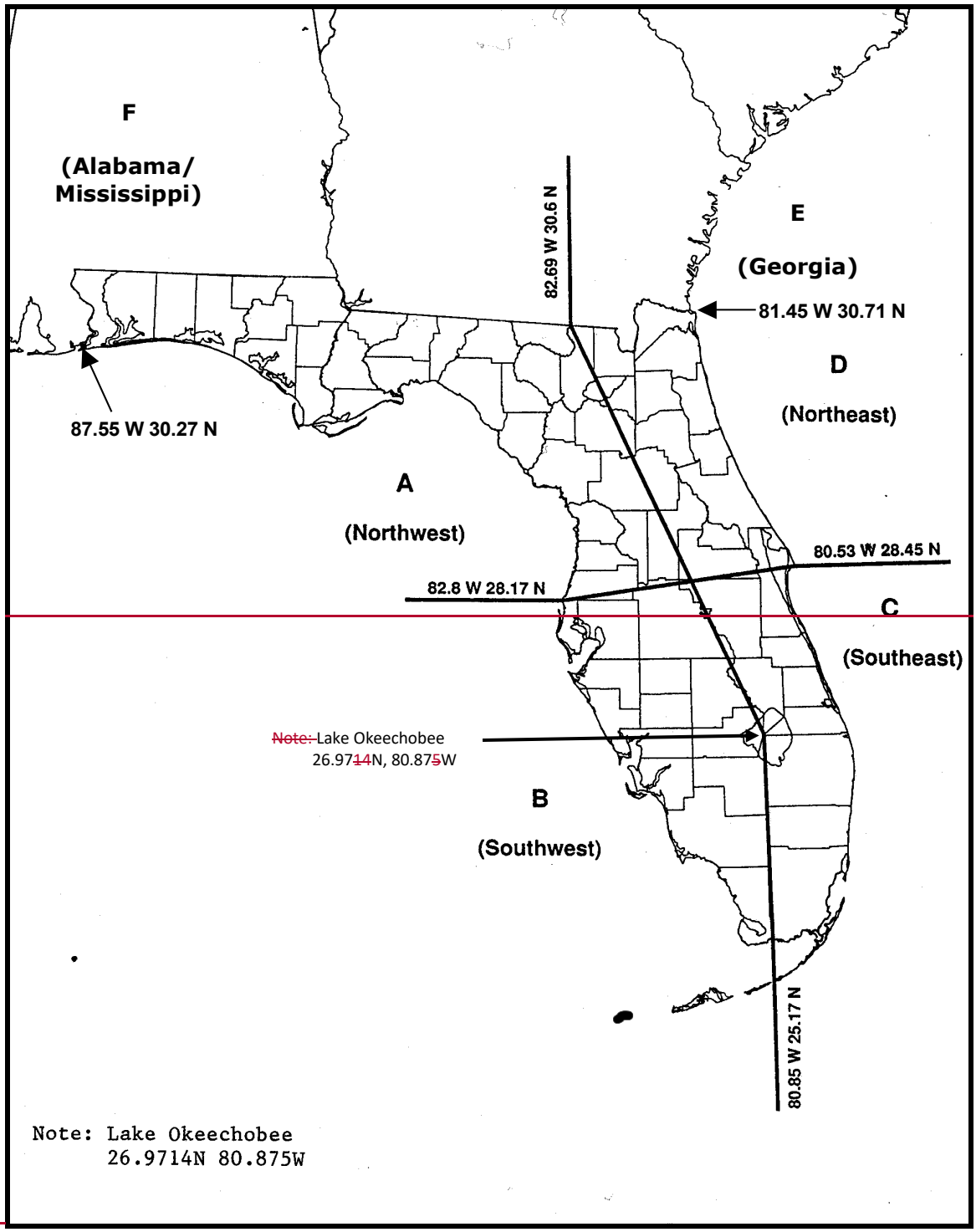
	Entire State					Region A – NW Florida				
	Reference Hurricane Set		Model Base Hurricane Set		Modeled	Reference Hurricane Set		Model Base Hurricane Set		Modeled
Category	Nbr	Rate	Nbr	Rate	Rate	Nbr	Rate	Nbr	Rate	Rate
1	~~25~~26	0.~~203~~208				~~15~~16	0.~~122~~128			
2	17	0.~~138~~136				5	0.~~041~~040			
3	~~14~~16	0.~~114~~128				~~6~~7	0.~~049~~056			
4	~~12~~13	0.~~098~~104				~~0~~1	0.~~000~~008			
5	3	0.024				1	0.008			

	Region B – SW Florida					Region C – SE Florida				
	Reference Hurricane Set		Model Base Hurricane Set		Modeled	Reference Hurricane Set		Model Base Hurricane Set		Modeled
Category	Nbr	Rate	Nbr	Rate	Rate	Nbr	Rate	Nbr	Rate	Rate
1	7	0.~~057~~056				8	0.~~065~~064			
2	4	0.~~033~~032				7	0.~~057~~056			
3	~~5~~6	0.~~041~~048				5	0.~~041~~040			
4	6	0.~~049~~048				6	0.~~049~~048			
5	0	0.000				2	0.016			

	Region D – NE Florida					Florida By-~~P~~passing Hurricanes				
	Reference Hurricane Set		Model Base Hurricane Set		Modeled	Reference Hurricane Set		Model Base Hurricane Set		Modeled
Category	Nbr	Rate	Nbr	Rate	Rate	Nbr	Rate	Nbr	Rate	Rate
1	1	0.008				5	0.~~041~~040			
2	2	0.016				3	0.024			
3	0	0.000				~~7~~8	0.~~057~~064			
4	0	0.000				0	0.000			
5	0	0.000				0	0.000			

	Region E – Georgia					Region F – Alabama/Mississippi				
	Reference Hurricane Set		Model Base Hurricane Set		Modeled	Reference Hurricane Set		Model Base Hurricane Set		Modeled
Category	Nbr	Rate	Nbr	Rate	Rate	Nbr	Rate	Nbr	Rate	Rate
1	0	0.000				7	0.~~057~~056			
2	2	0.016				3	0.024			
3	0	0.000				4	0.~~033~~032			
4	0	0.000				0	0.000			
5	0	0.000				1	0.008			

~~*Figure 1* State of Florida and Neighboring States by Region~~



Form M-2: Maps of Maximum Sustained Windspeed

Purpose: This form illustrates the ability of the hurricane model to simulate regional variations in windspeeds from hurricanes.

A. One or more automated programs or scripts shall be used to assist in ~~generate~~ generation and ~~arrange~~ formatting the data in Form M-2.

B. Provide color-coded contour plots on a map with ZIP Code boundaries of the maximum sustained windspeed for the modeled version of the Model Base Hurricane Set. Plot the position and value of the maximum sustained windspeed on the contour map.

C. Provide color-coded contour plots on maps with ZIP Code boundaries of the maximum sustained windspeed for a 100-year and a 250-year return period from the stochastic storm set. Plot the position and value of the maximum sustained windspeed on each contour map.

Maximum sustained windspeed in these maps ~~are defined as~~shall be the maximum one-minute sustained winds as modeled and recorded at each location. The location need not be a ZIP Code centroid, but the maximum sustained windspeed from the highest possible spatial resolution of the hurricane model.

Use the following eight isotach values and interval color-coding for all maps:

(1)	Minimum damaging	Blue
(2)	50 miles per hour (mph)	Medium Blue
(3)	65 mph	Light Blue
(4)	80 mph	Grey
(5)	95 mph	Light Red
(6)	110 mph	Medium Red
(7)	125 mph	Red
(8)	140 mph	Magenta

Contouring in addition to these isotach values may be included.

D. Include Form M-2 in a ~~s~~Submission appendix.

Form M-3: Radius of Maximum Wind~~s~~ and Radii of Standard Wind Thresholds

Purpose: This form illustrates the physical consistency of the hurricane model windfield.

A. One or more automated programs or scripts shall be used to generate and ~~arrange~~ format the data in Form M-3.

B. For the central pressure (CP) ranges in the table below, provide the first quartile (1Q), second quartile (2Q), and third quartile (3Q) in the stochastic storm set of the following quantities: radii to maximum wind (Rmax), the category 3 (110 mph) wind radii, the category 1 (73 mph) wind radii, and the ~~gale~~ tropical storm force (~~40~~ 39 mph) wind radii. If a value is unavailable, then populate the table with "NA."

C. Specify any truncations applied to Rmax distributions in the hurricane model, and if and how these truncations vary with other variables.

D. Provide a box and whiskers plot of the data from the table with central pressure on the *x*-axis and Rmax on the *y*-axis.

E. If central pressure is not modeled, describe how the hurricane model intensities were mapped to the central pressure ranges listed in the table.

F. Provide this form in Excel using the format given in the file ~~named~~ *"202~~3~~5FormM3.xlsx."* The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also include Form M-3 in a ~~s~~Submission appendix.

Central Pressure (millibars, mb)	Rmax (miles, mi)			Outer Radii (>110 mph) (mi)			Outer Radii (>73 mph) (mi)			Outer Radii (>~~40~~39 mph) (mi)		
	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q
980 ≤ cp < 990												
970 ≤ cp < 980												
960 ≤ cp < 970												
950 ≤ cp < 960												
940 ≤ cp < 950												
930 ≤ cp < 940												
920 ≤ cp < 930												
910 ≤ cp < 920												
900 ≤ cp < 910												
cp < 900												

Form ~~S-1~~M-4: Probability and Frequency of Florida Landfalling Hurricanes per Year

Purpose: This form illustrates the differences among the Reference Hurricane Set, the Model Base Hurricane set, and the modeled probabilities and frequencies of landfalling Florida hurricanes per year.

A. One or more automated programs or scripts shall be used to generate and ~~arrange~~ format the data in Form ~~S-1~~M-4.

B. Complete the table below for the modeled probabilities and frequencies of the number of landfalling Florida hurricanes per year. Values derived from the Reference Hurricane Set (as given in Form A-2) have been provided.

   Probabilities shall be rounded to three decimal places.

   Model Base Hurricane Set frequency values shall be multiplied by a factor that is the number of years in the Reference Hurricane Set divided by the number of years in the Model Base Hurricane Set.

   For a climate-adjusted hurricane model that uses either the Reference Hurricane Set or a Model Adjusted Hurricane Set for the Model Base Hurricane Set, a modeling organization shall provide two Form ~~S-1~~M-4s, one completed with climate-adjusted modeled probabilities and frequencies, and one completed without climate-adjusted modeled probabilities and frequencies.

C. Provide this form in Excel format. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also ~~i~~include Form ~~S-1~~M-4 in a ~~s~~Submission appendix.

Number of Hurricanes Per Year	Reference Hurricane Set Probability	Model Base Hurricane Set Probability	Modeled Probability	Reference Hurricane Set Frequency	Model Base Hurricane Set Frequency	Modeled Frequency
0	0.~~602~~592			74		
1	0.~~244~~248			~~30~~31		
2	0.~~130~~128			16		
3	0.~~024~~032			~~3~~4		
4	0.000			0		
5	0.000			0		
6	0.000			0		
7	0.000			0		
8	0.000			0		
9	0.000			0		
10 or more	0.000			0		

STATISTICAL HURRICANE STANDARDS

S-1 Modeled Results and Goodness-of-Fit~~*~~

~~*(*Significant Revision)*~~

A. The use of historical data in developing the hurricane model shall be supported by rigorous methods published in current scientific literature and current technical literature.

B. Modeled results shall reflect statistical agreement with historical data or the Model Base Hurricane Set using current scientific and statistical methods for the academic disciplines appropriate for the various hurricane model components. ~~Any~~ ~~d~~Differences shall be ~~justifiable~~justified.

Purpose: Many aspects of hurricane model development and implementation involve fitting a probability distribution to historical data (or to climate-adjusted historical data ~~adjusted to account for climate change~~) 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 sufficiently rigorous for demonstrating the reasonableness of models.

Relevant Forms:
- G-3, Statistical Hurricane Standards Expert Certification
- M-1, Annual Occurrence Rates
- ~~S-1~~M-4, Probability and Frequency of Florida Landfalling Hurricanes per Year
- S-1, Validation Comparisons, Citizens Property Insurance Corporation Claims Data (Trade Secret Item)
- S-2, Examples of Hurricane Loss Exceedance Estimates
- S-3, Distributions of Stochastic Hurricane Parameters
- S-4, Validation Comparisons
- S-5, Average Annual Zero Deductible Statewide Hurricane Loss Costs
- A-4, Hurricane Output Ranges
- A-8, Hurricane Probable Maximum Loss for Florida

Disclosures

1. Describe the nature and results of the goodness-of-fit tests performed to validate the windspeeds generated by the hurricane model.

~~2. Provide the dates of hurricane loss of the insurance company hurricane claims data used for validation and verification of the hurricane model.~~

~~3.~~2. Provide an assessment of uncertainty in hurricane probable maximum loss levels and in hurricane loss costs for hurricane output ranges using confidence intervals or other scientific characterizations of uncertainty.

~~4.~~3. Justify any differences between the historical and modeled results using current scientific and statistical methods in the appropriate disciplines.

~~5.~~4. Provide graphical comparisons of modeled and historical data and goodness-of-fit tests. Examples to include are hurricane frequencies, tracks, intensities, and physical damage.

~~6. Provide completed Form S-1(s). Provide a link to the location of the form(s) in the submission appendix [insert hyperlink(s) here].~~

~~7~~5. Provide completed Form S-2 in a Submission appendix. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here~~.

~~8~~6. Provide completed Form S-3 in a Submission appendix. ~~Identify the form of the probability distributions used for each function or variable, if applicable. Identify statistical techniques used for estimation and the specific goodness-of-fit tests applied along with the corresponding *p*-values. Describe whether the fitted distributions provide a reasonable agreement with the historical data.~~ Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

Audit

1. The modeling organization characterization of uncertainty for windspeed, damage estimates, annual hurricane loss, and hurricane probable maximum loss levels~~, and hurricane loss costs~~ will be reviewed ~~in the course of the on-site review~~as encountered.

2. Regression analyses performed will be reviewed, including parameter estimation, graphical summaries and numerical measures of the quality of fit, residual analysis and verification of regression assumptions, outlier treatment, and associated uncertainty assessment.

3. The vintage of statistical-related data, code, scientific literature, and technical literature used will be reviewed as encountered.

S-2 Sensitivity Analysis for Hurricane Model Output*

*(*Significant Revision)*

The modeling organization shall have assessed the sensitivity of temporal and spatial outputs with respect to the simultaneous variation of input variables using current scientific and statistical methods in the appropriate disciplines and shall have taken appropriate action.

Purpose: Sensitivity analysis involves the quantification of the magnitude of the output (e.g., windspeed, hurricane loss cost) 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 hurricane 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 hurricane model output.

Relevant Forms: G-3, Statistical Hurricane Standards Expert Certification
S-6, Hypothetical Events for Sensitivity and Uncertainty Analysis

Disclosures

1. Identify ~~the most sensitive aspect of~~ the hurricane model inputs to which the outputs are most sensitive and the basis for making this determination.

2. Identify other input variables that impact the magnitude of the output when the input variables are varied simultaneously. Describe the degree to which these sensitivities affect output results, and illustrate with an example.

3. Describe how other aspects of the hurricane model may have a significant impact on the sensitivities in output results and the basis for making this determination.

4. Describe and justify action or inaction as a result of the sensitivity analyses performed.

5. For a new modeling organization, or an existing modeling organization that has made changes to the windfield model formulation that could affect the conclusions of the sensitivity analysis~~only~~, provide completed Form S-6 in a Submission appendix. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

Audit

1. If Form S-6 is not submitted,

   A. The sensitivity analysis for the hurricane model will be reviewed.

   B. Statistical techniques used to perform the sensitivity analysis will be reviewed.

   C. The results of the sensitivity analysis displayed in graphical format (e.g., contour or high-resolution plots with temporal animation) will be reviewed.

2. If Form S-6 is submitted,

   A. If any hurricane model input variables are modified, the modified input files corresponding to those in the worksheet "SA all Variables" will be reviewed.

   B. If a set of unnamed variable quantile inputs for arbitrary model variables is used, how the set was used, and the specific values that correspond to the quantiles in Form S-6 will be reviewed.

S-3 Uncertainty Analysis for Hurricane Model Output*

*(*Significant Revision)*

The modeling organization shall have performed an uncertainty analysis on the temporal and spatial outputs of the hurricane model using current scientific and statistical methods in the appropriate disciplines and shall have taken appropriate action. The analysis shall identify and quantify the extent that input variables impact the uncertainty in hurricane model output as the input variables are simultaneously varied.

Purpose: Uncertainty analysis involves the quantification of the output (e.g., windspeed, hurricane loss cost) 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 key 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 hurricane model output.

Form S-6, if disclosed under ~~Hurricane~~ Standard S-2, will be used in the verification of ~~Hurricane~~ Standard S-3.

Relevant Forms: G-3, Statistical Hurricane Standards Expert Certification
S-6, Hypothetical Events for Sensitivity and Uncertainty Analysis

Disclosures

1. Identify the major contributors to the uncertainty in hurricane 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 hurricane model may have a significant impact on the uncertainties in output results and the basis for making this determination.

3. Describe and justify action or inaction as a result of the uncertainty analyses performed.

~~4. Form S-6, if disclosed under Hurricane Standard S-2, will be used in the verification of Hurricane Standard S-3.~~

Audit

1. If Form S-6 is not submitted,

   A. The uncertainty analysis for the hurricane model will be reviewed.

   B. Statistical techniques used to perform the uncertainty analysis will be reviewed.

   C. The results of the uncertainty analysis displayed in graphical format (e.g., contour or high-resolution plots with temporal animation) will be reviewed.

S-4 County Level Aggregation

At the county level of aggregation, the contribution to the error in hurricane 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 hurricane loss cost estimates due to its probabilistic nature is negligible. To be considered negligible, the standard error of each hurricane output range shall be less than 2.5% of the hurricane loss cost estimate.

Relevant Forms: G-3, Statistical Hurricane Standards Expert Certification
A-2, Model Base Hurricane Set Statewide Hurricane Losses
A-3, Hurricane Losses
A-4, Hurricane Output Ranges

Disclosure

1. Describe the sampling plan used to obtain the average annual hurricane loss costs and hurricane output ranges. For a direct Monte Carlo simulation, indicate steps taken to determine sample size. For an importance sampling design or other sampling scheme, describe the underpinnings of the design and how it achieves the required performance.

Audit

1. The accuracy associated with Nassau County will be reviewed. The contribution of simulation uncertainty via confidence intervals will be reviewed.

S-5 Replication of Known Hurricane Losses*

*(*Significant Revision)*

The hurricane model shall estimate incurred hurricane losses in an unbiased manner on a sufficient body of past hurricane events from more than ~~one~~ two insurance companies, one of which shall be Citizens Property Insurance Corporation, 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 hurricane loss experience may be used to replicate structure-only and contents-only hurricane losses. The replications shall be produced on an objective body of hurricane loss data by county or an appropriate level of geographic detail, and shall include hurricane loss data from Hurricane Irma (2017), Hurricane Michael (2018), ~~and~~ Hurricane Ian (2022), Hurricane Helene (2024) and Hurricane Milton (2024), ~~to the extent data from Hurricane Ian~~ Helene (2024) and Hurricane Milton (2024) are available.

Purpose: The hurricane model is to reasonably reproduce known hurricane losses for past events.

Relevant Forms:
- G-3, Statistical Hurricane Standards Expert Certification
- S-1, Validation Comparisons, Citizens Property Insurance Corporation Claims Data (Trade Secret Item)
- S-4, Validation Comparisons
- A-1, Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code
- A-2, Model Base Hurricane Set Statewide Hurricane Losses
- A-3, Hurricane Losses

Disclosures

1. Describe the nature and results of the analyses performed to validate the hurricane loss projections generated for personal and commercial residential hurricane losses separately. Include analyses for the 2017, ~~and~~ 2018, and 2022 hurricane seasons, and for Hurricane ~~Ian (2022)~~Helene (2024) and Hurricane Milton (2024) to the extent data from Hurricane ~~Ian~~ Helene (2024) and Hurricane Milton (2024) are available.

2. Provide completed Form S-1 in a Submission appendix if not considered as Trade Secret. Provide a hyperlink here to the location of the form.

~~2~~3. Provide completed Form S-4 in a Submission appendix. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

Audit

1. ~~The following information for each insurance company and hurricane will be reviewed:~~Trade Secret Form S-1 will be reviewed.
   a. ~~The validity of the hurricane model assessed by comparing projected hurricane losses produced by the hurricane model to actual observed hurricane losses incurred by insurers at both the state and county level,~~
   b. ~~The version of the hurricane model used to calculate modeled hurricane 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 hurricane 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 list of the departures, if any, in the windfield applied to a particular hurricane for the purpose of validation and the windfield used in the hurricane model under review,~~
   h. ~~The type of coverage applied in each hurricane to address:~~
      1. ~~Personal versus commercial~~
      2. ~~Residential structures~~
      3. ~~Manufactured homes~~
      4. ~~Commercial residential~~
      5. ~~Condominiums~~
      6. ~~Structures only~~
      7. ~~Contents only~~
      8. ~~Time element,~~
   i. ~~The treatment of demand surge or loss adjustment expenses in the actual hurricane losses or the modeled hurricane losses, and~~
   j. ~~The treatment of flood losses (including hurricane storm surge losses) in the actual hurricane losses or the modeled hurricane losses.~~

2. ~~The following will be reviewed:~~
   a. ~~The data sources excluded from validation and the reasons for excluding the data from review by the Commission (if any),~~
   b. ~~An analysis that identifies and explains anomalies observed in the validation data, and~~
   c. ~~User input data 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 hurricane losses will be reviewed.~~

4. ~~An additional version of Form S-4 with actual (i.e., non-disguised and non-scaled) values with associated scatter plots (modeled hurricane loss versus company actual hurricane loss) 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*

~~*(*Significant Revision)*~~

The difference, due to uncertainty, between historical and modeled annual average statewide hurricane loss costs shall be reasonable, given the body of data, by established statistical expectations and norms.

Purpose: The differences between historical and modeled annual average statewide hurricane loss costs are to be plausible from a statistical perspective.

Relevant Forms: G-3, Statistical Hurricane Standards Expert Certification
S-5, Average Annual Zero Deductible Statewide Hurricane Loss Costs
A-2, Model Base Hurricane Set Statewide Hurricane Losses
A-3, Hurricane Losses

Disclosures

1. Describe the nature and results of the tests performed to validate the expected hurricane loss projections generated. If a set of simulated hurricanes or simulation trials was used to determine these hurricane 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 hurricane model produces hurricane loss costs for specific historical events versus hurricane loss costs for events in the stochastic hurricane set.

3. Provide completed Form S-5 in a Submission appendix. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

~~**Audit**~~

~~1. Justification for the following will be reviewed:~~
~~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 hurricane model under review, and~~
~~e. Exposure assumptions.~~

~~Form S-1: Probability and Frequency of Florida Landfalling Hurricanes per Year~~

~~Purpose: This form illustrates the differences among the Reference Hurricane Set, the Model Base Hurricane set, and the modeled probabilities and frequencies of landfalling Florida hurricanes per year.~~

~~A. One or more automated programs or scripts shall be used to generate and arrange the data in Form S-1.~~

~~B. Complete the table below for the modeled probabilities and frequencies of the number of landfalling Florida hurricanes per year. Values derived from the Reference Hurricane Set (as given in Form A-2) have been provided.~~

~~Probabilities shall be rounded to three decimal places.~~

~~Model Base Hurricane Set frequency values shall be multiplied by a factor that is the number of years in the Reference Hurricane Set divided by the number of years in the Model Base Hurricane Set.~~

~~For a climate-adjusted hurricane model that uses either the Reference Hurricane Set or a Model Adjusted Hurricane Set for the Model Base Hurricane Set, a modeling organization shall provide two Form S-1s, one completed with climate-adjusted modeled probabilities and frequencies, and one completed without climate-adjusted modeled probabilities and frequencies.~~

~~D. Include Form S-1 in a submission appendix.~~

~~Number of Hurricanes Per Year~~	~~Reference Hurricane Set Probability~~	~~Model Base Hurricane Set Probability~~	~~Modeled Probability~~	~~Reference Hurricane Set Frequency~~	~~Model Base Hurricane Set Frequency~~	~~Modeled Frequency~~
~~0~~	~~0.602~~			~~74~~		
~~1~~	~~0.244~~			~~30~~		
~~2~~	~~0.130~~			~~16~~		
~~3~~	~~0.024~~			~~3~~		
~~4~~	~~0.000~~			~~0~~		
~~5~~	~~0.000~~			~~0~~		
~~6~~	~~0.000~~			~~0~~		
~~7~~	~~0.000~~			~~0~~		
~~8~~	~~0.000~~			~~0~~		
~~9~~	~~0.000~~			~~0~~		
~~10 or more~~	~~0.000~~			~~0~~		

Form S-1: Validation Comparisons, Citizens Property Insurance Corporation Claims Data (Trade Secret Item)

Purpose: This form illustrates the differences between Citizens Property Insurance Corporation (Citizens) claims data and modeled hurricane loss for a variety of specified conditions.

A. One or more automated programs or scripts shall be used to generate and format the data in Form S-1.

B. Provide a validation comparison of Citizens actual personal residential exposures and hurricane loss to modeled exposures and hurricane loss.

C. Provide a validation comparison of Citizens actual commercial residential exposures and hurricane loss to modeled exposures and hurricane loss. Use and provide a definition of the hurricane model relevant commercial residential classifications.

Provide each of these comparisons by line of insurance, construction type, policy coverage, county, or other level of similar detail in addition to total hurricane losses. Include hurricane loss as a percentage 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 hurricane loss. If this is not available, use exposures for only those policies that had a hurricane loss. Specify which was used.

Comparisons shall include hurricane losses from Hurricane Irma (2017), Hurricane Michael (2018), Hurricane Ian (2022), Hurricane Helene (2024), and Hurricane Milton (2024).

D. Provide scatter plots of modeled versus historical hurricane losses for each of the required validation comparisons. Plot the historical hurricane losses on the *x*-axis and the modeled hurricane losses on the *y*-axis.

E. If not considered as Trade Secret, provide Form S-1 in a Submission appendix.

Rather than using a specific published hurricane windfield directly, the winds underlying the modeled hurricane loss calculations shall be produced by the hurricane model being evaluated and shall be the same hurricane parameters as used in completing Form A-2.

Example Formats for Personal Residential:

Hurricane: _____

Exposure: Specify total exposure or hurricane loss only _____

Construction	Citizens Actual Hurricane Loss / Exposure	Modeled Hurricane Loss / Exposure	Difference
Wood Frame			
Masonry			
Other (specify)			
Total			

Hurricane: _____

Exposure: Specify total exposure or hurricane loss only _____

Coverage	Citizens Actual Hurricane Loss / Exposure	Modeled Hurricane Loss / Exposure	Difference
A			
B			
C			
D			
Total			

Example Format for Commercial Residential:

Hurricane: _____

Exposure: Specify total exposure or hurricane loss only _____

Construction	Citizens Actual Hurricane Loss / Exposure	Modeled Hurricane Loss / Exposure	Difference
Total			

Form S-2: Examples of Hurricane Loss Exceedance Estimates

Purpose: This form provides the modeling organization hurricane loss exceedance estimates for a notional risk dataset (Form A-1), the ~~2017~~ 2023 FHCF exposure data, and the ~~2023~~ 2025 FHCF exposure data.

A. One or more automated programs or scripts shall be used to generate and ~~arrange~~ format the data in Form S-2.

B. Provide estimates of the annual aggregate combined personal and commercial residential insured hurricane losses for various probability levels using the notional risk exposure datasets ~~specified~~ given in the table in Form A-1.D, the ~~2017~~ 2023 FHCF exposure data, and the ~~2023~~ 2025 FHCF exposure data.

C. Provide the total average annual hurricane loss for the ~~hurricane~~ loss exceedance distribution. If the modeling methodology does not allow the hurricane model to produce a viable answer for certain return periods, state so and why.

~~C~~D. Include Form S-2 in a ~~s~~Submission appendix.

Part A

Return Period (Years)	Annual Probability of Exceedance	Estimated Hurricane Loss Notional Risk Dataset	Estimated ~~Personal and Commercial Residential~~ Hurricane Loss ~~2017~~ 2023 FHCF Dataset	Estimated ~~Personal and Commercial Residential~~ Hurricane Loss ~~2023~~ 2025 FHCF Dataset
Top Event	NA			
10,000	~~0.01%~~0.0001			
5,000	~~0.02%~~0.0002			
2,000	~~0.05%~~0.0005			
1,000	~~0.10%~~0.0010			
500	~~0.20%~~0.0020			
250	~~0.40%~~0.0040			
100	~~1.00%~~0.0100			
50	~~2.00%~~0.0200			
20	~~5.00%~~0.0500			
10	~~10.00%~~0.1000			
5	~~20.00%~~0.2000			

Part B

	Estimated Hurricane Loss Notional Risk Dataset	Estimated ~~Personal and Commercial Residential~~ Hurricane Loss ~~2017~~ 2023 FHCF Dataset	Estimated ~~Personal and Commercial Residential~~ Hurricane Loss ~~2023~~ 2025 FHCF Dataset
Mean (Total Average Annual Hurricane Loss)			
Median			
Standard Deviation			
Interquartile Range			
Sample Size			

Form S-3: Distributions of Stochastic Hurricane Parameters

Purpose: This form identifies the probability distributions used in the stochastic hurricane model and provides their justification.

A. Provide the probability distribution functional form used for each stochastic hurricane parameter in the hurricane model.

B. Provide a summary of the justification for each functional form selected for each general classification and for the goodness-of-fit tests used.

Year Range Used for Fitting refers to the year range of data upon which the hurricane model distribution parameters are estimated.

Year Range Used for Validation refers to the year range of data upon which the goodness-of-fit statistics are based.

C. Identify the form of the probability distributions used for each function or variable, if applicable. Identify statistical techniques used for estimation and the specific goodness-of-fit tests applied along with the corresponding *p*-values. Describe whether the fitted distributions provide a reasonable agreement with the historical data.

~~C.~~D. Include Form S-3 in a ~~s~~Submission appendix.

Stochastic Hurricane Parameter (Function or Variable)	Functional Form of Distribution	Data Sources	Year Range Used		Justification for Functional Form, ~~and~~ Parameter Estimates, and Goodness-of-Fit Tests
			For Fitting	For Validation	

Form S-4: Validation Comparisons

Purpose: This form illustrates the differences between company actual and modeled hurricane loss for a variety of specified conditions.

A. One or more automated programs or scripts shall be used to generate and format the data in Form S-4.

~~A~~B. Provide four validation comparisons of company actual personal residential exposures and hurricane loss to modeled exposures and hurricane loss.

~~B~~C. Provide a validation comparison of company actual commercial residential exposures and hurricane loss to modeled exposures and hurricane loss. Use and provide a definition of the hurricane model relevant commercial residential classifications.

Provide each of these comparisons by line of insurance, construction type, policy coverage, county, or other level of similar detail in addition to total hurricane losses. Include hurricane loss as a percentage 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 hurricane loss. If this is not available, use exposures for only those policies that had a hurricane loss. Specify which was used.

Comparisons shall include hurricane losses from Hurricane Irma (2017), Hurricane Michael (2018), ~~and~~ Hurricane Ian (2022), Hurricane Helene (2024), and Hurricane Milton (2024), to the extent data from Hurricane ~~Ian~~ Helene (2024) and Hurricane Milton (2024) are available.

~~B. Provide a validation comparison of actual commercial residential exposures and hurricane loss to modeled exposures and hurricane loss. Use and provide a definition of the hurricane model relevant commercial residential classifications.~~

~~C~~D. Provide scatter plots of modeled versus historical hurricane losses for each of the required validation comparisons. Plot the historical hurricane losses on the *x*-axis and the modeled hurricane losses on the *y*-axis.

~~D~~F. Include Form S-4 in a ~~s~~Submission appendix.

Rather than using a specific published hurricane windfield directly, the winds underlying the modeled hurricane loss ~~cost~~ calculations shall be produced by the hurricane model being evaluated and shall be the same hurricane parameters as used in completing Form A-2.

Example Formats for Personal Residential:

Hurricane: _____
Exposure: Specify total exposure or hurricane loss only _____

Construction	Company Actual Hurricane Loss / Exposure	Modeled Hurricane Loss / Exposure	Difference
Wood Frame			
Masonry			
Other (specify)			
Total			

Hurricane: _____
Exposure: Specify total exposure or hurricane loss only _____

Coverage	Company Actual Hurricane Loss / Exposure	Modeled Hurricane Loss / Exposure	Difference
A			
B			
C			
D			
Total			

Example Format for Commercial Residential:

Hurricane: _____
Exposure: Specify total exposure or hurricane loss only _____

Construction	Company Actual Hurricane Loss / Exposure	Modeled Hurricane Loss / Exposure	Difference
Total			

Form S-5: Average Annual Zero Deductible Statewide Hurricane Loss Costs

Purpose: This form provides an illustration of the differences in ~~actual~~ historical and modeled average annual zero deductible statewide personal and commercial residential hurricane loss costs corresponding to the ~~2017~~ 2023 FHCF exposure data and the ~~2023~~ 2025 FHCF exposure data.

A. One or more automated programs or scripts shall be used to generate and format the data in Form S-5.

Part A – ~~2017~~ 2023 FHCF Exposure Data

~~A~~B. Provide the average annual zero deductible statewide personal and commercial residential hurricane loss costs produced using the Model Base Hurricane Set.

~~For the row related to the Current Accepted Hurricane Model and the two rows related to the Second Previous Accepted Hurricane Model, the table is to be completed with the same data as previously given in Form S-5 under the 2021 Hurricane Standards.~~

Average Annual Zero Deductible Statewide Personal and Commercial Residential Hurricane Loss Costs

Time Period	~~Reference Hurricane Set (Previously Historical)~~	Model Base Hurricane Set	Produced by Hurricane Model
Current Submission	~~N/A~~		
Current Accepted Hurricane Model* (~~2021~~2023 Hurricane Standards)		~~N/A~~	
~~Second Previous Accepted Hurricane Model* (2019 Hurricane Standards)~~		~~N/A~~	
Percent Change Current Submission/ ~~Second Previous~~Current Accepted Hurricane Model*		~~N/A~~	

**Enter N/A if no current ~~or previous~~ accepted hurricane model*

~~B. Provide a comparison with the statewide personal and commercial residential hurricane loss costs produced by the hurricane model.~~

C. Provide the 95% confidence interval on the differences between the means of the Model Base Hurricane Set and modeled personal and commercial residential hurricane loss costs.

Part B – ~~2023~~ 2025 FHCF Exposure Data

D. Provide the average annual zero deductible statewide personal and commercial residential hurricane loss costs produced using the Model Base Hurricane Set.

Average Annual Zero Deductible Statewide Personal and Commercial Residential Hurricane Loss Costs

Time Period	Model Base Hurricane Set	Produced by Hurricane Model
Current Submission		

~~E. Provide a comparison with the statewide personal and commercial residential hurricane loss costs produced by the hurricane model.~~

~~F.~~E. Provide the 95% confidence interval on the differences between the means of the Model Base Hurricane Set and modeled personal and commercial residential hurricane loss costs.

G. Include Form S-5 in a ~~s~~Submission appendix.

Form S-6: Hypothetical Events for Sensitivity and Uncertainty Analysis

Purpose: This form is a requirement for new modeling organizations ~~only~~or an existing modeling organization that has made changes to the windfield model formulation that could affect the conclusions of the sensitivity analysis. The form requires the hurricane model to be run under a variety of specified parameter settings in order to perform detailed sensitivity and uncertainty analyses.

SPECIFICATIONS

The Excel file *"FormS6Input~~23~~.xlsx"* contains nine worksheets which ~~are to~~shall be used by the modeling organization in performing sensitivity and uncertainty analyses for their hurricane model. The first eight worksheets are classified as follows:

Sensitivity Analysis (SA)	Uncertainty Analysis (UA)
1. SA all Variables	2. UA for CP 3. UA for Rmax 4. UA for VT 5. UA for WSP 6. UA for CF 7. UA for FFP 8. UA for Quantile

The first worksheet ("SA all Variables") contains three sets of 100 random combinations of the following hurricane model input variables for each of three categories of hurricanes (1, 3, and 5)~~.~~:

- CP = central pressure (in millibars)
- Rmax = radius of maximum sustained windspeed (in statute miles)
- VT = translational velocity (~~forward~~ translation speed in miles per hour)
- WSP = hurricane model windfield shape parameter
- CF = conversion factor for converting the modeled gradient winds to surface winds (or an optional additional input variable if conversion factor is not used)
- FFP = far-field pressure (in millibars)
- Quantiles for possible additional input variable (use is optional)

These hurricane model input variables are based on the probability distributions given in the table below~~*Figure 2*~~.

Figure 2 **Probability Distributions for Hurricane Model Input Variables**

	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
WSP	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)
Quantile	Cat 1	Quantile provided	
	Cat 3	Quantile provided	
	Cat 5	Quantile provided	

These hurricane model input variables may or may not exactly match those used by the modeling organization. A second input file *"FormS6Input~~23~~Quantiles.xlsx"* has been provided that contains the corresponding quantiles for the hurricane model input variables above, hence there is a one-to-one correspondence between these two files. Should a model use more input variables than the number for which quantiles have been provided, the modeling organization may generate additional quantiles.

Modeling organizations may use the quantiles in *"FormS6Input~~23~~Quantiles.xlsx"* in lieu of the specific values in *"FormS6Input~~23~~.xlsx."* 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 named variables or their respective quantiles are correlated. Should the modeling organization use a specific joint distribution between windfield model parameters, the covariance structure may be imposed.

A. One or more automated programs or scripts shall be used to generate and ~~arrange~~ format the data in Form S-6.

B. ~~Disclose~~ Specify how quantiles were used.

~~C. If any hurricane model input variables are modified, provide the modified input files corresponding to those in the worksheet "SA all Variables."~~

~~D.~~C. 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 hurricane model input, or both CP and FFP can be used as hurricane model inputs. ~~Disclose whether~~ Specify if CP and FFP were used as the basis for calculating pressure difference or as direct hurricane model inputs.

Rmax, VT, and CF (as appropriate to the hurricane model) are to be used as direct hurricane model inputs where applicable. An example of CF implementation is presented below.

~~*Figure 2* Probability Distributions for Hurricane Model Input Variables~~

	~~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~~
~~WSP~~	~~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)~~
~~Quantile~~	~~Cat 1~~	~~Quantile provided~~	
	~~Cat 3~~	~~Quantile provided~~	
	~~Cat 5~~	~~Quantile provided~~	

The fourth hurricane model input variable in the above list specifies quantiles ($0 \leq p \leq 1$) to be used with the modeling organization distribution for the windfield shape parameter. Quantiles from 0 to 1 have been provided in the input file *"FormS6Input~~23~~Quantiles.xlsx"* rather than specific values since a modeling organization~~s~~ may use different ranges and distributions for the windfield shape 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 hurricane model such that $P(X \leq x) = 0.345$ where X is a random variable representing the distribution for the windfield shape parameter used by the modeling organization.

~~E. 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 windfield shape parameter.~~

Note that the fourth and seventh input variables appear as quantiles in both *"FormS6Input~~23~~.xlsx"* and *"FormS6Input~~23~~Quantiles.xlsx."*

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 < Rmax

The value of the random variable CF from the input file *"FormS6Input~~23~~.xlsx"* is multiplied by r/Rmax. This ratio varies from 0 at the center of the eye to 1 at r = Rmax so CF increases linearly from the center of the eye to its maximum at Rmax. 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 Rmax. In between these two positions, the value of CF is based on linear interpolation using multiplication by r/Rmax.

CASE 2: Rmax < r < 3*Rmax

Within this interval, the value of the random variable CF is decreased from its maximum at r = Rmax by the following amount:

[(r - Rmax)/(3*Rmax - Rmax)]*(0.1)

Thus, at r = Rmax, CF is not decreased. At r = 3*Rmax, CF is decreased by 0.1. This calculation is simple linear interpolation between Rmax and 3*Rmax.

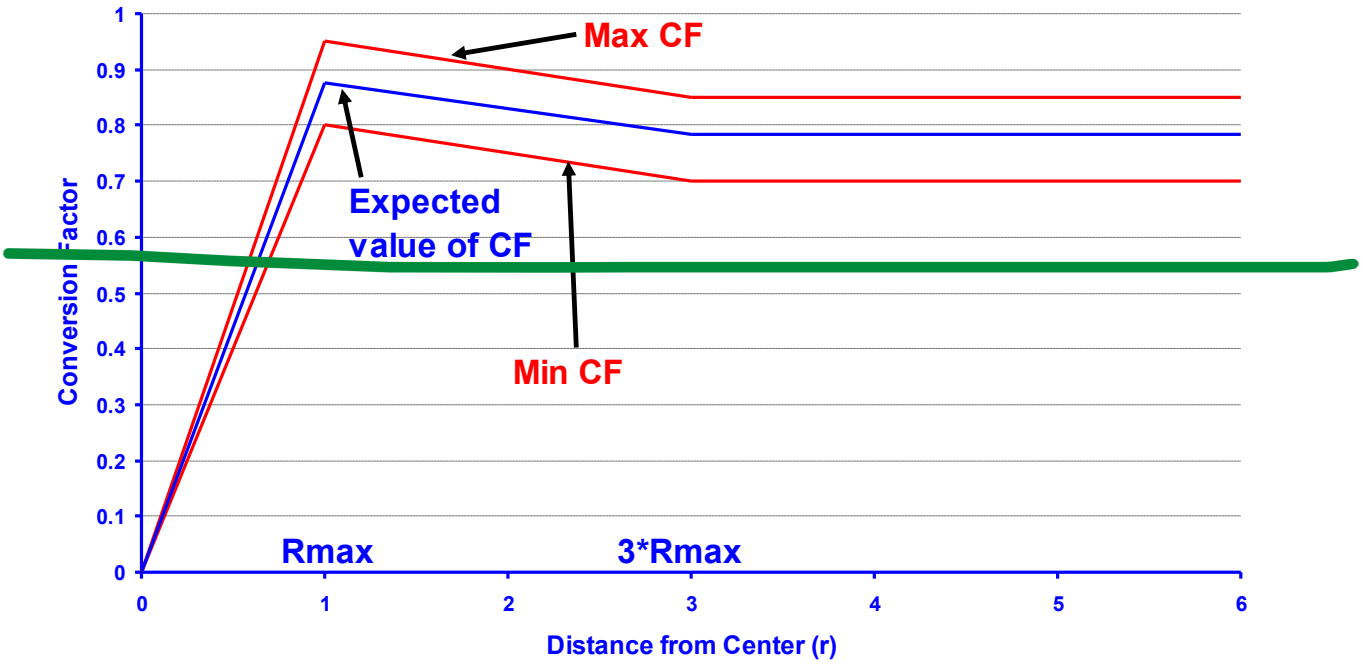
CASE 3: r > 3*Rmax

The value of the random variable CF at 3*Rmax is used for the remainder of the outer region~~,~~ (i.e., beyond r = 3*Rmax).

In summary, CF ramps up from its minimum value of 0 at the center of the hurricane to its maximum at Rmax and then ramps down in a linear fashion to 3*Rmax, where it achieves its maximum decrease of 0.1 from its value at Rmax. CF then remains at this value beyond 3*Rmax. As an example, the previous value of CF = 0.84 would occur at Rmax and then decrease in a linear fashion to 0.84 – 0.1 = 0.74 at 3*Rmax and remain at this value beyond 3*Rmax.

Figure ~~3~~2 shows an Uncertainty Envelope for CF using the methodology in this example. The horizontal axis in this graph is in units of Rmax. Thus, r = 0*Rmax represents the center of the hurricane, r = 1*Rmax represents Rmax, and r = 3*Rmax represents the start of the outer region. Two red lines have been added in *Figure ~~3~~2* to show the minimum and maximum possible values of CF from the input vectors in the input file *"FormS6Input~~23~~.xlsx"* 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 = Rmax is 0.8 and the maximum is 0.95. At r = 3*Rmax, 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 hurricane model.

~~Figure 3~~ ***~~Uncertainty Envelope (red lines) for the Conversion Factor~~***



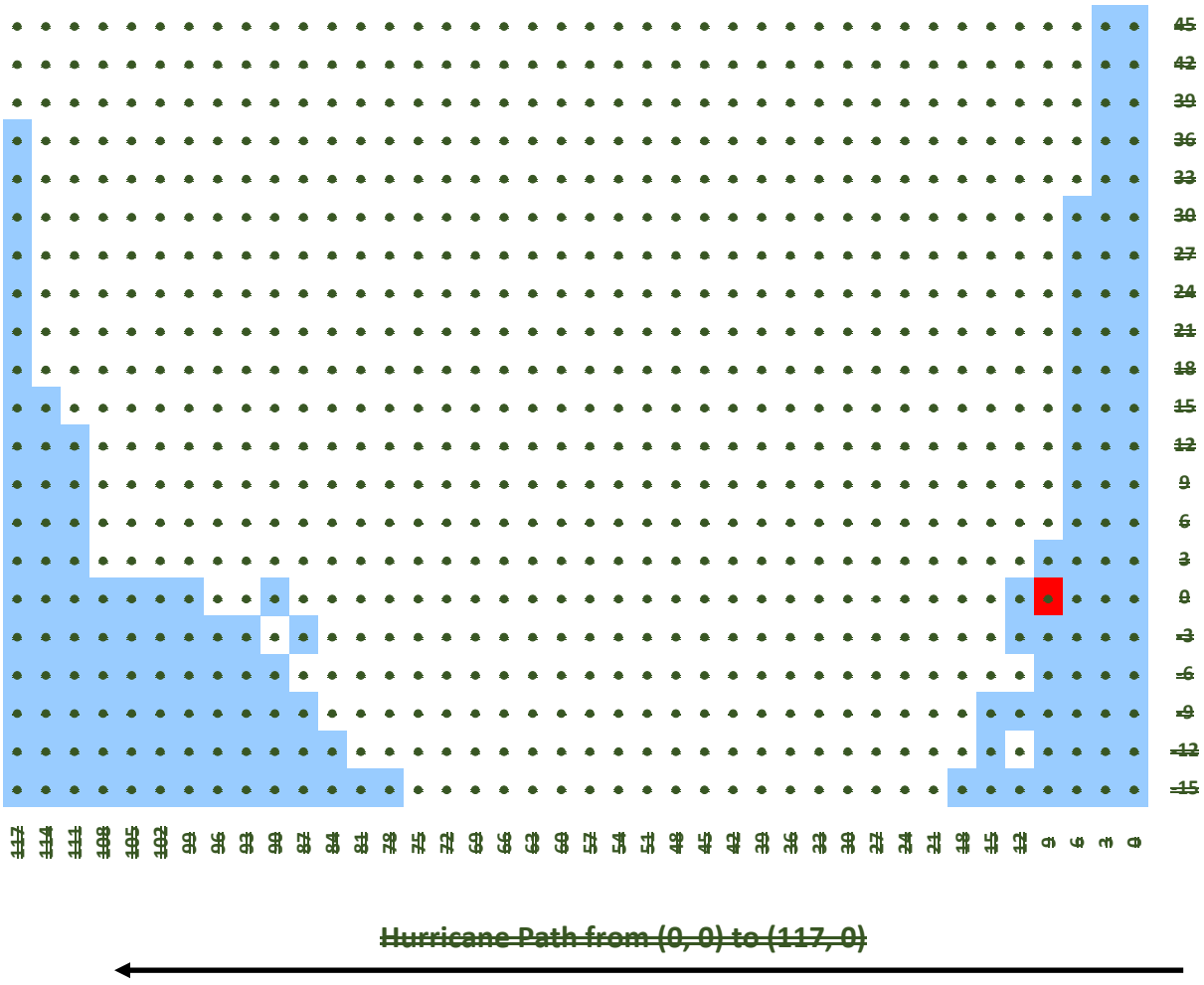
The 100 combinations of these hurricane model input variables represent different initial conditions for each of three categories of hurricanes (1, 3, and 5) given in the input file. These hurricanes follow a straight due west track passing through the point (2~~4~~5.8611N, 80.1196W).

The 21x40 grid illustrated in *Figure ~~5~~4* for southern Florida uses an approximate 3 statute mile spacing. For purposes of hurricane decay, use existing terrain consistent with the grid in *Figure ~~5~~4* or *Figure ~~4~~3* (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 hurricane landfall location (25.8611N, 80.1196W), identified by the red rectangle in *Figure ~~5~~4*. 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 input file.

~~Figure 4~~ **~~Map Version of Grid for Calculating Hourly Wind Velocities~~**

~~*Figure 5*~~ ~~Grid for Calculating Hourly Wind Velocities~~



HURRICANE LOSS COSTS

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.

Hurricane 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 structure coverages, at each of the 682 land-based vertices in *Figure* ~~5~~4. The 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~~1995
- Age of roof unknown

~~F.~~D. Produce hurricane loss costs for each hurricane category in two forms:

1. Aggregated hurricane loss costs over the 682 land-based vertices in the grid in *Figure ~~5~~4* for each input vector and each hurricane category (100 x 3 = 300 values), and

2. The mean hurricane loss cost at each of the 682 land-based vertices in the grid in *Figure ~~5~~4* over all 100 input vectors for each hurricane category (682 x 3 = 2,046 means).

~~G~~E. Calculate the total hurricane 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 hurricane loss cost as a percent of total exposure. The results for each input vector shall be reported on a single row with the following information:

1. Hurricane category (1, 3, or 5),

2. Input vector number,

3. Total hurricane loss cost over the 682 land-based vertices in the grid, and

4. The expected hurricane loss cost as a percent of total exposure to two decimal places (i.e., ~~15.42~~ 0.1542 for 15.42%).

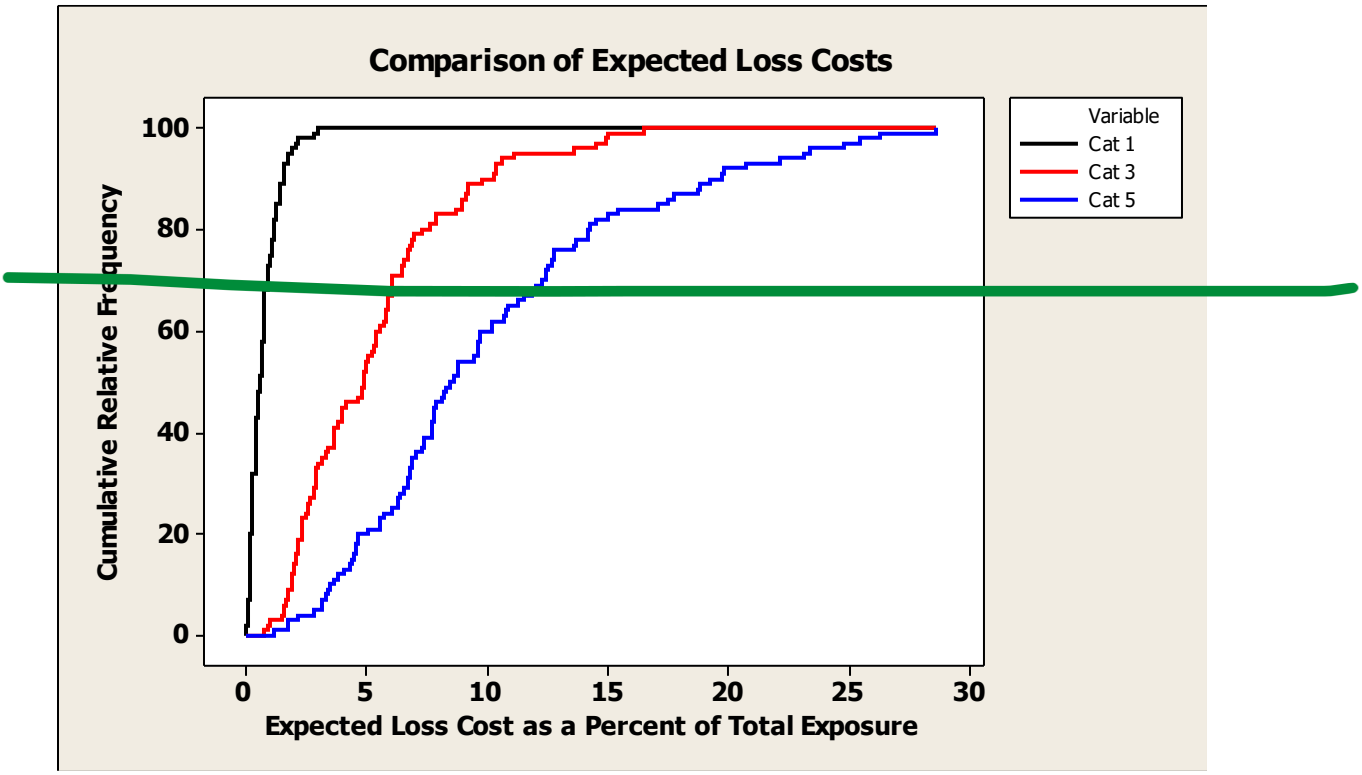
Thus, the entries in this file for input vectors 35-37 for the category 5 hurricane will appear as in the following format:

5	35	4767326.	6.99
5	36	4365003.	6.40
5	37	2531948.	3.71

~~H.~~F. Provide the results in an ASCII file and a PDF file named *"XXX2~~3~~5Expected Hurricane Loss Cost"* where XXX denotes the abbreviated name of the modeling organization. The ASCII file will have 300 rows.

~~I~~G. Display the results as cumulative empirical distribution functions as shown in *Figure ~~6~~5* or its equivalent.

~~Figure 6~~ **Comparison of Cumulative Empirical Distribution Functions of Hurricane Loss Costs for all Hurricane Categories**



~~J.~~H. Report the mean hurricane loss cost at each of the 682 land-based vertices in the grid over all 100 input vectors for each hurricane category. The results shall be reported with the following information:

1. Hurricane category (1, 3, or 5),

2. E-W grid coordinate (0, 3, 9, 12, …, 120),

3. N-S grid coordinate (-15, -12, -9, -6, …, 45), and

4. Hurricane 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:

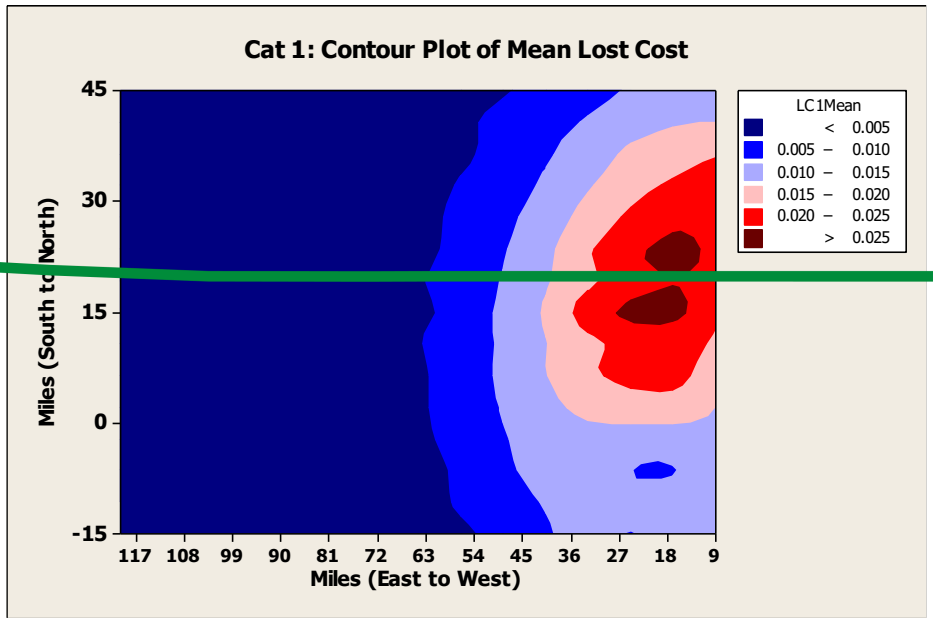
5	12	18	0.5142
5	15	18	0.4533
5	18	18	0.3872

~~K~~I. Provide the results in an ASCII file and a PDF file named *"XXX2~~3~~5Hurricane Loss Cost Contour"* where XXX denotes the abbreviated name of the modeling organization. The ASCII file will have 3 x 682 = 2,046 rows.

~~L~~J. Display the mean of the 100 input vectors as contour plots for each hurricane category as shown in *Figures ~~7~~6* to ~~9~~8 (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=102, 120-15=105, 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 ~~7~~6* to ~~9~~8.

~~*Figure 7 Contour Plot of Hurricane Loss Cost for a Category 1 Hurricane*~~



~~*Figure 8 Contour Plot of Hurricane Loss Cost for a Category 3 Hurricane*~~

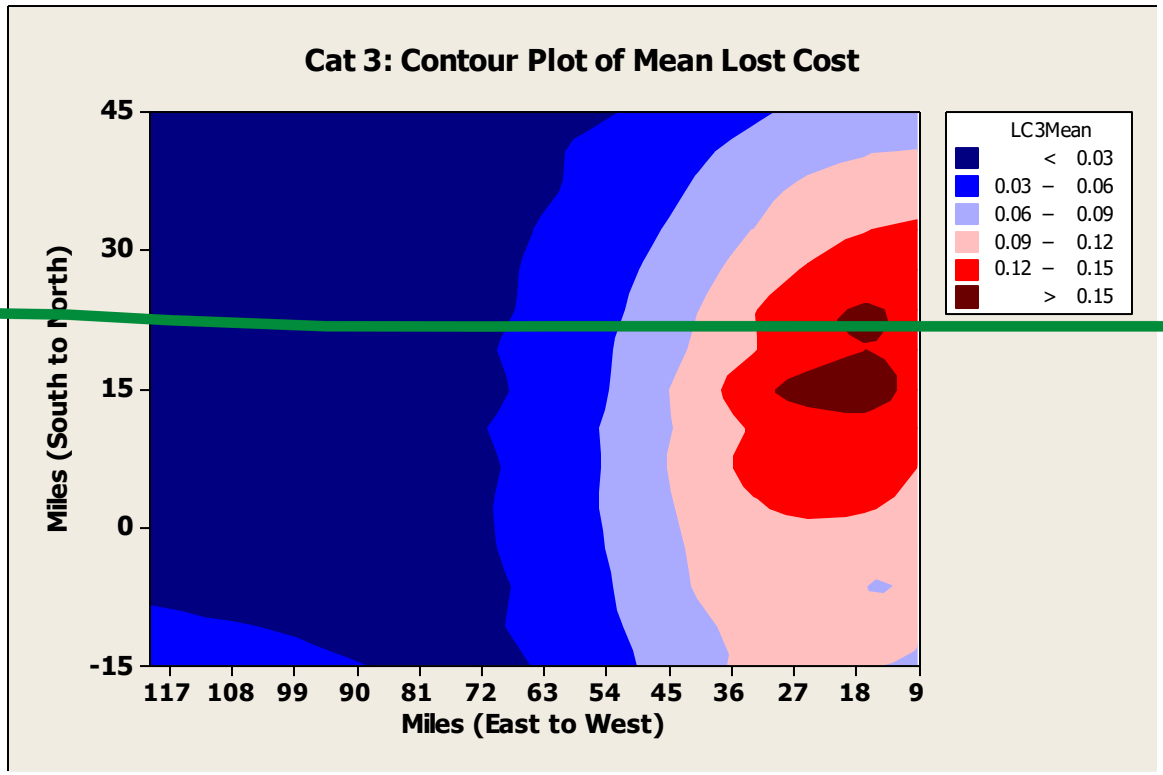
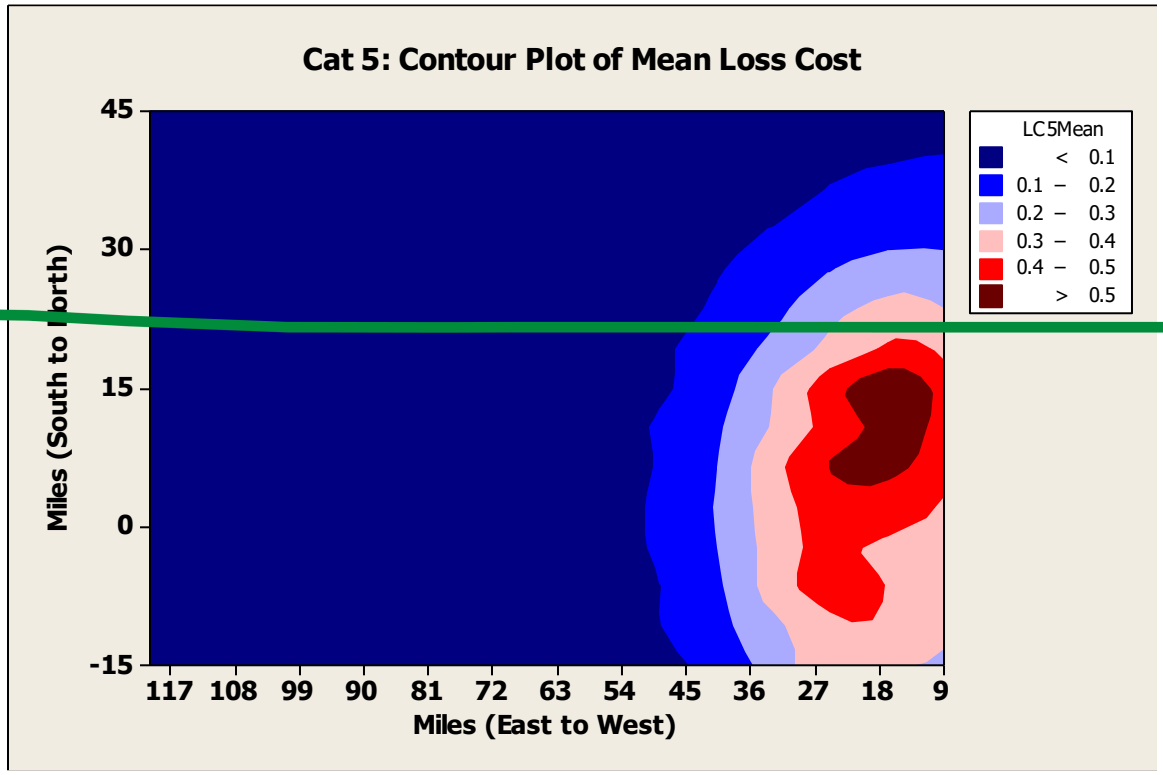


Figure 9 Contour Plot of Hurricane Loss Cost for a Category 5 Hurricane



UNCERTAINTY AND SENSITIVITY ANALYSIS FOR HURRICANE LOSS COSTS

~~M.~~K. The modeling organization ~~is to~~shall perform uncertainty and sensitivity analyses for expected hurricane loss costs as outlined below. The Professional Team ~~will~~ shall perform uncertainty and sensitivity analyses based on the modeling organization expected hurricane loss cost calculations as part of its preparation prior to reviewing the modeling organization internal uncertainty and sensitivity analyses (using the hurricane model's hurricane vulnerability functions) during the on-site review. The modeling organization ~~is to~~shall present to the Professional Team during the on-site review their uncertainty and sensitivity analyses using the hurricane model's hurricane vulnerability functions.

Sensitivity analyses ~~will~~ shall be based on standardized regression coefficients (SRC) for each hurricane model input variable in the 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 *https://fchlpm.sbafla.com/media/tepang2l/ua-sa-demo.pdf.*

Hurricane loss costs used in these sensitivity analyses were based on the Professional Team surrogate hurricane vulnerability function. If the SRC is positive for a given hurricane model input variable, then hurricane loss costs increase as the variable increases while negative SRC values indicate that hurricane loss costs decrease as the variable increases. The SRCs in these sensitivity analyses are summarized as follows:

Category	CP	Rmax	VT	WSP	CF	FFP
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 ~~10~~9 presents graphs of these SRCs for all six input variables for each category of hurricane. ~~This~~ The figure shows that WSP has the most influence on the magnitude of hurricane loss costs for a category 1 hurricane, and ~~this~~ the relationship is positive. Rmax has the second most influence on the magnitude of hurricane loss costs (positive) followed closely by CP (negative relationship) and CF (positive). FFP and VT had slight influence.

The category 3 results in *Figure ~~10~~9* show that Rmax now has the most influence on the magnitude of hurricane loss costs followed by CF and then WSP and CP. FFP and VT again had the least influence.

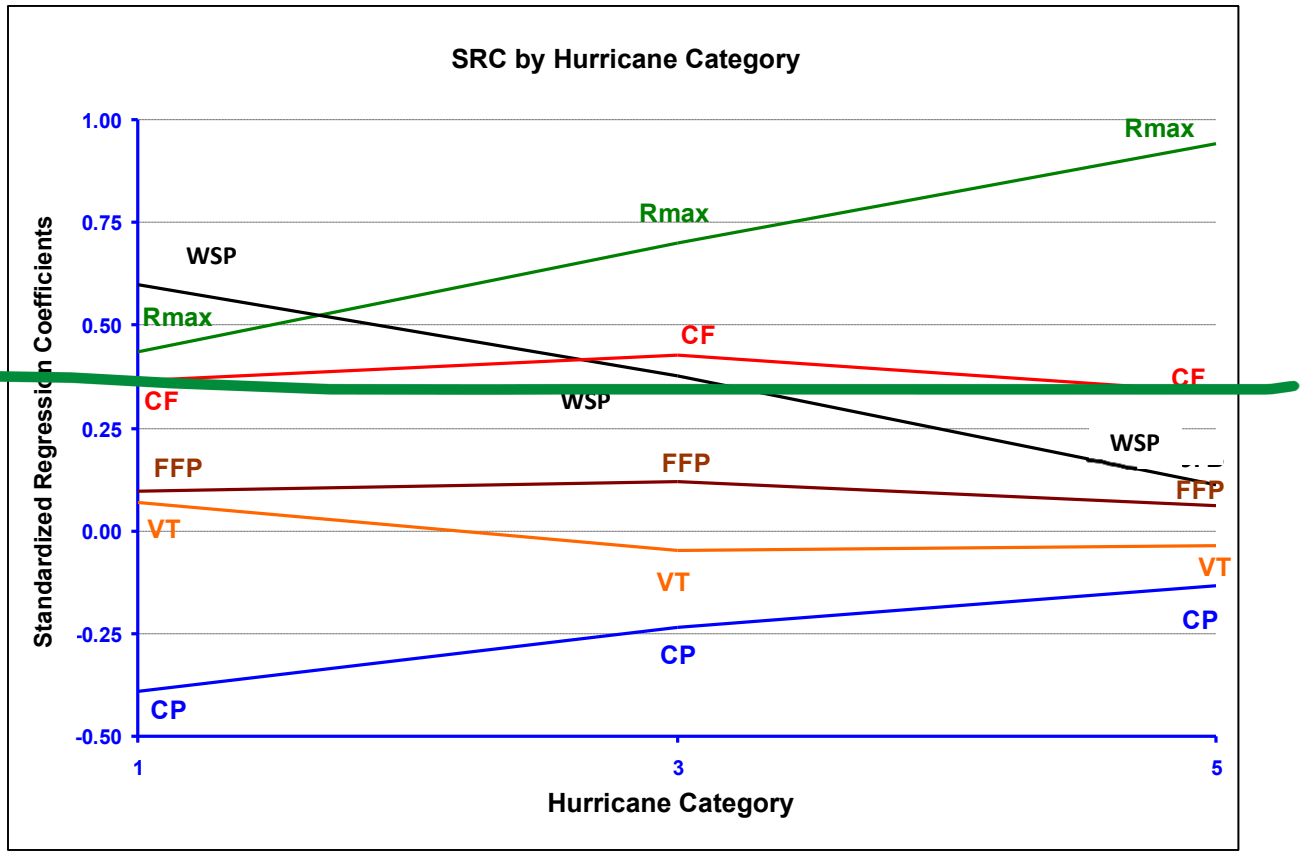
The SRCs for category 5 in *Figure ~~10~~9* have the same ordering as for category 3 with the exception that WSP and CP interchanged in the middle two positions.

Over all hurricane categories, Rmax, CF, and WSP have the most influence on the magnitude of hurricane loss costs 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~~in *Figure 9*.

~~***Figure 10***~~

~~**Standardized Regression Coefficients (SRC) for Expected Hurricane Loss Costs for All Input Variables for All Hurricane Categories**~~



Uncertainty analyses ~~will~~ shall be based on expected percentage reduction (EPR) for each hurricane model input variable in the 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 *https://fchlpm.sbafla.com/media/tepang2l/ua-sa-demo.pdf.*

If the EPR is large for a given input variable, that variable makes a large contribution to the uncertainty in hurricane loss costs while a small EPR indicates that the variable contributes much less to the uncertainty in hurricane loss costs. The EPRs in these uncertainty analyses are summarized as follows:

Category	CP	Rmax	VT	WSP	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 ~~11~~ 10 presents graphs of the~~se~~ EPRs for all six input variables for each category of hurricane. ~~This~~ The figure shows that WSP makes the largest contribution to the uncertainty (37.6%) in hurricane loss costs 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 hurricane loss costs.

The category 3 results in *Figure ~~11~~10* show that Rmax makes the largest contribution to the uncertainty (43.7%) in hurricane loss costs followed by CF (15.7%) and WSP (12.1%) while CP drops (5.3%). FFP (0.8%) and VT (0.1%) again make very little contribution to the uncertainty in hurricane loss costs.

The EPRs for category 5 in *Figure ~~11~~10* have the same ordering as for category 3 with the exception that WSP and CP are interchanged in the middle two positions. It is important to note that WSP dominates the uncertainty in hurricane loss costs 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.

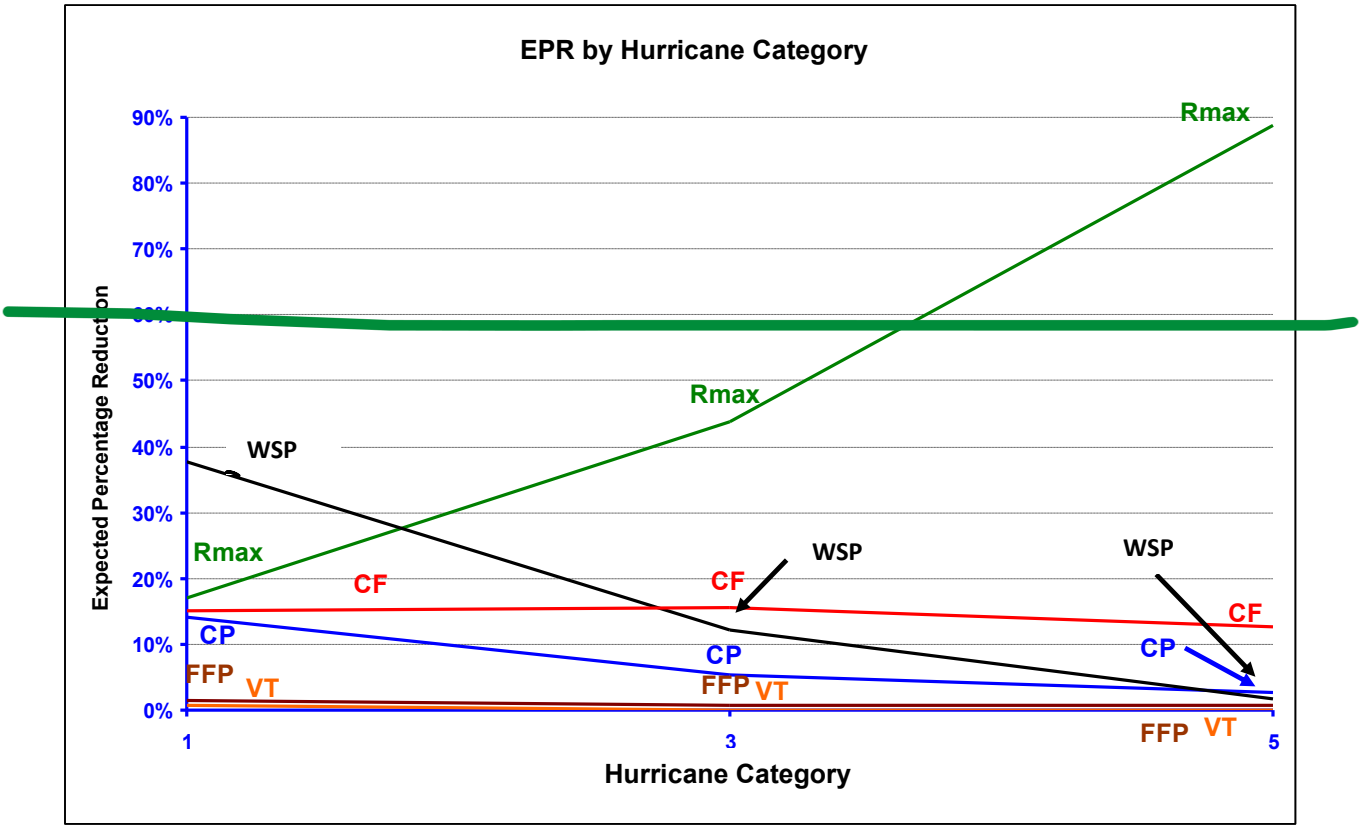
Over all hurricane categories, Rmax, CF, and WSP make the largest contributions to the uncertainty in hurricane loss costs followed in fourth place by CP and then FFP and VT.

The EPRs in the above summary do not necessarily sum to 100% unless the underlying hurricane 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 11*~~

~~Expected Percentage Reduction (EPR) for Expected Hurricane Loss Costs for All Input Variables for All Hurricane Categories~~



CLARIFICATION OF INPUT AND OUTPUT FILES FOR FORM S-6

~~N.~~L. The Professional Team will need all actual input and output files to verify the modeling organization sensitivity and uncertainty analyses results for hurricane loss costs as specified in Form S-6. The following explanation is provided to clarify which files the modeling organization shall submit. Compliance in submitting these files ~~will~~ eliminates the need for the Professional Team to request the~~se~~ files during the on-site review and ~~to~~ allows verification of the results prior to the on-site review.

Sensitivity Analysis~~.~~: The first worksheet in the input file "*FormS6Input~~23~~.xlsx*" is entitled "SA all Variables." This worksheet contains Latin hypercube samples (LHS) consisting of 100 random combinations of the following hurricane model input variables for each of three categories of hurricanes (1, 3, and 5)~~.~~:

- CP = central pressure (in millibars)
- Rmax = radius of maximum wind~~s~~ (in statute miles)
- VT = translational velocity (~~forward~~ translation speed in miles per hour)
- WSP = hurricane model windfield shape parameter
- CF = conversion factor for converting the modeled gradient winds to surface winds (or an optional additional input variable if conversion factor is not used)

- FFP = far-field pressure (in millibars)
- Quantiles for possible additional input variable (use is optional)

~~O.~~M. Modeling organizations may choose to use some variation of these input variables. For example, the modeling organization might choose not to use the WSP, but choose to include the "quantile" variables. The actual LHS files used by the modeling organization ~~are to~~shall be submitted, including the identification of the input parameters that were used.

~~P.~~N. The modeling organization is to also submit the hurricane loss cost output files for the sensitivity analysis portion of Form S-6. Provide the hurricane loss cost output files for the sensitivity analysis in an ASCII file and a PDF file named *"XXX25SA"* where XXX denotes the abbreviated name of the modeling organization.

Uncertainty Analysis~~.~~: Worksheets 2-8 in the input file "*FormS6Input~~23~~.xlsx*" are used for the uncertainty analysis portion of Form S-6 and are labeled as follows:

2. UA for CP
3. UA for Rmax
4. UA for VT
5. UA for WSP
6. UA for CF
7. UA for FFP
8. UA for Quantile

~~Q.~~O. The modeling organization ~~is to~~shall submit the hurricane loss cost output files for the uncertainty analysis portion of Form S-6 corresponding to worksheets 2-8.

~~R.~~P. Include the disclosures and displays as noted in the Form S-6 instructions in a ~~s~~Submission appendix.

VULNERABILITY HURRICANE STANDARDS

V-1 Development of Hurricane Building ~~Hurricane~~ Vulnerability Functions*

*(*Significant Revision)*

A. Development of the hurricane building ~~hurricane~~ vulnerability functions shall be based on a combination of available insurance company hurricane claims data and rational engineering analysis supported by laboratory testing, field testing, or post-event site investigations.

B. The development of ~~the~~ hurricane building ~~hurricane~~ vulnerability functions and the treatment of associated uncertainties shall be theoretically sound and consistent with fundamental engineering principles.

C. Residential building stock classification shall be representative of Florida construction for personal and commercial residential buildings.

D. Building height/number of stories, primary construction material, year of construction, location, building code, and other construction characteristics, as applicable, shall be used in the development and application of hurricane building ~~hurricane~~ vulnerability functions.

E. Hurricane vulnerability functions shall be developed for commercial residential building structures, personal residential building structures, manufactured homes, and appurtenant structures.

~~F. The minimum windspeed that generates damage shall be consistent with fundamental engineering principles.~~

~~G.~~F. Hurricane ~~B~~building ~~hurricane~~ vulnerability functions shall include damage as attributable to windspeed and wind pressure, water infiltration, and missile impact associated with hurricanes. Hurricane ~~B~~building ~~hurricane~~ vulnerability functions shall not include explicit damage to the building due to flood (including hurricane storm surge and wave action).

Purpose: Both hurricane and building characteristics affect personal and commercial residential hurricane building ~~hurricane~~ vulnerability functions. The data and methods used to develop hurricane building ~~hurricane~~ vulnerability functions, and the treatment of associated uncertainties, affect the modeled hurricane loss costs and hurricane probable maximum loss levels. Their development and documentation are essential parts of the hurricane model.

The adoption year and enforcement of statewide and local building codes affect the hurricane building ~~hurricane~~ vulnerability functions.

The design methods, applicable building codes, and construction practices may differ significantly for commercial residential building structures, personal residential building structures, manufactured homes, and appurtenant structures.

Damage occurs above the hurricane threshold of 74 mph but can also occur for windspeeds below this threshold.

Relevant Forms: G-4, Vulnerability Hurricane Standards Expert Certification
V-1, One Hypothetical Event
A-1, Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code
A-6, Logical Relationships to Hurricane Risk (Trade Secret Item)

Disclosures

~~1. Provide details of modifications to the building vulnerability component of the hurricane model since the current accepted hurricane model.~~

~~2.~~1. Provide a high-level flowchart documenting the process ~~by which~~for development and implementation of the hurricane building ~~hurricane~~ vulnerability functions ~~are developed and implemented~~.

2. Provide a comprehensive technical description of the hurricane building vulnerability functions, including theoretical basis, assumptions, data, methods, and processes used in the development of the hurricane building vulnerability functions.

3. Provide details of modifications to the hurricane building vulnerability functions~~component of the hurricane model~~ since the current accepted hurricane model.

~~3.~~4. Describe the nature and extent of insurance company hurricane claims data used to develop the hurricane building ~~hurricane~~ vulnerability functions. Describe in detail the breakdown of data into number of policies, number of insurers, dates of hurricane loss, amount of hurricane loss, and amount of dollar exposure; separated into personal residential, commercial residential, and manufactured homes.

~~4.~~5. Describe any new insurance company hurricane claims data, other than data from Citizens Property Insurance Corporation provided by the Commission, received and reviewed since the current accepted hurricane model. Indicate whether ~~the~~ any new data~~, if any,~~ have been incorporated in the hurricane model under review. If new data have not been incorporated, explain why.

~~5.~~6. Describe the assumptions, data (other than insurance company hurricane claims data), methods, and processes used for the development of the hurricane building ~~hurricane~~ vulnerability functions.

7. Describe the assumptions, data (including available insurance company hurricane claims data), methods, and processes used to develop hurricane building ~~hurricane~~ vulnerability functions when:

A. ~~r~~Residential construction types are unknown, or

B. ~~o~~One or more primary building characteristics are unknown, or

C. ~~o~~One or more secondary characteristics are known, or

D. ~~b~~Building input characteristics are conflicting.

8. Describe how the vertical variation of winds on multi-story buildings is accounted for in the hurricane building vulnerability functions. Provide citations to published scientific literature and technical literature in a Submission appendix per Standard G-1 Disclosure 5 that support the methodology.

~~6.~~9. Describe the basis, development, modeling, and treatment of uncertainties associated with the hurricane building ~~hurricane~~ vulnerability functions.

~~7.~~10. Summarize post-event site investigations, including the sources, and provide a ~~brief~~ detailed description of how the data from site investigations were used~~the resulting use of these data~~ in the development of hurricane building ~~hurricane~~ vulnerability functions.

~~8.~~11. ~~Provide the total number of building hurricane vulnerability functions available for use in the hurricane model for personal and commercial residential classifications.~~ Describe the categories of the different hurricane building ~~hurricane~~ vulnerability functions available for use in the hurricane model for personal and commercial residential classifications. Specifically, include descriptions of the building types and characteristics, building height, number of stories, regions within the state of Florida, year of construction, and occupancy types for which a unique hurricane building ~~hurricane~~ vulnerability function is used.

~~9~~12. Describe the process by which local construction practices and statewide and ~~county~~ local building code adoption and enforcement are considered in the development of the hurricane building ~~hurricane~~ vulnerability functions.

~~10~~13. Describe the relationship between building structure and appurtenant structure hurricane vulnerability functions and their consistency with insurance company hurricane claims data.

~~11. Describe the assumptions, data (including available insurance company hurricane claims data), methods, and processes used to develop building hurricane vulnerability functions when:~~

~~a. residential construction types are unknown, or~~

~~b. one or more primary building characteristics are unknown, or~~

~~c. one or more secondary characteristics are known, or~~

~~d.~~ ~~building input characteristics are conflicting.~~

~~12.~~14. Identify the minimum ~~one minute average sustained~~ windspeed ~~and the windspeed reference height~~ at which the hurricane ~~model~~ building vulnerability functions ~~begins to estimate~~generate damage, the windspeed reference height, and the windspeed averaging time. Describe the rationale for the minimum windspeed.

~~13.~~15. Describe how the duration of windspeeds at a particular location over the life of a hurricane is considered.

16. Describe how the hurricane ~~model~~ building vulnerability functions address~~es~~ wind-borne missile impact damage. ~~and~~

~~14.~~17. Describe how the hurricane building vulnerability functions address water infiltration.

~~15.~~18. Provide completed Form V-1 in a Submission appendix. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

Audit

1. Supporting material, including motivations, data, methods, and assumptions for changes to the hurricane building vulnerability ~~component~~ functions ~~changes~~ in Disclosure ~~1~~ 3 will be reviewed.

2. Comparisons of the modified hurricane building ~~hurricane~~ vulnerability functions with those in the current accepted hurricane model will be reviewed.

3. The vintage of vulnerability-related data, code, scientific literature, and technical literature used will be reviewed as encountered.

4. A detailed flowchart documenting the process for development and implementation of the hurricane building vulnerability functions will be reviewed.

5. Multiple samples of hurricane building ~~hurricane~~ vulnerability functions for commercial residential buildings ~~structures~~, personal residential buildings ~~structures~~, manufactured homes, and appurtenant structures will be reviewed.

6. A plot comparing hurricane building vulnerability functions for wood frame building structure, masonry building structure, and appurtenant structure will be reviewed.

7. A plot comparing appurtenant structure hurricane building vulnerability functions with insurance company hurricane claims data will be reviewed.

~~3.~~8. The breakdown of insurance company exposure data used to develop the hurricane building ~~hurricane~~ vulnerability functions into number of insurers, number of policies, number of locations, and amount of dollar exposure by policy type will be reviewed.

Policy Type	Number of Insurers	Number of Policies	Number of Locations	Exposure Value ($)
Personal Residential				
Manufactured Homes				
Commercial Residential				

~~4.~~9. The breakdown of insurance company hurricane claims data used to develop the hurricane building ~~hurricane~~ vulnerability functions into events (year and storm name), number of insurers, number of policies, number of locations, number of claims, and amount of loss separated by policy type will be reviewed.

Year	Storm Name	Number of Insurers			Number of Policies			Number of Locations			Number of Claims			Loss Amount ($)		
		Personal Residential	Manufactured Homes	Commercial Residential	Personal Residential	Manufactured Homes	Commercial Residential	Personal Residential	Manufactured Homes	Commercial Residential	Personal Residential	Manufactured Homes	Commercial Residential	Personal Residential	Manufactured Homes	Commercial Residential

10. Insurance company hurricane claims data ~~in the original form~~ will be reviewed with explanations for any changes made and descriptions of how missing or incorrect data were handled.

11. The process for incorporating new insurance company hurricane claims data~~, if any,~~ will be reviewed.

12. ~~How~~ Accounting for the claim practices of insurance companies ~~are accounted for~~ when insurance company hurricane claims data are used to develop hurricane building ~~hurricane~~ vulnerability functions will be reviewed. The level of damage the insurer considers a loss to be a total loss, claim practices of insurers with respect to concurrent causation, the impact of public adjusting, and the impact of the legal environment in the claims data analyses will be reviewed.

~~5.~~13. The modeling of uncertainty associated with hurricane building ~~hurricane~~ vulnerability functions for wood frame, masonry, and manufactured homes construction classes will be reviewed.

~~6.~~14. ~~How the uncertainties in windspeed for~~ For an individual hurricane at a given location, how the windspeed uncertainties are accounted for ~~in the hurricane model damage estimates~~ will be reviewed.

~~7.15. Insurance company hurricane claims data in the original form will be reviewed with explanations for any changes made and descriptions of how missing or incorrect data were handled.~~

~~10.~~15. Rational engineering analysis used to develop hurricane building ~~hurricane~~ vulnerability functions will be reviewed ~~for a variety of different building construction classes~~.

~~9~~16. Complete reports detailing loading conditions and damage states for any laboratory or field-testing data used will be reviewed.

~~12~~17.~~Laboratory or field tests and original p~~Post-event site investigation reports will be reviewed. Other scientific literature, technical literature, and expert opinion summaries will be reviewed.

~~8.~~18. The goodness-of-fit of the hurricane building ~~hurricane~~ vulnerability functions will be reviewed.

~~9.19. Complete reports detailing loading conditions and damage states for any laboratory or field testing data used will be reviewed.~~

~~10.20. Rational engineering analysis used to develop building hurricane vulnerability functions will be reviewed for a variety of different building construction classes.~~

~~11. The combination of available insurance company hurricane claims data and rational engineering analysis to develop the building hurricane vulnerability functions will be reviewed.~~

~~12.21. Laboratory or field tests and original post-event site investigation reports will be reviewed.~~

~~13~~19.Justification for the construction classes and characteristics used will be reviewed.

~~14. Multiple samples of building hurricane vulnerability functions for commercial residential building structures, personal residential building structures, manufactured homes, and appurtenant structures will be reviewed.~~

~~15~~20.Documentation and justification for the effects on the hurricane building ~~hurricane~~ vulnerability functions due to applicable building codes and their enforcement will be reviewed.

~~16. The process for incorporating new insurance company hurricane claims data, if any, will be reviewed.~~

~~17.How the claim practices of insurance companies are accounted for when insurance company hurricane claims data are used to develop building hurricane vulnerability functions will be reviewed. The level of damage the insurer considers a loss to be a total loss, claim practices of insurers with respect to concurrent causation, the impact of public adjusting, and the impact of the legal environment in the claims data analyses will be reviewed.~~

~~18~~21.The percentage of damage at or above which the hurricane ~~model~~ building vulnerability functions assume~~s~~ a total building loss will be reviewed.

~~19~~22.The treatment of law and ordinance in hurricane building ~~hurricane~~ vulnerability functions will be reviewed.

~~20.A plot comparing hurricane vulnerability functions for wood frame building structure, masonry building structure, and appurtenant structure will be reviewed.~~

~~21. A plot comparing appurtenant structure hurricane vulnerability functions with insurance company hurricane claims data will be reviewed.~~

V-2 Development of Hurricane Contents ~~Hurricane~~ Vulnerability Functions*

*(*Significant Revision)*

A. Development of the hurricane contents ~~hurricane~~ vulnerability functions shall be based on a combination of available insurance company hurricane claims data and rational engineering analysis supported by laboratory testing, field testing, or post-event site investigations.

B. The relationship between the hurricane ~~model~~ building and contents ~~hurricane~~ vulnerability functions shall be consistent with, and supported by, the relationship observed in insurance company hurricane claims data.

Purpose: Hurricane ~~C~~contents ~~hurricane~~ vulnerability functions and hurricane losses are affected by various hurricane, building, and contents characteristics.

Insurance company contents hurricane loss data are a reasonable indicator of the appropriateness of hurricane contents ~~hurricane~~ vulnerability functions.

The documentation of the development of hurricane contents ~~hurricane~~ vulnerability functions with respect to the methods and sources, including use of insurance company hurricane claims data, and any post-event site investigations, rational engineering analysis, and testing data and reports, support the appropriateness of the hurricane contents ~~hurricane~~ vulnerability functions.

A reasonable representation of hurricane contents ~~hurricane~~ vulnerability is necessary in order to address policies that cover hurricane contents ~~hurricane~~ losses.

Relevant Forms:
- G-4, Vulnerability Hurricane Standards Expert Certification
- V-1, One Hypothetical Event
- A-1, Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code
- A-6, Logical Relationships to Hurricane Risk (Trade Secret Item)

Disclosures

~~1. Provide details of modifications to the contents vulnerability component of the hurricane model since the current accepted hurricane model.~~

~~2.~~1. Provide a high-level flowchart documenting the process by which the hurricane contents ~~hurricane~~ vulnerability functions are developed and implemented.

2. Provide a comprehensive technical description of the hurricane contents vulnerability functions, including theoretical basis, assumptions, data, methods, and processes used in the development of the hurricane contents vulnerability functions.

3. Provide details of modifications to the hurricane contents vulnerability functions ~~component of the hurricane model~~ since the current accepted hurricane model.

~~3. Describe the assumptions, data, methods, and processes used to develop the contents hurricane vulnerability functions.~~

4. Describe the relationship between hurricane building vulnerability functions and hurricane contents ~~hurricane~~ vulnerability functions.

~~4.~~5. Describe the basis, development, modeling, and treatment of uncertainties associated with the hurricane contents ~~hurricane~~ vulnerability functions.

~~5.~~6. ~~Provide the total number of contents hurricane vulnerability functions.~~ Describe whether different hurricane contents ~~hurricane~~ vulnerability functions are used for personal residential, commercial residential, manufactured homes, unit location for condo owners and apartment renters, and various building classes.

~~6.7. Describe the relationship between building and contents hurricane vulnerability functions.~~

7. Describe how the impact of water infiltration is accounted for in the hurricane contents vulnerability functions.

Audit

1. Supporting material for changes to the hurricane contents vulnerability functions ~~component changes~~ in Disclosure ~~1~~3 will be reviewed.

2. Comparisons of the modified hurricane contents ~~hurricane~~ vulnerability functions~~, if any,~~ with those in the current accepted hurricane model will be reviewed.

~~3. Justification for changes from the current accepted hurricane model in the relativities between hurricane vulnerability functions for building and the corresponding hurricane vulnerability functions for contents will be reviewed.~~

3. Justification and documentation ~~of~~ for the method of development, the underlying data, and assumptions ~~related to~~ on which the hurricane contents ~~hurricane~~ vulnerability functions are based will be reviewed.

4. A detailed flowchart documenting the process by which the hurricane contents vulnerability functions are developed and implemented will be reviewed.

~~4.~~5. Multiple samples of hurricane contents ~~hurricane~~ vulnerability functions for wood frame, masonry, and manufactured homes construction classes will be reviewed.

~~5~~6. The goodness-of-fit of the hurricane contents ~~hurricane~~ vulnerability functions will be reviewed.

~~6~~7. The modeling of uncertainty associated with hurricane contents ~~hurricane~~ vulnerability functions for wood frame, masonry, and manufactured homes construction classes will be reviewed.

~~7~~8. Justification and documentation for the dependence of hurricane contents ~~hurricane~~ vulnerability functions on construction or occupancy type will be reviewed.

~~8. Justification and documentation of the method of development, the underlying data, and assumptions related to contents hurricane vulnerability functions will be reviewed.~~

~~9. Support for the rational engineering analysis used in developing the contents hurricane vulnerability functions will be reviewed.~~

~~10.~~9. The combination of available insurance company hurricane claims data and rational engineering analysis to develop the hurricane contents ~~hurricane~~ vulnerability functions will be reviewed.

~~11.~~10. The ~~modeling~~ effect of water infiltration on hurricane contents vulnerability functions for a multi-story commercial residential building~~, if applicable,~~ will be reviewed.

V-3 Development of Hurricane Time Element ~~Hurricane~~ Vulnerability Functions*

*(*Significant Revision)*

A. Development of the hurricane time element ~~hurricane~~ vulnerability functions shall be based on a combination of available insurance company hurricane claims data and rational engineering analysis supported by laboratory testing, field testing, or post-event site investigations.

B. The relationship between the hurricane ~~model~~ building and time element ~~hurricane~~ vulnerability functions shall be consistent with, and supported by, the relationship observed in insurance company hurricane claims data.

C. Hurricane ~~T~~time element ~~hurricane~~ vulnerability function development shall consider the estimated time required to repair or replace the property.

D. Hurricane ~~T~~time element ~~hurricane~~ vulnerability functions shall include hurricane time element ~~hurricane~~ losses associated with damage to the infrastructure caused by a hurricane.

Purpose: Hurricane ~~T~~time element ~~hurricane~~ vulnerability functions and hurricane losses are affected by various hurricane, building, and contents characteristics.

Insurance company hurricane time element ~~hurricane loss~~ claims data are a reasonable indicator of the appropriateness of hurricane time element ~~hurricane~~ vulnerability functions.

The documentation of the development of hurricane time element ~~hurricane~~ vulnerability functions with respect to the methods and sources, shall support the appropriateness of the hurricane time element ~~hurricane~~ vulnerability functions.

A reasonable representation of hurricane time element ~~hurricane~~ vulnerability is necessary to address policies that cover hurricane time element ~~hurricane~~ losses.

Policies can provide varying types of hurricane time element coverage and insurance policies may pay for hurricane time element claims irrespective of damage to the insured property.

Relevant Forms: G-4, Vulnerability Hurricane Standards Expert Certification
V-1, One Hypothetical Event
A-1, Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code
A-6, Logical Relationships to Hurricane Risk (Trade Secret Item)

Disclosures

~~1. Provide details of modifications to the time element vulnerability component of the hurricane model since the current accepted hurricane model.~~

~~2.~~1. Provide a high-level flowchart documenting the process by which the hurricane time element ~~hurricane~~ vulnerability functions are developed.

2. Provide a comprehensive technical description of the hurricane time element vulnerability functions, including theoretical basis, assumptions, data, methods, and processes used in the development of the hurricane time element vulnerability functions.

3. Provide details of modifications to the hurricane time element vulnerability functions ~~component of the hurricane model~~ since the current accepted hurricane model.

~~3. Describe the assumptions, data, methods, and processes used to develop the time element hurricane vulnerability functions.~~

4. Describe the basis, development, modeling, and treatment of uncertainties associated with the hurricane time element ~~hurricane~~ vulnerability functions.

5. Describe how hurricane time element ~~hurricane~~ vulnerability functions take into consideration damage to local and regional infrastructure.

6. Describe the relationship between hurricane building ~~structure~~ and time element ~~hurricane~~ vulnerability functions.

Audit

1. Supporting material for changes to the hurricane time element vulnerability ~~component~~ functions ~~changes~~ in Disclosure ~~1~~3 will be reviewed.

2. Comparisons of the modified hurricane time element ~~hurricane~~ vulnerability functions~~, if any,~~ with those in the current accepted hurricane model will be reviewed.

~~3. Justification for changes from the current accepted hurricane model in the relativities between hurricane vulnerability functions for building and the corresponding hurricane vulnerability functions for time element will be reviewed.~~

3. Justification and documentation ~~of~~ for the method of development, the underlying data, and assumptions ~~related to~~on which the hurricane time element ~~hurricane~~ vulnerability functions are based will be reviewed.

4. A detailed flowchart documenting the process by which the hurricane time element vulnerability functions are developed will be reviewed.

~~4.~~5. Multiple samples of hurricane time element ~~hurricane~~ vulnerability functions for wood frame, masonry, and manufactured homes construction classes will be reviewed.

~~5.~~6. The modeling of uncertainty associated with hurricane time element ~~hurricane~~ vulnerability functions for wood frame, masonry, and manufactured home construction classes will be reviewed.

~~6. Justification and documentation of the method of development, the underlying data, and assumptions related to time element hurricane vulnerability functions will be reviewed~~.

7. The goodness-of-fit of the hurricane time element vulnerability functions will be reviewed, including the combination of available insurance company hurricane claims data and rational engineering analysis to develop the hurricane time element vulnerability functions.

~~8. Support for the rational engineering analysis used in developing the time element hurricane vulnerability functions will be reviewed.~~

~~9. The combination of available insurance company hurricane claims data and rational engineering analysis to develop the time element hurricane vulnerability functions will be reviewed.~~

V-4 Hurricane Mitigation Measures and Secondary Characteristics*

*(*Significant Revision)*

A. Modeling of hurricane mitigation measures to improve a building's hurricane wind resistance, and the corresponding effects on hurricane vulnerability~~,~~ and associated uncertainties shall be theoretically sound and consistent with fundamental engineering principles. These measures shall include fixtures or construction techniques that affect the performance of the building and the damage to contents, and shall include:

- ***Roof strength***
- ***Roof covering performance***
- ***Roof-to-wall strength***
- ***Wall-to-floor-to-foundation strength***
- ***Opening protection***
- ***Window, door, and skylight strength~~.~~***

B. ~~The modeling organization shall justify a~~All hurricane mitigation measures and secondary characteristics considered by the hurricane model shall be justified.

C. Application of hurricane mitigation measures that affect the performance of the building and the damage to contents shall be justified as to the impact on reducing damage whether done individually or in combination.

D. Treatment of individual and combined secondary characteristics that affect the performance of the building and the damage to contents shall be justified.

Purpose: Hurricane mitigation measures are intended to eliminate or reduce hurricane damage in the modeled hurricane losses as they impact the performance of personal and commercial residential buildings under wind loading. Florida Statutes require rate filings to include, but not be limited to, the fixtures or construction techniques listed in ~~this~~ the 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 (e.g., braced gable end roof).

2. Enhanced roof covering performance (e.g., roof covering materials that comply with the current Florida Building Code).

3. Enhanced roof-to-wall strength (e.g., hurricane clips or straps, increased size or decreased spacing of nails in roof deck attachment).

4. Enhanced wall-to-floor-to-foundation strength (e.g., stronger anchor bolts or closer spacing of anchors).

5. Opening protection (e.g., shutter products).

6. Window, door (entry doors, garage doors, and sliding glass doors), and skylight strength (e.g., impact resistant glazing, entry doors, garage doors, and sliding glass doors of various strengths).

Mitigation measures and secondary characteristics are building characteristics in addition to primary characteristics that might affect building performance in a hurricane event under wind loading. Secondary characteristics include, but are not limited to:

1. Roof shape and strength,
2. Roof covering type and age,
3. Roof-to-wall connection,
4. Wall-to-floor-to-foundation connections, and
5. Opening strength and protection for windows, skylights, doors, and garage doors.

Relevant Forms: G-4, Vulnerability Hurricane Standards Expert Certification
G-6, Computer/Information Hurricane Standards Expert Certification
V-2, Hurricane Mitigation Measures and Secondary Characteristics, Range of Changes in Damage
V-3, Hurricane Mitigation Measures and Secondary Characteristics, Mean Damage Ratios and Hurricane Loss Costs (Trade Secret Item)
V-4, Differences in Hurricane Mitigation Measures and Secondary Characteristics
V-5, Differences in Hurricane Mitigation Measures and Secondary Characteristics, Mean Damage Ratios and Hurricane Loss Costs (Trade Secret Item)
A-6, Logical Relationships to Hurricane Risk (Trade Secret Item)

Disclosures

~~1. Provide details of modifications to hurricane mitigation measures and secondary characteristics in the hurricane model since the current accepted hurricane model.~~

1. Provide a high-level flowchart for calculating the impact of hurricane mitigation measures and secondary characteristics.

2. ~~Describe~~ Provide a comprehensive technical description of the hurricane mitigation measures and secondary characteristics vulnerability functions, including theoretical basis, assumptions, data, and the procedures used to calculate the impact of hurricane mitigation measures and secondary characteristics, including software, its identification, and current version. ~~Describe whether or not such procedures have been modified since the current accepted hurricane model.~~

~~1~~3. Provide details of modifications to hurricane mitigation measures and secondary characteristics ~~in the hurricane model~~vulnerability functions since the current accepted hurricane model.

~~3~~4.Provide completed Forms V-2 and V-4 in a Submission appendix. Provide ~~a~~ hyperlinks here to the location of the forms ~~in the submission appendix [insert hyperlink here]~~.

~~4~~5.Provide a description of the hurricane mitigation measures and secondary characteristics ~~used by~~implemented in the hurricane ~~model~~vulnerability functions, whether or not they are listed in Form V-2.

~~5~~6. Describe how hurricane mitigation measures and secondary characteristics are implemented in the hurricane ~~model~~vulnerability functions. ~~Identify any~~List major assumptions.

~~6~~7. Describe how the effects of multiple hurricane mitigation measures and secondary characteristics are combined in the hurricane ~~model~~ vulnerability functions and the process used to ensure that multiple hurricane mitigation measures and secondary characteristics are correctly combined.

~~7~~8. Describe how building and contents damage are affected by performance of hurricane mitigation measures and secondary characteristics. ~~Identify any~~List major assumptions.

~~8~~9. Describe how roof age and roof covering type are incorporated in the hurricane ~~model~~vulnerability functions.

~~9~~10. Describe how hurricane mitigation measures and secondary characteristics affect the uncertainty of the hurricane vulnerability functions. ~~Identify any~~List major assumptions.

~~10~~11. Provide completed Forms V-3 and V-5 in a Submission appendix if not considered as Trade Secret. Provide ~~a~~ hyperlinks here to the location of the forms ~~in the submission appendix [insert hyperlink here]~~.

~~11. Provide completed Form V-4. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~12. Provide completed Form V-5 if not considered as Trade Secret. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

Audit

1. Supporting material for changes in the hurricane mitigation measures and secondary characteristics vulnerability ~~component~~ functions ~~changes~~ in Disclosure ~~1~~3 will be reviewed.

2. Comparisons of the modified hurricane mitigation measures and secondary characteristics vulnerability functions~~, if any,~~ with those in the current accepted hurricane model will be reviewed.

3. Insurance company hurricane claims data, rational engineering analysis, or engineering judgment used to support the assumptions and implementation of the hurricane mitigation measures and secondary characteristics will be reviewed.

4. A detailed flowchart for calculating the impact of hurricane mitigation measures and secondary characteristics will be reviewed.

5. Hurricane mitigation measures and secondary characteristics included in the hurricane vulnerability functions~~used by the hurricane model~~, whether or not referenced in Form V-2 and Form V-3 will be reviewed for theoretical soundness and reasonability.

~~3~~6. Procedures~~, including software,~~ used to calculate the impact of hurricane mitigation measures and secondary characteristics and their implementation will be reviewed.

~~4. Form V-3 and Form V-5 will be reviewed.~~

~~5. Implementation of individual hurricane mitigation measures and secondary characteristics will be reviewed as well as~~

6. T~~t~~he effect of individual hurricane mitigation measures and secondary characteristics on damage will be reviewed.

~~4~~7.Trade Secret Forms V-3 and V-5 will be reviewed.

~~6~~8. Variations in the change in hurricane damage over the range of windspeeds for individual hurricane mitigation measures and secondary characteristics will be reviewed.

~~7.Insurance company hurricane claims data, rational engineering analysis, or engineering judgment used to support the assumptions and implementation of the hurricane mitigation measures and secondary characteristics will be reviewed.~~

~~8~~9.For each roof covering type used to complete Form V-2, the following will be reviewed:

~~a~~A. Roof age definition as considered in the ~~model~~hurricane building vulnerability functions, including assumptions,

~~b~~B. The association between roof age and year built, including assumptions,

~~c~~C. Variation in roof age assumptions (e.g., by region or ZIP Code), and

~~d~~D. The impact of roof age on loss costs.

~~9~~11. The methodology and ~~i~~implementation of multiple hurricane mitigation measures and secondary characteristics in the hurricane vulnerability functions will be reviewed.

12. The combined effects of ~~these~~ multiple hurricane mitigation measures and secondary characteristics on damage will be reviewed. Any variation in the change in hurricane damage over the range of windspeeds for multiple hurricane mitigation measures and secondary characteristics will be reviewed.

~~10. Hurricane mitigation measures and secondary characteristics used by the hurricane model, whether or not referenced in Form V-2 and Form V-3 will be reviewed for theoretical soundness and reasonability.~~

Form V-1: One Hypothetical Event

Purpose: This form illustrates the general behavior and reasonableness of building hurricane vulnerability functions for hypothetical windspeeds over hypothetical exposure data.

A. One or more automated programs or scripts shall be used to generate and format the data in Form V-1.

~~A.~~B. Windspeeds for 96 ZIP Codes and sample personal and commercial residential exposure data are provided in the file ~~named~~ *"FormV1Input~~23~~.xlsx."* The windspeeds and ZIP Codes represent a hypothetical hurricane track. Model the sample personal and commercial residential exposure data provided in the file against the~~se~~ windspeeds at the specified ZIP Codes, and provide the building and contents damage ratios and time element loss 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, manufactured 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 hurricane loss to all structures in the ZIP Codes subjected to that individual windspeed range, excluding demand surge and flood (including hurricane 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 hurricane loss to all structures of a specific type (wood frame, masonry, manufactured home, or concrete) in all of the windspeed ranges, excluding demand surge and flood (including hurricane storm surge). Subject Exposure is all exposures of that specific construction type in all of the ZIP Codes.

One reference structure for each of the construction types ~~is to~~shall be placed at the population centroid of the ZIP Codes. Do not include appurtenant structure, contents, or time element coverages in the building damage ratios. Do not include building, appurtenant structure, or time element coverages in the contents damage ratios. Do not include building, appurtenant structure, or contents coverages in the time element loss ratios.

Reference Frame Structure	Reference Masonry Structure
One story Unbraced gable end roof American Society for Testing and Materials (ASTM) D3161 Class D or ASTM D7158 Class D shingles 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 1995 Age of Roof Unknown	One story Unbraced gable end roof ASTM D3161 Class D or ASTM D7158 Class D shingles ½" plywood deck 6d nails, deck to roof members Weak truss to wall connection Masonry exterior walls No vertical wall reinforcing No shutters Standard glass windows No door covers No skylight covers Constructed in 1995 Age of Roof Unknown
Reference Manufactured Home Structure	**Reference Concrete Structure**
Tie downs Single unit Manufactured in 1980 Age of Roof Unknown	Twenty stories Eight apartment units per story No shutters Standard glass windows Constructed in 1980 Age of Roof Unknown

~~B~~C. Confirm that the structures used in completing the form are identical to those in the above table for the reference structures.

D. List assumptions necessary to complete Form V-1 (e.g., regarding structural characteristics, duration, ~~or~~ surface roughness). Provide the rationale and a detailed description of how the assumptions are ~~implemented~~reflected in the hurricane vulnerability functions.

~~C~~E. Provide separate plots of the Estimated Damage/Subject Exposure (*y*-axis) versus Windspeed (*x*-axis) for the Building, Contents, and Time Element data in Part A.

~~D~~F. Include Form V-1 in a ~~s~~Submission appendix.

Form V-1: One Hypothetical Event

Part A

Windspeed (mph, one-minute sustained 10-meter)	Estimated Building Damage/ Subject Building Exposure	Estimated Contents Damage/ Subject Contents Exposure	Estimated Time Element Loss/ Subject Time Element 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 Building Damage/ Subject Building Exposure	Estimated Contents Damage/ Subject Contents Exposure	Estimated Time Element Loss/ Subject Time Element Exposure
Wood Frame			
Masonry			
Manufactured Home			
Concrete			

Form V-2: Hurricane Mitigation Measures and Secondary Characteristics, Range of Changes in Damage

Purpose: This form illustrates the assessment of the impact of hurricane mitigation measures and secondary characteristics on building vulnerability functions when implemented individually or in combination at certain windspeeds.

A. One or more automated programs or scripts shall be used to generate and format the data in Form V-2.

~~A.~~B. Explain how the hurricane building vulnerability functions for the two reference structures are developed. Demonstrate that the hurricane building vulnerability function for each reference structure is related to one of the ~~hurricane model's~~ standard hurricane building ~~structure~~ vulnerability functions for frame and masonry constructions.

~~B.~~C. Place the reference building at the population centroid for ZIP Code 33921 in Lee County.

~~C.~~D. Provide the change in the zero deductible personal residential reference building damage ratio (not hurricane loss cost) for each individual hurricane mitigation measure and secondary characteristic listed in Form V-2, as well as for the combination of the four hurricane mitigation measures and secondary characteristics provided for the Mitigated Frame Building and the Mitigated Masonry Building ~~below~~.

~~D.~~E. List assumptions necessary to complete Form V-2, including those for membrane and metal roof covering, roof age, duration, and surface roughness. Provide the rationale and a detailed description of how the assumptions are ~~implemented~~reflected in the hurricane building vulnerability functions.

~~E.~~F. Provide an explanation for cells filled with "0" or blank cells.

~~F.~~G. Provide this form in Excel format without truncation. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also include Form V-2 in a ~~s~~Submission appendix.

Reference Frame Building	Reference Masonry Building
One story Unbraced gable end roof ASTM D3161 Class D or ASTM D7158 Class D shingles 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 1995 Age of Roof Unknown	One story Unbraced gable end roof ASTM D3161 Class D or ASTM D7158 Class D shingles ½" plywood deck 6d nails deck to roof members Weak truss to wall connection Masonry exterior walls No vertical wall reinforcing No shutters Standard glass windows No door covers No skylight covers Constructed in 1995 Age of Roof Unknown
Mitigated Frame Building	**Mitigated Masonry Building**
ASTM D7158 Class H shingles 8d nails deck to roof members Truss straps at roof Structural wood panel shutters Age of Roof <5 years	ASTM D7158 Class H shingles 8d nails deck to roof members Truss straps at roof Structural wood panel shutters Age of Roof <5 years

Form V-2: Hurricane Mitigation Measures and Secondary Characteristics, Range of Changes in Damage

INDIVIDUAL HURRICANE MITIGATION MEASURES AND SECONDARY CHARACTERISTICS			PERCENTAGE CHANGES IN DAMAGE ((REFERENCE DAMAGE RATIO - MITIGATED DAMAGE RATIO) / REFERENCE DAMAGE RATIO) * 100									
			FRAME BUILDING					MASONRY BUILDING				
			WINDSPEED (MPH)*					WINDSPEED (MPH)*				
			60	85	110	135	160	60	85	110	135	160
	REFERENCE BUILDING		—	—	—	—	—	—	—	—	—	—
ROOF CONFIGUR-ATION	BRACED GABLE ENDS											
	HIP ROOF											
ROOF COVERING	STANDING SEAM METAL PANEL											
	CORRUGATED METAL PANEL											
	ASTM D7158 CLASS H SHINGLES											
	CONCRETE/CLAY TILE											
	MEMBRANE											
ROOF SHEATHING	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	STRUCTURAL WOOD PANEL										
		METAL										
	DOOR AND SKYLIGHT COVERS											
WINDOW, DOOR, SKYLIGHT STRENGTH	WINDOWS	IMPACT RATED										
	ENTRY DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS										
	GARAGE DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS										
	SLIDING GLASS DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS										
	SKYLIGHT	IMPACT RATED										

HURRICANE MITIGATION MEASURES AND SECONDARY CHARACTERISTICS –IN COMBINATION	PERCENTAGE CHANGES IN DAMAGE ((REFERENCE DAMAGE RATIO - MITIGATED DAMAGE RATIO) / REFERENCE DAMAGE RATIO) * 100	
	FRAME BUILDING	MASONRY BUILDING
	WINDSPEED (MPH)*	WINDSPEED (MPH)*

	60	85	110	135	160	60	85	110	135	160
MITIGATED BUILDING										

**Windspeeds are one-minute sustained 10-meter.*

Form V-3: Hurricane Mitigation Measures and Secondary Characteristics, Mean Damage Ratios and Hurricane Loss Costs (Trade Secret Item)

Purpose: This form illustrates the assessment of the impact of hurricane mitigation measures and secondary characteristics on building vulnerability functions when implemented individually or in combination at certain windspeeds. The form also illustrates the underlying hurricane vulnerability functions and the hurricane loss costs for the reference and mitigated constructions.

A. One or more automated programs or scripts shall be used to generate and format the data in Form V-3.

~~A.~~B. Provide the mean damage ratio (without including any insurance considerations) to the reference building for each individual hurricane mitigation measure and secondary characteristic listed in Form V-3, as well as the percent damage for the combination of the four hurricane mitigation measures and secondary characteristics provided for the Mitigated Frame Building and the Mitigated Masonry Building ~~below~~.

~~B.~~C. Provide the zero deductible personal residential hurricane loss costs rounded to three decimal places, for the reference building and for each individual hurricane mitigation measure and secondary characteristic listed in Form V-3, as well as the hurricane loss costs for the combination of the four hurricane mitigation measures and secondary characteristics provided for the Mitigated Frame Building and the Mitigated Masonry Building ~~below~~.

~~C.~~D. Place the reference building at the population centroid for ZIP Code 33921 in Lee County.

~~D.~~E. List assumptions necessary to complete Form V-3, including those for membrane and metal roof covering, roof age, duration and surface roughness. Provide the rationale and a detailed description of how the assumptions are ~~implemented~~reflected in the hurricane building vulnerability functions.

~~E.~~F. Provide a graphical representation of the hurricane vulnerability curves for the reference buildings and the fully mitigated buildings.

~~F.~~G. If not considered as Trade Secret, provide this form in Excel format without truncation and in a ~~s~~Submission appendix. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name.

Reference Frame Building	Reference Masonry Building
One story Unbraced gable end roof ASTM D3161 Class D or ASTM D7158 Class D shingles 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 1995 Age of Roof Unknown	One story Unbraced gable end roof ASTM D3161 Class D or ASTM D7158 Class D shingles ½" plywood deck 6d nails deck to roof members Weak truss to wall connection Masonry exterior walls No vertical wall reinforcing No shutters Standard glass windows No door covers No skylight covers Constructed in 1995 Age of Roof Unknown
Mitigated Frame Building	**Mitigated Masonry Building**
ASTM D7158 Class H shingles 8d nails deck to roof members Truss straps at roof Structural wood panel shutters Age of Roof <5 years	ASTM D7158 Class H shingles 8d nails deck to roof members Truss straps at roof Structural wood panel shutters Age of Roof <5 years

Form V-3: Hurricane Mitigation Measures and Secondary Characteristics, Mean Damage Ratios and Hurricane Loss Costs (Trade Secret Item)

INDIVIDUAL HURRICANE MITIGATION MEASURES AND SECONDARY CHARACTERISTICS			MEAN DAMAGE RATIO										HURRICANE LOSS COSTS	
			FRAME BUILDING					MASONRY BUILDING					FRAME BUILDING	MASONRY BUILDING
			WINDSPEED (MPH)*					WINDSPEED (MPH)*					ACROSS ALL WINDSPEEDS*	
			60	85	110	135	160	60	85	110	135	160		
	REFERENCE BUILDING													
ROOF CONFIGUR-ATION	BRACED GABLE ENDS													
	HIP ROOF													
ROOF COVERING	STANDING SEAM METAL PANEL													
	CORRUGATED METAL PANEL													
	ASTM D7158 CLASS H SHINGLES													
	CONCRETE/CLAY TILE													
	MEMBRANE													
ROOF SHEATHING	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	STRUCTURAL WOOD PANEL												
		METAL												
	DOOR AND SKYLIGHT COVERS													
WINDOW, DOOR, SKYLIGHT STRENGTH	WINDOWS	IMPACT RATED												
	ENTRY DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS												
	GARAGE DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS												
	SLIDING GLASS DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS												
	SKYLIGHT	IMPACT RATED												

HURRICANE MITIGATION MEASURES AND SECONDARY CHARACTERISTICS IN COMBINATION	MEAN DAMAGE RATIO		HURRICANE LOSS COSTS	
	FRAME BUILDING	MASONRY BUILDING	FRAME BUILDING	MASONRY BUILDING

	WINDSPEED (MPH)*					WINDSPEED (MPH)*					ACROSS ALL WINDSPEEDS*	
	60	85	110	135	160	60	85	110	135	160		
MITIGATED BUILDING												

**Windspeeds are one-minute sustained 10-meter.*

Form V-4: Differences in Hurricane Mitigation Measures and Secondary Characteristics

Purpose: This form illustrates the impact of changes in the hurricane model of the hurricane mitigation measures and secondary characteristics from the current accepted hurricane model.

A. One or more automated programs or scripts shall be used to generate and format the data in Form V-4.

~~A~~B. Provide the differences between the values reported in Form V-2 relative to the equivalent data compiled from the current accepted hurricane model.

~~B~~C. List assumptions necessary to complete Form V-4, including those for membrane and metal roof covering, roof age, duration, and surface roughness.

~~C~~D. Provide a summary description of the differences.

~~D~~E. Provide this form in Excel format without truncation. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also include Form V-4 in a ~~s~~Submission appendix.

Form V-4: Differences in Hurricane Mitigation Measures and Secondary Characteristics

INDIVIDUAL HURRICANE MITIGATION MEASURES AND SECONDARY CHARACTERISTICS			DIFFERENCES FROM FORM V-2 RELATIVE TO CURRENT ACCEPTED HURRICANE MODEL									
			FRAME BUILDING					MASONRY BUILDING				
			WINDSPEED (MPH)*					WINDSPEED (MPH)*				
			60	85	110	135	160	60	85	110	135	160
	REFERENCE BUILDING		—	—	—	—	—	—	—	—	—	—
ROOF CONFIGUR-ATION	BRACED GABLE ENDS											
	HIP ROOF											
ROOF COVERING	STANDING SEAM METAL PANEL											
	CORRUGATED METAL PANEL											
	ASTM D7158 CLASS H SHINGLES											
	CONCRETE/CLAY TILE											
	MEMBRANE											
ROOF SHEATHING	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	STRUCTURAL WOOD PANEL										
		METAL										
	DOOR AND SKYLIGHT COVERS											
WINDOW, DOOR, SKYLIGHT STRENGTH	WINDOWS	IMPACT RATED										
	ENTRY DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS										
	GARAGE DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS										
	SLIDING GLASS DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS										
	SKYLIGHT	IMPACT RATED										

HURRICANE MITIGATION MEASURES AND SECONDARY CHARACTERISTICS– IN COMBINATION	DIFFERENCES FROM FORM V-2 RELATIVE TO CURRENT ACCEPTED HURRICANE MODEL									
	FRAME BUILDING					MASONRY BUILDING				
	WINDSPEED (MPH)*					WINDSPEED (MPH)*				
	60	85	110	135	160	60	85	110	135	160

MITIGATED BUILDING										

**Windspeeds are one-minute sustained 10-meter.*

Form V-5: Differences in Hurricane Mitigation Measures and Secondary Characteristics, Mean Damage Ratios and Hurricane Loss Costs (Trade Secret Item)

Purpose: This form illustrates the impact of changes in the hurricane model of the hurricane mitigation measures and secondary characteristics and the underlying hurricane loss costs for the reference and mitigated constructions from the current accepted hurricane model.

A. One or more automated programs or scripts shall be used to generate and format the data in Form V-5.

~~A.~~B. Provide the differences between the values reported in Form V-3 relative to the equivalent data compiled from the current accepted hurricane model.

~~B.~~C. List assumptions necessary to complete Form V-5, including those for membrane and metal roof covering, roof age, duration, and surface roughness.

~~C.~~D. Provide a summary description of the differences.

~~D.~~E. If not considered as Trade Secret, provide this form in Excel format and in a ~~s~~Submission appendix. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name.

Form V-5: Differences in Hurricane Mitigation Measures and Secondary Characteristics, Mean Damage Ratios and Hurricane Loss Costs (Trade Secret Item)

INDIVIDUAL HURRICANE MITIGATION MEASURES AND SECONDARY CHARACTERISTICS			DIFFERENCES FROM FORM V-3 RELATIVE TO CURRENT ACCEPTED HURRICANE MODEL											
			MEAN DAMAGE RATIO										HURRICANE LOSS COSTS	
			FRAME BUILDING					MASONRY BUILDING					FRAME BUILDING	MASONRY BUILDING
			WINDSPEED (MPH)*					WINDSPEED (MPH)*					ACROSS ALL WINDSPEEDS*	
			60	85	110	135	160	60	85	110	135	160		
	REFERENCE BUILDING													
ROOF CONFIGUR-ATION	BRACED GABLE ENDS													
	HIP ROOF													
ROOF COVERING	STANDING SEAM METAL PANEL													
	CORRUGATED METAL PANEL													
	ASTM D7158 CLASS H SHINGLES													
	CONCRETE/CLAY TILE													
	MEMBRANE													
ROOF SHEATHING	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	STRUCTURAL WOOD PANEL												
		METAL												
	DOOR AND SKYLIGHT COVERS													
WINDOW, DOOR, SKYLIGHT STRENGTH	WINDOWS	IMPACT RATED												
	ENTRY DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS												
	GARAGE DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS												
	SLIDING GLASS DOORS	MEETS WIND-BORNE DEBRIS REQUIREMENTS												
	SKYLIGHT	IMPACT RATED												

HURRICANE MITIGATION MEASURES AND SECONDARY CHARACTERISTICS IN COMBINATION	DIFFERENCES FROM FORM V-3 RELATIVE TO CURRENT ACCEPTED HURRICANE MODEL	
	MEAN DAMAGE RATIO	HURRICANE LOSS COSTS

	FRAME BUILDING					MASONRY BUILDING					FRAME BUILDING	MASONRY BUILDING
	WINDSPEED (MPH)*					WINDSPEED (MPH)*					ACROSS ALL WINDSPEEDS*	
	60	85	110	135	160	60	85	110	135	160		
MITIGATED BUILDING												

**Windspeeds are one-minute sustained 10-meter.*

A-~~4~~1 Modeled Hurricane Loss Cost and Hurricane Probable Maximum Loss Level Considerations*

*(*Significant Revision)*

A. The methods, data, and assumptions used in the estimation of hurricane loss costs and hurricane probable maximum loss levels shall be actuarially sound.

~~A.~~B. Hurricane loss cost projections and hurricane probable maximum loss levels shall not include expenses, risk load, investment income, premium reserves, taxes, assessments, or profit margin.

~~B.~~C. Hurricane loss cost projections and hurricane probable maximum loss levels shall not make a prospective provision for economic inflation.

~~C.~~D. Hurricane loss cost projections and hurricane probable maximum loss levels shall not include any explicit provision for direct flood losses (including those from hurricane storm surge).

~~D.~~E. Hurricane loss cost projections and hurricane probable maximum loss levels shall be capable of being calculated from exposures at a geocode (latitude and longitude) level of resolution.

~~E.~~F. Demand surge shall be included in the hurricane model~~'s~~ calculation of hurricane loss costs and hurricane probable maximum loss levels using relevant data and actuarially sound methods and assumptions.

G. For hurricane loss cost and hurricane probable maximum loss level estimates derived from and validated with historical insured hurricane losses, the assumptions in the derivations concerning (1) construction characteristics, (2) policy provisions, (3) coinsurance, and (4) contractual provisions shall be appropriate based on the type of risk being modeled.

Purpose: Hurricane loss costs and hurricane probable maximum loss levels are to be based on an actuarially sound methodology. The actuarial soundness resulting from compliance with the standard is particularly important to capital markets, insurers, reinsurers, and rating agencies that frequently use hurricane probable maximum loss levels.

The hurricane loss costs and hurricane probable maximum loss levels from the hurricane model shall reflect hurricane losses paid by the insurance company as insurance claims resulting from wind damage from an event as defined in ~~Hurricane~~ Standard A-~~2~~4.

Hurricane probable maximum loss levels can be either on an annual aggregate, an annual occurrence, or an event basis. All bases can be useful for understanding the hurricane loss distribution produced by the hurricane model.

Hurricane loss costs represent the expected annual hurricane loss per $1,000 of exposure. Other expense and profit loads such as those listed in ~~the standard~~ A-1.B may be included in insurance company rate filings, but are outside the scope of these standards ~~Commission~~.

Insured ~~H~~hurricane loss severity may be influenced by supply and demand factors applicable to material and labor costs. This is generally known as demand surge which occurs at the time of a large catastrophic event and is recognized as an important element for hurricane modeling.

Insured hurricane losses~~Insurance~~ may also be influenced (although perhaps differently from demand surge) by general price inflation. This is a type of economic inflation that is associated with past insured wind loss experience that has been used to develop and validate hurricane loss projection models. The standard does not allow for ~~prospective recognition of~~ future economic inflation or price inflation.

Relevant Forms: G-5, Actuarial Hurricane Standards Expert Certification
A-4, Hurricane Output Ranges
A-5, Percentage Change in Hurricane Output Ranges
A-8, Hurricane Probable Maximum Loss for Florida

Disclosures

1. Provide high-level flowcharts documenting the processes for calculating hurricane loss costs and hurricane probable maximum loss levels.

2. Provide a description of the hurricane model actuarial component, including processes used in calculating hurricane loss costs and hurricane probable maximum loss levels.

3. Provide details of modifications to the actuarial component of the hurricane model since the current accepted hurricane model.

~~1.~~4. Describe the method(s) used to estimate annual hurricane loss costs and hurricane probable maximum loss levels and the treatment of associated uncertainties. Identify any source documents used and any relevant research results.

~~2.~~5. Identify all possible resolutions available for the reported hurricane output ranges. Identify the finest level of resolution (i.e., the most granular level) for which hurricane loss costs and hurricane probable maximum loss levels can be provided.

~~3.~~6. Describe how the hurricane model incorporates demand surge in the calculation of hurricane loss costs and hurricane probable maximum loss levels.

~~4.~~7. Provide citations to published papers~~, if any,~~ or modeling-organization studies that were used to develop how the hurricane model estimates demand surge in a Submission appendix (see Standard G-1 Disclosure 5).

~~5~~8. Describe how economic inflation has been applied to past insurance experience to develop and validate hurricane loss costs and hurricane probable maximum loss levels.

9. Describe the calculation of uncertainty intervals in Form A-8.

~~11. Describe how the hurricane model produces hurricane probable maximum loss levels.~~

~~12~~10. Provide citations to published scientific literature and technical literature~~, if any,~~ or modeling-organization studies that were used to estimate hurricane probable maximum loss levels in a Submission appendix (see Standard G-1 Disclosure 5).

Audit

1. Supporting material for the ~~financial~~actuarial component changes in Disclosure ~~1~~3 will be reviewed.

2. Detailed flowcharts documenting the processes for calculating hurricane loss costs and hurricane probable maximum loss levels will be reviewed.

3. The vintage of actuarial-related data, code, scientific literature, and technical literature used will be reviewed as encountered.

~~2.~~4. The data and methods used for hurricane probable maximum loss levels for Form A-8 will be reviewed. ~~The hurricane associated with the Top Events~~An Excel spreadsheet of 5,000 years descending from the maximum annual loss (corresponding to Form A-8) showing the value of each event separately will be reviewed.

~~3~~5. The frequency distribution and the individual event severity distribution, or information about the formulation of events, underlying Form A-8 will be reviewed.

~~1.~~6. The hurricane model's handling of expenses, risk load, investment income, premium reserves, taxes, assessments, profit margin, economic inflation, and any criteria other than direct residential property insurance company hurricane claim payments will be reviewed.

~~2.~~7. The method of determining hurricane probable maximum loss levels will be reviewed.

~~3~~8. The uncertainty in the estimated annual hurricane loss costs (Form A-4) ~~and hurricane probable maximum loss levels~~ will be reviewed. ~~The d~~Details on the calculation of uncertainty intervals in Form A-8 and their justification will be reviewed.

~~4~~9. The data and methods used to incorporate individual aspects of demand surge on personal and commercial residential hurricane losses, inclusive of the effects from building material costs, labor costs, contents costs, and repair time will be reviewed. The vintage of the underlying demand surge data and references will be reviewed.

~~5~~10. The treatment of economic inflation and the claims and legal environments (social inflation) will be reviewed.

~~6~~11. The treatment of flood losses (including hurricane storm surge) in the determination of modeled hurricane losses will be reviewed.

~~G-4~~A-2 Independence of Hurricane Model Components*

*(*Significant Revision)*

The meteorology, vulnerability, and actuarial components of the hurricane model shall each be theoretically sound without compensation for potential bias from other components.

Purpose: The primary components of the hurricane model shall be individually sound and operate independently. In other words, the hurricane model shall not allow adjustments to one component to compensate for deficiencies in other components (compensation which could inflate or reduce hurricane loss costs and hurricane probable maximum loss levels). A hurricane model would not meet this standard if an unjustifiable calibration or adjustment has been made to improve the match between hurricane model output and the Model Base Hurricane Set for a specific hurricane.

In addition to each component of the hurricane model meeting its respective standards, the interrelationship of the hurricane model components as a whole shall be reasonable, logical, and justifiable.

Relevant Form: G-~~1~~5, ~~General~~Actuarial Hurricane Standards Expert Certification

Audit

1. The hurricane model components will be reviewed for adequately portraying hurricane phenomena and effects (damage, hurricane loss costs, and hurricane probable maximum loss levels) ~~in the course of the on-site review~~ as encountered. Attention will be paid to an assessment of ~~(1)~~ the theoretical soundness of each component~~, (2)~~ and the basis of the integration of each component into the hurricane model~~, and (3) consistency between the results of one component and another~~.

~~2. All changes in the hurricane model since the previous submission that might impact the independence of the hurricane model components will be reviewed.~~

~~G~~A-3 Insured Exposure ~~Location~~*

*(*Significant Revision)*

A. ZIP Codes used in the hurricane model shall not differ from the United States Postal Service publication date by more than 24 months at the date of submission of the hurricane model. ZIP Code information shall originate from the United States Postal Service.

B. ZIP Code centroids, when used in the hurricane model, shall be based on population data.

C. ZIP Code information purchased ~~by the modeling organization~~from a third-party vendor shall be verified by the modeling organization for accuracy and appropriateness.

D. If any hurricane model components are dependent on ZIP Code databases, a logical process shall be maintained for ensuring these components are consistent with the recent ZIP Code database updates.

E. Geocoding of the exposure location ~~methodology~~ shall be justified.

Purpose: 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 hurricane loss costs and hurricane probable maximum loss levels.

Accurate insured exposure locations are necessary for projecting hurricane loss costs and hurricane probable maximum loss levels. Hurricane model outputs, including hurricane loss costs, are sensitive to insured exposure locations. Appropriate methods must be used when converting street addresses to geocode locations (latitude and longitude).

Relevant Forms: G-~~1~~5, ~~General~~ Actuarial Hurricane Standards Expert Certification
G-6, Computer/Information Hurricane Standards Expert Certification
A-1, Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code
A-3, Hurricane Losses
V-1, One Hypothetical Event

Disclosures

1. Provide a description of the geographic information system (GIS) software and tools used for geocoding.

2. List and provide a brief description of the current ZIP Code databases used by the hurricne model and the related hurricane model components ~~to which they relate~~. Provide the effective (official United States Postal Service) dates corresponding to the ZIP Code databases.

3. Describe in detail how invalid ZIP Codes are handled.

4. Describe the data, methods, and process used in the hurricane model to convert among street addresses, geocode locations (latitude and longitude), and ZIP Codes.

~~5. List and provide a brief description of each hurricane model ZIP Code-based database (e.g., ZIP Code centroids).~~

~~6.~~5. Describe the process for updating hurricane model ZIP Code-based databases.

Audit

1. Geographic displays for all ZIP Codes will be reviewed.

2. ~~Geographic comparisons of previous to current locations~~A table of the top ten ZIP Code centroid~~s~~ movements from the current accepted model and geographic displays of the movements will be reviewed.

3. Third party vendor information, if applicable, and a complete description of the process used to validate ZIP Code information will be reviewed.

4. The treatment of ZIP Code centroids over water or other uninhabitable terrain will be reviewed.

5. Examples of geocoding for complete and incomplete street addresses will be reviewed.

6. Examples of latitude and longitude to ZIP Code conversions will be reviewed.

~~7. Hurricane model ZIP Code-based databases will be reviewed.~~

A-~~2~~4 Hurricane Events Resulting in Modeled Hurricane Losses*

*(*Significant Revision)*

A. Modeled hurricane loss costs and hurricane probable maximum loss levels shall reflect all insured wind related damages from hurricanes that produce minimum damaging windspeeds or greater on land in Florida.

B. The modeling organization shall have a documented procedure for distinguishing wind-related hurricane losses from other peril losses.

Purpose: Hurricane loss costs and hurricane probable maximum loss levels shall reflect the hurricane losses insurers pay as a result of a hurricane.

Hurricane loss costs and hurricane probable maximum loss levels shall only include insured wind-related hurricane losses and time element hurricane losses in Florida resulting from an event modeled as a hurricane consistent with s. 627.4025, F.S. The event shall include all such insured wind-related damage caused by a hurricane that makes landfall ~~on~~ in Florida as a hurricane or by~~-~~passes Florida as a hurricane and comes close enough to cause damaging winds in Florida.

Relevant Forms: G-5, Actuarial Hurricane Standards Expert Certification
A-1, Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code
A-2, Model Base Hurricane Set Statewide Hurricane Losses
A-3, Hurricane Losses
A-4, Hurricane Output Ranges
A-5, Percentage Change in Hurricane Output Ranges
A-6, Logical Relationships to Hurricane Risk (Trade Secret Item)
A-8, Hurricane Probable Maximum Loss for Florida

Disclosures

1. Describe how damage from hurricane model generated storms (landfalling and by~~-~~passing hurricanes) is excluded or included in the calculation of hurricane loss costs and hurricane probable maximum loss levels for Florida.

2. Describe how damage resulting from concurrent or preceding flood (including hurricane storm surge) is treated in the calculation of hurricane loss costs and hurricane probable maximum loss levels for Florida.

Audit

1. The hurricane model will be reviewed to evaluate whether the determination of hurricane losses and hurricane probable maximum loss levels ~~in the hurricane model is~~are consistent with this standard.

2. The documented procedure for distinguishing hurricane wind-only losses from other peril losses will be reviewed.

~~2.~~3. The hurricane model will be reviewed to determine that by~~-~~passing hurricanes and their effects are considered in a manner that is consistent with this standard.

~~3.~~4. The hurricane model will be reviewed to determine ~~whether and~~ how the hurricane model takes into account any damage resulting directly and solely from flood (including hurricane storm surge).

~~4.1. The documented procedure for distinguishing hurricane wind-only losses from other peril losses will be reviewed.~~

A-~~1~~5 Hurricane Model Input Data and Output Reports*

*(*Significant Revision)*

A. Adjustments, edits, inclusions, or deletions to insurance company or other input data used by the modeling organization shall be based upon generally accepted actuarial, underwriting, and statistical procedures.

B. All modifications, adjustments, assumptions, inputs and input file identification, and defaults necessary to use the hurricane model shall be actuarially sound and shall be included with the hurricane model output report.

C. Treatment of missing values for user inputs required to run the hurricane model shall be actuarially sound and described with the hurricane model output report.

Purpose: Modeled hurricane loss costs and hurricane probable maximum loss levels rely on certain ~~insurer~~ insurance company input data assumptions. Implicit assumptions may or may not be appropriate for a given entity using the hurricane model, depending on the circumstances.

Different hurricane modeling approaches may require different input data.

Compliance with this standard will be readily demonstrated through documented rules and procedures.

Relevant Form: G-5, Actuarial Hurricane Standards Expert Certification

Disclosures

1. Identify insurance-to-value assumptions and describe the methods and assumptions used to determine the property value and associated hurricane losses. Provide a sample calculation for determining the property value.

2. Identify depreciation assumptions and describe the methods and assumptions used to reduce insured hurricane losses on account of depreciation. Provide a sample calculation for determining the amount of depreciation and the actual cash value (ACV) hurricane losses.

3. Describe the methods and input data used to distinguish among policy form types (e.g., homeowners, dwelling property, manufactured homes, tenants, condo unit owners) and their deductibles and coverage limits.

4. Provide a copy of the input form(s) used by the hurricane model with the ~~hurricane model~~ options available for selection by the user for the ~~Florida~~ hurricane model under review. Describe the process followed by the user to generate the hurricane model output produced from the input form. Include the hurricane model name, version identification,

and platform identification on the input form. All items included in the input form shall be clearly labeled and defined.

5. Disclose, in a hurricane model output report, the specific inputs required to use the hurricane model, and the options of the hurricane model selected for use in a residential property insurance rate filing in Florida. Include the hurricane model name, version identification, and platform identification on the hurricane model output report. All items included in the hurricane model output report shall be clearly labeled~~, highlighted,~~ and defined.

6. Provide the specific set of options acceptable for use in preparing a Florida residential property insurance rate filing.

7. Describe ~~actions performed~~the process employed to ensure the validity of insurer or other input data used for hurricane model inputs or for validation/verification.

8. Disclose if changing the order of the hurricane model input exposure data produces different hurricane model output or results.

9. Disclose if removing or adding policies from the hurricane model input file affects the hurricane model output or results for the remaining policies.

Audit

1. Quality assurance procedures, including methods to assure accuracy of insurance company or other input data, will be reviewed. ~~Compliance with this standard will be readily demonstrated through documented rules and procedures.~~

2. All hurricane model inputs and assumptions will be reviewed to determine that the hurricane model output report appropriately discloses all modifications, adjustments, assumptions, and defaults used to produce the hurricane loss costs and hurricane probable maximum loss levels.

~~3. The hurricane model input forms used to capture data distinguishing among policy form types and their risk elements including location, deductibles, and limits of coverage will be reviewed.~~

~~4~~3. A live demonstration of t~~T~~he human-computer interface relevant to input data and output reports and corresponding nomenclature used ~~in~~ for Florida residential property insurance rate filings ~~will be reviewed~~shall be given.

A-~~3~~6 Hurricane Coverages*

(Significant Revision)

A. The methods used in the calculation of building hurricane loss costs, including the effect of law and ordinance coverage, shall be actuarially sound.

B. The methods used in the calculation of appurtenant structure hurricane loss costs shall be actuarially sound.

C. The methods used in the calculation of contents hurricane loss costs shall be actuarially sound.

D. The methods used in the calculation of time element hurricane loss costs shall be actuarially sound.

Purpose: A reasonable representation of building, appurtenant structure, contents, and time element hurricane losses is necessary in order to address policies that principally cover building, appurtenant structure, contents, and time element, such as tenants and condo unit owners policies.

Relevant Form: G-5, Actuarial Hurricane Standards Expert Certification

Disclosures

1. Describe the methods used in the hurricane model to calculate hurricane loss costs for building coverage associated with personal and commercial residential properties.

2. Describe the methods used in the hurricane model to calculate hurricane loss costs for appurtenant structure coverage associated with personal and commercial residential properties.

3. Describe the methods used in the hurricane model to calculate hurricane loss costs for contents coverage associated with personal and commercial residential properties.

4. Describe the methods used in the hurricane model to calculate hurricane loss costs for time element coverage associated with personal and commercial residential properties.

5. Describe the methods used in the hurricane model to account for law and ordinance coverage associated with personal residential properties.

6. Describe how the hurricane probable maximum loss levels produced by the hurricane model include the effects of personal and commercial residential insurance coverage.

7. Identify the assumptions used to account for the effects of coinsurance on commercial residential hurricane loss costs.

Audit

1. The methods used to produce building, appurtenant structure, contents, and time element hurricane loss costs will be reviewed.

2. The treatment of law and ordinance coverage will be reviewed, including the statutory required 25% and 50% coverage options for personal residential policies.

A-~~5~~7 Hurricane Policy ~~Conditions~~Limits and Deductibles*

*(*Significant Revision)*

A. The methods used in the development of mathematical ~~distributions~~ models to reflect the effects of deductibles, ~~and~~ policy limits, and policy exclusions shall be actuarially sound.

B. Deductible hurricane loss costs shall be calculated in accordance with s. 627.701(5)(a), F.S., and shall be actuarially sound.

~~B.~~C. The relationship among the modeled deductibles for hurricane loss costs shall be reasonable.

~~***C. Deductible hurricane loss costs shall be calculated in accordance with s. 627.701(5)(a), F.S.***~~

Purpose: For a given windspeed and building type, hurricane losses may fall below the deductible or above the policy limit. Therefore, the distribution of hurricane losses is important.

The determination of insurance coverage for a commercial residential policy is dependent upon the contractual responsibility of the condo unit owner or condo unit renter and that of the condominium association and the building owner. It is important that these responsibilities be appropriately accounted for in modeling hurricane loss cost projections and commercial residential hurricane probable maximum loss levels.

Relevant Forms: G-5, Actuarial Hurricane Standards Expert Certification
A-4, Hurricane Output Ranges
A-5, Percentage Change in Hurricane Output Ranges
A-6, Logical Relationships to Hurricane Risk (Trade Secret Item)

Disclosures

1. Describe the methods used in the hurricane model to treat deductibles (both flat and percentage), policy limits, and insurance-to-value criteria when projecting hurricane loss costs and hurricane probable maximum loss levels. Discuss data or documentation used to validate the method used by the hurricane model.

2. Describe if and how the hurricane model treats policy exclusions and loss settlement provisions.

3. Describe how the hurricane model treats annual hurricane deductibles.

Audit

1. The extent that insurance company hurricane claims data are used to develop mathematical ~~depictions~~ models of deductibles, policy limits, policy exclusions, and loss settlement provisions will be reviewed.

2. The extent that insurance company hurricane claims data are used to validate the hurricane model results will be reviewed.

3. Treatment of annual hurricane deductibles will be reviewed.

4. Justification for the changes from the current accepted hurricane model in the relativities among corresponding deductible amounts for the same coverage will be reviewed.

A-~~6~~8 Hurricane Loss Outputs and Logical Relationships to Risk*

*(*Significant Revision)*

~~***A. The methods, data, and assumptions used in the estimation of hurricane loss costs and hurricane probable maximum loss levels shall be actuarially sound.***~~

~~***B***~~***A.*** ***Hurricane loss costs shall not exhibit an illogical relation to risk, nor shall hurricane loss costs exhibit a significant change when the underlying risk does not change significantly.***

~~***C***~~***B.*** ***Hurricane loss costs produced by the hurricane model shall be positive and non-zero for all valid Florida ZIP Codes.***

~~***D***~~***C.*** ***Hurricane loss costs cannot increase as the quality of construction type, materials, and workmanship increases, all other factors held constant.***

~~***E***~~***D.*** ***Hurricane loss costs cannot increase as the presence of fixtures or construction techniques designed for hazard mitigation increases, all other factors held constant.***

~~***F***~~***E.*** ***Hurricane loss costs cannot increase as the wind resistant design provisions increase, all other factors held constant.***

~~***G***~~***F.*** ***Hurricane loss costs cannot increase as building code enforcement increases, all other factors held constant.***

~~***H***~~***G.*** ***Hurricane loss costs shall decrease as deductibles increase, all other factors held constant.***

~~***I***~~***H.*** ***The relationship of hurricane loss costs for individual coverages (e.g., building, appurtenant structure, contents, and time element) shall be consistent with the coverages provided.***

~~***J***~~***I.*** ***Hurricane output ranges shall be logical for the type of risk being modeled and apparent deviations shall be justified.***

~~***a.***~~***J.*** ***All other factors held constant, hurricane output ranges produced by the hurricane model shall in general reflect lower hurricane loss costs for:***

1. ***masonry construction versus frame construction,***
2. ***personal residential risk exposure versus manufactured home risk exposure,***
4. ***inland counties versus coastal counties,***
5. ***northern counties versus southern counties, and***
6. ***newer construction versus older construction.***

~~*B.1.For hurricane loss cost and hurricane probable maximum loss level estimates derived from and validated with historical insured hurricane losses, the assumptions in the derivations concerning (1) construction characteristics, (2) policy provisions, (3) coinsurance, and (4) contractual provisions shall be appropriate based on the type of risk being modeled.*~~

Purpose: ~~Hurricane loss costs and hurricane probable maximum loss levels are to be based on an actuarially sound methodology. The actuarial soundness resulting from compliance with the standard is particularly important to capital markets, insurers, reinsurers, and rating agencies that frequently use hurricane probable maximum loss levels.~~

Modeled hurricane loss costs ~~shall~~ vary according to risk. If the risk of loss due to hurricanes is higher for one area or building type, then the hurricane loss costs shall also be higher. Likewise, if there is no difference in risk, there shall be no difference in hurricane loss costs. Hurricane loss costs not having these properties do not have a logical relationship to risk.

Changes to the hurricane output ranges resulting from ~~R~~revisions to the hurricane model ~~lead to changes in the hurricane output ranges which are to~~shall be reasonable. This standard requires that the impacts on ~~the~~ hurricane loss costs ~~are~~ be attributable to ~~the~~ revisions to the hurricane model.

Relevant Forms:
- G-5, Actuarial Hurricane Standards Expert Certification
- M-2, Maps of Maximum Sustained Windspeed
- S-2, Examples of Hurricane Loss Exceedance Estimates
- S-5, Average Annual Zero Deductible Statewide Hurricane Loss Costs
- A-1, Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code
- A-2, Model Base Hurricane Set Statewide Hurricane Losses
- A-3, Hurricane Losses
- A-4, Hurricane Output Ranges
- A-5, Percentage Change in Hurricane Output Ranges
- A-6, Logical Relationships to Hurricane Risk (Trade Secret Item)
- A-8, Hurricane Probable Maximum Loss for Florida

Disclosures

~~1. Provide details of modifications to the financial component of the hurricane model since the current accepted hurricane model.~~

~~2~~1. Provide completed Forms A-1 and A-3 in both Excel and PDF format. ~~Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~3~~2. Provide completed Forms A-2, A-4, A-5, and A-8 in a Submission appendix. Provide a hyperlink here to the location of the forms ~~in the submission appendix [insert hyperlink here]~~.

~~4. Provide completed Form A-3. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~5. Provide completed Form A-4. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~6. Provide completed Form A-5 using the 2017 FHCF exposure data. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~7.~~3. Provide completed Form A-6 in a Submission appendix if not considered as Trade Secret. Provide a hyperlink here to the location of the form ~~in the submission appendix [insert hyperlink here]~~.

~~8.~~4. ~~Explain any assumptions, deviations, and differences from the prescribed exposure information in Form A-6. Explain how the treatment of unknown is handled in each sensitivity exhibit.~~

~~9. Provide completed Form A-8. Provide a link to the location of the form in the submission appendix [insert hyperlink here].~~

~~10. Describe the calculation of uncertainty intervals.~~

~~11. Describe how the hurricane model produces hurricane probable maximum loss levels.~~

~~12. Provide citations to published scientific literature and technical literature, if any, or modeling organization studies that were used to estimate hurricane probable maximum loss levels.~~

~~13. Describe how the hurricane probable maximum loss levels produced by the hurricane model include the effects of personal and commercial residential insurance coverage.~~

~~14~~4. Explain any differences between the values provided in Form A-8, Part A and those provided in Form S-2 using the ~~2017~~ 2023 FHCF exposure data.

~~15~~5. Explain any differences between the values provided in Form A-8, Part B and those provided in Form S-2 using the ~~2023~~ 2025 FHCF exposure data.

~~16~~6. Provide an explanation for all hurricane loss costs that are not consistent with the requirements of this standard.

~~17~~7. Provide an explanation of the differences in hurricane output ranges between the current accepted hurricane model and the hurricane model under review using the 2023 FHCF exposure data.

~~18. Identify the assumptions used to account for the effects of coinsurance on commercial residential hurricane loss costs.~~

Audit

~~1. Supporting material for the financial component changes in Disclosure 1 will be reviewed.~~

~~2. The data and methods used for hurricane probable maximum loss levels for Form A-8 will be reviewed. The hurricane associated with the Top Events will be reviewed.~~

~~3. The frequency distribution and the individual event severity distribution, or information about the formulation of events, underlying Form A-8 will be reviewed.~~

~~4~~1. Graphical representations of hurricane loss costs by ZIP Code and county will be reviewed.

~~5~~2. Color ~~coded~~ maps, using the Model Base Hurricane Set, depicting the effects of land friction on hurricane loss costs by ZIP Code will be reviewed.

~~6~~3. The procedures used by the modeling organization to verify the individual hurricane loss cost relationships will be reviewed. Methods (including any software) used in verifying ~~Hurricane~~ Standard A-~~6~~ 8 will be reviewed.

~~7~~4.The hurricane loss cost relationships among deductible, ~~policy form, construction type, coverage,~~ year of construction, building strength, number of stories, territory, and region will be reviewed. Apparent reversals in the hurricane output ranges and their justification will be reviewed.

~~8~~5. Justification for all changes in hurricane loss costs from the current accepted hurricane model based on the 2023 FHCF exposure data will be reviewed.

~~9. Apparent reversals in the hurricane output ranges and their justification will be reviewed.~~

~~10.The details on the calculation of uncertainty intervals and their justification will be reviewed.~~

6. Trade Secret Form A-6 will be reviewed.

Form A-1: Zero Deductible Personal Residential Hurricane Loss Costs by ZIP Code

Purpose: This form and the associated maps illustrate the range and variation by ZIP Code of zero deductible hurricane loss costs across Florida separately for frame owners, masonry owners, and manufactured homes.

A. One or more automated programs or scripts shall be used to assist in ~~generate~~ generation and ~~arrange~~ formatting the data in Form A-1.

B. Provide three maps, color-coded by ZIP Code (with a minimum of seven value ranges), displaying zero deductible personal residential hurricane loss costs per $1,000 of exposure for frame owners, masonry owners, and manufactured homes.

C. Provide, in the format given in the file ~~named~~ *~~"2023FormA1~~2025FormA1.xlsx,"* in both Excel and PDF format, the underlying hurricane loss cost data, rounded to three decimal places, used ~~for~~ to generate the maps in B. ~~above.~~ The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name.

D. Create exposure sets ~~for the exhibits~~ by modeling the frame owners, masonry owners, and manufactured homes ~~from Notional Set 3, described in the file *"NotionalInput23.xlsx,"*~~ given in the table below, geocoded to each ZIP Code centroid in the state, as provided in the hurricane model. Provide the ~~pre~~dominant county name and the Federal Information Processing Standards (FIPS) code (*Figure ~~12~~11)* associated with each ZIP Code centroid. Refer to the Notional Hurricane Policy Specifications ~~below~~ following G. for additional modeling information.

Construction	Year Built	Number of Stories	Roof Details	Opening Protection	Limit A	Limit B	Limit C	Limit D	Deductible
Frame	1989	1	Unknown	Unknown	100,000	10,000	50,000	20,000	0%
Masonry	1989	1	Unknown	Unknown	100,000	10,000	50,000	20,000	0%
Manufactured Homes	1989	1	Unknown	Unknown	50,000	5,000	25,000	10,000	0%

~~D.~~E. Explain any assumptions, deviations, and differences from the prescribed exposure information.

~~E~~F. Describe how ~~L~~law and ~~O~~ordinance is included in the hurricane loss cost data.

~~F~~G. List assumptions necessary to complete Form A-1. Provide the rationale and a detailed description of how the assumptions are ~~implemented~~reflected in the hurricane model.

~~*Figure 12* 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~~	~~DeSoto~~	~~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 obtained from the Federal Information Processing Standards (FIPS) Codes.~~

Notional Hurricane Policy Specifications

Policy Type | **Assumptions**

Owners

Coverage A = Building
- Replacement Cost included subject to Coverage A limit
- Law and Ordinance included*

*If data are not available, 25% shall be assumed

Coverage B = Appurtenant Structure
- Replacement Cost included subject to Coverage B limit
- Law and Ordinance included*

*If data are not available, 25% shall be assumed

Coverage C = Contents
- Replacement Cost included subject to Coverage C limit

Coverage D = Time Element
- Time limit = 12 months
- Per diem = $300/day per policy, if used

✧ Hurricane loss costs per $1,000 shall be related to the Coverage A limit

Manufactured Homes

Coverage A = Building
- Replacement Cost included subject to Coverage A limit

Coverage B = Appurtenant Structure
- Replacement Cost included subject to Coverage B limit

Coverage C = Contents
- Replacement Cost included subject to Coverage C limit

Coverage D = Time Element
- Time limit = 12 months
- Per diem = $300/day per policy, if used

✧ Hurricane loss costs per $1,000 shall be related to the Coverage A limit

Form A-2: Model Base Hurricane Set Statewide Hurricane Losses

Purpose: This form illustrates the modeling organization's ability to reasonably replicate ~~reasonably~~ historical hurricane losses for landfalling and by-passing Florida hurricanes.

A. One or more automated programs or scripts shall be used to generate and format the data in Form A-2.

~~A.~~B. Provide the total insured hurricane loss assuming zero deductible policies for individual historical hurricanes using the ~~2017~~ 2023 FHCF exposure data and the ~~2023~~ 2025 FHCF exposure data. The list of hurricanes in this form shall include all Florida and by-passing hurricanes in the Model Base Hurricane Set.

The table below contains the hurricanes from the Reference Hurricane Set. The modeling organization shall populate the table with its Model Base Hurricane Set. Each hurricane from the Reference Hurricane Set has been assigned an ID number. Additional hurricanes included in the Model Base Hurricane Set, if any, shall be added to the table in order of year and assigned an intermediate ID number within the bounding ID numbers. For hurricanes resulting in zero loss, the table entry shall be left blank.

As defined, a by-passing (ByP) hurricane ~~(ByP)~~ is a hurricane which does not make landfall ~~on~~ in Florida, but produces minimum damaging windspeeds or greater on Florida. For the by-passing hurricanes included in the table only, the hurricane ~~intensity~~ category entered is based upon the maximum sustained windspeed at closest approach to Florida as a hurricane, not the windspeed over Florida.

~~B.~~C. List assumptions necessary to complete Form A-2. Provide the rationale and a detailed description of how the assumptions are ~~implemented~~reflected in the hurricane model.

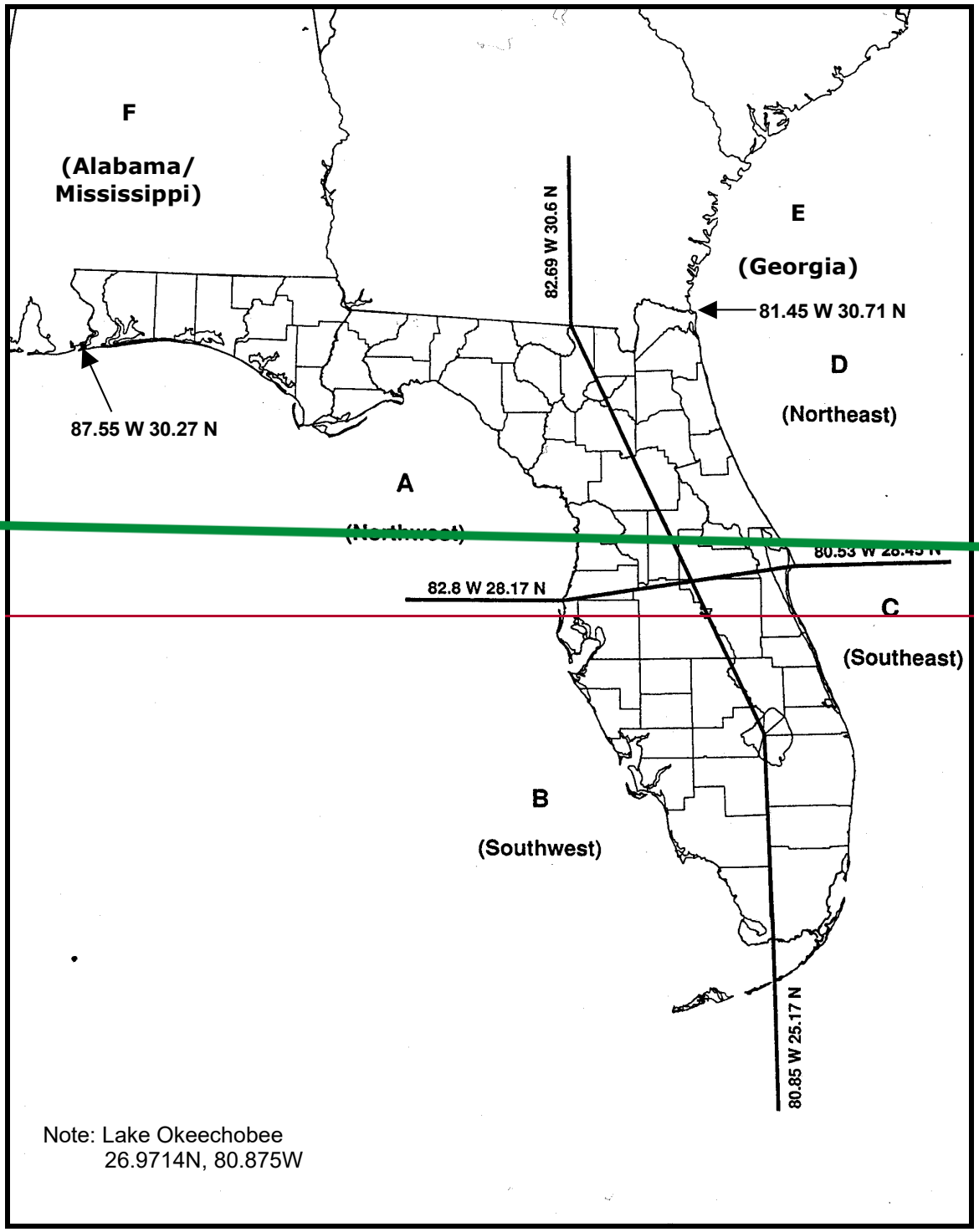
~~C.~~D. Provide this form in Excel format. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also include Form A-2 in a ~~s~~Submission appendix.

ID	Hurricane Landfall/ Closest Approach Date	Year	Name	Region as defined in *Figure 1* - Category	Personal and Commercial Residential Insured Hurricane Losses ($) ~~2017~~ 2023 FHCF Exposure Data	Personal and Commercial Residential Insured Hurricane Losses ($) ~~2023~~ 2025 FHCF Exposure Data
005	08/15/1901	1901	NoName04-1901	F-1		
010	09/11/1903	1903	NoName03-1903	C-1/A-1		
015	10/17/1904	1904	NoName04-1904	C-1		
020	06/17/1906	1906	NoName02-1906	B-1/C-1		
025	09/27/1906	1906	NoName06-1906	F-2/ByP-2		
030	10/18/1906	1906	NoName08-1906	B-3/C-3		
035	10/11/1909	1909	NoName11-1909	B-3		
040	10/18/1910	1910	NoName05-1910	B-2		
045	08/11/1911	1911	NoName02-1911	A-1		
050	09/14/1912	1912	NoName04-1912	F-1/ByP-1		
055	08/01/1915	1915	NoName01-1915	D-1		
060	09/04/1915	1915	NoName04-1915	A-1		
065	07/05/1916	1916	NoName02-1916	F-3/ByP-3		
070	10/18/1916	1916	NoName14-1916	A-2		
075	09/29/1917	1917	NoName04-1917	A-3		
080	09/10/1919	1919	NoName02-1919	B-4		
085	10/25/1921	1921	TampaBay06-1921	B-3		
090	09/15/1924	1924	NoName05-1924	A-1		
095	10/21/1924	1924	NoName10-1924	B-1		
100	07/28/1926	1926	NoName01-1926	D-2		
105	09/18/1926	1926	GreatMiami07-1926	C-4/A-3		
110	10/21/1926	1926	NoName10-1926	ByP-3		
115	08/08/1928	1928	NoName01-1928	C-2		
120	09/17/1928	1928	LakeOkeechobee04-1928	C-4		
125	09/28/1929	1929	NoName02-1929	C-3/A-1		
130	09/01/1932	1932	NoName03-1932	F-1/ByP-1		
135	07/30/1933	1933	NoName05-1933	C-1		
140	09/04/1933	1933	NoName11-1933	C-3		
145	09/03/1935	1935	LaborDay03-1935	C-5/A-2		
150	11/04/1935	1935	NoName07-1935	C-2		
155	07/31/1936	1936	NoName05-1936	A-2		
160	08/11/1939	1939	NoName02-1939	C-1/A-1		
165	10/06/1941	1941	NoName05-1941	C-2/A-1		
170	10/~~19~~18/1944	1944	NoName13-1944	B-3		
175	06/24/1945	1945	NoName01-1945	A-1		
180	09/15/1945	1945	NoName09-1945	C-4		
185	10/08/1946	1946	NoName06-1946	B-1		
190	09/17/1947	1947	NoName04-1947	C-4		
195	10/12/1947	1947	NoName09-1947	B-1/E-2		

ID	Hurricane Landfall/ Closest Approach Date	Year	Name	Region as defined in *Figure 1* - Category	Personal and Commercial Residential Insured Hurricane Losses ($) ~~2017~~ 2023 FHCF Exposure Data	Personal and Commercial Residential Insured Hurricane Losses ($) ~~2023~~ 2025 FHCF Exposure Data
200	09/22/1948	1948	NoName08-1948	B-4		
205	10/05/1948	1948	NoName09-1948	B-2		
210	08/26/1949	1949	NoName02-1949	C-4		
215	08/31/1950	1950	Baker-1950	F-1/ByP-1		
220	09/05/1950	1950	Easy-1950	A-3		
225	10/18/1950	1950	King-1950	C-4		
230	09/26/1953	1953	Florence-1953	A-1		
235	10/09/1953	1953	Hazel-1953	B-1		
240	09/25/1956	1956	Flossy-1956	A-1		
245	09/10/1960	1960	Donna-1960	B-4		
250	09/15/1960	1960	Ethel-1960	F-1		
255	08/27/1964	1964	Cleo-1964	C-2		
260	09/10/1964	1964	Dora-1964	D-2		
265	10/14/1964	1964	Isbell-1964	B-2		
270	09/08/1965	1965	Betsy-1965	C-3		
275	06/~~09~~08/1966	1966	Alma-1966	ByP-3/A-1		
280	10/04/1966	1966	Inez-1966	C-~~1~~2		
285	10/19/1968	1968	Gladys-1968	A-~~1~~2		
290	08/18/1969	1969	Camille-1969	F-5		
295	06/19/1972	1972	Agnes-1972	A-1		
300	09/23/1975	1975	Eloise-1975	A-3		
305	09/~~04~~03/1979	1979	David-1979	C-2/E-2		
310	09/13/1979	1979	Frederic-1979	F-3/ByP-3		
315	09/02/1985	1985	Elena-1985	F-3/ByP-3		
320	11/21/1985	1985	Kate-1985	A-2		
325	10/12/1987	1987	Floyd-1987	B-1		
330	08/24/1992	1992	Andrew-1992	C-5		
335	08/~~03~~02/1995	1995	Erin-1995	C-1/A-1		
340	10/04/1995	1995	Opal-1995	A-3		
345	07/19/1997	1997	Danny-1997	F-1		
350	09/03/1998	1998	Earl-1998	A-1		
355	09/25/1998	1998	Georges-1998	B-2/F-2		
360	10/15/1999	1999	Irene-1999	B-1		
365	08/13/2004	2004	Charley-2004	B-4		
370	09/05/2004	2004	Frances-2004	C-2		
375	09/16/2004	2004	Ivan-2004	F-3/ByP-3		
380	09/26/2004	2004	Jeanne-2004	C-3		
385	07/10/2005	2005	Dennis-2005	A-3		
390	08/25/2005	2005	Katrina-2005	C-1		

ID	Hurricane Landfall/ Closest Approach Date	Year	Name	Region as defined in *Figure 1* - Category	Personal and Commercial Residential Insured Hurricane Losses ($) ~~2017~~ 2023 FHCF Exposure Data	Personal and Commercial Residential Insured Hurricane Losses ($) ~~2023~~ 2025 FHCF Exposure Data
395	09/20/2005	2005	Rita-2005	ByP-2		
400	10/24/2005	2005	Wilma-2005	B-3		
405	09/02/2016	2016	Hermine-2016	A-1		
410	10/07/2016	2016	Matthew-2016	ByP-3		
415	09/10/2017	2017	Irma-2017	B-4		
420	10/08/2017	2017	Nate-2017	F-1		
425	10/10/2018	2018	Michael-2018	A-5		
430	09/04/2019	2019	Dorian-2019	ByP-2		
435	09/16/2020	2020	Sally-2020	F-2		
440	10/28/2020	2020	Zeta-2020	ByP-3		
445	11/11/2020	2020	Eta-2020	ByP-1		
450	07/07/2021	2021	Elsa-2021	ByP-~~2~~1		
455	09/28/2022	2022	Ian-2022	B-4		
460	11/10/2022	2022	Nicole-2022	C-1		
465	08/30/2023	2023	Idalia-2023	A-3		
470	08/05/2024	2024	Debby-2024	A-1		
475	09/27/2024	2024	Helene-2024	A-4		
480	10/10/2024	2024	Milton-2024	B-3		
Total						

~~*Figure 1* State of Florida and Neighboring States by Region~~



Form A-3: Hurricane Losses

Purpose: This form illustrates the modeling organization's ability to reasonably replicate ~~reasonably~~ historical hurricane losses.

A. One or more automated programs or scripts shall be used to assist in ~~generate~~ generation and ~~arrange~~ formatting the data in Form A-3.

B. Provide the percentage of personal and commercial residential zero deductible hurricane total loss, rounded to four decimal places, and the modeled loss from Hurricane Matthew (2016), Hurricane Irma (2017), Hurricane Michael (2018), and Hurricane Ian (2022) for each affected ZIP Code.

For Part A, use the ~~2017~~ 2023 FHCF exposure data, and for Part B, use the ~~2023~~ 2025 FHCF exposure data.

Rather than using directly a specified published windfield, the winds underlying the hurricane loss ~~cost~~ calculations shall be produced by the hurricane model under review and shall be the same hurricane parameters as used in completing Form A-2.

C. Provide maps color-coded by ZIP Code depicting the percentage of total personal and commercial residential hurricane loss from each hurricane: Hurricane Matthew (2016), Hurricane Irma (2017), Hurricane Michael (2018), and Hurricane Ian (2022), using the following interval coding~~.~~:

Red	> 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	> 0% to 0.1%
Grey	0%

D. Plot the relevant storm track on each map.

E. List assumptions necessary to complete Form A-3. Provide the rationale and a detailed description of how the assumptions are reflected in the hurricane model.

~~E~~F. Provide, in the format given in the file *"2025FormA3.xlsx,"* ~~this form~~Form A-3 in both Excel and PDF format. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name.

Part A – ~~2017~~ 2023 FHCF Exposure Data

ZIP Code	Hurricane Matthew (2016)		Hurricane Irma (2017)		Hurricane Michael (2018)		Hurricane Ian (2022)	
	Personal & Commercial Residential Modeled Loss ($)	Percent of Total Loss (%)	Personal & Commercial Residential Modeled Loss ($)	Percent of Total Loss (%)	Personal & Commercial Residential Modeled Loss ($)	Percent of Total Loss (%)	Personal & Commercial Residential Modeled Loss ($)	Percent of Total Loss (%)

Part B – ~~2023~~ 2025 FHCF Exposure Data

ZIP Code	Hurricane Matthew (2016)		Hurricane Irma (2017)		Hurricane Michael (2018)		Hurricane Ian (2022)	
	Personal & Commercial Residential Modeled Loss ($)	Percent of Total Loss (%)	Personal & Commercial Residential Modeled Loss ($)	Percent of Total Loss (%)	Personal & Commercial Residential Modeled Loss ($)	Percent of Total Loss (%)	Personal & Commercial Residential Modeled Loss ($)	Percent of Total Loss (%)

Form A-4: Hurricane Output Ranges

Purpose: This form provides an illustration of the projected personal and commercial residential modeled hurricane loss costs by county and provides a means to review for appropriate differentials among deductibles, coverages, and construction types.

A. One or more automated programs or scripts shall be used to generate the personal and commercial residential hurricane output ranges in the format shown in the file ~~named~~ *"~~2023FormA4~~2025FormA4.xlsx."*

B. Provide this form in Excel format. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also include Form A-4 in a ~~s~~Submission appendix.

C. Provide hurricane loss costs, rounded to three decimal places, by county (*Figure ~~13~~12*). Within each county, hurricane loss costs shall be shown separately per $1,000 of exposure for frame owners, masonry owners, frame renters, masonry renters, frame condo unit owners, masonry condo unit owners, manufactured homes, and commercial residential. For each of these categories using ZIP Code centroids, the hurricane output ranges shall show the highest hurricane loss cost, the lowest hurricane loss cost, and the weighted average hurricane loss cost.

   The aggregate personal and commercial residential exposure data ~~is to~~shall be ~~developed from~~ the ~~2017~~ 2023 FHCF exposure data for Part A, and ~~from~~ the ~~2023~~ 2025 FHCF exposure data for Part B~~, except for insured values and deductibles information~~. Insured values ~~are to~~shall be based on the hurricane output range specifications ~~given below~~following H. Deductible amounts of 0% and as specified in the hurricane output range specifications ~~are to~~shall be assumed to be uniformly applied to all risks.

   When calculating the weighted average hurricane loss costs, weight the hurricane loss costs by the total insured value~~ calculated above~~. Include the statewide range of hurricane loss costs (i.e., low, high, and weighted average).

D. If a modeling organization has hurricane loss costs for a ZIP Code for which there is no exposure, give the hurricane loss costs zero weight (i.e., assume the exposure in that ZIP Code is zero). Provide a list of those ZIP Codes where this occurs.

E. If a modeling organization does not have hurricane loss costs for a ZIP Code for which there is some exposure, do not assume such hurricane loss costs are zero, but use only the exposures for which there are hurricane loss costs in calculating the weighted average hurricane loss costs. Provide a list of the ZIP Codes where this occurs.

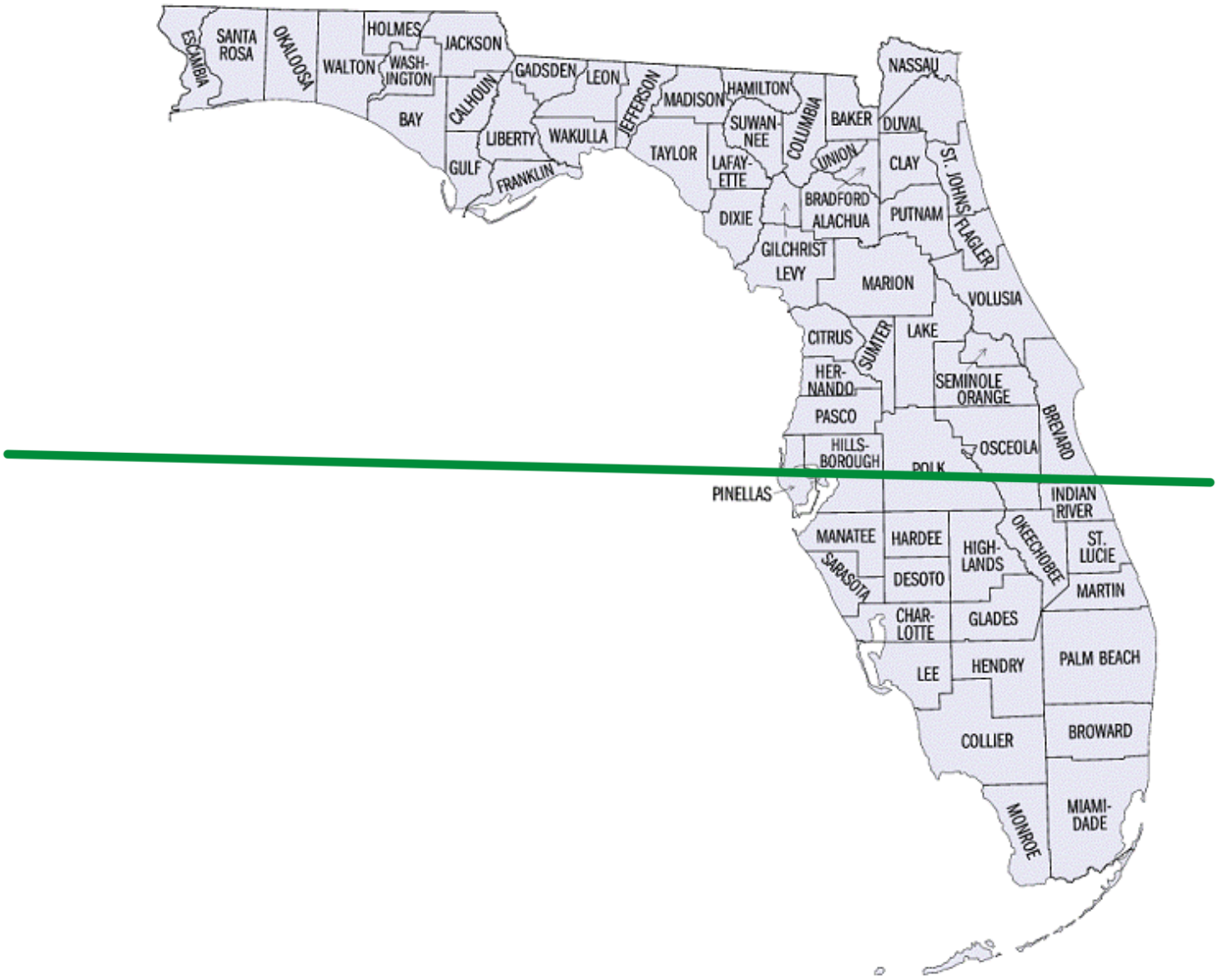
F. NA shall be used in cells to signify no exposure.

G. Indicate if per diem is used in producing hurricane loss costs for Coverage D (Time Element) in the personal residential hurricane output ranges. If a per diem rate is used, a rate of $300 per day per policy shall be used.

~~H. Describe how Law and Ordinance is included in the hurricane output ranges.~~

~~I.~~H. List assumptions necessary to complete Form A-4. Provide the rationale for assumptions and a detailed description of how the assumptions are ~~implemented~~reflected in the hurricane model.

~~*Figure 13* State of Florida by County~~



Hurricane Output Range Specifications

Coverage Values

Policy Type	Limit A	Limit B	Limit C	Limit D	Hurricane Deductible	All-Other Perils Deductible
Owners	100,000	10,000	50,000	20,000	2,000	500
Renters	---	---	50,000	20,000	1,000	500
Condo Unit Owners	5,000	---	50,000	20,000	1,000	500
Manufactured Homes	50,000	5,000	25,000	10,000	1,000	500
Commercial Residential	25,000,000	---	1,250,000	5,000,000	750,000	5,000

Policy Type

Owners

Assumptions

Coverage A = Building

- ~~Coverage A limit = $100,000~~
- Replacement Cost included subject to Coverage A limit
- Law and Ordinance included*

*If data are not available, 25% shall be assumed

Coverage B = Appurtenant Structure

- ~~Coverage B limit = 10% of Coverage A limit~~
- Replacement Cost included subject to Coverage B limit
- Law and Ordinance included*

*If data are not available, 25% shall be assumed

Coverage C = Contents

- ~~Coverage C limit = 50% of Coverage A limit~~
- Replacement Cost included subject to Coverage C limit

Coverage D = Time Element

- ~~Coverage D limit = 20% of Coverage A limit~~
- Time limit = 12 months
- Per diem = $300/day per policy, if used

- ~~Dominant Coverage = A~~
- Hurricane loss costs per $1,000 shall be related to the Coverage A limit
- Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles
- ~~2% Deductible of Coverage A~~
- ~~All other perils deductible = $500~~

Policy Type	Assumptions
Renters	**Coverage C = Contents** ~~• Coverage C limit = $50,000~~ • Replacement Cost included subject to Coverage C limit **Coverage D = Time Element** ~~• Coverage D limit = 40% of Coverage C limit~~ • Time limit = 12 months • Per diem = $300/day per policy, if used

~~✧ Dominate Coverage = C~~
✧ Hurricane loss costs per $1,000 shall be related to the Coverage C limit
✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles
~~✧ 2% Deductible of Coverage C~~
~~✧ All-other perils deductible = $500~~

Condo Unit Owners	**Coverage A = Building** ~~• Coverage A limit = 10% of Coverage C limit~~ • Replacement Cost included subject to Coverage A limit **Coverage C = Contents** ~~• Coverage C limit = $50,000~~ • Replacement Cost included subject to Coverage C limit **Coverage D = Time Element** ~~• Coverage D limit = 40% of Coverage C limit~~ • Time limit = 12 months • Per diem = $300/day per policy, if used

~~✧ Dominant Coverage = C~~
✧ Hurricane loss costs per $1,000 shall be related to the Coverage C limit
✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles
~~✧ 2% Deductible of Coverage C~~
~~✧ All-other perils deductible = $500~~

Policy Type	Assumptions
Manufactured Homes	**Coverage A = Building** ~~• Coverage A limit = $50,000~~ • Replacement Cost included subject to Coverage A limit **Coverage B = Appurtenant Structure** ~~• Coverage B limit = 10% of Coverage A limit~~ • Replacement Cost included subject to Coverage B limit **Coverage C = Contents** ~~• Coverage C limit = 50% of Coverage A limit~~ • Replacement Cost included subject to Coverage C limit **Coverage D = Time Element** ~~• Coverage D limit = 20% of Coverage A limit~~ • Time limit = 12 months • Per diem = $300/day per policy, if used ~~✧ Dominant Coverage = A~~ ✧ Hurricane loss costs per $1,000 shall be related to the Coverage A limit ✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles ~~✧ 2% Deductible of Coverage A~~ ~~✧ All-other perils deductible = $500~~
Commercial Residential	**Coverage A = Building** ~~• Coverage A limit = $25,000,000~~ • Replacement Cost included subject to Coverage A limit **Coverage C = Contents** ~~• Coverage C limit = 5% of Coverage A limit~~ • Replacement Cost included subject to Coverage C limit **Coverage D = Time Element** ~~• Coverage D limit = 20% of Coverage A limit~~ • Time limit = 12 months • Per diem = $300/day per policy, if used ~~✧ Dominant Coverage = A~~ ✧ Hurricane loss costs per $1,000 shall be related to the Coverage A limit ✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles ~~✧ 3% Deductible of Coverage A~~ ~~✧ All-other perils deductible = $5,000~~

Form A-5: Percentage Change in Hurricane Output Ranges

Purpose: This form illustrates the impact of changes in the hurricane model on the hurricane loss cost output ranges from the current accepted hurricane model.

A. One or more automated programs or scripts shall be used to assist in ~~generate~~ generation and ~~arrange~~ formatting the data in Form A-5.

B. Provide this form in Excel format. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also include all Form A-5 tables and maps ~~in Form A-5~~ in a ~~s~~Submission appendix.

C. Provide summaries of the percentage change in average hurricane loss cost output range data compiled in Form A-4, Part A, relative to the equivalent data compiled from the current accepted hurricane model, in the format shown below and in the file ~~named~~ *"~~2023FormA5~~2025FormA5.xlsx."*

For the percentage change in hurricane output range, provide the summary~~:~~ (1) statewide (overall percentage change), and (2) by region as defined in *Figure ~~14~~13.*

- ~~Statewide (overall percentage change),~~
- ~~By region, as defined in *Figure 14* – North, Central, and South, and~~
- ~~By county, as defined in *Figure 15* – Coastal and Inland.~~

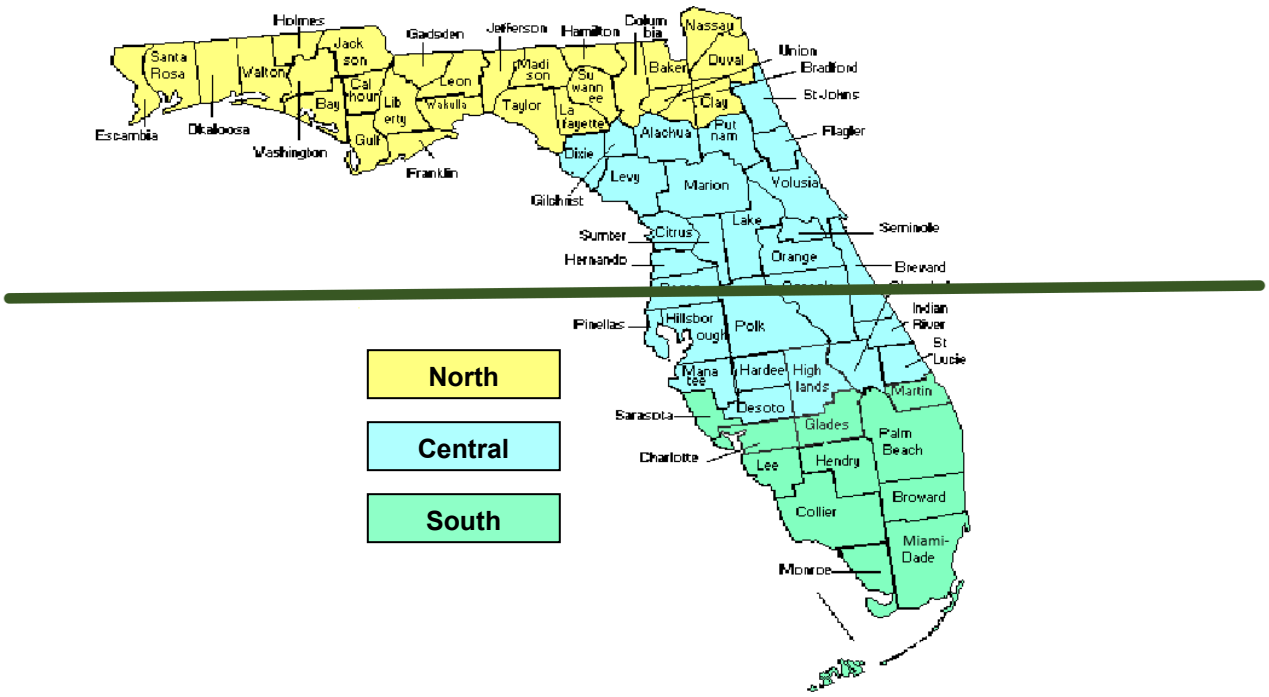
Percentage Change in $0 Deductible Hurricane Output Ranges (~~2017~~ 2023 FHCF Exposure Data)								
Region	Frame Owners	Masonry Owners	Manufactured Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
~~Coastal~~Panhandle								
~~Inland~~Central								
Northeast								
~~Central~~East								
Southeast								
Southwest								
West								
Statewide								

Percentage Change in Specified Deductible Hurricane Output Ranges (~~2017~~ 2023 FHCF Exposure Data)								
Region	Frame Owners	Masonry Owners	Manufactured Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
~~Coastal~~Panhandle								
~~Inland~~Central								
Northeast								
~~Central~~East								
Southeast								
Southwest								
West								
Statewide								

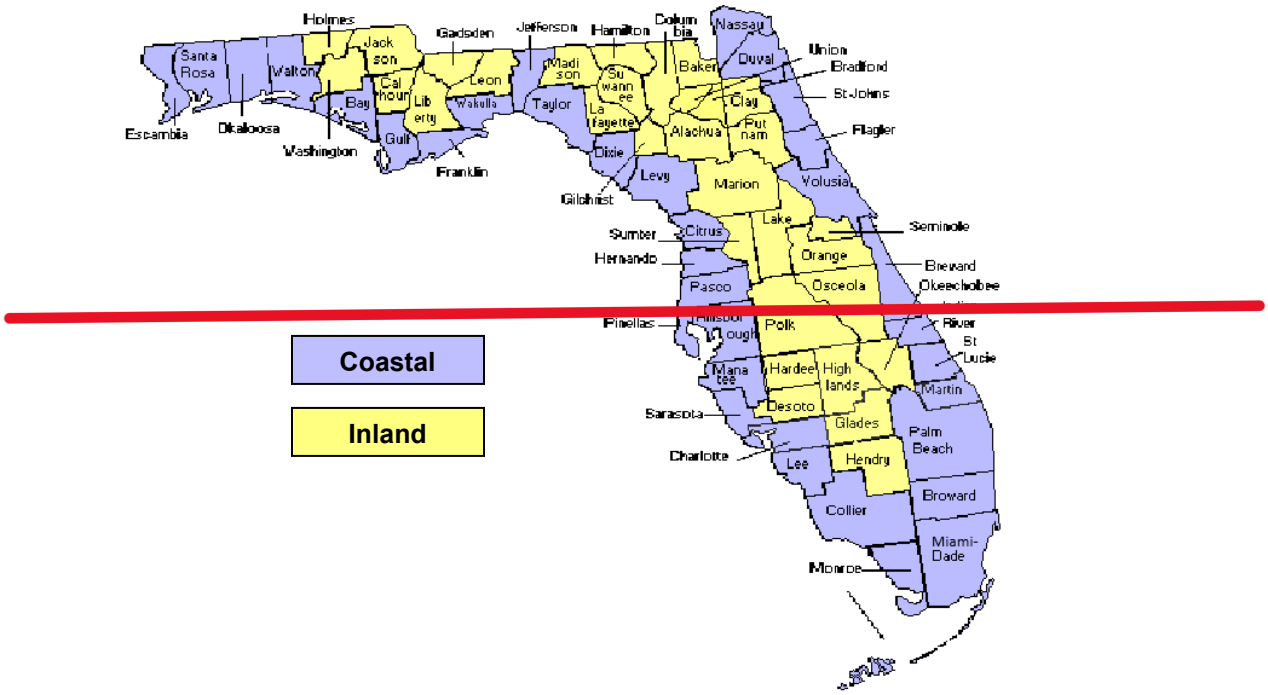
D. Provide color-coded maps by county reflecting the percentage change~~s~~ in the average hurricane loss costs with specified deductibles for frame owners, masonry owners, frame renters, masonry renters, frame condo unit owners, masonry condo unit owners, manufactured homes, and commercial residential from the hurricane output ranges ~~from~~ as reported in the current accepted hurricane model.

Counties with a negative percentage change (reduction in hurricane loss costs) shall be indicated with shades of blue~~,~~; counties with a positive percentage change (increase in hurricane loss costs) shall be indicated with shades of red~~,~~; and counties with no percentage change shall be grey. The larger the percentage change in the county, the more intense the color-shade.

~~*Figure 14* State of Florida by North/Central/South Regions~~



~~*Figure 15* State of Florida by Coastal/Inland Counties~~



Form A-6: Logical Relationships to Hurricane Risk (Trade Secret Item)

Purpose: This form provides an illustration of the hurricane loss cost relationships among deductible, ~~policy form, coverage~~, year of construction, building strength, and number of stories.

A. One or more automated programs or scripts shall be used to generate the exhibits in Form A-6.

B. Provide the logical relationship to hurricane risk exhibits in the format shown in the file ~~named~~ *"~~2023FormA6~~2025FormA6.xlsx."*

C. Create exposure sets for each exhibit by modeling all of the coverages from the appropriate Notional Set listed in the table below at each of the locations in Location Grid A as ~~described~~ provided in the file *"~~NotionalInput23~~NotionalInput25.xlsx."*

Refer to the Notional Hurricane Policy Specifications ~~below~~following L. for additional modeling information.

Exhibit	Notional Set
Deductible Sensitivity	Set 1
~~Policy Form Sensitivity~~Reserved for Future Use	Set 2
~~Coverage Sensitivity~~Reserved for Future Use	Set 3
Year Built Sensitivity	Set 4
Building Strength Sensitivity	Set 5
Number of Stories Sensitivity	Set 6

D. Explain any assumptions, deviations, and differences from the prescribed exposure information ~~in Form A-6~~. Explain how the treatment of unknown is handled in each sensitivity exhibit.

E. Provide a map with the Grid A locations plotted.

~~Refer to the Notional Hurricane Policy Specifications below for additional modeling information.~~

~~D~~F. Hurricane models shall treat points in Location Grid A as coordinates that would result from a geocoding process. Hurricane models shall treat points by simulating hurricane loss at exact location or by using the nearest modeled parcel/street/cell in the hurricane model. Report results for each of the points in Location Grid A individually, unless specified. Hurricane loss costs per $1,000 of exposure shall be rounded to three decimal places.

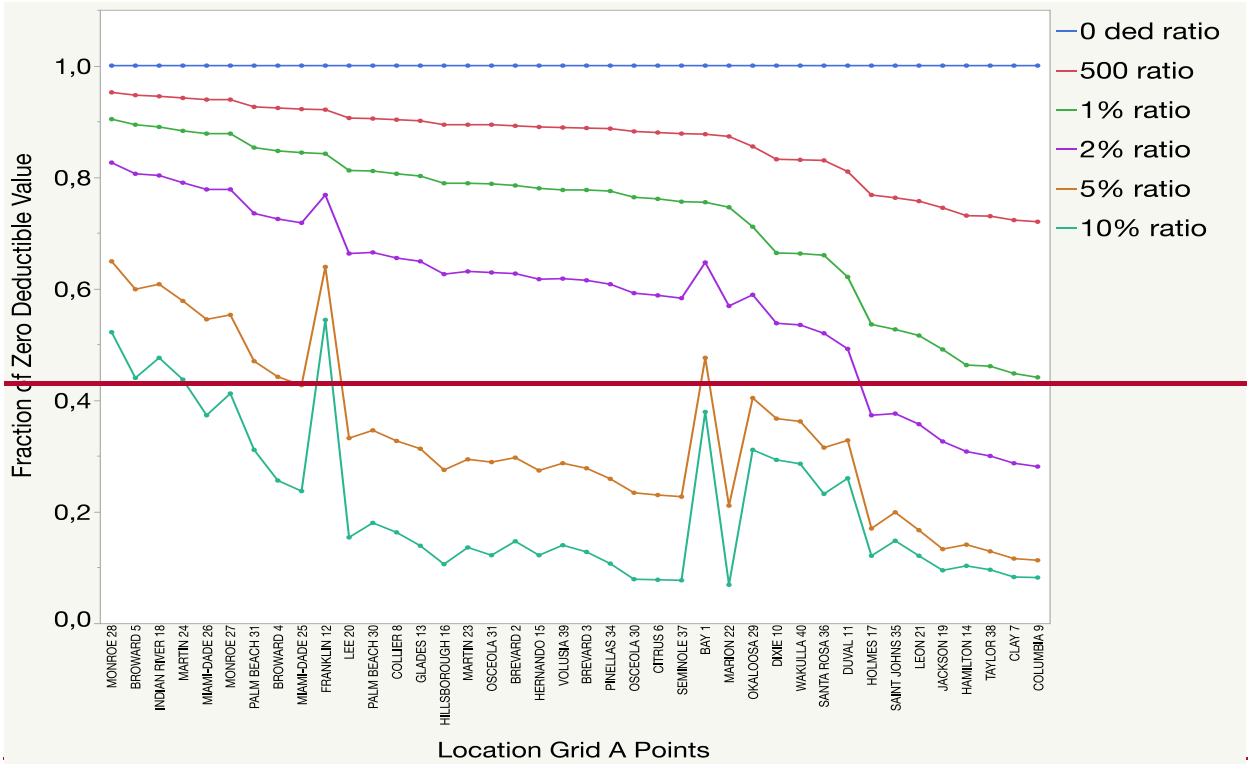
~~E~~G. Provide graphical summaries, as illustrated in *Figures* ~~*16*~~ *14* and ~~*Figure 17*~~*15*, to demonstrate the sensitivities for each Notional Set. When two variables produce overlapping curves, ensure that both curves are easily visible (e.g., unique line types and colors).

~~*Figure 17* is an update of *Figure 16* with the 2021 Florida Public Hurricane Loss Model data.~~ In ~~both figures~~*Figure 14*, the ~~forty counties~~locations along the *x*-axis are sorted left to right in descending order according to the $500 deductible ratio. ~~The rationale for this ordering can be gleaned by comparing to~~In *Figure* ~~*18*~~ *15* ~~in which~~ the ~~county~~ locations along the *x*-axis are sorted ~~ordering is~~ alphabetically.

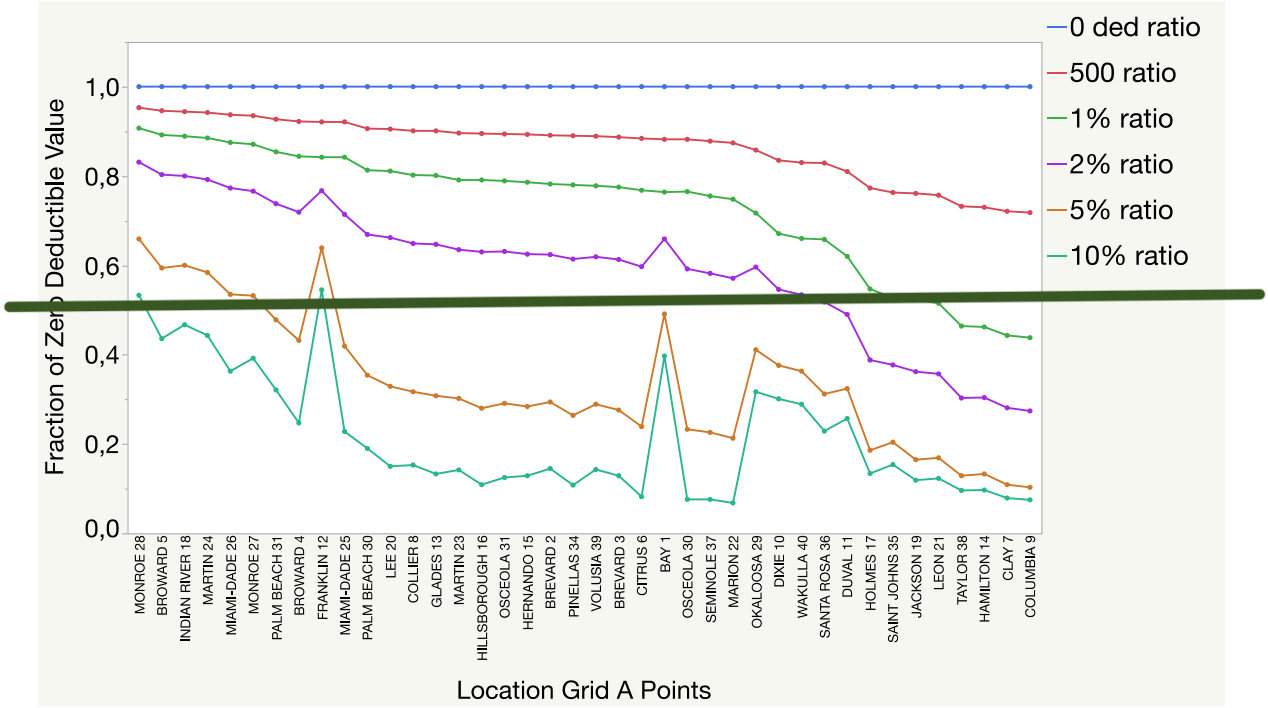
~~In all three figures, the fraction of $0 deductible values for each of the forty individual locations decreases over the range of $0 deductible down to 10% deductible, as expected. The ordering of locations in Grid A by the $500 deductible ratio is consistent with the $500 ratio curve being monotonically decreasing.~~

~~*Figure 16* and *Figure 17* highlight potential further interest in Franklin and Bay counties, whereas this nuance is not apparent in *Figure 18*. The use of the $500 deductible ratio for the *x*-axis ordering (versus the $0 deductible loss cost used in the previous *Report of Activities as of November 1, 2021*) simplifies the interpretation of the plots.~~

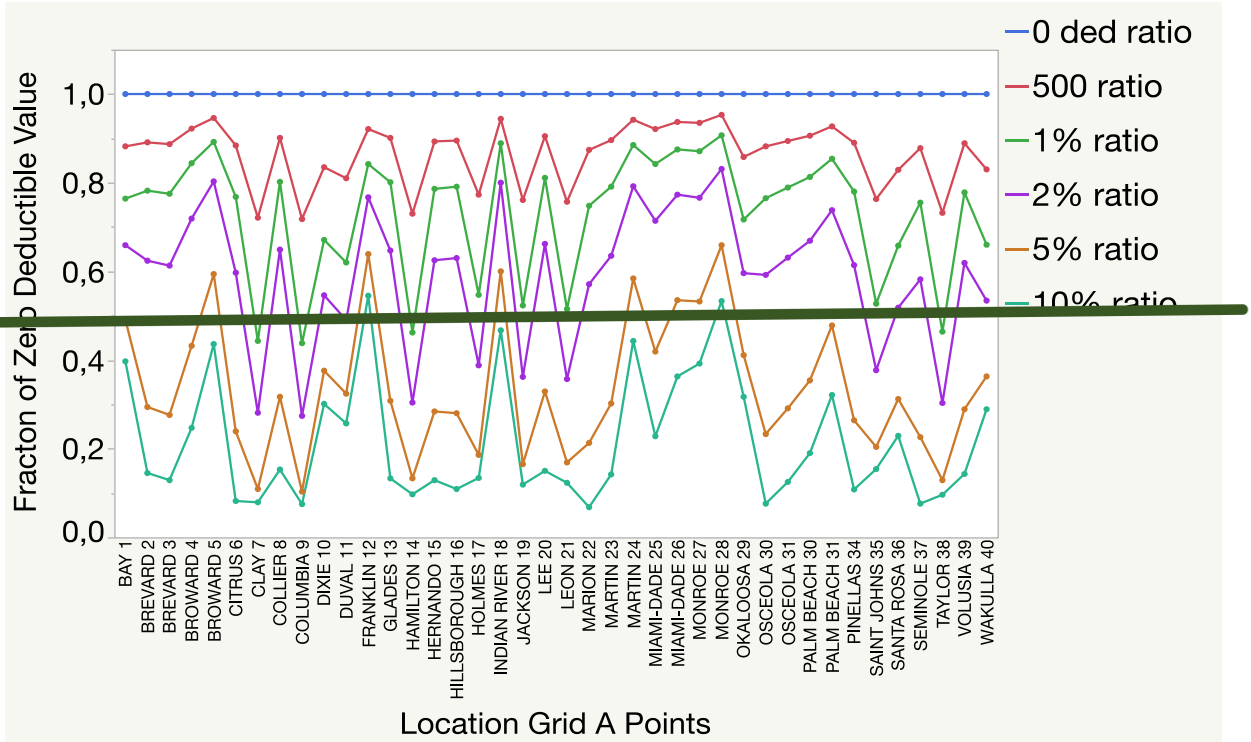
~~***Figure 16*** **Notional Set 1 – Deductible Sensitivities, Frame Owners Florida Public Hurricane Loss Model 2019 Data (*x*-axis ordered by $500 deductible ratio)**~~



~~*Figure 17*~~ ~~**Notional Set 1 – Deductible Sensitivities, Frame Owners**~~
~~**Florida Public Hurricane Loss Model 2021 Data**~~
~~**(x-axis ordered by $500 deductible ratio)**~~



~~*Figure 18*~~ ~~**Notional Set 1 – Deductible Sensitivities, Frame Owners**~~
~~**Florida Public Hurricane Loss Model 2021 Data**~~
~~**(x-axis ordered alphabetically)**~~



~~F.~~H. Create an exposure set and report hurricane loss costs results for strong owners frame buildings (Notional Set 5) for each of the points in Location Grid B ~~as described~~provided in the file *"~~NotionalInput23~~NotionalInput25.xlsx."*

~~G.~~I. Provide a ~~color-coded~~ contour colormap of the hurricane loss costs with the Florida state boundary superimposed.

~~H.~~J. Provide a scatter plot of the hurricane loss costs (*y*-axis) against distance to closest coast (*x*-axis).

~~I. Describe how Law and Ordinance is included in the hurricane loss costs.~~

~~J.~~K. List assumptions necessary to complete Form A-6. Provide the rationale for assumptions and a detailed description of how the assumptions are ~~implemented~~reflected in the hurricane model.

~~K.~~L. If not considered as Trade Secret, provide this form in Excel format and in a ~~s~~Submission appendix. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name.

Notional Hurricane Policy Specifications

Policy Type

Assumptions

Owners

Coverage A = Building

- Replacement Cost included subject to Coverage A limit
- Law and Ordinance included*

*If data are not available, 25% shall be assumed

Coverage B = Appurtenant Structure

- Replacement Cost included subject to Coverage B limit
- Law and Ordinance included*

*If data are not available, 25% shall be assumed

Coverage C = Contents

- Replacement Cost included subject to Coverage C limit

Coverage D = Time Element

- Time limit = 12 months
- Per diem = $300/day per policy, if used

✧ Hurricane loss costs per $1,000 shall be related to the Coverage A limit
✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles
✧ All-other perils deductible = $500

Renters

Coverage C = Contents

- Replacement Cost included subject to Coverage C limit

Coverage D = Time Element

- Time limit = 12 months
- Per diem = $300/day per policy, if used

✧ Hurricane loss costs per $1,000 shall be related to the Coverage C limit
✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles
✧ All-other perils deductible = $500

Policy Type	Assumptions
Condo Unit Owners	**Coverage A = Building** • Replacement Cost included subject to Coverage A limit **Coverage C = Contents** • Replacement Cost included subject to Coverage C limit **Coverage D = Time Element** • Time limit = 12 months • Per diem = $300/day per policy, if used

- ✧ Hurricane loss costs per $1,000 shall be related to the Coverage C limit
- ✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles
- ✧ All-other perils deductible = $500

Manufactured Homes	**Coverage A = Building** • Replacement Cost included subject to Coverage A limit **Coverage B = Appurtenant Structure** • Replacement Cost included subject to Coverage B limit **Coverage C = Contents** • Replacement Cost included subject to Coverage C limit **Coverage D = Time Element** • Time limit = 12 months • Per diem = $300/day per policy, if used

- ✧ Hurricane loss costs per $1,000 shall be related to the Coverage A limit
- ✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles
- ✧ All-other perils deductible = $500

Commercial Residential	**Coverage A = Building** • Replacement Cost included subject to Coverage A limit **Coverage C = Contents** • Replacement Cost included subject to Coverage C limit

Policy Type	Assumptions
	Coverage D = Time Element • Time limit = 12 months • Per diem = $300/day per policy, if used

- ✧ Hurricane loss costs per $1,000 shall be related to the Coverage A limit
- ✧ Hurricane loss costs for the various specified deductibles shall be determined based on annual deductibles
- ✧ All-other perils deductible = $5,000

Form A-8: Hurricane Probable Maximum Loss for Florida

Purpose: This form provides an illustration of the distribution of hurricane losses~~. The form also~~ and illustrates that appropriate calculations were used to produce both expected annual hurricane losses and hurricane probable maximum loss levels.

A. One or more automated programs or scripts shall be used to generate and ~~arrange~~ format the data in Form A-8.

B. Provide a detailed explanation of how the Expected Annual Hurricane Losses and Return Periods are calculated.

C. Complete Part A using the ~~2017~~ 2023 FHCF exposure data and Part B using the ~~2023~~ 2025 FHCF exposure data.

D. For the Expected Annual Hurricane Losses column in Part A.1 and Part B.1, provide personal and commercial residential, zero deductible statewide hurricane loss costs.

In the column, Return Period (Years), provide the return period associated with the average hurricane loss within the ranges indicated on a cumulative basis.

For example, if the average hurricane loss is $4,705 million for the range $4,501-$5,000 million, provide the return period associated with a hurricane loss that is $4,705 million or greater.

For each hurricane loss range in millions ($1,001-$1,500, $1,501-$2,000, $2,001-$2,500) the average hurricane loss within that range shall be identified and then the return period associated with that hurricane loss calculated. The return period is then the reciprocal of the probability of the hurricane loss equaling or exceeding this average hurricane loss size.

The probability of equaling or exceeding the average of each range shall be smaller as the ranges increase (and the average hurricane losses within the ranges increase). Therefore, the return period associated with each range and average hurricane loss within that range shall be larger as the ranges increase. Return periods shall be based on cumulative probabilities.

A return period for an average hurricane loss of $4,705 million within the $4,501-$5,000 million range shall be lower than the return period for an average hurricane loss of $5,455 million associated with the $5,001-$6,000 million range.

E. Provide a graphical comparison of the hurricane model under review Residential Return Periods hurricane loss curve to the current accepted hurricane model Residential Return Periods hurricane loss curve. Residential Return Period (Years) shall be shown on the *y*-axis on a log-10 scale with Hurricane Losses in Billions shown on the *x*-axis. The legend shall

indicate the corresponding hurricane model with a solid line representing the hurricane model under review and a dotted line representing the current accepted hurricane model.

F. Provide the expected hurricane loss and 10% (lower bound) and 90% (upper bound) hurricane loss levels for each of the Personal and Commercial Residential ~~Return Periods~~Annual Exceedance Probabilities given in Part A.2 and Part B.2, Annual Aggregate, and Part A.3 and Part B.3, Annual Occurrence. Describe how the uncertainty in hurricane vulnerability functions has been propagated to the uncertainty in portfolio loss and how it relates to the 10% and 90% hurricane loss levels.

G. List assumptions necessary to complete Form A-8. Provide the rationale for assumptions and a detailed description of how the assumptions are ~~implemented~~reflected in the hurricane model.

H. Provide this form in Excel format. The file name shall include the abbreviated name of the modeling organization, the hurricane standards year, and the form name. Also include Form A-8 in a ~~s~~Submission appendix.

Part A.1: Personal and Commercial Residential Hurricane Probable Maximum Loss for Florida (~~2017~~ 2023 FHCF Exposure Data)

HURRICANE LOSS RANGE (MILLIONS)			TOTAL HURRICANE LOSS	AVERAGE HURRICANE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES	RETURN PERIOD (YEARS)
$ >0	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					
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$ 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					
$ 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					

HURRICANE LOSS RANGE (MILLIONS)			TOTAL HURRICANE LOSS	AVERAGE HURRICANE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES	RETURN PERIOD (YEARS)
$ 100,001	to	$ Maximum					
Total							

Part A.2: Personal and Commercial Residential Hurricane Probable Maximum Loss for Florida – Annual Aggregate (~~2017~~ 2023 FHCF Exposure Data)

~~Return Period (Years)~~Aggregate Annual Exceedance Probability	Expected Hurricane Loss Level	10% Loss Level	90% Loss Level
~~Top Event~~ Maximum Annual Loss			
~~1,000~~0.001			
~~500~~0.002			
~~250~~0.004			
~~100~~0.01			
~~50~~0.02			
~~20~~0.05			
~~10~~0.10			
~~5~~0.20			

Part A.3: Personal and Commercial Residential Hurricane Probable Maximum Loss for Florida – Annual Occurrence (~~2017~~ 2023 FHCF Exposure Data)

~~Return Period (Years)~~Occurrence Annual Exceedance Probability	Expected Hurricane Loss Level	10% Loss Level	90% Loss Level
~~Top Event~~ Maximum Event Loss			
~~1,000~~0.001			
~~500~~0.002			
~~250~~0.004			
~~100~~0.01			
~~50~~0.02			

~~20~~0.05			
~~10~~0.10			
~~5~~0.20			

Part B.1: Personal and Commercial Residential Hurricane Probable Maximum Loss for Florida (~~2023~~ 2025 FHCF Exposure Data)

HURRICANE LOSS RANGE (MILLIONS)			TOTAL HURRICANE LOSS	AVERAGE HURRICANE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES	RETURN PERIOD (YEARS)
$ >0	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					
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$ 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					

HURRICANE LOSS RANGE (MILLIONS)			TOTAL HURRICANE LOSS	AVERAGE HURRICANE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES	RETURN PERIOD (YEARS)
$ 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							

Part B.2: Personal and Commercial Residential Hurricane Probable Maximum Loss for Florida – Annual Aggregate (~~2023~~ 2025 FHCF Exposure Data)

~~Return Period (Years)~~ Aggregate Annual Exceedance Probability	Expected Hurricane Loss Level	10% Loss Level	90% Loss Level
~~Top Event~~ Maximum Annual Loss			
~~1,000~~0.001			
~~500~~0.002			
~~250~~0.004			
~~100~~0.01			
~~50~~0.02			
~~20~~0.05			
~~10~~0.10			
~~5~~0.20			

Part B.3: Personal and Commercial Residential Hurricane Probable Maximum Loss for Florida – Annual Occurrence (~~2023~~ 2025 FHCF Exposure Data)

~~Return Period (Years)~~ Occurrence Annual Exceedance Probability	Expected Hurricane Loss Level	10% Loss Level	90% Loss Level
~~Top Event~~ Maximum Event Loss			
~~1,000~~0.001			
~~500~~0.002			
~~250~~0.004			
~~100~~0.01			
~~50~~0.02			
~~20~~0.05			
~~10~~0.10			
~~5~~0.20			

COMPUTER/INFORMATION HURRICANE STANDARDS

CI-1 General System Traceability and Change Tracking*

*(*New Standard)*

A. Hurricane model meteorology, vulnerability, and actuarial requirements shall be traceable through code segments related to said requirements through CI-3, CI-4, CI-5, CI-6, and CI-7 in sequence and shall be demonstrated through Code Dives.

B. All source code, scripts, test code, and documentation shall be located in central repositories controlled by repository software. Repository software shall support track changes, versioning, and collaborative editing.

Purpose: To provide a method for the modeling organization to demonstrate end-to-end traceability linking the varying levels of hurricane model design, implementation, and testing.

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Audit

1. Code Dives created and documented by the modeling organization prior to the on-site review on the hurricane model changes provided in Standard M-1 Disclosure 4, Standard M-2 Disclosure 3, Standard V-1 Disclosure 3, and Standard A-1 Disclosure 3 will be reviewed. If model changes within any of these standards involve multiple topics, the on-site review pre-visit letter provided to the modeling organization shall clearly identify which specific areas of the changes should be the focus of the associated code dive.

2. The explicit methods employed by the modeling organization to link together various levels of abstraction of the selected requirements and their implementation will be reviewed.

3. Additional Code Dives may be initiated at the request of the Professional Team during the on-site review and will be performed within each relevant standards group as encountered.

4. The central repositories and their associated version control systems will be reviewed.

5. Verification that documentation is created separately from, and is maintained consistently with, the source code in version-controlled central repositories will be reviewed.

CI-2 Artificial Intelligence-Based Software Engineering*

*(*New Standard)*

A. An Artificial Intelligence (AI) Policy document specifying where and how AI is used in software engineering (SWE) shall be maintained.

B. AI use within the software engineering process shall be fully documented with guidelines for:

1. Acceptable and prohibited uses of AI, including language models and generative AI within software engineering,

2. The quality checks or testing procedures in place to help mitigate potentially erroneous model output during the artificial intelligence software engineering (AI-SWE) process,

3. AI-SWE incident reporting, ongoing monitoring, and policy updates,

4. Data security and privacy concerns,

5. Use of available commercial and open-source AI-SWE tools,

6. Protocols for handling data, including collection, storage, and processing,

7. Accountability within the modeling organization for AI-SWE development, deployment, and monitoring,

8. Designation of responsible individuals or teams to oversee AI-SWE use in software engineering, and

9. Immediate reporting of any AI-SWE system malfunctions, misuse, or breaches.

C. An established review cycle to assess the AI-SWE policy relevance and effectiveness shall be maintained.

D. Training on the AI-SWE policy and the responsible use of AI shall be established and completed.

Purpose: To ensure there are clearly defined policies and procedures on what constitutes AI and its acceptable uses (e.g., development, implementation, testing, data analysis, documentation) within the software engineering process for the hurricane model.

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Disclosure

1. Provide a description of AI use cases for assisting in software engineering for the hurricane model.

Audit

1. The AI-SWE Policy document will be reviewed.

2. The documented procedures on AI-SWE for the hurricane model (e.g., development, implementation, testing, data analysis, documentation) will be reviewed.

3. The AI-SWE model types, learning algorithms, training data, testing data, measures of effectiveness, and output quality checks will be reviewed.

4. Any AI-SWE model training performed, whether fine-tuning or from scratch, will be reviewed.

CI-~~1~~3 Hurricane Model Documentation*

*(*Significant Revision)*

A. Hurricane model functionality and technical descriptions shall be formally documented ~~formally~~ in an archival format separate from the use of correspondence including emails, presentation materials, and unformatted text files.

~~***B. All documentation, code, and scripts shall be located in central repositories controlled by repository software. Repository software shall support track changes, versioning, and collaborative editing.***~~

~~C.~~B. All computer software relevant to the hurricane model shall be consistently documented and dated.

~~D.~~C. The following shall be maintained: (1) a table of all changes in the hurricane model from the current accepted hurricane model to the initial ~~s~~Submission ~~this year~~under the 2025 hurricane standards, and (2) a table of all substantive changes since ~~this year's~~the initial ~~s~~Submission.

~~E.~~D. Documentation shall be created separately from the source code.

~~F.~~E.A list of all externally acquired, currently used, hurricane model-specific software and data assets shall be maintained. The list shall include (1) asset name, (2) asset version number, (3) asset acquisition date, (4) asset acquisition source, (5) asset acquisition mode (e.g., lease, purchase, open source), and (6) length of time asset has been in use by the modeling organization.

Purpose: To capture all aspects of *documenting* the hurricane model. Documentation enables the modeling organization personnel to create a shared, formal hurricane model organizational structure of all information specifically related to the hurricane model. This structure (1) may include many forms of media such as printed documentation, diagrams, and time-based media such as animations, and (2) may be implemented on one or more platforms.

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Disclosures

1. Provide a description of the software engineering methodologies (e.g., Scrum, Agile, Waterfall, Hybrid) utilized for the software lifecycle.

2. Document compliance with external international, national, or organizational standards and certifications, where applicable to the Computer/Information Hurricane Standards.

Audit

1. 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/Information Hurricane Standards are ~~being~~ reviewed. Internal users of the software will be interviewed.

~~1. The central repositories will be reviewed.~~

2. Complete user documentation, including all recent updates, will be reviewed.

~~3.~~1. ~~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/Information Hurricane Standards are being reviewed. Internal users of the software will be interviewed.~~

~~4. Verification that documentation is created separately from, and is maintained consistently with, the source code will be reviewed.~~

~~5.~~3. The list of all externally acquired hurricane model-specific software and data assets will be reviewed.

~~6.~~4. The tables specified in ~~Hurricane~~ Standard CI-~~1~~3.~~D~~C that contain the items listed in ~~Hurricane~~ Standard G-1~~,~~ Disclosure ~~7~~ 6 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 Computer/Information ~~Hurricane~~ Standards CI-~~2~~4, CI-~~3~~5, CI-~~4~~6, CI-~~5~~7, and CI-~~7~~9.

~~7. Tracing of the hurricane model changes specified in Hurricane Standard G-1, Disclosure 7 and Audit 4 through all Computer/Information Hurricane Standards will be reviewed.~~

CI-~~2~~4 Hurricane Model Requirements~~*~~

~~*(*Significant Revision)*~~

A complete set of requirements for each software component, as well as for each database or data file accessed by a component, shall be maintained. Requirements shall be updated whenever changes are made to the hurricane model.

Purpose: To define an initial stage of hurricane model development. 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 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. Requirements drive the subsequent design (~~Hurricane~~ Standard CI-~~3~~5), implementation (~~Hurricane~~ Standard CI-~~4~~6), and verification (~~Hurricane~~ Standard CI-~~5~~7) of the hurricane model.

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 personal residential home exposures marked with small circles.

3. ***Functionality:*** For example, make the software design at the topmost level a data flowchart containing the following components: HURRICANE, WINDFIELD, DAMAGE, and HURRICANE LOSS COSTS. Write the low-level code in Java.

4. ***Network Organization:*** For example, the use of multiple platforms, client-server layout, and cloud services.

5. ***Documentation:*** For example, use Acrobat PDF for the layout language, and add PDF hyperlinks in documents to connect the sub-documents.

6. ***Data:*** For example, store the hurricane vulnerability data in an Excel spreadsheet using a different sheet for each construction type.

7. ***Human Resources:*** For example, ~~task~~ assigning individuals ~~for~~ tasked with the six-month coding of the windfield simulation. Ask others to design the user-interface by working with the Quality Assurance team.

8. ***System Models:*** For example, models with representations of software, data, and associated human collaboration will use Business Process Model and Notation (BPMN), Unified Modeling Language (UML), or Systems Modeling Language (SysML).

9. ***Security:*** For example, store electronic backups and tapes off-site, with incremental daily backups. Password-protect all source files.

10. ***Quality Assurance:*** For example, filter new insurance company hurricane claims data against norms and extremes created for the last project.

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Disclosure

1. Provide a description of the hurricane model and platform(s) documentation for interface, human factors, functionality, system documentation, data, human and material resources, security, and quality assurance.

Audit

1. Maintenance and documentation of a complete set of requirements for each software component, database, and data file accessed by a component will be reviewed.

2. Requirements documentation specifically relating to each model change identified in ~~Hurricane~~ Standard G-1~~,~~ Disclosure ~~7~~ 6 will be reviewed.

CI-~~3~~5 Hurricane Model Organization and Component Design*

*(*Significant Revision)*

A. The following shall be maintained and documented: (1) detailed control and data flowcharts and interface specifications for each software component, (2) schema definitions for each database and data file, (3) flowcharts illustrating hurricane model-related flow of information and its processing by modeling organization personnel or consultants, (4) network organization, and (5) system model representations associated with (1)-(4) above. Documentation shall be to the level of components that make significant contributions to the hurricane model output.

B. All flowcharts (e.g., software, data, and system models) in the ~~s~~Submission or in other relevant documentation shall be based on (1) a referenced industry standard (e.g., UML, BPMN, SysML), or (2) a comparable internally developed standard which is separately documented.

Purpose: To *design* the hurricane model once requirements (~~Hurricane~~ Standard CI-~~2~~4) have been specified. The software system (comprised of code and data) and the business process (composed of people and information flows) are designed as a collection of interconnected components. Hurricane models are designed to function over networks and sometimes are embedded in more than one platform. Networks include component nodes such as router, client, server, and cloud.

Hurricane model components are frequently specified in hierarchical flowcharts and diagrams. Example components might include HURRICANE, WINDFIELD, DAMAGE, and HURRICANE LOSS COSTS, and the major sub-components of each. The purpose of each example component is, as follows:

1. HURRICANE accepts Model Base Hurricane Set information and generates Model Base Hurricane Set and stochastic storm trajectories,

2. WINDFIELD accepts the output from HURRICANE and produces site-specific winds,

3. DAMAGE accepts the output from WINDFIELD and generates damage to building, and

4. HURRICANE LOSS COSTS accepts the output from DAMAGE and generates hurricane loss costs.

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Audit

1. The following will be reviewed:

   a. A flowchart defining the process for form creation,

   ~~a.~~b. Detailed control and data flowcharts, completely and sufficiently labeled for each component,

   ~~b.~~c. Interface specifications for all components in the hurricane model,

   ~~c.~~d. Documentation for schemas for all data files, along with field type definitions,

   ~~d.~~e. Each network flowchart including components, sub-component flowcharts, arcs, and labels,

   ~~e.~~f. Flowcharts illustrating hurricane model-related information flow among modeling organization personnel or consultants (e.g., BPMN, UML, SysML, or equivalent technique including a modeling organization internal standard), and

   ~~f.~~g. If the hurricane model is implemented on more than one platform, the detailed control and data flowcharts, component interface specifications, schema documentation for all data files, and detailed network flowcharts for each platform.

2. The flowchart reference guide or industry standard reference will be reviewed.

3. Flowcharts as encountered will be reviewed for compliance with the flowchart standard.

CI-~~4~~6 Hurricane Model Implementation*

*(*Significant Revision)*

A. A complete procedure of coding guidelines consistent with accepted practices shall be maintained. Coding guidelines shall be referenced for each programming language used in the hurricane model or ~~s~~Submission document. Coding guidelines shall be enforced through automated tools or documented review procedures.

B. Network organization documentation shall be maintained.

C. A complete procedure used in creating, deriving, or procuring and verifying databases or data files accessed by components shall be maintained.

D. With the exception of Forms G-1 through G-7 and Form S-3, all forms required by the Hurricane Standards Report of Activities shall be produced through an automated procedure or procedures as indicated in the respective form instructions.

~~D. All components shall be traceable, through explicit component identification in the hurricane model representations (e.g., requirements, flowcharts) down to the implementation level.~~

E. A table of all software components affecting hurricane loss costs and hurricane probable maximum loss levels shall be maintained 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.

F. 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.

G. The following documentation shall be maintained for all components or data modified by items identified in ~~Hurricane~~ Standard G-1~~,~~ Disclosure ~~7~~ 6~~and Audit 4~~:

1. ***A list of all equations and formulas used in documentation of the hurricane model with definitions of all terms and variables, and***

2. ***A cross-referenced list of implementation source code terms and variable names corresponding to items within G.1 above.***

H. Hurricane model code and data shall be accompanied by documented review plans, testing plans, and if needed, update plans through regularly scheduled intervals. The vintage of the hurricane model code and data shall be justified.

I. The static and dynamic program analysis tools used to aid in the implementation of the hurricane model shall be documented.

Purpose: To *implement* the hurricane model based on requirements (~~Hurricane~~ Standard CI-~~2~~4) and design (~~Hurricane~~ Standard CI-~~3~~5). The hurricane model implementation is created using computer software (i.e., code) and data. Elements formed in the design stage shall be fully traceable to components of the implementation. The design stage serves as an abstract, and often visual, representation of the underlying implementation comprised of code and data.

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Disclosure

1. Specify the hardware, operating system, and essential software required to use the hurricane model on a given platform.

Audit

1. Portions of the code, not necessarily related to recent changes in the hurricane model, will be reviewed.

~~1.~~2. Code and data implementations, for at least the meteorology, vulnerability, and actuarial components, will be reviewed.

~~2.~~3. The documented coding guidelines, including procedures for ensuring readable identifiers for variables, constants, and components, and confirmation that these guidelines are uniformly implemented will be reviewed.

4. Enforcement practices for coding guidelines involving automated tooling or review procedures will be reviewed.

~~3.~~5. The procedure used in creating, deriving, or procuring and verifying databases or data files accessed by components will be reviewed.

~~4.~~6. The traceability among components at all levels of representation will be reviewed.

~~5.~~7. The following information 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, modification rationale, and by whom,
d. Purpose or function of the component, and

e. Input and output parameter definitions.

~~6.~~8. The table of all software components as specified in ~~Hurricane~~ Standard CI-~~4~~6.E will be reviewed.

~~7.~~9. Hurricane model components and the method of mapping to elements in the computer program will be reviewed.

~~8.~~10. Comments within components will be reviewed for sufficiency, consistency, and explanatory quality.

~~9.~~11. Unique aspects within various platforms with regard to the use of hardware, operating system, and essential software will be reviewed.

~~10.~~12. Network organization implementation will be reviewed.

~~11.~~13. Code and data review plans, testing plans, update plans, and schedules will be reviewed. Justification for the vintage of code and data will be reviewed.

~~12.~~14. Automated procedures used to create forms will be reviewed.

15. The use of static and dynamic program analysis tools will be reviewed.

CI-~~5~~7 Hurricane Model Implementation Verification*

*(*Significant Revision)*

A. General

For each component, procedures shall be maintained 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. Testing software shall be used to assist in documenting and analyzing all components.

2. Unit tests shall be performed and documented for each updated component.

3. Regression tests shall be performed and documented on incremental builds.

4. Integration tests shall be performed and documented to ensure the correctness of all hurricane model components. Sufficient testing shall be performed to ensure that all components have been executed at least once.

C. Data Testing

1. Testing software shall be used to assist in documenting and analyzing all databases and data files accessed by components.

2. Integrity, consistency, and correctness checks shall be performed and documented on all databases and data files accessed by the components.

D. Test adequacy information shall be collected and maintained for hurricane model components and data. The type of adequacy measures used and level of adequacy achieved shall be sufficiently justified.

Purpose: To ensure a correct mapping from executing the implementation (~~Hurricane~~ Standard CI-~~4~~6) to previously specified requirements (~~Hurricane~~ Standard CI-~~2~~4) and design (~~Hurricane~~ Standard CI-~~3~~5). *Verification* requires tests to be run by varying component inputs to ensure correct output.

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Disclosures

1. State whether any two executions of the hurricane model with no changes in input data, parameters, code, and seeds of random number generators produce the same hurricane loss costs and hurricane probable maximum loss levels.

2. Provide an overview of the component testing procedures.

3. Provide a description of verification approaches used for externally acquired data, software, and models.

Audit

1. Procedures for physical unit conversion verification (e.g., knots to mph) will be reviewed.

2. 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.

3. The testing software used by the modeling organization will be reviewed.

4. The component (unit, regression, integration) and data test processes and documentation will be reviewed including compliance with independence of the verification procedures.

5. Test adequacy information collected as part of the testing of hurricane model components and data will be reviewed.

~~5.~~6. Fully time-stamped, documented cross-checking procedures and results for verifying equations, including tester identification, will be reviewed. Examples include mathematical calculations versus source code implementation or the use of multiple implementations using different languages.

~~6.~~7. Flowcharts defining the processes used for manual and automatic verification will be reviewed.

~~7.~~8. Verification approaches used for externally acquired data, software, and models will be reviewed.

~~8.~~9. ~~Complete and thorough v~~Verification procedures and output from the hurricane model changes identified in ~~Hurricane~~ Standard G-1~~,~~ Disclosure ~~7~~ 6 will be reviewed.

CI-~~6~~8 Human-Computer Interaction*

*(*Significant Revision)*

A. Interfaces shall be implemented as consistent with accepted principles and practices of Human-Computer Interaction (HCI), Interaction Design, and User Experience (UX) engineering.

B. Interface options used in the hurricane model shall be unique, explicit, and distinctly emphasized.

C. For an insurance company Florida ~~insurance~~ rate filing, interface options shall be limited to those options found acceptable by the Commission.

Purpose: To ensure that HCI, and relevant interfaces, meet the state of the art. HCI, Interaction Design, and UX engineering focus on promoting a high degree of usability with minimal ambiguity for the user. Interface options for a current accepted hurricane model shall have a single option~~,~~ (e.g., labeled FCHLPM with the current accepted model name and version number).

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Disclosure

1. Identify procedures used to design, implement, and evaluate interface options.

Audit

1. External and internal user interfaces will be reviewed.

2. Documentation related to HCI, Interaction Design, and UX engineering will be reviewed.

3. The decision process specifying the logic of interface option selections, when an acceptable hurricane model is selected, will be reviewed.

4. Consistency between Standard CI-8.C and the hurricane model input form in support of a potential insurance company Florida rate filing (Standard A-5 Disclosure 4) will be reviewed.

CI-~~7~~9 Hurricane Model Maintenance and Revision*

*(*Significant Revision)*

A. A clearly written policy shall be implemented for review, maintenance, and revision of the hurricane model and network organization, including verification and validation of revised components, databases, and data files.

B. A revision to any portion of the hurricane model that results in a change in any Florida personal and commercial residential hurricane loss cost or hurricane probable maximum loss level shall result in a new hurricane model version identification.

C. Procedures for fault and change tracking through the use of issue tracking software shall be maintained.

~~C.~~D. A list of all hurricane model versions since the initial ~~s~~Submission ~~for this year~~under the 2025 hurricane standards shall be maintained. Each hurricane model description shall have a unique version identification and a list of additions, deletions, and changes that define that version.

Purpose: To create a formal procedure for identifying, organizing, and *maintaining hurricane model versions*. Hurricane model software, data, and documentation are stored in an online system that tracks all editing changes by author and change date.

Relevant Form: G-6, Computer/Information Hurricane Standards Expert Certification

Disclosures

1. Identify procedures used to review and maintain code, data, and documentation.

2. Describe the rules underlying the hurricane model and code revision identification systems.

3. Provide all accepted and functionally equivalent model version number and platform identifications for the current accepted hurricane model and the previous accepted hurricane model, if applicable.

Audit

1. All policies and procedures used to review and maintain the code, data, and documentation will be reviewed. For each component in the system decomposition, the installation date under configuration control, the current version identification, and the date of the most recent change(s) will be reviewed.

2. The policy for hurricane model revision and management will be reviewed.

~~3.1. Portions of the code, not necessarily related to recent changes in the hurricane model, will be reviewed.~~

~~4.~~3. The change tracking software will be reviewed and checked for the ability to track date and time.

4. The use of issue tracking software, for tracking changes and faults, including procedures for bug reporting and reproduction, fault localization, fault repair, and the implementation and testing of program changes will be reviewed.

5. The list of all hurricane model revisions as specified in ~~Hurricane~~ Standard CI-~~7~~9.~~C~~ D will be reviewed.

6. The model version history over the past 5 years, leading up to the version submitted will be reviewed.

CI-~~8~~10 Hurricane Model Security*

*(*Significant Revision)*

Security procedures shall be implemented and fully documented for (1) secure access to individual computers where the software components or data can be created or modified, (2) secure operation of the hurricane 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, (4) secure software engineering practices including software vulnerability mitigation procedures, and (~~4~~5) secure access to documentation, software, and data in the event of a catastrophe.

Purpose: To ensure that the hurricane model is *secured* against unauthorized access. Security procedures are necessary to maintain an adequate, secure, and correct base for code, data, and documentation of the hurricane model and platforms. The modeling organization ~~is expected to~~shall 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/Information Hurricane Standards Expert Certification

Disclosures

1. Describe methods used to ensure the security and integrity of the code, data, and documentation. These methods include the security aspects of each platform and its associated hardware, software, and firmware.

2. Identify certifications, if any, and external standards compliance relevant to cybersecurity.

Audit

1. The written policy for all security procedures and methods used to ensure the security of code, data, and documentation will be reviewed.

2. Documented security procedures for access, client hurricane model use, anti-virus software installation, and off-site procedures in the event of a catastrophe will be reviewed.

3. Secure software engineering practices, including procedures for mitigating the presence of vulnerabilities in implemented code, will be reviewed.

~~3.~~4. Security aspects of each platform will be reviewed.

~~4.~~5. Network security documentation and network integrity assurance procedures will be reviewed.

~~WORKING~~ DEFINITIONS ~~OF TERMS~~

~~Working~~ Definitions ~~of Terms~~

Definitions are listed to provide the meaning of terms used in the *Hurricane Standards Report of Activities* and the *Flood Standards Report of Activities*. Some definitions provide background information, context, and clarification for certain terms. Definitions are not intended to introduce requirements not stipulated in the standards, disclosures, forms, or audit items. ~~(These terms are applicable to the *Hurricane Standards Report of Activities* or the *Flood Standards 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 property 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 or Society of Actuaries with requisite experience and compliance with U.S. Qualification Standards of the American Academy of Actuaries as applicable to property catastrophe modeling.

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.

Aggregate Data:

Summarized datasets or data summarized by using different variables~~;~~ (e.g., data summarizing the exposure amounts by line of business by ZIP Code is one set of aggregated data).

Annual Aggregate Loss Distribution:

~~For Commission purposes, the p~~Probability distribution of the sum of all losses that are expected to occur for all modeled hurricane or flood events in each year ~~or for all modeled flood events in each year~~.

Annual Exceedance Probability:

Probability of an annual loss outcome greater than a specified value. Reciprocal of the return period.

Annual Occurrence Loss Distribution:

~~For Commission purposes, the p~~Probability distribution of the largest loss that is expected to occur for all modeled hurricane or flood events in each year.

Appurtenant Structures:

Detached buildings and other structures located on the same property as the principal insured building (e.g., detached garage, fences, swimming pools, patios). For standard flood policies, contracts, and endorsements, appurtenant structures include detached garage only, and for other flood policies, contracts, and endorsements, appurtenant structures may include detached garage and may include other detached structures.

Artificial Intelligence (AI):

Machine learning models for processing and generating text, code, data, images, audio, or video.

Artificial Intelligence-Based Software Engineering (AI-SWE):

Use of machine learning methods in artificial intelligence to implement phases of the software engineering process and workflow.

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.

Astronomical Tide:

The periodic variation in sea surface that results from gravitational attraction of the sun and moon without any atmospheric influence.

Atlantic Basin:

The area including the entire North Atlantic Ocean, the Caribbean Sea, and the Gulf of ~~Mexico~~America.

Audit Item:

A requirement that contains information deemed by the modeling organization as trade secret that must be satisfied during the on-site review for verification of a standard by the Professional Team.

Average Annual Loss (AAL):

The expected value of the annual aggregate loss distribution.

Bathymetry:

Spatial variation of ocean depth relative to mean sea level.

Business Process Model and Notation (BPMN):

A graphical representation for specifying business processes in a business process model.

By ~~P~~passing Hurricane ~~(ByP)~~:

A hurricane which does not make landfall ~~on~~ in Florida, but produces minimum damaging windspeeds or greater on land in Florida. A Florida bypassing hurricane may make landfall in an adjacent state.

Bypassing Storm:

A tropical or non-tropical storm that causes damaging windspeeds or flooding in Florida, but does not cross the inland state boundaries or does not make landfall in Florida.

Calibration:

Process of adjusting values of model input parameters in an attempt to fit appropriate target datasets.

Catastrophe:

A natural or man-made event that causes more than $25 million in insured property losses and affects a significant number of policyholders and insurers as defined by Property Claims Services.

~~**Center:**~~

~~The point inside the eye of a hurricane where the wind is calm and about which the hurricane winds rotate.~~

Characteristic, Flood:

An output of the flood model (e.g., modeled inundation or storm tide at a particular location).

~~**Hurricane**~~ **Characteristic, Hurricane:**

An output of the hurricane model~~;~~ (e.g., modeled windspeed at a particular location, track, intensity variation).

Characteristics (Output):

~~For Commission purposes, r~~Resulting values or datasets which are generated by the model through a process of analyzing, evaluating, interpreting, or performing calculations on parameters (input).

~~**Civil Engineer:**~~

~~Licensed professional engineer whose practice covers the design, analysis, evaluation, and construction of building foundations and structures.~~

Climate Adjustment:

Any modification to a dataset, parameter, or other model component to account for non-stationarity in the background climate. Such modifications may reflect internal climate variability or external forcings of the climate system.

Climate-Adjusted Model:

A model that incorporates climate adjustments~~accounts for climate change using either 1) a Model Climate-Adjusted Hurricane Set or 2) the Reference Hurricane Set or Model Adjusted Hurricane Set and accounts for climate change through other model development steps~~.

Code:

In software engineering, computer instructions and data definitions expressed in a programming language or in a form input to an assembler, compiler, or other translator. *See also*: **Program**.

Code Dive:

An end-to-end walkthrough of a given feature implemented in the hurricane or flood model starting with the requirements that define the feature, then moving to where the feature is situated within the software architecture of the model, the implementation of the feature in the code (including relevant documentation), the testing of the feature, and any recent maintenance or revisions of the feature. The main purpose of a Code Dive is to provide the Professional Team a means of observing the full system traceability of a feature through its inception in requirements to its testing and revision history.

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 inter-changeably 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.

Concept Map:

A diagram that contains concept nodes and relations using curves or arrows, with both nodes and relations being labeled.

Conditional Tail Expectation:

Expected value of the loss above a given loss level.

Condominium Owners Policy:

The coverage provided to the condominium unit owner in a building against damage to the interior of the unit.

Control Flow:

The sequence in which operations are performed during the execution of a computer program. *Contrast with*: **Data Flow**.

Conversion Factor:

(1) The ratio of the one-minute 10-meter winds to a reference wind (e.g., another level, gradient wind, or boundary layer depth-average). (2) 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 Scientific Literature:

A refereed or peer-reviewed publication specific to the academic discipline involved and recognized by the academic community as an advancement or significant contribution to the literature that has not been superseded or replaced by more recent literature.

Current Technical Literature:

A publication specific to the discipline involved and recognized by the relevant community as an advancement or significant contribution that has not been superseded.

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 acceptable to the Commission.~~ Includes current scientific literature and current technical literature.

Current Accepted Model:

(1) ~~The~~ A flood model determined acceptable under the 2021 flood standards.
(2) ~~The~~ A hurricane model determined acceptable under the ~~2021~~ 2023 hurricane standards.

Damage:

(1) Physical harm caused to ~~something~~ property in such a way as to impair its value, usefulness, or normal function. (2) 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 incorporated 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 code requirements. Since the Commission is reviewing hurricane models for purposes of residential rate filings in Florida and flood models for purposes of personal 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 (flood or hurricane) relative to the total cost to rebuild or replace the property of like kind and quality.

Damaging Wave Action:

Waves with sufficient energy to cause structural damage to a personal residential structure.

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 Validation:

Techniques to assure the needed accuracy, required consistency, and sufficient completeness of data values used in model development and revision.

Datum, Horizontal & Vertical:

The reference specifications of a measurement system, usually a system of coordinate positions on a surface (horizontal datum) or heights above or below a surface (vertical datum). A datum provides a baseline reference for numerical values associated with location or height. Common datums used in the U.S. include North American Datum, NAD27 and NAD83 (horizontal) and National Geodetic Vertical Datum, NGVD29 and National American Vertical Datum, NAVD88 (vertical).

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**.

Deficiency:

A lack of required documentation. Some common deficiencies include failure to respond to all portions of a standard, disclosure, or form; failure to update text to the current *Hurricane Standards Report of Activities* language or the current *Flood Standard Report of Activities* language; omission of supporting scientific references; errors and contradictory material in the Submission; insufficient detail for review of methodology; and failure to follow the acceptability process requirements.

Demand Surge:

A sudden and generally temporary increase in material and labor costs which occurs following a catastrophic event.

Depreciation:

The decrease in the value of property over time.

Development of Vulnerability Functions:

The derivation, calibration, and validation of hurricane or flood vulnerability functions.

Discharge:

The volume of water moving through a specifically defined location or two-dimensional area over a quantity of time, usually quantified in cubic feet per second (cf/s).

Disclosure:

Information (including forms) required from the modeling organization related to a particular standard, which is not deemed as trade secret information by the modeling organization and shall be included in the Submission document.

Dry Floodproofing:

Measures that result in a building being watertight, with walls and exterior surfaces substantially impermeable to the passage of floodwater, and with structural components having the capacity to resist flood loads.

Economic Inflation:

~~With regards to insurance, t~~The trended long-term increase in the costs of insurance coverages brought about by the increase in costs for the materials and services.

Elevation:

Vertical distance above or below a specific vertical datum.

Erosion (Flood Induced):

The wearing away, collapse, undermining, or subsidence of land during a flood.

Event, Flood:

A peril that results in coastal, inland, or compound flooding in Florida.

Event, Hurricane:

~~For purposes of modeling hurricane losses, an event is any h~~Hurricane that makes landfall in Florida ~~as a hurricane~~ or by-passes Florida ~~as a hurricane but comes close enough to cause~~ causing 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:

The background environmental surface pressure of a tropical cyclone far from the tropical cyclone's center. The difference between the far-field and minimum central pressure is related to the tropical cyclone maximum wind.

Filling Rate:

See: **Decay Rate**.

Finding:

An official conclusion or determination by the Commission after conducting an investigation, inquiry, or research into a specific matter.

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 testing.

Flood:

A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties, at least one of which is the policyholder's property, from:

1. Overflow of inland or tidal waters,
2. Unusual and rapid accumulation or runoff of surface waters from any source,
3. Mudflow, or
4. Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

See s. 627.715(1)(a)5.(b), F.S.

Flood Barrier:

A structural component attached to or constructed around a building or building opening, preceding a flood event, to prevent flood waters from entering a building or area by creating a watertight barrier. Flood barriers can include permanent but movable components, such as watertight doors and seals, or temporary (removable) components, such as floodwall panels.

Flood-borne Debris:

Objects carried or moved by floodwaters into a personal residential structure and capable of causing damage to that structure.

Flood, Coastal:

Flood resulting from astronomical tides ~~or~~ and storm surge.

Flood Conditions:

Physical characteristics associated with flooding such as extent and elevation or depth, flow velocity, waves, duration, erosion, salinity, contamination, debris.

Flood, Compound:

Coastal and inland flooding occurring coincidentally, such that the flood level at an affected location may exceed that from coastal flooding alone or inland flooding alone.

Flood Depth (Hazard):

Flood elevation minus ground elevation.

Flood Depth (Vulnerability):

Flood elevation minus lowest floor elevation. For coastal floods, flood depth is measured: (1) from the wave crest elevation or from the water surface including wave runup, or (2) from the stillwater elevation, provided however, that wave conditions are incorporated into vulnerability functions.

Flood Duration:

The length of time in which an area or building is inundated by floodwaters.

Flood Elevation:

Elevation of the water surface relative to a vertical datum. For coastal floods, the flood elevation includes wave setup (wave radiation stress) and is taken at the wave crest elevation or the water surface including wave runup, unless wave conditions are incorporated into vulnerability functions.

Flood Extent:

The horizontal limits of a given flood event, occurring where the ground elevation equals the flood elevation.

Flood Frequency:

The probability, in percentage, that a flood of a specific level will occur or be exceeded in any given year.~~; e.g., a~~A flood with a 1% flood frequency (i.e., 0.01 annual probability) is a flood that has a 0.01 probability of being equaled or exceeded in any year.

Flood, Inland:

Flood not of coastal origin. Inland floods typically are due to ~~rainfall~~precipitation, runoff, ponding, and include riverine floods, lacustrine floods, and surface water flooding.

Flood Inundation:

The rising of a body or source of water and its overflowing onto normally dry land.

Flood, Lacustrine:

A type of inland flooding usually associated with a generally non-moving water source (e.g., lake, pond) caused by water levels rising and inundating adjacent areas with standing water.

Flood Life Cycle:

The full progression of flooding conditions, beginning with the initial flood inundation, continuing through the rise, peak, and fall of floodwaters, and ending when floodwaters have receded below the threshold set in the definition of flood.

Flood Mitigation Measure:

Any measure which reduces flood damage to a building by (1) preventing flood waters from inundating the building (e.g., elevating a building above the estimated flood elevation), or (2) decreasing the damage which flood inundation would cause to a building (e.g., elevating electrical and other flood-susceptible components of the building above the flood elevation and retrofitting the portions of the building which would be inundated with flood-resistant materials).

Flood, Riverine:

A type of inland flooding usually associated with a watercourse (e.g., river, stream) which results in water overflowing the banks of the watercourse and inundating adjacent areas with moving water. The velocity of the floodwater can be a major factor in the resulting damage and injuries associated with the flood.

Flood, Surface Water:

Flooding caused by the accumulation of above-ground water which is not associated with a specific watercourse or water body, including flooding of urban areas (e.g., streets).

Floodplain:

Any land area susceptible to being inundated by floodwaters from any source.

Floodwater:

The water that inundates an area during a flood, usually containing debris and possible contaminants.

Flow Velocity:

The velocity of water as it moves within a channel or over land, usually quantified in feet per second (ft/s).

Flowchart:

A diagram that visually depicts information moving through a system identified by iconic representations of components. Components are interconnected by pathways frequently represented by arrows. Examples of flowcharts are flow of data and control, and flow of information in a system comprised of people and machines.

Footprint, Flood:

The horizontal extent inundated by flood.

Footprint, Hurricane:

A plan view map of the highest wind velocities over the storm episode.

~~**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.~~

Frequency Distribution:

Division of a sample of observations into a number of classes together with the number of observations in each class.

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**.

Fundamental Engineering Principles:

The basic engineering tools, physical laws, rules, or assumptions from which other engineering tools can be derived.

Geocoding:

Assignment of a location to geographic coordinates.

Geographic Grid:

An array of cells used to define geographic space. Each cell stores a numeric value that represents a geographic attribute (e.g., elevation) for that unit of space. Data from the grid cells can be compiled into a set of contours or used to create a three-dimensional surface. When the grid is drawn as a map, cells are often assigned colors according to their numeric value. Each grid cell is referenced by its x, y coordinate location.

Geographic Information System (GIS):

An integrated collection of computer software and data used to review and manage information about geographic places, analyze spatial relationships, and model spatial processes. A GIS provides a framework for gathering and organizing spatial data and related information so that it can be displayed and analyzed.

Geographic Location Data:

Information related to the geocoding process within the model software.

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:

~~Maximum~~ The ratio ~~of the windspeed averaged over a short interval of time (such as 3 or 10 seconds) to the~~ between the peak wind gust of a specific duration to the corresponding mean windspeed for a period of time.

Homeowner Insurance Policy (HO):

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 1950s. Prior to that time, homeowners wishing coverage for fire, theft, and liability had to purchase three separate policies.~~ Typically, ~~H~~homeowner's policies do not cover ~~earthquake or~~ flood. ~~These are sold separately.~~

HUC-8, Florida Modified:

A modified version of the USGS HUC-8 subbasin boundaries from the Watershed Boundary Dataset (WBD) used for reporting modeled results. Subbasins have been trimmed at the Florida state line and predominately trimmed at the coastal shoreline. Resulting smaller subbasins at the northern Florida state line have been merged into downstream subbasins (Lower Conecuh and Escambia; Pea and Lower Choctawhatchee; Lower Chattahoochee and Lower Flint and Apalachicola; and Alapaha and Upper Suwannee), while some larger subbasins have been subdivided (Lower St. Johns, Daytona-St. Augustine, Upper St. Johns, Crystal-Pithlachascotee, Kissimmee, Peace, Florida Southeast Coast, and Florida Bay-Florida Keys). The Florida Modified HUC-8 boundaries are provided in shapefile format in the file *FLmodHUC8_boundaries.zip*.

HUC-8, HUC-10, HUC-12:

Modeling organization developed or refined hydrologic units (HUs) identified by the corresponding USGS HUC designation. Modeling organizations may refine these HUs or define their own.

Human-Computer Interaction (HCI):

A multidisciplinary field focusing on the interactions between humans (i.e., users) and computer technology. The principles of HCI focus on the design of user interfaces and common design guidelines for improving the usability of user interfaces.

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 hurricane model; e.g., modeled windspeed at a particular 10-meters height is 74 miles per hour or greater.~~

Hurricane Mitigation Measure:

A factor or function that improves a structure's resistance to wind, water infiltration, or missile impact.

~~**Hurricane Parameter:**~~

~~An input (generally stochastic) to the hurricane model; e.g., radius of maximum wind, maximum wind, profile factor, instantaneous speed and direction of motion.~~

Hydraulic Structure:

A submerged or partially submerged structure that conveys, controls, or modifies the natural flow of water (e.g., bridges, culverts, canals).

Hydrologic Unit Code (HUC):

The designation assigned to a hydrologic unit in the watershed boundary dataset by the USGS which describes where the unit is located geographically and the level of subdivision of the unit. HUCs are designated by hierarchical numbers, with smaller subdivisions consisting of 2 additional digits: 8 digits for subbasins (HUC-8), 10 digits for watersheds (HUC-10), and 12 digits for subwatersheds (HUC-12).

Implementation:

The process of transforming a design specification into a system realization with components in hardware, software, and humanware. *See also*: **Code**.

Increased Cost of Compliance (ICC):

Coverage offered by the National Flood Insurance Program (up to $30,000) to help cover the costs of bringing a home or business into compliance with local community floodplain management ordinance or regulations during repairs or reconstruction.

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 c~~Characteristic or event ~~is one~~ which is unaffected by the existence of another characteristic or ~~by whether or not~~ another event ~~occurs~~.

Inflow Angle:

The angle that near-surface ~~hurricane~~ tropical cyclone wind vectors make with respect to the azimuthal direction about the storm center. The angle is measured inward toward the storm center. It is a parameter used to transform assumed circular ~~hurricane~~ tropical cyclone winds ~~appropriate for the free troposphere~~ to inward directed winds appropriate for the near-surface.

Initial Soil Conditions:

Conditions (generally related to moisture content) of a soil preceding a precipitation or flood event, which affect the soil infiltration rate and maximum infiltration volume. The initial conditions of soil can have a large impact on ~~rainfall~~ precipitation runoff, due to the ability (or inability) of the soil to absorb water. Initial moisture conditions of a soil can be affected by groundwater levels or recent ~~rainfall~~ precipitation events.

Inquiry:

Fact-finding process used by the Commission to gather information to understand a specific issue and develop informed recommendations for standards, disclosures, audit items, and forms.

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.

Insured Primary Damage:

Damage that is not excess of or secondary to another policy, contract, or endorsement.

Integration Test:

A test to ensure the correctness of all components when operating as a whole.

Intensity:

~~The peak one-minute sustained, 10-meter winds measured near the center of a tropical cyclone~~The highest maximum sustained surface windspeed in a tropical cyclone, measured or estimated from measurements near the storm center, at a point in time. This quantity is denoted by Vmax (maximum velocity) in the Reference Hurricane Set and in the HURDAT2 database. Intensity thresholds in the Saffir-Simpson Hurricane Wind Scale are based on maximum sustained windspeed. The Reference Hurricane Set maximum sustained windspeed is typically assumed to be representative of an upstream marine roughness wind exposure for a landfalling storm, or for an upstream open terrain wind exposure for a storm already inland. *See also*: **Maximum Sustained Windspeed**.

Interactive Traceability:

In the context of computer software auditing and review, the dynamic ability to trace and verify the relationships between software artifacts (such as requirements, design elements, code, and test cases) in real-time or through user-driven interactions during an audit or review process.

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.

Inverse Barometer Effect:

A response in sea level to a change in atmospheric pressure.

Isotach:

A line of constant windspeed.

Issue:

Concerns or problems related to the operation and theoretical soundness of the hurricane or flood model, use of reasonable assumptions, and other related aspects dealing with accuracy or reliability.

Landfall:

~~A landfall has occurred when~~ The point at which the center of tropical cyclone circulation crosses the coastline from ~~sea~~ water to land.

Landfall Frequency Distribution:

Frequency distribution of ~~hurricanes~~ tropical cyclones whose centers have crossed the coastline from water (Atlantic Ocean or Gulf of ~~Mexico~~America) to land. For ~~hurricane~~ tropical cyclone paths that roughly parallel the coastline with multiple crossings, a single count of the initial crossing shall be used in the frequency distribution.

Law and Ordinance Coverage:

Coverage for loss to the undamaged portion of the building if municipal ordinance or code may require that a partially damaged building be demolished; the cost of demolition of the undamaged portions of the building, if it is mandated by the building, zoning, or land use ordinance or law; any increased expenses incurred to upgrade, repair, or replace the building with one conforming to the current building laws or ordinances.

Licensed Professional Engineer:

Professional engineer who has met specific qualification standards in education, work experience, and examinations and has been licensed by a state licensure board.

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:

The portion of the insurance premium applicable to the payment of insured losses only, exclusive of insurance company expenses and profits, per unit of insured exposure. Loss costs are generally stated per thousand dollars of exposure.

Loss Exceedance Estimate:

The loss amount which would be exceeded at a given level of probability based on a specific exposure dataset.

Lowest Floor:

The lowest floor of the lowest enclosed area, including basement, but excluding any unfinished or flood-resistant enclosure, usable solely for vehicle parking, building access, or limited storage, provided that such enclosure is not built so as to render the structure in violation of building code and floodplain management requirements.

Major Flood Control Measure:

Measure undertaken on a large scale, to reduce the presence, depth, or energy of flow or waves in areas that receive flood protection from the measure. Major flood control measures include dams, levees, and floodwalls whose failure could affect hundreds of personal residential properties or more.

Manning's *n*:

An empirically determined coefficient, also known as the Manning's Roughness Coefficient, describing the roughness of a ground and ground-cover combination.

Manufactured Home:

Type of **Mobile Home**, fabricated in a plant on or after June 15, 1976, in compliance with the federal Manufactured Home Construction and Safety Standard Act, and according to standards promulgated by the U.S. Department of Housing and Urban Development (HUD). Manufactured homes are transportable in one or more sections, eight feet or more in width and built on an integral chassis. They are designed to be used as a dwelling when set in place and connected to the required utilities and includes the plumbing, heating, air-conditioning, and electrical systems contained therein. Persons licensed by the Florida Department of Highway Safety and Motor Vehicles must perform installation. The structures are typically covered by mobile/manufactured home insurance policies (MH).

Mapping of ZIP Codes:

~~Either a point estimate or a physical geographic area~~Representation of geographic area covered by a postal code or the centroid of the area.

Maximum Sustained Windspeed:

The ~~peak~~ highest one-minute ~~sustained,~~average wind measured or estimated during some longer period of time (e.g., ten minutes or one hour) at a height of 10~~-~~ meters ~~winds in a hurricane~~. *See also*: **Intensity**.

~~Mean Windspeed:~~

~~The time average 10-meter windspeed at a location. One minute is used to define the Saffir-Simpson Hurricane Wind Scale.~~

Miles Per Hour (mph):

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~~ is 882 mb in Hurricane Wilma (2005).

Mobile Home:

Common term used to describe **Manufactured Home** (see above). Technically, mobile homes were fabricated prior to June 15, 1976. These structures are covered by mobile/manufactured home insurance policies (MH).

Model:

A comprehensive set of formal structures, data, and components used to capture processes associated with the effects of hurricanes or floods and their impacts on personal and commercial residential ~~and commercial~~ properties leading to insured losses. These processes include the following:

1. Scientific and engineering representations such as equations, pseudo-codes, flowcharts, and source code,
2. All data necessary for producing such losses, and
3. System representations, involving human collaboration and communication, relating to 1. and 2.

Model Adjusted Hurricane Set:

The **Reference Hurricane Set** adjusted by ~~the~~ a modeling organization with additional data, datasets, and modifications, excluding climate adjustments ~~for climate change~~, and used to calibrate and validate modeled hurricanes impacting Florida and adjacent states.

Model Base Hurricane Set:

The hurricane set created by ~~the~~ a modeling organization: (1) **Reference Hurricane Set**, (2) **Model Adjusted Hurricane Set**, or (3) **Model Climate-Adjusted Hurricane Set**.

Model Climate-Adjusted Hurricane Set:

The **Reference Hurricane Set** or the **Model Adjusted Hurricane Set** modified by ~~the~~ a modeling organization to incorporate ~~the impacts of~~ climate ~~change~~adjustments, which may be used to calibrate the modeled hurricanes impacting Florida and adjacent states.

Model Management:

The processes associated with the model lifecycle, including design, creation, implementation, verification, validation, maintenance, and documentation of the model.

Model Organization:

The structure of components in a program/system, their interrelationships, and the principles and guidelines governing their design and evolution over time.

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 Test**.

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.

Modeling Organization:

An entity encompassing the requisite qualifications and experience (as found in Hurricane Standard G-2~~,~~ and Flood Standard GF-2) that organize resources to develop and maintain any models that have the potential for improving the accuracy or reliability of the hurricane loss projections used in residential insurance rate filings or flood loss projections used in personal residential insurance rate filings.

~~**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.~~

Modular Home:

Dwelling manufactured off-site and erected/assembled on-site in accordance with Florida Building Code requirements. All site related work (erection, assembly, and other construction at the site, including all foundation work, utility connection, etc.) is subject to local permitting and inspections. Modular homes are typically covered by homeowner insurance policies (i.e., HO-3).

National Flood Insurance Program (NFIP):

The program of flood insurance coverage and floodplain management administered under the National Flood Insurance Act of 1968 (and any amendments to it), and applicable ~~F~~federal regulations promulgated in Title 44 of the Code of Federal Regulations, Subchapter B.

NFIP Flood Model:

A collection of hydrologic and hydraulic analyses adopted by a community as part of an NFIP Flood Insurance Study (FIS).

National Geodetic Vertical Datum of 1929 (NGVD29):

A vertical datum, established in 1929 and renamed in 1973, derived from observed mean sea level at 26 tide gauges in the United States and Canada, and a series of benchmarks established across the United States from those tide gauges.

National Weather Service (NWS):

~~The National Weather Service is a~~A division of the National Oceanic and Atmospheric Administration (NOAA).

Network Organization:

A configuration of computer-based nodes and communication links which connect nodes.

Non-Tropical Storm:

A storm that ~~has none or only some of~~does not exhibit the full meteorological characteristics of a tropical cyclone. ~~It is driven in part or full by energy sources other than the heat content of seawater.~~ Such storms include, but are not limited to, ~~extra-tropical cyclones,~~ sub-tropical cyclones, post-tropical cyclones, and remnant lows ~~that may have had~~ with partial tropical origins; ~~, as well as~~ mid-latitude cyclones and frontal systems ~~that did not have~~of non-tropical origin~~s~~; and isolated precipitation phenomena such as mesoscale convective systems, deep convection, or land-sea breeze circulations.

North American Vertical Datum of 1988 (NAVD88):

A vertical datum, established in 1991, derived from measurements taken in the United States, Canada, and Mexico to address changes in land surface and the resulting elevation distortions due to the motion of the earth's crust, postglacial rebound, and ground subsidence.

Notional:

Theoretical or hypothetical information provided for completion of select Submission forms (e.g., Forms A-6 and AF-6).

Order of Operations:

Sequence that determines the order in which mathematical operations are performed in calculations involving more than one operation.

Parameter, Flood

An input to the flood model (e.g., radius of maximum wind, LULC, precipitation rate).

~~Hurricane~~ Parameter, Hurricane:

An input (generally stochastic) to the hurricane model~~;~~ (e.g., radius of maximum wind, maximum sustained windspeed, profile factor, instantaneous speed, ~~and~~ direction of motion).

Parameters (Input):

~~For Commission purposes, v~~Values entered into the model which are used, singularly or in combination, to calculate a characteristic (output).

Parcel:

Official land boundary defining the legal extent of a property.

Peak Gust:

Highest 10-meter winds recorded, generally in a 2- to 3-second interval.

Peak Hurricane Intensity:

Maximum one-minute sustained, 10-meter winds near the center of the hurricane over the lifetime of a hurricane. *See also*: **Intensity**.

Percolation:

The slow movement of water through the pores in soil or permeable rock, usually occurring under mostly saturated conditions.

Personal Property Insurance:

Coverage provided by homeowners or renters insurance policies that covers the cost of repairing or replacing contents (e.g., furniture, clothing, electronics, other personal possessions both inside and outside a home) if damaged, stolen, or destroyed due to a covered event.

Personal Residential Property Insurance:

The type of coverage provided by homeowner's, manufactured homeowner's, dwelling, tenant's, condominium unit owner's, cooperative unit owner's, and similar policies; see s. 627.4025, F.S.

Planetary Boundary Layer (PBL) Models:

Mathematical and statistical representations of the planetary boundary layer (PBL). The PBL is the bottom layer of the atmosphere that is in contact with the surface of the earth. Its properties are highly influenced by frictional contact with the surface. The PBL is often turbulent and ranges in depth from tens of meters to several kilometers depending on time of day and surface geography.

Platform:

The unique combination of hardware, operating system, and essential software required as a base for the model implementation.

Position:

~~The position of a hurricane is the l~~Latitude and longitude of ~~its~~ a tropical cyclone's 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. 627.041(2), F.S. Premium is the amount charged to the policyholder and includes all taxes and commissions.

Pressure Field:

The spatial distribution of sea level pressure associated with a storm. Typically, the sea level pressure increases radially from a minimum at the storm center until it is indistinguishable from the environmental background pressure.

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. Modeling organizations can determine the PML on various bases depending on the needs of the user.

Professional Engineer:

A person engaged in the professional practice of rendering service or creative work requiring education, training, and experience in engineering sciences and the application of special knowledge of the mathematical, physical, and engineering sciences in such professional or creative work as consultation, investigation, evaluation, planning or design of public or private utilities, structures, machines, processes, circuits, buildings, equipment or projects, and supervision of construction for the purpose of securing compliance with specifications and design for any such work (National Society of Professional Engineers).

Profile Factor:

A ~~hurricane~~ storm parameter input to the ~~hurricane~~ model that controls the radial structure of the tropical cyclone winds independently of radius of maximum wind (Rmax) and ~~M~~maximum ~~Velocity (Vmax)~~sustained windspeed.

Program:

See: **Code**.

Projection, Horizontal & Vertical:

A method by which the curved surface of the earth is portrayed on a flat surface. This generally requires a mathematical transformation of the earth's latitude and longitude, and projections vary by the portion of the earth being depicted. All projections distort distance, area, shape, direction, or some combination thereof. A common horizontal projection system used in Florida is State Plane Coordinates, divided into three zones: north, east, and west. Vertical components are added to a horizontal projection (x, y coordinates) to create a projected coordinate system (x, y, z coordinates).

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.

Proprietary:

See: **Trade Secret**.

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 Wind~~s~~ (Rmax):

Radial ~~D~~distance from the storm center ~~of a hurricane~~ to the location of the highest ~~strongest~~ maximum sustained surface windspeed anywhere in the storm at a point in time.

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~~ translation speed. Recurvature happens when the storm moves into the subtropical westerlies.

Refactoring:

Reviewing computer source code to improve nonfunctional attributes of the software through a continuous and sustained code improvement effort. Refactoring involves methods to reduce code complexity, improve readability and extensibility, including unit testing.

Reference Hurricane Set:

HURDAT2 date, time, position, and intensity data for the period 1900-2022~~2~~4.

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.

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.

Residential Property Insurance:

See s. 627.4025, F.S. *See also*: **Commercial Residential Property Insurance** and **Personal Residential Property Insurance**.

Return Period:

The reciprocal of an annual exceedance probability of a given loss or event.

~~**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 Hurricane Wind Scale:

A scale ranging from one-to-five based on a hurricane's maximum one-minute, 10-meter sustained windspeed. This scale estimates potential property damage from hurricane winds.

Saffir-Simpson Hurricane Wind Scale

Category	Sustained Winds (mph)	Damage
1	74 – 95	Minimal
2	96 – 110	Moderate
3	111 – 129	Extensive
4	130 – 156	Extreme
5	157 or higher	Catastrophic

Salinity:

The dissolved salt content of water, often expressed as a mass fraction. Typical salinity of seawater is 35 parts per thousand, but values vary due to river input, precipitation, evaporation, and other factors.

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.

Sea-Surface Drag Coefficient:

The ratio of the wind stress on the sea surface to the 10-meter wind kinetic energy. It is used to relate the near surface windspeed to the sea surface wind stress required for storm surge modeling. The coefficient is estimated semi-empirically and is observed to be a function of windspeed.

Semantic Network:

A graph-based knowledge representation containing nodes and relations, with both nodes and relations being labeled.

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 Model Revision:

Any revision to the model that results in changes to loss costs or probable maximum loss levels.

Significant Standard Revision:

Any non-editorial revision to a standard, disclosure, form, or audit item.

Site-Built Home:

Dwelling that is constructed on the building site in accordance with the Florida Building Code. All site related work (foundation, building, and other construction at the site, utility connection, etc.) is subject to local permitting and inspections. Site-built homes are typically covered by homeowner insurance policies (i.e., HO-3).

SLOSH:

Acronym for Sea, Lake, and Overland Surges from Hurricanes; ~~(SLOSH) is~~ an NWS computer model developed to estimate storm surge heights resulting from historical, hypothetical, or predicted hurricanes by taking into account the atmospheric pressure (difference between central pressure and ambient pressure far from the storm), radius of maximum winds~~s~~, and track data (~~forward~~ translation speed and direction).

Software Engineering:

The application of a systematic, disciplined, and quantifiable approach to the design, development, operation, and maintenance of software; that is, the application of engineering to software.

Soil Infiltration:

The downward entry of water into the soil or rock surface.

Soil Infiltration Rate:

The rate at which a soil under specified conditions absorbs ~~falling rain~~precipitation, melting snow, or surface water, expressed in depth of water per unit of time (e.g., inches/hour). Infiltration rate usually has a rapid decline with time from the beginning of infiltration and reaches a steady state as the soil eventually becomes saturated. At this stage, the infiltration rate would be approximately equal to the percolation rate.

Special Loss Settlement:

Loss provision used by the NFIP for manufactured homes equal to the minimum of the following three quantities: replacement cost, 1.5 times actual cash value, and policy limit.

Standard Flood Insurance:

Insurance that must cover only losses from the peril of flood equivalent to that provided under a standard flood insurance policy under the NFIP. Standard flood insurance issued

in Florida must provide the same coverage, including deductible and adjustment of losses, as that provided under a standard flood insurance policy under the NFIP; see s. 627.715, F.S.

Statistical Terms:

Definitions of statistical terms are available in: A Dictionary of Statistical Terms, Fifth Edition, F.H.C. Marriott, John Wiley & Sons, 1990.

Stillwater Elevation:

The elevation of the water surface (relative to a vertical datum) resulting from freshwater inputs, and where present, astronomical tides and storm surge. For coastal floods, the stillwater elevation may include wave setup (wave radiation stress) but excludes coastal wave forms (wave height, wave runup) that fluctuate above and below the stillwater elevation.

Stillwater Flood Depth:

Stillwater elevation minus ground elevation.

Storm Center:

The point ~~inside the eye of a hurricane~~ within a tropical cyclone ~~where the wind is calm and about~~around which the ~~hurricane~~winds rotate.

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 storm, 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 storm. Storm surge is usually estimated by subtracting the normal or astronomical tide from the observed storm tide.

Storm Tide:

The level of the sea surface including the effects of both the storm surge and the astronomical tide.

Storm Track:

The trajectory of a tropical cyclone center.

Stormwater:

Water from precipitation events which typically runs off impervious (e.g., paved) areas and is then conveyed via roadways and other impervious areas into systems of swales, ditches, pipes, channels, and ponds. Stormwater usually contains contaminants from

impervious areas (e.g., oil, chemicals) and can accumulate to cause flooding during larger precipitation events.

Sub-Component:

A component that is encapsulated within another component. *See also*: **Component Tree**.

Surface Roughness, Flood:

Irregularity of a physical surface that causes resistance to the flow of water over that surface. For water flowing over land, surface roughness relates to soil type, surface texture, land cover, and vegetation. For flood, surface roughness can be represented by the Manning's coefficient.

Surface Roughness, Hurricane:

Irregularity of a physical surface that causes resistance to the flow of wind over that surface. For wind flowing over land, surface roughness relates to the land use and land cover (e.g., grassland, trees, buildings). For wind flowing over marine or large inland waters, surface roughness depends on windspeed and the irregularity of the sea surface. Surface irregularity is commonly represented by a roughness length, which is the theoretical height (m) above the surface at which the wind velocity is zero. *See also:* **Surface Roughness, Marine.**

Surface Roughness, Marine:

Irregularity of the water surface due to the interaction of wind, waves, swell, and current. *See also:* **Surface Roughness, Hurricane.**

Surface Windspeed:

~~The wind observed or calculated at the height of 10-meters. Surface windspeed thresholds in the Saffir-Simpson Hurricane Wind Scale are averaged over one-minute.~~ Windspeed observed or calculated at a reference height of 10 meters.

System Decomposition:

The hierarchical division of a system into components. *See also*: **Component Tree**.

Systems Modeling Language (SysML):

A general-purpose modeling language for systems engineering applications that supports the specification, analysis, design, verification, and validation of a broad range of systems and systems-of-systems.

~~**Temporary Flood Protection Measure:**~~

~~Any measure temporarily installed preceding a flood event to protect a building or area from inundation by floodwaters, which is then removed after the flood event.~~

Terrain:

~~Terrain or terrain roughness for structures or a site is determined by the s~~Surface ~~area~~ region surrounding ~~the~~ a site ~~including other structures (height and density) and~~including topographic features such as ground elevation, vegetation or trees, and bodies of water, and for wind, structures (height and density).

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.

Test Adequacy:

Extent to which a set of test cases covers the software's functionality, performance, and other critical aspects, ensuring the software is reliable and performs as expected. It is about defining criteria and using them to determine if enough testing has been completed.

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~~ the software 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 unit, aggregation, regression, and functional testing.

Time Element Coverage:

Insurance for a covered ~~incident~~ event resulting in loss of use of property for a period of time. The loss is considered to be time lost, not actual property damage~~;~~ (e.g., business interruption, extra expense, rent and rental value, additional living expense, leasehold interest coverage).

Topography:

A detailed graphic description or representation of the natural and artificial surface features of an area of land, in a way to show relative positions and elevations, and usually not including portions of land which are always or normally submerged. *See also*: **Bathymetry**.

Traceability:

Degree to which a relationship can be established between two or more products of the development process, especially products having a predecessor-successor or primary-subordinate relationship to one another.

Trade Secret:

Information, including a formula, pattern, compilation, program, device, method, technique, or process that (1) derives independent economic value from not being generally known to and not readily ascertainable by others who can obtain economic value from its disclosure or use, and (2) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy; see s. 688.002(4), F.S.

~~Forward~~ Translation Speed:

~~The forward s~~Speed at which a tropical cyclone's center 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.~~

Tropical Cyclone:

~~A generic term for a non~~Non-frontal synoptic-scale cyclone originating over tropical or subtropical waters with organized convection and definite cyclonic surface wind circulation.

Tropical Storm:

~~A t~~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.

Unified Modeling Language (UML):

A standardized modeling language in software engineering using graphic notation to create visual models of software systems. This language is designed to enable software developers to specify, visualize, construct, and document artifacts in object-oriented software development.

Unit:

See: **Component**.

Unit Conversion:

Physical-based transformation (e.g., knots to mph).

Unit Test:

Each component is tested on its own, isolated from the other components in the system.

Unobstructed Flow:

For flow over water, winds with an upstream marine wind exposure. For flow over land, winds representative of an upstream open terrain wind exposure.

User:

A person who uses a computer to execute code, to provide the code with input through a user interface, or to 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 Experience (UX) Engineering:

The systematic and iterative process of designing, implementing, and evaluating the interactions between humans (i.e., users) and computer technology, particularly user interfaces. UX engineering is closely related to Human-Computer Interaction ~~(HCI)~~, but focuses on the process that user interfaces are iteratively created, rather than the design principles that guide their initial creation.

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.

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.

Version Control:

A system or process for managing changes to versions of digital artifacts such as software, documents, or data files that allows for the tracking, comparison, and restoration of previous versions, and maintains a record of modifications, contributors, and timestamps.

Vertical Datum:

A base measurement point or set of points to which elevations are referenced.

Vertical Wind Profile:

The continuous variation of ~~hurricane~~ tropical cyclone windspeeds with height.

Visualization:

A two- or three-dimensional graphical display, chart, or plot meant to augment or replace a numerical table.

Vmax ~~(or Maximum Wind)~~:

The ~~peak one-minute, 10-meter winds in~~intensity of a hurricane~~. Depending upon the context, Vmax may also refer to the strongest gradient wind~~ as included in the Reference Hurricane Set and HURDAT2.

Vulnerability Assessment:

A determination as to how likely a particular insured structure is to be damaged by a hurricane or flood and an estimate of the loss potential.

Vulnerability Function (Flood):

The curve that represents the damage ratios expected at various flood depths.

Vulnerability Function (Wind):

The curve that represents the damage ratios expected at various windspeeds.

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.

Water Infiltration (Wind):

~~Rain~~Precipitation entering a building during a tropical cyclone, not including water intrusion caused by flood.

Water Intrusion (Flood):

Penetration of water from outside the structure into the structure, by means not included in the definition of flood (e.g., sewer back-up, groundwater). Water intrusion does not include precipitation water infiltration during a tropical cyclone, or during other ~~rain~~ precipitation events.

Watershed:

A geographic area of land where all precipitation drains to a common outlet or body of water, such as a stream, river, lake, or ocean.

Watershed Boundary Dataset (WBD):

The areal extent of surface water drainage to a point, accounting for all land and surface areas as defined by USGS. Watershed boundaries are determined solely upon science-based hydrologic principles, not favoring any administrative boundaries or special projects, nor a particular program or agency. The intent of defining hydrologic unit for the WBD is to establish a base-line drainage boundary framework, accounting for all land and surface areas.

USGS states that users should be aware that temporal changes may have occurred since the dataset was collected and that some parts of the data may no longer represent actual surface conditions. Users should not use the data for critical applications without full awareness of its limitations. The USGS appreciates acknowledgment for products derived from the data. The WBD for Florida, obtained from *https://usgs.gov/national-hydrography/access-national-hydrography-products*, is the version last modified on January 16, 2024.

Wave Crest Elevation:

Elevation (relative to vertical datum) of the top (crest) of a coastal wave. The wave crest elevation must be above the stillwater elevation.

Wave Height:

The vertical distance between the crest and the preceding trough of a wave.

Wave Proxy:

A characterization that accounts for the presence of waves without modeling waves explicitly.

Wave Runup:

The rush of water up a slope or structure face. Wave runup occurs as waves break and run up above the stillwater elevation.

Wave Runup Elevation:

Elevation (relative to vertical datum) that a wave runs up a slope or structure face. The wave runup elevation must be above the stillwater elevation.

Wave Setup (Wave Radiation Stress):

Super-elevation of the water surface over normal storm surge elevation due to onshore mass transport of water by wave action alone.

Weakening:

A reduction in the maximum one-minute sustained 10-meter winds. *See also*: **Decay Rate**.

Wet Floodproofing:

Measures that allow floodwaters to enter a building while preventing or providing resistance to flood damage to the building and its contents.

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.~~Two-dimensional plan view or snapshot map of the wind velocity field associated with a tropical cyclone at a point in time. Visualizations typically include windspeed contours (isotachs) and streamlines representing wind direction.

Wind Exposure:

The frictional regime of the wind at a given location determined by the weighted effect of upstream roughness elements on the flow measured in surface roughness (meters).

ZIP Code Centroid, Geographic:

~~Two types of centroids:~~

~~**Geographic Centroid:**~~

The geographic center of a ZIP Code.

ZIP Code Centroid, Population-Weighted ~~Centroid~~:

Geographic point that represents the average location of a population within a ZIP Code. ~~The center determined by weighting the distribution of population over the ZIP Code~~.

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INQUIRIES ~~OR INVESTIGATIONS~~

INQUIRIES ~~OR INVESTIGATIONS~~

The Commission finds that since its activities are ongoing, it is appropriate to set out a list of matters which the Commission determines are subjects for further inquiry ~~and~~ or investigation. These matters may be discussed during any Commission or committee meeting. 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.

The Professional Team shall provide~~s~~ a report detailing its findings and conclusions regarding ~~on~~ the inquiries ~~or investigations~~ to the Commission prior to the committee meetings.

Active Inquiries ~~or Investigations~~

~~***Roof Covering Type and Attachment***~~

~~The Professional Team is requested to explore with each modeling organization what types of metal, tile, and membrane roof coverings are considered in the model, what variations in attachments are considered in the model, and how building vulnerability functions are developed for the different roof covering types and attachments.~~

~~***Building and Roof Vulnerability***~~

~~The Professional Team is requested to explore with each modeling organization if and how roof covering loss costs can be separated from total building loss costs, and how policy terms related to roof deductible and actual cash value applied to the roof covering are accounted for in the loss costs produced by the model.~~

Commercial Residential Claims Data

The Professional Team is requested to evaluate whether modeling organizations have or can obtain sufficient commercial residential claims data to support more than one validation in Form S-4. The evaluation should consider both the quantity and quality of available claims data.

Previous Inquiries or Investigations

Acceptability Process and Standards for Future Consideration
(Note: Report was provided to the Commission July 2009 and is available through a public records request.)

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, forms, 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, forms, and procedures deemed appropriate in the *Report of Activities as of November 1, 2009*.

Adverse Loss Development
(Note: Report was provided to the Commission July 2013 and is available at *https://fchlpm.sbafla.com/media/qoynbefu/20130710_inquiriesreport.pdf*.)

Is the impact of reopened claims evident in the claims data provided to the modeling organizations for validation of the hurricane loss projections generated by the hurricane model? Should the impact of adverse loss development be incorporated in the hurricane model loss results, and if so, how? Should adverse loss development be a consideration to be incorporated into the hurricane standards or as a separate hurricane standard?

The Commission determined that adverse loss development shall not be incorporated into the existing hurricane standards.

ALE/Storm Surge/Infrastructure
(Note: Report was provided to the Commission July 2005 and is available through a public records request.)

The Commission investigated how ALE claim payments are affected by storm surge damage to the infrastructure.

The Commission determined that ALE loss costs produced by a hurricane model shall appropriately consider ALE claims as a result of damage to the infrastructure.

Building and Roof Vulnerability

(Note: Report was provided to the Commission August 2025 and is available at *https://fchlpm.sbafla.com/media/eq3foel2/pt-report-on-inquiries-8-21-25.pdf*.)

The Professional Team ~~is requested to~~ explored with each modeling organization if and how roof covering loss costs can be separated from total building loss costs, and how policy terms related to roof deductible and actual cash value applied to the roof covering are accounted for in the loss costs produced by the model.

The Commission determined that insurers do not regularly capture specific replacement values or policy terms pertaining to the roof. Historically and currently, roof information is bundled into Coverage A of a policy. A significant shift would be required within the insurance industry for roof specific replacement values and deductibles to become commonplace in how insurers track policy information. At present, roof covering loss costs cannot be separated from total building loss costs. Further, roof deductibles in policies are not present in the current generation of models, but modeling organizations are aware of movement in this direction.

Claims Data Contamination of Flood and Wind Losses

(Note: Report was provided to the Commission September 2017 and is available at *https://fchlpm.sbafla.com/media/xbnb2jga/20170928_pt_inquiry-report.pdf*.)

The Commission investigated how contamination of claims data (flood loss counted as wind loss) impacts validation and hurricane model output.

The Commission recognizes that this issue is ongoing and efforts to evaluate insurance company hurricane claims data are to be continually audited.

Commercial Residential Property

(Note: Reports were provided to the Commission July 2002, July 2005, July 2006, and July 2009. The reports are available through a public records request.)

The Commission studied commercial residential to determine (1) if the Commission should expand its scope to include commercial residential property in the hurricane 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 hurricane standards, and (5) if separate hurricane standards should be created for commercial residential.

The Commission determined that after the 2004 and 2005 hurricane seasons there was information on which reasonable commercial residential hurricane loss costs could be modeled and validated, and that commercial residential hurricane standards would be adopted.

Condo-Unit Floor Location
(Note: Report was provided to the Commission September 2017 and is available at *https://fchlpm.sbafla.com/media/xbnb2jga/20170928_pt_inquiry-report.pdf*.)

The Commission investigated the condo-unit floor location impact on hurricane loss costs and how the lack of floor location is treated in the hurricane model.

The Commission determined that the absence of floor location loss data for condominiums precludes the inclusion of this effect in~~to~~ a hurricane model.

Demand Surge
(Note: Report was provided to the Commission July 2003 and is available through a public records request.)

The Commission 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 hurricane 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 was sufficient information on which reasonable demand surge estimations could be made and to incorporate demand surge in~~to~~ the hurricane standards.

HURDAT Data Revisions
(Note: Reports were provided to the Commission July 2003 and July 2005 and are available through a public records request.)

The Commission assessed adopting HURDAT as the Base Hurricane Storm Set and determined that all hurricane models shall 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 and July 2006 and are available through a public records request.)

The Commission 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 and 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 through a public records request.)

The Commission investigated if any potential bias is entered into the hurricane 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 hurricane model results by the inclusion or exclusion of a year's hurricane season.

Impact of Legal and Claims Environment
(Note: Report was provided to the Commission September 2019 and is available at *https://fchlpm.sbafla.com/media/sdalhxo4/201909_pt_inquiryreportclaimsenvironment.pdf*.)

The Commission investigated the impact of the legal and claims environment (e.g., assignment of benefits, attorney fees, increased litigation) on modeled hurricane loss costs and hurricane probable maximum loss levels, including if the impact of the legal and claims environment is evident in the claims data provided to the modeling organizations for validation of the modeled hurricane loss costs and hurricane probable maximum loss levels; if the impact of the legal and claims environment should be incorporated in the hurricane model results, and if so, how; and if the impact of the legal and claims environment should be incorporated into the hurricane standards.

The Commission determined that the impact of the legal and claims environment shall not be incorporated into the existing hurricane standards at this time.

Impact on Modeling Organizations
(Note: Report was provided to the Commission July 2003 and is available through a public records request.)

The Commission investigated the cost factor involved with meeting the standards and the acceptability process, the impact changes have on this cost, and ideas for reducing 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.

Inland versus Coastal Exposures
(Note: Report was provided to the Commission September 2017 and is available at *https://fchlpm.sbafla.com/media/xbnb2jga/20170928_pt_inquiry-report.pdf*.)

The Commission investigated how the treatment of inland versus coastal exposures has an effect on the spatial evaluation of hurricane vulnerability functions.

The Commission determined this issue is covered under the existing standards and audit requirements as the approaches used are deemed proprietary.

Interactions of Hurricanes
(Note: Report was provided to the Commission July 2005 and is available through a public records request.)

The Commission investigated the assumptions used by the hurricane models regarding whether the damage caused by multiple hurricanes impacting the same exposure during a hurricane season is independent and how it impacts hurricane loss costs.

The Commission determined that hurricane models shall calculate ~~deductible~~ hurricane loss costs on an annual deductible basis.

Hurricane Mitigation Impact
(Note: Report was provided to the Commission July 2013 and is available through a public records request.)

The Commission considered the development of new forms to examine the impact of mitigation schemes, individually and in combination, on the mean damage ratio for a portfolio similar to the one used in Form V-1 for frame and masonry constructions and an actuarial form similar to Form V-3 providing hurricane loss costs rather than mean damage ratio.

The Commission adopted revisions to the reference structures in the existing hurricane vulnerability forms and determined the reporting of hurricane loss costs in Form V-3 for the reference building, for each individual hurricane mitigation measure, and for the combination of the four hurricane mitigation measures is adequate.

Multi-Decadal Variability and Its Impact on Expected Hurricane Loss
(Note: Reports were provided to the Commission July 2006 and July 2009 and are available through a public records request.)

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 for a total duration of 20-30 years and then decrease to activity levels like the low frequency and hurricane landfall times of the 1980s. The Commission assessed if the hurricane models should take this into account.

The Commission determined that its procedures are sufficient to review a hurricane model submitted to account for multi-decadal variability.

Retrofit or Remodeled Structures
(Note: Report was provided to the Commission July 2009 and is available through a public records request.)

The Commission investigated how retrofit or remodeled buildings are treated in a hurricane model and what information is reflected in year-built data provided by insurance companies.

The Commission determined that the current methods used by hurricane 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 through a public records request.)

The Commission investigated the use of latitude and longitude-based exposure datasets rather than ZIP Code based where the exposure is placed at the population centroid and how this would impact hurricane loss costs.

The Commission determined that ZIP Code based exposure data is appropriate.

Roof Covering Type and Attachment

(Note: Report was provided to the Commission August 2025 and is available at *https://fchlpm.sbafla.com/media/eq3foel2/pt-report-on-inquiries-8-21-25.pdf*.)

The Professional Team ~~is requested to~~ explored with each modeling organization what types of metal, tile, and membrane roof coverings are considered in the model, what variations in attachments are considered in the model, and how building vulnerability functions are developed for the different roof covering types and attachments.

The Commission determined that there are basically two approaches to modeling roof covering type and attachment. One treats these building characteristics as secondary modifiers to baseline building vulnerability functions. The second is an engineering approach that quantifies wind load and resistance directly on building components. Within each approach there are various levels of detail that the Commission determines acceptable in the various models. The Submissions themselves offer such details (e.g., disclosures in Standard V-4).

Software Engineering

(Note: Report was provided to the Commission July 2013 and is available at *https://fchlpm.sbafla.com/media/qoynbefu/20130710_inquiriesreport.pdf*.)

The Commission investigated the software engineering techniques, such as code refactoring, used by modeling organizations to improve the readability, efficiency, maintainability, and structure of software without changing its functionality.

The Commission determined the software engineering techniques and the availability of tools for use by modeling organizations to improve the readability, efficiency, maintainability, and structure of the software without changing its functionality shall be assessed before additional requirements are imposed in the Computer/ Information Standards.

Specific or Unique Hurricane Modeling Issues

(Note: Report was provided to the Commission July 2013 and is available at *https://fchlpm.sbafla.com/media/qoynbefu/20130710_inquiriesreport.pdf*.)

The Commission investigated specific or unique hurricane modeling issues.

The Commission determined anomalies related to specific counties or unique circumstances that may impact hurricane modeling results shall be identified, and these issues shall be evaluated and discussed by the Commission.

Storm Surge

(Note: Reports were provided to the Commission July 2009, available through a public records request, and July 2013 available at *https://fchlpm.sbafla.com/media/qoynbefu/20130710_inquiriesreport.pdf*.)

The Commission investigated how modeling organizations model storm surge during the development of the 2017 Flood Standards, including the following:

1. Storm surge calculation,
2. Underlying formulation of the storm surge calculation (e.g., dynamical or statistical, underlying equations or functional/distributional form), including whether it includes wave action,
3. Source and resolution of the bathymetry and coastal topography used in the storm surge calculation at the risk location level,
4. Hurricane parameters and characteristics used in the storm surge calculation,
5. Inputs used in the storm surge calculation that have not already been described,
6. Storm surge initialization in an individual storm surge calculation,
7. Storm surge development related to storm track out to sea,
8. Comparison of the storm surge calculated in the flood model with observed storm surge (e.g., five locations from a different coastal county),
9. Comparison of storm surge calculated in the flood model worst case for the same five locations compared with other datasets or models,
10. Flood model capability to determine losses due to storm surge explicitly, and
11. Development of the building flood vulnerability functions for storm surge.

The Commission sought input and feedback on the development of the flood standards from the modeling organizations and the public. In addition to monthly flood standards committee meetings over the course of a year, on-site visits to modeling organizations were conducted for additional feedback purposes. The Commission published *Discussion Flood Standards as of December 1, 2015*, for review of coastal and inland flood modeling.

The Commission adopted flood standards, disclosures, audit requirements, forms, and procedures deemed appropriate in the *Flood Standards Report of Activities as of November 1, 2017.*

Transition of Hurricanes

(Note: Report was provided to the Commission July 2005 and is available through a public records request.)

The Commission 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 hurricane models are adequate to capture the transition effects of hurricane weakening and friction, and that the hurricane models shall 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.

Uncertainty Reduction
(Note: Report was provided to the Commission September 2017 and is available at *https://fchlpm.sbafla.com/media/xbnb2jga/20170928_pt_inquiry-report.pdf*.)

The Commission investigated aspects of the hurricane model and inputs that could lead to the greatest reduction in the uncertainty in hurricane model outputs (e.g., hurricane frequency, damage functions, incorrect data input, granularity of exposure location (ZIP Code centroid versus street address) data input).

The Commission identified several aspects of hurricane models that drive the inherent uncertainties.

Vulnerability Hurricane Model Development for Hurricane Mitigation Features
(Note: Report was provided to the Commission July 2013 and is available at *https://fchlpm.sbafla.com/media/qoynbefu/20130710_inquiriesreport.pdf*.)

The Commission explored the use of a physical/engineering-based approach to vulnerability hurricane model development for application of hurricane mitigation features.

The Commission recognizes there are challenges in applying a physical/ engineering-based approach including the large number of input variables to support this type of hurricane vulnerability function development, converting physical loss to financial loss, and the insurance company hurricane claims analysis relative to the impact of hurricane mitigation factors. The Commission determined that the current methods used by hurricane models are adequate for the application of hurricane mitigation features.

APPENDICES

Acronyms

(These acronyms are applicable to the *Hurricane Standards Report of Activities* or the *Flood Standards Report of Activities*.)

AAL	Average Annual Loss
ACV	Actual Cash Value
AI	Artificial Intelligence
AIR	AIR Worldwide Corporation (now Verisk)
AI-SWE	Artificial Intelligence-Based Software Engineering
ALAE	Allocated Loss Adjustment Expense
ALE	Additional Living Expense
ARA	Applied Research Associates, Inc.
ASTM	American Society for Testing and Materials
BCEGS	Building Code Effectiveness Grading Schedule
BPMN	Business Process Model and Notation
ByP	By-~~P~~passing
CDF	Cumulative Distribution Function
CF	Conversion Factor
cf/s	Cubic Feet per Second
Ch.	Chapter
Citizens	Citizens Property Insurance Corporation
Commission	Florida Commission on Hurricane Loss Projection Methodology
CL	CoreLogic, Inc. (now Cotality, Inc.)
CP	Central Pressure
CS	Committee Substitute
EPR	Expected Percentage Reduction
EQE	EQECAT, Inc. (now ~~CoreLogic~~Cotality, Inc.)
F.S.	Florida Statutes
FBC	Florida Building Code
FCHLPM	Florida Commission on Hurricane Loss Projection Methodology
FEMA	Federal Emergency Management Agency
FFP	Far-Field Pressure
FHCF	Florida Hurricane Catastrophe Fund
FIPS	Federal Information Processing Standards
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FPM	Florida Public ~~Hurricane Loss~~ Model
ft/s	Feet per Second
FWMD	Florida Water Management District
GIS	Geographic Information System
HB	House Bill
HCI	Human-Computer Interaction
HEC-RAS	Hydrologic Engineering Center River Analysis System
HO	Homeowners Insurance Policy
HU	Hydrologic Unit

HUC	Hydrologic Unit Code
HUC-8	8-Digit Hydrologic Unit Code
HUC-10	10-Digit Hydrologic Unit Code
HUC-12	12-Digit Hydrologic Unit Code
HUD	U.S. Department of Housing and Urban Development
HURDAT2	Hurricane Data 2nd Generation
ICC	Increased Cost of Compliance
IF	Impact Forecasting
KCC	Karen Clark & Company
LAE	Loss Adjustment Expense
LHS	Latin Hypercube ~~Sampling~~Samples
LULC	Land Use Land Cover
m	Meters
mb	Millibars
MH	Manufactured Home
mi	Miles
mph	Miles per Hour
~~MRLC~~	~~Multi-Resolution Land Characteristics~~
n	Manning's Roughness Coefficient
N/A	Not Applicable
NAD/NAD83	North American Datum of 1983
NAVD/NAVD88	North American Vertical Datum of 1988
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NGVD/NGVD29	National Geodetic Vertical Datum of 1929
NLCD	National Land Cover Database
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
OIR	Office of Insurance Regulation
PBL	Planetary Boundary Layer
PML	Probable Maximum Loss
r	Radius
Rmax	Radius of Maximum Winds
RMS	~~Moody's RMS (formerly~~ Risk Management Solutions, Inc. (now Moody's)
rms	Root Mean Square
ROA	Report of Activities
s.	Section of Florida Statutes
SA	Sensitivity Analysis
SB	Senate Bill
SBA	State Board of Administration
SLOSH	Sea, Lake, and Overland Surges from Hurricanes
SRC	Standardized Regression Coefficient
SWE	Software Engineering
SysML	Systems Modeling Language
UA	Uncertainty Analysis
ULAE	Unallocated Loss Adjustment Expense

UML	Unified Modeling Language
U.S.	United States
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
UX	User Experience
Vmax	Maximum Velocity
VSK	Verisk
VT	Translational Velocity
WBD	Watershed Boundary Dataset
WGS/WGS84	World Geodetic System of 1984
WSP	Windfield Shape Parameter
ZIP	Zone Improvement Plan

Figures

(These figures are applicable to the *Hurricane Standards Report of Activities*.)

Figure 1 **State of Florida and Neighboring States by Region**

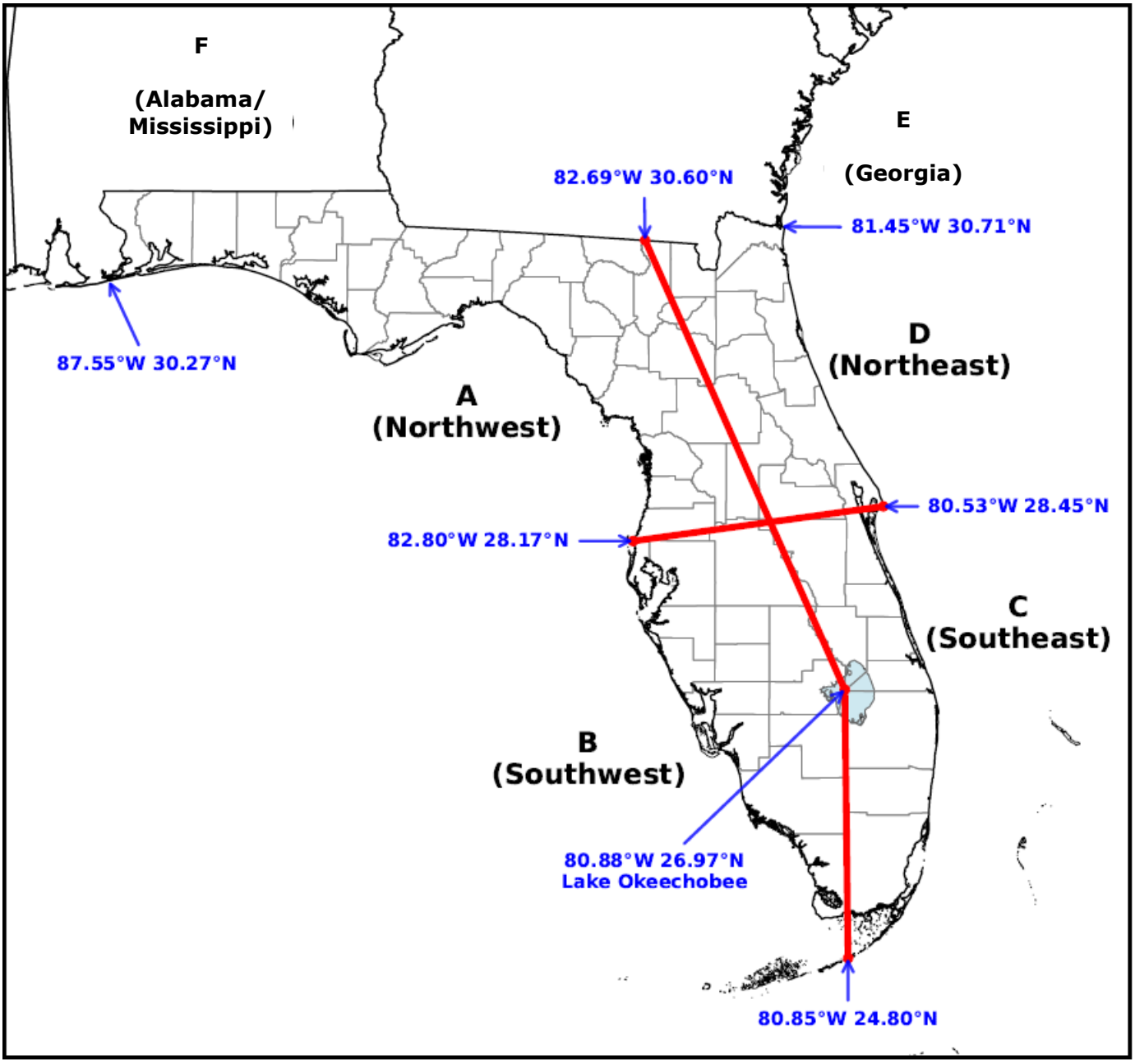


Figure ~~3~~2 Uncertainty Envelope (red lines) for the Conversion Factor

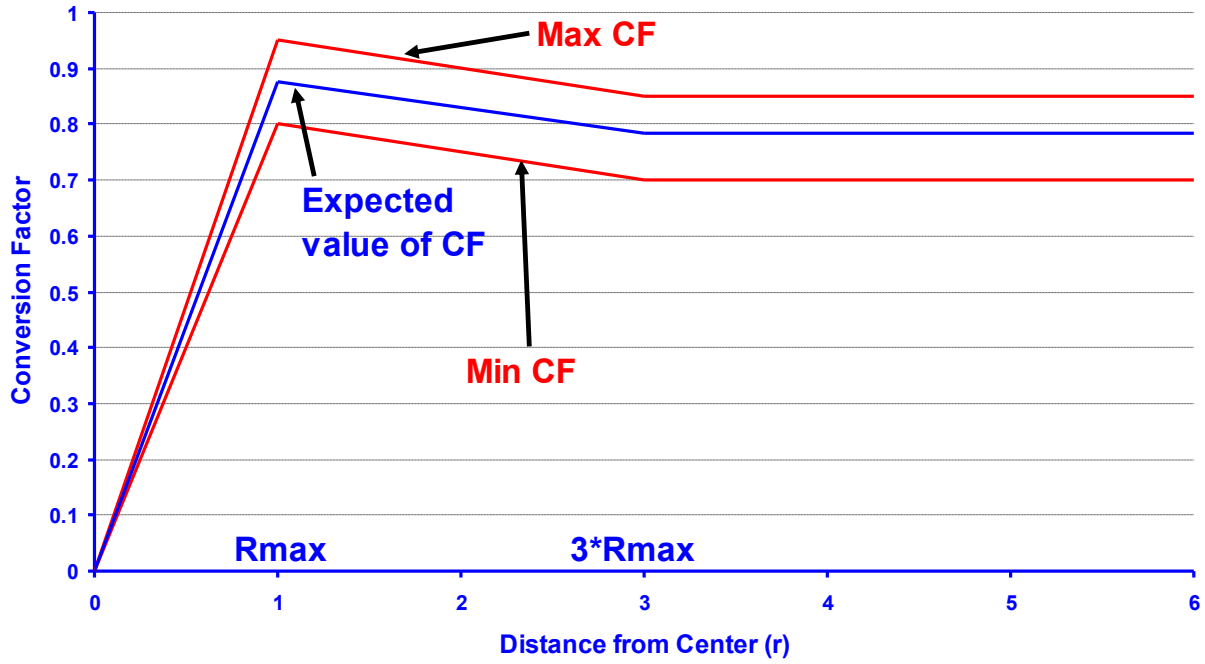


Figure ~~4~~3 Map Version of Grid for Calculating Hourly Wind Velocities

Figure 54 Grid for Calculating Hourly Wind Velocities

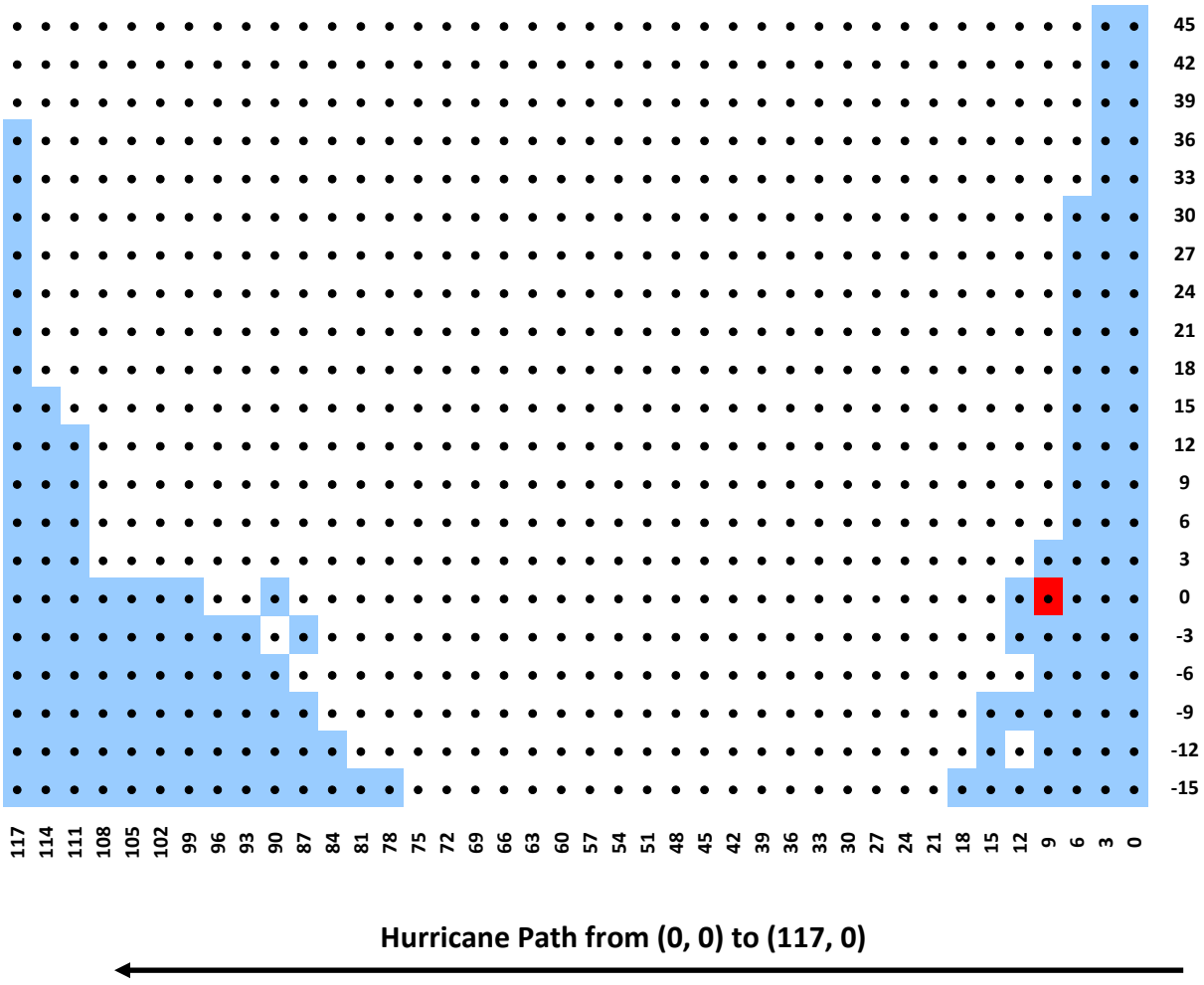


Figure ~~6~~5 Comparison of Cumulative Empirical Distribution Functions of Hurricane Loss Costs for all Hurricane Categories

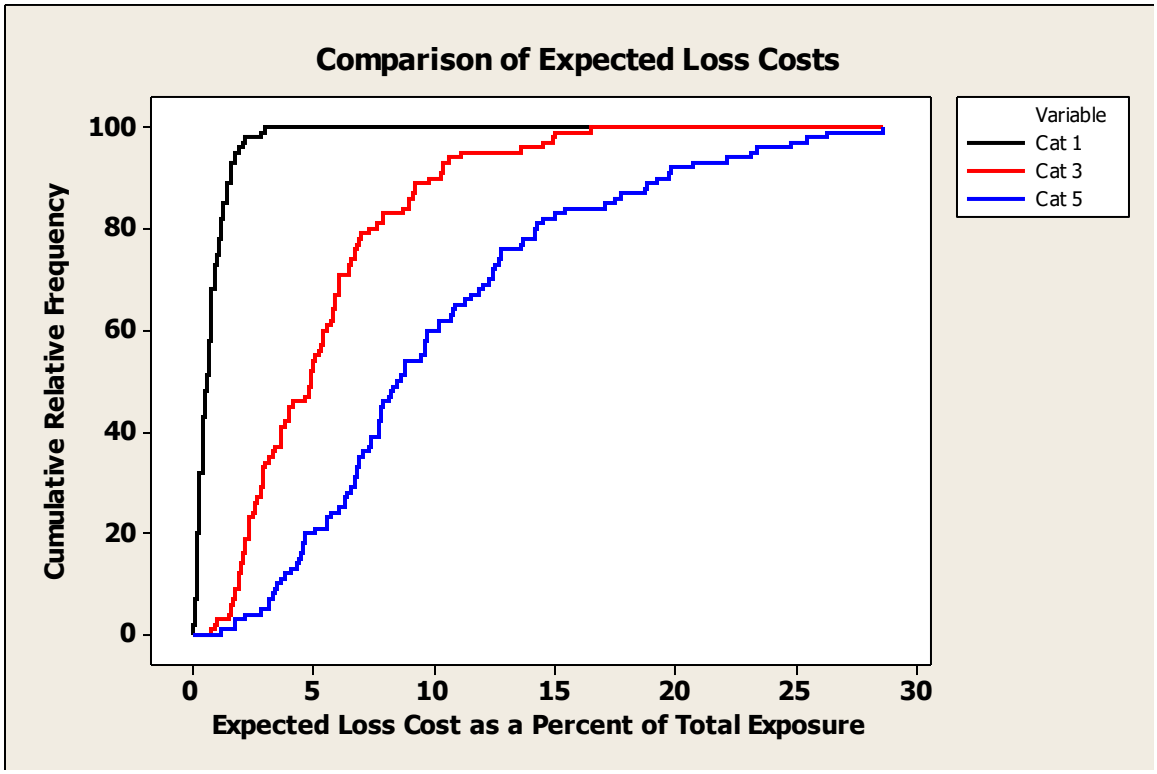


Figure ~~7~~6 Contour Plot of Hurricane Loss Cost for a Category 1 Hurricane

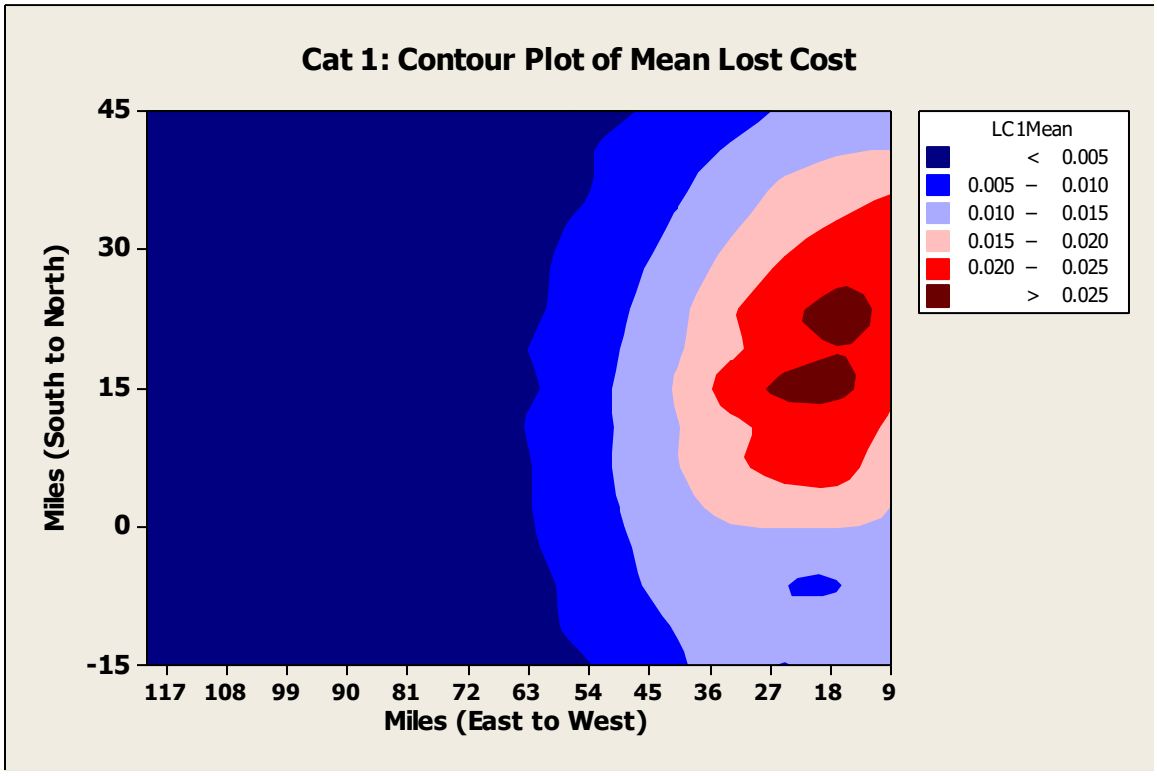


Figure ~~8~~7 Contour Plot of Hurricane Loss Cost for a Category 3 Hurricane

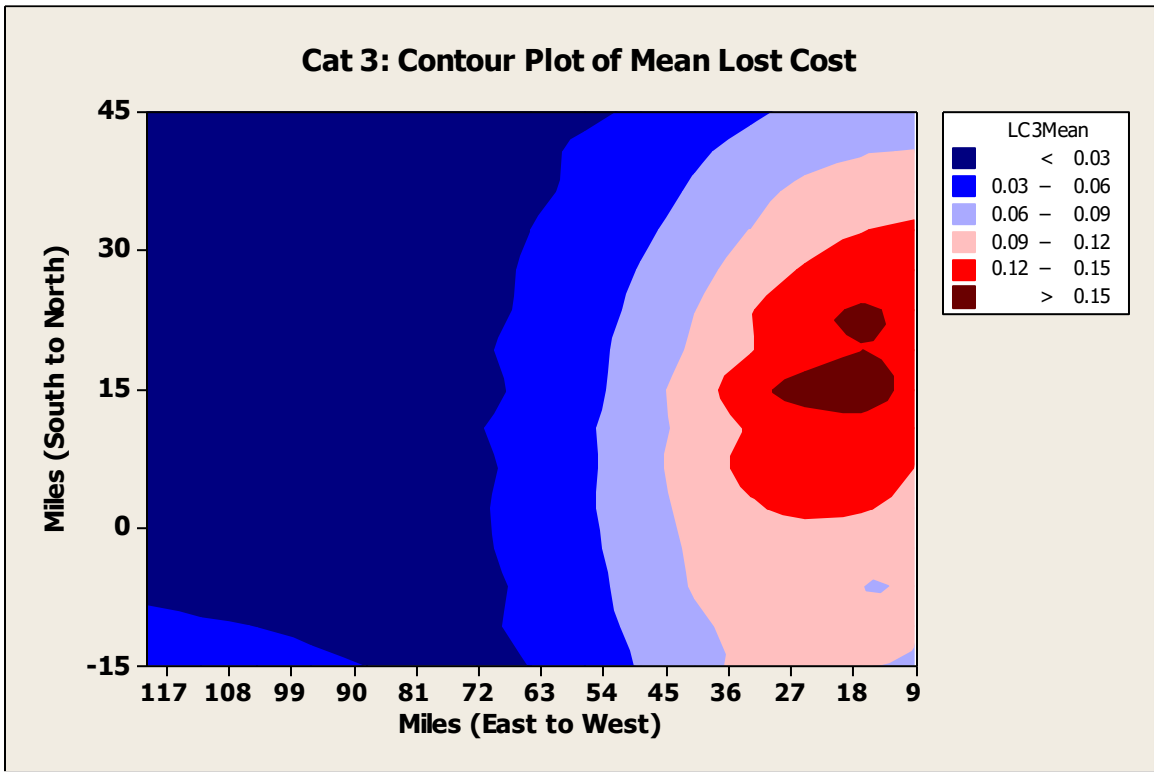


Figure ~~9~~8 Contour Plot of Hurricane Loss Cost for a Category 5 Hurricane

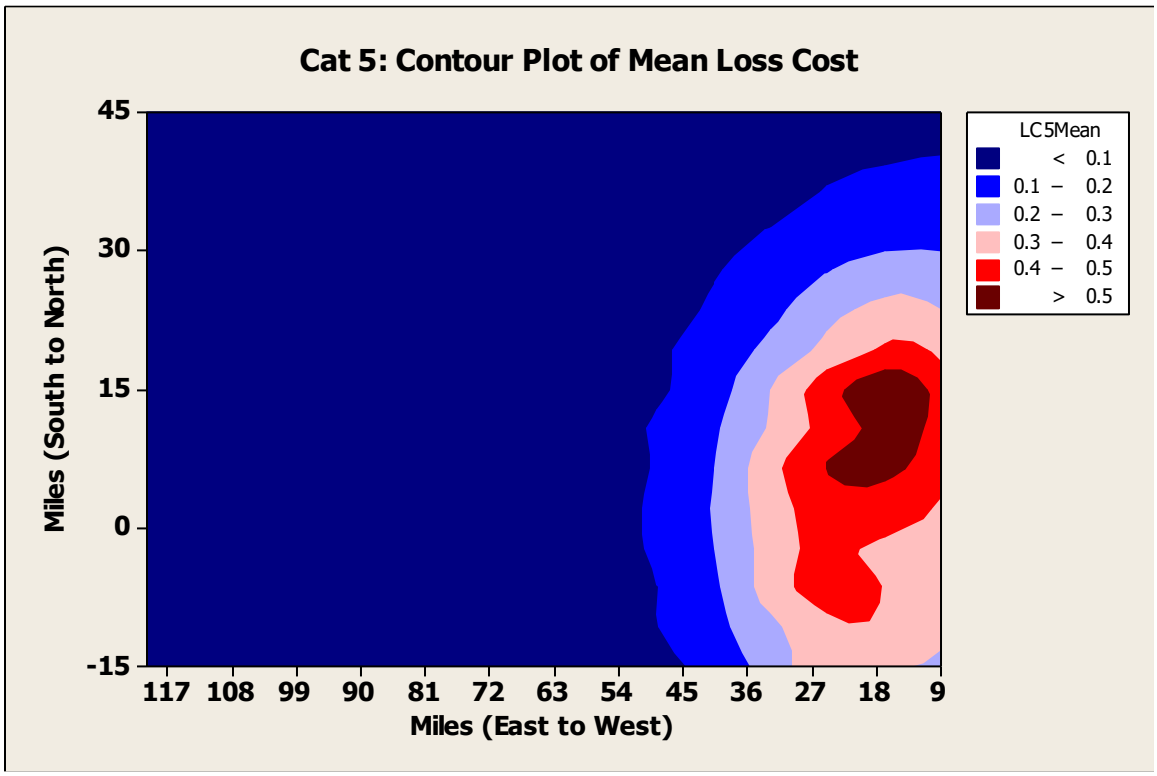


Figure ~~10~~9 Standardized Regression Coefficients (SRC) for Expected Hurricane Loss Costs for All Input Variables for All Hurricane Categories

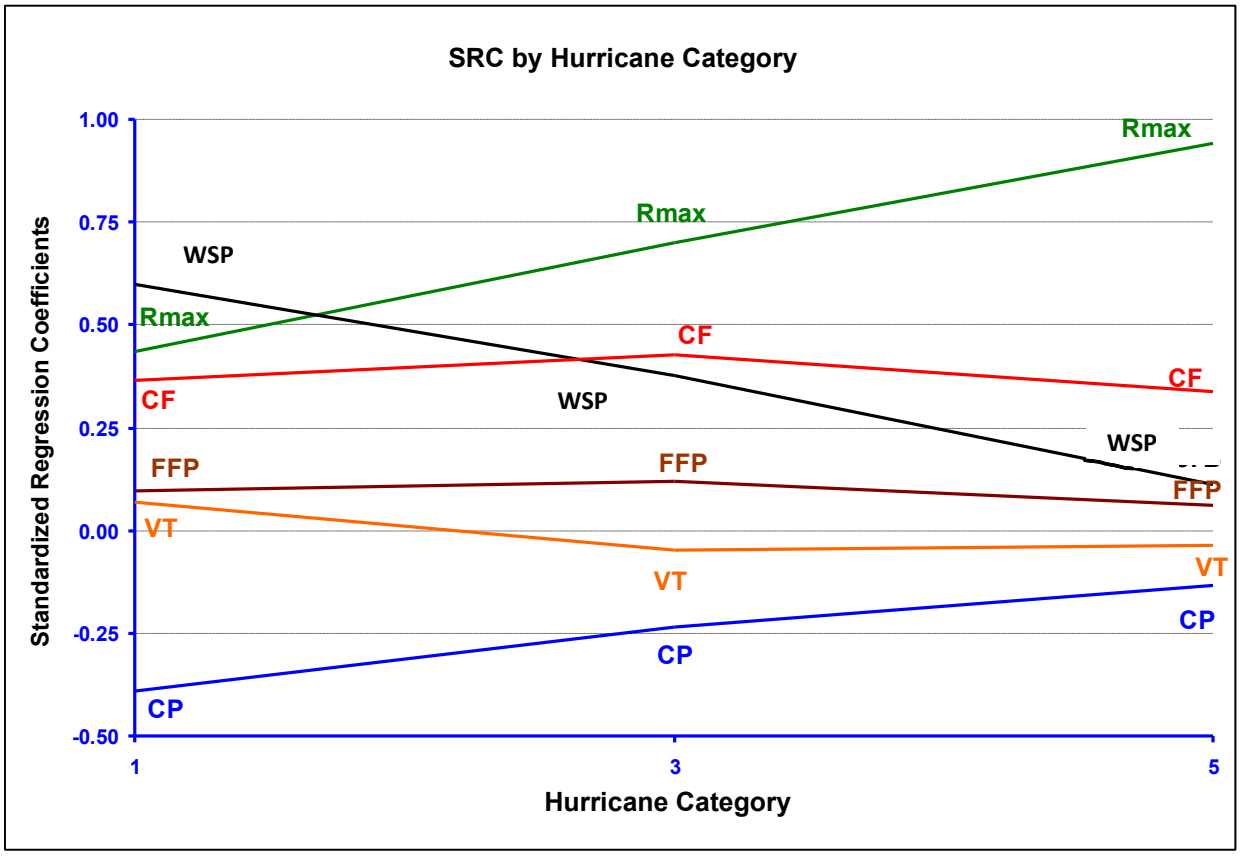


Figure ~~11~~10 Expected Percentage Reduction (EPR) for Expected Hurricane Loss Costs for All Input Variables for All Hurricane Categories

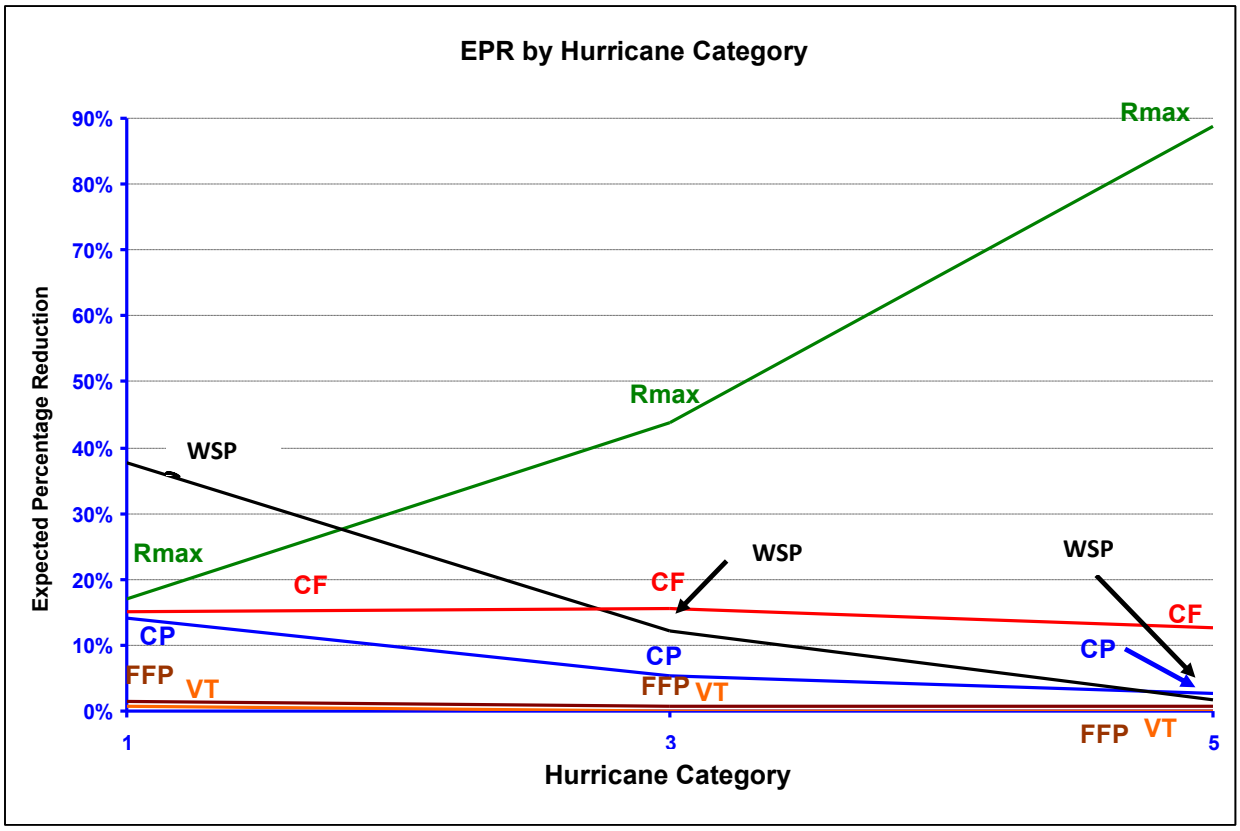


Figure ~~12~~11 **Florida County Codes**

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	DeSoto	**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 obtained from the Federal Information Processing Standards (FIPS) Codes.

Figure ~~13~~ 12 **State of Florida by County**

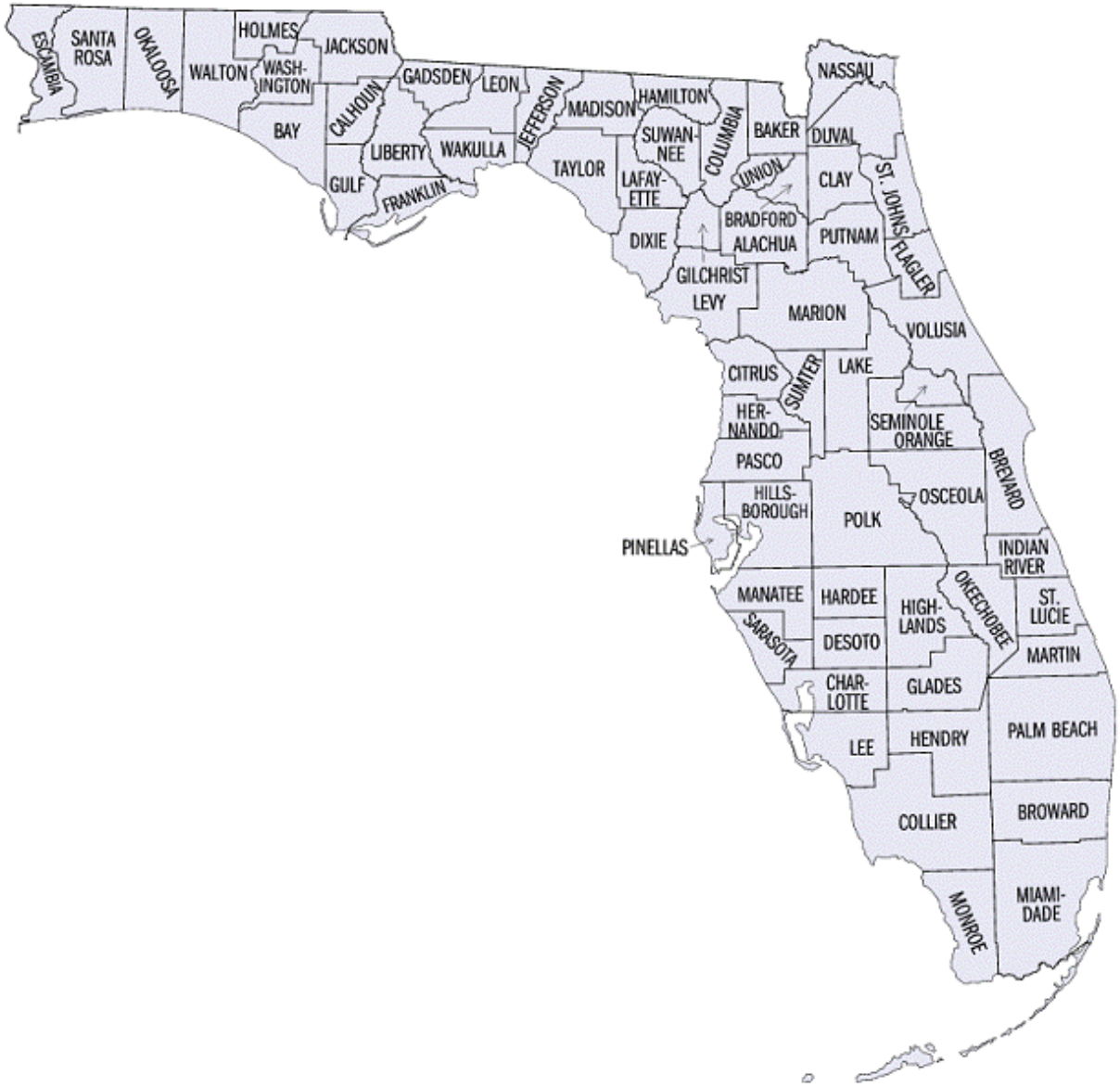
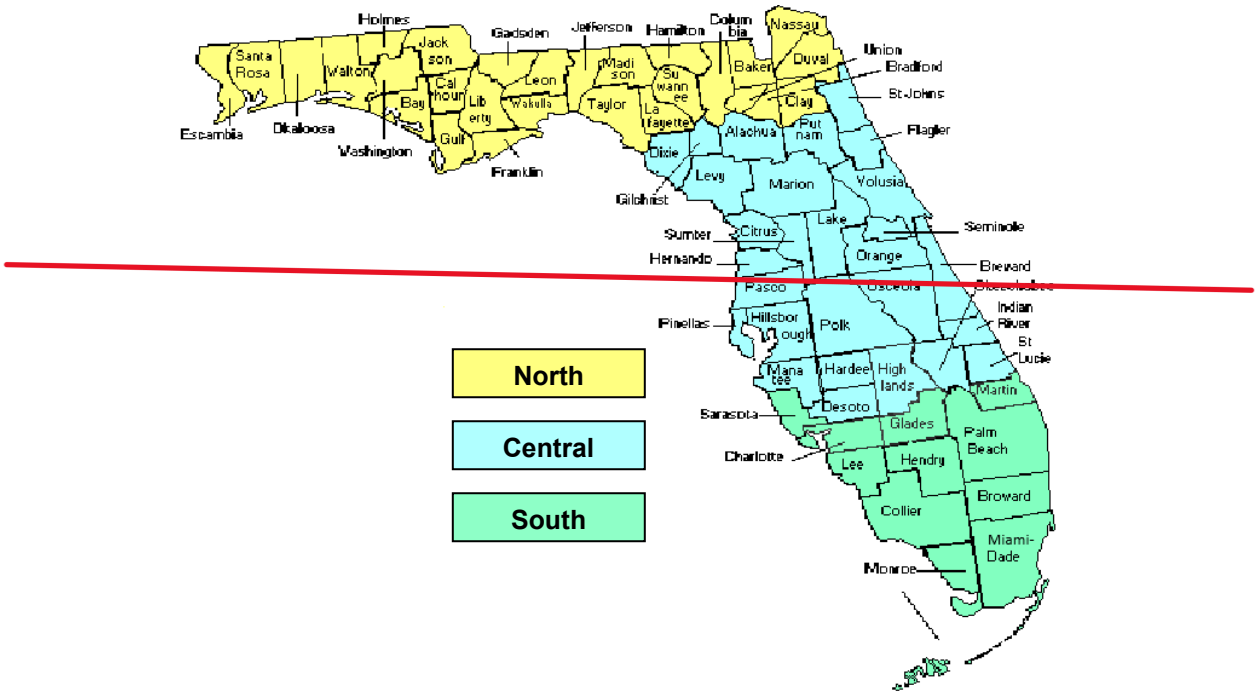
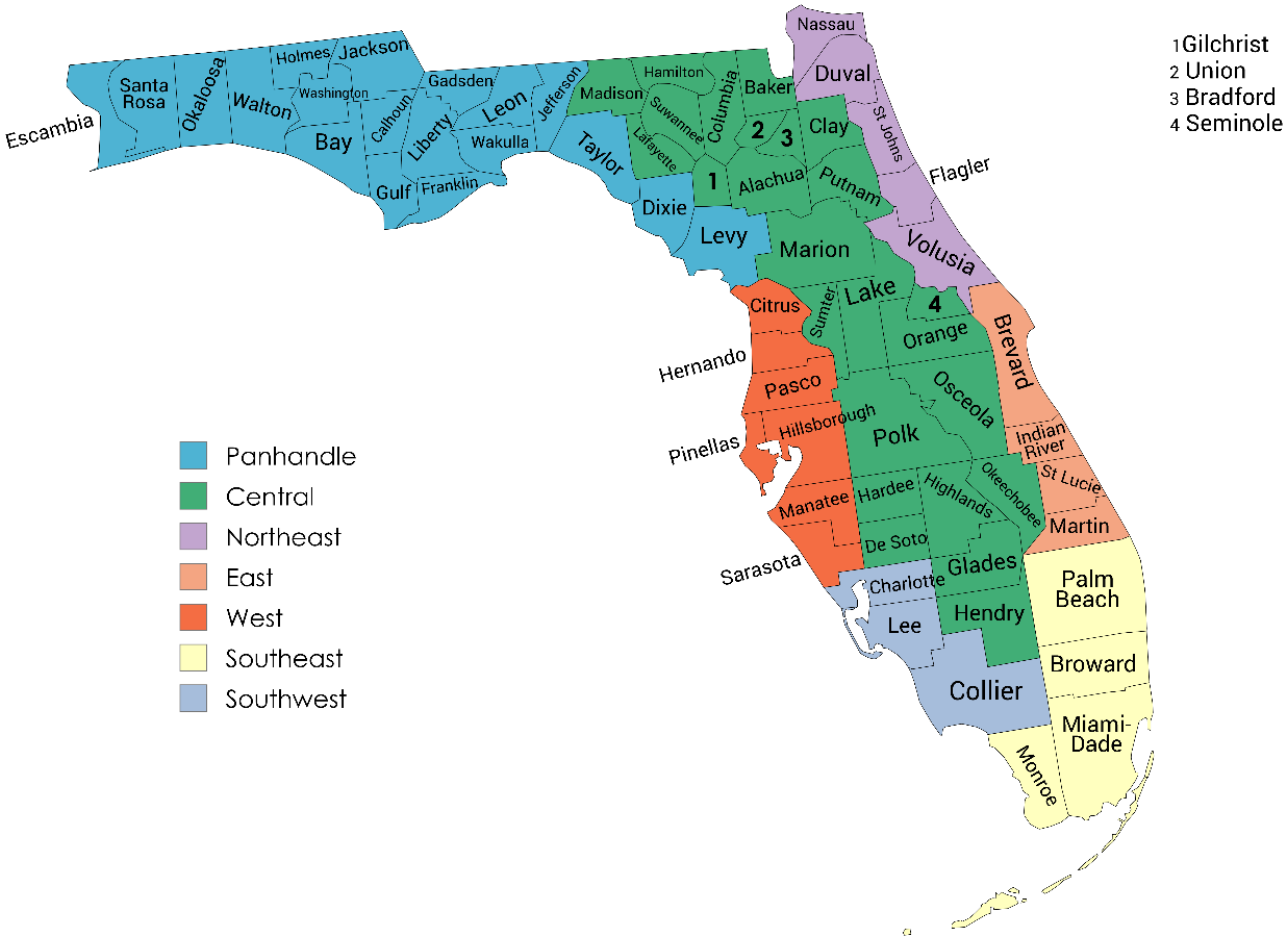
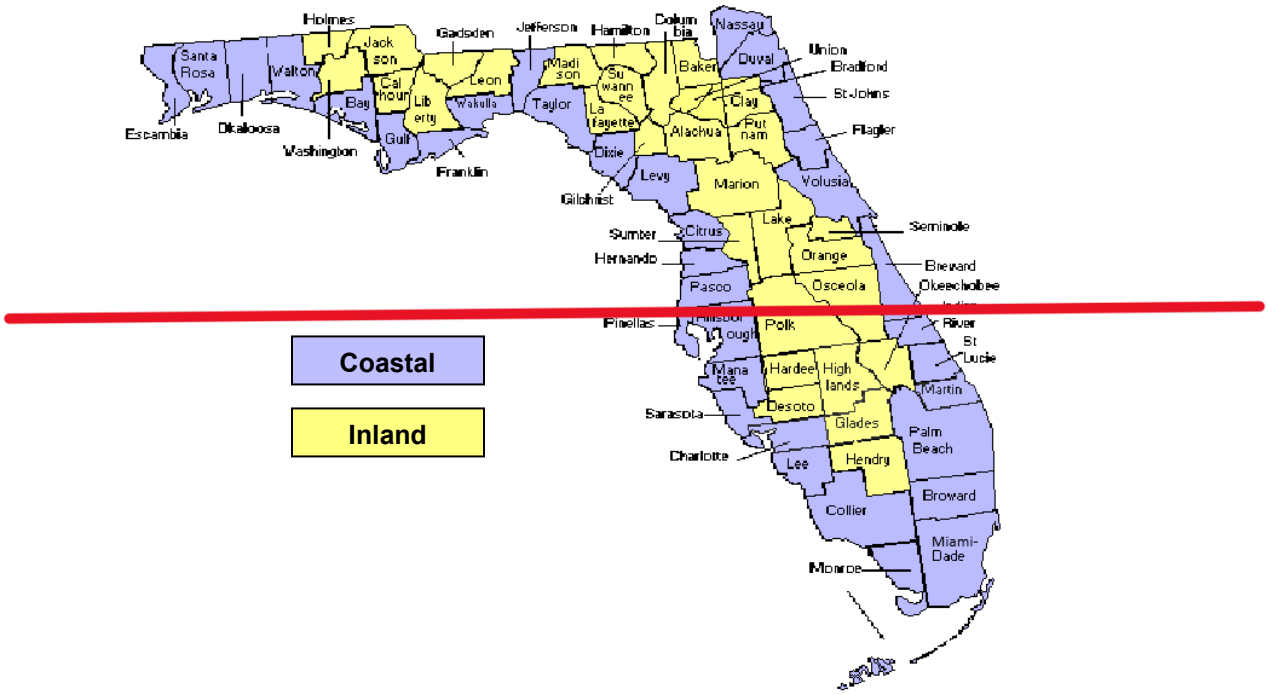


Figure ~~14~~13 State of Florida by ~~North/Central/South~~ Regions





~~*Figure 15* State of Florida by Coastal/Inland Counties~~



~~*Figure 16*~~ ~~Notional Set 1 – Deductible Sensitivities, Frame Owners~~
~~Florida Public Hurricane Loss Model 2019 Data~~
~~(x axis ordered by $500 deductible ratio)~~

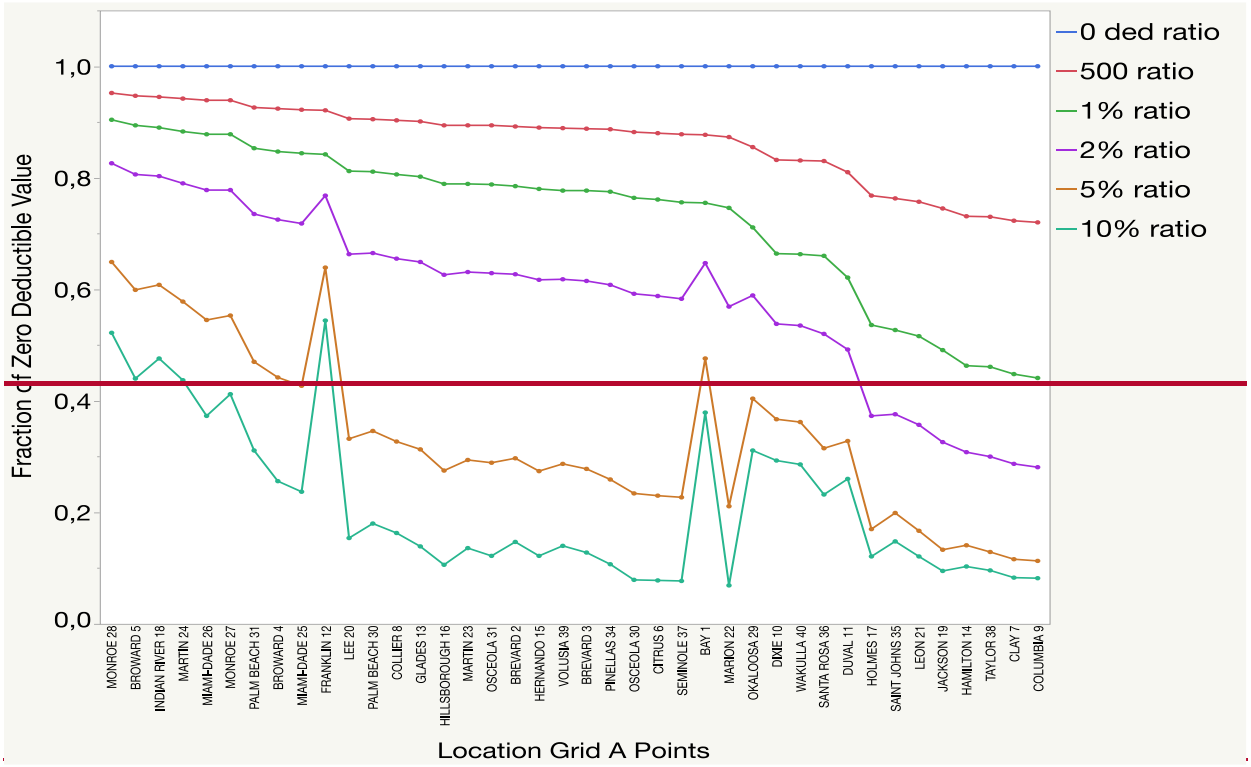


Figure ~~17~~ 14 **Notional Set 1 – Deductible Sensitivities, Frame Owners**
~~*Florida Public Hurricane Loss Model 2021 Data*~~
(x-axis ordered by $500 deductible ratio)

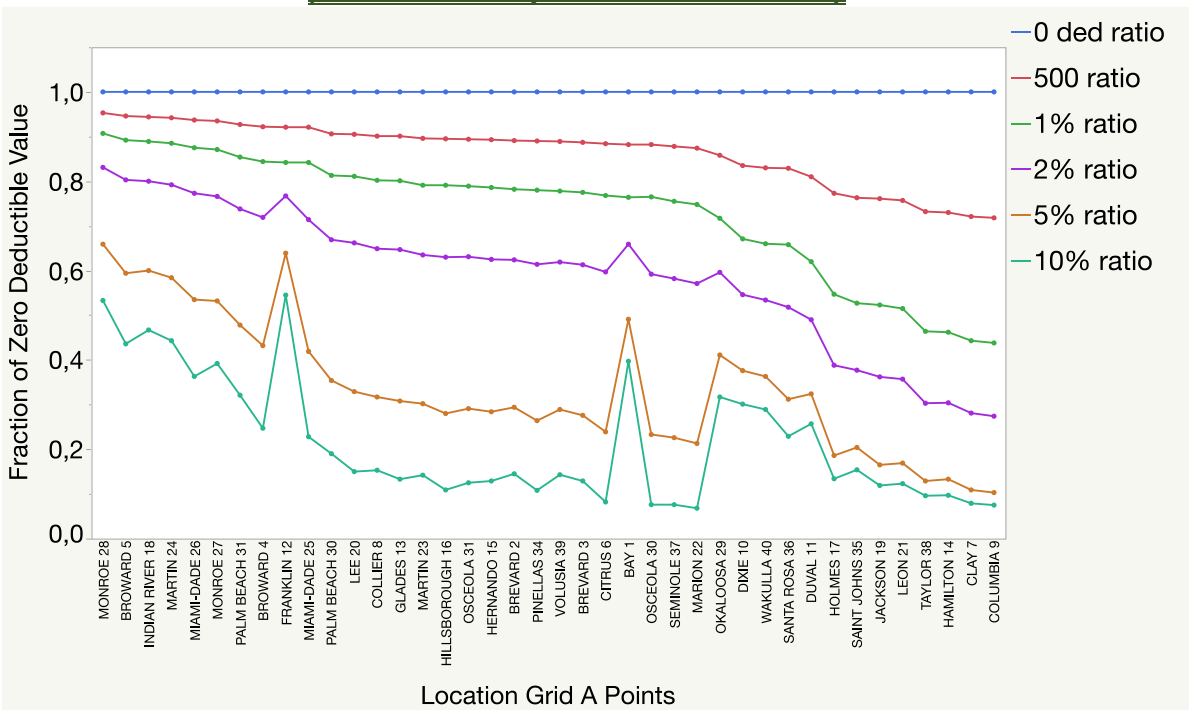
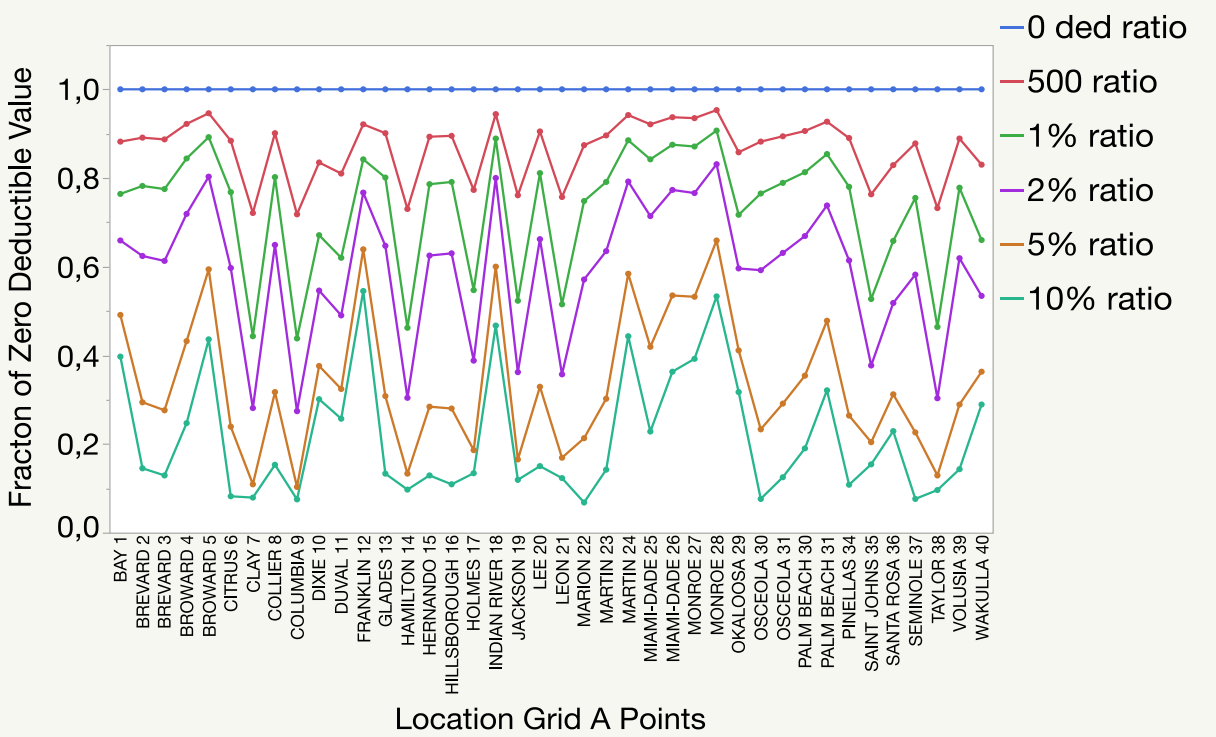


Figure ~~18~~ 15 **Notional Set 1 – Deductible Sensitivities, Frame Owners**
~~Florida Public Hurricane Loss Model 2021 Data~~
(x-axis ordered alphabetically)



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 12 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 or the executive director’s designee. The executive director’s designee must be a full-time employee of the corporation and have actuarial science experience.

4. The Director of the Division of Emergency Management or the director’s designee. The director’s designee must be a full-time employee of the division.

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 that was responsible for at least 1 percent of the aggregate statewide direct written premium for homeowner 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.

8. A licensed professional structural engineer who is a full-time faculty member in the State University System and who has expertise in wind mitigation techniques. This appointment shall be made by the Governor.

(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 and flood loss projections used in rate filings for personal lines residential flood insurance coverage. 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 and probable maximum loss levels for use in a rate filing under s. 627.062. An insurer may employ a model in a rate filing until 120 days after the expiration of the commission's acceptance of that model and may not modify or adjust models found by the commission to be accurate or reliable in determining probable maximum loss levels. This paragraph does not prohibit an insurer from using a straight average of model results or output ranges for the purposes of a rate filing for personal lines residential flood insurance coverage under s. 627.062.

(e) The commission shall adopt actuarial methods, principles, standards, models, or output ranges for personal lines residential flood loss no later than July 1, 2017.

(f) The commission shall revise previously adopted actuarial methods, principles, standards, models, or output ranges every odd-numbered year for hurricane loss projections. The commission shall revise previously adopted actuarial methods, principles, standards, models, or output ranges no less than every 4 years for flood loss projections.

(g) 1. A trade secret, as defined in s. 688.002, which is used in designing and constructing a hurricane or flood loss model and which 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. a. 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. The closed meeting must be recorded, and no portion of the closed meeting may be off the record.

b. The recording of a closed portion of a meeting is exempt from s. 119.07(1) and s. 24(a), Art. 1 of the State Constitution.

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; s. 1, ch. 2010-89; s. 431, ch. 2011-142; s. 76, ch. 2012-5; s. 5, ch. 2013-60; s. 2, ch. 2014-80; s. 1, ch. 2014-98; s. 2, ch. 2015-135; s. 1, ch. 2017-142; s. 1, ch. 2019-35; s. 4, ch. 2023-217.

627.4025 Residential coverage and hurricane coverage defined.–

(1) Residential coverage includes both personal lines residential coverage, which consists of the type of coverage provided by homeowner, mobile home owner, dwelling, tenant, condominium unit owner, cooperative unit owner, and similar policies, and commercial lines residential coverage, which consists of the type of coverage provided by condominium association, cooperative association, apartment building, and similar policies, including policies covering the common elements of a homeowners association. Residential coverage for personal lines and commercial lines as set forth in this section includes policies that provide coverage for particular perils such as windstorm and hurricane or coverage for insurer insolvency or deductibles.

(2) As used in policies providing residential coverage:

(a) "Hurricane coverage" is coverage for loss or damage caused by the peril of windstorm during a hurricane. The term includes ensuing damage to the interior of a building, or to property inside a building, caused by rain, snow, sleet, hail, sand, or dust if the direct force of the windstorm first damages the building, causing an opening through which rain, snow, sleet, hail, sand, or dust enters and causes damage.

(b) "Windstorm" for purposes of paragraph (a) means wind, wind gusts, hail, rain, tornadoes, or cyclones caused by or resulting from a hurricane which results in direct physical loss or damage to property.

(c) "Hurricane" for purposes of paragraphs (a) and (b) means a storm system that has been declared to be a hurricane by the National Hurricane Center of the National Weather Service. The duration of the hurricane includes the time period, in Florida:

1. Beginning at the time a hurricane warning is issued for any part of Florida by the National Hurricane Center of the National Weather Service; and

2. Ending 72 hours following the termination of the last hurricane watch or hurricane warning issued for any part of Florida by the National Hurricane Center of the National Weather Service.

(d) "Hurricane deductible" means the deductible applicable to loss caused by a hurricane.

History.–s. 8, ch. 95-276; s. 11, ch. 96-194; s. 10, ch. 97-55; s. 13, ch. 2023-130.

627.701(5)-(10) Liability of insureds; coinsurance; deductibles. –

(5) (a) The hurricane deductible of any personal lines residential property insurance policy issued or renewed on or after May 1, 2005, shall be applied as follows:

1. The hurricane deductible shall apply on an annual basis to all covered hurricane losses that occur during the calendar year for losses that are covered under one or more policies issued by the same insurer or an insurer in the same insurer group.

2. If a hurricane deductible applies separately to each of one or more structures insured under a single policy, the requirements of this paragraph apply with respect to the deductible for each structure.

3. If there was a hurricane loss for a prior hurricane or hurricanes during the calendar year, the insurer may apply a deductible to a subsequent hurricane which is the greater of the remaining amount of the hurricane deductible or the amount of the deductible that applies to perils other than a hurricane. Insurers may require policyholders to report hurricane losses that are below the hurricane deductible or to maintain receipts or other records of such hurricane losses in order to apply such losses to subsequent hurricane claims.

4. If there are hurricane losses in a calendar year on more than one policy issued by the same insurer or an insurer in the same insurer group, the hurricane deductible shall be the highest amount stated in any one of the policies. If a policyholder who had a hurricane loss under the prior policy is provided or offered a lower hurricane deductible under the new or renewal policy, the insurer must notify the policyholder, in writing, at the time the lower hurricane deductible is provided or offered, that the lower hurricane deductible will not apply until January 1 of the following calendar year.

(b) For commercial residential property insurance policies issued or renewed on or after January 1, 2006, the insurer must offer the policyholder the following alternative hurricane deductibles:

1. A hurricane deductible that applies on an annual basis as provided in paragraph (a); and

2. A hurricane deductible that applies to each hurricane.

(6) (a) It is the intent of the Legislature to encourage the use of higher hurricane deductibles as a means of increasing the effective capacity of the hurricane insurance market in this state and as a means of limiting the impact of rapidly changing hurricane insurance premiums. The Legislature finds that the hurricane deductibles specified in this subsection are reasonable when a property owner has made adequate provision for restoration of the property to its full value after a catastrophic loss.

(b) A personal lines residential insurance policy providing hurricane coverage may, at the mutual option of the insured and insurer, include a secured hurricane deductible as described in paragraph (c) if the applicant presents the insurer a certificate of security as described in paragraph (d). An insurer may not directly or indirectly require a secured deductible under this subsection as a condition of issuing or renewing a policy. A certificate of security is not required with respect to an applicant who owns a 100 percent equity interest in the property.

(c) A secured hurricane deductible must include the substance of the following:

1. The first $500 of any claim, regardless of the peril causing the loss, is fully deductible.

2. With respect to hurricane losses only, the next $5,000 in losses are fully insured, subject only to a copayment requirement of 10 percent.

3. With respect to hurricane losses only, the remainder of the claim is subject to a deductible equal to a specified percentage of the policy dwelling limits in excess of the deductible allowed under former paragraph (3)(a) but no higher than 10 percent of the policy dwelling limits.

4. The insurer agrees to renew the coverage on a guaranteed basis for a period of years after initial issuance of the secured deductible equal to at least 1 year for each 2 percentage points of deductible specified in subparagraph 3. unless the policy is canceled for nonpayment of premium or the insured fails to maintain the certificate of security. Such renewal shall be at the same premium as the initial policy except for premium changes attributable to changes in the value of the property.

(d) The office shall draft and formally propose as a rule the form for the certificate of security. The certificate of security may be issued in any of the following circumstances:

1. A mortgage lender or other financial institution may issue a certificate of security after granting the applicant a line of credit, secured by equity in real property or other reasonable security, which line of credit may be drawn on only to pay for the deductible portion of insured construction or reconstruction after a hurricane loss. In the sole discretion of the mortgage lender or other financial institution, the line of credit may be issued to an applicant on an unsecured basis.

3. A licensed insurance agent may issue a certificate of security after obtaining for an applicant a line of credit, secured by equity in real property or other reasonable security, which line of credit may be drawn on only to pay for the deductible portion of insured construction or reconstruction after a hurricane loss. The Florida Hurricane Catastrophe Fund shall negotiate agreements creating a financing consortium to serve as an additional source of lines of credit to secure deductibles. Any licensed insurance agent may act as the agent of such consortium.

3. Any person qualified to act as a trustee for any purpose may issue a certificate of security secured by a pledge of assets, with the restriction that the assets may be drawn on only to pay for the deductible portion of insured construction or reconstruction after a hurricane loss.

4. Any insurer, including any admitted insurer or any surplus lines insurer, may issue a certificate of security after issuing the applicant a policy of supplemental insurance that will pay for 100 percent of the deductible portion of insured construction or reconstruction after a hurricane loss.

5. Any other method approved by the office upon finding that such other method provides a similar level of security as the methods specified in this paragraph and that such other method has no negative impact on residential property insurance catastrophic capacity. The legislative intent of this subparagraph is to provide the flexibility needed to achieve the public policy of expanding property insurance capacity while improving the affordability of property insurance.

(e) An issuer of a certificate of security may terminate the certificate for failure to honor any of the terms of the underlying financial arrangement. The issuer must provide notice of termination to the insurer within 10 working days after termination. Unless the policyholder obtains a replacement certificate of security within an additional 20 working days after such notice, the deductible provision in the policy must revert to a lower deductible otherwise offered by the insurer and the policyholder is responsible for any additional premium required for a policy with such deductible.

(7) Prior to issuing a personal lines residential property insurance policy on or after April 1, 1997, or prior to the first renewal of a residential property insurance policy on or after April 1, 1997, the insurer must offer a deductible equal to $500 applicable to losses from perils other than hurricane. The insurer must provide the policyholder with notice of the availability of the deductible specified in this subsection in a form approved by the office at least once every 3 years. The failure to provide such notice constitutes a violation of this code but does not affect the coverage provided under the policy. An insurer may require a higher deductible only as part of a deductible program lawfully in effect on June 1, 1996, or as part of a similar deductible program.

(8) Notwithstanding the other provisions of this section or of other law, but only as to hurricane coverage as defined in s. 627.4025 for commercial lines residential coverages, an insurer may offer a deductible in an amount not exceeding 10 percent of the insured value if, at the time of such offer and at each renewal, the insurer also offers to the policyholder a deductible in the amount of 3 percent of the insured value. Nothing in this subsection prohibits any deductible otherwise authorized by this section. All forms by which the offers authorized in this subsection are made or required to be made shall be on forms that are adopted or approved by the commission or office.

(9) With respect to hurricane coverage provided in a policy of residential coverage, when the policyholder has taken appropriate hurricane mitigation measures regarding the residence covered under the policy, the insurer shall provide the insured the option of selecting an appropriate reduction in the policy's hurricane deductible or selecting the appropriate discount credit or other rate differential as provided in s. 627.0629. The insurer must provide the policyholder with notice of the options available under this subsection on a form approved by the office.

(10)(a)Notwithstanding any other provision of law, an insurer issuing a personal lines residential property insurance policy may include in such policy a separate roof deductible that meets all of the following requirements:

1. The insurer has complied with the offer requirements under subsection (7) regarding a deductible applicable to losses from perils other than a hurricane.

2. The roof deductible may not exceed the lesser of 2 percent of the coverage A limit of the policy or 50 percent of the cost to replace the roof.

3. The premium that a policyholder is charged for the policy includes an actuarially sound credit or premium discount for the roof deductible.

4. The roof deductible applies only to a claim adjusted on a replacement cost basis.

5. The roof deductible does not apply to any of the following events:

    a. A total loss to a primary structure in accordance with the valued policy law under s. 627.702 which is caused by a covered peril.

    b. A roof loss resulting from a hurricane as defined in s. 627.4025(2)(c).

    c. A roof loss resulting from a tree fall or other hazard that damages the roof and punctures the roof deck.

    d. A roof loss requiring the repair of less than 50 percent of the roof.

If a roof deductible is applied, no other deductible under the policy may be applied to the loss or to any other loss to the property caused by the same covered peril.

(b) At the time of initial issuance of a personal lines residential property insurance policy, an insurer may offer the policyholder a separate roof deductible with the ability to opt-out and reject the separate roof deductible. To reject a separate roof deductible, the policyholder shall sign a form approved by the office.

(c) At the time of renewal, an insurer may add a separate roof deductible to a personal lines residential property insurance policy if the insurer provides a notice of change in policy terms pursuant to s. 627.43141. The insurer must also offer the policyholder the

ability to opt-out and reject the separate roof deductible. To reject a separate roof deductible, the policyholder shall sign a form approved by the office.

(d) The office shall expedite the review of any filing of insurance forms that only contain a separate roof deductible pursuant to this subsection. The commission may adopt model forms or guidelines that provide options for roof deductible language which may be used for filing by insurers. If an insurer makes a filing pursuant to a model form or guideline issued by the office, the office must review the filing within the initial 30-day review period authorized by s. 627.410(2), and the roof deductible portion of the filing is not subject to the 15-day extension for review under that subsection.

History.–s. 605, ch. 59-205; s. 3, ch. 76-168; s. 1, ch. 77-457; ss. 2, 3, ch. 81-318; ss. 538, 541, 809(2nd), ch. 82-243; s. 79, ch. 82-386; s. 114, ch. 92-318; s. 16, ch. 93-410; s. 13, ch. 95-276; s. 12, ch. 96-194; s. 11, ch. 97-55; s. 26, ch. 97-93; s. 1736, ch. 97-102; s. 1183, ch. 2003-261; s. 4, ch. 2004-480; ss. 12, 13, ch. 2005-111; s. 45, ch. 2006-12; s. 28, ch. 2007-1; s. 17, ch. 2007-90; s. 151, ch. 2008-4; s. 13, ch. 2022-268; s. 21, ch. 2023-172; s. 8, ch. 2023-217.

627.7011 Homeowners' policies; offer of replacement cost coverage and law and ordinance coverage.–

(1) Prior to issuing a homeowner's insurance policy, the insurer must offer each of the following:

(a) A policy or endorsement providing that any loss that is repaired or replaced will be adjusted on the basis of replacement costs to the dwelling not exceeding policy limits, rather than actual cash value, but not including costs necessary to meet applicable laws and ordinances regulating the construction, use, or repair of any property or requiring the tearing down of any property, including the costs of removing debris.

(b) A policy or endorsement providing that, subject to other policy provisions, any loss that is repaired or replaced at any location will be adjusted on the basis of replacement costs to the dwelling not exceeding policy limits, rather than actual cash value, and also including costs necessary to meet applicable laws and ordinances regulating the construction, use, or repair of any property or requiring the tearing down of any property, including the costs of removing debris. However, additional costs necessary to meet applicable laws and ordinances may be limited to 25 percent or 50 percent of the dwelling limit, as selected by the policyholder, and such coverage applies only to repairs of the damaged portion of the structure unless the total damage to the structure exceeds 50 percent of the replacement cost of the structure.

An insurer is not required to make the offers required by this subsection with respect to the issuance or renewal of a homeowner's policy that contains the provisions specified in paragraph (b) for law and ordinance coverage limited to 25 percent of the dwelling limit, except that the insurer must offer the law and ordinance coverage limited to 50 percent of the dwelling limit. This subsection does not prohibit the offer of a guaranteed replacement cost policy.

(2) Unless the insurer obtains the policyholder's written refusal of the policies or endorsements specified in subsection (1), any policy covering the dwelling is deemed to include the law and ordinance coverage limited to 25 percent of the dwelling limit. The rejection or selection of alternative coverage shall be made on a form approved by the office. The form must fully advise the applicant of the nature of the coverage being rejected. If this form is signed by a named insured, it is conclusively presumed that there was an informed, knowing rejection of the coverage or election of the alternative coverage on behalf of all insureds. Unless the policyholder requests in writing the coverage specified in this section, it need not be provided in or supplemental to any other policy that renews, insures, extends, changes, supersedes, or replaces an existing policy if the policyholder has rejected the coverage specified in this section or has selected alternative coverage. The insurer must provide the policyholder with notice of the availability of such coverage in a form approved by the office at least once every 3 years. The failure to provide such notice constitutes a violation of this code, but does not affect the coverage provided under the policy.

(3) In the event of a loss for which a dwelling or personal property is insured on the basis of replacement costs:

(a) For a dwelling, the insurer must initially pay at least the actual cash value of the insured loss, less any applicable deductible. The insurer shall pay any remaining amounts necessary to perform such repairs as work is performed and expenses are incurred. However, if a roof deductible under s. 627.701(10) is applied to the insured loss, the insurer may limit the claim payment as to the roof to the actual cash value of the loss to the roof until the insurer receives reasonable proof of payment by the policyholder of the roof deductible. Reasonable proof of payment includes a canceled check, money order receipt, credit card statement, or copy of an executed installment plan contract or other financing arrangement that requires full payment of the deductible over time. If a total loss of a dwelling occurs, the insurer must pay the replacement cost coverage without reservation or holdback of any deprecation in value, pursuant to s. 627.702.

(b) For personal property:

1. The insurer must offer coverage under which the insurer is obligated to pay the replacement cost without reservation or holdback for any depreciation in value, whether or not the insured replaces the property.

2. The insurer may also offer coverage under which the insurer may limit the initial payment to the actual cash value of the personal property to be replaced, require the insured to provide receipts for the purchase of the property financed by the initial payment, use such receipts to make the next payment requested by the insured for the replacement of insured property, and continue this process until the insured remits all receipts up to the policy limits for replacement costs. The insurer must provide clear notice of this process before the policy is bound. A policyholder must be provided an actuarially reasonable premium credit or discount for this coverage. The insurer may not require the policyholder to advance payment for the replaced property.

(4) (a) An insurer that issues a homeowner's insurance policy must include with the policy documents at initial issuance and every renewal, in bold type no smaller than 18 points, the following statement:

"LAW AND ORDINANCE: LAW AND ORDINANCE COVERAGE IS AN IMPORTANT COVERAGE THAT YOU MAY WISH TO PURCHASE. PLEASE DISCUSS WITH YOUR INSURANCE AGENT."

(b) An insurer that issues a homeowner's insurance policy that does not provide flood insurance coverage must include on the policy declarations page at initial issuance and every renewal, in bold type no smaller than 18 points, the following statement:

"FLOOD INSURANCE: YOU SHOULD CONSIDER THE PURCHASE OF FLOOD INSURANCE. YOUR HOMEOWNER'S INSURANCE POLICY DOES NOT INCLUDE COVERAGE FOR DAMAGE RESULTING FROM FLOOD EVEN IF HURRICANE WINDS AND RAIN CAUSED THE FLOOD TO OCCUR. WITHOUT SEPARATE FLOOD INSURANCE COVERAGE, YOUR UNCOVERED LOSSES CAUSED BY FLOOD ARE NOT COVERED. PLEASE DISCUSS THE NEED TO PURCHASE SEPARATE FLOOD INSURANCE COVERAGE WITH YOUR INSURANCE AGENT."

(c) The intent of this subsection is to encourage policyholders to purchase sufficient coverage to protect them in case events excluded from the standard homeowners policy, such as law and ordinance enforcement and flood, combine with covered events to produce damage or loss to the insured property. The intent is also to encourage policyholders to discuss these issues with their insurance agent.

(5) (a) As used in this subsection, the term "authorized inspector" means an inspector who is approved by the insurer and who is:

1. A home inspector licensed under s. 468.8314;

2. A building code inspector certified under s. 468.607;

3. A general, building, or residential contractor licensed under s. 489.111 or a roofing contractor;

4. A professional engineer licensed under s. 471.015;

5. A professional architect licensed under s. 481.213; or

6. Any other individual or entity recognized by the insurer as possessing the necessary qualifications to properly complete a general inspection of a residential structure insured with a homeowner's insurance policy.

(b) An insurer may not refuse to issue or refuse to renew a homeowner's policy insuring a residential structure with a roof that is less than 15 years old solely because of the age of the roof.

(c) For a roof that is at least 15 years old, an insurer must allow a homeowner to have a roof inspection performed by an authorized inspector at the homeowner's expense before requiring the replacement of the roof of a residential structure as a condition of issuing or renewing a homeowner's insurance policy. The insurer may not refuse to issue or refuse to renew a homeowner's insurance policy solely because of roof age if an inspection of the roof of the residential structure performed by an authorized inspector indicates that the roof has 5 years or more of useful life remaining.

(d) For purposes of this subsection, a roof's age shall be calculated using the last date on which 100 percent of the roof's surface area was built or replaced in accordance with the building code in effect at that time or the initial date of a partial roof replacement when subsequent partial roof builds or replacements were completed that resulted in 100 percent of the roof's surface area being built or replaced.

(e) This subsection applies to homeowners' insurance policies issued or renewed on or after July 1, 2022.

(6) This section does not:

(a) Apply to policies not considered to be "homeowners' policies," as that term is commonly understood in the insurance industry.

(b) Apply to mobile home policies.

(c) Limit the ability of an insurer to reject or nonrenew any insured or applicant on the grounds that the structure does not meet underwriting criteria applicable to replacement cost or law and ordinance policies or for other lawful reasons.

(d) Prohibit an insurer from limiting its liability under a policy or endorsement providing that loss will be adjusted on the basis of replacement costs to the lesser of:

1. The limit of liability shown on the policy declarations page;

2. The reasonable and necessary cost to repair the damaged, destroyed, or stolen covered property; or

3. The reasonable and necessary cost to replace the damaged, destroyed, or stolen covered property.

(e) Prohibit an insurer from exercising its right to repair damaged property in compliance with its policy and s. 627.702(7).

History.–s. 17, ch. 93-410; s. 1184, ch. 2003-261; s. 14, ch. 2005-111; s. 23, ch. 2006-12; s. 4, ch. 2009-87; s. 19, ch. 2011-39; s. 1, ch. 2018-63; s. 1, ch. 2019-82; s. 14, ch. 2022-268; s. 14, ch. 2022-271; s. 8, ch. 2024-182.

627.714 Residential condominium unit owner coverage; loss assessment coverage required.–

(1) For policies issued or renewed on or after July 1, 2010, coverage under a unit owner's residential property policy must include at least $2,000 in property loss assessment coverage for all assessments made as a result of the same direct loss to the property, regardless of the number of assessments, owned by all members of the association collectively if such loss is of the type of loss covered by the unit owner's residential property insurance policy, to which a deductible of no more than $250 per direct property loss applies. If a deductible was or will be applied to other property loss sustained by the unit owner resulting from the same direct loss to the property, no deductible applies to the loss assessment coverage.

(2) The maximum amount of any unit owner's loss assessment coverage that can be assessed for any loss shall be an amount equal to that unit owner's loss assessment coverage limit in effect 1 day before the date of the occurrence that gave rise to the loss. Such coverage is applicable to any loss assessment regardless of the date of the assessment by the association. Any changes to the limits of a unit owner's coverage for loss assessments made on or after the day before the date of the occurrence are not applicable to such loss.

(3) Regardless of the number of assessments, an insurer providing loss assessment coverage to a unit owner is not required to pay more than an amount equal to that unit owner's loss assessment coverage limit as a result of the same direct loss to property.

(4) Every individual unit owner's residential property policy must contain a provision stating that the coverage afforded by such policy is excess coverage over the amount recoverable under any other policy covering the same property. If a condominium association's insurance policy does not provide rights for subrogation against the unit owners in the association, an insurance policy issued to an individual unit owner in the association may not provide rights of subrogation against the condominium association.

History.–s. 5, ch. 2010-174; s. 12, ch. 2020-63; s. 1, ch. 2021-99.

Florida Office of Insurance Regulation Informational Memoranda

INFORMATIONAL MEMORANDUM 02-0470M
June 6, 2002
Florida Department of Insurance
Tom Gallagher
Treasurer, Insurance Commissioner and Fire Marshal

All Property and Casualty Insurers Authorized to Write Residential Property Insurance in the State of Florida

Implementation of Revision to Section 627.0629(1), F.S. Concerning Residential Property Insurance Rate Filings - Delayed Effective Date Pursuant to HB 1307

The purpose of this memorandum is to advise insurers that the substantive changes to the captioned statute have been postponed from a February 28, 2002 effective date to a June 1, 2002 effective date. Rate filings received by the Department on or after June 1, 2002 must include actuarially reasonable differentials for fixtures or construction techniques demonstrated to reduce the amount of loss in a windstorm. Types of fixtures or techniques that must be included are specified in the statute. In addition, credits for fixtures and techniques that meet the minimum requirements of the Florida Building Code must be included in the rate filing. All insurers must make a rate filing which includes actuarially reasonable differentials by February 28, 2003. This date has not changed.

A public domain study providing data and information on estimated loss reduction for wind resistive building features in single-family residences in Florida is available. The complete text of that study, Development of Loss Relativities for Wind Resistive Features of Residential Structures, may be downloaded from the website of the Florida Department of Community Affairs at http://www.dca.state.fl.us/fbcdJprograms/ rcmp/ index.htm. The Florida Department of Insurance recognizes that study as a basis for deriving actuarially reasonable differentials to reflect techniques that have been demonstrated to reduce the amount of loss in a windstorm. Insurers may rely upon other fully documented studies as long as filings include comparable documentation for the differentials (or lack of same) requested.

Compliance with this statute requires each filing to include appropriate treatment for existing construction (retrofit) as well as for new construction (built to meet the requirements of the new Florida Building Code). Provisions should be considered for construction features that exceed building code requirements for the location of the structure and that have been demonstrated to reduce windstorm losses. Each filer must specify how the construction features it proposes to use in rating will be verified and must precisely define the fixtures and techniques within its rate manual. At this time, filers will

not be permitted to offset hypothetical loss of premium revenue as a result of compliance with this statute. Partly in order to minimize the effect of the lack of offset, the Department is currently suggesting a modification to the relativities contained in the above study (see below). Once the actual distribution of insureds is available for a company's combination of fixtures and techniques recognized, differentials for each, and verification procedures, the company may submit a complete rate filing that adjusts base rates accordingly. This rate filing should also completely implement the discounts, credits, or other rate differentials indicated in the fully documented study relied upon by the insurer, to the extent they are actuarially credible.

The statute requires inclusion of at least the following fixtures or construction techniques:

1. Enhanced roof strength. Example: Roof covering materials that comply with the Florida Building Code 2001 or the 1994 South Florida Building Code ("110 mph" rated shingle)
2. Enhanced roof covering performance. Example: Secondary water resistance in case of roof covering failure (application of self-adhering modified bitumen tape to plywood joints or foamed polyurethane structural adhesive covering joints between all plywood sheets)
3. Enhanced roof to wall strength. Example: Hurricane Clips or Wraps, increased size or decreased spacing of nails in roof deck attachment
4. Enhanced wall-to-floor-to-foundation strength. Example: House may not rely solely on gravity and friction for resistance to uplift and lateral loads
5. Opening protection. Example: Shutter products
6. Window, door, and skylight strength. Example: Impact resistant glazing

The examples cited in this list have been demonstrated to reduce windstorm losses in the above referenced study. Filings that omit consideration of any of these items must contain actuarially sound and documented demonstrations that the item(s) omitted do not reduce windstorm losses. Filings must also include rate differentials for all other techniques that meet the minimum requirements of the Florida Building Code.

The following fixtures or construction techniques have also been demonstrated to reduce windstorm losses in the above referenced study:

1. Roof Shape - Hip roof with sloping ends and sloping sides down to the roof eaves line
2. Wall Construction - Masonry 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

Such fixtures or techniques should be considered in each filing.

There are other fixtures and techniques that were not considered in the above referenced study. Filers wishing to include such items must provide appropriately documented actuarially reasonable bases for their inclusion and the differentials requested.

Rate relativities may be based on Tables 6-1, 6-2, 6-4, 6-5, 6-6, and 6-7 of the above referenced study, appropriately modified. Filers must modify those tables if their rate relativities are to apply to more than the hurricane portion of the rate since the tables are predicated solely on reduction in hurricane loss costs. Filers must also modify those tables to treat the expense portion of the rate properly. To the extent that relativities will apply to that part of the rate that is not proportional to loss costs (for example general and other acquisition expense components) the tables must be modified. Finally, filers are required to apply sound actuarial judgment in using the loss cost relativities shown in those tables. In view of the large rate changes which might otherwise be induced, the approximations needed to produce practical results (such as the specifications of the houses used for modeling and the number of rating factors used), and the potential for differences in results using different hurricane models, the Department currently suggests the following modification:

$\mathbf{R = (R_t - 1.0).50 + 1.0}$ where

R_t is the rate relativity based on the Table, modified for the prior two considerations and R is the rate relativity to be used. As filers become able to measure the effects of implementation accurately, this modification must be curtailed.

The Department of Insurance recognizes that, in many cases, verification of fixtures and techniques will involve professional inspection of properties. The cost of such inspections may be included as an expense by insurers within their rate filings as specified by Section 627.062(2)(b)2, Florida Statutes or any necessary certificate of inspection may be provided by the insured at the expense of the insured. Where some elements of an insurer's compliance plan are reasonably subject to self-certification by the insured or to exterior photographic documentation, insureds must be permitted to take advantage of such elements without incurring inspection expenses. Acceptable inspector qualifications should be documented in insurer manuals to permit insureds a choice of qualified inspectors.

Questions regarding this memorandum may be directed to Howard Eagelfeld, Actuary, Bureau of Property and Casualty Forms and Rates, at (850) 413-5319 or eagelfeldh@doi.state.fl.us.

INFORMATIONAL MEMORANDUM

OIR-03-001M
ISSUED
January 23, 2003
Office of Insurance Regulation
Kevin M. McCarty
Director

All Property and Casualty Insurers Authorized to Write Residential Property Insurance in the State of Florida

Implementation of Revision to Section 627.0629(1), F.S. Concerning Residential Property Insurance Rate Filings, Effective June 1, 2002

Supplement to INFORMATIONAL MEMORANDUM 02-0470M issued on June 6, 2002

The purpose of this memorandum is to assist insurers with the filing requirements for this referenced statutory revision. The Department has analyzed the study, Development of Loss Relativities for Wind Resistive Features of Residential Structures commissioned by the Florida Department of Community Affairs, and created suggested sets of credits for new and existing construction. These suggested credits are available on the Department's website and are intended to facilitate filing preparation and review as well as simplify administration and application of such credits.

For existing construction, the Department's analysis combined Tables 6-1, 6-2, and 6-4 from the above-referenced study. For purposes of determining credits, all of the relativities were divided by the existing construction relativity for the non-FBC equivalent roof cover, roof deck attachment A, roof-wall toe nails connection, and no opening protection for Terrain B and C, respectively. This approach was confirmed as appropriate with the firm that conducted this study. Credits were then determined and tempered by 50%. This tempering was applied in view of the large rate changes which might otherwise be induced, the approximations needed to produce practical results (such as the specifications of the houses used for modeling and the number of rating factors used), and the potential for differences in results using different hurricane models. As filers become able to measure the effects of implementation accurately, this tempering must be curtailed. An examination of the resultant credits indicated that the differences between the credits for certain fixtures/techniques were minimal. The suggested credits, therefore, combined the credits for the following fixtures/techniques:

1. Roof Deck Attachment D and Roof Deck Attachment C.
2. Hurricane Opening Protection for All Openings and Windows Only.
3. Basic Opening Protection for All Openings and Windows Only.
4. Braced Gable Roof Shape and Unbraced Gable Roof Shape.

The suggested additional credits for Masonry and Reinforced Masonry Construction were eliminated recognizing the fact that insurers currently use construction type in the rating of their policies and will continue to do so.

For new construction, the Department's analysis combined Tables 6-6 and 6-7 from the above-referenced study. For purposes of determining credits, all of the relativities were divided by the existing construction relativity for the non-FBC equivalent roof cover, roof deck attachment A, roof-wall toe nails connection, and no opening protection for Terrain B and C, respectively (the Terrain C relativity was used for the High Velocity Hurricane Zone). This approach was confirmed as appropriate with the firm that conducted this study. Credits were then determined and tempered by 50%. This tempering was applied in view of the large rate changes which might otherwise be induced, the approximations needed to produce practical results (such as the specifications of the houses used for modeling and the number of rating factors used), and the potential for differences in results using different hurricane models. As filers become able to measure the effects of implementation accurately, this tempering must be curtailed.

An examination of the resultant credits indicated that the differences between the credits for certain fixtures/techniques were minimal. The suggested credits, therefore, combined the credits for the following fixtures/ techniques:

1. Dimensional Lumber Deck and Other Roof Deck.
2. Terrain B and Terrain C - Wind Speed ≥ 120, Wind Borne Debris Region.
3. High Velocity Hurricane Zone and Terrain C.
4. Terrain B FBC Wind Speed = 100, all Wind Speeds of Design.
5. Terrain B FBC Wind Speed = 110, all Wind Speeds of Design.
6. Enclosed and Partially Enclosed Structures.
7. Opening Protection – All Openings and Windows Only.

The suggested additional credits for Masonry and Reinforced Masonry Construction were eliminated recognizing the fact that insurers currently use construction type in the rating of their policies and will continue to do so.

These suggested sets of credits contemplate the elimination of insurers' current windstorm protective devices (i.e. shutter) credits. Insureds who currently qualify for a windstorm protective devices credit should at least qualify for a Basic Opening Protection credit.

Insurers should continue to give Building Code Effectiveness Grading Schedule (BCEGS) credits to those insureds that qualify for such credits. The Department suggests tempering these credits by 25% to eliminate any overlap between these credits and the suggested windstorm loss reduction credits.

The Department is willing to consider the reduction or elimination of new home discounts on wind premiums for homes that qualify for new construction credits.

Questions regarding this memorandum may be directed to Ken Ritzenthaler. He can be contacted at (850) 413-5314 or ritzenthalerk@dfs.state.fl.us.

Meeting Schedule and Topics of Discussion

1995

July 14	Commission 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 Hurricane Model
November 2	The Evaluation Process
November 16	Meeting with Modeling Organizations to provide input for the Evaluation Process
November 30	Adoption of Initial Hurricane Standards and Guidelines

1996

January 8	Review of Modeling Organization Responses for Modules 1 and 2
January 29	Comparison of Hurricane 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 Worldwide Corporation (AIR) Presentation
April 20	EQECAT, Inc. (EQE) Presentation
April 26	Tillinghast Presentation
April 27	Risk Management Solutions, Inc. (RMS) Presentation
May 6	Committee Meetings B Session 1 Adopting Hurricane Standards
May 20	Committee Meetings B Session 2 Adopting Hurricane Standards
June 3	Adopting a Specification of Acceptable Computer Hurricane Models or Hurricane 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 Hurricane Standards and Procedures; Vulnerability Standards Committee Meeting
April 11	Review of AIR Hurricane Model
May 6	Meteorology Standards Committee Meeting
May 7	General Standards Committee Meeting
May 16	Review of AIR Hurricane Model (Continued); Computer Standards Committee Meeting
May 22	Vulnerability Standards Committee Conference Call Meeting
May 29	Review of AIR Hurricane Model (Continued); Adoption of 1997 Hurricane Standards
September 29	Planning for Calendar Year and Review of Hurricane Models
October 23	Vulnerability Committee Meeting
October 24	Review of AIR Hurricane Model
December 11 & 12	Review of EQE Hurricane Model
December 16	Review of RMS Hurricane Model

1998

April 23	Committee Meetings
April 24	Committee Meetings; Adoption of 1998 Hurricane Standards
May 21	Modules and Acceptability Process Adopted
November 17 & 18	Review of Tillinghast Hurricane Model
November 19 & 20	Review of E.W. Blanch Hurricane Model
December 8	Review of RMS Hurricane Model
December 9	Review of EQE Hurricane Model
December 10	Review of AIR Hurricane Model

1999

March 19	Commission Workshop; New Timeframe for Hurricane Model Review
July 15 & 16	Committee Meetings
July 28	Meteorology Standards Committee Meeting
August 17	Adoption of 1999 Hurricane Standards and *Hurricane Standards Report of Activities*

2000

March 15	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
May 9	Review of AIR Hurricane Model – Suspended Consideration; E.W. Blanch and RMS Hurricane Models Determined Acceptable under the 1999 Hurricane Standards
May 10	EQE Hurricane Model Determined Acceptable under the 1999 Hurricane Standards; Review of Risk Engineering Hurricane Model
May 11	Review of Risk Engineering Hurricane Model (Continued) – Suspended Consideration
May 12	Review of AIR Hurricane Model (Continued) – Postponement Approved
July 25 & 26	Applied Research Associates, Inc. (ARA) Hurricane Model Determined Acceptable under the 1999 Hurricane Standards
July 27	Committee Meetings
July 28	Committee Meetings; AIR Hurricane Model Determined Acceptable under the 1999 Hurricane Standards
September 14 & 15	Adoption of 2000 Hurricane Standards and *Hurricane Standards Report of Activities*

2001

March 27	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
May 10	EQE and E.W. Blanch Hurricane Models Determined Acceptable under the 2000 Hurricane Standards
May 11	AIR and ARA Hurricane Models Determined Acceptable under the 2000 Hurricane Standards
July 30	RMS Hurricane Model Determined Acceptable under the 2000 Hurricane Standards; Committee Meetings
July 31	Committee Meetings
September 18	Canceled due to World Trade Center Bombings
September 19	Adoption of 2001 Hurricane Standards and *Hurricane Standards Report of Activities*
October 15	Adoption of 2001 Hurricane Standards and *Hurricane Standards Report of Activities* (Continued)

2002

March 27	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
May 29	RMS Hurricane Model Determined Acceptable under the 2001 Hurricane Standards
May 30	EQE and AIR Hurricane Models Determined Acceptable under the 2001 Hurricane Standards
May 31	ARA Hurricane Model Determined Acceptable under the 2001 Hurricane Standards
July 23 & 24	Committee Meetings
September 18 & 19	Adoption of 2002 Hurricane Standards and *Hurricane Standards Report of Activities*

2003

February 20	Continuing Education and Training Workshop – Overview of Methodologies used in Catastrophe Computer Simulation Models
April 1	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
May 29	AIR and ARA Hurricane Models Determined Acceptable under the 2002 Hurricane Standards
May 30	EQE and RMS Hurricane Models Determined Acceptable under the 2002 Hurricane Standards
July 22 & 23	Committee Meetings
August 21 & 22	Adoption of 2003 Hurricane Standards and *Hurricane Standards Report of Activities*

2004

March 18	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
May 12	RMS and ARA Hurricane Models Determined Acceptable under the 2003 Hurricane Standards
May 13	AIR and EQE Hurricane Models Determined Acceptable under the 2003 Hurricane Standards
July 27 & 28	Committee Meetings
September 15 & 16	Canceled due to Hurricane Ivan
October 6 & 7	Adoption of 2004 Hurricane Standards and *Hurricane Standards Report of Activities*

2005

March 10 & 11	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
June 1	Review of RMS Hurricane Model
June 2	RMS, AIR, and EQE Hurricane Models Determined Acceptable under the 2004 Hurricane Standards
June 3	ARA Hurricane Model Determined Acceptable under the 2004 Hurricane 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 Hurricane Standards and *Hurricane Standards Report of Activities*

2006

January 25 & 26	Workshop to Discuss Modeling Commercial Residential Exposure, Simplification of the Commission's Review Process, and to Review the Study "*An Assessment of Computer Generated Loss Costs in Florida"*
March 16	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
May 16	AIR Hurricane Model Determined Acceptable under the 2005 Hurricane Standards; Review of RMS Hurricane Model
May 17	RMS and ARA Hurricane Models Determined Acceptable under the 2005 Hurricane Standards
May 18	EQE Hurricane Model Determined Acceptable under the 2005 Hurricane Standards
June 30	Promulgating Rules Conference Call Meeting
July 26 & 27	Committee Meetings and Rule Workshop
August 17 & 18	Adoption of 2006 Hurricane Standards and *Hurricane Standards Report of Activities*; Approval to file Notice of Proposed Rulemaking for Rule 19-16.001, Florida Commission on Hurricane Loss Projection Methodology
September 26	Discussion of Rule Hearing comments received on Rule 19-16.001, Florida Commission on Hurricane Loss Projection Methodology
October 23	Withdrawal of Rule 19-16.001, Florida Commission on Hurricane Loss Projection Methodology

2007

March 13	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
May 8	ARA Hurricane Model Determined Acceptable under the 2006 Hurricane Standards
May 9	EQE and AIR Hurricane Models Determined Acceptable under the 2006 Hurricane Standards
June 21	RMS Hurricane Model Determined Acceptable under the 2006 Hurricane Standards
August 15 & 16	Committee Meetings
August 17	Florida Public Model (FPM) FPM Determined Acceptable under the 2006 Hurricane Standards
September 20 & 21	Adoption of 2007 Hurricane Standards and *Hurricane Standards Report of Activities*
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 *Hurricane Standards Report of Activities as of November 1, 2007*

2008

March 12	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
March 21	Discussion of RMS Hurricane Model Submission and Determination of On-Site Review
May 20	AIR and RMS Hurricane Models Determined Acceptable under the 2007 Hurricane Standards
May 21	ARA Hurricane Model Determined Acceptable under the 2007 Hurricane Standards
June 23	EQE and FPM Determined Acceptable under the 2007 Hurricane 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 Hurricane Standards and *Hurricane Standards Report of Activities*

2009

January 29 & 30	Workshop to Discuss Modeling of Commercial Residential Exposure and Short-Term Frequency

	March 19	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
	May 19	AIR Hurricane Model Determined Acceptable under the 2008 Hurricane Standards
	June 2	ARA and FPM Determined Acceptable under the 2008 Hurricane Standards
	June 3	EQE Hurricane Model Determined Acceptable under the 2008 Hurricane Standards; RMS Hurricane Model Not Determined Acceptable under the 2008 Hurricane 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 Hurricane Model under the 2008 Hurricane Standards; Adoption of an Addendum to the *Hurricane Standards Report of Activities as of November 1, 2008*; RMS Hurricane Model Determined Acceptable under the 2008 Hurricane Standards
	August 11	Committee Meetings
	August 12	Windstorm Mitigation Committee Meeting
	August 13	Committee Meetings
	September 15 & 16	Adoption of 2009 Hurricane Standards and *Hurricane Standards Report of Activities*
	September 17	Windstorm Mitigation Committee Meeting
	October 29	Windstorm Mitigation Committee Meeting
	December 4	Discussion of AIR Request to Submit a Hurricane Model for Review Outside of the Every Other Year Review Cycle Adopted in the *Hurricane Standards Report of Activities as of November 1, 2009*; Adoption of an Addendum to the *Hurricane Standards Report of Activities as of November 1, 2009*
	December 18	Windstorm Mitigation Committee Meeting
2010		
	January 15	Discussion on Windstorm Mitigation Discounts Report
	January 25	Approval of Windstorm Mitigation Discounts Report to the Governor, the Cabinet, the President of the Senate, and the Speaker of the House of Representatives
	April 15	Discussion of AIR Hurricane Model Submission and Determination of On-Site Review
	June 8	AIR Hurricane Model Determined Acceptable under the 2009 Hurricane Standards

	October 26	Discussion of AIR Hurricane Model Software Implementation Issue; Acceptability of AIR Hurricane Model under the 2009 Hurricane Standards Temporarily Suspended
	November 8	Corrected AIR Hurricane Model Determined Acceptable under the 2009 Hurricane Standards
	December 14	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
2011		
	June 2	ARA and RMS Hurricane Models Determined Acceptable under the 2009 Hurricane Standards
	June 16	EQE Hurricane Model Determined Acceptable under the 2009 Hurricane Standards; FPM Not Determined Acceptable under the 2009 Hurricane Standards
	August 17 & 18	Reconsideration of the FPM; FPM Determined Acceptable under the 2009 Hurricane Standards; Committee Meetings
	September 21 & 22	Corrected RMS Hurricane Model Determined Acceptable under the 2009 Hurricane Standards; Committee Meetings
	October 19 & 20	Adoption of 2011 Hurricane Standards and *Hurricane Standards Report of Activities*
	November 16	Adoption of 2011 Hurricane Standards and *Hurricane Standards Report of Activities* (Continued); Discussion of AIR Request for Consideration of Different Software Versions Acceptable under the 2009 Hurricane Standards; Review and Action Delegated to Commission Chair with Input ~~of~~ from the Professional Team
2012		
	December 17	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews; Discussion of RMS Notification of Error in Previous Hurricane Model
2013		
	March 7	Discussion of RMS Error in Previous Hurricane Model; Acceptability of RMS Hurricane Model under the 2009 Hurricane Standards Rescinded; Corrected RMS Hurricane Model Determined Acceptable under the 2009 Hurricane Standards
	June 18	Workshop to Discuss New Software Platforms, Modeling Storm Surge, Recent Revisions to HURDAT, Recap of Hurricane Model Review Process; ARA Hurricane Model Determined Acceptable under the 2011 Hurricane Standards
	June 19	AIR and RMS Hurricane Models Determined Acceptable under the 2011 Hurricane Standards

	June 20	EQE Hurricane Model Determined Acceptable under the 2011 Hurricane Standards; Executive Committee Meeting
	August 13	FPM Determined Acceptable under the 2011 Hurricane Standards; Discussion of AIR Request for Consideration of New Software Platform Acceptable under the 2011 Hurricane Standards and Approval of Professional Team to Review the New Software Platform On-Site; Approval of Executive Committee Recommendations; Committee Meetings
	August 14 & 15	Committee Meetings (Continued)
	September 24 & 25	Adoption of 2013 Hurricane Standards and *Hurricane Standards Report of Activities*
2014		
	September 30	Acceptability Process Committee Meeting to discuss the process and timeline for developing flood standards
	October 30	Flood Standards Development Committee Meeting
	November 14	Flood Standards Development Committee Meeting
	December 16	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews; Flood Standards Development Committee Meeting
2015		
	January 29	Flood Standards Development Committee Meeting
	February 19	Discussion of AIR Notification of Issue in Previous Hurricane Model; Discussion of ARA Notification of Error in Previous Hurricane Model; Acceptability of ARA Hurricane Model under the 2011 Hurricane Standards Temporarily Suspended; Flood Standards Development Committee Meeting
	March 31	Flood Standards Development Committee Meeting
	April 22	Corrected ARA Hurricane Model Determined Acceptable under the 2011 Hurricane Standards; Flood Standards Development Committee Meeting
	June 2	FPM and EQE Hurricane Models Determined Acceptable under the 2013 Hurricane Standards
	June 3	ARA and AIR Hurricane Models Determined Acceptable under the 2013 Hurricane Standards
	June 4	Flood Standards Development Committee Meeting
	June 30	RMS Hurricane Model Determined Acceptable under the 2013 Hurricane Standards; Flood Standards Development Committee Meeting

	July 1	Flood Standards Development Committee Meeting
	August 11	Executive Committee Meeting; Approval of Executive Committee Recommendations; Flood Standards Development Committee Meeting
	September 22 & 23	Hurricane Standards Committee Meetings
	September 24	Flood Standards Development Committee Meeting
	October 8	Flood Standards Development Committee Meeting
	October 13 & 14	Adoption of 2015 Hurricane Standards and *Hurricane Standards Report of Activities*
	November 17	Commission Meeting to Consider Publication of Discussion Flood Standards
2016		
	December 13	Corrected ARA Hurricane Model Determined Acceptable under the 2013 Hurricane Standards; Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
2017		
	May 10	AIR and FPM Hurricane Models Determined Acceptable under the 2015 Hurricane Standards
	May 11	ARA and CoreLogic, Inc. (CL) Hurricane Models Determined Acceptable under the 2015 Hurricane Standards
	May 12	RMS Hurricane Model Determined Acceptable under the 2015 Hurricane Standards
	May 22 & 23	Flood Standards Committee Meetings
	June 15 & 16	Adoption of 2017 Flood Standards, Principles, and Acceptability Process
	September 27 & 28	Hurricane Standards Committee Meetings
	October 25	Adoption of 2017 Hurricane Standards, *Hurricane Standards Report of Activities,* and *Flood Standards Report of Activities*
2019		
	January 7	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
	June 11	AIR and Karen Clark & Company (KCC) Hurricane Models Determined Acceptable under the 2017 Hurricane Standards
	June 12	ARA and FPM Hurricane Models Determined Acceptable under the 2017 Hurricane Standards
	June 13	CL and RMS Hurricane Models Determined Acceptable under the 2017 Hurricane Standards

	September 18 & 19	Hurricane Standards Committee Meetings
	October 29	Adoption of 2019 Hurricane Standards and *Hurricane Standards Report of Activities*; Adoption of an Amendment to the 2017 Flood Standards Model Review Schedule in the *Flood Standards Report of Activities as of November 1, 2017*
2020		
	December 10	Adoption of Remote Review Procedures amending the 2019 *Hurricane Standards Report of Activities* and the 2017 *Flood Standards Report of Activities*
2021		
	January 12	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
	June 1	RMS and ARA Hurricane Models Determined Acceptable under the 2019 Hurricane Standards
	June 2	KCC and CL Hurricane Models Determined Acceptable under the 2019 Hurricane Standards
	June 9	AIR and FPM Hurricane Models Determined Acceptable under the 2019 Hurricane Standards
	June 10	Impact Forecasting (IF) Hurricane Model Determined Acceptable under the 2019 Hurricane Standards
	September 29 & 30	Hurricane and Flood Standards Committee Meetings
	October 26 & 27	Adoption of 2021 Hurricane Standards, 2021 Flood Standards, *Hurricane Standards Report of Activities,* and *Flood Standards Report of Activities*
2022		
	February 3	Corrected ARA Hurricane Model Determined Acceptable under the 2019 Hurricane Standards
	June 10	Discussion of Senate Bill 2-D ~~that~~ passed during the 2022 Florida Legislative Special Session
	September 15 & 16	Workshop to Discuss the Current State-of-the-Science in the Field of Climatology and the Annual Catastrophe Stress Testing Performed by the Florida Office of Insurance Regulation
2023		
	January 5	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
	June 1	RMS and CL Hurricane Models Determined Acceptable under the 2021 Hurricane Standards

June 2	ARA Hurricane Model Determined Acceptable under the 2021 Hurricane Standards
July 19	KCC and FPM Hurricane Models Determined Acceptable under the 2021 Hurricane Standards
July 20	IF Hurricane Model Determined Acceptable under the 2021 Hurricane Standards
September 27 & 28	Hurricane Standards Committee Meetings
October 25 & 26	Adoption of 2023 Hurricane Standards and *Hurricane Standards Report of Activities*; Adoption of an Amendment to the 2021 Flood Standards Model Review Schedule in the *Flood Standards Report of Activities as of November 1, 2021*

2024

January 4	Verisk Hurricane Model Determined Acceptable under the 2021 Hurricane Standards

2025

January 3	Discussion of Hurricane Model Submissions and Determination of On-Site Reviews
June 11	KCC and CL Hurricane Models Determined Acceptable under the 2023 Hurricane Standards
June 12	Verisk and Moody's Hurricane Models Determined Acceptable under the 2023 Hurricane Standards
June 13	FPM and IF Hurricane Models Determined Acceptable under the 2023 Hurricane Standards
September 16-18	Hurricane and Flood Standards Committee Meetings
October 28	Adoption of 2025 Hurricane Standards, 2025 Flood Standards, *Hurricane Standards Report of Activities*, and *Flood Standards Report of Activities*

Transcript Information

All public meetings of the Florida Commission on Hurricane Loss Projection Methodology are transcribed by a ~~C~~court ~~R~~reporter. If you would like to purchase copies of any transcript, contact the ~~C~~court ~~R~~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
December 4, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
December 18, 2009	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
January 15, 2010	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
January 25, 2010	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
April 15, 2010	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 8, 2010	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
October 26, 2010	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
November 8, 2010	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
December 14, 2010	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 2, 2011	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 16, 2011	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221

August 17, 2011	Tracy Brown, Accurate Stenotype Reporters, Inc., 850-878-2221
August 18, 2011	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
September 21, 2011	Tracy Brown, Accurate Stenotype Reporters, Inc., 850-878-2221
September 22, 2011	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
October 19, 2011	Sarah Gilroy, Accurate Stenotype Reporters, Inc., 850-878-2221
October 20, 2011	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
November 16, 2011	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
December 17, 2012	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
March 7, 2013	Tracy Brown, Accurate Stenotype Reporters, Inc., 850-878-2221
June 18 - 20, 2013	Tracy Brown, Accurate Stenotype Reporters, Inc., 850-878-2221
August 13 - 15, 2013	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
September 24 & 25, 2013	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
September 30, 2014	Tracy Brown, Accurate Stenotype Reporters, Inc., 850-878-2221
October 30, 2014	Mary Kay Kline, Accurate Stenotype Reporters, Inc., 850-878-2221
November 14, 2014	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
December 16, 2014	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
January 29, 2015	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
February 19, 2015	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
March 31, 2015	Tracy Brown, Accurate Stenotype Reporters, Inc., 850-878-2221
April 22, 2015	Tracy Brown, Accurate Stenotype Reporters, Inc., 850-878-2221
June 2 - 4, 2015	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
June 30, 2015	Tracy Brown, Accurate Stenotype Reporters, Inc., 850-878-2221
July 1, 2015	Lori Dezell, Accurate Stenotype Reporters, Inc., 850-878-2221
August 11, 2015	Lori Dezell, 850-251-1482
September 22 - 24, 2015	Lori Dezell, 850-251-1482
October 8, 2015	Lori Dezell, 850-251-1482
October 13 & 14, 2015	Lori Dezell, 850-251-1482
November 17, 2015	Carolyn Rankine, Premier Reporting, 850-894-0828
December 13, 2016	Jo Langston, Accurate Stenotype Reporters, Inc., 850-878-2221
May 10 - 12, 2017	Lori Dezell, 850-251-1482
May 22 & 23, 2017	Lori Dezell, 850-251-1482

June 15 & 16, 2017	Lori Dezell, 850-251-1482
September 27 & 28, 2017	Lori Dezell, 850-251-1482
October 25, 2017	Lori Dezell, 850-251-1482
January 7, 2019	Lori Dezell, 850-251-1482
June 11 - 13, 2019	Lori Dezell, 850-251-1482
September 18 & 19, 2019	Lori Dezell, 850-251-1482
October 29, 2019	Lori Dezell, 850-251-1482
December 10, 2020	Lori Dezell, 850-251-1482
January 12, 2021	Lori Dezell, 850-251-1482
June 1 & 2, 2021	Lori Dezell, 850-251-1482
June 9 & 10, 2021	Lori Dezell, 850-251-1482
September 29 & 30, 2021	Lori Dezell, 850-251-1482
October 26 & 27, 2021	Lori Dezell, 850-251-1482
February 3, 2022	Lori Dezell, 850-251-1482
June 10, 2022	Lori Dezell, 850-251-1482
September 15 & 16, 2022	Lori Dezell, 850-251-1482
January 5, 2023	Lori Dezell, 850-251-1482
June 1 & 2, 2023	Lori Dezell, 850-251-1482
July 19 & 20, 2023	Lori Dezell, 850-251-1482
September 27 & 28, 2023	Lori Dezell, 850-251-1482
October 25 & 26, 2023	Lori Dezell, 850-251-1482
January 4, 2024	Tracy Brown, Tally Stenos, 850-445-9876
January 3, 2025	Stephanie Nargiz, North Florida Court Reports, 850-701-8800
June 11 & 12, 2025	Lori Dezell, 850-251-1482
June 13, 2025	Tracy Brown, Tally Stenos, 850-445-9876
September 16-18, 2025	Lori Dezell, 850-251-1482
October 28, 2025	Lori Dezell, 850-251-1482

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
Post Office Box 13300
Tallahassee, Florida 32317-3300

or by emailing donna.sirmons@sbafla.com.

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