

THIRD-PARTY DATA AND MODELS (H) TASK FORCE

Third-Party Data and Models (H) Task Force March 16, 2024, Minutes

Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) Presentation (Attachment One)

Draft Pending Adoption

Draft: 3/25/24

Third-Party Data and Models (H) Task Force
Phoenix, Arizona
March 16, 2024

The Third-Party Data and Models (H) Task Force of the Innovation, Cybersecurity, and Technology (H) Committee met in Phoenix, AZ, March 16, 2024. The following Working Group members participated: Michael Conway, Chair (CO); Michael Yaworsky, Vice Chair (FL); Lori K. Wing-Heier (AK); Barbara D. Richardson represented by Tom Zuppan (AZ); Ricardo Lara represented by Ken Allen (CA); Gordon I. Ito (HI); Doug Ommen represented by Andrew Hartnett (IA); Dean L. Cameron represented by Weston Trexler (ID); Vicki Schmid represented by Julie Holmes (KS); Gary D. Anderson represented by Jackie Horigan (MA); Grace Arnold represented by Phil Vigliaturo (MN); Chlora Lindley-Myers represented by Cynthia Amann (MO); Jon Godfread represented by Colton Schulz (ND); D.J. Bettencourt represented by Christian Citarella (NH); Scott Kipper represented by Alexia Emmermann (NV); Adrienne A. Harris represented by Sumit Sud (NY); Judith L. French represented by Matt Walsh (OH); Michael Humphreys (PA); Elizabeth Kelleher Dwyer represented by Brett Bache (RI); Michael Wise represented by Melissa Manning (SC); Cassie Brown represented by J'ne Byckovski (TX); Kevin Gaffney represented by Mary Block (VT); and Nathan Houdek represented by Timothy Cornelius (WI). Also participating were: Wanchin Chou (CT); Brian Downs (OK); and Travis Jordan (SD).

1. Received a Report on the Formation of the Task Force and its Charges

Commissioner Conway stated the two adopted charges of the Task Force. The first charge is to research and gather information as to what types of artificial intelligence (AI)/machine learning (ML) models are currently being used by insurance companies that are provided from third parties that may require regulation. The second charge is to monitor and report on the regulatory efforts of third-party models at the federal and international levels.

Commissioner Conway stated that the Task Force will work through the first charge over the next year, while the plan for the second year will be to draft a regulatory framework to then propose to the Innovation, Cybersecurity, and Technology (H) Committee for review and approval through Plenary.

Further, he stated that the Task Force has drafted and discussed the work plan in regulator-to-regulator session and will have a follow-up meeting to discuss the feedback received. At that point, the Task Force will discuss the work plan with interested parties and other stakeholders.

2. Heard a Presentation on the FCHLPM

Commissioner Yaworsky referenced the development of Florida's catastrophe (CAT) models regulatory framework and its impact on the Florida insurance market as a baseline for how those models are used. He stated that the Florida CAT modeling commission is housed within an agency that is separate from the Florida Office of Insurance Regulation (OIR) and consists of experts from across the state, including an actuary from the OIR and state meteorologists who are charged with reviewing CAT models.

Donna Sirmons (State Board of Administration of Florida—SBA) gave a presentation (Attachment One) on the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM). She stated that after Hurricane Andrew, the Florida legislature recognized the need for expert evaluation of CAT models to resolve conflicts among actuarial professionals and provide immediate and continuing improvement in the sophistication of the actuarial methods. This prompted the legislature to create the FCHLPM in 1995 as an independent body housed within the SBA, funded out of the Florida Hurricane Catastrophe Fund (FHCF) and operating under its governing statute.

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The structure and processes of the FCHLPM are designed to protect the proprietary intellectual property of the CAT models. A team of experts representing each of the scientific disciplines conducts on-site audits. In 2005, the Florida legislature passed a law exempting the FCHLPM from Florida public records and public meetings laws for trade secret information. The FCHLPM has authorized a team of professional experts to travel on-site to review and evaluate the models for compliance with the standards. The FCHLPM reviews each model independently and looks at the scientific principles that have been applied.

For the flood models, the same general framework would be used for any peril whether for wildfire, earthquake, or severe convective storms with changes made to address the different parameters specific to each peril. The audit requirements are proprietary items that the professional team reviews in-depth when they are on-site. A sensitivity analysis is also required to be performed to identify the major contributors to the uncertainty. The computer information standards address: 1) model documentation; 2) specification requirements; 3) implementation of the model; 4) data verification testing of the components and the input data; 5) human-computer interaction and interface options; 6) minimum requirements for cybersecurity standards; and 7) certifications for cloud computing, compliance controls, and backup and redundancy procedures. In 2000, Florida passed a law to develop a public hurricane loss model, which is housed at Florida International University (FIU).

Allen asked whether the public gets a chance to ask questions, voice concerns or objections, or interact in a public session. Sirmons said that the public is allowed under Florida law to make any comments and ask questions during a public meeting. The FCHLPM has had some representatives from Massachusetts and from the Florida Keys attend public meetings. However, it is mainly during these public meetings when the FCHLPM is developing standards on how it is going to review the model and how it is setting the standards.

Commissioner Conway asked to gain a better understanding about why the law change in 2005 was needed. Sirmons said that it was a specific trade secret exemption to address the trade secret information about the design and development of CAT models. Under Florida law, if two or more FCHLPM members are gathered together to discuss anything that would come before the FCHLPM for formal action, then that is considered to be a public meeting. So, if two FCHLPM members were to go on-site to review the model, then that would have been a violation of the public meetings law. The law change allows more than one FCHLPM member to be able to attend an on-site review at the same time to gain confidence that they have seen and understand what they are voting on.

Chou asked whether Sirmons is involved in the Federal Emergency Management Agency (FEMA) rating 2.0 modeling review for flood and works with any of its intellectual property Sirmons said that the FCHLPM is not involved with the FEMA rating. However, she added that the FCHLPM has looked at FEMA's aggregated exposure and claims data but have not been involved in the FEMA rating.

Emmermann asked what happens when a model is rejected or if there are issues with a model. She asked if the FCHLPM has to review and approve it, is there some sort of protection or a hearing process to contest whether the FCHLPM's decision was appropriate. Sirmons said that a modeler can appeal the FCHLPM's finding that the model is not acceptable or does not meet the standards. The modeler has up to 30 days to follow up with a written appeal to say what additional information it will provide in order to state its case. If the appeal fails, then the modeler must wait until the next change of standards at the next review cycle to submit again.

Commissioner Conway asked who pays for the reviews and the audits. Sirmons said that the FCHLPM pays, funded out of the FHCF.

Trexler stated that there are seven hurricane models that are accepted in Florida. He asked whether other models have been rejected over the years. Sirmons said that there was a short-term model submitted that did not pass

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the standards because there was not enough claims data, and the validation of the model was weak. That model was withdrawn, and a full historical model was submitted and found acceptable.

Commissioner Conway asked Sirmons to elaborate on how models are properly incorporating the impact of mitigation and the building code changes that Florida has undertaken. Sirmons said that the modeler must show the FCHLPM its vulnerability functions that show at what point it considers 100% loss at different wind speeds and what the ratio of the damage will be. The modeler also must show the reduction in losses after applying mitigation factors such as techniques for sliding glass windows, garage doors, roof attachment, the roof, the deck, etc. that are in place. The FCHLPM looks at the mitigations individually and collectively. Commissioner Yaworsky stated that the Florida Office of Insurance Regulation conducts studies every five years to determine the mandatory minimum mitigation credits that need to be applied to a policy. The OIR promulgates Form 802, which requires every homeowner to have an inspection done to determine qualifying credits. The form is a tool the FCHLPM uses to ensure mitigations are applied appropriately within the model. Sirmons responded that the FCHLPM also looks at the damage assessment reports after an event and assesses whether mitigations worked on homes that were damaged.

Having no further business, the Third-Party Data and Models (H) Task Force adjourned.

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FLORIDA COMMISSION ON HURRICANE LOSS PROJECTION METHODOLOGY

FORMATION OF THE COMMISSION

Created by the Florida Legislature as an independent commission in 1995

Housed within the State Board of Administration of Florida

Funded out of the Florida Hurricane Catastrophe Fund

- Annual budget \$1.65 million

Operates under statute (Section 627.0628, Florida Statutes)

Structure and process designed to address “Black Box” issue

- On-site audits conducted by a team of experts representing each scientific discipline in the models
- Trade secret exemptions added by the Legislature in 2005
- Commission member on-site visits provide greater access to the model

COMPOSITION OF THE COMMISSION

Twelve-member panel of experts to provide the most actuarially sophisticated guidelines and standards for the projection of hurricane and flood losses

- Actuary: Industry
- Actuary: Office of Insurance Regulation
- Actuary: Florida Hurricane Catastrophe Fund (FHCF) Advisory Council
- Insurance Consumer Advocate
- Director of the Division of Emergency Management
- FHCF Chief Operating Officer
- Executive Director of Citizens Property Insurance Corporation
- Insurance Finance Expert*
- Statistics Expert*
- Computer System Design Expert*
- Meteorology Expert*
- Licensed Professional Structural Engineer*

*Full-time faculty member of the State University System

PROFESSIONAL TEAM

Composition – Actuary, Statistician, Meteorologist, Hydraulic Engineer, Computer/Information Scientist, Structural Engineer, Coastal Engineer

Participates in all phases of the Commission's activities

- Report of Activities development
- Submission review
- On-site audit – full access to the model, data, documentation, and source codes
- Commission meeting participation and support
- Identification of important trends and research

Two experts for each discipline, a primary member and a backup member

ROLE OF THE COMMISSION

Defined in Section 627.0628(3)(a), Florida Statutes

- *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 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 revise previously adopted actuarial methods, principles, standards, models, or output ranges every odd-numbered year for hurricane loss projections and no less than every 4 years for flood loss projections*

COMMISSION FINDINGS AND IMPLICATIONS

With respect to a rate filing:

- *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*
- *An insurer is not prohibited 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*

GENERAL OBSERVATIONS

Hurricane and flood loss projection computer models are complex by their very nature

The projection of loss costs and probable maximum loss levels is difficult and involves many scientific disciplines

Results among hurricane models differ and work has been done to better understand and reduce the variation

There is no “right” answer

The uncertainty in model input data can cause significant uncertainty in loss costs

A model may be constructed in any scientifically sound and defensible fashion

Aside from some anomalies which are thoroughly investigated and explained, the modeled loss costs fall within the range one would expect given the universe of possible scientifically valid approaches

The science of catastrophe modeling is always evolving as are the standards the models must meet to be determined acceptable by the Commission

COMMISSION KEY PRINCIPLES

All models or methods shall be theoretically sound

Models or methods shall not be biased to overstate or understate results

The output of models or methods shall be reasonable, and the modeler shall demonstrate its reasonableness

All sensitive components of models or methods shall be identified

COMMISSION STANDARDS

Six Hurricane Categories

- General
- Meteorological
- Statistical
- Vulnerability
- Actuarial
- Computer/Information

Seven Flood Categories

- General
- Meteorological
- Hydrological and Hydraulic
- Statistical
- Vulnerability
- Actuarial
- Computer/Information

HURRICANE REQUIREMENTS (2023)

Standards	<u>General</u>	<u>Meteorological</u>	<u>Statistical</u>	<u>Vulnerability</u>	<u>Actuarial</u>	<u>Computer/ Information</u>
35 118 subparts	5 14 subparts	6 16 subparts	6 7 subparts	4 17 subparts	6 32 subparts	8 32 subparts
Disclosures 203	40	42	23	43	42	13
Forms 28	7	3	6	5	7	0
On-Site Audit Requirements 218	23	34	24	54	30	53

FLOOD REQUIREMENTS (2021)

Standards	<u>General</u>	<u>Meteorological</u>	<u>Hydrological & Hydraulic</u>	<u>Statistical</u>	<u>Vulnerability</u>	<u>Actuarial</u>	<u>Computer/ Information</u>
37 130 subparts	5 14 subparts	5 19 subparts	4 15 subparts	5 6 subparts	4 14 subparts	6 29 subparts	8 33 subparts
Disclosures 262	45	48	36	16	65	43	9
Forms 27	8	0	5	2	4	8	0
On-Site Audit Requirements 268	34	39	33	22	49	40	51

MODEL APPROVAL

Model must pass all standards

Only one version of the model permitted

Hurricane and flood models reviewed independently

Only long-term models have been reviewed and found acceptable

No formal voting on other model types

- Short or near-term models
- Elicitation (expert opinion) models
- Open platform models

CURRENT ACCEPTED HURRICANE MODELS

Verisk (formerly AIR Worldwide) – since 1996

CoreLogic (formerly EQECAT) – since 1997

Moody's RMS (formerly Risk Management Solutions) – since 1997

Applied Research Associates (ARA) – since 1999

Florida Public Hurricane Loss Model (Florida International University) – since 2006

Karen Clark & Company – since 2017

Impact Forecasting – since 2019

MODELING ORGANIZATIONS

Modelers support and recognize the importance of the work of the Commission

“AIR is a strong proponent of the Commission and sees great value in the submission process as it allows, among other benefits, transparency in the model building process while protecting modelers’ intellectual property. It also promotes and establishes the validity of catastrophe models in general.”

July 22, 2011

“KCC is pleased to be leading the industry as the first catastrophe modeling company to subject our flood model to the most comprehensive, thorough, and objective external review process.”

December 15, 2022

COMMISSION IMPLICATIONS

No other state has a process like Florida

“We very much value this process. And as you know, many states look to Florida and this review as not every state has been able to dedicate the resources or have the same professional review. We feel the process is very valuable for us as a company, but certainly for the entire U.S. insurance industry.”

Karen Clark & Company, July 19, 2023

SUMMARY OF COMMISSION ACTIVITIES

Average 9 meeting days a year

Average 10 on-site hurricane model audits during review years

Hurricane Standards Report of Activities published every odd year

Flood Standards Report of Activities published every other odd year

Rigorous public disclosure, on-site audits, and evaluation process

Reviewed 10 different modeling organizations over 27 years

Total Cost to Date: over \$11.1 million

All Commission documentation is available on the Commission's website, <https://fchlpm.sbafla.com/>

COMMISSION PROCESS

Development and Adoption of Standards and Acceptability Process

- Professional Team meets and drafts preliminary revisions to the Report of Activities
- Commission committee meetings
- Commission meeting to adopt the standards, acceptability process, and Report of Activities
- Report of Activities published and provided to the Modelers

COMMISSION PROCESS *(Continued)*

Model Submissions

- Hurricane model submissions are due November 1 of the following even year (1 year)
- Flood model submissions are due November 1 of the following odd year (2 years)

Review of Model Submissions

- Professional Team reviews to identify any deficiencies and issues and meets to develop recommendations to the Commission
- Commission meets to review and amend, as necessary, the list of deficiencies and issues recommended by the Professional Team
- Commission sends letter of deficiencies and issues to Modelers with deadline for responding to deficiencies before the on-site audits begin
- Professional Team pre-visit letters are provided to Modelers
- Pre-visit conference call with Professional Team if requested by Modeler

COMMISSION PROCESS *(Continued)*

Professional Team On-Site Review

- Audits every aspect of the model for verification and compliance with every standard
- Performs a due diligence review regarding the data and information provided in the disclosures and forms
- Provides a report to the Commission of the audit results
- Two possible outcomes regarding auditing for compliance with the standards
 - Model complies with all the standards, or
 - Model does not comply with all the standards

Professional Team Cannot Verify All Standards

- If the problems can be corrected while the Professional Team is on-site, they will review any corrective actions taken before determining verification of a standard
- If the problems cannot be corrected while the Professional Team is on-site, the Modeler has 7 days from the final day of the audit to request an additional verification review, and then has an additional 30 days to submit corrections and revisions
- Modeler has the option to forego an additional verification review and present its arguments for compliance directly to the Commission at the model review meeting or it may withdraw its request for review

Professional Team Additional Verification Review

- Audits corrections and revisions made to the model and submission documentation
- Audits for compliance with standards not verified during the initial on-site review
- Performs additional on-site tests of the model
- Reviews any new or revised trade secret material
- Appends its report to the Commission with the additional verification review results

COMMISSION PROCESS *(Continued)*

Commission Meeting to Review Models for Acceptability

- Reviews each model separately
- Closed session for review of trade secret information
- Public sessions
 - Modeler presentations
 - Commission votes on all standards
- Model is found acceptable only if it meets all standards
- If the model fails to be found acceptable, the Modeler has up to 30 days to file a written appeal of the Commission's finding

COMMISSION PROCESS *(Continued)*

Appeal Process for a Model Not Found Acceptable

Process for Problems Discovered After a Model has been Found Acceptable

Process for Interim Model Updates After a Model has been Found Acceptable

Process for Interim Platform Updates After a Model has been Found Acceptable

Process for Model Update for Consistency of Hurricane and Flood Models

Review and Acceptance Criteria for Functionally Equivalent Model Platforms

CURRENT WORK OF THE COMMISSION

2021 Hurricane Standards

- Model submissions were due November 1, 2022
- Received 7 hurricane model submissions – Applied Research Associates, CoreLogic, Florida Public Model, Impact Forecasting, Karen Clark & Company, Moody’s RMS, and Verisk
- On-Site reviews were held February – April 2023 with additional verification reviews held in May and November 2023
- Commission meetings to review models for acceptability – June 1 & 2, 2023, July 19 & 20, 2023, and January 4, 2024

2023 Hurricane Standards

- Committee meetings to draft proposed 2023 hurricane standards – September 27 & 28, 2023
- Commission meetings to adopt 2023 hurricane standards, acceptability process, and Report of Activities – October 25 & 26, 2023
- Model submissions due November 1, 2024

CURRENT WORK OF THE COMMISSION *(Continued)*

2021 Flood Standards

- Model submissions were originally due November 1, 2023; an extension to January 31, 2024, was granted in August 2023
- Received 3 flood model submissions – Florida Public Model, Impact Forecasting, Karen Clark & Company
- Commission added an additional submission date of June 1, 2025

For submissions received on January 31, 2024:

- Commission meeting to review submissions for deficiencies and identify any issues: April 4, 2024
- Professional Team on-site reviews: May – June 2024
- Professional Team additional verification reviews, if needed: July – August 2024
- Commission meetings to review models for acceptability: September 2024

ADJUSTMENTS FOR OTHER STATES OR COUNTRIES (HURRICANE)

Terrain (Hawaii and North Carolina)

Mountainous terrain protection (Caribbean Islands, Cuba)

Extra-tropical transitions (Mid-Atlantic and Northeast US)

Greater intensity of storms (Pacific Basin)

Insurance regulations and practices by state

APPLICATIONS TO OTHER PERILS

General Approach

- Hazard  Damage  Financial Loss to Exposure
- Hazard includes frequency and intensity
- Damage may be probabilistic

Specific Perils

- Severe Convective Storms (Hail, Tornados, Straight-Line Winds)
- Floods, Earthquakes, Wildfires
- Sinkholes, Tsunamis, Volcanoes

Interdisciplinary Team of Experts

- Hazard Domain Expert (Meteorologist, Hydrologist, Seismologist, Geologist, Statistician)
- Damage Expert (Structural Engineer, Coastal Engineer, Hydraulic Engineer)
- Financial Loss Expert (Actuary)
- Computer/Information Expert

CONTACT INFORMATION

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