

Florida Commission on Hurricane Loss Projection Methodology -- Background and History

- **S. 627.0628, F.S.** created FCHLPM in 1995
- Required Commission to adopt initial actuarial methods, [principles](#), standards, models, or output ranges no later than **December 31, 1995** (done on November 30, 1995).
- As soon as possible, but no later than **July 1, 1996**, the commission shall adopt revised actuarial methods, principles, [standards](#), models, or output ranges which include [specification of acceptable computer models](#) or output ranges derived from computer models... (done on June 3, 1996).
- **S. 627.0628(3)(d), F.S.** – “The commission shall [adopt revisions](#) to previously adopted actuarial methods, principles, [standards](#), models, or output ranges [at least annually](#).”

- 11 Commission Members
- FCHLPM administratively assigned to the SBA but to independently exercise its powers and duties.
- SBA Trustees Annually Appoint the Chair
- Commission funded out of FHCF Budget
- SBA/FHCF Staff Commission
- Professional Team (5 members with backups)
- The Review and Evaluation Process
 - Principles
 - Findings (Accuracy and Reliability, Proprietary Information)
 - Modules – information made public by the modelers and an audit process to review proprietary information, test of the models, and due diligence
 - Guidebook (to prepare the modeler for the on-site review)
 - Standards
 - Definitions
 - Acceptability Process

➤ **Summary of Principles adopted --**

1. Actions taken at publicly noticed meetings by vote and transcribed.
2. Mission Statement: Assess effectiveness of methods and adopt findings regarding accuracy or reliability.
3. Proprietary Nature of models respected but Commission should have access to information.
4. Findings subject to revision at discretion of the Commission.
5. No model will be determined acceptable until it has been evaluated according to the Commission's process and procedures.
6. Acceptability does not apply to other versions of a model; Commission will accommodate routine updating.
7. Commission's process is not to restrict competition or thwart innovation.
8. Models should be theoretically sound.
9. Output ranges should be reasonable and modelers demonstrate their reasonableness.
10. Insurers should not improperly manipulate results.
11. Models should not be biased to overstate or understate results.
12. All sensitive components of the model should be identified.

➤ Current -- Review and Evaluation Process

- Principles
- Findings (Accuracy and Reliability, Proprietary Information)
- Modules – information made public by the modelers and an audit process to review proprietary information, test the models, and to do due diligence
- Guidebook (to prepare the modeler for the on-site review)
- Standards
- Definitions
- Acceptability Process

➤ New Proposed -- Review and Evaluation Process

- Principles
- Findings (Accuracy and Reliability, Proprietary Information)
- **Grouping of Standards**
 - **Standards** – new numbering scheme, combined standards
 - ❖ **Purpose** – moved portions of the guidebook information here
 - ❖ **Disclosures** – (non-proprietary information)
 - ❖ **Audit/Guidebook** – moved to Standards Section (proprietary information shown during on-site review)
 - **Forms** – new, revised, and deleted
- **Definitions** – some new definitions and some definitions deleted for terms not found in the Report of Activities
- **On-Site Review** – Creation of a separate section
- **Acceptability Process** – voting process with two tier voting requirement

CURRENT

PROPOSED

Acceptability Process

Acceptability Process

Definitions

Standards

Guidebook

Modules

Findings

Commission Structure

Principles

Some Standards Have Been Combined with Others or Moved

A Few New Definitions & Some Deletions

For All Non-Proprietary Information

Information Moved to Audit Section &/or Purpose Section

Modules are Gone and the Information is Now in a New Disclosures Section or Forms Section

Forms are Moved to Standards Section at the End of Each Grouping

Proprietary Information Shown to PT During On-site Review

On-Site Review

Definitions

Standards
-- Purpose
-- Disclosures
-- Audit Forms

Grouping of Standards:
General G-1 to G-5
Meteorological M-1 to M-6
Vulnerability V-1 to V-2
Actuarial A-1 to A-7
Statistical S-1 to S-8
Computer C-1 to C-7

Findings

Commission Structure

Principles

New Two Tiered Voting Process

New Separate Section

New Numbering Scheme for Standards

Florida Commission on Hurricane Loss Projection Methodology -- Report of Activities

➤ Why the Changes?

- To Create a More User Friendly Document
- To Clarify and Simplify Procedures
- To Facilitate Easier and Quicker Access to Materials
- To Eliminate Redundancies
- To Facilitate Quality Discussions
- To Simplify Voting Requirements

Clarification of Terms

- **Standards** — something set up and established by authority, custom, or general consent as a model or example. (Requirements)
- **Disclosures** — something exposed to view, made known or public. (Public Information)
- **Forms** — for the purpose of revealing more about how the models operate. (Additional Public Information)
- **Audit** — to examine with intent to verify, a methodological examination or review. (Verification)

Summary of Changes to the Acceptability Process

- Replaced Modules with Disclosures
- Disclosures will be mandatory, but will not require the disclosure of proprietary information.
- Any requirements to view proprietary information will be part of the on-site review.
- A Standard is a requirement, condition, or circumstance to be met. Standards should not be worded in such a way to require additional information since all information and data are meant to be provided in the Disclosures and Forms or during the on-site review.
- Several Standards have been combined into fewer Standards with Subparts.
- Allows for a Two-Stage Voting Process – reduces the actual number of votes (6 votes minimum).

Standards

(New Organization in Report of Activities)

- **Group X**
 - **Standard X-1**
 - Purpose
 - Disclosures
 - Audit
 - **Standard X-2**
 - Purpose
 - Disclosures
 - Audit
 - **Standard X-3**
 - Purpose
 - Disclosures
 - Audit
 - **Forms** Applicable for the Group
 - Form X-1*
 - Form X-2
 - Form X-3

•Forms are numbered sequentially within a Group, the numbering is not related to Standard numbering.

Standards

(Six Groups – 35 Standards)

- General (5): G-1 through G-5
- Meteorological (6): M-1 through M-6
- Vulnerability (2): V-1 through V-2
- Actuarial (7): A-1 through A-7
- Statistical (8): S-1 through S-8
- Computer (7): C-1 through C-7

Standards have been re-numbered and some have been combined to create subparts thus reducing the number from 48 to 35.

Modules

- **Module 1 (General Description)** – Moved under various Standards for each group G,M,V,A,S,& C
- **Module 2 (Credentials)** – Moved to G-2 & S-1.4
- **Module 3 (Tests & Forms)** – Moved under various Standards for each group G,M,V,A,S,& C
- **Module 4 (On-Site Review)** – Separate Section
- **Module 5 (Modeler Presentation)** – Moved to the Acceptability Process

The material required in the Modules has been moved to the Standards (either as a Disclosure or as a Form), the Acceptability Process, or to a new section (On-Site Review).

Changes to the Acceptability Process

- **Page 1** – Capitalized “Standard” & “Standards”
- **Page 2** – I.A.
 - Better defines a new modeler.
 - Replaces references to Modules with Disclosures & Forms.
 - NEW -- Requires an Expert Certification Form, see page 16.
 - Requires that modeler submission letter contain a list of non-proprietary information that the modeler anticipates presenting to the Commission.
- **Page 3** –
 - Notes new form numbers.
 - Single numbering system required.
 - Tables, Graphs, and other non-text items listed in the Table of Contents and abbreviations defined.
 - Format requirements, whether proprietary information will be provided to the Professional Team, included in the Disclosures or Forms.
- **Page 4** –
 - Color requirements for graphs and maps (moved from Standard 5.1.7).
 - Notification requirements for an existing modeler similar to that of a new modeler found on pages 2 & 3 above.

Changes to the Acceptability Process

- **Page 7** – NOTE B. Review of Readiness Notification
 - If submission is incomplete, unclear, or non-responsive, Commission may specify time frame to correct deficiency. PT will review, Modeler will explain in writing to Commission. Failure to correct deficiency within time specified will result in a termination of the review process. (Not New).
 - Prior to telephone conference call PT provide to FHCF a detailed pre-visit letter outlining specific issues to be addressed by the Modeler.
- **Page 11** – Modeler Presentation (Old Module 5)
 - Overview presentation regarding the model (theoretical soundness and why the model is accurate and reliable).
 - Changes from the previously accepted model.
 - Address issues and/or deficiencies raised by the Commission or the PT associated with the original submission.
 - Answer questions and clarify Disclosures and Forms.
 - Verification of each Standard.
 - All presentation material shall be provided in advance in electronic format which is readable by all members of the Commission.

Changes to the Acceptability Process

➤ Page 12 – Voting at the Meeting to Determine Acceptability

- Model must be found acceptable under all Standards and Subparts of Standards.
- Voting is the same for new and existing models.
- Standards will be categorized under six (6) groupings:
 - General
 - Meteorological
 - Vulnerability
 - Actuarial
 - Statistical
 - Computer
- Each Category will be voted on after the Modeler has discussed all Standards in the Category.
- If the Category passes, the Commission will move to the next Category.
- If the Category fails, the Commission will vote individually on each Standard in the Category.
- Significant change to Standards will be noted for discussion purposes only. If a Standard has not changed, the Commission has the option of not spending much time discussing the Standard or can revisit the Standard in as much detail as desired.
- There should be no need to “set aside” or “carve out” various Standards to be voted on individually. If the Group fails, it is mandatory that each Standard in the group be individually voted on.
- A motion and second is required for all votes.
- All votes will be by roll call.
- The Commission, based on a proper motion and second, may change the voting requirement.

Changes to the Acceptability Process

- **Page 13 – Notification of Acceptability**
 - The modeler will need to provide the Commission with all required information prior to the Chair sending the modeler the letter of acceptability.
- **Page 16 – Expert Certification Form**
 - Requires signatures of experts
- **OTHER CHANGES**
 - **Disclosures & Forms**
 - ❖ Eliminated many redundancies from old module information
 - ❖ Shortened questions
 - ❖ Re-phrased questions where appropriate
 - ❖ Eliminated Form A
 - ❖ Eliminated Form F (except for a new Modeler)
 - ❖ Revised Figures 1, 3, & 5
 - ❖ New Forms
 - **Standards**

Important Dates & Activities

- Professional Team Conference -- June/July
- Committees -- July
- Commission -- August/September
- Report of Activities -- November 1
- Model Submissions due -- February 28
- Commission Reviews Submissions -- March/April
- On-site Reviews -- April/May
- Models Reviewed -- May/June

Commission Planning Calendar

Revising & Developing Standards

Reviewing Models

Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Professional Team & Staff Conference	Committee Meetings to Revise Standards		Commission Meeting to Adopt Standards & ROA		Report of Activities			Modelers Submissions Due	Commission Reviews Submissions	On-Site Reviews		Models Reviewed

Standards

(Six Groups – 35 Standards)

- General (5): G-1 through G-5
- Meteorological (6): M-1 through M-6
- Vulnerability (2): V-1 through V-2
- Actuarial (7): A-1 through A-7
- Statistical (8): S-1 through S-8
- Computer (7): C-1 through C-7

Standards have been re-numbered and some have been combined to create subparts thus reducing the number from 48 to 35.

General Standards

- General: G-1 through G-5
- Proposed Changes
 - Deleted:
 - 5.1.1 (Scope and Implementation), *deleted portion dealing with ALE and storm surge. Considered in A-7.C*
 - 5.1.3 (Model Revision Policy) *moved to Computer Standards*
 - 5.1.7* (Visual Presentation of Data) *moved to Acceptability Process, page 6*
 - Combined & Added:
 - 5.1.6 (Identification of Units of Measure and Conversion Factors), combined with 5.2.1 (Units of Measure for Model Output), & 5.2.2. (Damage Function Wind Inputs) *last two moved from Meteorological Standards*

Seven Standards reduced to five. Two deleted and moved (one to Computer Standards and one to Acceptability Process), two moved from Meteorological Standards and combined with others.

***No longer a Standard.**

Meteorological Standards

- Meteorological: M-1 through M-6
- Proposed Changes
 - Deleted:
 - 5.2.1 (Units of Measurer for Model Output) *moved to General Standards*
 - 5.2.2 (Damage Function Wind Inputs) *moved to General Standards*
 - Combined:
 - 5.2.6 (Hurricane Probabilities) and 5.2.7 (Hurricane Probability Distributions),
 - 5.2.8 (Land Friction) and 5.2.9 (Hurricane Overland Weakening Rate)

Ten Standards reduced to six. Two deleted and moved to General Standards, and four combined into two.

Vulnerability Standards

- Vulnerability: V-1 through V-2
- Proposed Changes
 - Deleted:
 - 5.3.6 (Additional Living Expense) *moved to Actuarial Standards*
 - Combined:
 - 5.3.1 (Deviation of Vulnerability Functions, 5.3.2 (Required Vulnerability Functions), 5.3.3 (Wind Speeds Causing Damage), 5.3.4 (Construction and Codes)

Six Standards reduced to two. One moved to Actuarial Standards, and four combined into one.

Actuarial Standards

- Actuarial: A-1 through A-7
- Proposed Changes
 - Deleted:
 - 5.4.2 (Actuarial Modifications) *The re-write and edit of 5.4.1 incorporates 5.4.2*
 - 5.4.10 (Replication of Known Hurricane Losses) *moved to Statistical Standards*
 - 5.4.11 (Comparison of Estimated Hurricane Loss Costs) *moved to Statistical Standards*
 - 5.4.12 (Output Ranges) *moved to Statistical Standards*
 - Combined and Added:
 - 5.4.3 (Loss Cost Projections) and 5.4.5 (Demand Surge)
 - 5.4.9 (Additional Living Expense) and 5.3.6 (Additional Living Expense) *moved here from Vulnerability Standards*

Twelve Standards reduced to seven. Four deleted, three moved to Statistical Standards, and two combined into one, and one added and combined with an existing Standard.

Statistical Standards

- Statistical: S-1 through S-8
- Proposed Changes
 - Deleted: None
 - Combined:
 - 5.6.1 (Use of Historical Data) and 5.6.2 (Comparison of Historical and Modeled Results)
 - Added:
 - 5.4.10 (Replication of Known Hurricane Losses) *moved here from Actuarial Standards*
 - 5.4.11 (Comparison of Estimated Hurricane Loss Costs) *moved here from Actuarial Standards*
 - 5.4.12 (Output Ranges) *moved here from Actuarial Standards*

Six Standards increased to eight. Two standards combined into one. Three Standards added and moved from Actuarial Standards.

Computer Standards

- Computer: C-1 through C-7
- Proposed Changes
 - Deleted:
 - 5.5.7 (User Documentation) *The re-write and edit of 5.5.2 incorporates 5.5.7*
 - New: One
 - C-7 Security
 - Combined:
 - 5.5.6 (Model Maintenance and Revision) and 5.1.3 (Model Revision Policy)

Seven Standards remain at seven. One Standard deleted. One Standard added from General Standards and combined with another. A new Standard is added.

Standards Noted with Significant Revisions*

- ▶ **M-1** Official Hurricane Set or Suitable Approved Alternatives
- ▶ **M-2** Hurricane Characteristics
- ▶ **M-5** Land Friction and Weakening
- ▶ **M-6** Logical Relationships of Hurricane Characteristics
- ▶ **V-1** Derivation of Vulnerability Functions
- ▶ **V-2** Mitigation Measures

*Note: The notation of “Significant Revisions” or “Significant Changes” no longer relates to voting requirements. The notation will aid the Commission’s depth of discussions, but does not designate a special voting requirement as it has in the past – See new voting procedures on page 12 of the Acceptability Process.

Standards Noted with Significant Changes

- ▶ **M-1 Official Hurricane Set or Suitable Approved Alternatives***

***For landfall frequency analyses, the modeler shall use the latest updated official storm set. All proposed alternatives to the official storm set shall be subject to the approval of the Commission.**

****Question: How does the Commission approve an alternative? Should it be submitted in advance or done on the “fly” as the Modeler presents the Standard? Should “Approved” be changed to “Acceptable?”***

Standards Noted with Significant Changes

▶ M-2 Hurricane Characteristics

Methods for depicting all modeled hurricane characteristics, including but not limited to wind speed, radial distributions of wind and pressure, minimum central pressure, radius of maximum winds, strike probabilities, tracks, and the time variant wind fields, shall be based on information documented by current* scientific literature or modeler information accepted by the Commission.

****Question: What is meant by “current” scientific literature? Do we mean “most current?”***

Standards Noted with Significant Changes

▶ M-5 Land Friction and Weakening

- A. (5.2.8) *The magnitude of land friction coefficients shall be consistent with accepted **current*** scientific literature, consistent with **current** geographic surface roughness, and shall be implemented with appropriate geographic information system data. (Significant Revision)*
- B. (5.2.9) *The hurricane overland weakening rate methodology used by the model shall be shown to be reasonable in comparison to historical records, documented in accepted **current** scientific literature or modeler information accepted by the Commission.*
- C. *Transition of winds from over water to over land (i.e. landfall) shall be shown to be reasonable in comparison to historical records, documented in accepted current scientific literature or modeler information accepted by the Commission.* (New Standard)

**Question: What is meant by “current” scientific literature? Do we mean “most current?”*

Standards Noted with Significant Changes

▶ **M-6** Logical Relationships of Hurricane Characteristics

A. The radius of maximum winds shall reflect specified hurricane characteristics.

B. The magnitude of asymmetry shall increase as the translational velocity increases, all other factors held constant.

C. The wind speed shall decrease with increasing surface roughness (friction), all other factors held constant.

D. For recurving storms, peak hurricane intensity shall occur near the point of recurvature. (New Standard)

Standards Noted with Significant Changes

► V-1 Derivation of Vulnerability Functions

A. (5.3.1) Development of the vulnerability functions is to be based on a combination of the following: (1) historical data, (2) tests, (3) structural calculations, (4) expert opinion, (5) site inspections. Any development of the vulnerability functions based on structural calculations or expert opinion shall be supported by tests, site inspections, or historical data.

B. (5.3.1) The method of derivation of the vulnerability functions shall be demonstrated to be theoretically sound.

C. (5.3.1) Any modification factors/functions to the vulnerability functions or structural characteristics and their corresponding effects shall be clearly defined and their theoretical soundness demonstrated.

D. (5.3.4) *In the derivation and application of vulnerability functions, assumptions concerning construction type and construction characteristics, including building code revisions and enforcement, shall be demonstrated to be reasonable and appropriate.

(*Significant Revision)

E. (5.3.2) Vulnerability functions shall be separately derived for building structures, mobile homes, appurtenant structures, contents, and additional living expense.

F. (5.3.3) The minimum wind speed that generates damage shall be shown to be reasonable.

Standards Noted with Significant Changes

▶ **V-2** Mitigation Measures (5.3.5)

A. Modeling of mitigation measures to improve a building's wind resistance and the corresponding effects on vulnerability shall be demonstrated to be theoretically sound. These measures shall include, but not be limited to, fixtures or construction techniques that enhance:

- ***Roof strength***
- ***Roof covering performance***
- ***Roof-to-wall strength***
- ***Wall-to-floor-to-foundation strength***
- ***Opening protection***
- ***Window, door, and skylight strength.***

B. Application of mitigation measures shall be shown to be reasonable both individually and in combination.

Note: New V-2 form is designed to be used in conjunction with this Standard.