**Findings of the Commission**

**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 standards that the Commission has adopted since 1996 and the accuracy or reliability of the computer simulation models that the Commission has reviewed. The Commission thus far has reviewed computer simulation models exclusively because these constitute the only widely accepted approach to estimate residential loss costs, personal residential 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 individual or 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 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, 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 sections of hurricane standards established and refined since June of 1996:

* General Standards reflecting the professional status of the hurricane model designers and testers and generic aspects of the hurricane model;
* Meteorological Standards covering all aspects of this infrequent weather phenomenon;
* Statistical 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;
* Vulnerability Standards assessing the impact of the hurricane winds on residential property;
* Actuarial Standards assessing the damage impact in insurance terms;
* Computer/Information Standards providing 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, i.e., 2009, 2011, 2013, 2015, 2017, etc. 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 will be reviewed by the Commission for acceptability 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 sections of flood standards established in June of 2017:

* General Flood Standards reflecting the professional status of the flood model designers and testers and generic aspects of the flood model;
* Meteorological Flood Standards covering all aspects of coastal flooding including wind and other meteorological elements that drive storm surge;
* Hydrological and Hydraulic Flood Standards covering all aspects of inland flooding including riverine, lacustrine, and surface water flooding;
* 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;
* Vulnerability Flood Standards assessing the impact of the coastal and inland flooding on personal residential property;
* Actuarial Flood Standards assessing the damage impact in insurance terms;
* Computer/Information Flood Standards providing 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. 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 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.

**Findings of the Commission**

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