Professional Team Report to the Florida Commission on Hurricane Loss Projection Methodology on Inquiries or Investigations from the 2011 Report of Activities

A Report of Discussions with Modelers during the 2013 On-Site Reviews

July 10, 2013

1) **ADVERSE LOSS DEVELOPMENT** - *Is the impact of reopened claims evident in the claims data provided by the modeling organizations for validation of the loss projections generated by the model? Should the impact of adverse loss development be incorporated in the model loss results, and if so, how? Should adverse loss development be a consideration to be incorporated into the standards or as a separate standard?*

Ideally, modelers would only use fully developed claims, but settle typically for insurance data sets in which a 90% threshold is met (deeming them fully developed). The range of treatment varies from the case of accepting data regardless of the development amount to insisting on datasets based on fully developed claims. By requiring only data with fully developed claims, some modelers receive their data well after the event. This resulted in a long delay in accounting for the 2004 and 2005 hurricane losses, after the 12-year period following Hurricane Andrew in which data was scarce for model validation in Florida.

There is a noticeable difference in results coming from independent and company adjusters.

Presently, we do not believe that adverse loss development should be incorporated into existing or new standards.

2) **MITIGATION IMPACT** – *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.*

The responses regarding this issue ranged from the status quo to proposals for extensive changes to existing forms. The status quo response suggests that the current set of forms are adequate and do not require revision. Alternatively, a suggestion was made to revise the hazard definition in the form, as the windspeed by ZIP Code description does not characterize the event adequately. The baseline house was also viewed as problematic as it represents a very weak structure—one for which mitigation measures could be dubious. In terms of individual versus combinations of mitigation measures, a natural progression of mitigation measures could be more realistic than the one feature at a time approach embodied now.

Given the State's interest in accounting for mitigation measures, we recommend development of a new mitigation form. This could be done in consultation with the modelers and would be included in the 2015 Report of Activities.

3) **SOFTWARE ENGINEERING** – *Determine the software engineering techniques, such as code refactoring, used by the modeling organizations to improve the readability, efficiency, maintainability, and structure of software without changing its functionality.*

Modelers advocated the use of methods such as refactoring, but only if tools exist to assist in that process. When code is changed for reasons of upgrading, code is checked for correct functionality through other methods (e.g., Standard C-5).

We suggest that the availability of tools for refactoring should be assessed before additional requirements are imposed in the Computer Standards.

4) **SPECIFIC AND/OR UNIQUE MODELING ISSUES** – *Anomalies related to specific counties and/or unique circumstances that may impact modeling results shall be identified, and these issues shall be evaluated and discussed by the Commission.*

The following specific or unique modeling issues arose in our discussions:

1. Exposure data is a pervasive topic that traverses virtually all of the Commission issues. Examples of specific data issues include secondary features, roof age, elevation at base of first floor, and number of floors in high rises, and where the unit is located. In general, the better the quality of the exposure data (in relation to losses, as well), the better the modelers will be able to refine their models.
2. Monroe County surfaces in this discussion as most of its exposure is susceptible to storm surge. There has been an assertion by some that Monroe County's wind peril rates are excessive since, following a strong storm surge, there may be limited wind peril on the surviving structures. Sorting out storm surge, waves, flooding and wind contributions is an issue of its own stature (Number 5).

5) **STORM SURGE** – *How are modeling organizations modeling storm surge? Should there be a storm surge standard similar to the demand surge standard?*

Note: This report includes updated information to the July 2009 report to the Commission on this topic (available at *www.sbafla.com/method/portals/methodology/CommissionInquiries/200907_InquiriesReportJuly 2009.pdf*).

The modelers are well aware of issues related to storm surge and, independent of the Florida Commission, may have storm surge models of various types implemented in their models. Federal Agencies have necessarily been addressing this topic for years; there are long-standing public domain storm surge models (e.g., Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model), as well as newer, more sophisticated, models from a variety of sources (not necessarily public). Modelers suggested that we could use current NOAA SLOSH models coupled with their wind model somehow. Some modelers wonder if these models serve the needs of the Commission.

NOAA and FEMA have developed databases on historical landfall events that include meteorological data and various significant water levels (e.g., high water mark), also including estimates of wave contribution at individual locations. FEMA has been tasked to develop a coastal "formula" to allocate the contributions due to wind and storm surge but this work is ongoing.

At present, there remains considerable work to achieve actuarial soundness of potential storm surge models. Some barriers include the following:

1. A key issue is the suitability of vulnerability functions and lack of data on property characteristics, such as property ground level elevation, existence of basement, fully developed and furnished basements vs. bare minimum basements, first floor elevation, and split-level buildings.
2. As non-covered perils, there are lack of data issues associated with storm surge (i.e., storm surge losses).
3. Likewise, the conversion from damage to losses, especially in light of the conflict between allocating wind and storm surge perils, is another key concern.
4. The actuarial component is also problematic with a lack of relevant and suitable claims data for storm surge.

Presently, the lack of reliable data on storm surge damage and claims appears to provide a barrier to including it in the loss costs analysis. Some modelers suggest that they are exploring storm surge models for loss estimation, thus it may benefit the Commission to revisit this topic again in the future.

6) **VULNERABILITY MODEL DEVELOPMENT FOR MITIGATION FEATURES** – *Explore the use of a physical/ engineering based approach to vulnerability model development for application of mitigation features.*

Some modelers currently apply this approach. Challenges in applying this approach include the large number of input variables to support this type of development of vulnerability functions, converting physical loss to financial loss, and the claims analysis relative to the impact of mitigation factors.

We propose to continue discussing this approach with modelers for consideration in the 2015 Standards.

Note to the Commission: The above summary of modeler input on these issues reflects non-attributable comments from those modelers whose formal on-site reviews were completed with some time available for these inquiries.

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