South Carolina Department of Insurance

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BULLETIN NUMBER 2014-03

TO: All Insurers Licensed to Transact Property and Casualty Insurance Business within the State of South Carolina

FROM: Raymond G. Farmer
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SUBJECT: The Use of Hurricane Catastrophe Models in Property Insurance Ratemaking

DATE: March 12, 2014

I. PURPOSE AND INTRODUCTION

South Carolina law authorizes the Director of Insurance to evaluate the use of any natural catastrophe model in property insurance rate filings in South Carolina.[1] In 2012, the South Carolina Department of Insurance (SCDOI or Department) solicited a Request for Proposals for a review and study of the computer simulation models that are designed to produce hurricane insurance loss costs for insuring properties in South Carolina. The Catastrophe Model Panel which was engaged consisted of an actuary (Mr. Martin Simons), a meteorologist (Dr. Jenni Evans), and a structural engineer (Dr. Masoud Zadeh). Each panel member has considerable experience reviewing natural hazard catastrophe models and is a member of the Professional Team selected to advise Florida's Commission on Hurricane Loss Projection Methodology. Four modeling organizations submitted hurricane models for evaluation by the panel. These included models from AIR Worldwide (AIR), Applied Research Associates (ARA), EQECAT, and Risk Management Solutions (RMS).

The SCDOI received the panel's preliminary report in July 2013 and scheduled a public hearing for October 9, 2013. The final report was received in early October 2013. In addition to holding a public hearing, the Department made as much of the two reports as possible available to the public on its website, with some portions being redacted due to their proprietary nature. These reports may be accessed directly at the following locations:

- Preliminary Report: http://doi.sc.gov/ArchiveCenter/ViewFile/Item/264; and
- Final Report: http://www.doi.sc.gov/DocumentCenter/View/7184).

[1] S.C. Code Ann. § 38-75-1140 (2007).

The October 2013 public hearing consisted of presentations by the Director, SCDOI staff, an independent actuary, and Martin Simons on behalf of the panel as well as comments from the public and other interested parties. While responding to a consumer question, Mr. Simons made the following statement which summarizes the findings in the panel's report:

> Basically, our report determined that the models do a very good job, with [several] exceptions. And when these exceptions are taken care of, we can have great confidence in the models. But, basically, the models do a very good job of determining the expected annual loss from hurricanes.

The SCDOI hired a court reporter to document the hearing and posted the transcript as well as other relevant materials on its website. All of the above-referenced materials are available on the Coastal Insurance webpage, http://www.doi.sc.gov/592/Coastal-Insurance.

On December 12, 2013, the Director issued Order 2013-05 to summarize the findings found in the catastrophe model panel's report. It also ordered the following:

- The SCDOI shall develop a procedure for examining and evaluating hurricane catastrophe models used in property insurance rate filings.
- The four modelers referenced in the order will meet with SCDOI staff within 45 days of the order on specific issues identified in the panel's report.
- Within 90 days of the order, the SCDOI will issue a bulletin implementing the recommendations set forth in the order.
- Any company or entity using hurricane catastrophe models to develop rates must include sufficient and appropriate information as required by the SCDOI in its rate filing.

As required by the order, SCDOI staff has met with representatives of each modeling company individually, with meetings taking place in SCDOI offices between December 6, 2013 and January 8, 2014. This bulletin is being issued in accordance with Order 2013-05.

II. APPLICABILITY AND SCOPE

This bulletin applies to all property insurance rate filings made in South Carolina beginning June 1, 2014. The Department requests that companies adopt the provisions set forth in this bulletin sooner if possible.

The requirements set forth in this bulletin will be incorporated into the review of property insurance rate filings via the Department's Actuarial Exhibits as noted in Section III. B. of this bulletin. The Department anticipates making future enhancements and modifications to these requirements via updates to the Actuarial Exhibits. As such, carriers are advised that they should review these exhibits in advance of any rate filing to ensure that they are keeping up with any changes to filing requirements. Companies will be responsible for keeping up with any updates promulgated by the Department.

In addition, guidance will be issued at a later date to address future model revisions, their impact on modeled losses for South Carolina, and any necessary materials that modelers will need to provide for Department staff review of periodic updates to hurricane catastrophe models. Changes or updates to the list of approved hurricane catastrophe models as provided in this bulletin are anticipated to be incorporated directly into the Actuarial Exhibits published for carrier use in the rate filing process.

III. SOUTH CAROLINA DEPARTMENT OF INSURANCE REQUIREMENTS

A. Current Requirements that Will Continue to Remain in Effect

The Department does not accept historical claims data for hurricanes as the sole basis for estimating expected hurricane loss costs in the development of rates that are not excessive, inadequate, or unfairly discriminatory. Nor does the Department permit the use of any of the following model variations: "short-term," "near-term," "medium-term," "warm phase," "warm water," "warm sea surface temperature," or any other variation that, although different in title than the aforementioned examples, has a similar effect of limiting the modeled period. Only the long term variation of catastrophe models is permitted. The Department also does not allow the inclusion of storm surge in results from any type of hurricane model unless the company's policies provide flood coverage. If the company does provide flood coverage, then it should show this to be the case in its rate filing(s).

Catastrophe models that include tropical storms and tropical depressions in their stochastic storm sets are only allowed to be used when losses from these storms are not included in historical loss data included in a company's indication calculation. This is done to avoid double counting the effects of those storms - once in the modeled hurricane losses and once again in the non-hurricane portion of the losses.

When using hurricane models, companies are required to provide information related to the models and their use as outlined in the Department's Actuarial Exhibits. This includes information on the model itself as well as adjustments made to the modeled results. The Department allows companies to use results from multiple acceptable hurricane models in their filings. This "blended" approach should provide equal weighting to each model utilized and be thoroughly documented and explained in the filing materials. Demand surge may be included in the modeled results as long as the company provides the impact it has on the modeled losses.

B. New Requirements Effective Under this Bulletin

The following models, regardless of software version, are approved for use in property insurance rate filings in South Carolina:

- AIR Atlantic Tropical Cyclone Model version 12.0.1
- AIR Atlantic Tropical Cyclone Model version 14.0.1
- ARA HurLoss version 6.0[2]
- EQECAT WORLDCATenterprise version 3.13
- EQECAT WORLDCATenterprise version 3.16
- EQECAT Risk Quantification and Engineering version 14
- RMS RiskLink version 11.0 SP3a[3]

The Department will require model-specific output reports to be submitted for hurricane models used in filings.

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[2] If ARA Hurloss version 6.0 is used for rate filings, the filing company should provide resolutions and justification with regard to the following issues: (1) treatment of tropical cyclones that do not reach hurricane strength, (2) treatment of unknown masonry residential structures (i.e., masonry residential structures that are not identified as either unreinforced or reinforced), and (3) treatment of the 2006 International Building Code. ARA has agreed to resolve the above issues in a subsequent model version. Once implemented, the Department will review the above listed improvements.

[3] Based on additional information and subsequent discussions with RMS, the Department's understanding is that RMS RiskLink version 11.0 SP3a should be allowed as opposed to RMS RiskLink version 11.0 SP2c which is listed in Order 2013-05 as an acceptable model.

Provided below is a list of the output reports that should be included in rate filings depending on the catastrophe model used:

- AIR Models – Analysis Log
- ARA Models – Analysis Summary Report
- EQECAT Models – Exposure Report; Probabilistic Report; Event Loss Table Report
- RMS Models – Analysis Summary Report for FCHLPM

The Department has updated its Catastrophe Exhibit (labeled as CAT-Home) within the Actuarial Exhibits to include additional questions and information. The revised Catastrophe Exhibit has been included in the Homeowners Actuarial Exhibits file, which is available on the Department's website under the Property & Casualty page (http://doi.sc.gov/432/Property-Casualty) and is also available under the filing instructions on SERFF. As a part of the enhancements to the Catastrophe Exhibit, there is now a list of the approved hurricane catastrophe models. If a model version that is not included in this list is being used, then loss cost differences from the approved model must not be significant. The company should explain and discuss any differences between the models as well as the impact of the selection on the indication calculation. The company should, further, indicate whether the model version being used has been approved by the Florida Commission on Hurricane Loss Projection Methodology as well as the model approval and expiration date. After extensive conversations with modelers, the Department believes that modelers are able to provide insurers with evidence of whether or not there will be an impact on modeled losses. In the past, a company has been asked to identify all adjustments made to model output; the Department is now requiring companies to also list any modifications made to the model itself.

Throughout the model review process, it has been evident that modeled results are dependent upon input data from companies using the models. As such, insurers are now asked to describe the input data used when running the models. Secondary modifiers can be used in the AIR, EQECAT, and RMS models to more accurately reflect the impact building codes have on an individual property's hurricane exposure. Each of these modelers has or is in the process of developing guidance on how to use secondary modifiers appropriately. The Department strongly recommends that insurers use them or provide justification of why they cannot along with the impact of not using them.

IV. QUESTIONS

Questions regarding the content of this bulletin should be directed to the Department's Property and Casualty Unit of the Market Services Division via email at P&Cmail@doi.sc.gov.