

## **Audit Findings in 2009 with Particular Attention to Form A-6 (Output Ranges)**

The Output Ranges (Form A-6) provide an essential source of information from computer hurricane models submitted to the Florida Commission on Hurricane Loss Projection Methodology. Instructions are provided by the Commission to allow the review of model outputs that are comparable and therefore, amenable to comparison. Thus, it is critical that the reported entries in Form A-6 (loss cost per \$1000 exposure) are values produced by the model according to the Report of Activities instructions and are free of errors. To minimize problems and to enhance detection of problems, if any, automated scripts have been required since 2006 for form completion. A number of related forms and maps are produced to scrutinize the results further and to characterize their differences from the previous year. Over the years the Professional Team has detected a variety of problems with modeler Output Ranges including, for example, incorrect completion of Form A-6 (leading to the automated script requirement), anomalous ZIP Code values (from examining maps) or evidence of illogical relationship to risk (related to land use and land cover treatment).

Prior to the distribution of the FHCF aggregate exposure data in 2008 (using 2007 exposures) the method used by the modelers produced the same results as if the instructions had been carried out as prescribed in the Report of Activities. The 2007 exposure data, however, incorporated additional information, including among other items, "year built." Unlike the policy limit, deductible, and coverage provisions which are superseded by the policy provisions that are specified in the Report of Activities, the "year built" information can only be determined from the FHCF exposure file as prescribed. Therefore, the method used by the modelers to complete Form A-6 no longer produces the same results as would have been obtained by following the Commission's instructions.

During the 2008 audits, which were the first audits using the 2007 FHCF aggregate exposure data, the Professional Team spent time with each modeler reviewing the methods used by the modeler to ingest the various columns of information provided in the Catastrophe Fund exposure data provided by the Commission.

During this year's on-site reviews, issues relating to Form A-6 were identified which ultimately were determined to apply to each modeler. Problems with three of the modeler results were detected during the on-site reviews. The issue was subsequently presented to each of the first two modelers who had already completed the on-site review, and these modelers agreed that the Form had not been produced in accordance with the instructions contained in the Report of Activities. They each have decided to re-run their model to produce a new version of Form A-6 as well as the associated Forms A-7 and A-8.

Attached to this document are the Form A-6 instructions. Of particular interest is Item B. Sentence three of this paragraph is:

For each of these categories using ZIP Code centroids, the output range shall show the highest loss cost, the lowest loss cost, and the weighted average loss cost based on the 2007 Florida Hurricane Catastrophe Fund aggregate exposure data provided in the file named "*hlpm2007.exe*."

This file can be used to generate a data file containing the full Catastrophe Fund exposure set of 378,646 lines of information (many associated with multiple risks). The file *hlpm2007.exe* is an improvement over its predecessor *hlpm2002.exe* since the 2007 version includes fields for Year Built, BCEG Code, Florida Building Code Indicator, Structure Opening Protection, Roof Shape, Roof-Wall Connection and Roof-Deck Attachment. Year Built is a categorical variable whose ranges correspond to building code changes in Florida. The file named "*07FHCFWts.xls*" is provided to the modeler to assist in obtaining the weighted average of ZIP Code values and protects the proprietary nature of modeler results.

The Report of Activities also provides specified policy information on pages 132 – 135. The instructions direct the modeler to use the specified policy provisions in the following sentence:

For each of the loss costs provided, identify what that loss cost represents by line of business, deductible option, construction type, and coverages included, i.e., structure, contents, appurtenant structures, or additional living expenses **as specified**. (emphasis added)

The instructions seem straightforward, yet each of the modelers used *07FHCFWts.xls* to define baseline structures in lieu of the risks given by *hlpm2007.exe*, thereby not appropriately accounting for the new exposure details such as "year built." The prescribed file was only used to the extent that its summary values are embodied in the file *07FHCFWts.xls* for assigning weights to ZIP Code values.

The Professional Team discovered this issue in conjunction with examining logical relationships to risk:

Loss costs cannot increase as the quality of building codes and enforcement increases, all other factors held constant. (See Standard A-6, Item E)

Standard G-5, Audit item 5 states:

A flowchart defining the process for Form creation will be reviewed.

A review of the flowchart provided the Professional Team with the tool to perceive that file *hlpm2007.exe* was not used as called for in the instructions. Typically, the modeler actuary also confirmed this conclusion. Once the problem was detected for one modeler, the Professional Team continued to investigate the problem during subsequent on-site reviews. This issue was also brought to the attention of the modelers who had already had their on-site reviews, and it was discovered that in the completion of Form A-6, the two modelers had not used file *hlpm2007.exe* as called for in the instructions.

Since all five modelers completed Form A-6 in a comparable fashion, but one that the Professional Team deemed as making Standard A-10 unverified, some reflection on Form A-6 is in order. Some modelers have indicated that the instructions are suggestive of using baseline structures as along the lines of the Specifications of Policy Types. This topic should be addressed at the summer Commission committee meetings.

## Form A-6: Output Ranges

- A. Provide output ranges in the format shown in the file named "2008FormA6.xls" by using an automated program or script. A hard copy of the output range spreadsheets shall be included in the submission. Provide the output ranges on CD in Excel format. The file name shall include the abbreviated name of the modeler, the Standards year, and the Form name.
- B. Provide loss costs by county. Within each county, loss costs shall be shown separately per \$1,000 of exposure for personal residential, tenants, condo unit owners, and mobile home; for each major deductible option; and by construction type. For each of these categories using ZIP Code centroids, the output range shall show the highest loss cost, the lowest loss cost, and the weighted average loss cost based on the 2007 Florida Hurricane Catastrophe Fund aggregate exposure data provided in the file named "hlp2007.exe." A file named "07FHCFWts.xls" has also been provided for use in determining the weighted average loss costs. Include the statewide range of loss costs (i.e., low, high, and weighted average). For each of the loss costs provided, identify what that loss cost represents by line of business, deductible option, construction type, and coverages included, i.e., structure, contents, appurtenant structures, or additional living expenses as specified.
- C. If a modeler has loss costs for a ZIP Code for which there is no exposure, then the modeler shall give the loss costs zero weight (i.e., assume the exposure in that ZIP Code is zero). Provide a list in the submission document of those ZIP Codes where this occurs.
- D. If the modeler does not have loss costs for a ZIP Code for which there is some exposure, the modeler shall not assume such loss costs are zero, but shall use only the exposures for which it has loss costs in calculating the weighted average loss costs. Provide a list in the submission document of the ZIP Codes where this occurs.
- E. All anomalies in loss costs that are not consistent with the requirements of Standard A-10 and have been explained in Disclosure A-10.1 shall be shaded.

Modelers shall indicate if per diem is used in producing loss costs for Coverage D (ALE) in the output ranges. If a per diem rate is used in the submission, a rate of \$150.00 per day per policy shall be used.

