

**Florida Commission on Hurricane Loss Projection Methodology  
2013 Standards**

**Florida Public Hurricane Loss Model**

**Florida International University**

**Professional Team On-Site Review: February 2-4, 2015**

The purpose of the pre-visit letter is to outline specific issues unique to the modeler's submission, and to identify lines of inquiry to be followed during the on-site review to allow adequate preparation by the modeler. Aside from due diligence with respect to the full submission, various questions that the Professional Team is certain to ask the modeler during the on-site review are provided in this letter. This letter does not preclude the Professional Team from asking for additional information during the on-site review that is not given below or discussed during an upcoming conference call that will be held if requested by the modeler. One goal of the potential conference call is to address modeler questions related to this letter or other matters pertaining to the on-site review. The overall intent is to expedite the on-site review and to avoid last minute preparations that could just as easily have been handled earlier.

Some of this material may have been shown or may have been available on a previous visit by the Professional Team. The Professional Team will also be considering material in response to deficiencies and issues designated by the Florida Commission on Hurricane Loss Projection Methodology (Commission).

The goal of the Professional Team on-site review is to provide the Commission with a clear and thorough report of the model, subject to non-disclosure restrictions on proprietary information. All modifications, adjustments, assumptions, or other criteria that were included in producing the information requested by the Commission in the submission should be disclosed and will be reviewed.

It is important that all material prepared for presentation during the on-site review be presented using a medium that is readable by all members of the Professional Team simultaneously. The Professional Team will review selected computer code in conjunction with the reviews performed for each section. Computer code should be readily available in a format that will allow simultaneous visualization by the entire Professional Team. Access to critical articles or materials referenced in the submission or during the on-site review should be available on-site for the Professional Team. The Professional Team should be provided access to internet connections through the Professional Team members' laptops for reference work that may be required while on-site.

The on-site schedule is tentatively planned to proceed in the following sequence: (1) presentation by the modeler of new or extensively updated material related to the model; (2) section by section review commencing within each section with pre-visit letter responses; (3) responses to new or significantly changed standards in the 2013 Report of Activities, and (4) responses to the audit items for each standard in the Report of Activities.

We note that the submission document does not include a date and time in the footnote which could be construed as non-responsive to the requirements in the Acceptability Process (II.A.5.b, page 47). In lieu of reprinting the entire document to abide by this requirement, we will accept

page changes that do abide by the requirement during the on-site review. Likewise, the submission is deficient by not placing the forms in an Appendix.

Be prepared to have available for the Professional Team's consideration, all insurance company claims data received or newly processed since the previous submission. Be prepared to describe any processes used to amend or validate the model that incorporates this data.

Provide an explanation for each loss cost change of more than 5% from the loss costs produced in the previous submission using the 2007 Florida Hurricane Catastrophe Fund (FHCF) exposure data to the corresponding loss costs produced in the current submission using the 2007 FHCF exposure data.

When the Professional Team arrives on-site, provide five (5) printed copies of all figures with scales for the X and Y axes labeled that are not so labeled in the submission. Label the figures with the same figure number as given in the submission. Also, provide five (5) printed copies of Form V-3 and the electronic file used to complete Form V-3 on a removable drive medium. This material will be used during the on-site review and will be returned when the on-site review is complete. Additionally, provide five (5) printed copies of Form A-6 (all 8 worksheets) and the electronic file(s) used to complete Form A-6 and Form A-7. The electronic files will be examined only on-site and will be deleted from the Professional Team member's laptop at the conclusion of the review.

Be prepared to provide for the Professional Team's review all engineering data (post event surveys, tests, etc.) received since the previous review by the Professional Team. Be prepared to describe any processes used to amend or validate the model that incorporates this data.

Be prepared to demonstrate how the modeler is consistently using the Source Versioning System implemented as there appears to still be a systemic problem. Discuss any changes made to improve the correspondence and communications between modeling teams as described in the Professional Team Report, 2011 Standards, On-Site Review January 21-23, 2013 and Additional Verification Review April 15, 2013, with excerpts below:

*January 21-23, 2013:*

*In 2011, the Professional Team performed two reviews of the Florida Public Model. The first review was on-site and conducted March 14-17, 2011. The second, additional verification, review was held on June 6 and 7, 2011. During these reviews, the Professional Team emphasized existing poor correspondence and connections between, and among, different model teams. These teams include experts in meteorology, actuarial science, structural engineering, statistics, and computer science. The modeler produced measures designed to mitigate problems occurring as a result of the problems in correspondence and communication. These measures were discussed on Page 4 (Preamble) and Page 61 (Standard C-1) of the Professional Team's 2011 report.*

*During the current audit, it became clear that many of the same substantial issues raised during the 2011 audit remained. In particular, inter-group communications remain problematic. The Professional Team emphasized the importance of improving these issues. Dr. Shahid Hamid (signatory on Form G-1) recognized that problems continue to exist. Dr. Hamid introduced a new written policy designed to further mitigate errors that appear to result from lack of*

*coordination and communication. The Professional Team remains concerned about the recent history (2011-2013) of the coordination and communication problems. If the recent policy is successfully implemented, these problems should be mitigated.*

*In auditing the model, the Professional Team identified discrepancies in version dates between the model in the Source Versioning System and the submission timeline. The Source Versioning System has not been adopted by all modeler groups. Although evidence was provided to indicate that the model being reviewed and the model submission were concurrent, the system in place is not adequate.*

*A fully operational Source Versioning System needs to be implemented and then demonstrated with a re-run of the output ranges to assure that the current version of the model concurs with what was submitted. If these output ranges agree with those in the November 2012 submission, no further forms need to be completed.*

*April 15, 2013:*

*FIU began with a presentation on a version control system used by all model components to track all modifications to the code, model input data, and documentation. FIU stated project meetings were held to review SVN functionality, to discuss the repository structure, and to set up SVN clients. Individual meetings were also held to reinforce SVN knowledge. FIU demonstrated that SVN is now consistently used by all model components.*

If any changes have been made in any part of the model or the modeling process from the descriptions provided in the original 2013 submission, provide the Professional Team with a complete and detailed description of those changes, the reasons for the changes (e.g., an error was discovered), and all revised Forms where any output of the form changed.

For your information, the Professional Team will arrive in business casual attire.

The pre-visit comments are grouped by standards sections.

### **GENERAL STANDARDS:**

1. G-1, Disclosure 2, page 39: Explain the use of RSMeans Residential Cost Data and Construction Estimating Institute (Langedyk & Ticola, 2002) to estimate cost of repair.
2. G-1, Disclosure 5.B, Vulnerability Component, page 107: Provide a sense of the impact of the various vulnerability changes.
3. G-2, Disclosure 2.B, page 116: Provide resumes of the personnel identified.
4. G-3.C, page 120: Provide maps of previous and current ZIP Code centroid locations (as has been done in previous reviews).
5. G-3, Disclosure 1, page 121: Explain the use of ZIP Code centroids to correct windspeeds.

6. G-3, Disclosure 3, page 121: Explain the methodology and process for conversion from latitude and longitude to street address or Zip Code.

#### **METEOROLOGICAL STANDARDS:**

7. Form M-1.E, page 160: Describe how changes in HURDAT2 due to the re-analyses and additions of new hurricane seasons are incorporated into the Base Hurricane Storm Set. Individual cases may be reviewed.
8. M-2, Disclosure 1, pages 133-134: Provide the new data on Rmax and the fit that is now being used. Identify which data were removed from the previous Rmax database used in the fitting and explain why.
9. M-2, Disclosure 1, pages 133-134: Discuss how the new Rmax data is impacting B estimation (page 22).
10. M-2, Disclosure 1, pages 133-134: The use of NCEP data in the calculation of PI (and range of years included) will be reviewed.
11. M-4.D, page 143: Discuss how the coastal transition function explicitly takes into account the vertical variation of the horizontal winds.
12. M-4, Disclosure 2, page 144: Discuss how the new Rmax data affect the distributional fits.
13. M-4, Disclosure 8, page 145: Demonstrate how the new LULC database has been incorporated into the model. Individual cases may be reviewed.
14. M-4, Disclosure 10, page 146: The method for updating the historical windfield footprints will be examined. Updates to Hurricane NoName09 from 1945 (AL091945) will be compared with the same hurricane as represented in the previous submission.
15. Form M-2, pages 161-165: Discuss the relative variation of the windspeed minima versus maxima between the three temporal sampling periods.
16. M-5, Disclosure 2, pages 150-151: Explain why the simulated winds in Figures 30 and 31 remain unchanged from the previous submission when the roughness database used in the model has been updated based on two LULC databases.
17. M-6, Disclosure 3, page 155: Discuss the source of the model large bias when measured by the 110 mph wind radius compared to observations.

#### **STATISTICAL STANDARDS:**

18. S-1, Disclosure 1, page 173: Provide further details on the MLE gamma distribution fit to Rmax. Provide an electronic version of the data underlying the fit.

### **VULNERABILITY STANDARDS:**

19. V-1, Disclosure 11, page 256: Explain how the approach outlined applies to unknown construction type.
20. V-1, Disclosure 15, pages 257-259: Plot the ratio of actual appurtenant structure loss to building loss versus the ratio of modeled appurtenant structure loss to building loss.
21. Form V-1, pages 289-293: Compare the results in Form V-1 with the previous submission.
22. Form V-2, page 296: Compare the results in Form V-2 with the previous submission.
23. Form V-3, pages 299-303: Compare the results in Form V-3 with the previous submission.

### **ACTUARIAL STANDARDS:**

24. A-4.C, page 323: Describe the process used to ensure that storm surge losses are excluded from the model's loss cost outputs.
25. Form A-4B, page 453: Describe how the file hlpm2012c.txt was processed for use in completing Form A-4B.
26. Form A-5, page 354: Explain the percentage change in output ranges for Palm Beach and Broward Counties in Figure 97.
27. Form A-5, page 357: Explain the percentage change in output ranges for Monroe and Indian River Counties in Figure 100.
28. Form A-5, page 359: Explain the percentage change in output ranges for Levy County (low) and Manatee County (high) in Figure 102.
29. Form A-5, page 361: Explain the 9071.96% increase for Calhoun County in Figure 104.
30. Form A-5, page 472: Explain commercial residential inland percentage changes.

### **COMPUTER STANDARDS:**

31. C-1.B, page 370: Relate the primary binder table of contents with the response to Standard G-1, Disclosure 5 (pages 105-108) by demonstrating individual table item compliance with Computer Standards C-1 through C-7.
32. C-2, page 372: Provide requirements documentation that specifically relates to each model change identified in Standard G-1, Disclosure 5 (pages 105-108).
33. C-5, pages 376-378: Provide complete and thorough verification procedures and output from the model changes identified in Standard G-1, Disclosure 5 (pages 105-108).

34. C-6.D, page 379: Provide the model version history over the past 5 years, leading up to the version identified in the submission.