

**Florida Commission on Hurricane Loss Projection Methodology
2011 Standards**

Florida Public Hurricane Loss Model

Florida International University

Professional Team On-Site Review: January 21-23, 2013

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 2011 Report of Activities, and (4) responses to the audit items for each standard in the Report of Activities.

Be prepared to have available for the Professional Team's consideration, all insurance company claims data received since 2004, including all data related to the 2004 and 2005 hurricane seasons. 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 the electronic file used to complete Form V-3 on a removable drive medium. Additionally, provide the electronic file(s) used to complete Form A-7.

Be prepared to provide for the Professional Team's review all engineering data (post event surveys, tests, etc.) received since the review by the Professional Team in 2009. Be prepared to describe any processes used to amend or validate the model that incorporates this data.

If any changes have been made in any part of the model or the modeling process from the descriptions provided in the original 2011 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.

As part of the on-site review, the Professional Team is charged with obtaining information regarding the two issues noted in the deficiency letter that will be later considered during the Commission meeting to review the model for acceptability.

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.B, page 17: Provide documented checklist-based, or other, verification of the followed process documented in Figure 1.
2. G-1, Disclosure 2, page 21: Explain the simulated track with genesis over land in eastern Cuba, traverses most of the country and then exits Cuba and heads north.
3. G-1, Disclosure 2, page 23: Provide to SBA staff with the response to the Deficiencies an Excel file with the radius of maximum winds and corresponding central pressures used in the gamma distribution fit for Rmax.
4. G-1, Disclosure 2, page 25: A new surface friction model is mentioned, but is not mentioned on page 98 with the Meteorological Component changes.
5. G-1, Disclosure 2, page 34: Provide the functional form of the Weibull distribution used here, as the "tail length parameter" term is non-standard.
6. G-1, Disclosure 2, page 54: Clarify whether an upper bound is still imposed on the terminal velocity and provide its value (if relevant).

7. G-1, Disclosure 2, page 56: Make explicit what the reference FPHLM means.
8. G-1, Disclosure 5.A, pages 98-102: Provide in detail the changes to the Vulnerability Component. Describe why the change, how it was implemented, and what are the results and improvements. Provide test plans, tests implementation, and QA of all related software which were generated or modified due to these changes.
9. G-1, Disclosure 5.A.3, page 99: The last bullet under meteorological Component, “the definition...” shall be moved as the first bullet under Vulnerability Component to be consistent with the list given on page 98.
10. G-1, Disclosure 5.B.2, page 102: Discuss and compare the impact from individual changes to impact due to all changes combined. Specifically, it seems all impacts are in the direction of decrease. Explain why decreases of 22% and 47% in the vulnerability component do not compare with an overall decrease of 8.3%.
11. G-1, Disclosure 5.C, page 106: Explain the east-west asymmetry in the response to the hurricane PBL height change.
12. G-1, Disclosure 5.C., page 107: Explain the hanging 2. and 3. at the top of the page.
13. G-2, Disclosure 2.B, page 114: Resumes for the new employees listed should be available.

METEOROLOGICAL STANDARDS:

14. M-2, page 130: Clarify the HURDAT version used for the storm initial position and motion.
15. M-2, Disclosure 1, page 130: Explain the decrease in the number of Rmax observations (from 108 to 100) with the addition of five more years (2006-2010) to the landfall Rmax database. Provide to SBA staff with the response to the Deficiencies an Excel file with the previous and current Rmax datasets.
16. M-2, Disclosure 5, page 134: Discuss the rationale for the change of the hurricane PBL height to 450 m and the structure of its impacts on the simulated hurricane windfield.
17. M-2, Disclosure 5, page 134: Given the change in hurricane PBL depth, justify the continued use of 77.5% for adjustment of mean boundary layer winds to surface winds.
18. M-4.B, page 139: Describe the methods used to update the Land Use/Land Cover database used from the 2001 distributions inherent in the LCD 2001 database.
19. M-4, Disclosure 7, page 141: Discuss the currency of the Land Use/Land Cover database used.
20. Form M-2, pages 158-161: Discuss the variations in location between maxima for actual and open terrain for each time period plotted in Form M-2.

21. Form M-2, pages 158-161: Justify the increase or maintenance of the maximum windspeed for actual terrain compared to open terrain, given that windspeeds for actual terrain are almost uniformly weaker across the state than for open terrain.

VULNERABILITY STANDARDS:

22. V-1, Disclosures 8-14, pages 214-221: Disclosures 8 through 14 are new disclosures for V-1. Prepare to discuss in depth.
23. V-1, Disclosure 13, page 218: Explain highest point at around \$275,000,000 actual structure losses in Figure 52.
24. V-1, Disclosure 13, page 219: Explain 2 points above \$40,000,000 of modeled losses versus approximately \$10,000,000 in contents losses.
25. V-2, pages 223-226: Discuss in depth and provide supporting documentation.
26. Form V-1, pages 233-234: Describe the process and provide the documentation for all steps to complete Form V-1. Discuss the reasons why Part A damage ratios for high windspeeds have decreased significantly relative to the previous submission. Provide a comparison of the previous submission vulnerability functions to the current submission. Explain the small decrease for wood frame, masonry, and mobile home in Part B where concrete damage ratios have increased.
27. Form V-2, page 239: In lieu of changes observed in Form V-1, explain why Form V-2 has not changed.

ACTUARIAL STANDARDS:

28. Provide detailed results for Monroe County at the ZIP Code level for all Actuarial forms. Also, explain the results for Low Mobile Homes versus Low Commercial Residential.
29. A-5, Disclosure 1, page 262: Describe the process whereby contents losses are a function of the internal damage to the structure. Describe the engineering judgment described under the "Personal Residential" heading.
30. A-5, Disclosure 1, page 263: Describe the process where contents losses are a function of the internal damage to the structure. Describe the engineering judgment cited under the "Commercial Residential" heading.
31. Form A-5, page 286: Explain results for Gilchrist and Dixie Counties.
32. Form A-5, page 288: Explain results for area around Martin County.
33. Form A-6, Appendix F: Describe the process and provide the documentation for all steps to complete Form A-6. Describe the steps taken to ensure sensibility of the results.
34. Form A-7, Appendix G: Describe the process and provide the documentation for all steps to complete Form A-7. Describe the steps taken to ensure sensibility of the results.

STATISTICAL STANDARDS:

35. S-4, page 311: Provide explicit calculations that demonstrate that the standard errors are less than 2.5% of the average loss costs for each county.
36. Form S-2, page 318: Explain how a majority of the years have no landfalling hurricanes in Florida yet the median loss is non-zero for the Personal and Commercial Residential Loss FHCF Data Set whereas the median is zero for the Notional Risk Data Set.
37. Form S-3, page 319: Explain the justification in Form S-3 for the Rmax distribution that notes the Rmax is semi-bounded but the implementation (page 133) reveals that Rmax is restricted to [4, 60].
38. Form S-3, page 319: Provide a complete list including distributions given on page 56. Also, the genesis positions have small uniform random error terms added. Ensure that Form S-3 is complete.
39. Form S-4, page 320: Of the 22 comparisons, 19 have modeled ratios larger than actual ratios. Respond to potential bias these results suggest.
40. Form S-4, page 323: Scatterplot for Comparison #5 must be redone.

COMPUTER STANDARDS:

41. C-1.B, page 333: Relate the primary binder table of contents with the response to Standard G-1, Disclosure 5 (page 98) by demonstrating individual table item compliance with Computer Standards C-1 through C-7.
42. C-2, page 335: Provide requirements documentation that specifically relates to each model change identified in Standard G-1, Disclosure 5 (page 98).
43. C-5, page 339: Provide complete and thorough verification procedures and output from the model changes identified in Standard G-1, Disclosure 5 (page 98).
44. C-6.D, page 342: Provide the model version history over the past 5 years, leading up to the version identified in the submission.