

# CATASTROPHE MODELING HANDBOOK

Catastrophe Insurance (C) Working Group  
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# UPDATING OF CATASTROPHE MODELING HANDBOOK

- Background
- Sections in Handbook
- Memo from Climate and Resiliency Task Force Workstream
- Potential Next Steps



# OVERVIEW OF CATASTROPHE MODELING HANDBOOK

- Last Updated November 2010
- 9 Primary Sections [33 pages]
- Plus 18 Appendices [Additional 400+ pages]

# PURPOSE OF THE HANDBOOK

- The purpose of the Catastrophe Computer Modeling Handbook (Handbook) is to explore in some detail catastrophe computer models and to discuss issues that have arisen or can be expected to arise from their use....The guidance offered in this Handbook is advisory only and is not intended to prescribe mandatory regulatory procedures. The guidance is not intended to be all-inclusive; rather, it suggests areas and concepts that should be considered and explored in order to become well informed about catastrophe computer models.

# HANDBOOK SECTIONS

## I. Purpose and Background

- Brief overview
- Perspectives from Insurers, Modelers, Consumers and Regulators
- Although general, still somewhat outdated in description

## II. Selected Catastrophe Perils

- Overview of Two Risks:
  - Earthquake
  - Hurricane

# HANDBOOK SECTIONS

## III. General Overview of Models

- Three Modules Described:
  - Scientific
  - Engineering
  - Insurance

## IV. Model Input Provided by Company

- Exposure and Insurance Data

# HANDBOOK SECTIONS

## V. Model Output

- Average Annual Losses
- Loss Costs
- Distribution of Losses
- Exceeding Probability Distribution
- Individual Event Losses
- Historical Event Losses

## VI. Model Validation and Update

- Accuracy
- Comparison to Historical Information
- Input Data Provided by Company
- Model Updates
- Probabilistic Range
- Real-Time Predictions
- Sensitivity
- Stability

# HANDBOOK SECTIONS

## VII. Evaluating Models

- General Questions
- Questions Specific to Earthquakes
- Questions Specific to Hurricanes

## VIII. Regulatory Review & Acceptance

- Scrutiny of process and results
- Challenge of proprietary information



# HANDBOOK SECTIONS

## IX. Related Activities

- Actuarial Standard for Model Use
- Pre-Tax Loss Reserves for Companies.
- Activities to Consider: – Auditing Company exposure data; Education and outreach.

## Appendices

- Definitions
- Model Data Sources/Documentation (published information on modelers)
- Types of output
- Modeler Contacts
- DOI Contacts
- Enacted legislation
- Florida Commission, CEA, etc.
- Interrogatories
- State circular letters

# CATASTROPHE INSURANCE (C) WORKING GROUP CHARGE

- Provide a forum for discussing various issues related to catastrophe modeling, and monitor issues that will result in changes to the *Catastrophe Computer Modeling Handbook*.

# MEMO FROM CLIMATE AND RESILIENCY (EX) TASK FORCE TECHNOLOGY WORKSTREAM

- 1. Purpose of Handbook “should be revisited to develop an understanding of how the Catastrophe Handbook is used currently and determine its practical use within the regulatory toolkit. Furthermore, the work should be coordinated with the Catastrophe Risk (E) Subgroup to understand the materials it is developing or otherwise making available to state insurance regulators regarding catastrophe models.”

# MEMO FROM CLIMATE AND RESILIENCE (EX) TASK FORCE TECHNOLOGY WORKSTREAM

- 2. The questions for evaluating models in Section VII of the Catastrophe Handbook are of particular interest and should be updated to, at a minimum, include the wildfire questions described in the *Application of Wildfire Mitigation to Insured Property Exposure*. Consider questions specific to additional perils for which there are catastrophe models in use today including, but not limited to, flood. Furthermore, the questions should be denoted to clarify which should be directed to insurers versus catastrophe modelers.

# MEMO FROM CLIMATE AND RESILIENCE (EX) TASK FORCE TECHNOLOGY WORKSTREAM

- 3. Explore which catastrophe modelers have begun including climate data in their models. As model versions are updated regularly and advancements continue to evolve in this area, the Working Group should consider alternative formats for the Catastrophe Handbook to make more recent information available or otherwise consider more frequent updates to be made in the future.

# QUESTIONS

- Determine why regulators are not using Handbook
- What is it missing?
- What would improve its usefulness?

# CONSIDERATIONS

- Gather regulator interest on what is needed.
- Incorporate CIPR/RMS Wildfire Report including information to obtain from insurer and cat model vendor.
- Edit “Questions to Insurers/Modelers”
- The American Academy of Actuaries has developed guidance and education on catastrophe models, which the Working Group may wish to explore.
- Explore climate models.
- Determine future updates – and how to better educate regulators/ensure they have the information needed.

## NEXT STEPS

- Consider appointing a Drafting Group to determine what improvements are needed and draft edits to Handbook starting with memo and considering other updates/changes