

**PROPOSAL FOR A RISK-BASED CAPITAL CHARGE FOR PROPERTY  
CATASTROPHE RISK BASED ON THE RESULTS OF CATASTROPHE  
MODELING  
(As of 6-23-2010)**

***DRAFT- FOR DISCUSSION PURPOSES ONLY***

*Comment: This is intended to be a draft. Further discussion and further revision are expected prior to adopting a final version. It is intended that this draft will lead to final adoption of some form of catastrophe risk RBC charge.*

- 1.** The RBC charge for property catastrophe risk for an insurance company will be the modeled catastrophe losses calculated by any one of the three commercially available catastrophe risk models, using the company's own insured property exposure information as inputs to the model. The three commercially available catastrophe risk models are the AIR model, the EQECAT model, and the RMS model. ***It will be permissible for the company to determine the charge based on the average of the results of two or all three of the commercially available catastrophe risk models.***

*Comment: It is still our intent to be inclusive and not restrict the use of any appropriate model, but as a practical matter, there are three generally accepted models in common use at this time.*

2. The charge will be based on the once-in-100 years' modeled loss level, in keeping with the general concept of RBC as a "minimum capital" standard. Insurers will also be required to report their modeled losses at the once-in-250 years', once-in-500 years' and once-in-1,000-years' levels in their annual submission of the confidential RBC Report that accompanies the Annual Statement.

*Comment: There is still regulatory concern that very adverse but plausible events, such as a Hurricane Andrew-strength storm hitting downtown Miami, or a repeat of the 1906 San Francisco Earthquake and fire, will not be contained within the proposed RBC capital requirements. There is concern with what the perception of the general public will be in the event insurers are not able to meet their obligations arising from such an event. This concern will be partially satisfied with disclosure to the regulators of the modeled losses at the less frequent, more stringent levels.*

*Additional Comment: the standard will need to be revised if the NAIC modifies the RBC formula as a result of the Solvency Modernization Initiative by defining "Company Action Level" as an explicit standard such as 1-in-100 years or 1-in-250 years' loss level.*

3. A separate charge will be determined for the hurricane peril and for the earthquake peril. No other property catastrophe perils will be considered at this time.

*Comment: see #5 below*

4. The charges for the hurricane and earthquake perils will be considered to be independent of each other, and independent of all other risks measured by the RBC formula. This means that they will each be subject to the covariance adjustment of the RBC formula.

*Comment: The earthquake and hurricane perils are clearly totally uncorrelated, so they ought to be treated as such in the overall RBC formula, and the way to do this is to apply the covariance adjustment separately to each of the two perils.*

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5. A charge will be calculated on a gross of reinsurance basis, and a negative charge or credit will also be determined based on the company's modeled anticipated ceded reinsurance. The actual charge applied will be on a net basis; that is, it will be determined by subtracting the modeled credit for ceded reinsurance from the charge calculated on a gross-of-reinsurance basis.

*Comment: Separate gross and ceded calculations are necessary in order to determine the contingent credit risk charges discussed in item 6 immediately following.*

6. A separate contingent credit risk charge will be calculated for the hurricane peril and for the earthquake peril. Each of these charges will be 10% of the expected ceded loss generated by model for the 1-in-100 years' expected loss level, which was subtracted from the gross-of-reinsurance losses to get the charge net of reinsurance. The contingent credit risk charge will not apply to receivables that are due to intercompany pooling or mandatory pools and associations. Each of these charges shall be considered to be 100% correlated with the corresponding net loss charge, so each should be added to the corresponding net loss charge prior to application of the covariance calculation.

*Comment: A credit risk charge for ceded reinsurance receivable is currently provided for in the general RBC formula. The charge is 10% of the receivable. In the event of an insured catastrophe, large ceded reinsurance receivable amounts will be created, so there should be an RBC charge for this eventuality. For consistency with the general formula, we chose to use the same 10% charge. It is possible that a larger charge would be appropriate for the catastrophe-related credit risk, since reinsurance collectibility is more likely to be a problem immediately after a major catastrophe than it would be in the normal course of business.*

*Additional Comment: Evidence has been presented to us that the rating agencies apply credit risk charges that are much smaller than 10% of the receivable. This subgroup will submit a request to the Property Risk-Based Capital Working that the Working Group consider reevaluating the appropriateness of the size of the 10% credit risk charge.*

*Additional Comment: The covariance treatment (assuming the contingent credit risk to be fully dependent) seems necessary since the creation of a large ceded reinsurance receivable balance will occur as a direct result of the catastrophe that causes the direct and net losses.*

7. Insurers will not be required to utilize any prescribed set of assumptions in their modeling for RBC purposes, but will be free to use the assumptions they deem to be most appropriate to the accurate assessment and management of their company's catastrophe risk. However, as detailed subsequently in this proposal, insurers will be required to attest that they have used the same assumptions and data for their property catastrophe risk calculation for RBC purposes that they use for their internal catastrophe risk management process. In addition, insurers will be required, as part of the confidential RBC Report which is filed along with the Annual Statement, to provide commentary on their treatment of the following modeling options or assumptions in their calculations for purposes of determining the catastrophe risk charges:
  - a. Time dependency- the shorter-term expected frequency for hurricane, and the consideration of time since the last earthquake
  - b. Demand surge
  - c. Storm surge
  - d. Fire following earthquake
  - e. Secondary uncertainty

This commentary will include the rationale for the treatment given each assumption.

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8. Because actual property catastrophe losses are included in the industry and individual insurance company losses that affect the risk-based capital charges derived by the existing RBC formula, it is necessary to remove these losses from the formula to avoid double-counting. The P&C RBC Working Group of the NAIC Capital Adequacy Task Force will have the responsibility of obtaining the industry total serialized catastrophe losses for each Annual Statement Line of Business from Property Insurance Services, Inc., and removing them from the losses included in the determination of the industrywide loss ratios by line included in the existing RBC formula calculation for Underwriting Risk- Premiums. This will need to be done prior to implementation of the catastrophe risk charge in the RBC formula, and will subsequently need to be done whenever the by-line factors are updated.

*Comment: This referral is being made since the P&C RBC Working Group is responsible for maintaining the industry underwriting risk factors for the existing RBC formula. Since the Working Group regularly seeks the assistance of the American Academy of Actuaries to develop updated industry factors for the RBC formula, it would be logical to follow the same procedure to determine appropriate industry factors with catastrophe losses excluded. Clearly, there is work to be done to determine the precise process and formulas.*

9. It will be the responsibility of each individual insurance company to obtain its own serialized catastrophe losses, and to remove them from the losses used in its own individual RBC calculation of the “Underwriting Risk- Premiums” charge for risk other than catastrophe risk.

*Comment: This should be easy, since each company submits their own catastrophe losses to their statistical agent.*

10. The “Underwriting Risk- Reserves” portion of the RBC formula will be unaffected by the implementation of the catastrophe risk charges.

*Comment: Loss reserve development patterns with catastrophe losses included in them are expected to be not overly different from loss reserve development patterns, while loss ratios with catastrophe losses included are expected to be vastly different from loss ratios with only non-cat losses included. We think there is insufficient justification for separate treatment of catastrophe losses in the reserve development portion of the formula, and think that this component is better off left unchanged.*

11. The P&C RBC Working Group will also have the responsibility of reviewing and approving any additional catastrophe models that any insurer or insurers want to be allowed to use in the determination of the catastrophe risk portion of their RBC charge. Approval should be granted as long as it can be demonstrated that the model is in fairly common use in the industry, that the model does not produce results extremely divergent from the results of existing approved models, and that scientific evidence relating to earth movement, meteorology, and building vulnerability to damage have been incorporated in a reasonably sound manner.

*Comment: This item deserves considerable thought and discussion. We think it is unwise to allow new models to be used with no review whatsoever, but we do not have the resources to do a detailed technical review. We desire a process that would be relatively easy to get through, and we thought that the P&C RBC Working Group could possibly assume this responsibility, possibly assisted by the AAA.*

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An insurance company shall not be required to use the most recent version of an approved catastrophe model, but will be required to use either the most recent version or a version that was current for at least part of the calendar year to which the Annual Statement applies. Because of this, no “transition rule” allowing the phased implementation of the effect of a model version change is contemplated.

*Comment: This means that, in effect, a new model version would not be required to be implemented until it had been published for 12 months. This is intended to provide some flexibility, while avoiding transition rules that may become complicated and cumbersome. It would require insurers to keep fairly current with model adoption, but would not require the immediate use of the very latest version.*

12. Every insurance company will be required, as part of the confidential RBC Report which is filed along with the Annual Statement, to provide an attestation by a responsible officer that the modeling data and analysis used to determine the company’s catastrophe risk charges for the Risk-Based Capital formula are the same or substantially the same as the modeling data and analysis used in the company’s own internal catastrophe risk management process. In addition, insurers will be required to provide commentary on their treatment of the following modeling options or assumptions in their calculations for purposes of determining the catastrophe risk charges: time dependency- the shorter-term expected frequency for hurricane, and the consideration of time since the last earthquake; demand surge; storm surge; fire following earthquake; and secondary uncertainty. This commentary will include the rationale for the treatment given each assumption. This will be included as an attachment to the confidential RBC Report each insurance company is required to file as an Annual Statement supplement.

*Comment: The intent with this requirement was to inhibit the possible practice of looking for the model with the lowest answer, in order to minimize a company’s RBC requirement. The idea is that a company will be less likely to seek the lowest answer when evaluating its own risk profile for its own risk management purposes.*

13. Every insurance company will be required to provide as part of its annual confidential RBC Report a discussion of the process applied and the steps taken to ensure the completeness and accuracy of the company’s exposure data used as input into the catastrophe modeling that forms the basis of the company’s catastrophe risk charge in the RBC formula. It is expected that this discussion will provide substantive commentary on the accuracy and completeness of the company’s exposure data used in its catastrophe modeling. This commentary should include comment on the extent to which exposure data is accurately “geo-coded” to GPS coordinates or to street address; the extent to which the data is correctly coded to zip code; and the extent to which the data is not accurately coded to GPS coordinates, or to street address, or to zip code.

*Comment: This requirement is seen as the cornerstone of our efforts to assure a meaningful result and a responsible application of the models. The idea is that we should accept any of the models’ results as reasonable, despite the different answers that can be produced by the different models, as long as reasonably accurate and complete exposure data is used. We think it is essential that we concentrate our efforts on ensuring that proper data is used as input to the models. It would be preferable that this data be audited, but failing that, there should at least be a clear statement from the company about the accuracy of the exposure data, and the opportunity for the regulator to review the company’s data in order to determine if it is accurate enough to ensure an appropriate catastrophe risk RBC charge.*

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14. The NAIC financial examination process will be modified to require examiners, as part of each financial examination of an insurance company, to review the catastrophe exposure input data used by each company to determine its catastrophe risk RBC charge. The examination process should form an opinion as to what extent the data is complete, and to what extent data is accurately “geo-coded” to GPS coordinates or street address, or is accurately coded to zip code, or is accurately coded to neither. The examination process should result in an opinion as to whether or not the exposure data is accurate enough and complete enough to allow for a reasonable catastrophe risk RBC charge to be developed.

*Comment: More thought needs to be given to this item, but we believe both that the financial examiners should be examining the catastrophe model input data, and providing the Commissioner their opinion as to its usefulness in assessing the company’s RBC charge.*

15. The financial examination shall also audit the insurer’s records to determine the accuracy of the insurer’s attestation that its catastrophe modeling for RBC purposes is substantially the same as its catastrophe modeling for internal risk management purposes.

*Comment: We think this follows naturally and should be relatively easy to implement. It should be a simple matter to check Board of Directors’ minutes or internal risk management committee minutes against the records supporting the catastrophe modeling done for the RBC calculations.*

16. The Commissioner of each insurance company’s state of domicile shall have the responsibility for reviewing the insurer attestations and examination reports that provide information on the accuracy of the company’s exposure data used in the modeling analysis that formed the basis for the catastrophe risk portion of the company’s RBC calculation. If the Commissioner determines that the company’s coding of its insured property exposure data is not sufficiently accurate for purposes of determining a reasonable RBC catastrophe risk charge through catastrophe modeling, the Commissioner is empowered to reject the company’s RBC Report.

*Comment: This also needs more work, but the basic idea should be clear. This item intends to give the domiciliary Commissioner the authority to review the information in order to determine if the company has met a general reasonableness standard. If the company has not met the standard, the intent is to empower the domiciliary Commissioner to require remedial action to be taken.*

17. The following classes of insurers shall be exempt from calculating catastrophe risk charges as part of their RBC calculation:

- a. Any company with property values insured for wind damage in states bordering on the Atlantic Ocean, including the Gulf of Mexico, that in total are less than 5% of its policyholders surplus, shall be exempt from calculating a catastrophe risk charge for hurricane risk.
- b. Companies with property values insured for earthquake risk or for fire following earthquake in any of the following states: Alaska, Hawaii, Washington, Oregon, California, Idaho, Nevada, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico, or any location within 200 miles of the New Madrid Fault Zone; that in total are less than 5% of its policyholders surplus, shall be exempt from calculating a catastrophe charge for earthquake risk.

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*Comment: This is a rough attempt at an exemption standard. The thinking is that if a company has less than 5% of its policyholders surplus exposed to catastrophe risk in any of these areas, it could be fairly sure that it will not suffer material losses due to the earthquake and hurricane perils. It is quite possible that more refined boundaries could be drawn; for example, much of Texas would not be subject to either peril. This was merely meant to be a quick and simple screen that would not include any significant earthquake or hurricane exposure.*

- 18. (Revised)** *The calculated RBC Charge incorporating property catastrophe risk shall be displayed in the confidential RBC Report for informational purposes only for two Annual Statements prior to its full implementation as the replacement for the existing RBC Charge formula.*

*Comment: a desire has been expressed that this charge be calculated and displayed for at least a year on an "information only" basis. It is expected that the P&C RBC Working Group will use the information provided in this display to evaluate both the impact of the new requirement on the required surplus of insurers and the effectiveness of its implementation. This review may also result in fine-tuning of the formula prior to its live implementation.*