



Date: 6/7/22

Virtual Meeting

CATASTROPHE RISK (E) SUBGROUP

Tuesday, June 14, 2022

1:00 – 2:00 p.m. ET / 12:00 – 1:00 a.m. CT / 11:00 a.m. – 12:00 p.m. MT / 10:00 – 11:00 a.m. PT

ROLL CALL

| | | | |
|-----------------------------|-------------|-------------------|----------------|
| Wanchin Chou, Co-Chair | Connecticut | Anna Krylova | New Mexico |
| Halina Smosna, Co-Chair | New York | Tom Botsko | Ohio |
| Robert Ridenour, Vice Chair | Florida | Andrew Schallhorn | Oklahoma |
| Laura Clements | California | Will Davis | South Carolina |
| Judy Mottar | Illinois | Miriam Fisk | Texas |
| Gordon Hay | Nebraska | | |

NAIC Support Staff: Eva Yeung

AGENDA

1. Hear a Presentation from the International Society of Catastrophe Managers (ISCM) On Its Program—*Shari S. Zola (International Society of Catastrophe Managers—ISCM)* Attachment A
2. Discuss the Independent Model Review Instruction in the Rcat Component —*Wanchin Chou (CT)* Attachment B
3. Evaluate Other Catastrophe Risks for Possible Inclusion in the Rcat Component —*Halina Smosna (NY)*
4. Consider Exposure of Proposal 2022-04-CR (2013-2021 Wildfire Event Lists) —*Wanchin Chou (CT)* Attachment C
5. Discuss Any Other Matters Brought Before the Subgroup—*Wanchin Chou (CT)*
6. Adjournment



ELEVATING OUR PROFESSION

Credentialization

Networking

Continuing Education

Information Sharing (through ISCM website)

Credentialization – Proven Experience

Certified Specialist in Catastrophe Risk (CSCR)

Best Practice Experts

Gain and demonstrate knowledge of practical applications in catastrophe modeling

- Property / Cat Insurance Market Standards
- Understanding Best Use of Catastrophe Models
- Proven knowledge & support of Property Cat (re)insurance value chain

How:

- 4 courses & exams + Ethics Course (waivers for exam 1)
- Experienced Industry Professional Pathway available by nomination with 5+ years experience

Joint endeavor
between ISCM &
iCAS

Over 180
credentialed
professionals

Proof &
recognition of
expertise

Industry defined
competencies

Certified Catastrophe Risk Management Professional (CCRMP)

Recognized Subject Matter Experts

Demonstrate advanced applications and methodologies of catastrophe risk management or development/delivery of models

- Customized / Advanced Applications
- Tailoring Own View of CAT Risk
- Capable of Critical Assessments
- Trusted Advisor to Senior Stakeholders

How:

- Experienced Industry Professional Pathway available by nomination
- **New Technical pathway available**
- No exams yet – targeting 2024 for Risk Managers

Continuing Education

2021 Education Events

- Thunderstorm and Midwest Derecho panel
- Liability Exposure Management
- Asia-Pacific Seismic Risk Viewed Through a Global Lens
- LMA/ISCM Webinar: Climate Risk
- Open Source Catastrophe Modeling panel
- Catastrophe Model Validation – An External Perspective
- Artificial Intelligence and Machine Learning: How will it shape cat risk management?
- Learning from Catastrophe Surprises
- Post Event Challenges: Supply Chain, Demand Surge, and Loss Amplification
- Climate Data Analytics in the Catastrophe World

2021 Coffee Talks

- March – Careers panel
- April – Catastrophe Modeling Exhibits in PowerBI
- May – IBHS Housing as Infrastructure
- June – Hunting for a Climate Change Signal in Atlantic Hurricane Noise
- July – Website & Discussion Forum
- August – From Black Box to Glass Box: Evaluation Catastrophe Models to Support a View of Risk
- October – Impact of USGS 2018 Hazard Update on Loss Assessments
- December – An Introduction to Cyber

Continuing Education

2022 Education Events

- January APAC webinar
 - Landfalling Tropical Cyclones in East Asia: Variability and Future Projections
- March IUA/Oasis webinar with ISCM guest speakers
 - Cat Women – Highlighting female role models in the Catastrophe Community
- April – Lessons Learnt from European Flood “Bernd”
- June – Scenario Modeling
- August – Effective Science Communication by Prof Scott St. George

Hoping to return to in-person education events in the fall of 2022

Looking for Leaders for the ISCM Coffee Talk Series:

15 minutes of content - 15 minutes of Q&A

If you would like to lead a coffee talk topic, please send a brief description of your proposed topic to Emily Sambuco (emily.sambuco@libertymutual.com).

All non-marketing topics welcome!

2022 Coffee Talks

- January – 2021 Cat Review
- March – Open-Source Interoperability
- May – Past, Present, and Future of Terrorism Modeling
- July – Hurricane Season Outlook with Phil Klotzbach

Potential future topics for Education Events or Coffee Talks

- Ukraine/Social Unrest
- Strikes, Riots, and Civil Commotion Analytics
- Pandemic
- Credential Process
- Actionable approaches for cat managers on sustainability
- Incorporating climate risk into statistics
- Clash between nat cat and liability
- Systemic liability
- Cascading risk: volcanos and tsunamis
- Cat modeling skillsets utilized outside the insurance industry
- Spectrum of Professionalism
- Estimating and Trending Losses

ISCM Website

Resource Library

- Reference documents by peril, company,
- White papers
- Industry reports

Accreditation

- Description of various credentials and pathways
- Value proposition
- Templates for candidates and managers

New

ISCM Archive

- Member only access to past presentation slide decks / webinar recordings

Topic Forum

- Post- webinar / conference discussions
- Structured discussions by topic
- Open chat

Other

- Event postings & registration
- Membership subscriptions

Visit the website: www.catmanagers.org

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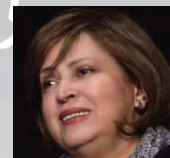
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Kelly Hereid
Liberty Mutual



Emma Watkins
Lloyds



Peter Zimmerli
Axis Capital

Interested in helping to lead this community by joining the ISCM Board?

The Nomination Committee is currently reviewing "credentialed" candidates to fill open board seats. Let us know if you would like to be considered.

Volunteers

A special thank you to all our volunteers, we wouldn't be able to do this without your hard work and dedication.



Mark Tilbury
W/R/B Underwriting



Steve Greenberg
*Insight Catastrophe
Managers*



Imelda Powers
Guy Carpenter

*Megan Royek Carne – Allstate
Tim Edwards – TigerRisk
Christopher Fox – Aon
Shubharoop Ghosh – ImageCat
Jason Kowieski – Guy Carpenter
Howard Kunst – CoreLogic*

*Michelle McClane – Munich Re Specialty Insurance
Kerry Mindiak – BMS
Brittany Recker – Munich Re Specialty Insurance
Emily Sambuco – Liberty Mutual
Andy Siffert – BMS
Craig Tillman – WeatherPredict
LeeAnn Tomko – Intact Insurance
Veronica Van Dyke – American Family*

Past Board Members
*Liz Cleary – Guy Carpenter
Randy Law – Chubb Tempest Re
Minchong Mao – Aon
Brian Owens
Chris Zumbrum – Guy Carpenter*

Get Involved

ISCM Committees

Technology

Manages the website containing events calendar; resource library; ISCM archive; forum; membership database.

Marketing

Messaging current happenings and web content. Promoting ISCM and the Cat Credentials.

Education

Plan virtual and in person sessions for all levels in the field.

Credentialization

Development and maintenance of exams, review of Experienced Industry Practitioner applications.

ISCM Membership

To become member visit our Website at

WWW.CATMANAGERS.ORG



**Already a member, please update your
profile!**

CALCULATION OF CATASTROPHE RISK CHARGE RCAT
PR027A, PR027B, PR027C, PR027, AND PR027INT

The catastrophe risk charge for earthquake (PR027A), ~~and~~ hurricane (PR027B), and wildfire for informational purposes only PR027C -risks is calculated by multiplying the RBC factors by the corresponding modeled losses and reinsurance recoverables. The risk applies on a net basis with a corresponding contingent credit risk charge for certain categories of reinsurers. Data must be provided for the worst year in 50, 100, 250, and 500; however, only the worst year in 100 will be used in the calculation of the catastrophe risk charge. While projected losses modeled on an Aggregate Exceedance Probability basis is preferred, companies are permitted to report on an Occurrence Exceedance Probability basis if that is consistent with the company's internal risk management process.

The projected losses can be modeled using the following NAIC approved third party commercial vendor catastrophe models: AIR, EQECATCoreLogic for earthquake and hurricane only, RMS, KCC, the ARA HurLoss Model (hurricane only), or the Florida Public Model for hurricane, as well as catastrophe models that are internally developed by the insurer or that are the result of adjustments made by the insurer to vendor models to represent the own view of catastrophe risk (hereinafter "own models").

However, an insurer seeking to use an own model must first obtain written permission to do so by the domestic or lead state insurance regulator. In the situation where the model output is used to determine the catastrophe risk capital requirement for a single entity, the regulator granting permission to use the own model is the domestic state. In the situation where the model output is used to determine the catastrophe risk capital requirement for a group, the grantor is the lead state regulator. In the situation where the insurer seeking permission is a non-U.S. insurer, the grantor shall be the lead state regulator. Under all scenarios, the regulator that is granting permission should inform other domestic states that have a catastrophe risk exposure and share the results of the review.

To obtain permission to use the own model, the insurer must provide the domestic or lead state insurance regulator with written evidence of each of the following:

1. The use of the own model is reasonable considering the nature, scale, and complexity of the insurer's catastrophe risk;
2. The own model is used for catastrophe risk management, capital assessment, and the capital allocation process and the model has been used for at least the last 3 years;
3. The perils included in the RBC Catastrophe Risk Charge have been validated by the insurer and that these perils include both US and global exposures, where applicable;
4. The own model has been developed using reasonable data and assumptions and that model results used in determining the RBC Catastrophe Risk Charge reflect exposure data that is no older than six months;
5. The insurer has individuals with experience in developing, testing and validating internal models or engages third parties with such experience. The insurer must provide supporting model documentation and a copy of the latest validation report and the insurer is solely responsible for the relevant cost. For each peril included in the RBC Catastrophe Risk Charge, the validation report should attest that the projected losses are a reasonable quantification of the exposure of the reporting entity. The validation report must provide a description of the scope, content, results and limitations of the validation, the individual qualifications of validation team and the date of the validation. Both the model documentation and the model validation report must be provided at a minimum once every five years, or whenever the lead or domestic state calls an examination; whenever there is a material change in the model; or whenever there is a material change in the insurer's exposure to catastrophe exposure.
6. The results of the own model should be compared with the results produced by at least one of the following models: AIR, EQECATCoreLogic for earthquake and hurricane only, RMS, KCC, ARA HurLoss (hurricane only), or the Florida Public Model for hurricane. The insurer must provide the comparison and an explanation of the drivers of differences between the results produced by the internal model vs. results produced by the selected prescribed model.
7. If the own model has been approved or accepted by the non-U.S. group-wide supervisor for use in the determination of regulatory capital, the insurer must submit evidence, if available, from the non-US group-wide supervisor of the most recent approval/acceptance including the description of scope, content, results and limitations of the approval/acceptance process and dates of any planned future approval/acceptance, if known. The name and the contact information of a contact person at the non-US group-wide supervisor should also be provided for questions on the approval/acceptance process.

If the lead or domestic state determines that permission to use the own model cannot be granted, the insurer shall be required to determine the RBC Catastrophe Risk Charge through the use of one of the third party commercial vendor models (AIR, ~~EQECAT~~CoreLogic for earthquake and hurricane only, RMS, KCC, ARA HurLoss (hurricane only)), or the Florida Public Model for hurricane, as advised by the lead state or domestic state.

If the lead or domestic state determines that permission to use the own model can be granted to determine the RBC Catastrophe Risk Charge, the model will be subject to additional review through the ongoing examination process. If, as a result of the examination, the lead or domestic state determines that permission to use the own model should be revoked, the insurer may be required to resubmit the risk-based capital filing and any past filings so impacted where own model was used, as directed by the lead state or domestic state. If the insurer obtains permission to use the own model, it cannot revert back to using third party commercial vendor models to determine the RBC Catastrophe Risk Charge in subsequent reporting periods, unless this is agreed with the lead or domestic state that granted permission.

The contingent credit risk charge should be calculated in a manner consistent with the way the company internally evaluates and manages its modeled net catastrophe risk.

Note that no tax effect offsets or reinstatement premiums should be included in the modeled losses. Further note that the catastrophe risk charge is for earthquake and hurricane risks only.

As per the footnote on this page, modeled losses to be entered PR027A, ~~and~~ PR027B and PR027C in Lines (1) through (4) are to be calculated using one of the **third party commercial vendor** models – AIR, ~~EQECAT~~CoreLogic for earthquake and hurricane only, RMS, KCC, ARA HurLoss (hurricane only); or the Florida Public Model (hurricane only) **or the insurer's own catastrophe model**; and using the insurance company's own insured property exposure information as inputs to the model. The insurance company may elect to use the modeled results from any one of the models, or any combination of results of two or more of the models. Each insurer will not be required to utilize any prescribed set of modeling assumptions but will be expected to use the same exposure data, modeling, and assumptions that the insurer uses in its own internal catastrophe risk management process. Any exceptions must be explained in the required *Attestation Re: Catastrophe Modeling Used in RBC Catastrophe Risk Charges* within this RBC Report.

The ~~Grand Total (PR027) page includes an i~~Interrogatory on page (PR027INT) ~~to~~ supports an exemption from filing the catastrophe risk charge.

Any company qualifying for exemption from the earthquake risk charge must identify the particular criteria from among (1a), (1b), (2) and (3) that provides its qualification for exemption, and may leave the other three items from this group of four possible qualifications for exemption blank; except identification of criteria (3) as the basis for the exemption requires a further answer to (3a) and (3b).-. If an insurer does not write or assume earthquake risks leaving no gross exposure, enter an "X" in PR027INT interrogatory 3, with no need to fill in (3a) and (3b). If the company qualifies for exemption from the earthquake risk charge, page PR027A and line (1) on PR027 may be left blank.

Any company qualifying for exemption from the hurricane risk charge must identify the particular criteria from among (4a), (4b), (5) and (6) that provides its qualification for exemption, and may leave the other three items from this second group of four possible qualifications for exemption blank. If an insurer does not write or assume hurricane risks leaving no gross exposure, enter an "X" in PR027INT interrogatory 6. ~~If the company qualifies for exemption from the earthquake risk charge, page PR027A and line (1) on this page may be left blank.~~ If the company qualifies for exemption from the hurricane risk charge, page PR027B and line (2) on this page PR027 may be left blank. ~~If an insurer does not write or assume hurricane risks leaving no gross exposure, enter an "X" in interrogatory 6.~~

Any company qualifying for exemption from the wildfire risk charge must identify the particular criteria from among (7a), (7b), (8) and (9) that provides its qualification for exemption and may leave the other three items from this third group of four possible qualifications for exemption blank. If an insurer does not write or assume hurricane risks leaving no gross exposure, enter an "X" in PR027INT interrogatory 9. If the company qualifies for exemption from the wildfire risk charge, page PR027C and line (3) on PR027 may be left blank

In general, the following conditions will qualify a company for exemption: if it uses an intercompany pooling arrangement or quota share arrangement with U.S. affiliates covering 100% of its earthquake, ~~and~~ hurricane and wildfire risks such that there is no exposure for these risks; if it has a ratio of Insured Value – Property to surplus as regards policyholders of less than 50%; or if it writes Insured Value – Property that includes hurricane, ~~and/or~~ earthquake and/or wildfire coverage in catastrophe-prone areas representing less than 10% of its surplus as regards policyholders.

“Insured Value – Property” includes aggregate policy limits for structures and contents for policies written and assumed in the following annual statement lines – Fire, Allied Lines, Earthquake, Farmowners, Homeowners, and Commercial Multi-Peril.

“Catastrophe-Prone Areas in the U.S.” include:

- i. For hurricane risks, Hawaii, District of Columbia and states and commonwealths bordering on the Atlantic Ocean and/or the Gulf of Mexico including Puerto Rico.
- ii. For earthquake risk or for fire following earthquake, any of the following commonwealth or states: Alaska, Hawaii, Washington, Oregon, California, Idaho, Nevada, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico, Puerto Rico, and geographic areas in the following states that are in the New Madrid Seismic Zone - Missouri, Arkansas, Mississippi, Tennessee, Illinois and Kentucky.
- iii. For wildfire risk, California, Idaho, Montana, Oregon, Nevada, Wyoming, Colorado, New Mexico, Washington, Arizona, and Utah.

Specific Instructions for Application of the Formula

Column (1) – Direct and Assumed Modeled Losses

These are the direct and assumed modeled losses per the first footnote. Include losses only; no loss adjustment expenses. For companies that are part of an inter-company pooling arrangement, the losses in this column should be consistent with those reported in Schedule P, i.e. losses reported in this column should be the gross losses for the pool multiplied by the company’s share of the pool.

Column (2) – Net Modeled Losses

These are the net modeled losses per the footnote. Include losses only; no loss adjustment expenses.

Column (3) - Ceded Amounts Recoverable

These are the modeled losses ceded under any reinsurance contract. Include losses only, no loss adjustment expenses, and should be associated with the Net Modeled Losses.

Column (4) - Ceded Amounts with Zero Credit Risk Charge

Per the footnote, modeled catastrophe losses that would be ceded to the categories of reinsurers that are not subject to the RBC credit risk charge (i.e., U.S. affiliates and mandatory pools, whether authorized, unauthorized, or certified).

Column (6) – Amount

These are automatically calculated based on the previous columns.

Column (7) - RBC Requirement

A factor of 1.000 is applied to the reported modeled catastrophe losses calculated on both AEP and OEP basis, and a factor of 0.018 is applied to the reinsurance recoverables. The RBC Requirement is based on either AEP reported results or OEP reported results (not both), consistent with the way the company internally evaluates and manages its modeled net catastrophe risk.

Column (5) – Y/N

Please indicate “Y” for OEP basis and “N” for AEP basis. This column should not be blank.

ATTESTATION RE: CATASTROPHE MODELING USED IN RBC CATASTROPHE RISK CHARGES PR002

(1) Company Name hereby certifies that the modeled catastrophe losses for earthquake risk and hurricane risk entered on lines 1 through 3 of Schedule PR027 of this Risk-Based Capital Report were determined by applying the same catastrophe models or combination of models to the same underlying exposure data, and using the same modeling assumptions, as the company uses in its own internal risk management process, with the following exceptions:

(1a) _____

These exceptions, if any, are made for the following reasons:

(1b) _____

The following describes the company's application of catastrophe modeling to the determination of the Rcat risk charges: (Include which models are used in what combinations for each of the Rcat charges; what key modeling assumptions are used, including but not limited to time dependency, secondary uncertainty, storm surge, demand surge, and fire following earthquake; and the rationale for treatment of each issue or item): (provide attachments if necessary):

(2) _____

The company further certifies that the underlying exposure data used in the catastrophe modeling process is accurate and complete to the best of our knowledge and ability, with the following limitations:

(3) _____

The following describes the extent to which the exposure location data is accurate to GPS coordinates; to zip code; and to a level less accurate than zip code: (provide attachments if necessary):

(4) _____

The following describes the steps taken to validate, to the best of the Company's knowledge and belief, the accuracy and completeness of the exposure data used in the modeling process to determine the Rcat catastrophe risk charges (provide attachments if necessary):

(5) _____

Provide an explanation of the methodology used to derive the amounts in columns 3 and 4 of page PR027A and PR027B.

(6) _____

(7) Completed on behalf of: _____ (7) Completed By: _____
Last First Middle Title

(7) Email: _____ (7) Phone: _____ Date: _____

CALCULATION OF CATASTROPHE RISK CHARGE FOR EARTHQUAKE PR027A

| Earthquake | Reference | Modeled Losses | | | |
|---|-----------------|---|---------------|---------------------------------|--|
| | | (1) Direct and Assumed | (2) Net | 3† Ceded Amounts Recoverable | (4)†† Ceded Amounts Recoverable with zero Credit Risk Charge |
| (1) Worst Year in 50 | Company Records | | | | |
| (2) Worst Year in 100 | Company Records | | | | |
| (3) Worst Year in 250 | Company Records | | | | |
| (4) Worst Year in 500 | Company Records | | | | |
| | | | | (5) Y/N | |
| (5) Has the company reported above, its modeled earthquake losses using an occurrence exceedance probability (OEP) basis? | | | | | |
| | | Reference | (6) Amount | Factor | (7) RBC Requirement (C(6) * Factor) |
| (6) Net Earthquake Risk | | L(2) C(2) | 0 | 1.000 | 0 |
| (7) Contingent Credit Risk for Earthquake Risk | | L(2) C(3) - C(4) | 0 | 0.018 | 0 |
| (8) Total Earthquake Catastrophe Risk (AEP Basis) | | If L(5) C(5) = "N", L(8) C(6) = L(6) C(7)+ L(7) C(7), otherwise "0" | 0 | 1.000 | 0 |
| (9) Total Earthquake Catastrophe Risk (OEP Basis) | | If L(5) C(5) = "Y", L(9) C(6) = L(6) C(7)+ L(7) C(7), otherwise "0" | 0 | 1.000 | 0 |
| (10) Total Earthquake Catastrophe Risk | | L(8) C(7) + L(9) C(7) | | | 0 |

Lines (1)-(4): Modeled losses to be entered on these lines are to be calculated using one of the following NAIC approved third party commercial vendor catastrophe models - AIR, EQECAT, RMS, the ARA HurLoss Model, or the Florida Public Model for hurricanes; or a catastrophe model that is internally developed by the insurer and has received permission of use by the lead or domestic state. The insurance company's own insured property exposure information should be used as inputs to the model(s). The insurance company may elect to use the modeled results from any one of the models, or any combination of the results of two or more of the models. Each insurer will not be required to utilize any prescribed set of modeling assumptions, but will be expected to use the same data, modeling, and assumptions that the insurer uses in its own internal catastrophe risk management process. An attestation to this effect and an explanation of the company's key assumptions and model selection may be required, and the company's catastrophe data, assumptions, model and results may be subject to examination.

† Column (3) is modeled catastrophe losses that would be ceded under reinsurance contracts. This should be associated with the Net Modeled Losses shown in Column (2).

††Column (4) is modeled catastrophe losses that would be ceded to the categories of reinsurers that are not subject to the RBC credit risk charge (i.e., U.S. affiliates and mandatory pools, whether authorized, unauthorized, or certified).

Denotes items that must be manually entered on the filing software.

CALCULATION OF CATASTROPHE RISK CHARGE FOR HURRICANE PR027B

| Hurricane | Reference | Modeled Losses | | | | |
|--|---|---------------------------|------------|---------------------------------|--|---|
| | | (1) Direct and Assumed | (2) Net | 3† Ceded Amounts Recoverable | (4)†† Ceded Amounts Recoverable with zero Credit Risk Charge | |
| (1) Worst Year in 50 | Company Records | | | | | |
| (2) Worst Year in 100 | Company Records | | | | | |
| (3) Worst Year in 250 | Company Records | | | | | |
| (4) Worst Year in 500 | Company Records | | | | | |
| | | | | (5) Y/N | | |
| (5) Has the company reported above, its modeled hurricane losses using an occurrence exceedance probability (OEP) basis? | | | | | | |
| | Reference | | | (6) Amount | Factor | (7) RBC Requirement (C(6) * Factor) |
| (6) Net Hurricane Risk | L(2) C(2) | | | 0 | 1.000 | 0 |
| (7) Contingent Credit Risk for Hurricane Risk | L(2) C(3) - C(4) | | | 0 | 0.018 | 0 |
| (8) Total Hurricane Catastrophe Risk (AEP Basis) | If L(5) C(5) = "N", L(8) C(6) = L(6) C(7)+ L(7) C(7), otherwise "0" | | | 0 | 1.000 | 0 |
| (9) Total Hurricane Catastrophe Risk (OEP Basis) | If L(5) C(5) = "Y", L(9) C(6) = L(6) C(7)+ L(7) C(7), otherwise "0" | | | 0 | 1.000 | 0 |
| (10) Total Hurricane Catastrophe Risk | L(8) C(7) + L(9) C(7) | | | | | 0 |

Lines (1)-(4): Modeled losses to be entered on these lines are to be calculated using one of the following NAIC approved third party commercial vendor catastrophe models - AIR, EQECAT, RMS, the ARA HurLoss Model, or the Florida Public Model for hurricanes; or a catastrophe model that is internally developed by the insurer and has received permission of use by the lead or domestic state. The insurance company's own insured property exposure information should be used as inputs to the model(s). The insurance company may elect to use the modeled results from any one of the models, or any combination of the results of two or more of the models. Each insurer will not be required to utilize any prescribed set of modeling assumptions, but will be expected to use the same data, modeling, and assumptions that the insurer uses in its own internal catastrophe risk management process. An attestation to this effect and an explanation of the company's key assumptions and model selection may be required, and the company's catastrophe data, assumptions, model and results may be subject to examination.

† Column (3) is modeled catastrophe losses that would be ceded under reinsurance contracts. This should be associated with the Net Modeled Losses shown in Column (2).

††Column (4) is modeled catastrophe losses that would be ceded to the categories of reinsurers that are not subject to the RBC credit risk charge (i.e., U.S. affiliates and mandatory pools, whether authorized, unauthorized, or certified).

Denotes items that must be manually entered on the filing software.

CALCULATION OF CATASTROPHE RISK CHARGE PR027

| | <u>Reference</u> | <u>(1)</u> <u>RBC Amount</u> |
|---------------------------------------|-------------------------|---------------------------------|
| (1) Total Earthquake Catastrophe Risk | PR027A L(10) C(7) | 0 |
| (2) Total Hurricane Catastrophe Risk | PR027B L(10) C(7) | 0 |
| (3) Total Catastrophe Risk (Rcat) | $SQRT(L(1)^2 + L(2)^2)$ | 0 |

INTERROGATORY TO SUPPORT EXEMPTION FROM COMPLETING PR027 (To be completed by companies reporting no RBC charge in either Line 1 or Line 2)

Place an "X" in the appropriate cell for the criteria under which the company is claiming an exemption

A Earthquake Exemption (To be completed by companies reporting no RBC charge in Line 1) -

- (1) The company has not entered into a reinsurance agreement covering earthquake exposure with a non-affiliate or a non-US affiliate and, either
 - (1a) the company participates in an inter-company pooling arrangement with 0% participation, leaving no net exposure for earthquake risks; Or
 - (1b) the company cedes 100% of its earthquake exposures to its US affiliate(s), leaving no net exposure for earthquake risks
- (2) The Company's Ratio of Insured Value - Property to surplus as regards policyholders is less than 50%
- (3) The company has written Insured Value - Property that includes earthquake coverage in the Earthquake-Prone areas representing less than 10% of its surplus as regards policyholders

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For any company qualifying for the exemption under 3 provide details about how the "geographic areas in the New Madrid Seismic Zone" were determined.

(3a) What resource was used to define the New Madrid Seismic Zone?

(3b) Was exposure determined based on zip codes or counties in the zone, was it based on all of the earthquake exposure in the identified states or was another methodology used? Describe any other methodology used.

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B Hurricane Exemption (To be completed by companies reporting no RBC charge in Line 2) -

- (4) The company has not entered into a reinsurance agreement covering hurricane exposure with a non-affiliate or a non-US affiliate and, either
 - (4a) the company participates in an inter-company pooling arrangement with 0% participation, leaving no net exposure for hurricane risks; Or
 - (4b) the company cedes 100% of its hurricane exposures to its US affiliate(s), leaving no net exposure for hurricane risks
- (5) The Company's Ratio of Insured Value - Property to surplus as regards policyholders is less than 50%
- (6) The company has written Insured Value - Property that includes hurricane coverage in the Hurricane-Prone areas representing less than 10% of its surplus as regards policyholders

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Note: "Earthquake-Prone areas" include any of the following states or commonwealths: Alaska, Hawaii, Washington, Oregon, California, Idaho, Nevada, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico, Puerto Rico, and geographic areas in the following states that are in the New Madrid Seismic Zone - Missouri, Arkansas, Mississippi, Tennessee, Illinois and Kentucky.

"Hurricane-Prone areas" include Hawaii, District of Columbia and states and commonwealths bordering on the Atlantic Ocean, and/or Gulf of Mexico including Puerto Rico.

Denotes items that must be manually entered on the filing software.

Capital Adequacy (E) Task Force

RBC Proposal Form

- | | | |
|---|---|--|
| <input type="checkbox"/> Capital Adequacy (E) Task Force | <input type="checkbox"/> Health RBC (E) Working Group | <input type="checkbox"/> Life RBC (E) Working Group |
| <input checked="" type="checkbox"/> Catastrophe Risk (E) Subgroup | <input type="checkbox"/> Investment RBC (E) Working Group | <input type="checkbox"/> Op Risk RBC (E) Subgroup |
| <input type="checkbox"/> C3 Phase II/ AG43 (E/A) Subgroup | <input type="checkbox"/> P/C RBC (E) Working Group | <input type="checkbox"/> Stress Testing (E) Subgroup |

| | |
|---|--|
| DATE: <u>11/1/2021</u> | <u>FOR NAIC USE ONLY</u> |
| CONTACT PERSON: <u>Eva Yeung</u> TELEPHONE: <u>816-783-8407</u> EMAIL ADDRESS: <u>eyeung@naic.org</u> ON BEHALF OF: <u>Catastrophe Risk (E) Subgroup</u> NAME: <u>Wanchin Chou</u> TITLE: <u>Chair</u> AFFILIATION: <u>Connecticut Department of Insurance</u> ADDRESS: <u>153 Market St,</u> <u>Hartford, CT 06103</u> | Agenda Item # <u>2022-04-CR</u> Year <u>2022</u> <u>DISPOSITION</u> <input type="checkbox"/> ADOPTED _____ <input type="checkbox"/> REJECTED _____ <input type="checkbox"/> DEFERRED TO _____ <input type="checkbox"/> REFERRED TO OTHER NAIC GROUP _____ <input type="checkbox"/> EXPOSED _____ <input type="checkbox"/> OTHER (SPECIFY) _____ |

IDENTIFICATION OF SOURCE AND FORM(S)/INSTRUCTIONS TO BE CHANGED

- | | | |
|---|---|--|
| <input type="checkbox"/> Health RBC Blanks | <input type="checkbox"/> Property/Casualty RBC Blanks | <input type="checkbox"/> Life RBC Instructions |
| <input type="checkbox"/> Fraternal RBC Blanks | <input type="checkbox"/> Health RBC Instructions | <input type="checkbox"/> Property/Casualty RBC Instructions |
| <input type="checkbox"/> Life RBC Blanks | <input type="checkbox"/> Fraternal RBC Instructions | <input checked="" type="checkbox"/> OTHER <u>Cat Event Lists</u> |

DESCRIPTION OF CHANGE(S)

2013-2021 U.S. and non-U.S. Catastrophe Event Lists

REASON OR JUSTIFICATION FOR CHANGE **

Adding 2013 through 2021 Wildfire events for 2022 RBC reporting

Additional Staff Comments:

** This section must be completed on all forms.

Revised 11-2013

| Type of Event | Year | Name | Date | Location | Overall losses when occurred |
|---------------|------|---------------------------------------|-------------------|--|------------------------------|
| Wildfire | 2013 | Black Forest | 6/11/13-6/20/13 | Colorado Springs | ~ 420.5 million |
| Wildfire | 2013 | Rim | 8/17/13-9/20/13 | Sierra Nevada, California | > 100 million |
| Wildfire | 2014 | Texas | 5/11/14-5/20/14 | Texas, California | > 25 million |
| Wildfire | 2015 | Butte Fire | 9/9/15-10/1/15 | Amador County, California | ~ 300 million |
| Wildfire | 2015 | Valley Fire | 9/12/15-10/15/15 | Lake, Napa and Sonoma County, California | ~ 700 million |
| Wildfire | 2016 | Erskine Fire | 6/23/16-7/11/16 | Lake Isabella, Kern County, California | ~26 million |
| Wildfire | 2016 | Soberanes Fire | 7/22/16-9/30/16 | Soberanes Creek, Garrapata State Park, Santa Lucia Preserve, Monterey County, California | > 200 million |
| Wildfire | 2016 | Chimney Fire | 8/13/16-9/6/16 | Santa Lucia Range, San Luis Obispo County, California | > 25 million |
| Wildfire | 2016 | Clayton Fire | 8/13/16-8/26/16 | Lake County, California | >25 million |
| Wildfire | 2016 | Gatlinburg Wildfire | 11/29/16-12/5/16 | Sevier County, Gatlinburg, Pigeon Forge, Tennessee | ~637 million |
| Wildfire | 2017 | Northern California Wildfires | 10/8/17-10/31/17 | Northern California | ~ 11 billion |
| Wildfire | 2017 | Southern California Wildfires | 12/4/17-12/23/17 | Southern California | ~ 2.2 billion |
| Wildfire | 2018 | Spring Creek Fire | 6/27/18-7/11/18 | Spring Creek, Colorado | < 100 million |
| Wildfire | 2018 | Carr, Mendocino California Wildfires | 7/23/18-8/15/18 | Northern California | >1,000 million |
| Wildfire | 2018 | Northern California Camp Wildfire | 11/8/18-11/25/18 | Butte County, California | >7.5 billion |
| Wildfire | 2018 | Southern California Woolsey Wildfires | 11/8/18-11/21/18 | Los Angeles and Ventura County, California | 1.5 billion |
| Wildfire | 2019 | Australian Bushfires | 9/2019-3/2020 | New South Wales, Queensland, Victoria, South Australia, Western Australia, Tasmania and Northern Territory | ~910 million |
| Wildfire | 2019 | Saddleridge Wildfire | 10/10/19-10/23/19 | Sylmar, Los Angeles, Calimesa, Riverside County, California | <1,000 million |
| Wildfire | 2019 | Kincadee Wildfire | 10/23/19-11/6/19 | Northeast of Geyserville, Sonoma County, California | <1,000 million |
| Wildfire | 2020 | Cameron Peak | 08/13/20-12/02/20 | Roosevelt National Forest, Larimer County, Colorado | ~71 million |
| Wildfire | 2020 | SCU Lighting Complex Wildfire | 8/16/20-9/16/20 | San Francisco Bay Area, Central Valley Santa Clara, Alameda, Contra Costa, San Joaquin, Merced, Stanislaus | <1,000 million |
| Wildfire | 2020 | Beachie Creek Wildfire | 8/16/20-10/10/20 | Approx. 2 miles south of Jaw Bones flats in rugged terrain deep in the Opal Creek Wilderness. | >1,000 million |
| Wildfire | 2020 | CZU Lightning Complex Wildfire | 8/16/20-9/22/20 | San Mateo and Santa Cruz Counties, California | >1,000 million |
| Wildfire | 2020 | LNU Lightning Complex Wildfire | 8/17/20-10/2/20 | Lake, Napa, Sonoma, Solano, and Yolo Counties, California | > 1,000 million |
| Wildfire | 2020 | Carmel Fire | 8/18/20-9/4/20 | Carmel Valley, California | <1,000 million |
| Wildfire | 2020 | North Complex Fire | 8/18/20-10/12/20 | Plumas and Butte Counties, California | <1,000 million |
| Wildfire | 2020 | Creek Fire | 9/4/20-10/12/20 | Fresno and Madera Counties, California | <1,000 million |
| Wildfire | 2020 | Bobcat Fire | 9/6/20-10/23/20 | Central San Gabriel Mountains, in and around the Angeles National Forest California | < 1,000 million |
| Wildfire | 2020 | Babb Road Fire | 9/7/20-9/18/20 | Malden and Pine City, Palouse County of Eastern Washington | <1,000 million |
| Wildfire | 2020 | Alameda Fire | 9/7/20-9/16/20 | Jackson County, Oregon | <1,000 million |
| Wildfire | 2020 | Holiday Farm Fire | 9/7/20-10/3/20 | Willamette National Forest | <1,000 million |
| Wildfire | 2020 | Echo Mountain Complex Fire | 9/7/20-9/23/20 | north of Lincoln City, Oregon | <100 million |
| Wildfire | 2020 | Riverside Fire | 9/8/20-10/3/20 | Valley Drive between Misty Ridge Drive and Mitchell Avenue, Oregon | <100 million |
| Wildfire | 2020 | Slater Fire | 9/8/20-10-9/20 | Northern California and Southern Oregon | <100 million |
| Wildfire | 2020 | Glass Fire | 9/27/20-10/19/20 | Napa and Sonoma Counties, California | > 1,000 million |
| Wildfire | 2020 | East Troublesome Fire | 10/14/20-11/9/20 | Grand County, Colorado | ~543 million |
| Wildfire | 2021 | Bootleg Wildfire | 7/17/21-8/6/21 | Northwest of Beatty, Oregon | <1,000 million |
| Wildfire | 2021 | Dixie Wildfire | 7/14/21-10/5/21 | Butte, Plumas, Tehama, Lassen and Shasta Counties, California | >1,000 million |
| Wildfire | 2021 | Caldor Fire | 8/14/21-10/5/21 | El Dorado National Forest and other areas of the Sierra Nevada in El Dorado, Amador, and Alpine County, California | <1,000 million |
| Wildfire | 2021 | Corkscrew Fire | 8/15/21-8/30/21 | Ford, WA; Tum Tum, Springdale, City of Deer Park, Loon Lake, Clayton, H395, Scoop Mt | <100 million |
| Wildfire | 2021 | Marshall Fire | 12/30/21-1/1/22 | Boulder County, Colorado | ~ 2 billion |

| Year | Event Type | Begin | End | Event | Country | Affected Area (Detail) | Munich Re NatCATService Insured losses (in original values, US\$m) Criteria: insured losses equal/greater US\$ 25m. Tries to reflect non-US losses only | Swiss Re Sigma: Insured Loss Est. US\$m (mid point shown if range given) Mostly reflect total US and nonUS losses combined. | Others |
|------|------------|-------------|----------|--|-------------------|---|---|---|-----------|
| 2013 | Wildfire | 11/01/12 | 04/01/13 | Tasmanian Bushfires | Australia | Central Highlands, East coast (Bicheno), Forestier and Tasman Peninsulas, Tasmania, Australia | | | ~\$44m |
| 2013 | Wildfire | 10/17/13 | 10/31/13 | New South Wales Bushfires | Australia | New South Wales | | | ~\$138m |
| 2014 | Wildfire | Summer 2014 | | Northwest Territories Fire | Canada | Northwest Territories, Canada | | | ~\$3.6b |
| 2015 | Wildfire | 11/25/15 | 12/02/15 | Pinery Bushfire | Australia | Lower Mid North, Light River, West Barossa, South Australia, Australia | | | \$75m |
| 2015 | Wildfire | 12/25/15 | | Wye River, Separation Creek bushfires, | Australia | Great Ocean Road region of Victoria, Australia | | | ~\$110m |
| 2016 | Wildfire | 01/06/16 | | Waroona-Yarloop Bushfire | Western Australia | | | | ~\$71.25m |
| 2016 | Wildfire | 05/01/16 | 05/26/16 | Canada Wildfire | Canada | Fort McMurray | | | \$3.52b |
| 2016 | Wildfire | 11/22/16 | 11/27/16 | November 2016 Israel Fires | Israel | Various regions in Israel, mainly in Haifa, Judean Mountains and the Sharon Plain | | | >\$25m |
| 2017 | Wildfire | 06/06/17 | | Knysna Fires | South Africa | Knysna region of the Western Cape | | | ~\$146m |

| | | | | | | | | |
|------|----------|----------|----------|----------------------------|-------------|--|--|----------|
| 2017 | Wildfire | 07/01/17 | 08/01/17 | British Columbia Wildfires | Canada | British Columbia | | >\$78m |
| 2017 | Wildfire | 10/15/17 | 10/16/17 | Iberian Wildfires | Portugal | Northern Portugal and Northwestern Spain | | ~\$210m |
| 2018 | Wildfire | May-18 | Aug-18 | Sweden Wildfires | Sweden | ranging from north of Arctic Circle to the southern County of Scania. | | >\$87m |
| 2018 | Wildfire | Jul-18 | | Greece Wildfires | Greece | Attica, Greece | | ~\$38.1m |
| 2020 | Wildfire | 10/04/20 | | Lake Ohau Fire | New Zealand | Northwest of Lake Ohau Village | | ~\$25m |
| 2020 | Wildfire | 02/05/21 | | Perth Hills Wildfire | Australia | Shire of Mundaring, Shire of Chittering, Shire of Northam City of Swan | | ~\$63m |

Source: Munich Re's NAT CAT Service, Swiss Re Sigma and Aon Benfield