



A Proposal to Establish a Catastrophe (CAT) Modeling “Center of Excellence” (COE) within the NAIC’s Center for Insurance Policy & Research (CIPR)

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Introduction

The leadership and members of the NAIC have determined natural CAT risks and resiliency to be a top priority and organized several workstreams to pursue objectives intended to help ensure homes and businesses are protected from insured perils arising from natural CATs, while keeping markets stable through financially strong insurers and reinsurers. For example, the Catastrophe Risk (E) Subgroup has spent many years working to develop risk-based capital (RBC) factors for hurricane and earthquake exposures and, more recently, grappling with how best to address wildfire, flood, and convection storm perils. Separately, the Catastrophe Insurance (C) Working Group is charged with maintaining the NAIC *State Disaster Response Plan*, the *Disaster Assistance Program*, and the *Catastrophe Computer Modeling Handbook*. The Working Group has also commenced work to determine ways in which the private flood market can be facilitated and monitored by the state insurance regulators. The Climate and Resiliency (EX) Task Force has taken on significant work, which will require a deeper understanding of all aspects of climate and natural CAT risks. Further, many state insurance regulators are taking on new roles in working to create risk resilient communities within their jurisdictions.

Given these increased pressures and new roles, state insurance regulators need to improve their understanding of the CAT modeling technologies used by insurers and reinsurers. This means having access to the same knowledge, insights, and tools used by insurers. In doing so, state insurance regulators can more effectively engage with insurers and state and federal policymakers when discussing how best to maintain critical insurance coverages for their states’ economies and developing new regulatory policy. The NAIC can play an instrumental role fulfilling these needs.

In this regard, the Technology Workstream of the Climate and Resiliency (EX) Task Force was assigned the task of considering the potential application of technology, such as early warning systems and predictive modeling tools, to better understand and thereby evaluate insurers’ climate and natural CAT



risk exposures. In particular, the Technology Workstream was tasked with determining whether technical support services were needed by state insurance departments regarding the industry's use of CAT models.

To help facilitate the members' consideration of such a need, NAIC/CIPR staff conducted two presentations on June 7 and Aug. 6, 2021, wherein staff laid out a range of support services for state insurance departments when encountering the use of commercial CAT models by insurers in rate making processes, solvency functions, and/or other insurance business decisions (e.g., strategic, reinsurance, claims management). NAIC/CIPR staff addressed potential support services in the areas of: 1) facilitating access to CAT modeling documentation; 2) providing technical education and training; and 3) conducting applied research to proactively address regulatory climate risk and resilience priorities. Finally, an additional related benefit highlighted is the ability to provide future support services for other modeled CAT risk beyond climate and natural CATs, including casualty/liability, cyber, terrorism, and infectious diseases such as pandemics. This additional support work could potentially influence other NAIC related committee activities, as appropriate.

Proposal

As outlined in the introduction above, the time has arrived for the NAIC to establish a permanent support group—i.e., the NAIC CAT Modeling COE—to provide the NAIC and state system of insurance regulation with the necessary technical expertise, tools, and information to effectively regulate the insurers and reinsurers exposed to catastrophic events for a secure and stable insurance marketplace. We believe this COE would be best positioned within the NAIC's CIPR given CIPR's: 1) existing knowledge, expertise, and recent NAIC applied research track record in this field; and 2) its ability to effectively work with modelers and state insurance regulators from a neutral perspective within the NAIC. Below is a complementary and integrated series of technical support services envisioned by the COE:

- 1) Facilitating insurance department access to CAT modeling documentation and assistance in the distilling of this information.
- 2) Providing general technical education/training materials on the mechanics of commercial models and treatment of perils and risk exposures.
- 3) Conducting applied research analysis utilizing various model platforms to proactively answer the regulatory "so what" questions that may need to be addressed for regulatory resilience priorities.



The first element from above provides for the CAT Modeling COE to facilitate insurance department access to CAT modeling documentation and other information, as well as centralizing accumulated knowledge and expertise to aid in the deciphering and distillation of CAT models. The COE would assist with managing both CAT model vendor relationships and insurance department needs. As such, the COE would be briefed on the modeling technologies and inputs in a similar fashion as insurers and reinsurers are and have access to the same modeling documentation to develop internal expertise. This knowledge and expertise would then be actively shared with state insurance regulators for use in regulatory processes and other considerations. Critically, this information would be collected and stored on an NAIC regulator-only technological platform with proper CAT modeling vendor Data Use Agreements (DUAs) in place to allow for proprietary model information sharing, part of which has been a stumbling block to regulatory access to date.

The second element from above provides for technical education/training materials on the mechanics of commercial models and treatment of perils and risk exposures for state insurance regulators. Importantly, this technical training would be utilized to enhance regulatory operational activities, thereby bringing the science to operations. For example, it would allow for state insurance departments and the NAIC to reimagine the NAIC [Catastrophe Computer Modeling Handbook](#), which could become the foundational authoritative literature on state insurance regulator use of CAT models. As state insurance regulators gain more practice with these models, the NAIC is also well-positioned to develop best practices on industry use, as well as state insurance regulator use. Consequently, the NAIC [Financial Condition Examiners Handbook](#) and the [NAIC Own Risk and Solvency Assessment \(ORSA\) Guidance Manual](#) could be improved to account for the latest developments and best practices in CAT risk assessment. Further from a solvency perspective, both the development of related RBC CAT charges and climate stress testing would benefit greatly from such a technical foundation.

The third element from above provides for conducting applied research analysis to utilize various model platforms to proactively answer the regulatory “so what” questions that may need to be addressed. CAT models are not limited to use by the insurance industry; they are tools for CAT risk assessment. State insurance regulators can apply these tools in much the same way as the industry, albeit for regulatory resilience priorities (e.g., how to increase the uptake and proliferation of home hardening activities related to hurricane and wildfire risk). Such mitigation activities are critical to reduce expected losses and improve the availability and affordability of coverage currently and in a future warming climate. Applied research utilizing CAT models can demonstrate the economic value of such mitigation activities, laying the proper foundation for policy discussions to address increasing property owner mitigation implementation.



Lastly, it is important to note that these identified support services will not be taking the place of individual state department of insurance (DOI) activities involving CAT models, such as model and rate filing reviews, nor will the CAT Modeling COE be approving vendor models. Rather, the support services will allow the COE to engage with state insurance regulators as a trusted partner with a sufficient level of CAT modeling expertise to enable the conduction of ongoing CAT modeling regulatory activities more effectively.

Plan of Action

In the past year, many of the above support services have already transpired and/or are currently underway. These include: 1) regulator-only technological platform infrastructure development and DUA executions; 2) NAIC Insurance Summit and CIPR events focused on CAT modeling education concerning wildfire and flood models, CAT model climate change incorporation and climate risk assessment, and casualty CAT modeling; 3) successful completion of a California, Colorado, and Oregon DOI [wildfire mitigation report](#) and wildfire CAT model technical documentation done in conjunction with the Insurance Institute for Business & Home Safety (IBHS) and Risk Management Solutions (RMS), which was further leveraged by the Catastrophe Risk (E) Subgroup for wildfire RBC factor development and the Catastrophe Insurance (C) Working Group *Catastrophe Computer Modeling Handbook* updates. Therefore, this proposal will not be to start such CAT modeling COE support service activities, but rather to build upon and leverage these activities for further enhancement and formalization at the NAIC.

Following the meeting of the Technology Workstream on Aug. 6, 2021, the proposal was released to the member states for further comments and questions. Comments were considered, and a revised proposal was approved for public exposure by the Technology, Solvency, and Pre-Disaster Mitigation Workstreams on Sept. 20, 2021.

Following the Sept. 20 regulator-only meeting, the proposal was released to interested parties for further comment and questions for 30 days. Comments will be considered by the Technology Workstream following this feedback and revisions may be made to the proposal, as agreed upon.

If the proposal advances through the above process steps, it will be prepared for recommendation to the Climate Risk and Resiliency (EX) Task Force at the NAIC 2021 Fall National Meeting in San Diego, CA.

We anticipate there would be no new charges associated with creation of the COE; i.e., the expenses associated with the COE resources would be effectively absorbed by the NAIC budget and have no



special assessments, fee for services, etc. These resources may include: 1) recruiting a vendor/insurance department CAT modeling relationship manager and a CAT model research analyst; 2) funding for education/training development and implementation and the licensing and/or running of models for applied research to support and/or enhance regulatory operational activities; and 3) addressing regulatory resilience priorities.

Conclusion

In the face of extreme weather and the future climate significantly affecting property insurance markets, state insurance regulators need to have access to the same knowledge, insights, and CAT modeling tools used by insurers and reinsurers to assess and address climate risk and resiliency; i.e., knowledge and tools that are available for state insurance regulators to access, understand, and utilize. To accomplish this, we propose that the NAIC establish a permanent support group—i.e., the NAIC CAT Modeling COE—housed within the NAIC’s research unit; i.e., CIPR. We have laid out a proposal and plan of action that would build upon the work that the NAIC/CIPR has already been conducting around climate and CAT risks and allows the NAIC/CIPR to bring science to the operation of the DOIs in a way that is additive to the existing regulatory system, easy to access, and tailored to the needs of the state insurance regulators.

We welcome feedback on the proposal and plan of action. Please send questions or comments to Jennifer Gardner at jgardner@naic.org.