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The American Insurance Association appreciates the opportunity to testify on the issue of catastrophe modeling. The use of models is very important for a stable insurance market, one that results in better portfolio management, and more accurate pricing. This benefits insurers and consumers alike.

Catastrophe (Cat) modeling is the process of using computer-assisted calculations to estimate the losses that could be sustained by a portfolio of properties due to a catastrophic event such as a hurricane or earthquake. Cat modeling combines several scientific disciplines – actuarial science, engineering, meteorology, and seismology.

Insurers use cat modeling as a tool for both underwriting and pricing. Models are used to assess the risk in a portfolio of exposures. This helps guide an insurer's underwriting strategy, and can help the insurer decide how much reinsurance to purchase. In addition, some departments of insurance allow insurers to use cat modeling in their rate filings to help determine how to price the insurance product.

Historical loss information is obviously an important element for projecting and predicting the likelihood of future loss, but this information, by itself, does not provide a comprehensive picture of potential catastrophic loss scenarios. Catastrophe models supplement historical loss information in the following ways:

- Insurers use cat models to account for the location of currently insured buildings in loss estimates. For example, an insurer may have significant concentrations of risk in areas that had few or no buildings at the time of the last storm or earthquake. Without catastrophe models, it would be virtually impossible to determine expected losses in an area with no historical loss information.

- Cat models account for changes in the values of exposed property, and are used to estimate repair costs following an event. It costs more to repair and replace buildings and their contents today than it did in the past, and the changes are not uniform across portfolios. This makes it difficult to apply a simple adjustment to historical data.

- Cat models consider changes in building codes and building quality. The propensity for a loss caused by a given wind speed, or a given earthquake

intensity, has reduced as building quality has improved. Cat models completely reflect the current building stock in terms of location, density and construction.

- Models also help to account for changes in insurance terms over time, and to test various coverage options. For example, the risk reduction to insurers and premium savings to consumers due to the introduction of percentage deductibles in place of flat dollar deductibles might be impossible to estimate from limited historical claim data, but models can easily analyze these variables.

- Models synthesize all of the issues just described to help insurers establish reinsurance needs, analyze and minimize their costs of capital, and distribute their costs by establishing an appropriate "cat load" in the rates for each line of business, territory and class.

Indeed, historical loss data are too sparse to predict accurately the likelihood of future loss. The modern homeowners insurance product has existed for less than 50 years. But modelers typically use at least 100 years of historical meteorological information. If insurers were limited to a 50-year look-back, there would be numerous adverse results:

- Areas that have had catastrophic losses in the past would likely be overcharged, because these losses, which contain a degree of randomness, would be averaged over a shorter time frame. Conversely, nearby areas that were not affected by a storm or earthquake would likely be undercharged. A direct consequence of this in ratemaking would be statewide cross-subsidies, usually with less exposed areas subsidizing areas at greater risk.

- Rates would be less stable over time. As catastrophic events occur in an area, those events would be factored into a relatively shorter historical time period for ratemaking, and rates could rise precipitously. Scientific assumptions underlying the models, though occasionally adjusted to reflect new research, are generally more stable than short-term catastrophe loss results.

If politically motivated restrictions are placed on the models, they will not be as accurate and reliable as they could be, which could lead to both solvency and market concerns.

In addition, restricting the use of models is likely to inhibit innovation. Licensure is, in effect, a barrier to market entry that could discourage new competitors from entering the market. The need for product innovation could also diminish as the existing modeling firms have less reason to distinguish themselves from their competitors.

Moreover, if it becomes more difficult for insurers to use models, there will be greater uncertainty as to the predictability of risk. This means that prudent underwriters, erring on the side of caution, will necessarily make higher estimates of risk. Therefore,

additional surplus will be needed to support a given insurer's book of business. As a result, the insurer could have less capacity to write business in a given market.

Other segments of our industry use models as well. Insurance rating agencies use catastrophe modeling as a tool to assess the financial strength of insurers that take on catastrophe risk. Rating agencies also use cat models to provide guidance to insurers on how to deal with financial planning for catastrophes. Many insurers, especially those that are publicly traded, find that this guidance is useful in that it helps insurers determine how they can maintain strong financial ratings.

Any information gap between primary insurers and these other segments of the industry will work to the disadvantage of primary insurers. Reinsurers and reinsurance brokers use cat modeling to price and structure reinsurance treaties. Likewise, the capital markets – cat bond investors, investment banks, and bond rating agencies – use cat modeling in the pricing and structuring of catastrophe bonds. The ability to use greater precision in predicting risk can attract capital to a given market. Even if primary insurer use of cat models is restricted, rating agencies, reinsurers and the capital markets will not be subject to these restrictions.

Regardless of whether insurers can use models for ratemaking, insurers may continue to use models to manage their own portfolios and for other internal applications.   As a result, insurers will know where their products are priced inadequately. And if an insurer's rates are not closely aligned with how it manages its book of business, the insurer would likely have to limit its exposure through underwriting actions and, in extreme situations, withdraw from a market. This, in turn, leads to availability issues and bloated residual markets.   In an information-driven market, you can restrict the price of the product or the quantity of the product provided, but generally not both.

In conclusion, there are many benefits to insurer use of catastrophe models, both internally and externally.

- Cat models utilize the current in-force data – the cleanest and most accurate data in the historical record – that reflect today's risk concentrations, structural damageability, and coverage terms.

- Cat models determine both overall capital needs and allocation of that capital to business unit, territory, and class, promoting a sound financial footing for insurers and the most accurate rate structure for insurance products.

- Restrictions on the use of cat models in ratemaking will not change the abilities of unregulated global analysts and capital providers, but could discourage availability of coverage in cat-exposed insurance markets.

Thank you, and I would be happy to respond to questions.