

June 14, 2023

## **Background: Verisk presentation to California State Assembly Joint Hearing on Insurance and Emergency Management**

We appreciate the opportunity to present on catastrophe models and their role in assessing wildfire risk in California. Part of our goal as a company is to help society prepare for the impacts of catastrophes before they occur, and we are pleased to be part of the conversation towards developing solutions to benefit residents and businesses throughout California.

Catastrophe models are designed to help insurers assess the risk from low frequency, high severity events. Hurricanes were among the very first applications. Prior to Hurricane Andrew in 1992, insurers made assumptions about the size of the maximum loss they could suffer in a large event. They employed rules of thumb, largely based on historical experience, and the consensus opinion was that a Category 5 Hurricane in South Florida could cause, at most, a \$5B industry loss.

Unfortunately, Hurricane Andrew illustrated the inadequacy of that approach – after the industry suffered a \$15B loss from the event, many companies were unable to pay claims. Several insurers became insolvent, precipitating an insurance crisis in the state.

The 1994 Northridge Earthquake provided a similar wake-up call – exposing the limitations of historical data for estimating large losses and completely remaking the insurance industry here in California. Recognizing the inadequacy of relying solely on historical data, the California Earthquake Authority now relies on catastrophe models to assess and manage their risk.

From our founding as Applied Insurance Research in 1987, our company was the first to apply science and data to the problem – that is, to overlay the windspeeds from actual hurricanes onto the map of a city and calculate the damage that could occur. Since that time, catastrophe models have expanded to include a wide range of perils, including wildfire, and have become standard tools used by insurers and reinsurers to manage the financial impact of extreme events.

As noted above, the fundamental issue is estimating loss from very low frequency, but very high severity events – the type of events that can cause a company to become insolvent and leave policy holders without protection at a time when they need it most. Catastrophe events are rare, and the underlying exposures are constantly evolving. For these events, relying on loss history, as is done in the California property insurance market, is simply not enough. When catastrophe modelling is allowed for loss estimation it can also provide more temporal stability to the process, avoiding the spikes that would be observed relying solely on traditional data sources.

Catastrophe models simulate realistic events, relying on scientific and engineering data, to develop a range of scenarios. The models offer large catalogs of simulated events; in effect, we're providing 10,000 simulations of what could happen next year. In this way, the models augment and effectively extend the available loss experience.

The Verisk Wildfire Model starts with an objective assessment of the landscape and propensity to burn, considering a region-specific assessment of vegetative fuels, slope, and road access, and the homes and businesses are then mapped on to this surface. The model begins by first creating an ignition, and then simulates the effects of wind and weather, fire spread, fire suppression, and the physical characteristics of the structures.

The model considers the impact on the fuel load from multi-year cycles of rainfall and drought, creating a catalog of events that are physically realistic and statistically consistent with the historical record.

The model considers many thousands of events, including those that have not yet occurred, but could occur. In addition, the model fills a critical gap in the historical record by including events similar to events that have occurred in the past, but on today's exposure.

Verisk serves the market by providing realistic and objective models that enable all stakeholders to better understand and effectively manage risk from extreme events. Catastrophe models allow the market to operate efficiently by creating a common means of understanding and transferring risk.

Today, catastrophe models are used throughout the entire insurance value chain, by brokers, insurers and reinsurers, and the capital markets, with the modeled results regarded as the "currency" for catastrophe risk transfer.

The models also provide a framework on which to measure and assess the impact of mitigation, changes to land use, and updates to building codes. Enhancing the science and the data through a process of continual improvement allows models, and the insurance industry, to evolve. The underlying framework can also be adapted to assess the risk from climate change, by projecting the catalog of events from today's climate to future climate scenarios.

Catastrophe models support the industry's mission of providing financial resilience to homes, businesses and communities. A key factor in this mission is a recognition that the risk must be measured to be managed. Companies should be able to use the most relevant tools available to develop actuarially sound rates. There should be consistency between those rates and the metrics underlying risk transfer to the reinsurance and capital markets. We recommend an approach that considers the full range of risk management tools, recognizing that this can be done while still protecting consumers, as is the case in many other states.

We look forward to continuing the discussion on using the best science available to assess wildfire risk. Please let us know how Verisk can be a helpful resource as you move forward in building a more resilient California.

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