



Use of catastrophe models by California Earthquake Authority

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Introduction

Large, damaging earthquakes are infrequent, but can be catastrophic when they occur. Because earthquake insurers lack access to historical data upon which to project future loss estimates and establish rates, the use of models for this catastrophic risk is necessary and authorized.

CEA is required by California law to set actuarially sound rates, that is rates that are not inadequate, not excessive, and not unfairly discriminatory. An additional requirement is that CEA rates be based on “best available science”. To meet these legal requirements, CEA uses catastrophe models to:

- Develop rates and mitigation discounts
- Determine the amount of claim paying capacity CEA needs
- Estimate CEA losses after an event
- Strategic planning

CEA’s Historical and Current Use of Models

CEA enabling statutes (CIC §10089.40) contemplated model usage for establishing rates and laid out the requirement that rate differentials may be established only if the information and methods are consistent with the state of the art of scientific knowledge within the scientific community.

Following inception in 1996, and once the portfolio of insured homes had fully transitioned to the CEA, the CEA Governing Board began examining the appropriate amount of Claim Paying Capacity (CPC) for the portfolio. Catastrophe models were utilized for key metrics such as the CPC needed to provide coverage for target capacity levels as well as “repeats” of historic earthquakes. To this day, and with the CEA Governing Board’s support and approval, CEA contracts with the three widely recognized, commercially available catastrophe-loss models/modelers: Verisk (previously “AIR”), CoreLogic, and Risk Management Solutions, Inc. to view a broad range of modeling results for planning purposes including evaluating CPC targets,

as well as to determine the expected reinsurance recoverable for the many risk transfer contracts CEA purchases.

A unique feature of the CEA statute is that it exempts CEA from CIGA and instead contemplates that CEA would pay claims on a pro-rata or installment basis if an event exceeds CEA's claim paying capacity (CIC §10089.35). CDI regulations (CCR §2697.8) require that upon the occurrence of any earthquake event in the State that is likely to give rise to significant losses, CEA staff shall create a scientific model of anticipated losses within seven days. Here again, CEA will use catastrophe loss model output to satisfy the requirement.

Another feature of the CEA enabling statute is the required Hazard Reduction Discount. CEA is required to provide a discount of at least 5% if the insured mitigates their home (§10089.40(d)). The maximum discount currently available is 25%. The schedule of discounts was developed from catastrophe model output.

CEA also uses catastrophe model output for strategic planning and evaluating a variety of "what-if" scenarios ranging from catastrophe response drills to coverage design.

All other California earthquake insurance writers can and do use catastrophe loss models for setting rates as allowed by CDI regulations applicable to private insurers (CCR §2644.4).

The same section also allows private insurers to use catastrophe loss models to develop the estimate for fire following earthquake losses which is part of the homeowners insurance rate development process.