

SYMPOSIUM BRIEF

# INSURING CALIFORNIA IN A CHANGING CLIMATE

## Adapting the Industry to New Needs, Risks, and Opportunities

March 2019

**BerkeleyLaw**

UNIVERSITY OF CALIFORNIA

---

Center for Law, Energy &  
the Environment

---

---

## Insuring California in a Changing Climate

Climate change poses risks to California's economy, residents, infrastructure, cities, and natural resources. The insurance industry, which provides financial protection to governments, individuals, and businesses for risks they face, will play a central role in efforts to the harmful impacts of climate change on California. Yet the industry itself is vulnerable to a number of climate change-related risks that may affect its ability to maintain its historical level of protection throughout California. These risks involve three main types:

- **Physical risk:** the increased likelihood of property damage, supply chain interruptions, health risks and other outcomes due to the physical impacts of climate change-related events;
- **Transition risk:** the impact to insurers' assets of an economic transition away from carbon-intensive industries; and
- **Liability risk:** the potential for increased litigation against insureds and resulting liability due to climate change-related losses.

These risks will become significant individually and in the scale and dynamics of their interaction, posing a challenge to the insurance industry's ability to protect Californians as the impacts of climate change grow and solidify.

In June 2018 the Center for Law, Energy & the Environment (CLEE) at UC Berkeley School of Law convened a group of insurance regulators, industry leaders, California energy and climate policymakers, climate data scientists, nonprofit researchers and advocates, and academics for a symposium focusing on the state of climate science and insurance modeling; climate litigation and other legal risks; asset vulnerability and disclosure; insurance product innovation and green investments; insurance availability and affordability; and integrating insurance policy with broader climate policy. They identified the top risks and opportunities the insurance community and California residents face in a changing climate, as well as key regulatory reforms, new products, and technological and research developments needed to identify and address them.

This symposium brief outlines the key insights these experts delivered, summarizing the key points from each section and panel of the event.

---

---

## Keynote Address - Dave Jones, California Insurance Commissioner (former)

“Insurers are not adequately considering or addressing climate-related transition risk—the impact and risk of moving to an economy that does not rely on fossil fuels. More and more governments at the local, state, and national levels are taking action to limit the use of fossil fuels. If consumers, businesses, markets, and governments take concerted action to dramatically reduce the use of fossil fuels, there is a risk that the value of fossil fuel investments will drop, and that they will become ‘stranded assets’ on the books of insurance companies.



It is the climate-related transition risk to insurer investments in coal, oil, gas, and utilities that resulted in my launching in 2016 the Climate Risk Carbon Initiative. First, we asked all 1,300 insurance companies doing business in California to voluntarily divest from their investments in thermal coal enterprises and to refrain from future investments in them. Second, I required insurers that write \$100 million or more in premiums nationally to disclose coal, oil, gas, and power-generating utility investments. In 2018, we surveyed insurers again and updated and made public each insurer’s response to my divestment request and more recent data on their coal, oil, and gas investments. More insurers have agreed to divest coal. We also engaged 2 Degrees

Investing Initiative and with their assistance the California Department of Insurance became the first United States-based regulator to conduct a climate risk scenario analysis of individual insurers’ portfolios and a sector-wide analysis, consistent with the recommendations of the G-20 Financial Stability Board’s Task Force on Climate Related Financial Disclosures. In my last week as California’s Insurance Commissioner we completed another climate risk scenario analysis of insurers’ investment portfolios, this time analyzing both physical and transition risk, making us the first financial regulator anywhere in the world to conduct climate-related physical and transition risk scenario analysis of insurers’ investment portfolios. Insurers need to consider and address both climate-related physical and transition risks, and insurance regulators have a critical role to play in making sure that insurers are considering and addressing all aspects of climate risk to their underwriting of insurance and their investments of reserves.”

*These remarks have been edited and updated to reflect important developments in the second half of 2018.*

# The State of Climate Science and Insurance Modeling: Identifying Risk, Certainty, and Insurance Implications

## Key Points:

- Climate change is not a future but a “now” issue. California is already experiencing climate change, in the form of lost glacier mass and snowpack, warming ocean temperatures, increasing numbers of homes, businesses, and communities burned by wildfires, and changes in species ranges and timing of natural patterns. The State of California’s Fourth Climate Change Assessment, which is intended to inform adaptation planning and implementation, should be a foundational document for all applicable policymaking.
- Climate change increases the severity, frequency, and unpredictability of catastrophic events, but insurers are developing solutions to evaluate the risks. Real-time data collection via drones and other new technologies allows insurers to assess claims and losses faster and at a greater level of detail. These abilities, in turn, allow insurers and governments to target critical geographies and infrastructure and better inform policymaking.

## Highlight Recommendation:

Insurance regulators should encourage insurers to employ enhanced catastrophe (CAT) modeling in assessing risk and offering policies. New capacities such as explicit ember and smoke simulations, accounting for the spread of fires into urban areas, and measuring increasing precipitation volatility allow insurers to comprehensively assess new and evolving risks and develop innovative mitigation and suppression measures. Regulators can require insurers to demonstrate that they are using the most advanced methods to fine-tune the scope and pricing of coverage, as well as to calibrate their overall business models.

## Legal Liability: Climate Litigation and Other Risks

### Key Points:

- Climate change litigation is increasing as the actual costs of climate change begin to accumulate. The number of plaintiffs seeking remedies in court will grow as more businesses, governments, and individuals suffer climate-related personal and property losses. As a result, the defendants—those directly or indirectly responsible for emissions or for exacerbating the impacts—will likely look to insurance to limit their litigation and liability costs. The high number of venues in which climate suits are filed increases the likelihood that plaintiffs will eventually succeed.
- Climate change losses and impacts present a challenge for establishing and attributing legal liability. Slow-onset events such as sea level rise and fast-onset events like wildfires can each confound traditional common-law theories such as nuisance and negligence and existing statutory schemes. But the increasing ability of science to attribute climate damages may prevail over long-standing legal procedure barriers and judicial reluctance to allow these disputes to come to trial.
- Lawsuits by local governments against major fossil fuel companies generate headlines, but smaller companies and licensed professionals may face greater risks. The largest companies are likely self-insured, but smaller players must buy insurance with policies that may be implicated if a court establishes a path for liability against extractors or emitters. Corporate directors and licensed professionals, such as engineers and planners who hold heightened legal duties to protect or inform clients and shareholders about potential climate risks, may be the first defendants to face liability.

## Highlight Recommendation:

Insurers and insureds should increase disclosure of the physical, transition, and litigation risks they face due to climate change. While significant liability has not yet developed, failure to disclose material climate risks to investors and clients could emerge as an initial front of liability. Corporate entities should seek to set or meet the industry standard for disclosure, and insurance regulators could consider strengthening requirements around disclosing threats to financial holdings.



## Asset Vulnerability: Assessing and Managing Risks

### Key Points:

- Modeling transition risks is subject to even greater uncertainty than modeling physical risks. CAT models are becoming increasingly accurate and granular in predicting physical risks and disasters. But the same technical advances that support CAT models and attribution science do not account for policy changes and market responses to the evolving risks of climate change. Asset managers and investors thus must account for an especially wide range of potential transition scenarios, and they have an obligation to identify the worst-case scenarios.
- Governments and insurers are underinvesting in resiliency. Resiliency measures are generally known to repay in terms of both financial and human protection. Requiring disclosure may be insufficient to motivate action—policymakers may need to introduce more regulations requiring property inspections and the inclusion of 5-10 year risks in insurance pricing.

### Highlight Recommendation:

Regulators could help investors and market leaders develop a set of agreed-upon and understood carbon supply curves in order to plan for economic transition. These curves should be possible to produce based on existing corporate disclosure and the known global emissions budget (i.e., the maximum quantity of emissions possible to avoid more than 2 degrees Celsius of global warming) of approximately 900 gigatons of carbon and a range of policy and energy mix scenarios. Insurance regulators can increase efforts to require disclosure of fossil fuel holdings and compile industry-wide data on the transition threat.

## Insurance Innovation: New Products and Services, Proactive Investments

### Key Points:

- Some insurers are innovating to support emissions reduction efforts. Insurers have undertaken 1500 climate-focused activities, including innovative insurance products, investment in clean energy, and public disclosure of climate risks. Solar shortfall insurance and energy efficiency insurance, which essentially guarantee minimum performance of new investments and installations that reduce emissions, are gaining traction. Advances in machine learning and real-time measurement will facilitate similar products for energy storage and electrical grid performance, all of which can help governments reduce overall emissions.
- The insurance industry is beginning to return to a role of loss prevention in the context of climate change. Examples include parametric insurance linking enhanced coastal resilience and ecosystem restoration.
- Pay-as-you-drive (PAYD) insurance offers a model to promote consumer-side greenhouse gas reduction, loss-prevention, and social equity simultaneously. By linking rates to miles driven, PAYD incentivizes reduced vehicle use—lowering emissions and the risk of covered losses. The PAYD pricing structure can also make vehicle insurance more affordable for low-income consumers, thereby reducing costs for the low-income insured and reducing the number of uninsured drivers. Policy makers could consider tax incentives or mandates to drive insurer offerings and further innovation based on this model.

### Highlight Recommendation:

Property insurers can lead the way on innovative green insurance products. Measures such as rate discounts for green buildings (which present less overall risk of loss) and coverage upgrades for insureds who improve structures after a covered loss can serve the interests of insurers and insureds alike. Regulators could consider methods to improve customer awareness and reduce barriers to the introduction of these products.

## Insurance Availability and Affordability in a Changing Climate

### Key Points:

- High fire-risk areas in California are experiencing higher increases in insurance premiums, greater rates of policy non-renewal, refusal to write new coverage, and lower coverage-to-value ratios. To best serve high-risk areas, insurers need to be able to use probabilistic fire models that evaluate risk at the individual property level and vary rates based on differences in their risk levels. Insurers also need to communicate what standards are required to be eligible for coverage and for the various rate tiers.
- Community-level action may be necessary to maintain insurance availability and affordability in high-risk areas. Because insurers assess risk at both the individual home and community level, homeowners need to work with local governments to adopt protective planning, construction, and vegetation measures at the community level that are consistent with insurer underwriting considerations in order to continue to find coverage.
- Community-based pooled insurance policies could offer a way forward as more areas are classified as high-risk for fire and flood. As risks become more persistent and pervasive, insuring at the community level may be the most efficient and predictable way to protect individuals within vulnerable areas. This innovative model—involving a single policy between a community and an insurer that would provide insurance to designated properties, with streamlined claims processes—could bring detailed risk information, insurance expertise, and community planning together.

### Highlight Recommendation:

State legislators can propose industry reforms that help ensure affordability and availability in all communities. Measures like mandatory renewal offers for residents whose properties meet mitigation and defensible-space requirements, coverage for replacement costs when policyholders choose to rebuild in new locations, and extended time periods to recover building replacement costs and living expenses would all help better protect residents affected by climate disasters.

## Toward Better Coordination between the Insurance and Climate Research and Policy Communities - Ken Alex, Senior Advisor to Governor Brown and Director of the Governor's Office of Planning and Research (former)

### Highlight Recommendations:

Policymakers and industry leaders should:

- Encourage land use planning that addresses the intersection of climate mitigation and resiliency and insurance innovation. Transportation accounts for nearly 50% of California's greenhouse gas emissions, and land use decisions directly affect transportation levels. Land use planning also determines how many homes are located in areas most vulnerable to wildfire, flood, and sea-level rise. Insurers and regulators can collaborate to incentivize resilient planning and behavior-inducing innovative insurance products.
- Ensure accurate estimations of corporate physical risk. Major facilities are key drivers of the California economy and are often located in areas vulnerable to flood and sea level rise. Insurers and policymakers need to assess these risks properly for the health of the statewide economy.
- Assess and address risk on a community and statewide scale. California insurance and climate regulators can coordinate to ensure that local governments, residents, and insurers are taking appropriate action to limit exposure to climate change risks, reduce overall harm to businesses and individuals, and provide affordable coverage for when losses inevitably occur.

## Agenda and Participants

### Keynote Address

Dave Jones, California Insurance Commissioner (former)

### The State of Climate Science and Insurance Modeling: Identifying Risk, Certainty and Insurance Implications

Louise Bedsworth, Governor's Office of Planning and  
Research

Robert Muir-Wood, RMS

Jose Peralta, Aon

Bruce Riordan, Climate Readiness Institute

### Legal Liability: Climate Litigation and Other Risks

Cara Horowitz, UCLA School of Law

Ted Lamm, CLEE

Lindene Patton, Earth & Water Law Group

Jessica Wentz, Sabin Center for Climate Change Law

### Asset Vulnerability: Assessing and Managing Risks

Aaron Ezroj, California Department of Insurance

Alice Hill, Hoover Institution

Tricia Jamison, 2<sup>o</sup> Investing Initiative

Henrik Jeppesen, Carbon Tracker Initiative

Nik Steinberg, Four Twenty Seven

### Insurance Innovation: New Products and Services, Proactive Investments

Stephen Bushnell, Stephen Bushnell + Associates

Richard Jones, The Hartford Steam Boiler

Inspection and Insurance Company

Evan Mills, Lawrence Berkeley National Laboratory

Claudia Polsky, UC Berkeley School of Law

### Insurance Availability and Affordability in a Changing Climate

Lloyd Dixon, RAND Corporation

Ethan Elkind, CLEE

Joel Laucher, California Department of Insurance

Kathleen Schaefer, UC Davis

### Toward Better Coordination Between the Insurance and Climate Research and Policy Communities

Ken Alex, Senior Advisor to Governor Brown and  
Director of the Governor's Office of Planning and  
Research (former)



Photo courtesy of Flickr's Daniel Ramirez

## Center for Law, Energy & the Environment (CLEE)

UC Berkeley School of Law  
390 Simon Hall  
Berkeley, CA 94720-7200  
[www.clee.berkeley.edu](http://www.clee.berkeley.edu)

For further information, including background research and presentations, visit  
<https://www.law.berkeley.edu/research/clee/events/insuring-california/>

### Contacts:

**Ethan Elkind**, Director of the Climate Program at CLEE, at [eelkind@law.berkeley.edu](mailto:eelkind@law.berkeley.edu)  
**Ted Lamm**, Research Fellow in the Climate Program at CLEE, at [tlamm@law.berkeley.edu](mailto:tlamm@law.berkeley.edu).

**BerkeleyLaw**  
UNIVERSITY OF CALIFORNIA

---

Center for Law, Energy &  
the Environment