Comments of the Edison Electric Institute to the
on Catastrophic Wildfire Recovery

April 22, 2019

The Edison Electric Institute ("EEI") writes to provide comments in response to the request published by the Commission on Catastrophic Wildfire Recovery ("Commission"). Due to the very broad nature of the Commission's request, EEI frames these comments as a response to *Wildfires and Climate Change: California's Energy Future* (the "Strike Force Report"). EEI is the association that represents all U.S. investor-owned utilities. Our members, which include the three investor-owned utilities in California, provide electricity for about 220 million Americans, and operate in all 50 states and the District of Columbia. EEI's California members have been instrumental in mobilizing private capital to accomplish the State's ambitious clean energy and climate goals and other policy objectives. Financially healthy investor-owned utilities have been and will be critical to ensuring continued and increased investments in clean energy and wildfire hazard mitigation for the benefit of all Californians.

As the Strike Force Report succinctly illustrates, California is facing a catastrophic increase in wildfires, with longer wildfire seasons resulting in extensive damage and loss of life. These damages are unsustainable for all electricity customers, the investor-owned utilities that serve them, and the many Californian's who rely upon highly-skilled, well-paying jobs in the utility industry.[1] These comments focus on ensuring the financial health of the investor-owned utilities so that they can continue to provide safe, reliable, and affordable power, invest in fire mitigation efforts and technologies, facilitate fair and prompt treatment for wildfire victims, and accelerate their role in achieving the State's clean energy goals. These goals cannot be accomplished without significant reform to California's unique liability regime for wildfires that effectively renders utilities the backstop insurer for every wildfire despite the fact that many risk factors are out of their control. The reforms to the liability regime must be coupled with reform of the California Public Utility Commission ("CPUC") to restore the regulatory compact between utilities and the State by providing greater certainty for cost recovery of investments made to reduce those risks that utilities can control and damages that they are required to bear.

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[1] California's investor-owned utilities provide thousands of high quality, well-paying jobs. *See Company Profile*, PG&E Corp.,https://www.pge.com/en_US/about-pge/company-information/profile/profile.page (as of May 23, 2018) (PG&E employs approximately 20,000 employees). The electric power industry is responsible for 2.7 million jobs—and supports another 4.4 million induced jobs—across the United States. In total, the industry supports more than seven million jobs, which constitutes approximately five percent of all jobs in the United States. *See* M.J. Bradley & Associates, *Powering America: The Economic and Workforce Contributions of the U.S. Electric Power Industry* 6 (2017), https://mjbradley.com/sites/default/files/PoweringAmerica.pdf (as of July 11, 2018). Further, employment in the industry is well-paying and stable; the median annual wages for direct electric power industry employees were $73,000 in 2015, the latest year for which data are available. This is twice the national average. With benefits, including health care and retirement contributions, median annual compensation exceeds $100,000. Nearly every job category in the industry earns a median wage of $30 or more per hour, plus health and retirement benefits. Many of these skilled, well-paying jobs do not require a four-year college degree, unlike many other jobs with similar pay and benefits. *See id.* at 9. And while employment opportunities in the industry are expected to grow for various types of workers over the next decade, these opportunities rely on the continued financial health and viability of electric companies.

These comments also address the different funds proposed by the Strike Force Report, as well as other options for wildfire mitigation that the Commission should consider.

I. California Must Restore the Regulatory Compact That The State Has Leveraged To Accomplish Ambitious Clean Energy And Other Policy Goals.

The Strike Force Report acknowledges that financially healthy investor-owned utilities are necessary to the State's clean energy efforts and to address wildfires, recognizing that these companies have been critical in reducing greenhouse gas emissions, supporting energy efficiency, driving down the costs of renewable energy, integrating storage and other distributed and variable renewable resources and supporting the deployment of electric vehicles. To a large extent, these efforts have been undertaken to comply with mandates from the legislature or the CPUC. To successfully comply with these mandates, investor-owned utilities have raised billions of dollars in private capital from a range of investors—and this private capital has supplemented the need to use tax payer dollars to fund the State's ambitious clean energy and other policy goals.

What the Strike Force Report fails to acknowledge is that investors were willing to provide the capital needed to achieve these goals because of the strength of the regulatory compact between investor-owned utilities, their customers, and the CPUC. This regulatory compact held that, in exchange for serving all customers, the investor-owned utilities would be allowed to charge rates that reflect their costs of providing service to their customers plus a regulated return on their investments. These "cost-of-service" rates provide investors the confidence they need that their investments will be repaid and that there will be a return on their equity. Cost-of-service rates, which are proposed by utilities, but scrutinized and approved by the CPUC, serve many purposes, in addition to attracting investment: they protect customers, ensure that costs are shared by all electricity customers and promote intergenerational equity by ensuring that the large capital investments needed to provide safe, affordable, reliable, and clean energy are spread out over the life of those investments.

Cost-of-service rates are designed to recover the electric company's costs to serve all customers. As discussed in more detail in these comments, California's investor-owned utilities are currently under significant financial stress due to the State's unique policy regime that effectively holds utilities strictly liable for all catastrophic wildfire damages, regardless of fault. In California, therefore, the costs to serve all electricity customers include third-party damages relate to wildfires. In 2017, the CPUC broke the regulatory compact underpinning cost-of-service rates when it denied cost recovery for wildfire damages. Investor-owned utilities must still serve all customers—even those customers who live in the high wildfire hazard wildland urban interface ("WUI")—but there is no longer certainty that all costs can be recovered in electricity rates.

Losses over the last few fire seasons repeatedly reaching well into the billions of dollars, and dim prospects of recovering these costs through rates—even when the fire is not the result of the investor-owned electric company's [negligence]—have rendered the investor-owned utilities virtually uninvestible. In the words of Moody's:

> The negative outlook reflects the uncertain political and regulatory environment in California and execution risk associated with pending legislative and regulatory efforts to mitigate the liability, **cost recovery** and liquidity risks of wildfires and

> inverse condemnation, and the potential that they may not be successful, as well as the risk of future wildfire exposures.[2]

While the investor-owned utilities in California may no longer provide electricity generation services to customers in the future and may one day no longer serve as the provider of last resort for generation services, the Strike Force Report is clear that they will be needed to build, own, and maintain the electricity transmission and distribution system in the State. That is, they will still be obligated to serve all customers and, therefore, must be able to raise capital at reasonable rates. This means that they must have more certainty that wildfire costs can be recovered in rates. California has used the regulatory compact and cost-of-service rates to leverage private capital to accomplish important policy objectives and will need to use this tool to engage in the extensive wildfire mitigation and resilience efforts. Any comprehensive solution to the wildfire crisis must restore this regulatory compact or will fail.

II. The Commission Must Take Steps To Restore The Financial Health Of Investor-Owned Utilities.

As the recent bankruptcy filing by Pacific Gas & Electric Company ("PG&E") and the credit downgrades of the other investor-owned utilities and certain publicly owned utilities clearly demonstrate, the scale of catastrophic wildfire liabilities has grown far beyond what can be managed under the current regulatory regime—which effectively requires the investor-owned utilities to act as backstop insurers for all property owners in the State. Given the scale of the financial liabilities at stake, any solution that is sufficient to restore market confidence in California's investor-owned utilities must both shrink the overall size of the liabilities to which the utilities are exposed for catastrophic wildfires (except in the case of fault) and provide investor-owned utilities with access to a broad range of insurance and other funding options. As discussed in more detail below, a broad variety of insurance or other risk-shifting options are necessary to cover different tranches of wildfire risk and ensure that sufficient capital resources will be available to compensate wildfire victims in the event of a catastrophic loss.

A. The Commission and the Legislature Must Address the Current Liability Regime; Investor-Owned Utilities Cannot be the De Facto Insurer of Every Homeowner in the State.

In the United States, legal frameworks for addressing natural hazard losses tend to express a policy preference that individual property owners should not bear the full costs of hazard losses. Instead, governments use a variety of mechanisms to socialize the natural hazard losses experienced by individual property owners. For example, in the aftermath of federally declared disasters, individual property owners can access federal funds for both temporary

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[2] Moody's Investor Service, *Moody's Downgrades Edison International to Baa3 and Southern California Edison to Baa2; outlooks negative*, Mar. 5, 2019, https://www.moodys.com/research/Moodys-downgrades-Edison-International-to-Baa3-and-Southern-California-Edison--PR_396014 (emphasis added); *see also*, Moody's Investor Service, *Moody's Downgrades San Diego Gas & Electric to Baa1 from A2; outlook negative*, Mar. 5, 2019, https://www.moodys.com/research/Moodys-downgrades-San-Diego-Gas-Electric-to-Baa1-from-A2--PR_396110 ("The negative outlook reflects the risks associated with the magnitude of exposure and liabilities related to wildfires affecting electric utilities in California, as well as the execution risk around the implementation of legislative and regulatory initiatives that significantly mitigate these risks.").

housing assistance and long-term rebuilding costs.[3] Such cost-socialization acts as a form of social insurance, spreading across society as a whole.[4] The result is that individuals can live in areas where they cannot personally afford the costs of natural hazard exposure because they can externalize a portion of those costs to a taxpayer or ratepayer base.

Under the structure envisioned in *Barham*, wildfire claims would similarly function as a form of social insurance: individual property owner claims would be paid by the electric company and recovered in rates, ultimately socializing those costs across the entire customer base. When functioning in this manner, the system of compensating wildfire victims effectively called on Californians to collectively bear the costs of wildfire hazard exposure socialized across a service territory. This is an approach that is somewhat reasonable when fires occur in the absence of electric company fault, as it accounts for the many factors that contribute to wildfire hazard exposure by assuming collective responsibility for bearing those losses. However, the CPUC's current approach to cost recovery for wildfire damages drastically undercuts this system by effectively turning a social insurance program into a system of transfer payments. That is, under the current cost recovery regime, California has gone from using the utilities as a tool to administer social insurance with costs collectively borne by all residents to a system in which the companies are acting as *de facto* private insurers.

The precarious situation of California's investor-owned utilities is the result of both the extent of exposure to wildfire hazards in the State and California's unique policy approach to socializing wildfire risks. While making homeowners devasted by wildfires whole by socializing costs is a laudable policy goal, no other state makes its utilities act as the insurer of last resort for all third-party property losses from wildfires, particularly in instances in which their equipment was not at fault. The CPUC's current cost recovery standard uses a post-hoc analysis—which essentially holds that the occurrence of fire means that any actions taken by the investor-owned utility were imprudent—breaks the regulatory compact, pushing these costs onto shareholders, whose resources will quickly be depleted by billion-dollar damages. As evidenced by PG&E's bankruptcy, this renders the liability regime a failed social insurance program that serves no one's interests: not those who have been harmed by wildfires, not electricity customers who rely on the investor-owned utilities for affordable, reliable, and increasingly clean power, not the companies, which have invested billions of dollars in serving customers, and not the State, which has aggressive clean energy and other policy goals.

Moreover, this regime fails to align risks with those who are best-positioned to mitigate them—and then holds the electric companies strictly liable for others' failure to act reasonably. While electric equipment can be involved in wildfires and electric companies have and should make investments to mitigate the risks of running power lines through high-hazard areas, investor-owned utilities have little control over many of the other significant drivers of increased wildfire hazard exposure in California. In particular, they have no control over the increasing number of families that are moving into the WUI.[5] Growing populations in the WUI increase the number of

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[3] 42 U.S.C. § 5174(c).

[4] *See* Margaret Peloso & Kristen Miller, *Unnatural Disaster*, The Environmental Forum, May/June 2018, 27, 27, *available at* https://www.eli.org/the-environmental-forum/unnatural-disaster.

[5] *See* Alice Hill & William Kakenmaster, *A New Normal: California's Increasing Wildfire Risk and What to do About it*, May 24, 2018, https://www.hoover.org/research/new-normal-californias-increasing-wildfire-risk-and-what-

lives and value of structures that are at risk when wildfire events occur, increasing hazard exposure. Such growth is driven by economic factors in the State, including the lack of affordable housing in California's major cities, and by local land-use decision making.[6] Because utilities have the obligation to serve, they will continue to extend their transmission and distribution networks to provide electricity to the growing population in the WUI, resulting in an increase in hazard exposure over which they have no control.[7] Further, the insurance industry also plays an important role in the growth of the WUI: the relative affordability of property insurance in the WUI encourages Californians to move to areas with higher wildfire hazard exposures because the State does not permit insurance costs do not properly reflect the risk of losing one's home in a fire. Thus, even where electric company equipment may be the proximate cause of a catastrophic fire event, there are many other stakeholders that are driving wildfire risk.

This regime is bad policy because it jeopardizes investor-owned utilities' ability to provide reliable and affordable power, as well as the broader Californian economy, by holding these companies liable for billions of dollars of damages.[8] In addition, this regime is bad policy because it creates incentives for others to engage in risky behaviors or to fail to mitigate their contributions to wildfire risk. Accordingly, the current regulatory regime must be reformed: (1) investor-owned utilities should only be held liable for wildfire damages when the company is at fault; and (2) investor-owned utilities should be guaranteed cost-recovery for wildfire damages when they have engaged in prudent mitigation activity.

As EEI has explained elsewhere,[9] California courts have held that investor-owned utilities are strictly liable for any wildfire damage caused by their equipment under the inverse condemnation doctrine. The legislature can override the courts' common law decision to extend the inverse condemnation doctrine to investor-owned utilities. This option is explained in more detail in EEI's whitepaper *Legislative Options to Reform Inverse Condemnation in California*.[10]

Reform of the strict liability regime under inverse condemnation would help reduce the size of third-party damages that electric companies have to pay, help restore some investor confidence in California's regulatory compact, as well as create incentives for others to mitigate the risks over which they have control to reduce wildfires.

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do-about-it (noting that there are 4.5 million California households in the WUI and the WUI in California grew by almost 1,000 square miles between 1990 and 2000).

[6] *See* Wildfires and Climate Change: California's Energy Future A Report from Governor Newsom's Strike Force 14 (April 12, 2019) [hereinafter Strike Force Report].

[7] While the IOUs have invested significantly in fire hazard mitigation, the complete elimination of all fire risk is not possible, and some fire-mitigation measures may be prohibitively expensive in certain areas. For example, while undergrounding is one of the most effective measures to prevent utility caused wildfires because it eliminates the risk that tree limbs will come in contact with power lines, it can cost as much as $3 million per mile. With no control over land use policies, investor-owned utilities will face the increased wildfire hazard exposure that comes from additional houses in the WUI and has no ability to limit this development, leaving only risk-mitigation options while expanding service available.

[8] EEI, *Amicus Curiae Letter in Support of Pacific Gas & Electric Company's Petition for Review*, No. S249429 at 2-6 (July 12, 2018).

[9] *Id.* at 6-7.

[10] Attached hereto as Exhibit A.

B. The CPUC Process Must Be Reformed to Provide Certain Cost Recovery for Investments in Wildfire Mitigation and Damages.

In holding investor-owned utilities strictly liable for wildfire damages regardless of fault, the California courts reasoned that because all customers share in the benefits of the electric system, they should also share in the risks posed by that system, including the increasing risk of wildfire.[11] Critical to this reasoning was the courts' assumption that the investor-owned utilities could spread costs by raising electricity rates through future rate recovery proceedings.[12]

But this assumption, upon which both decisions rest, is fundamentally incorrect, as demonstrated by a CPUC decision in October 2017 that denied SDG&E's application to recover $379 million of inverse condemnation wildfire costs.[13] As explained in the Strike Force Report, this decision severely undermined investors' confidence in investor-owned utilities' stock because it "raised concerns in the capital markets that investors in California utilities were more exposed to wildfire liabilities than previously thought."[14]

As background, investor-owned utilities may only recover non-routine costs, such as wildfire damages, through rates if the CPUC separately determines that they may do so.[15] Under current law, the CPUC will make such a determination if it finds that the electric company acted reasonably and prudently.[16] This "prudent manager" standard requires that the "practices, methods, and acts engaged in by [the] utility follow the exercise of reasonable judgment in light of facts known or which should have been known at the time the decision was made."[17]

While this standard, in theory, allows utilities to recover costs so long as they "exercise . . . reasonable judgment," in practice, past decisions indicate that CPUC is very unlikely to allow IOUs to recover wildfire costs, even under circumstances where the electric company took reasonable steps to prevent and respond to wildfires. In its order denying SDG&E's application, for example, the CPUC found that SDG&E failed to meet the prudent manager standard with respect to its management of facilities prior to the October 2007 Witch Fire, essentially determining that the occurrence of a fire demonstrated that the company failed to act prudently. As a result of this perfection standard, investor-owned utilities and potential investors have read the CPUC decision to indicate that there is very little that utilities can do operationally to ensure,

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[11] *Barham*, 74 Cal.App.4th at 754.
[12] *Pacific Bell*, 208 Cal.App.4th 1400; *Barham*, 74 Cal.App.4th at 752.
[13] *See In re: San Diego Gas & Electric Co.*, Order Denying Application [D. 17-11-033] (Cal. Pub. Util. Comm'n) (Nov. 30, 2017) [hereinafter CPUC Order Denying SDG&E Wildfire Costs]; Order Denying Rehearing of Decision (D.) 17-11-033 [D. 18-07-025] (Cal. Pub. Util. Comm'n) (July 12, 2018); Order Denying Writ for Review, No. D074417, Cal. Ct. of Appeal, 4th District, Div. 1 (Nov. 13, 2018).
[14] Strike Force Report at 31; Moody's Investors Service, *San Diego & Electric Company – Regulator denies SDG&E's recovery of wildfire costs, a credit negative for all California utilities* (Dec. 4, 2017) [hereinafter Moody's SDG&E Credit Opinion].
[15] Cal. Public Utilities Code § 451. For a description of the use of catastrophic event memorandum accounts to address wildfire risks see Carolyn Kousky et al., Wildfire Costs in California: The Role of Electric Utilities, Wharton Issue Brief, Aug. 2018, at 8, *available at* https://riskcenter.wharton.upenn.edu/wp-content/uploads/2018/08/Wildfire-Cost-in-CA-Role-of-Utilities-1.pdf.
[16] *See, e.g.*, CPUC Order Denying SDG&E Wildfire Costs at 9.
[17] *Id.*

with certainty, that they will meet the prudent manager standard in the event of a wildfire and be allowed to recover costs.[18]

The California courts that extended strict liability to investor-owned utilities did not envision that the CPUC would insert its own cost recovery standard into the process. This conflicts with the strict liability regime imposed by inverse condemnation and undermines the cost-sharing rationale of the court decisions that imposed this strict liability on the investor-owned utilities. The Commission, therefore, must take steps to ensure cost-recovery for wildfire damages if California is going to continue to require that electric companies serve as the *de facto* wildfire insurer for the entire State.

Without adequate assurance that investor-owned utilities will receive timely recovery for payment of wildfire damages regardless of the investor-owned utilities' fault, their credit ratings will continue to decline and their costs of capital will continue to increase, which will inevitably increase costs for customers as the basic costs of doing business for utilities increase. Unless California's investor-owned utilities receive either relief for inverse condemnation claims without fault, or timely cost recovery assurance for expenses related to such claims, they will continue to be subject to a confiscatory rate regime—strict liability for billions in dollars of wildfire damages, but no recovery assurance for these unavoidable costs.

One way to accomplish this would be for the Commission and legislature to create a distinct standard by which the CPUC will review requests for cost recovery for wildfire damages. The legislature has the ability to simply and clearly direct CPUC to grant rate recovery to electric companies for a particular class of costs and issue such a directive outlining the circumstances in which catastrophic wildfire losses should be automatically recoverable.[19] For example, the legislature could direct the CPUC to allow IOUs to recover costs when they have demonstrated substantial compliance with wildfire mitigation plans. Such an approach would incentivize wild fire mitigation efforts and would stop the CPUC from equating prudence with the prevention of all wildfires.

The Strike Force proposes a number of CPUC reforms that it terms "safety incentives." These incentives include a number of measures directed at board-level risk management for wildfires and adjusting the allowed return on equity that utilities can earn based on their wildfire performance.[20] No further details are provided on any of these proposals. Any such reforms must be coupled with reforms to the CPUC's standard for reviewing requests for recovery of wildfire damages.

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[18] *See, e.g.*, Moody's SDG&E Credit Opinion ("The SDG&E ruling may make it difficult for utilities to meet the CPUC's prudency standards in the future."). This problem is also due in part to the lack of clear regulations and standards for wildfire response and mitigation measures. In their absence, IOUs lack clarity regarding what level of mitigation they should engage in and how exactly to respond to wildfires in order to avoid liability. As discussed further below, pre-approved wildfire management plans could address this issue. *See* text, *infra*, accompanying notes 29-33.

[19] *See, e.g.*, CAL. PUB. UTIL. CODE § 8386(h)(3) ("The commission shall authorize the electric corporation to recover in rates the costs of the independent evaluator.").

[20] Strike Force Report, *supra* note 6, at 12.

C. Even With Reform of the Liability Standard and More Certain Cost Recovery, Utilities Need More Tools to Address Financial Risk to Protect Themselves and Their Customers.

Because the insurance market is not capable of addressing the enormous liabilities associated with the recent wildfires in California, and as the Governor's Strike Force Report correctly notes,[21] California's investor-owned utilities cannot survive under the current regulatory regime, which holds them strictly liable for wildfire damage without any guarantee of cost recovery through rates. However, even with reform of the liability regime and more certain cost recovery for potential wildfire damages, utilities will need a broad variety of insurance or other risk-shifting options cover different tranches of wildfire risk and ensure that sufficient capital resources will be available to compensate wildfire victims in the event of a catastrophic loss.

In past decades, the traditional insurance market provided sufficient and affordable protection for wildfire liability for California's investor-owned utilities because wildfire liabilities were smaller. But due to the rise in frequency and severity of wildfires in California along with the current liability regime, this is no longer the case. The traditional insurance market alone cannot provide a solution for wildfire funding for at least three reasons: (1) premium rates; (2) funding for the cost of those premiums; and (3) market capacity.

Insurance premiums for California's investor-owned utilities have sky-rocketed in recent years to a cost of approximately 25 percent of the limit purchased.[22] California's investor-owned utilities each have purchased between $1 billion and $1.5 billion of insurance, which results in an annual premium spend for each investor-owned electric company of between $250 million and $375 million. If they were able to purchase insurance in an amount that would cover a truly catastrophic wildfire, the annual spend would be much higher. For example, even if an electric company was able to purchase $30 billion in insurance for wildfire liability—which, as discussed below, it could not—the annual spend on premium would be billions of dollars. And the pricing for this coverage would continue to increase rapidly if California continues to experience year-over-year wildfires.

The cost of these insurance premiums is generally passed on to the utilities' customers.[23] It is clearly untenable for annual premiums of billions of dollars to be spread among electricity customers. It is equally untenable to expect any investors to contribute that amount of capital on an annual basis solely to fund the purchase of insurance. While it is currently feasible for investor-owned utilities to purchase approximately $1 to $1.5 billion of insurance, that amount of insurance will not protect wildfire victims in the event of a catastrophic wildfire.

Further, the traditional insurance market does not have sufficient capacity. California investor-owned utilities are limited by premium rates, but they are also constrained by the limits that traditional insurers are willing to risk in any given year. The amount of insurance carried by California's investor-owned utilities suggests that the market is unwilling to provide insurance of over $1.5 billion to any individual investor-owned electric company, much less annual limits of

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[21] Strike Force Report, *supra* note 6, at 27.

[22] *See* Carolyn Kousky, Katherine Greig and Brett Lingle, "Financing Third Party Wildfire Damages: Options for California's Electric Utilities," February 2019, at 12, attached hereto as Exhibit B.

[23] *Id.*

$30 billion or more to each company. And if wildfires continue to occur year-over-year without any changes to the liability regime, more insurers are likely to decline to cover utilities at all for wildfire risk.

There are other insurance-like solutions that could provide some amount of funding for wildfire damages, including catastrophe bonds, industry captive insurance companies, and risk pools, each of which is described at length in the Wharton Insurance Report attached hereto as Exhibit B. While all of these tools can and should be used to layer a "tower" of protection for utilities and wildfire victims, none of these tools are adequate to finance catastrophic losses on a high frequency basis. At most, these tools can increase the amount of capital available to repay wildfire victims by an order of magnitude.

The Strike Force Report begins to develop some of the other financing and insurance tools that utilities will need to address wildfire liabilities. These are presented as alternatives. As discussed below, however, these concepts will need to be layered to provide sufficient resources for wildfire victims while protecting the financial health of utilities and their customers.

1. **The proposed Liquidity Fund would be of limited value; self-insurance that is recovered in electricity rates may be a better option to ensure sufficient resources are available for wildfire victims.**

The Strike Force proposes a Liquidity Fund that would provide a resource for utilities to make payments related to catastrophic wild fires in the time period between when the cause of the fire is determined and when the CPUC makes a determination of whether the costs and be recovered from ratepayers. While additional tools to allow investor-owned utilities to securitize debt as a tool to raise capital in the aftermath of a catastrophic wildfire may be needed, it is not clear how the Liquidity Fund would accomplish this goal.

As proposed, the Liquidity Fund would act as a revolver, ultimately being repaid through rate recovery or by electric company shareholders, depending upon whether the IOU is determined to have met a yet-to-be-defined recovery standard. Without significant changes to the application of inverse condemnation, discussed above, it is unclear how the proposed Liquidity Fund would provide certainty to the market. In the experience of EEI's members, it is the possibility of significant, recurring wildfire liabilities that cannot be recovered in rates that has caused uncertainty in the market. It is not clear how the Liquidity Fund will address these concerns in any fashion.

The Strike Force seeks comment on the impacts of a liquidity-only fund on electricity rates and affordability. Without a significant overhaul to the current CPUC cost recovery standard so that it allows for the socialization of wildfire costs in rates, EEI does not expect that the Liquidity Fund will have any meaningful impact on the credit ratings or borrowing costs of California's investor-owned utilities. Accordingly, a Liquidity Fund would not help alleviate the costs of wildfires and therefore will not have an impact on preventing increases in rates.

Rather than allowing the CPUC to manage a large Liquidity Fund, customers and investor-owned utilities likely would be better served if the utilities are permitted to recover self-insurance layers that are included in their general rate case. With a self-insurance layer in addition to any

commercially reasonable wildfire damage insurance, each IOU can direct the funds to either investments that return income to enhance liquidity and make sure there is sufficient cash on hand to respond to wildfire expenses.

2. If designed properly, a Wildfire Fund could help achieve several of the Strike Force Report's policies goals.

A Wildfire Fund is one of the many insurance tools that IOUs will need to manage catastrophic wildfire liability on a going forward basis. For the fund to play a meaningful role in stabilizing California's economy and helping the State both adapt to climate impacts and mitigate climate change, it must be part of an integrated framework for the reduction of wildfire risk. If properly designed, the Wildfire Fund has the potential to deliver substantial benefits to electricity consumers, investor-owned utilities, insurance companies, homeowner ratepayers, and the State and local governments. A key issue, however, will be who pays into the Fund.

While determining which stakeholders pay into the Fund is a critical design issue for the Commission to consider, other design elements are equally important and provide opportunities to achieve multiple objectives, including streamlining claims, addressing underinsurance concerns, and providing a more equitable sharing of wildfire costs that recognizes the different risks of wildfire faced by different property owners. The Commission should consider the following design principles: First recovery by insurers should be capped at a level that is consistent with the typical settled value of subrogated insurance claims, discussed in more detail below. Second, property owners should be required to present their claims for the underinsured portions of their losses to the fund, allowing for the implementation of a number of mechanisms to encourage property owners to maintain adequate insurance coverage and ensure that Wildfire Fund dollars are distributed in a manner that provides more protections for lower income customers.

The Strike Force's proposal to require all insurers in California to present their claims to the Fund is an important design element. This could reduce the transaction costs associated with insurance company recoveries by forgoing protracted and expensive litigation. EEI's review of the available data suggests that subrogated insurance claims brought by insurers against utilities typically settle for approximately 50 percent of their book value. Accordingly, EEI agrees with the Strike Force recommendation that insurers' claims against the fund should be capped and suggests that 50 percent of the claim value is a reasonable amount of compensation from the Wildfire Fund. This structure would require the insurance industry to share in the costs of catastrophic wildfire and has the potential to reduce the required size of the Wildfire Fund to a manageable level.

The Strike Force Report suggests that the Wildfire Fund would administer claims by insurance companies and be available as a resource for investor-owned utilities to seek reimbursement when they have settled uninsured claims with property owners. EEI encourages the Commission to instead develop a framework where individual claimants with uninsured losses can also present their claims directly to the Wildfire Fund. Such a mechanism could spare property owners the time, expense, and uncertainty of litigation and instead compensate wildfire victims in the most efficient manner possible. As discussed below, this structure also has the potential to provide more complete compensation to lower income property owners.

Any fund administering property owner claims must recognize that the compensation provided to wildfire victims in California in events where electric companies are found to not have violated a fault standard is effectively a form of social insurance. That is, California has made an explicit policy choice that it does not wish to make individual property owners bear the whole cost of their exposure to wildfires—instead preferring to socialize it across other residents. This approach is seen in many contexts where governments must determine how to deal with natural hazard exposure faced by their citizens, and states often respond by relying on a variety of social insurance mechanisms that spread costs across the entire tax base (e.g., Stafford relief) or a ratepayer base (e.g., the Florida Hurricane Catastrophe Fund).[24] In fact, the socializing of disaster losses and government actions to reduce natural hazard exposure have become so pervasive they tend to influence property-owner decision making, encouraging more people to live in areas with high natural hazard exposure.[25] Therefore, it is essential that any approach to compensating wildfire victims recognize the central role that communities play in wildfire hazard reduction and create incentives for individual property owners to mitigate their wildfire hazard exposure.

In addition to providing for more efficient recoveries, channeling direct property owner claims to the Wildfire Fund could allow for a design that creates incentives for reducing property owner exposure to wildfire risk and ensure that payments from the fund go to those residents who are least able to bear the costs of a catastrophic wildfire. The Commission should adopt a model for the Fund based on the flood-specific provisions of the Stafford Act in which property owners are required to maintain insurance after receiving an initial payment under the federal disaster relief programs.[26] Under the current federal model, homeowners who fail to maintain required insurance coverage after receiving payments for a flood loss are ineligible to receive federal disaster aid in future flood events.[27] Similarly here, the Commission could structure the fund such that all property owners are entitled to receive an initial payment after their first catastrophic wildfire loss, but condition eligibility for subsequent payments on maintaining adequate insurance coverage. If combined with the insurance pricing incentives recommended by the Strike Force,

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[24] The Stafford Disaster Relief program is administered by the Federal Emergency Management Agency, making funds available in the aftermath of a Presidentially declared disaster event. 42 U.S.C. § 5170. Stafford relief is available for a wide array of measures including emergency services, temporary housing assistance, individual property owner assistance for rebuilding, and assistance for the rebuilding of key community infrastructure such as hospitals and schools. *Id.* §§ 5171, 5172(a), 5174(c). Money spent in Stafford Disaster relief is drawn from the general federal budget in the form of special Congressional appropriations in the aftermath of a disaster event. *See* CONGRESSIONAL RESEARCH SERVICE, 2017 DISASTER SUPPLEMENTAL APPROPRIATIONS: OVERVIEW (2018) (describing three supplemental appropriations bills providing $120 billion in budget authority for hurricane and wildfire disasters in 2017), *available at* https://fas.org/sgp/crs/homesec/R45084.pdf, Thus, the Stafford program socializes the costs of federally declared disasters across the entire tax base.

The Florida Hurricane Catastrophe Fund is a state-backed reinsurance program developed by Florida in the aftermath of Hurricane Andrew. David Adams, *Hurricane Season and Florida's Insurance System: Living on Borrowed Time?,* Insurance Journal (June 3, 2013), http://www.insurancejournal.com/news/southeast/2013/06/03/294104.htm. Rather than have insurers exist the property and casualty market in the State over an inability to charge higher risk-based premiums, the State chose to develop a state-backed reinsurance program to cover the excess risk of hurricane losses. 2009 Fla. Stat. § 215.555 (2014). The Florida Hurricane Catastrophe Fund is funded by premiums paid by insurers to the Fund, and the Fund also has the ability to issue bonds to cover its costs in the event of a large loss. *Id.* § 215.555.

[25] For a discussion of these factors and a review of the literature on property owner decisionmaking see MARGARET E. PELOSO, ADAPTING TO RISING SEA LEVELS: LEGAL CHALLENGES AND OPPORTUNITIES 43-80 (2017).

[26] 42 U.S.C. § 5154a.

[27] *Id.*

such a requirement could provide a powerful incentive for wildfire hazard mitigation at the property-owner level.

For individual claimants, the Wildfire Fund could implement two measures for the reimbursement of uninsured losses that would help to ensure that resources flow to those who need them most. First, like the Stafford Disaster Relief Program's flood provisions, the Wildfire Fund could prohibit property owners from making recoveries for properties that are not their primary residence.[28] Second, for the un- or underinsured portion of claims brought to the Fund by property owners, the Commission could recommend a sliding scale of recovery for the loss based on the amount claimed (e.g. full recovery up to $500,000, 50 percent recovery excess losses between $500,000 and $1,000,000, 25 percent recovery on excess losses between $1,000,000 and $2,000,000, and no recovery above the $2,000,000 threshold).

One of the key design elements of any fund approach will be differentiating between utility-caused wildfires where the conduct of individual companies exceeded a fault standard—meaning that costs should be borne by the company and its shareholders—or whether they are costs that can be socialized across the rate base. SB901 introduced the concept of wildfire mitigation plans ("WMPs") that are subject to approval by the CPUC.[29] Under SB901 once a WMP is approved, the investor-owned utilities are required to use independent evaluators to asses compliance with their approved plans, and the CPUC is to consider this information in any subsequent proceeding for cost recovery.[30] The WMP construct and adherence to the WMP's requirements should be used to determine whether catastrophic wildfire costs will be borne by the Wildfire Fund or by the individual utility.

To enhance confidence in this system, the minimum requirements for a WMP should be more clearly mandated by the legislature.[31] In addition, any program for establishing enhanced CPUC oversight must be coupled with reform of the CPUC to enhance its technical capabilities to review WMPs and engage in continuing evaluation of compliance. The Commission should evaluate the creation of a new Wildfire Safety Branch in the CPUC's Safety and Enforcement Division consisting of a professional staff with expertise in wildfire risk management. The work of the Wildfire Safety Branch could be modeled after the process currently used by the California Coastal Commission, in which the professional staff with significant technical expertise issue a staff report including recommended actions for each major permitting action that the Coastal Commission takes.[32] Similarly, the Wildfire Safety Branch could provide expert review of WMPs,

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[28] 42 U.S.C. § 5174(b).
[29] *See* CAL. PUB. UTIL. CODE § 8386(b).
[30] *Id.* § 8386(h).
[31] Under SB901's provisions foe wildfire management plans, many of the factors are vaguely defined in the statute, looking to the investor-owned utilities to define factors such as what constitute adequate performance benchmarks and progress metrics, what is the appropriate level of vegetation management, and what are appropriate plans for infrastructure maintenance. *Id.* § 8386(c). In turn, while the CPUC "shall" consider the plan and adherence to it any subsequent rate proceeding, there is no requirement that the CPUC permit recovery of the costs associated with implementing the WMP. *Id.* § 8386(g). Instead, the Commission should evaluate the feasibility of more prescriptive requirements for WMPs, such as prescriptive levels of risk reduction that must be achieved, coupled with automatic inclusion of the costs associated with WMP execution in future rate proceedings.
[32] *See,* California Coastal Commission, Meeting Rules & Procedures, https://www.coastal.ca.gov/meetings/rules-procedures/; *see, e.g.*, California Coastal Commission, Staff Report: Permit Amendments Th23a & Th23b, Apr. 18,

and make recommendations for additional required measures for wildfire hazard risk reduction. The Commission should also evaluate how a newly established Wildfire Safety Branch could evaluate ongoing compliance with a WMP (or what kind of post-event investigation the Wildfire Safety Branch would conduct to determine substantial compliance with the WMP). As a further incentive for WMP compliance, the Commission could evaluate a structure in which investor-owned utilities would not be entitled to a prudence hearing for the recovery of costs in a fault-based event unless the company can first make the showing that it has complied with its WMP in all material respects.[33]

III. Other Options for Mitigation Wildfire Hazards and Encouraging Resilience

Any comprehensive approach to addressing the challenge of catastrophic wildfire events must include efforts by all stakeholders to reduce wildfire hazard exposures. Efforts to reduce wildfire hazards require a separate pool of resources that are aimed at reducing the potential for future catastrophic wildfires. Successful hazard mitigation is related to the fund options proposed by the Strike Force Report because it can reduce the size of the fund that would be needed because the frequency and scope of catastrophic wildfires would be reduced. For wildfire hazard mitigation to be most effective, the Commission should evaluate structures that could help all stakeholders use their resources collectively to target the actions that will lead to the most significant reductions in wildfire hazard exposure. Such a structure would require two innovations by the Commission not raised in the Strike Force report. First, the Commission should explore tools to evaluate, rank, and deploy capital to support the most effective measures to reduce hazard exposure. Second, the Commission should evaluate whether an additional pool of capital will be necessary to effectively mitigate hazard exposure.

Hazard Mitigation by Utilities: Wildfire Mitigation Plans will be a centerpiece of utility efforts to mitigate wildfire hazards. Common elements that emerge across WMPs include: (a) expansion of situational awareness and weather monitoring, (b) investment in grid hardening, such as investment in coated conductors, and (c) expansion of vegetation management practices. In line with these and other practices, investor-owned utilities have committed in their WMPs to invest significant resources in building and updating weather stations; employ additional cameras to monitor risks; use best practices in data analytics and global information system ("GIS") monitoring; update communications strategies and equipment; increase inspections, patrols, and trimming of vegetation; and undertake many other innovative approaches to managing wildfire risks.[34] The innovative approaches each company has taken to manage wildfire risks reflect the diverse geography of each company's operations as well as customer and stakeholder needs. For

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2019 (providing assessment of consistency of a proposed permit with approved local coastal plan requirements for biological resource protection and landform modification).

[33] Under this type of a structure, the CPUC could rely upon the independent evaluation of compliance with the wildfire management plan required under CAL. PUB. UTIL. CODE § 8386(h), including a new compulsory standards for risk mitigation. The Commission could craft a series of clear, compulsory standards that are easy to verify (e.g., putting reclosers in manual mode or disabling them in certain conditions) and require verification that these standards be met before a proceeding for recovery of wildfire costs may begin.

[34] Southern California Edison Company, Wildfire Mitigation Plan (2019); PG&E, Wildfire Mitigation Plan (2019); San Diego Gas & Electric, Wildfire Mitigation Plan (2019); Liberty Utilities/CalPeco Electric, Wildfire Mitigation Plan (2019); Bear Valley Electric Service, Wildfire Mitigation Plan (2019); PacifiCorp, Wildfire Mitigation Plan (2019). All investor owned electric company WMPs can be found on the CPUC website at: http://cpuc.ca.gov/SB901/.

example, PG&E's WMP includes not only many of the above-listed elements but also the concept of resilience zones, which would allow customers access to key public services such as grocery stores and gas stations during time of power shutdowns.[35] The WMP of Southern California Edison ("SCE") includes many of the same elements and also discusses SCE's continued assessment of alternative technologies to prevent ignition events and reduce public exposure.[36] The WMP of San Diego Gas & Electric ("SDG&E") includes many of the same elements as well as a plan to acquire a second helicopter for dispatch by CalFire for active firefighting and patrolling of power lines.[37] As companies continue to develop and share best practices in this area, WMPs are one tool that will enhance companies' ability to mitigate wildfire hazards.

As discussed above in connection with the Wildfire Fund, reforming the CPUC to provide comprehensive technical evaluation of WMPs when they are submitted and monitor implementation could provide additional tools to promote wildfire hazard mitigation. The Commission should evaluate the role that new technical experts at the CPUC could play in evaluating emerging best practices and adding on to any requirements for WMPs that are specified by the legislature. In addition to the measures highlighted in the WMPs, there are two other tools potentially available to the investor-owned utilities that the Commission should consider: public service power shutoffs and the potential for differential rate classes.

Under the California Public Utility Code, utilities are permitted to de-energize lines to protect public safety.[38] The CPUC has interpreted these provisions to permit public safety power shutoffs during high wind events in order to prevent wildfires.[39] In the last two years the investor-owned utilities have used public safety power shutoffs on numerous occasions during high wind events to prevent additional wildfire events. Reports to the CPUC on these events demonstrate that public safety power shutoffs likely prevented additional wildfire events. For example, in a report on its November 2018 public safety power shutoff SDG&E reported that in post-event patrols before lines were put back into service: "SDG&E crews reported wind-related damage to five overhead circuits. The damages included broken wire strands, broken cross arm, tree in secondary wire, tree branch (debris) in conductors and a severely leaning pole."[40] Similarly, after an October 2018 public safety power shutoff PG&E's report to the CPUC documented numerous instances of wind-caused damage in post-event patrols stating:

> During these patrols, PG&E personnel discovered 23 instances of wind-related issues across impacted divisions that required remediation prior to re-energizing. This included 18 instances of damage to PG&E equipment, 15 of which appear to have been caused by falling vegetation. In addition to damaged assets, PG&E personnel also discovered five cases of documented hazards (all

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[35] PG&E, Wildfire Mitigation Plan at 99.
[36] SCE, Wildfire Mitigation Plan at 71.
[37] SDG&E, Wildfire Mitigation Plan at 84-85.
[38] CAL. PUB. UTIL. CODE §§ 451, 399.2(a).
[39] *See* CPUC Resolution ESRB-8,
at 2, http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M217/K801/217801749.PDF.
[40] San Diego Gas & Electric Company, SDG&E Report on De-Energization Events: November 11-16, 2018, Dec. 4, 2018, http://cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/News_Room/NewsUpdates/2018/SDGE%20De-Energization%20Report%20(Nov%2011-16%202018%20RFW).pdf.

vegetation-related), such as branches found lying across conductors, which were cleared prior to re-energizing.[41]

Each of these reports explains that the decision to conduct a public safety power shutoff was a last resort driven by extreme fire danger conditions during periods of very low humidity and very high winds, conditions that are likely to increase in frequency and severity with climate change.[42]

Public safety power shutoffs are proving an essential tool to prevent catastrophic wildfires, but they are not without impact to utilities and the communities they serve. While the consequences of power outages are certainly less severe than the complete loss of a community due to catastrophic wildfire, the likelihood that public safety power shutoffs will impact reliability increases as the impacts of climate change are felt and wildfire hazards increase. This means that California communities are left with two choices: accept a future in which electric service is subject to frequent interruption during wildfire season (which may become nearly year-round with climate change) or work collaboratively to increase local resilience to interruptions in transmission services that are necessary to mitigate catastrophic wildfire risk.

Providing community-level resilience will require significant investments in local infrastructure, including storage and distributed energy resources, and the investor-owned utilities can play a vital role in making this resilience a reality. This will require the Commission to design a number of modifications to the current legal and regulatory system to encourage resilience. First and foremost, investor-owned utilities must be empowered to make additional investments in storage and grid resiliency measures at the community level. The California Public Utility Code already permits the CPUC to grant rate recovery for the installation of energy storage systems.[43] The Commission should evaluate a strengthening of this framework under which new statutory requirements for installation of storage and other resilience measures for areas impacted by public service power shutoffs are prescribed and rate recovery for these measures is guaranteed by statute.

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[41] Pacific Gas & Electric Company, PG&E Public Safety Power Shutoff Report to the CPUC, Oct, 31, 2018, at 9, *available at* http://cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/PGE%20PSPS%20Report%20Letter%2020181031.pdf.

[42] *See* James M. Vose, et al., 2018: Forests 241 *in* Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [D.R. Reidmiller, et. al. (eds.)] doi: 10.7930/NCA4.2018.CH6 ("The duration of the season during which wildfires occur has increased throughout the western United States as a result of increased temperatures and earlier snowmelt. Increased vapor pressure deficit (Ch. 21: Midwest, Figure 21.3) and reduced summer precipitation have deepened summer droughts in the West and thus increased wildfire risk. By the middle of this century, the annual area burened in the western United States could increase 2–6 times from the present, depending on the geographic area, ecosystem and local climate."); Yufang Jin, et. al., *Identification of Two Distinct Fire Regimes in Southern California: Implications for Economic Impact and Future Change*, 10 Environmental Res. Letters 094005 at 9 (2015) (reporting that 4 out of 5 models run in the study predicted more intense Santa Ana events, which are expected to increase the Santa Ana fire season).

[43] Cal. Pub. Util. Code § 2838.2(c)(1) states that "[t]he commission may approve, or modify and approve, programs and investments of an electrical corporation in distributed energy storage systems with appropriate energy storage management systems and reasonable mechanisms for cost recovery[.]" Under the definitions section applicable to Chapter 7.7, an "energy storage system" may "[b]e . . . owned by a load-serving entity . . . ." *Id.* § 2835(a)(2)(B). A "load-serving entity" is defined as "an electrical corporation, electric service provider, or community choice aggregator." *See id.* § 380; *see also id.* § 2835(b) (noting that a load-serving entity has the same meaning as defined in § 380). In defining "procurement" in reference to acquiring by ownership or contractual right to use the energy from or capacity of an energy storage system, section 2835(f) mandates that "[n]othing in this chapter, and no action by the commission, shall discourage or disadvantage development and ownership of an energy storage system by an electrical corporation." *Id.* § 2835(f).

The Commission should endorse and approach that allows investor-owned utilities to identify the parts of their service territories that are most susceptible to service interruptions from public service power shutoffs and recover the costs of additional investments in storage and other resiliency measures in these communities.

Another tool that the Commission should evaluate to promote community resilience is the use of differential rate structures. Differential rates are potentially attractive because they can both provided necessary capital to take measures that reduce wildfire risk and they can be designed to minimize rate impacts to customers outside of the WUI.[44] The Commission should consider two options for differentiated rates. In the first, investor-owned utilities would be permitted to collect funds necessary to achieve hardening of infrastructure in the WUI, which could reduce the need for public service power shutoffs. This could be achieved either through a surcharge on the bills of customers living in high fire hazard areas. The second alternative would be a surcharge focused on communities at the highest risk of public service power shutoffs, with the funds to be spent on storage and other measures that minimize the disruptive effects of public service power shutoffs in impacted communities.

In evaluating potential sources of funding for local resilience that minimizes the impact of public service power shutoffs, there are several other options that the Commission should explore. First, the Commission should examine the current uncertainty regarding the economic loss rule in California and evaluate whether economic loss dollars should flow directly to individual customers or if they should be diverted to a fund that could be invested in measures to reduce the impacts of future public service power shutoffs.[45] Second, federal funds through FEMA's Hazard Mitigation Grant Program are available for wildfire mitigation projects at the individual or community level.[46] The Commission should evaluate how California can create integrated risk reduction programs where the investor-owned utility, local government, and federal resources could be combined to invest in resilience measures that would mitigate the impacts of public service power shutoffs.

Hazard Mitigation by State and Local Governments: The Commission should evaluate the role that changes to and enforcement of existing state and local government policies could mitigate wildfire risk. First and foremost, as the Strike Force correctly recognizes, California must make a public policy choice about how many people should live in high wildfire hazard exposure areas in the WUI.[47] Population growth in the WUI not only puts Californians who move to high fire hazard zones at risk but also negatively impacts all Californians, who indirectly pay for the costs of wildfires. Therefore, the Commission and local governments must grapple with the larger climate adaptation question of how wildfire risks will continue to evolve and how land use practices must change to respond to increased wildfire hazard in the future. As the Strike Force correctly

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[44] Note that placing the financial impacts of fire hazard mitigation on customers living the WUI is potentially desirable from an economic perspective because it translates the enhanced fire risk in the WUI into a price signal, potentially encouraging Californians to invest in property in areas with lower wildfire hazard exposure.

[45] In California, as in virtually every other state, plaintiffs generally cannot recover for purely economic losses in negligence cases. However, a case currently before the State Supreme Court could change California's approach to this issue. *See* Brief of Amici Curiae, Southern California Edison et al., *Southern California Gas Leak Cases*, No. S246669 at 16-17 (Sept. 5, 2018). Elimination of the economic loss rule in California would expose investor-owned utilities to claims for purely economic harms during public safety power shutoffs, further increasing the cost of wildfire hazard mitigation.

[46] *See* https://www.fema.gov/hazard-mitigation-grant-program.

[47] Strike Force Report, *supra* note 6, at 14.

recognizes, the Commission must consider techniques to promote regional land-use planning and encourage building in less fire-prone areas.[48] State and local governments should also take measures to ensure that they have invested in and provided sufficient infrastructure for emergency response that reflects the land use choices made in their communities.

Beyond basic zoning authority, which can shape the nature of development in the WUI, there are a number of measures available for local government wildfire hazard mitigation that the Commission should evaluate. First, the Strike Force Report notes updates to state building codes in 2008 to improve fire-resistance and efforts to educate homeowners about retrofitting.[49] The Commission should evaluate what tools might be available to require homeowner retrofitting (for example as a potential permitting condition when modifications are made to an existing home).

Second, the Commission should evaluate how to make California's defensible space rules more effective. The California Public Resources Code requires property owners in certain high wildfire hazard areas to maintain a zone of defensible space around any structure on their property that is free from vegetation.[50] Few local jurisdictions have developed the requisite programs to educate the public on and enforce these rules, which could substantially reduce the probability of loss in a wildfire event.[51] The Commission should evaluate what mechanisms are available to State and local governments to enforce the defensible space rules and how they could be encouraged to do so.

Hazard Mitigation by the Insurance Industry: EEI supports the Strike Force's recommendation that insurance rates be structured to provide communities or individual homeowners with financial incentives to engage in wildfire hazard mitigation. Past examples clearly demonstrate that in order for such incentives to be effective, baseline property insurance rates in the WUI should be allowed to increase significantly, with substantial rate discounting offered for risk reduction measures.[52] The clearest example of the level of financial incentives that may be necessary to incentivize homeowner risk reduction is drawn from the rebuilding after Hurricane Sandy. Historically, research on the National Flood Insurance program demonstrated that homeowners were very unlikely to mitigate their flood risks in rebuilding after a loss, and this behavior was largely attributed to heavily subsidized flood insurance rates and homeowner expectations that the would not experience a similar loss in the future.[53] When Hurricane Sandy hit the New York metropolitan area, New York and New Jersey had just received updated flood maps from FEMA (a key determinant of rates). Under NFIP, rates are determined by the flood zone in which a property resides, and homeowners can receive rate reductions for elevating their

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[48] *Id.* at 15.
[49] *Id.* at 15.
[50] CAL. PUB. RES. CODE § 4291.
[51] *See, e.g.*, New York Times, In California, Mixed Results for Regulations Meant to Help Stop Fires (Dec. 11, 2017), https://www.nytimes.com/2017/12/11/us/california-widlfires-prevention-regulations.html (noting that California's defensible space regulations are less effective because "communities do not enforce them").
[52] *See* Howard Kunreuther, *Disaster Mitigation and Insurance: Learning from Katrina*, 604 ANNALS AM. ACAD. POL. & SOC. SCIENCE 208, 212 (2006) (arguing that people either don't understand or willfully ignore probabilities of disaster loss); Howard Kunreuther & Anne E. Kelffner, *Should Earthquake Mitigation Measures be Voluntary or Required?* 4 J. REGULATORY ECON. 321 (1992) (finding that even when equipped with accurate information on risks, property owners will underinvest in loss reduction measures).
[53] Christine M. McMillan, Comment, *Federal Flood Insurance Policy: Making Matters Worse*, 44 HOUS. L. REV. 471, 475 (2007).

homes out of the 100-year flood plain. With the new maps in place, the difference in premiums soared with annual premiums up to $10,000 for houses that were not elevated as compared to a few hundred dollars for those on stilts that placed the first floor of the home above the 100-year flood plain.[54] In response, many communities updated their floodplain regulations to secure lower insurance rates for local residents and elevated homes have now become the norm.[55] This example demonstrates that when set at the correct levels, insurance pricing incentives can be an important driver of property owner risk reduction. The Commission should evaluate the types and levels of incentives that would be necessary to encourage property owner hazard mitigation and evaluate what changes, it any, need to be made at the California Department of Insurance to compel the use of such pricing incentives.

As a funding tool for mitigation, the Commission should also consider whether any tax should be placed on home insurance policies for those homes in high-risk areas, or for some sub-set of such homes (e.g., homes that are vacation homes rather than primary residences or homes that are worth substantially more than the cost of the average home). This could help the State raise funds for larger mitigation efforts such as vegetation management. Such a tax, of course, would require a contribution from the homeowners rather than the insurance companies themselves.

The Strike Force Report notes that costs from wildfires should be allocated "in a manner that shares the burden broadly among stakeholders, including utilities (ratepayers and investors), insurance companies, local governments, and attorneys."[56] Although insurance companies have premium ratepayers and investors of their own, no one has yet suggested that some portion of wildfire costs should be allocated to both of these constituencies. While it may appear on the surface as though insurance companies are suffering significant losses from the wildfires,[57] there is more to the story. For all wildfires, insurers have access to reinsurance protection. Because reinsurance is often purchased for a large portfolio of policies that include risks in many states (e.g., homeowners insurance policies issued by an insurance group across the United States), insurers have the ability to smooth out catastrophic losses by spreading risk across a larger pool. Moreover, in wildfires allegedly caused by electric utilities, insurers pursue subrogation recoveries against the utilities. Anecdotal evidence suggests that a significant majority of all wildfire claims against utilities are brought by subrogating insurers, seeking recovery for payments already made by the insurers to insured homeowners. Historically, utilities have settled these claims between 50 and 60 percent, meaning that insurers are reimbursed by utilities for over half of their stated loss. And insurers generally pass on these recoveries to their reinsurers. As a result, utilities are being forced to act as *de facto* reinsurers for homeowners insurance companies in California.

Given this situation, the Commission should consider whether an appropriate contribution from insurance companies should include two components: (1) a tax imposed on certain

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[54] *See* Les Christie, *Flood Insurance Soaring for Thousands of Homeowners*, CNN, Oct. 21, 2013, https://money.cnn.com/2013/10/21/real_estate/flood-insurance/index.html.

[55] Claire Lowe, *Elevated Beach Homes the Norm Since Superstorm Sandy*, CLAIMS J., Apr. 24, 2017, https://www.claimsjournal.com/news/east/2017/04/24/278086.htm.

[56] Strike Force Report, *supra* note 6, at 3.

[57] *See* LLOYD DIXON ET AL., RAND CORPORATION, THE IMPACT OF CHANGING WILDFIRE RISK ON CALIFORNIA'S RESIDENTIAL INSURANCE MARKET 51-53 (2018) (losses incurred by homeowners' insurers exceed the amount of premium charged in some years, especially years with a catastrophic wildfire like 2017).

purchasers of homeowners insurance to fund wildfire mitigation efforts; and (2) a cap on subrogation recoveries that insurance companies can receive from utilities (e.g., a recovery cap of 50 percent of each insurer's payments to its insured homeowners). Given the historical settlement range for subrogated claims, the Commission should set the cap for subrogated claims at 50 percent as this will save consumers money and should result in the same effective recovery for insurance companies who will be able avoid litigation costs by bringing their claims directly to the fund. This cap could be removed if an electric company is found to have acted imprudently.

Lessons Learned from Insurance Company Regulation. In California, like utilities, most homeowners insurance companies must seek rate approval from a state regulator.[58] While utilities present their general rate cases to the CPUC, insurance companies seek rate approval from the California Department of Insurance ("CDI"). Unlike a general rate case before the CPUC, however, the CDI rate approval process does not result in a rate schedule that fixes rates for classes of customers. Instead, the CDI employs a prior-approval rate-making formula that sets a minimum and maximum allowable premium for each insurer's portfolio of policies.[59] After receiving rate approval, the insurers offer insurance to homeowners within their pre-approved rate range, based on the insurers' evaluation of individual homes on a case-by-case basis and the insurers' assessment of a given area's wildfire risk. On its web site, the CDI warns homeowners that "many insurers also apply a surcharge to the premium for homes located in areas with a comparably higher risk for wildfires. Those wildfire-related surcharges can range from 15 percent to over 300 percent depending on a home's vulnerability to the risk of wildfire . . ."[60] Moreover, homeowners insurers can decline to offer or renew insurance in high-risk areas, and insurers can cancel existing insurance policies on 45 days' notice.

Under the regulatory compact, California's utilities must provide electricity to all California residents, but the utilities do not have the ability to apply any type of surcharge to those residents living in high-risk areas. Such a discretionary surcharge (within a range pre-approved by a state regulator), or even a differential rate class, could be used to help finance mitigation efforts. The legislature could encourage specific mitigation actions to be undertaken by utilities—including undergrounding of power lines, hardening the distribution system, or other actions—by directing the CPUC to allow utilities to apply a surcharge to residents in high-risk areas for mitigation actions intended to protect that area.

IV. Conclusion

EEI thanks the Commission for this opportunity to provide input on the necessary measures to address catastrophic wildfire risks in California. In order to take meaningful steps to mitigate

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[58] Some homeowners' policies are issued by surplus lines insurers (i.e., insurers not subject to the same rate regulation by the State as admitted insurers). However, estimates suggest that the percentage of homeowners' insurance policies placed in California by surplus lines insurers is less than 2%. *See* The Surplus Line Association of California, "Surplus Lines and Homeowners Insurance," available at http://www.slacal.org/publications/surplus-lines-and-homeowners-insurance (surplus lines place 1.4% of homeowners policies in California, with admitted insurers placing 97.6%); *see also* DIXON ET AL., *supra* note 57, AT 34-35 (surplus lines place 0.2% of homeowners policies, with 98.3% of homeowners policies placed by admitted insurers, although number of policies placed by surplus lines insurers in high-risk areas for wildfire appears to be increasing).

[59] *See* LLOYD DIXON ET AL., *supra* note 57, at 55-56.

[60] California Department of Insurance, "2018 Homeowners Insurance: Homeowners Insurance Comparison Tool," available at https://interactive.web.insurance.ca.gov/apex_extprd/f?p=111:20.

wildfire hazard exposure and provide the financial stability that investor-owned utilities will require to continue to invest in helping California reach its climate and other policy, as well as address the challenge of climate change adaptation, the Commission must put forward a comprehensive solution that both reduces the size of future catastrophic wildfire liabilities and provides concrete funding solutions. In framing potential solutions, the Commission must grapple with California's policy choice to socialize the costs of wildfire hazard exposure and attempt to both determine the most equitable mechanism for socializing hazard exposure costs while providing incentives for all parties that contribute to wildfire hazard exposure to take steps to reduce wildfire risk.

Appendix A

Legislative Options to Reform Inverse Condemnation in California
Edison Electric Institute White Paper
April 22, 2019

In the wake of the devastating 2017 and 2018 wildfire seasons, California's governor, legislature, regulatory agencies, and stakeholders are urgently pursuing comprehensive policy solutions that will address the rising dangers presented by wildfires. As part of this effort, Governor Newsom assembled a Strike Force to "develop a comprehensive roadmap to address the issues of wildfires, climate change, and the state's energy sector."[1] As the Strike Force explains in its April 2019 report ("Strike Force Report"), investor-owned electric companies "must be part of the solution" to stem the rise in wildfires, which are sometimes sparked by electric equipment during extreme wind conditions.[2] At the same time, the electric companies' financial health is under profound threat by the current regulatory regime. As explained further below, under a doctrine called inverse condemnation, property owners may sue investor-owned electric companies in state court for uncapped amounts of wildfire damage, regardless of whether the electric companies are at fault. The imposition of such enormous liability, which electric companies cannot avoid entirely as it is imposed regardless of fault, is compounded by the fact that the electric companies are unlikely to recover the damages through rates.[3] This combination is financially unsustainable. Not only has it caused one California electric company to seek bankruptcy protection,[4] it also undermines investors' confidence and has resulted in credit downgrades that have hamstrung the electric companies' ability to raise capital.[5]

Recognizing that such outcomes threaten the electric companies' ability to provide reliable and affordable power, as well as the broader Californian economy,[6] the Strike Force Report proposes to reform the inverse condemnation doctrine such that investor-owned electric companies are not held liable for wildfire damages under a strict liability standard.[7] Such reform could be accomplished through legislation that prohibits the application of the inverse condemnation doctrine to private electric companies. Under this regime, property owners would still be able to use traditional tort theories (*e.g.*, negligence) to attempt to recover wildfire damages caused by the electric companies' misconduct.[8]

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[1] Governor Newsom's Strike Force, *Wildfires and Climate Change: California's Energy Future* at 1 (Apr. 12, 2019), https://www.gov.ca.gov/wp-content/uploads/2019/04/Wildfires-and-Climate-Change-California%E2%80%99s-Energy-Future.pdf.
[2] *Id.* at 2.
[3] *Id.* at 28-31.
[4] *See* Press Release, Pacific Gas & Electric, PG&E Files for Reorganization Under Chapter 11 (Jan. 29, 2019), https://www.pge.com/en/about/newsroom/newsdetails/index.page?title=20190129_pge_files_for_reorganization_under_chapter_11 [hereinafter PG&E Bankruptcy Press Release].
[5] Strike Force Report at 31; Moody's Investors Service, *San Diego & Electric Company – Regulator Denies SDG&E's Recovery of Wildfire Costs, a Credit Negative for all California Utilities* (Dec. 4, 2017) [hereinafter Moody's SDG&E Credit Opinion].
[6] Strike Force Report at 27.
[7] *Id.* at 36.
[8] To succeed on a negligence claim, for example, a property owner would be required to demonstrate that the investor-owned electric company engaged in negligent conduct that proximately caused the damages at issue.

This white paper analyzes the pathway to such reform. Part I provides the relevant legal and factual background. Part II demonstrates that the legislature has the authority to enact the requisite legislation.

I. Legal Background

A. Inverse condemnation doctrine in California.

California's inverse condemnation doctrine is rooted in the state constitution's taking clause, which provides that "[p]rivate property may be taken or damaged for a public use and only when just compensation . . . has first been paid to, or into court for, the owner."[9] This clause provides authority for two types of proceedings: it allows the government to initiate eminent domain proceedings to "take" property and it allows property owners to initiate lawsuits against the government for just compensation when a taking has occurred in the absence of eminent domain proceedings.[10] The latter are "otherwise known as 'inverse condemnation'" proceedings.[11]

Importantly, inverse condemnation in California is a strict liability doctrine.[12] As the California Supreme Court has explained, subject to certain limited exceptions,[13] "any actual physical injury to real property proximately caused by [a public] improvement as deliberately designed and constructed is compensable under [the takings clause] whether foreseeable or not."[14] This strict liability standard is driven primarily by the takings clause's underlying policy, which is "to distribute throughout the community the loss inflicted upon the individual by the making of the public improvements."[15] As the Court explained in *Albers v. County of Los Angeles*, one of the seminal inverse condemnation cases, "the cost of such damage can better be absorbed, and with infinitely less hardship, by the taxpayers as a whole than by the owners of the individual parcels damaged."[16] The Court therefore concluded that requiring property owners to demonstrate that the damages were foreseeable or intended by the government would leave some owners "uncompensated, . . . contribut[ing] more than [their] proper share to the public undertaking."[17]

Given this loss-spreading rationale, inverse condemnation claims have historically applied to governmental and other public entities, which have the authority to act for "public use" and the

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[9] Cal. Const. art. I, § 19(a).
[10] *Cal. State Auto. Ass'n Inter-Ins. Bureau v. City of Palo Alto*, 138 Cal. App. 4th 474, 479 (2006) (citing *San Diego Metro. Transit Dev. Bd. v. Handlery Hotel, Inc.*, 73 Cal. App. 4th 517, 529 (1999)).
[11] *Id.*
[12] *Albers v. Cty. of Los Angeles*, 62 Cal. 2d 250, 263-64 (1965).
[13] The California Supreme court has identified "two strains of decisions in which the urgency or particular importance of the governmental conduct involved was so overriding that considerations of public policy inveighed against a rule rendering the acting public entity liable absent fault." *Holtz v. Super. Ct.*, 3 Cal. 3d 296, 304-05 (1970). The first exception "involve[s] noncompensable damages inflicted in the proper exercise of the police power." *Id.* at 305 (internal quotation marks omitted). The second "encompasse[s] those cases in which the state at common law had the right to inflict the damage." *Id.* (internal quotation marks omitted).
[14] *Albers*, 62 Cal. 2d at 263-64.
[15] *Albers*, 62 Cal. 2d at 263; *see also Holtz*, 3 Cal. 3d at 303 (The "underlying purpose" of inverse condemnation is "to distribute throughout the community the loss inflicted upon the individual by the making of public improvements: to socialize the burden . . . that should be assumed by society.") (internal quotation marks omitted).
[16] *Albers*, 62 Cal. 2d at 263.
[17] *Id.* at 262.

ability to actually spread the costs across the population via taxes.[18] Such an ability is crucial given the doctrine's framework, which, as noted above, holds public entities liable irrespective of fault. And the doctrine has been expansively interpreted in other ways, including the California Supreme Court's holding that a governmental entity may be held strictly liable even where the public improvement is "only one of several concurrent causes," so long as it is a "substantial cause."[19] That the doctrine is strict liability and applies under a broad theory of causation greatly expands the scope of damages that can be recovered under the doctrine—an approach that is only sustainable where the defendant is capable of spreading the loss across the broader population. Indeed, "it is elementary that an inverse condemnation action . . . requires state action and, therefore, cannot be asserted against private parties."[20]

B. Expansion of Inverse Condemnation to Investor-Owned Electric Companies.

Despite this history and the clear rationale for limiting inverse condemnation claims to public entities, the California Court of Appeal for the Fourth Appellate District extended the doctrine to allow inverse condemnation claims against investor-owned electric companies for the first time in 1999 in *Barham v. Southern California Edison Company*.[21] The Second District issued a similar holding in 2012 in *Pacific Bell Telephone Co. v. Southern California Edison Company.*[22]

In both decisions, the courts' rationale turned on their conclusion that *privately* owned electric companies are sufficiently akin to public entities for the purpose of inverse condemnation, which in turn relied on two factors: (1) the courts' reading of California's Public Utilities Code, which gives investor-owned electric companies condemnation authority,[23] and (2) the courts' incorrect assumption that privately owned electric companies are able to spread the loss of any incurred damages across their ratepayers in a manner similar to a public entities' ability to spread losses across taxpayers.[24]

At issue in *Barham* were inverse condemnation claims brought by plaintiffs whose property had been damaged by wildfires that were ignited when Southern California Edison's ("SCE") overhead power line equipment broke during "strong Santa Ana wind conditions," causing "superheated components to fall to the ground."[25] Noting that the success of the inverse condemnation claims depended on the Barhams' ability to "prove that a public entity ha[d] taken or damaged their property for a public use," the Fourth District set about analyzing "whether SCE was a 'public agency' that damaged the Barhams' property for a 'public use.'"[26] The court answered this question in the affirmative for two reasons. First, the court noted that utilities, including investor-owned electric companies, have the power to condemn private property under section 612 of the

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[18] *See, e.g.*, *Id.* at 253-54 (plaintiff asserted inverse condemnation claims against a county); *Holtz*, 3 Cal. 3d at 299 (same); *Bauer v. Ventura Cty.*, 45 Cal. 2d 276, 281-82 (1955) (same).
[19] *Belair v. Riverside Cty Flood Control Dist.*, 47 Cal. 3d 550, 559 (1988).
[20] *Bach v. Cty. of Butte*, 215 Cal. App. 3d 294, 307 (1989).
[21] 74 Cal. App. 4th 744 (1999).
[22] 208 Cal. App. 4th 1400 (2012), *as modified* (Sept. 13, 2012).
[23] *Barham*, 74 Cal. App. 4th at 752 (quoting Cal. Pub. Utils. Code §§ 217, 218, and 612); *Pacific Bell*, 208 Cal. App. 4th at 1406 n.3 (quoting Cal. Pub. Utils. Code § 612).
[24] *Barham*, 74 Cal. App. 4th at 752; *Pacific Bell*, 208 Cal. App. 4th at 1407.
[25] *Id.* at 748.
[26] *Id.* at 751-52.

California Public Utilities Code.[27] Given this authority, and consistent with case law that likened utilities to governmental entities in other contexts, the Fourth District concluded that "the state generally expects a . . . utility to conduct its affairs more like governmental entity than a private corporation."[28] Second, the court assumed that holding SCE liable would fulfill the "fundamental policy underlying the concept of inverse condemnation . . . to spread among the benefitting community any burden disproportionately borne by a member of that community to establish a public undertaking for the benefit of all."[29]

This line of reasoning is mirrored in the 2012 *Pacific Bell* decision. In that case, Pacific Bell sued SCE for damages to Pacific Bell's underground cables that resulted from a surge of electricity in a nearby utility pole that occurred when a large bird came in contact with SCE's energized power lines.[30] Agreeing with the *Barham* court's reasoning, the Second District also found that investor-owned electric companies may be held liable under inverse condemnation.[31] With respect to the conclusion that private electric companies are "akin to . . . governmental entit[ies]" by virtue of their statutorily granted condemnation power, *Pacific Bell* elaborated on the *Barham* court's reasoning by citing to other sections of the public utilities code that grant utilities "quasi-monopolistic authority."[32] *Pacific Bell* also elaborated on the second factor underlying the *Barham* court's conclusion—*i.e.*, the assumption that holding investor-owned utilities liable under the inverse condemnation doctrine will function to spread losses across the benefitting community.[33] The court first noted that the loss-spreading mechanism, which is the "policy justification[] underlying inverse condemnation," functions equally as well when the defendant is an investor-owned electric company as when the defendant is a governmental entity.[34] The court rejected SCE's explanation that private electric companies are not guaranteed to spread losses "because [they] d[o] not have taxing authority and may raise rates only with the approval of California's Public Utilities Commission."[35] Without further explanation, the court concluded that SCE "ha[d] not pointed to any evidence to support its implication that the Commission would not allow [SCE] . . . to pass on damages liability" to its ratepayers.[36] In other words, like the *Barham* court, *Pacific Bell* made the crucial assumption that investor-owned electric companies are able to reliably spread losses across their ratepayers in order to fulfill "the fundamental policy underlying the concept of inverse condemnation."[37]

However, this assumption has proven incorrect, as demonstrated by a California Public Utilities Commission ("CPUC") decision in November 2017 that denied San Diego Gas & Electric Company's ("SDG&E") application to recover $379 million of inverse condemnation wildfire

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[27] *Id.* at 752 (citing Cal. Pub. Utils. Code § 612 ("An electric corporation may condemn any property necessary for the construction and maintenance of its electric plant.")).
[28] *Id.* at 753 (quoting *Gay Law Students Ass'n v. Pac. Tel. & Tel. Co.*, 24 Cal. 3d 458, 469 (1979)).
[29] *Id.* at 752.
[30] *Pacific Bell*, 208 Cal. App. 4th at 1403.
[31] *Id.* at 1404 ("We . . . agree with the conclusion reached in *Barham* and by the trial court that Edison may be liable under inverse condemnation for the damage to Pacific Bell's property.").
[32] *Id.* at 1406 (citing Cal. Pub. Utils. Code § 6001 et seq.); *see also id.* at 1406 n.3 (quoting Cal. Pub. Utils. Code § 612, which grants IOUs condemnation power).
[33] *Id.* at 1407.
[34] *Id.*
[35] *Id.*
[36] *Id.*
[37] *Barham*, 74 Cal. App. 4th at 752; *Pacific Bell*, 208 Cal. App. 4th at 1407.

damages.[38] The CPUC explained that "[i]nverse condemnation principles are not relevant to a Commission . . . review" of cost-recovery applications.[39] The CPUC further explained that "[e]ven if SDG&E were strictly liable [under the inverse condemnation doctrine], we see nothing in the cited case law that would supersede this Commission's exclusion jurisdiction over cost recovery / cost allocation issues involving Commission regulated utilities."[40] As made clear above, this decision undermines the very rationale for extending inverse condemnation to private electric companies.

Relevant to the ongoing policy discussions embodied in Governor Newsom's Strike Force Report, the CPUC decision also highlights the severe threat that the inverse condemnation regime poses to the viability of California's investor-owned electric companies. As the Strike Force Report explains, the CPUC decision undermined investors' confidence in electric company stock because it "raised concerns in the capital markets that investors in California utilities were more exposed to wildfire liabilities than previously thought."[41] In a credit opinion issued just after the CPUC decision, Moody's commented that the decision "is a credit negative" given the state's inverse condemnation regime, under which "utilities can be held strictly liable for damages caused by wildfires, regardless of fault."[42] In the credit report's view, the potential exposure is significant, and could extend to billions of dollars.[43] The ratings agencies' views of the situation have only deteriorated since; as of the date of the Strike Force Report, SCE and SDG&E were downgraded to "close to non-investment grade ratings."[44] The situation is even more immediately dire for Pacific Gas & Electric Company ("PG&E"), which was forced to declare bankruptcy in 2019 in the face of approximately $10 billion of wildfire liability from the October 2017 wildfires alone.[45]

II. The California Legislature Has the Authority to Enact Legislation that Prohibits Inverse Condemnation Claims Against Investor-Owned Electric Companies.

As suggested by the Strike Force Report, the problems posed by the inverse condemnation regime can be resolved by moving away from a strict liability standard for investor-owned electric companies. One method of doing so is to pass legislation that effectively prohibits property owners from bringing inverse condemnation claims against such companies. For example, the Legislature could enact a statute clarifying (1) that investor-owned electric companies are not "public entities" for purposes of inverse condemnation, even if they may exercise eminent domain authority in certain circumstances or (2) that electrical failures from equipment owned by a private electric

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[38] *See In re: San Diego Gas & Elec. Co.*, Order Denying Application [D. 17-11-033] (Cal. Pub. Utils. Comm'n, Nov. 30, 2017) [hereinafter CPUC Order Denying SDG&E Wildfire Costs]; Order Denying Rehearing of Decision (D.) 17-11-033 [D. 18-07-025] (Cal. Pub. Utils. Comm'n, July 12, 2018); Order Denying Writ for Review, No. D074417, Cal. Ct. of App., 4th District, Div. 1 (Nov. 13, 2018).
[39] CPUC Order Denying SDG&E Wildfire Costs at 64.
[40] *Id.* at 65.
[41] Strike Force Report at 31; Moody's SDG&E Credit Opinion.
[42] Moody's SDG&E Credit Opinion.
[43] *Id.*
[44] Strike Force Report at 31.
[45] PG&E Bankruptcy Press Release, *supra*, note 4; *see also* PG&E Corp., Annual Report (Form 10-K) at 28 (Feb. 9, 2018) (noting that California's Department of Insurance announced that insurers had received claims totaling approximately $10 billion in losses as a result of the October 2017 wildfires).

company on private land is not inherently a "public use," even if the electricity being transmitted may ultimately reach members of the public.

While some voices in recent public discourse have suggested that doing so would require amending California's constitution,[46] this is not the case. That view incorrectly assumes that *Barham*'s and *Pacific Bell*'s holdings—*i.e.*, their conclusion that damage resulting from equipment owned by a private electric company constitutes a "public use" as that phrase is used in Article I, Section 19—stem from a correct interpretation of the California Constitution that is binding on the Legislature. This is incorrect for two reasons. First, the critical finding in those cases rests primarily on statutory interpretation, rather than constitutional interpretation. As noted above, the novel aspect of *Barham* and *Pacific Bell* was the conclusion that investor-owned electric companies are sufficiently akin to governmental entities to perform the loss-spreading function underlying the inverse condemnation doctrine.[47] That finding rested primarily on the two courts' discussion of the California Public Utilities Code, which grants private electric companies "condemnation power" and "quasi-monopolistic authority."[48] Such reasoning does not preclude the Legislature from acting here; the California Supreme Court has consistently recognized the power of the Legislature to abrogate the effects of courts' common law decisions, including decisions of statutory interpretation.[49]

Second, even if the *Barham* and *Pacific Bell* decisions are properly viewed as constitutional interpretations, the legislature is not bound by those interpretations. Rather, the California Supreme Court has consistently held that it alone is the final authority on such issues.[50] In the absence of a decision by that court regarding whether investor-owned electric companies may be sued as public entities under the takings clause, the California legislature is entitled to take a view on the matter.[51] Indeed, the California Supreme Court has explained at length that the legislature

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[46] *See, e.g.*, Brad Kuhn, *California to Finally Tackle Inverse Condemnation Reform for Wildfires?* (Apr. 17, 2019), https://www.californiaeminentdomainreport.com/2019/04/articles/new-legislation/california-to-finally-tackle-inverse-condemnation-reform-for-wildfires/ ("There are also questions about whether such legislation would be constitutional without going through the process of a constitutional amendment.").

[47] *Barham*, 74 Cal. App. 4th at 752; *Pacific Bell*, 208 Cal. App. 4th at 1406.

[48] *Barham*, 74 Cal. App. 4th at 752 (quoting Cal. Pub. Utils. Code §§ 217, 218, and 612); *Pacific Bell*, 208 Cal. App. 4th at 1406 (citing Cal. Pub. Utils. Code § 6001 et seq.).

[49] *Jones v. Lodge at Torrey Pines P'ship*, 42 Cal. 4th 1158, 1186 (2008) (Werdegar, J., dissenting) (noting that "the Legislature abrogated" the Supreme Court's holding based on its construction of the relevant statute); *Cheong v. Antablin*, 16 Cal. 4th 1063, 1069 (1997) ("Within constitutional limits, the Legislature may, if it chooses, modify the common law by statute.").

[50] *E.g.*, *Raven v. Deukmejian*, 52 Cal. 3d 336, 354 (1990) ("[T]his court sits as a court of last resort in interpreting state constitutional guarantees.") (internal quotation marks omitted); *Sands v. Morongo Unified Sch. Dist.*, 53 Cal. 3d 863, 903 (1991) (Lucas, C.J., concurring) ("As the Supreme Court of California, we are the final arbiters of the meaning of state constitutional provisions."); *Palermo v. Stockton Theatres, Inc.*, 32 Cal. 2d 53, 67 (1948) (Carter, J., & Traynor, J., concurring) ("If these constitutional questions had not previously been considered by this court it might be possible to construe these provisions in such a way as to avoid constitutional implications.").

[51] The California Supreme Court's role as the final authority on state constitutional questions and the Courts of Appeal's inherently limited role are both recognized by federal courts. While federal courts must accept California Supreme Court precedent on state constitutional questions, they "should consider decisions of the California Courts of Appeal only where the Supreme Court of California has not spoken on the question and where there is no convincing evidence that the highest court of the state would decide the issue differently." *PSM Holding Corp. v. Nat'l Farm Fin. Corp.*, 884 F.3d 812, 824 (9th Cir. 2018) (internal quotation marks and alterations omitted); *but see Owen By & Through Owen v. United States*, 713 F.2d 1461, 1464 (9th Cir. 1983) ("In the absence of a pronouncement by the highest court of a state, the federal courts must follow the decision of the intermediate appellate courts of the state

is due significant deference on questions of state constitutional interpretation and has inherent authority to act in the absence of clear constitutional restrictions. For example, the Court has noted that legislative acts are afforded a "presumption of constitutionality,"[52] and will be affirmed by the courts "unless they are disclosed to be unreasonable or clearly inconsistent with the express language or clear import of the Constitution."[53] This is "particularly appropriate when the Legislature has enacted a statute with the relevant constitutional prescriptions clearly in mind. . . .In such a case, the statute represents a considered legislative judgment as to the appropriate reach of the constitutional provision."[54] Further, "[i]f there is any doubt as to the Legislature's power to act in any given case, the doubt should be resolved in favor of the Legislature's action."[55] In doing so, the Court has instructed that the Constitution "be construed strictly, and . . . not . . . be extended to include matters not covered by the language used."[56]

Such deference should be afforded to the Legislature with respect to the issue at hand. In any review of legislation that prohibits inverse condemnation claims against investor-owned electric companies, the relevant text of the Constitution—the takings clause—should not be read by courts as preclusive. Indeed, such legislation would not be "unreasonable or clearly inconsistent with the express language or clear import"[57] of the takings clause, which does not require that privately owned electric companies be subject to inverse condemnation claims. Moreover, such legislation is consistent with the California Supreme Court's extensive jurisprudence on the inverse condemnation doctrine. As explained above, the Court has long held that the driving rationale is to spread losses across the community that benefits from a public improvement.[58] The envisioned legislation would bring the scope of the doctrine back in line with this jurisprudence by preventing the doctrine from reaching private entities who lack the authority to spread losses.

Accordingly, in the absence of clear California Supreme Court precedent to the contrary, the Legislature is free to enact legislation prohibiting inverse condemnation claims for wildfire damage against private electric companies.

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unless there is convincing evidence that the highest court of the state would decide differently.") (internal quotation marks omitted).

[52] *Pac. Legal Found. v. Brown*, 29 Cal. 3d 168, 180 (1981).

[53] *Cal. Hous. Fin. Agency v. Patitucci*, 22 Cal. 3d 171, 177 (1978); *see also City & Cty.ounty of San Francisco v. Indus. Accident. Comm'n*, 183 Cal. 273, 279, 191 P. 26, 28 (1920) ("In such a situation, where a constitutional provision may well have either of two meaning[s], it is a fundamental rule of constitutional construction that, if the Legislature has by statute adopted one, its action in this respect is well-nigh, if not completely, controlling. When the Legislature has once construed the Constitution, for the courts then to place a different construction upon it means that they must declare void the action of the Legislature.").

[54] *Pac. Legal Found.,* 29 Cal. 3d at 180.

[55] *Methodist Hosp. of Sacramento v. Saylor*, 5 Cal. 3d 685, 691 (1971) (internal quotation marks omitted).

[56] *Id.*

[57] *Patitucci*, 22 Cal. 3d at 177.

[58] *See* text, *supra*, accompanying notes 16-17.

Appendix B

FINANCING THIRD PARTY WILDFIRE DAMAGES: OPTIONS FOR CALIFORNIA'S ELECTRIC UTILITIES

Carolyn Kousky, Katherine Greig, and Brett Lingle

February 2019

Wharton
Risk Management and
Decision Processes Center

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Financing Third Party Wildfire Damages: Options for California's Electric Utilities

Carolyn Kousky, Katherine Greig, and Brett Lingle[1]

Executive Summary

- Wildfire risk is escalating in the western United States, devastating and disrupting communities and creating billions of dollars in property damage.
- Under a unique legal regime in the state of California (inverse condemnation), electric utilities are held strictly liable for property damage associated with any wildfire where utility infrastructure is found to have been a significant cause of ignition, even if the utility was not negligent in their risk management actions.
- Wildfires in 2017 and 2018 have shown that these liabilities can reach into the billions, threatening the financial health and solvency of utilities, with consequences for ratepayers, shareholders, and the state's ability to meet its climate and energy goals.
- This liability poses challenges for traditional approaches to risk financing as it is concentrated and potentially catastrophic.
- When utilities act negligently, they should bear costs proportional to their negligence. Absent reform to eliminate or modify the application of the doctrine of inverse condemnation to utilities, however, utilities need financing mechanisms that enable them to cover this growing liability.
- There are a range of mechanisms that could facilitate a utility's ability to access capital to cover this risk, including funded self-insurance, commercial insurance, catastrophe bonds, industry captives, an industry risk pool, and recovery bonds. These financing options are not mutually exclusive, and several should be layered together to ensure funding for third-party liability from wildfires of various magnitudes.
- Each of these strategies would require an annual contribution and/or initial capitalization. How those costs are distributed has implications for who ultimately bears the costs of wildfires. To align with the regulatory compact, ratepayers would shoulder cost-effective pre-wildfire financing and shareholders would pay post-loss costs in proportion to utility imprudence.
- With the significant increase in wildfire risk due to climate change and continued development in the wildland urban interface, risk mitigation by all stakeholders will be needed to complement financing efforts. This includes land use planning modifications, adoption and enforcement of strong building codes, broad education campaigns for those living in high-risk areas, and cost-effective mitigations by land owners and business owners.

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1. Overview

In California and across the west, the frequency and severity of catastrophic wildfires are increasing, as are the damages. Eight of the twenty most destructive wildfires in California history occurred in 2017 and 2018, destroying more than 31,000 structures—double the number consumed by the other twelve.[2] In the 1980s, the California Department of Forestry and Fire Protection (Cal Fire) spent an average of $61 million (2018 USD) per year on fire suppression. Since then, costs have escalated steadily and significantly, reaching an average of $121 million in the 1990s, an average of $304 million from 2000-2009, and averaging roughly $450 million annually since 2010 (all in 2018 dollars).[3] Beyond the direct property damage and suppression costs, these fires have substantial indirect damages, as well, such as lost tax revenue to local governments, health impacts from the smoke, increased carbon emissions, and lost environmental values.

In most places outside California, the direct property damages from wildfires—the focus of this paper—are borne by property owners, insurers, and taxpayers (via state or federal disaster assistance programs). In California, however, electric utilities can be required to pay all property damages for wildfires where utility infrastructure was a significant cause of wildfire ignition. The California state constitution says that private property may be "taken" or damaged for public use only when just compensation is provided.[4] Several courts in California have held this doctrine applies to electric utilities, since they have a state-granted monopoly and provide a public service. As such, in California, electric utilities are strictly liable for property damages arising from wildfires traced to their equipment; that is, they must pay for the damages even if they are without fault.[5]

Note, the reasoning for inverse condemnation, as explained by the courts, is that costs associated with activities that generate broad public benefits should be "distribute[d] throughout the community...to socialize the burden...that should be assumed by society."[6] The courts have held that utilities are able to socialize costs through rates and thus spread wildfire related costs on all those who benefit from electricity. In contrast to a classic "taking" where a government entity can raise taxes to cover the costs, whether or not these costs can be passed to ratepayers is under the control of the California Public Utilities Commission (CPUC) and is not guaranteed. In making decisions, the CPUC adheres to a standard of evaluating whether the utility acted "reasonably and prudently" in operating and managing its system.[7] This is a distinct standard from legal negligence. A party can be found negligent for a single act,

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[2] See: http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Destruction.pdf.

[3] All figures adjusted to 2018 US dollars; data online at: http://www.fire.ca.gov/fire_protection/downloads/SuppressionCostsOnepage.pdf.

[4] Cal. Const., art. I, § 19(a) ("Private property may be taken or damaged for a public use and only when just compensation...has first been paid to, or into the court for, the owner.")

[5] For more, see: Kousky, C., B. Lingle, K. Greig, and H. Kunreuther (2018). "Wildfire Costs in California: The Role of Electric Utilities." Issue Brief. Wharton Risk Management and Decisions Processes Center, University of Pennsylvania, August. Online at https://riskcenter.wharton.upenn.edu/wp-content/uploads/2018/08/Wildfire-Cost-in-CA-Role-of-Utilities-1.pdf.

[6] Holtz v. Super. Ct., 3 Cal.3d.296, 303 (1970).

[7] For more on this in relation to recent CPUC findings, see http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M218/K019/218019946.PDF.

whereas a reasonable and prudent operator is one who operates its system consistent with the standards in place at the time even if an adverse event nonetheless occurs.

The potential costs arising from this strict liability regime in California have recently been substantial. For fires in 2007, San Diego Gas and Electric had to pay $2.4 billion in wildfire costs.[8] PG&E estimated it could face up to $15 billion in liability and hundreds of lawsuits if their infrastructure was involved in the ignition of 2018's Camp Fire.[9] The company's financial viability in the face of these liabilities has been so tested that it filed for bankruptcy at the end of January 2019. All three major rating agencies have downgraded the investor owned utilities in response to California's application of strict liability for wildfire damages; PG&E has lost investment grade status.[10] Lower ratings may discourage investors from purchasing utility-issued bonds and from buying equity in the company. This makes it more difficult and expensive for utilities to refinance debt maturities and raise debt and equity capital for critical projects.

All stakeholders agree that when utilities have acted negligently, they should bear costs proportional to their negligence. However, when they have not acted negligently, this strict liability legal regime will subject California's utilities to financial hardship with risks now recognized as potentially so large, it could threaten their viability, impacting ratepayers, shareholders (who tend to be older and middle income[11]), and undermining the state's ability to meet climate and energy goals that require investments by the utility. While PG&E's forecasted bankruptcy has raised myriad questions, this paper does not address PG&E's past or future management, decision-making, or actions. The paper looks at the broader issue for all utilities of how to finance a catastrophic risk, for which traditional risk financing approaches are stressed, absent reform of the application of inverse condemnation.

Recognizing concerns about the unsustainability of the status quo, the California Legislature created a Commission on Catastrophic Wildfire Cost and Recovery to "examine issues related to catastrophic wildfires associated with utility infrastructure."[12] The Commission, seated in January 2019, is tasked with recommending policy options for action by the governor and legislature that would "socialize the costs associated with catastrophic wildfires in an equitable manner," as well as options for establishing "a fund to assist in the payment of costs associated with catastrophic wildfires." [13] Legislation has also recently been introduced to create a risk pooling mechanism for California's utilities.

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[8] Whitlock, J. (2017). "CPUC Turns Down San Diego Gas & Electric's 2007 Wildfires Request." *San Diego Business Journal*, November 30.

[9] Gold, Russell (2019) "PG&E bankruptcy: The first of many corporate casualties of climate change?" *Wall Street Journal*, January 18.

[10] See https://www.moodys.com/research/Moodys-downgrades-Pacific-Gas-Electric-to-Caa3-and-PGE-Corp--PR_393849 and https://www.moodys.com/research/Moodys-Changes-Edison-International-and-Southern-California-Edisons-Rating-Outlooks--PR_380780.

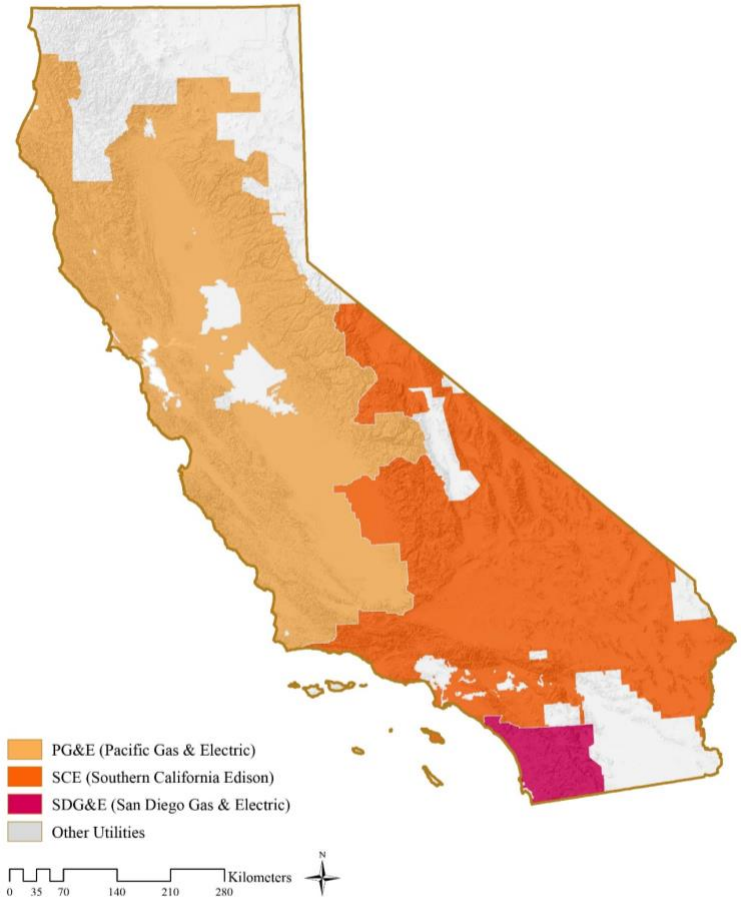
[11] Ernst & Young (2012). The Beneficiaries of the Dividend Tax Rate Reduction A Profile of Utility Shareholders. Washington, DC, Edison Electric Institute and the American Gas Association.

[12] SB 901, 2018, Reg. Session (CA 2017-2018); text available online at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB901.

[13] SB 901, 2018, Reg. Session (CA 2017-2018).

To inform the ongoing policy dialogue, this paper discusses potential financing options for third-party wildfire damages for California's electric utilities, assuming that the current liability regime remains in place. We focus on the state's investor-owned utilities (IOUs) since they have had the largest liabilities to date, they cover a significantly larger service area, and have commensurately greater exposure to wildfire risk. The three largest IOUs in the state—Pacific Gas and Electric (PG&E), San Diego Gas and Electric (SDG&E) and Southern California Edison (SCE)—are responsible for providing roughly three-quarters of all electricity used in California (see Figure 1 for service areas). That said, publicly-owned utilities (POUs), of which there are over 40 in the state, could also face these concerns and we discuss POUs explicitly where relevant. Indeed, the CEO of the Sacramento Municipal Utility District (SMUD) noted in a hearing to the California state legislature on August 9, 2018 that if a POU were ever found to have had equipment igniting a wildfire, that could lead to massive rate increases for customers or bankruptcy for a smaller POU.

FIGURE 1. CALIFORNIA ELECTRIC UTILITY SERVICE AREAS



Section 2 begins with an overview of the current arrangements for utilities to cover wildfire damage. Section 3 presents a range of risk financing strategies that could help facilitate access to capital to cover property damage from wildfires for which utility equipment is deemed to be a cause of ignition. This includes discussion of funded self-insurance, commercial insurance, catastrophe bonds, industry captives, an industry risk pool, and recovery bonds. The financing options are not mutually exclusive, and several could be utilized simultaneously to ensure funding for various magnitude wildfires. We discuss this in Section 4. Each of these financing strategies would require an annual contribution and/or initial capitalization to be viable. In Section 5, we present potential funding sources and mechanisms, and their distributional implications. Section 6 concludes.

2. Current Utility Financing Mechanisms for Wildfire Damages

The investor-owned utilities in California recover their costs through general rate cases to the California Public Utility Commission. Electricity rates are set to cover the full costs of providing service to customers plus a reasonable return. This is governed by the *regulatory compact*, an agreement that utilities will provide universal electricity—a critical and essential service—and in exchange, they will be allowed to recover the full costs of providing it.[14] The general rate cases are a mechanism for ensuring that the standard and predictable costs of electricity provision are included in the cost of electricity. These rate cases are designed to balance a range of competing objectives, involve multiple stakeholders, and may not be quick to complete. The approach, though, is designed for situations in which costs are fairly stable over time. A large, unexpected expense requires other mechanisms for determining how to recoup costs and avoid rate shock for customers. We review current mechanisms to do this here. When unexpected costs are not allowed to be recovered in rates, the utility will earn less than its authorized return on capital, which could restrict the amount of capital it can raise, and in the extreme, threaten its financial health.

While a utility's own equipment can be damaged by wildfire and require substantial expenditures to repair, a much larger expense for California's electric utilities comes from third-party liability for wildfire property damage. Unlike other states at high risk for wildfire, property owners in California can seek compensation for property damage caused by wildfires ignited by utility equipment through the application of the legal principle of inverse condemnation, rooted in Article 1, Section 19 of the state constitution (and interpreted by the California state courts), regardless of whether the utility was negligent or at fault.[15] Insurance companies can also use this doctrine to subrogate against the utilities and recoup their claims payments and attorney's fees. As noted above, the courts have adopted a strict

[14] Lazar, J. (2016). *Electricity Regulation in the US: A Guide. Second Edition*. Montpelier, VT: The Regulatory Assistance Project. Retrieved from http://www.raponline.org/knowledge-center/electricityregulation-in-the-us-a-guide-2.

[15] For more details on the operation of inverse condemnation and California's utilities, see: Kousky, C., B. Lingle, K. Greig, and H. Kunreuther (2018). "Wildfire Costs in California: The Role of Electric Utilities." Issue Brief. Wharton Risk Management and Decisions Processes Center, University of Pennsylvania, August. Online at https://riskcenter.wharton.upenn.edu/wp-content/uploads/2018/08/Wildfire-Cost-in-CA-Role-of-Utilities-1.pdf.

liability standard for inverse condemnation. As wildfire risks have sky-rocketed, California's utilities are now facing unprecedented liabilities for third-party property damage.

Currently, there are a few standard approaches for utilities to address unexpected costs. These mechanisms, discussed briefly in this section, are not enough, however, to provide financial protection to utilities from the escalating third-party wildfire risk. Some of these mechanisms are not allowed to be used for this liability (as opposed to damage to a utility's own system) and none ensure financing for the growing liability in a manner that sufficiently protects customers and utilities.

First, utilities can make use of a Catastrophic Event Memorandum Account (CEMA). These were created by the state legislature in 1991 following the Loma Prieta Earthquake in 1989. When a disaster is declared by the state or federal government, utilities can establish a CEMA to track disaster costs (such as repairing and replacing damaged infrastructure and restoring service) and later seek approval from the CPUC to recover those costs from ratepayers.[16] Once a disaster is declared, the utility may begin recording eligible costs in a CEMA, but must notify the CPUC and provide details of the disaster as well as the estimated costs to be incurred. A utility cannot record any costs incurred *before* the date of the disaster declaration; as such, risk mitigation expenses incurred in anticipation of a disaster would not be eligible for recording in a CEMA. CEMAs cannot be used for third party damage and the possible liability from the application of inverse condemnation.

For events that do not receive a formal disaster declaration, utilities may record costs and seek recovery through a mechanism called "Z-factor recovery." Z-factor recovery allows utilities the opportunity to recover costs from unforeseen, exogenous events that are not declared states of emergency and that meet the criteria for qualifying events. These criteria include that the event cannot have been preventable by management and must have had a significant financial impact on the utility.[17] Utilities must meet a deductible—typically $5 million to $10 million depending on the utility—before they can seek Z-factor recovery.[18] After identifying a Z-factor event, meeting the deductible, and recording relevant costs, utilities must request approval from the CPUC to recover costs from rates. This approach has been used by utilities to seek rate recovery due to increasing insurance costs post-wildfire.[19] The Z-factor mechanism is not generally used to recover wildfire liability costs as it has been assumed that utilities have some degree of control over general litigation costs, settlement amounts, and other legal

[16] Lau, E. (2016). "Cost Recovery Mechanisms for Electric Utilities for exogenous events occurring between GRC proceedings." Presentation to Commissioner Committee Meeting, October 26.

[17] For events to qualify for Z-factor recovery, they must meet 8 criteria: (1) the event must be exogeneous to the utility; (2) the event must occur after implementation of rates; (3) the costs are beyond the control of the utility management; (4) the costs are not a normal part of doing business; (5) the costs have a disproportionate impact on the utility; (6) the costs must have a major impact on overall costs; (7) the cost impact must be measurable; and (8) the utility must incur the cost reasonably. For more, see: http://docs.cpuc.ca.gov/published/Final_decision/3163-24.htm.

[18] This is only available for events that occur during post-test years.

[19] See, for example, https://www1.sce.com/NR/sc3/tm2/pdf/3768-E.pdf and Lau, E. (2016). "Cost Recovery Mechanisms for Electric Utilities for exogenous events occurring between GRC proceedings." Presentation to Commissioner Committee Meeting, October 26.

expenses. As such, utilities have recorded and sought recovery of wildfire liability costs through a separate mechanism—the Wildfire Expense Memorandum Account (WEMA).

WEMAs allow utilities to record (and later seek recovery for) wildfire-liability related costs such as co-insurance or deductible expenses; legal expenses incurred defending wildfire claims; increases in wildfire insurance premiums from amounts authorized in the utilities' general rate cases; and incremental wildfire liability costs, among others. Unlike CEMAs, which utilities can open at their discretion once a disaster declaration has been made, utilities must seek approval from the CPUC to establish a WEMA. Once established, the utility may keep the general account open and create sub-accounts for costs tied to individual fires. The utility may then seek cost recovery in separate, subsequent proceedings. The utility may also choose when to apply for recovery and which costs to include in the application.

There is no guarantee that the CPUC will allow the utility to recover WEMA costs from rates. For example, in 2015 SDG&E applied to recover $379 million in WEMA costs for wildfires occurring in 2007 (actual incurred liability was somewhat higher as SDG&E proposed a 90/10 split with shareholders). The CPUC denied all rate recovery for SDG&E, deciding that the utility did not "reasonably and prudently operate its facilities" connected to the fires. This clearly demonstrates that recording and recovering expenses are different decisions.[20] There can also be a time delay between the need to pay costs and the time when a recovery decision is made, during which the utility will have to have capital to address.

When the CPUC permits costs from unforeseen events to be recovered, it may allow the utility to record the recoverable costs as an asset and not take a charge against retained equity on the balance sheet. To reduce the annual rate impact, this regulatory asset can be amortized over time until the utility has recovered all costs.[21] In addition to extending recovery over a longer period, the regulatory asset can be debt financed. These details are decided by the CPUC as a part of a regulatory proceeding.

In response to the potentially large liabilities from the 2017 wildfires, newly enacted legislation (SB 901), specifies that for those wildfires, the CPUC must apply a financial stress test when allocating costs to a utility's shareholders and ratepayers following prudency review. The financial test determines the

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[20] PG&E also uses a cost recovery mechanism known as the Major Emergency Balancing Account (MEBA). The MEBA allows the company to recover actual costs from responding to catastrophes and major emergencies that do not receive official declarations and are therefore ineligible for CEMA recovery. The MEBA is a two-way balancing account in which PG&E can only spend MEBA funds on non-CEMA emergencies and any unused funds are returned to ratepayers. If PG&E spends more than the approved amount, the CPUC must review the costs for reasonableness before they can be recovered. In contrast to PG&E, SCE and SDG&E include the forecasted costs of emergency preparedness and response in the general rate case budget and do not separate them into a balancing account. As such, SCE and SDG&E are permitted to reallocate funds to other authorized activities if they spend less than forecasted. However, if they spend more than the budgeted amount, they have to draw funds from other areas of the budget or draw from funds that would otherwise be distributed as dividends to shareholders (or, if there are insufficient funds that would be paid as dividends, go to the market to raise money through a stock or debt issuance) to pay the difference.

[21] For a broader discussion of this and other cost recovery mechanisms, see: Edison Electric Institute (2014). "Before and After the Storm: A compilation of recent studies, programs, and policies related to storm hardening and resiliency." Washington, DC.

threshold amount a utility's shareholders can absorb which minimizes harm to ratepayers and acts as a cap on the shareholder allocation. That is, the CPUC must consider a utility's "financial status and determine the maximum amount the corporation can pay without harming ratepayers or materially impacting its ability to provide safe and adequate service."[22] The bill requires the CPUC to limit the wildfire costs and expenses disallowed for rate recovery to the amount determined by the stress test.

Note that these approaches are all for IOUs. POUs are generally smaller and face a different rate-setting process as they are not owned by investors. POUs can be organized in various ways, such as municipal districts, city departments, or rural cooperatives, but all tend to be non-profits managed by elected officials and/or public employees. For POUs, rates are set by the governing body of the utility or by a city council through a public process. Since they do not have shareholders, all wildfire costs would fall on ratepayers regardless of any negligence or serious misconduct by the POU.

3. Disaster Risk Financing Strategies

The risk of third-party wildfire liability for California's electric utilities poses challenges for traditional risk financing approaches. First, the risk is concentrated solely on California's electric utilities, and primarily on the large IOUs. As such, there is no appetite nationally for this risk to be part of a national risk pool or captive. When not diversified broadly, however, there are fewer options to secure affordable risk financing. Second, losses associated with this liability have clearly reached catastrophic levels, especially over the last two years. Mechanisms to provide capital for high loss levels are expensive and challenge commercial insurance markets. Indeed, as we discuss further below, California's utilities are facing a hard insurance market for this risk, where prices are high and supply is scarce.

This section discusses six options for financing this risk. We note at the outset that risk management includes both investments in cost-effective risk reduction as well as risk financing. This paper focuses on risk financing for remaining third party wildfire risk that cannot be cost-effectively mitigated. Determining optimal mitigation levels, however, especially when many of them are costly, is a critical area for additional analyses. All of the mechanisms we discuss in this section are designed to provide access to capital in high loss years and smooth costs over time. The options are not mutually exclusive and in Section 4 we discuss how they can be integrated to create a "tower" of financing for a utility.

3.1 Funded Self-Insurance

The first approach to consider is that a utility can retain all or a portion of the risk through funded self-insurance. Retaining more frequent and lower magnitude risks—and potentially higher levels—is usually cost-effective and encourages investments in risk reduction. Self-insurance through a dedicated account funded through rates as a cost of service can provide greater financial protection than other approaches to retaining risk, such as reducing expenditures to cover post-disaster costs, lowering dividend payouts, or keeping cash on hand (which tends to be low for utilities).

[22] See SB 901, available here: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB901

The standard approach for self-insurance would be through the creation of a wildfire reserve account. This account would grow over time (assuming there are years without catastrophic wildfires) to a predetermined adequate level and then be drawn down as needed to pay wildfire-related liabilities. The account could be designed to return back to ratepayers any amounts collected that exceed the required reserve level. Funding and initial capitalization, such as through a dedicated rate component, is discussed in Section 5.

Pre-funded reserves can benefit utilities and ratepayers in several ways. Adequately funded reserves reduce utilities' potential borrowing costs that might be incurred if the utility relied solely on post-event financing. Second, at times self-insurance can be less expensive than transferring the risk. Third, a well-funded reserve, capable of covering some portion of a potential loss, would likely increase investor confidence in the utility. Such confidence allows for continued investments in service reliability, capital improvements, and other activities.

There are, however, limitations to the role that funded reserves can play in financing catastrophic losses. One obstacle is that state regulators may be reluctant to let utilities collect pre-payments through rates to support the unquantifiable costs of future events. The funded reserve account would need to be designed specifically to prevent elected officials or regulators from clawing back funds that are not put to immediate use. As already stated, the funded reserve account would also need to be designed to return to ratepayers amounts collected that exceed required reserve levels. It is possible that such an account could only usefully cover lower levels of losses if there is regulator and consumer pushback on extraordinarily large reserves. In general, investors tend to not look favorably on simply setting aside large amounts of capital. This may make a captive more attractive for financing catastrophic loss levels, as discussed in Section 3.4.

Another issue with these accounts is that it takes time to build a reserve. One event could deplete the fund just as it is getting started and hinder future efforts to build an adequate reserve. This could be mitigated by initially capitalizing the fund with some base amount, perhaps through securitization backed by a dedicated rate component (discussed in Section 5). A second concern is that the damages from wildfires may continue to escalate, such that any fund would start to be used extremely frequently. In this case, it would be difficult to build it up over time. Essentially, the reserve would devolve into a set amount of wildfire liability financed by a dedicated rate component; other mechanisms would be needed to cover damages beyond this amount. Florida utilities have reserve accounts for storm damages, but they, too, have depleted their reserves and needed to tap other sources of capital to fully cover liabilities (see box).

Storm Reserve Accounts in Florida

Following Hurricane Andrew in 1992, Florida utilities had difficulty securing property insurance, especially for damage to their own transmission and distribution facilities. As a result, the Florida Public Service Commission (FPSC) allowed utilities to self-insure by establishing reserve accounts to cover property damages arising from severe storms and hurricanes.[23] Note, these are likely for much smaller amounts than the potential third-party liability risk facing California's utilities. FPSC regulations state that utilities may only use these funds to pay for incremental costs related to storm restoration activities such as additional labor or supplies needed to restore service and repair facilities. Florida utilities are required to file a Storm Damage Self-Insurance Reserve Study with the FPSC every five years, "including data for determining a target balance for, and the annual accrual amount to" the storm reserve account. Utilities must also file an annual report describing their efforts to secure commercial insurance for their facilities. The FPSC allows electric utilities to collect surcharges from customers for the purposes of building a storm damage reserve. If and when their reserves are exhausted (as has occurred following major storms), utilities may be able to charge customers for costs that exceed the balance of the fund.[24]

One method by which Florida utilities can recover these costs and rebuild their reserve accounts is issuing securitized bonds (see Section 3.6). For example, after Florida Power & Light's storm reserves were depleted by hurricanes in 2004 and 2005, the utility petitioned the FPSC to collect $1.7 billion from ratepayers to finance recovery bonds and to replenish their reserve account to $650 million. FPSC denied the request, deciding that FPL could collect only $1.13 billion from ratepayers and that the reserve could be replenished to just $200 million.[25] To collect these funds, FPL has charged its customers just over $1 per month since 2007 and will continue doing so until August 2019.

In addition to storm reserves, the commission has also permitted the use of a separate pre-funded account to cover liability costs associated with utility-caused injuries and damages. The purpose of the liability account is "to meet the probable liability, not covered by insurance for deaths or injuries to employees or others and for damages to property neither owned nor held under lease by the utility."[26] Similar accounts could potentially be structured for California utilities.

[23] Florida Administrative Code, Rule 25-6.0143. See https://www.flrules.org/gateway/ruleno.asp?id=25-6.0143.
[24] Edison Electric Institute (2014). Before and After the Storm: A compilation of recent studies, programs, and policies related to storm hardening and resiliency. Washington, DC.
[25] Pounds, M.H. and D. Fleshler (2006). "FPL Will Charge You $1 A Month for 12 Years for Storm Recovery." *South Florida Sun Sentinel*, May 16.
[26] Florida Administrative Code, Rule 25-6.0143.

3.2 Commercial Insurance

Insurance draws on principles of risk pooling to indemnify losses in exchange for regular premium payments. Investor owned utilities have historically purchased some amount of insurance to cover their liability for wildfire-related property damage to third parties. These are policies purchased from the private market. After the 2017 and 2018 wildfires, however, it has become clear that these policies are insufficient to cover the growing risk. For example, PG&E reported in their November 13, 2018 regulatory filing that the company purchased approximately $1.4 billion ($700 million for general liability and $700 million for third party property damages) in liability coverage for wildfire for the period from August 1, 2018 to July 31, 2019 (this figure includes the catastrophe bond discussed in Section 3.3). While this may appear to be a large coverage limit, the company notes that it "could be subject to significant liability in excess of insurance coverage that would be expected to have a material impact on PG&E Corporation's and the Utility's financial condition."[27] If held responsible for the 2018 wildfires, its liability could approach $15 billion.

Generally, the cost of wildfire insurance coverage is included in rates as a cost of service through the general rate case process.[28] That said, insurers have become concerned about the growing liability risks to utilities, and prices have increased substantially. For example, the CEO of SMUD noted in an August 8, 2018 hearing that their insurance costs were four times higher than in the previous year.[29] This appears to be the pattern for the IOUs, as well. PG&E's rate on line[30] sky-rocketed from 6-7% in 2017/2018 to around 25% for 2018/2019.[31] SCE saw a similarly high rate on line of 24% in the same timeframe. SCE purchased approximately $1 billion of wildfire-specific insurance, "subject to a self-insured retention of $10 million per occurrence" for the period from June 1, 2018 through May 31, 2019.[32] Rates were even higher following the Camp and Woolsey Fires.

Due to significant increases in premiums, all three IOUs have requested CPUC approval to include in rates the increased wildfire premium expenses.[33] Historically, insurance premiums have generally been recoverable in rates. With the increase in insurance premiums observed the past couple years, however, the CPUC may need to become comfortable with treating other financing mechanisms similarly should there be times when the utility ascertains another financing mechanism is more cost-effective. Insurance may also simply become less available, necessitating additional approaches. SCE noted in its

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[27] See: http://investor.pgecorp.com/financials/sec-filings/sec-filings-details/default.aspx?FilingId=13059295.
[28] Utilities have also utilized Z-factor recovery or a WEMA to seek recovery of unexpected premium increases.
[29] Hearing archived online here: http://calchannel.granicus.com/MediaPlayer.php?view_id=7&clip_id=5726.
[30] Rate on line is defined as the premium divided by the limit.
[31] Hewlett, R. (2018). "Insurers and ILS investors exposed to $1.4bn PG&E Cali wildfire cover." *The Insurer*. November 15.
[32] See: https://www.edison.com/home/investors/sec-filings-financials/sec-filings.html?company=827052&company=827052&formType=.
[33] See https://www1.sce.com/NR/sc3/tm2/pdf/3768-E.pdf, https://www.pge.com/pge_global/common/pdfs/about-pge/company-information/regulation/2020-General-Rate-Case-Summary.pdf, and https://www.sdge.com/sites/default/files/SDG%2526E-27%2520%2528SCG-29%2529%2520Direct%2520Testimony%2520of%2520Neil%2520Cayabyab%2520-%2520Corporate%2520Center%2520-%2520Insurance.pdf.

request for Z-factor recovery of higher insurance premiums last year that they found some insurers have stopped offering such coverage or limited the amount they will write.[34] The combined forces of climate change escalating wildfire risk and the strict liability for third-party damages are creating a hardening of this insurance market, limiting the amount of commercial insurance that utilities can use to finance third-party wildfire liability.

3.3 Catastrophe Bonds

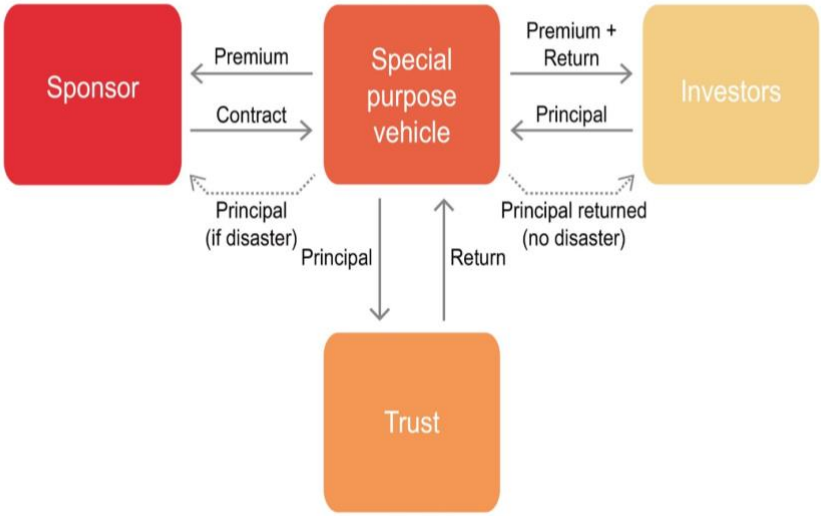
Catastrophe bonds (cat bonds) are used like insurance to transfer risk from a sponsor (here, the utility) to investors. Part of the justification for catastrophe bonds is that extreme events that might overwhelm insurance markets could potentially be more easily handled by the financial markets. In addition, securities markets tend to be more efficient in facilitating information sharing and price discovery.[35] It is generally believed that cat bonds are attractive to investors because they are not highly correlated with other financial markets and can generate higher returns. Given the potential loss of principal and different types of risks, however, they are not appropriate for all investors. And if investors, many of whom are not experts in disaster risk, do not feel comfortable with a risk, they will require much higher levels of compensation or may not be willing to invest at all. Note that to date, catastrophe bonds have been for first-party property damage, not third-party liability.

Figure 2 shows the general structure of a cat bond. The sponsor sets up a Special Purpose Vehicle (SPV) to facilitate the bond. The SPV collects principal from investors and holds it in a safe asset (labeled *trust* in the figure below) to reduce credit risk. The SPV is needed because investors cannot directly offer insurance to the sponsor without regulatory authority (a license). The investors get a return along with premium payments paid by the sponsor. If the clearly defined "triggering event" tied to a previously defined disaster occurs within the defined timeframe, the principal is given to the sponsor; if not, the principal is returned to the investors. Cat bonds can be proportional, so that greater percentages of the principal are released depending on the severity of the event. Cat bonds usually mature between one and five years (three years is most common).

[34] See: https://www1.sce.com/NR/sc3/tm2/pdf/3768-E.pdf.

[35] Cummins, D. J. and M. A. Weiss (2009). "Convergence of Insurance and Financial Markets: Hybrid and Securitized Risk-Transfer Solutions." *Journal of Risk and Insurance* 76(3): 493-545.

FIGURE 2. STRUCTURE OF A CATASTROPHE BOND



There are various types of triggers that would require release of the principal to the sponsor, including: indemnity, industry, parametric, and modeled triggers. An indemnity trigger may use a sliding scale of actual losses experienced by the issuer. An industry trigger is activated when industry-wide losses from an event hit a certain threshold. A parametric trigger describes actual weather or disaster conditions (wind speeds or earthquake intensity, for example). A modeled trigger relies on specified catastrophe model estimates that claims exceed a specified amount.[36] Parametric triggers generally allow for much more rapid payout than an indemnity trigger, which requires verification of losses. That said, parametric triggers create basis risk for the sponsor, or the possibility that losses are not equal to payouts.

Catastrophe bonds are generally used to cover just a slice of a risk. For example, they may cover losses between $1 billion and $1.5 billion. In this case, the point at which the catastrophe bond begins to cover losses—$1 billion in this example—is called the attachment point. The cap of payments is the exhaustion point. It is common for cat bonds to not take a full layer, but only a share of a layer in order to provide diversification in sources of capital.

The premium spread of the bond depends on the probability of the loss for investors. For this, investors rely on estimates prepared by catastrophe modeling companies. If investors do not trust the catastrophe models or are uncomfortable with the risk, they will demand higher premium spreads.[37] This is certainly the case for third-party wildfire liability for California's electric utilities, which require not just confidence in the underlying hazard models but also in how modelers account for the likelihood that the ignition is started by a given utility and then once started, expected liabilities (which are a

[36] Edesess, M. (2015). "Catastrophe Bonds: An Important New Financial Instrument." *Alternative Investment Analyst Review*. Chartered Alternative Investment Analyst Association, Fall.
[37] Hardy, M. and F. Yang. (2017). "CAT Bond Premium Spreads." Global Risk Institute, June.

function not just of property damage but also litigation). This is unique for catastrophe bonds, which have previously been issued to cover only first-party disaster damages.

Both PG&E and Sempra (parent company of SDG&E) have attempted to use catastrophe bonds for third-party wildfire liability risk. PG&E went to market in August of 2018; this was the first issue to provide pure California wildfire protection with a trigger tied to third-party liability. Sempra's deal is similarly tied to their third-party California wildfire property liability risks. PG&E and Sempra each launched an SPV that raises capital from investors for the issuance of a cat bond that collateralizes a reinsurance agreement between the SPV and a traditional reinsurance company, which in turn provides protection to a traditional insurer, which in turn insures the utility for wildfire liability risk.[38] The PG&E cat bond is a $200 million tranche that attaches at $1.25 billion and covers a $500 million layer from that point upwards, with a franchise deductible applied for each event. In August 2018, at the time the bond was issued and before the Camp or Woolsey Fires started, price guidance was set at 6%-6.5% (see Table 1). The Sempra-sponsored cat bond is a $125 million tranche priced at 4% (in the middle of the 3.5% to 4.5% guidance). It attaches at $1.325 billion and exhausts at $1.465 billion, and Sempra is retaining the difference between the $125 million and the layer of $140 million.

TABLE 1. RECENT CALIFORNIA UTILITY CATASTROPHE BOND ISSUANCES[39]

Issuer / SPV	Cal Phoenix Re Ltd. (Series 2018-1)	SD Re Ltd. (Series 2018-1)
Cedent / Sponsor	PG&E Corporation	Sempra Energy
Placement / structuring agent(s)	GC Securities is sole structuring agent and lead bookrunner	GC Securities is sole structuring agent and lead bookrunner
Risk modelling	AIR Worldwide	AIR Worldwide
Size	$200 million	$125 million
Trigger type	Indemnity	Indemnity
Ratings	NR	NR
Date of issuance	Aug 2018	Oct 2018

The trigger for these bonds is similar to an indemnity trigger, but given the unique case of inverse condemnation in this context, payout of the bond is determined based on utility equipment being found to be the cause of the fire. These investigations, done by Cal Fire, can take months or years to complete. Further, the total amount the utility must pay will be based on the legal claims brought against it by homeowners and insurance companies. This means that investors will not be certain about the status of

[38] For PG&E, this cascades from its SPV to Tokio Millennium Re to Energy Insurance Mutual to PG&E. For Sempra, coverage cascades from its SPV to Hannover Re to Energy Insurance Mutual to Sempra. See: http://www.artemis.bm/deal_directory/cal-phoenix-re-ltd-series-2018-1/ and http://www.artemis.bm/deal_directory/sd-re-ltd-series-2018-1/.

[39] For more discussion, see: http://www.artemis.bm/blog/2018/10/08/sd-re-ltd-california-wildfire-cat-bond-to-price-at-middle-of-guidance/ and http://www.artemis.bm/deal_directory/cal-phoenix-re-ltd-series-2018-1/

the bond until well after the blaze has been contained; the bonds have limits for how long the collateral can be held.

Investors are not fully comfortable taking this new risk, as the PG&E bond failed to upsize as expected[40] and placed at over seven times its modeled expected loss.[41] This is much higher than most cat bonds. Data on the average price to expected loss by year for property (not liability) cat bonds from Artemis shows it has been under five since 2003 and under four since 2012.[42] After the 2017 and 2018 wildfires, interest in cat bonds designed with indemnity triggers exclusively for California utility third-party liability appears to have all but disappeared. Experts disagree as to whether the market may become more comfortable with this particular risk in the future. Some think this may occur, others believe that the past two wildfire seasons will permanently discourage any interest in cat bonds solely for California utilities' third-party wildfire liability.

3.4 Industry Captive

Captive insurance companies ("captives") are a type of insurance firm established by a parent company (that is itself not an insurance company) or by a group of companies to insure the risks of the owners. They date back to the 1500s and ship owners in London. Captives are essentially a form of funded self-insurance where the insurance provider is owned by the insured. The captive often operates like a traditional insurer, collecting premiums, issuing policies, and paying claims but offers these services only to the owners. The captive may, in turn, use multiple reinsurance or risk transfer mechanisms.

There are multiple benefits to and motivations for forming a captive. Specifically, they can be used to cover difficult-to-insure risks. They have also historically been established in periods of hard insurance markets as a way to save costs on risk transfer and address risk financing where commercial insurance is not available or is uneconomic. Captives can also reduce costs by providing direct access to reinsurance markets. Firms may also choose a captive in order to maintain control or ensure stability in risk transfer costs. Finally, a captive can have tax advantages since, often, contributions to a reserve are not tax deductible, but premium payments (to a captive) are deductible.

California utilities could join together and create a group captive to cover their liability for wildfire-related property damage. Generally, the owners—the utilities—would elect a board of directors to manage the captive. Many management and design options would require expert consultation, such as the setting of premiums among various participants, underwriting strategies, claims adjusting, capitalization requirements, management structures, and domicile location. Some initial capitalization would be necessary, because a captive insurer formed by the utilities would need to have adequate loss reserves. It is worth noting that any captive would have to set sufficient premiums to cover the risk, which may not necessarily be much lower than would be charged by commercial insurance. That said,

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[40] Artemis (2018). "PG&E Secures First Wildfire Indemnity Corporate Cat Bond at $200 Million." August 7. Online at: http://www.artemis.bm/news/pge-secures-first-wildfire-indemnity-corporate-cat-bond-at-200m/
[41] Jasper, C. (2018). "California Wildfire Blindsides Cat Bondholders" *Global Capital* November 22.
[42] Data online here: http://www.artemis.bm/deal_directory/cat_bonds_ils_average_multiple.html.

the premiums of a captive would be retained in no-loss years and available to be rebated or used for other purposes as determined by captive owners. They may need regulatory approval before being created for this particular purpose.

Something similar is not without precedent in the energy industry. For example, in the mid-1970s, the Associated Electric & Gas Insurance Services Limited (AEGIS), an electric utility group captive, was created as a mutual. It now provides liability and property coverage to hundreds of policyholders in the energy industry and operates as a surplus lines carrier in all U.S. states. As another example, after the Three Mile Island accident, the Nuclear Mutual Limited was created as a captive because the founding utilities were unable to get the coverages and pricing they desired in the commercial insurance market. Nuclear Electric Insurance Limited (NEIL) was soon formed as a sister company and later the two merged. NEIL now insurers nuclear plants abroad, as well. As a final example, in the 1980s Energy Insurance Mutual, a mutual insurance company, was formed to provide excess liability coverage to utilities that were struggling to find coverage on the commercial market.[43] Some of these existing captives have previously offered small amounts of coverage for wildfire liability to California utilities but are unable or unwilling to provide sufficient protection for the escalating risk of strict liability for third-party damages,[44] suggesting a captive exclusively for California electric utilities may need to be created.

A related option for utilities is to form a risk retention group. These are corporations or limited liability associations governed by the Federal Liability Risk Retention Act of 1986. They are created to offer liability coverage for related members, which here would be the California utilities and their third-party wildfire damage liability. To do this, the state insurance commissioner must approve a feasibility study, business plan, and capital requirements and then license the operation.[45] Most risk retention groups are captives but there are some differences with the captives discussed above. Specifically, risk retention groups must be owned by policyholders and must have at least two policyholders (whereas a captive could be formed by a single company and write only coverage for that firm). Also, the capital requirements may differ and risk retention groups can only write liability insurance, while captives can provide quite broad coverage.[46] Risk retention groups have been used before in the industry. For example, the Public Utility Mutual Insurance Company is a risk retention group providing liability coverage to municipal utilities in the Northeast.

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[43] An Energy Insurance Mutual subsidiary acted as the insurer for PG&E in connection with PG&E's cat bond, with all of Energy Insurance Mutual's coverage obligations backed by a reinsurance agreement with Tokio Millenium Re, which are in turn backed by a retrocessional reinsurance agreement with PG&E's SPV, which is funded by principal from capital markets investors.

[44] https://www1.sce.com/NR/sc3/tm2/pdf/3768-E.pdf

[45] National Association of Insurance Commissioners (2013). Risk Retention and Purchasing Group Handbook. Washington, D.C.

[46] Further, risk retention groups can operate throughout the U.S. after they are licensed in a state and do not need a fronting insurer to write policies.

3.5 Risk Pool

A risk pool is a mechanism to spread risk among a group of participants. Financial resources are combined among pool participants to cover losses whenever any of the pool participants experience a covered event. Essentially, participants exchange a share of their own risk for a share of the group risk of all members. Pools offer a couple of benefits. They are member-owned and operated, giving the participants more control over their coverages. They also tend to support risk reduction measures, through technical assistance or financial assistance in low-loss years, which would help members and lower claims for the pool.

Risk pools can at times offer affordable coverage against risks that are expensive or difficult to insure in the private market. Cost benefits from pooling risks, however, are only actualized for unpredictable and infrequent risks that can be diversified among many participants. If California frequently experiences annual fire seasons with blazes traced to utilities, a pool may not be able to offer benefits because the resources of the small pool would be insufficient without unfavorably high annual contributions. Moreover, due to overhead costs, pools will not be cost-effective if the utility is essentially simply trading dollars with the pool. A study projecting future wildfire liability to utilities would need to be undertaken to guide further exploration of a pool in this context and to determine what layer of losses would be most cost-effective to pool.

Risk pools have been used in other contexts where commercial insurance is expensive or difficult to obtain. Municipal pools, for example, are cooperative, nonprofit insurance entities owned and controlled by local governments. In general, participating local governments pay a premium into the pool and receive a coverage document, similar to an insurance policy. In the event of a covered loss, the pool pays claims to the local government. Municipal pools often cover liability, property damage to city buildings, and workers compensation for employees. Many have a consulting relationship with an actuarial firm to help them price their coverage. If funds exceed claims in a given year, the pool may retain the earnings in reserve or may return them as a dividend. The Association of Governmental Risk Pools (AGRiP) estimates that at least 80 percent of public entities in the United States participate in a risk pool.[47] A few states treat these as insurance and are, therefore, regulated by state insurance commissions, but most states do not; California Government Code section 990.8 expressly states that such pools are not to be treated as insurance.[48] Dozens of such pools operate in the state and may hold lessons for the structure of a utility risk pool.

A number of design questions would need to be explored to establish a pool for electric utilities. The first would be determining the members. Presumably, at a minimum a pool would include the three IOUs in California, but it could also include the POUs, or at least the larger ones (such as SMUD) that are concerned about their wildfire risk.

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[47] See fact sheet at https://www.nlc.org/sites/default/files/users/user118/Fact_Sheet-3.docx.

[48] Doucette, J.E. (2002). "Wading in the Pool: Interlocal Cooperation in Municipal Insurance and the State Regulation of Public Entity Risk Sharing Pools - A Survey." *Connecticut Insurance Law Journal* **8**(2): 533-564.

A risk pool for third-party wildfire claims would require both upfront capitalization as well as annual contributions funded through rates. Contributions would likely need to be securitized and approved by the CPUC in a manner similar to premium payments to a (re)insurer (for more discussion see Section 5). Pool contributions could be determined based on several metrics. Contributions, however, must be set somewhat proportional to risk or it would not be to the benefit of some participants to join the pool. Contributions could be based on a financial metric, service area size, or wildfire exposure, such as the percentage of line miles area in high wildfire risk areas. In theory, contributions could be reduced when a utility invests substantially in wildfire risk mitigation, although determining the amount of the reduction for various activities and verifying compliance may be difficult and/or contentious. Alternatively, pool membership may first require certain mitigation activities.

There is precedent for linking the risk transfer activities of a pool to risk reduction. The Caribbean Catastrophe Risk Insurance Facility (CCRIF) pools disaster risk for member Caribbean and Central American countries. Countries pay an annual premium that is proportional to their risk of the particular natural disaster (CCRIF provides policies for earthquake, tropical cyclone, and excess rainfall). Donor organizations initially capitalized the pool. It both builds up a reserve and uses reinsurance. If losses exceed claims-paying ability, then payouts are pro-rated. Notably, CCRIF also provides hazard maps and risk information to countries to help them lower their potential losses through better land use and building regulations.[49]

The specific coverages of a utility risk pool would need to be defined in contracts akin to policy documents. These would clearly define when the pool would pay losses for a member and how much would be covered. These contracts would also establish a stop-loss for each member, or an amount beyond which the pool would not pay. If the pool grew in sophistication, it could offer member-tailored coverages that would be priced appropriately by employing the services of an actuary.

Finally, the pool would need to determine how to use unspent funds at the end of each year. Initially, some portion of unspent funds would likely be used to build up a reserve for the pool. If and when the reserve reached an adequate level, remaining funds could be given back to members for defined wildfire mitigation activities or simply pro-rated back to members.

3.6 Recovery Bonds

Pre-event financing arrangements, such as those discussed thus far, have the benefit of ensuring clear and defined mechanisms for obtaining capital to pay damages when it becomes necessary. Bonds, however, have been issued by multiple entities after natural disasters to help fund the unexpected and often high costs of these events. Such bonds are often referred to as recovery bonds. These bonds, like others, are sold to investors and then repaid with interest over a set period of time.

[49] For more information see: CCRIF SPC (2015). "Understanding CCRIF: A Collection of Questions and Answers." Grand Cayman, Cayman Islands: March.

State legislation passed in the fall of 2018 allows electric utilities in California to pay for wildfire liability costs through the sale of state-sponsored recovery bonds. Specifically, the bill authorizes the CPUC to "issue financing orders to support issuance of recovery bonds to finance costs, in excess of insurance proceeds, incurred, or that are expected to be incurred, by an electrical corporation, excluding fines and penalties, related to wildfires…"[50] This would allow recovery bonds to be securitized with a dedicated revenue source to repay the debt, which would produce a more favorable rating. Without cash receipts from such a dedicated rate component, the bonds would not be securitizable, lowering their rating and potentially causing investors to shy away from them.

Currently, the CPUC can issue a securitization order only following the reasonableness review of paid wildfire liabilities. As a result, the utilities must raise interim capital to finance the payment of wildfire liabilities without certainty of recovery. Raising the necessary capital may be difficult in this context. New legislation could enable securitization orders in advance of cost recovery determination, facilitating access to capital. A request by the utility for a securitization order pre-loss (for example, to fund any of the earlier discussed mechanisms) would be subject to review and authorization by the CPUC. If the CPUC determines post-loss that those costs are not "just and reasonable," it may disallow some portion of the utility's revenue requirement proportional to the utility's conduct while leaving the dedicated rate component servicing the securitization bonds intact. In making the "just and reasonable" determination, the law requires the CPUC to consider the utility's conduct, wildfire mitigation practices, and the extent to which costs were caused by factors beyond the utility's control, such as climate conditions and wind speed. As noted above, recent legislation also directs the CPUC to consider the utility's financial status and how much the company can pay without harming customers or adversely impacting service provision.

Uncertainty in rate recovery, coupled with shrinking equity post-wildfire, could make it harder for utilities to issue debt when most needed. That said, if the recovery bond is securitized by a dedicated rate component, this reduces the riskiness of the bond and results in a higher rating and lower interest rate. As such, when viable, recovery bonds can allow utilities to access larger amounts of capital relatively quickly. Securitized recovery bonds can also spread the cost of the disaster over multiple years and can reduce overall costs to consumers. As a consequence, securitized recovery bonds have become a fairly standard way for paying to repair systems damaged in hurricanes.[51] By way of example, in the aftermath of the 2004 hurricane season, the Florida legislature passed a law allowing utilities to recover storm damage costs and to rebuild storm reserve accounts by issuing securitized bonds. Following another series of devastating storms in 2005, Louisiana, Mississippi, and Texas followed suit.[52]

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[50] See SB 901, available here: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB901

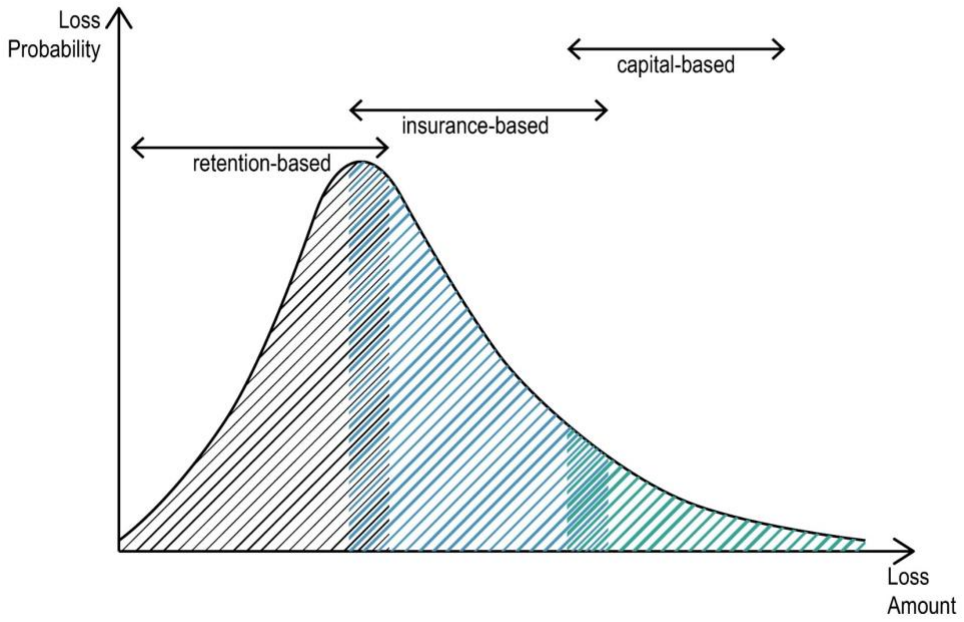
[51] For more, see: Britt, E. (2017). "Hurricanes Harvey and Irma: Electric Industry Impacts, Restoration, and Cost Recovery" *Infrastructure* 57(1).

[52] Ebert, M.E., J. Atkins, B., E.M. Jackson, J.M. Maltby, and R.L. Freeman (2016). "Critical Electric Power Infrastructure Recovery and Reconstruction: New Policy Initiatives in Four Gulf Coast States after 2005's Catastrophic Hurricanes." Fairfax, Virginia, George Mason University School of Law, Critical Infrastructure Protection Program.

4. Layering Financing

The financing solutions discussed in Section 3 fall into three overlapping categories: (1) retention-based solutions, (2) insurance-based solutions, and (3) capital-based solutions. The first are formalized approaches for the utility continuing to self-insure a portion of the risk through mechanisms such as reserve accounts. Industry captives would be quasi-retention based and quasi-insurance in so far as the captive is owned by the members it insures. Risk pools would move more toward an insurance-based solution and then, finally, there is standard commercial policies. Capital-based solutions move risk to the financial markets through various forms of bonds or other insurance-linked securities. As shown in Figure 3, these solutions can be matched to different parts of the loss distribution.[53] It is generally more cost-effective for firms to retain the high frequency and lower loss risks, transfer the lower probability and higher magnitude risks, and make use of capital markets for the tail risks (risks with low probability and high losses) where greater amounts of capital can be accessed.

FIGURE 3. RISK FINANCING STRATEGIES

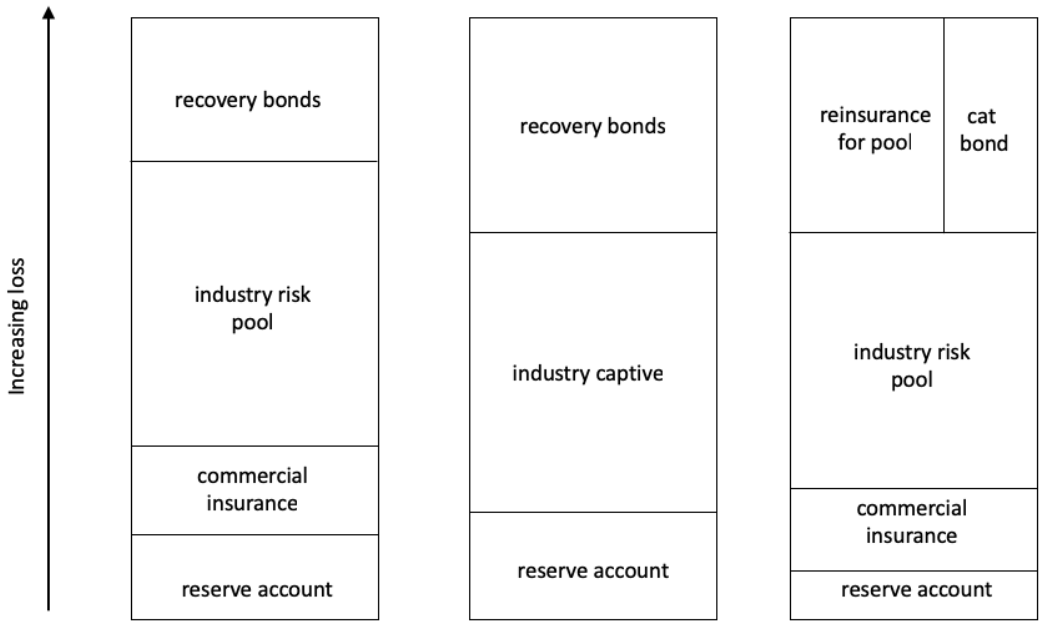


Determining optimal levels of risk retention versus risk transfer and how to choose among various institutional mechanisms is a difficult and complex decision for a company. In essence, the utility should

[53] Several analysts have explored such breakdowns in instruments previously. For example, see: Mutenga, S. and S.K. Staikouras (2007). "The Theory of Catastrophe Risk Financing: A Look at the Instruments that Might Transform the Insurance Industry." *The Geneva Papers* **32**: 222-245 and Aon (2015). "Finding the Right Retention" online at https://www.casact.org/community/affiliates/sccac/1215/Ferrell-Malbon-Rico.pdf.

layer various risk financing solutions for different levels of the risk as suggested in Figure 3. There are multiple approaches to operationalizing this as shown in the three example risk financing towers in Figure 4. Any of these financing towers—and others—are plausible approaches to financing the risk. With such a concentrated and potentially catastrophic risk, however, there are limitations to all these approaches and none will be as affordable as a risk that could be pooled more broadly or was more limited in potential downside (such as first-party wildfire damages).

FIGURE 4. EXAMPLE RISK FINANCING TOWERS



Clearly a first order metric for comparison among different options is cost-effectiveness or minimizing opportunity cost, as well as market support/availability. The cost of different options varies along the expected loss distribution; companies must also recognize the cost of retained risk. At a high level, this can be guided by Figure 3, but choosing among various insurance-based approaches would require a more detailed risk and actuarial analysis. Such a study would examine future liability for wildfire-related property damage and include a financial analysis of various options in light of the utility's risk tolerance. It would consider, as well, some challenges with risk pooling, whether in a captive or pool, among only a very small number of utilities with the potential for catastrophic losses.

Beyond a cost or financial analysis, choosing among the various risk financing approaches should also be guided by other metrics of potential interest to utilities including: control over risk transfer arrangements, regulatory requirements, stability over time, linkages with risk reduction, and the distribution of costs. Analysis of these factors and making an ultimate decision must be done in dialogue with the CPUC, because a critical component of decision-making will be the extent to which various risk

financing costs can be included in customer rates. Cost-effective risk financing, however, should be supported by the CPUC as it would benefit the customer through lower impacts on rates and improved financial health of the utility.

5. Funding

Most of the financing approaches discussed in Section 3 would need annual contributions and many would also require initial capitalization to be viable. This funding could potentially come from three sources: ratepayers, taxpayers, and shareholders. The application of inverse condemnation to electric utilities is predicated on the argument that wildfire damages are a cost of electricity provision and should be spread across all customers through rates. The CPUC does not always allow this, however, and utilities are now in a position where the distribution of these costs is quite uncertain and utility shareholders have been a source of post-loss contributions. When the company has not behaved imprudently, however, this violates the regulatory compact mentioned earlier: that utilities should be able to recover all costs of providing electricity service in exchange for universal provision—even electricity provision in high wildfire risk areas. To align with the regulatory compact, ratepayers would shoulder cost-effective pre-wildfire financing and shareholders would pay post-loss costs only in proportion to utility imprudence. In this section, we discuss in more detail contributions from all three groups.

5.1 Utility Customers

Utility rates need to cover the costs associated with providing electricity in a responsible way in a fire-prone state that requires utilities to pay for third-party property damage through a strict liability regime. The question is how much, when, and through what mechanism. Annual contributions for a reserve fund, insurance premium payments, or pool contributions could all be funded through a specific fee or dedicated rate component on ratepayers' utility bills. This would require approval by the CPUC or legislation.[54]

Historically, recovery of commercial insurance premiums in rates has been standard, as they are a cost of operation. When insurance premiums are allowed to be recovered but not other types of risk financing, however, utilities may have poor incentive to purchase excessively expensive insurance (if it is even available). In order to guarantee the financial soundness of utilities through pre-event financing, the CPUC will need to begin to broaden consideration of recovery for the other mechanisms discussed here alongside standard insurance policies. Another challenge is that rate cases have tended to look at historical losses. In a time of increasing wildfire costs, including growing insurance premiums and capacity constraints, historical numbers will fail to be accurate. Modelled future expenses will be needed in rate cases.

[54] The CPUC already allows other types of costs to be socialized among ratepayers. For example, through the California Alternate Rates for Energy (CARE) program, qualifying low income households can receive a 30-35 percent discount on their electric bill, which is paid through a surcharge levied on all other utility customers.[54] By making electricity more affordable for low-income households, the CARE program provides a public good that is believed to benefit the broader community, including the ratepayers that finance the discounts. The same logic applies for pre-financing wildfire losses. By contributing to a financial mechanism that allows utilities to effectively manage wildfire liability costs, ratepayers are providing a public good that accrues to their communities when utilities are able to continue providing service in high-risk areas.

If fees are charged to ratepayers, these could be uniform or vary across different customer segments. One general consideration is that a uniform fee on all ratepayers would likely be regressive because lower income households tend to pay a higher portion of their income toward utility bills than higher-income households. To address this concern, the wildfire risk financing fees could be waived for the lowest income ratepayers or addressed through federal and state programs already established to help lower income households pay their energy bills (e.g., the Low-Income Home Energy Assistance Program or the California Alternate Rates for Energy program).

Wildfire risk is not distributed evenly and some customers contribute more to the risk than others. The risk of igniting a wildfire is higher when lines must be hung through high fire-risk areas, such as the area called the wildland-urban interface (WUI). Accordingly, there is an equity argument to be made for charging a higher wildfire fee on ratepayers in the WUI. A differential fee does not mean that it should be zero for urban-dwellers, however, as many transmission lines that provide power for all customers must cross the WUI. While it could be challenging to define the WUI area that would face higher charges, this could be aided by the many wildfire risk designations produced by Cal Fire. The designated areas may also face different reliability standards since de-powering lines in high wind conditions would likely be needed during adverse conditions to reduce the possibility of ignition.

Determining some type of pre-wildfire or standing fee on ratepayer bills to fund potential liabilities through a pre-disaster financing mechanism discussed in Section 3 would provide greater stability for the utility and, ultimately, for ratepayers. Currently, commercial insurance is limited and expensive and interest among investors for assuming this risk is minimal, suggesting a deeper investigation of captives or risk pools is worth undertaking. While post-wildfire negotiations in the face of growing liability generally creates problematic uncertainties for all parties, recovery bonds could be used with a pre-disaster approval for securitizing them through a dedicated rate component.

5.2 Taxpayers

It is unlikely that taxpayers would be called on to finance this risk for utilities even though choices made by state and local governments around land use, building codes, and fuel management contribute to the increased risk. The contribution of these factors, combined with climate change, is not recognized in a regime that holds utilities strictly liable for property damages. This regime is increasingly pushing utilities toward financial hardship (or bankruptcy) with the possibility of cascading impacts in the state. The growing financial precariousness of utilities could, if severe enough, threaten energy reliability and California's climate change goals. As such, absent reform of strict liability, legislators may choose to provide some limited type of funding to help protect the utilities from bankruptcy and to ensure that capital is available for third parties whose homes were damaged in wildfires and/or for the insurers who paid out homeowner claims following wildfires. This could take the form of initially capitalizing a risk pool or industry captive, for example, or providing a standing state guarantee of recovery bond issuances. If and how a state contribution is made would require a more detailed analysis and discussion with various stakeholders.

5.3 Shareholders

With the current financing arrangement—or lack thereof—for third-party wildfire liability, shareholders are bearing some of the costs. For example, beginning with the fourth quarter of 2017, PG&E suspended payment of cash dividends on its common and preferred stock, due to potential wildfire liability. It should be noted that many retirees and other investors choose utilities precisely because they pay reliable dividends and tend to be low risk. This was coupled with plummeting value to the point where PG&E filed for bankruptcy, which could impose costs on many stakeholders. Other IOUs have also seen declines due to wildfire liabilities, impacting their shareholders as well. A study of the direct shareholders of utility stocks with qualified dividends found that around 60% were over age 65 and two-thirds had incomes under $100,000 (with 38% having incomes under $50,000).[55] When utility shareholders bear the costs, therefore, it primarily impacts older and less affluent individuals.

In addition to withholding dividends to cover wildfire damages and declines in share prices, shareholders indirectly contribute to wildfire liability costs if the company has to take on more debt or issue more stock and uses the funds to cover wildfire expenses. That said, it would be extremely difficult to issue debt or equity in an environment when dividends are suspended and the utility faces continued exposure to future large liabilities that are not adequately financed through secure pre-event mechanisms backed by ratepayer contributions. Moreover, declining credit ratings and stock prices make it more difficult and expensive for utilities to borrow funds or raise capital for critical projects. If utilities can't access funds through these means, they may rely more heavily on rate increases to pay for necessary infrastructure improvements. As a result, ratepayers will shoulder more costs through higher electricity bills.

6. Conclusion

The effects of climate change, along with development in the wildland urban interface are continuing to drive up the risk of wildfire damages in California. The state needs to adopt a sound financing strategy for its electric utilities to protect all parties and to ensure continued progress on broader climate and energy goals. The most straightforward way to achieve this may be to eliminate strict liability for third-party wildfire damages coupled with a cost recovery standard at the CPUC that is tied to universally agreed upon risk reduction activities (such as could be articulated in the utilities' SB 901 wildfire management plans). The current regime has created a risk that is difficult to finance due to its concentrated and catastrophic potential. Eliminating strict liability for third-party damages for wildfire, while simultaneously adopting new regulations on wildfire mitigation activities for electric utilities, could preserve incentives for proper risk reduction yet not threaten the ability of utilities to provide electrical service in high-risk areas by forcing them to cover escalating costs even when they are not negligent.

[55] Ernst & Young (2012). "The Beneficiaries of the Dividend Tax Rate Reduction A Profile of Utility Shareholders." Washington, DC, Edison Electric Institute and the American Gas Association.

Absent reform, addressing third-party wildfire liability for California's electric utilities will require layering together multiple risk financing options. Utilities likely need a dedicated rate component for some level of funded self-insurance as the initial financing layer. Commercial insurance and catastrophe bonds may be able to play a small role, but currently, the private market has seen rising prices and decreasing interest in assuming this risk. As such, utilities likely need to pursue, in consultation with the CPUC, some type of risk pool or industry captive. If utilities could be guaranteed pre-disaster state backing or CPUC approval of rate recovery, recovery bonds are another viable financing option. Without more certainty, however, they may not provide needed financial assurances. Ex-ante financing and guidelines are necessary to have in place, because without them, post-wildfire there are protracted negotiations between the utility, CPUC, the state legislature, and other stakeholders on how to divide costs between ratepayers and shareholders. Reducing this post-disaster confusion is in the interest of all stakeholders.

Only about 5% of wildfire ignitions are from power lines (this is just over 10% of acres burned).[56] For the state as a whole, then, property damage from wildfire is a much broader issue than electric utilities. As concerns mount about the affordability and availability of property insurance in highly wildfire-prone regions,[57] the state must have a larger policy discussion with utilities, insurers, and all other stakeholders, about how to equitably fund this growing risk and provide greater incentives for risk reduction to all parties, including local governments and households.

[56] This figure is based on analysis of Cal Fire data from 2007 to 2016, see http://www.fire.ca.gov/fire_protection/fire_protection_fire_info_redbooks.

[57] See: California Department of Insurance (2017). "The Availability and Affordability of Coverage for Wildfire Loss in Residential Property Insurance in the Wildland-Urban Interface and Other High-Risk Areas of California: CDI Summary and Proposed Solutions," December.