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Wildfires and Climate Change: California's Energy Future

A Report from Governor Newsom's Strike Force

April 12, 2019

Executive Summary

Climate change has created a new wildfire reality for California. The state's fire season is now almost year round. More than 25 million acres of California wildlands are classified as under very high or extreme fire threat. Approximately 25 percent of the state's population – 11 million people – lives in that high-risk area.

Wildfires are not only more frequent but far more devastating. **Fifteen of the 20 most destructive wildfires in the state's history have occurred since 2000; ten of the most destructive fires have occurred since 2015.** The results are visible to all: lives lost, grave fire damage to homes and communities, rising gas and electricity rates, pressure on the home insurance market, and the threat of insolvency for California's utilities. The largest investor-owned utility in the state has filed for bankruptcy protection and two other major investor-owned utilities in southern California have had their credit ratings downgraded. Financial experts have opined that these utilities are likely one major fire away from bankruptcy. Making matters worse, this year has all the conditions for devastating fires, with a very wet season leading to high vegetation density. During fire season, that vegetation dries out and becomes fuel.

Since the first days of his administration, the Governor has taken decisive action to strengthen California's emergency preparedness and response capabilities to mitigate wildfires and build community resilience. In response to instability in the energy sector and to PG&E's decision to file for bankruptcy, the Governor created a strike force to coordinate the state's efforts relating to the safety, reliability, and affordability of energy, as well as to continue progress to achieve the state's climate commitments. As part of these efforts, sixty days ago, the Governor directed the strike force to develop a comprehensive roadmap to address the issues of wildfires, climate change, and the state's energy sector. That roadmap is attached.

The strike force report sets out steps the state must take to reduce the incidence and severity of wildfires, including the significant wildfire mitigation and resiliency efforts the Governor has already proposed. It renews the state's commitment to clean energy. It outlines actions to hold the state's utilities accountable for their behavior and potential changes to stabilize California's utilities to meet the energy needs of customers and the economy.

It is imperative that utilities not put profits ahead of safety and service. That is why the state has and will continue to advocate in PG&E's bankruptcy proceeding for fair treatment of fire victims, for California consumers, and for California policies and values.

Preventing and Responding to Catastrophic Wildfires

The report begins by setting out steps that the administration, the CPUC, local communities, and utilities must take to reduce the incidence and severity of wildfires and to step up both community resilience and the state's response capabilities. To accomplish this, it is critical that the state:

Wildfires and Climate Change: California's Energy Future

- **Expand fire prevention activity** by improving forest and vegetation management, accelerating fuel reduction projects on both public and private land, training the workforce needed to scale up these projects, investing in new technologies to model and monitor fire risk, and strengthening utility oversight so that they invest more in safety.
- **Make communities more resilient** by considering updating codes that govern defensible space, encouraging cost-effective hardening of homes, strengthening evacuation, encouraging other emergency planning, and improving land use practices to reduce the damage to life and property from wildfires.
- **Invest in fire suppression and response** by investing in new fire engines and aircraft, re-deploying National Guard personnel from the border to support fire suppression initiatives, purchasing detection cameras to provide advanced data to firefighters, and investing in a statewide mutual aid system to pre-position resources in high-risk areas.
- **Call on the Federal Government to Better Manage Federal Forest Land.** As the owner of 57 percent of California's forestland, the federal government must also do its fair share to reduce fire risk. Specifically, the Governor has joined the governors of Washington and Oregon to call for the federal government to double the investment in managing federal forestlands in our states due to the high risk of wildfires.

Renewing California's Commitment to Clean Energy

Given that climate change is a core driver of heightened wildfire risk, California must continue its transition to clean energy. California has established ambitious greenhouse gas reduction targets and the utility sector has been critical to the significant progress our state has made. But, an unstable energy market presents new risks, and temperatures keep rising. Any solution must adapt to the changing market landscape while maintaining the state's commitment to mitigating climate change. To do this, the state should consider:

- **Evaluating state-level resource backstop options** to reduce gaps and inefficiencies that can result from an increasingly fragmented energy market – including the option of creating a state power procurement entity.
- **Increasing transparency and reliability protections for customers** by establishing standards to make energy provider information more transparent and facilitate statewide planning.

Allocating Responsibility for Wildfire Costs

An honest assessment of the realities of current and future climate change tells us that no matter how committed we are to preventing and fighting fires and to reducing carbon emissions over the long-term, the state will experience further fire damage in the coming years. If we continue on our current legal and regulatory path, we will get similar results – more deadly and destructive fires that put utilities near insolvency. That is unacceptable for fire victims and utility customers and is incompatible with an economy that requires safe, reliable, and affordable power. Any real plan must allocate costs resulting from wildfires in a manner that shares the burden broadly among stakeholders,

Wildfires and Climate Change: California's Energy Future

including utilities (ratepayers and investors), insurance companies, local governments, and attorneys. Taxpayers have substantially increased their contribution to mitigating fire risk and fighting fires when they ignite.

Any successful approach for allocating responsibility for wildfire costs should be based on the following principles: (1) maintaining safe and affordable power, (2) holding utilities accountable to prioritize safety, (3) treating wildfire victims fairly, (4) requiring equitable stakeholder contributions, (5) reducing overall costs from wildfire damage, (6) promoting California's clean energy goals, and (7) recognizing the contribution of California taxpayers.

The strike force has identified the following three concepts for evaluation against these principles:

- A **liquidity-only fund** that would provide liquidity for utilities to pay wildfire damage claims pending CPUC determination of cost recovery potentially coupled with modification of cost recovery standards.
- Adopting a **fault-based standard** that would modify California's strict liability standard to one based on fault to balance the need for public improvements with private harm to individuals.
- Creation of a **catastrophic wildfire fund** coupled with a revised cost recovery standard to spread the cost of catastrophic wildfires more broadly among stakeholders.

These concepts should be publicly debated, as each has impacts, tradeoffs, and consequences that must be addressed. Some concepts rely on voluntary contributions from utility investors, who in exchange will demand more clarity in the regulatory standard for cost recovery from ratepayers.

The choices are difficult, the future is uncertain and the solutions are imperfect. But legislative action is necessary for the stability of the state's energy market to meet the needs of Californians, and to achieve the state's clean energy goals.

Under the status quo, all parties lose – wildfire victims, energy consumers, and Californians committed to addressing climate change. Victims face a great deal of uncertainty and diminished ability to be compensated for their losses and harm. Customers face rising rates and instability. California's ability to achieve its climate goals is frustrated. Utility vendors and employees face uncertainty and likely significant losses. The bottom line is that utilities either in or on the verge of bankruptcy are not good for Californians, for economic growth, or for the state's future.

Strengthening Utility Market Regulation

Utilities must be active participants in the quest for safe, reliable, and affordable power. This report recommends strengthening utility regulation by reforming the California Public Utilities Commission (CPUC) to:

Wildfires and Climate Change: California's Energy Future

- **Expand safety expertise** by improving the CPUC's ability to review wildfire mitigation plans, conduct inspections and audits, and enforce safety standards at investor-owned utilities.
- **Clarify cost recovery standards** by setting clear guidelines in statute for when the CPUC can pass on the costs of claims from wildfire damage to ratepayers.
- **Improve decision-making** by overhauling procedures, delegating more decisions to technical staff so that judges and commissioners focus on core questions of rate-setting, and improving enforcement.
- **Review high-risk industry regulatory models** and explore options for incorporating the latest climate impact research, in concert with the Governor's Office of Planning & Research, as well as academic and industry experts in risk reduction.

Holding PG&E Accountable for Safety

PG&E is a textbook example of what happens when a utility does not invest in safety after numerous deadly reminders to do so over many years. Even today, PG&E is taking advantage of the bankruptcy process to promote the interests of investors over fire victims and other stakeholders. California will advocate for fair treatment of victims and employees, as well as to uphold the state's clean energy commitments in the bankruptcy process. The state will:

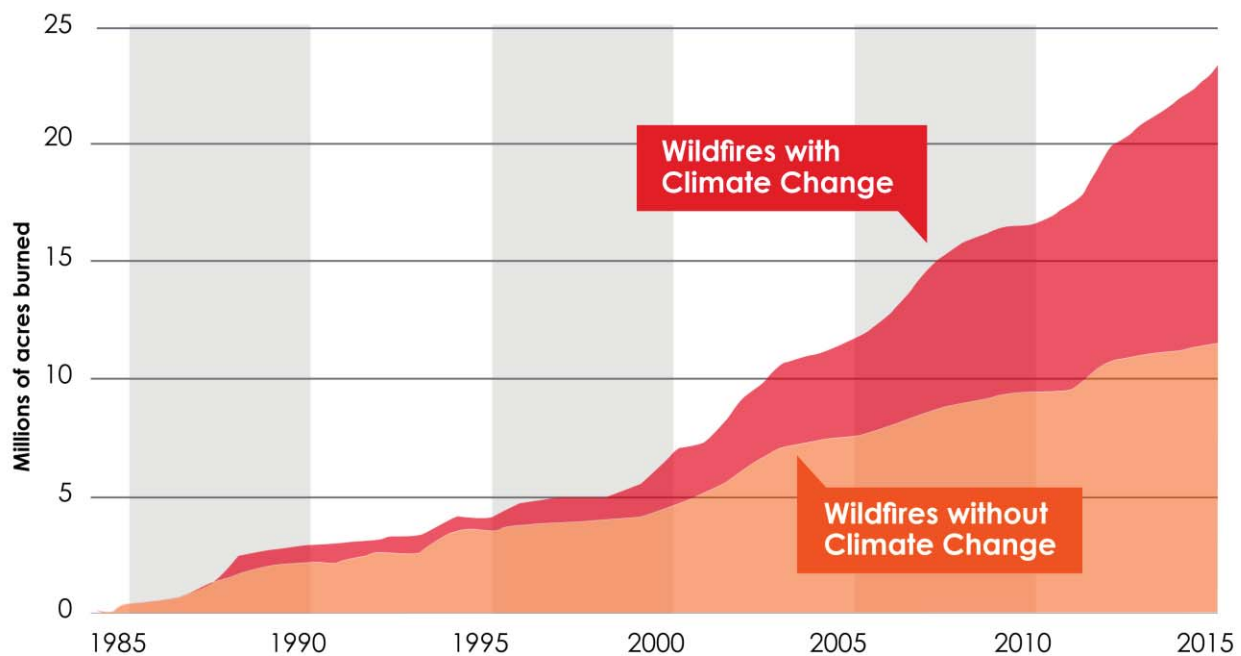
- **Monitor – and intervene – in the bankruptcy proceedings** to protect California's interests. PG&E is a private entity, but its misconduct has had grave consequences for the state and its people.
- **Evaluate options to satisfy wildfire claims** from the last two years so fire victims are treated fairly.
- **Demand that a reorganized PG&E serve the public interest.** After years of mismanagement and safety failures, no options can be taken off the table to reform PG&E, including municipalization of all or a portion of PG&E's operations; division of PG&E's service territories into smaller, regional markets; refocusing PG&E's operations on transmission and distribution; or reorganization of PG&E as a new company structured to meet its obligations to California.

The status quo is unsustainable. A better future is possible – one grounded in clear rules, effective regulation, and a new emphasis on safety so every Californian can access safe, reliable, affordable power. As the climate changes and risks rise, California must once more lead the way.

Introduction

California faces a dramatic increase in the number and severity of wildfires. Fifteen of the 20 most destructive wildfires in the state's history have occurred since 2000; ten of the most destructive fires have occurred since 2015.¹ While wildfires are a natural part of California's ecology, the fire season is getting longer every year—with most counties now experiencing fire season from mid-May to mid-December and several counties facing fire danger year-round.² Warmer temperatures, variable snowpack, and earlier snowmelt caused by climate change make for longer and more intense dry seasons, leaving forests more susceptible to severe fire.

Figure-01³



At the same time that our climate is changing and fueling the devastating force of wildfires, increased development in the wildland-urban interface (WUI) has placed more

¹ See generally, CAL FIRE, *Top 20 Most Destructive California Wildfires*, (Mar. 2019), http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Destruction.pdf (last visited Apr. 10, 2019) ("Top 20 Most Destructive California Wildfires").

² See generally, CAL FIRE, *2018 Fire Season Incident Information*, http://cdfdata.fire.ca.gov/incidents/incidents_seasondeclarations?year=2018 (last visited Apr. 10, 2019).

³ Eberhard Faust & Markus Steuer, *CLIMATE CHANGE INCREASES WILDFIRE RISK IN CALIFORNIA* | MUNICH RE MUNICHRE.COM (2019), <https://www.munichre.com/topics-online/en/climate-change-and-natural-disasters/climate-change/climate-change-has-increased-wildfire-risk.html> (last visited Apr 11, 2019) ("Climate Changes Increases Wildfire Risk").

Wildfires and Climate Change: California's Energy Future

residents in the potential path of destruction. Today, approximately 25 percent of the state's population (over 11 million people) lives in high fire-risk areas, including the WUI.⁴

The combination of more powerful wildfires and more Californians living in their paths has resulted in enormous, incomprehensible loss. Last year, 85 people died in the Camp Fire alone and 19,000 homes and other structures were damaged or destroyed.⁵ According to data from Butte County, more than 60 percent of those victims were over 60 years old.⁶ Paradise and other towns were devastated. The Camp Fire was only one of approximately 7,600 wildfires in 2018. Damage estimates for the 2018 wildfire season are staggering, with insured losses alone exceeding \$12 billion.⁷ Thousands of Californians who lost their homes, and their livelihoods in these fires, are still without permanent homes and struggling to rebuild their lives.

The damages caused by wildfires are unsustainable for the directly impacted victims, for the state, which is spending hundreds of millions of dollars to respond, and for local communities trying to rebuild. In response to climate change and heightened wildfire threat, California is expanding resilience efforts through increased investments in fire mitigation and response, community hardening, and emergency preparedness.

California's electric utilities must be part of the solution to this problem. In the past four years, equipment owned by California's three largest investor-owned utilities sparked more than 2,000 fires.⁸ Utility-caused fires tend to spread quickly and be among the most destructive. Hundreds of thousands of miles of electrical transmission and distribution lines snake across the California landscape, often igniting fires during extreme wind events and in remote areas, making early detection and fire suppression extremely challenging. Longer fire seasons make utility-caused fires even more likely. Hardening the electrical grid is thus a critical component to overall wildfire risk management.⁹ Our utilities—public and private—must make needed investments to reduce the risk of utility-ignited fires and, with the new reality of climate change, must do so now.

At the same time, the current system for allocating costs associated with catastrophic wildfires—often caused by utility infrastructure, but exacerbated by drought, climate change, land-use policies, and a lack of forest management—is untenable both for

⁴ LEVENTHAL CENTER FOR ADVANCED URBANISM, *Cataloguing the Interface: Wildfire and Urban Development in California*, (Spring 2018), <http://lcau.mit.edu/project/cataloguing-interface-wildfire-and-urban-development-california> (last visited Apr. 10, 2019).

⁴ Top 20 Most Destructive California Wildfires.

⁵ Cal Fire, *Top 20*.

⁶ *Los Angeles Times*, *Many victims of California's worst wildfire were elderly and died in or near their homes, new data show*, (Dec. 13, 2018) (archived from the original on Dec. 14, 2018).

⁷ CAL. DEP'T. INSUR., *CALIFORNIA DEPARTMENT OF INSURANCE INSURED LOSSES FROM THE 2018 CALIFORNIA WILDFIRES*, (Jan., 28, 2019), <http://www.insurance.ca.gov/0400-news/0100-press-releases/2019/upload/nr14-2019Insured-Losses-2018-Wildfires.pdf> (last visited Apr. 10, 2019).

⁸ Carolyn Kousky, et. al., *Wildfire Costs In California: The Role of Electric Utilities* Wharton Risk Management and Decision Processes Center (Sept. 2018), riskcenter.wharton.upenn.edu/wp-content/uploads/2018/08/Wildfire-Cost-in-CA-Role-of-Utilities-1.pdf (last visited Apr. 10, 2019).

⁹ Measures commonly used to harden the electrical grid include using insulated electrical lines in high-risk areas, replacing wood poles with steel, installing specialized monitoring equipment, and using new technologies that can reduce sparks or undergrounding lines when necessary in extreme high-fire areas.

Wildfires and Climate Change: California's Energy Future

utility customers and for our economy. Multi-billion dollar wildfire liabilities over the last several years have crippled the financial health of our privately and publicly owned electric utilities. Pacific Gas & Electric Company (PG&E) filed for bankruptcy in the face of massive potential liability for wildfire damages. Other investor-owned and public utilities have experienced recent credit ratings downgrades, with San Diego Gas & Electric (SDG&E) and Southern California Edison Company (SCE) now precipitously hovering just above junk status. Utilities rely on credit to finance ongoing infrastructure investments, including fire mitigation. As utilities' credit ratings deteriorate, their borrowing costs increase and those costs for capital necessary to make essential safety improvements are passed directly to customers. These downgrades, and the prospect of additional utility bankruptcy filings, directly impact Californians' access to safe, reliable and affordable electricity.

In his State of the State Address, the Governor directed a strike force to develop a comprehensive strategy, within 60 days, to address the destabilizing effect of catastrophic wildfires on the state's electric utilities. He charged the strike force with developing a strategy to ensure California's "continued access to safe affordable power" and to "seek justice for fire victims, fairness for employees and protection for consumers."¹⁰

As the Governor stated, the crisis confronting California's electric utilities comes "at a time when the entire energy market is evolving" and is exacerbated by "regulations and insurance practices created decades ago [that] didn't anticipate these changes." The Governor recognized the need to "map out longer-term strategies, not just for the utilities' future, but for California's future, to ensure that the cost of climate change doesn't fall on those least able to afford it."

The Governor directed his strike force to develop a comprehensive strategy that achieves the following objectives:

1. Assure access to safe, reliable and affordable power for all Californians.
2. Reduce the severity of wildfires through continued investments in fire mitigation, vegetation management and other strategies to reduce fuels.
3. Develop and implement technologies to more quickly identify and respond to wildfires.
4. Reduce the number of utility-sparked wildfires through smart investments in increased safety, prevention, grid-hardening, and vegetation management around electrical lines.
5. Facilitate fair and prompt treatment for wildfire victims and allocate the burden of wildfire damage responsibly and fairly across all stakeholders.
6. Ensure that California continues to make progress toward its clean energy goals.

¹⁰ OFFICE OF GOV. GAVIN NEWSOM, *Governor Newsom Delivers State of the State Address*, (Feb. 12, 2019), <https://www.gov.ca.gov/2019/02/12/state-of-the-state-address/> (last visited Apr. 10, 2019).

Wildfires and Climate Change: California's Energy Future

7. Provide sufficient certainty to investors and credit ratings agencies to avoid downgrades of utilities that could cause further bankruptcies and/or drive up borrowing costs, each of which raises prices for utility customers.
8. Hold utilities accountable for improving safety and preventing wildfires and for damages if their misconduct causes a wildfire.
9. Avoid a band-aid approach and instead set a path for the energy market of the future.
10. PG&E serves 40 percent of California electricity customers and has an egregious safety record. The state must hold PG&E accountable and demand systemic reforms and a commitment to safety.

This Report provides a roadmap to confront the challenges of catastrophic wildfires:

- Part 1: Catastrophic Wildfire Prevention and Emergency Response
- Part 2: Mitigating Climate Change through Clean Energy Policies
- Part 3: Fair Allocation of Catastrophic Wildfire Damages
- Part 4: A More Effective CPUC with the Tools to Manage a Changing Utility Market
- Part 5: Holding PG&E Accountable & Building a Utility that Prioritizes Safety

It will take a comprehensive approach to mitigate and prepare for wildfires, as well as to advance our climate goals. That said, the most vexing public policy challenge addressed in this Report is the equitable distribution of wildfire liability. The Report sets forth three concepts to address this central question--the imminent wildfire liability issues facing California's utilities--each as described further in Part 3:

- **Concept 1:** Liquidity-Only Fund. This concept would create a fund to provide liquidity for utilities to pay wildfire damage claims pending CPUC determination of whether or not those claims are appropriate for cost recovery and may be coupled with modification of cost recovery standards.
- **Concept 2:** Changing Strict Liability to a Fault-Based Standard. This concept would involve modification of California's strict liability standard under inverse condemnation to one based on fault to balance the need for public improvements with private harm to individuals.
- **Concept 3:** Wildfire Fund. This concept would create a wildfire fund coupled with a revised cost recovery standard to spread the cost of catastrophic wildfires more broadly among stakeholders.

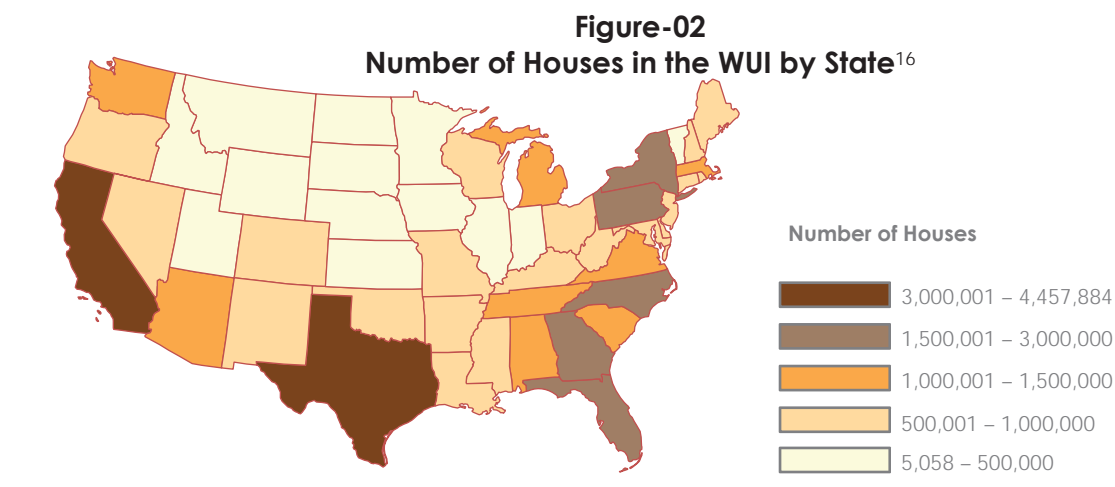
California needs to think creatively to find new ways to apportion the cost of catastrophic wildfires—ones that treat victims fairly and compassionately, that are sustainable for consumers, and that spread the burden equitably.

Part 1: Catastrophic Wildfire Prevention and Response

Catastrophic wildfires pose an urgent threat to lives, property, and resources in California. The 2017 and 2018 wildfire seasons were the most destructive in California's history.¹¹ More than 9,000 wildfires ignited across California in 2017 and 7,571 wildfires ignited in 2018, burning more than 2.8 million acres combined.¹² These fires caused the loss of 139 lives and destroyed tens of thousands of homes and businesses.¹³ They also poisoned the air across vast swaths of the state and harmed public health.¹⁴ Additionally, catastrophic wildfires compounded the challenge of reducing our greenhouse gas emissions by emitting millions of carbon particles into the air.¹⁵

Climate change, widespread tree mortality, weak utility infrastructure, and the proliferation of homes in the WUI magnify the wildfire threat and place substantially more people and property at risk than ever before.

Today, as illustrated in Figure-02 below, California's WUI is home to approximately 4.5 million homes and 11 million people.



¹¹ CAL FIRE, Incident Information as of Jan. 24, 2018, http://cdfdata.fire.ca.gov/incidents/incidents_stats?year=2017 (last visited Apr. 10, 2019).

¹² Id.

¹³ CAL FIRE, *Top 20 Most Destructive California Wildfires*, (Mar. 14, 2019), http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Destruction.pdf (last visited Apr. 10, 2019); CAL FIRE, *Top 20 Deadliest California Wildfires*, (Feb. 19, 2019), http://calfire.ca.gov/communications/downloads/fact_sheets/Top20_Deadliest.pdf (last visited Apr. 10, 2019); CAL FIRE, *Top 20 Largest California Wildfires*, (Mar. 14, 2019), http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Acres.pdf (last visited Apr. 10, 2019).

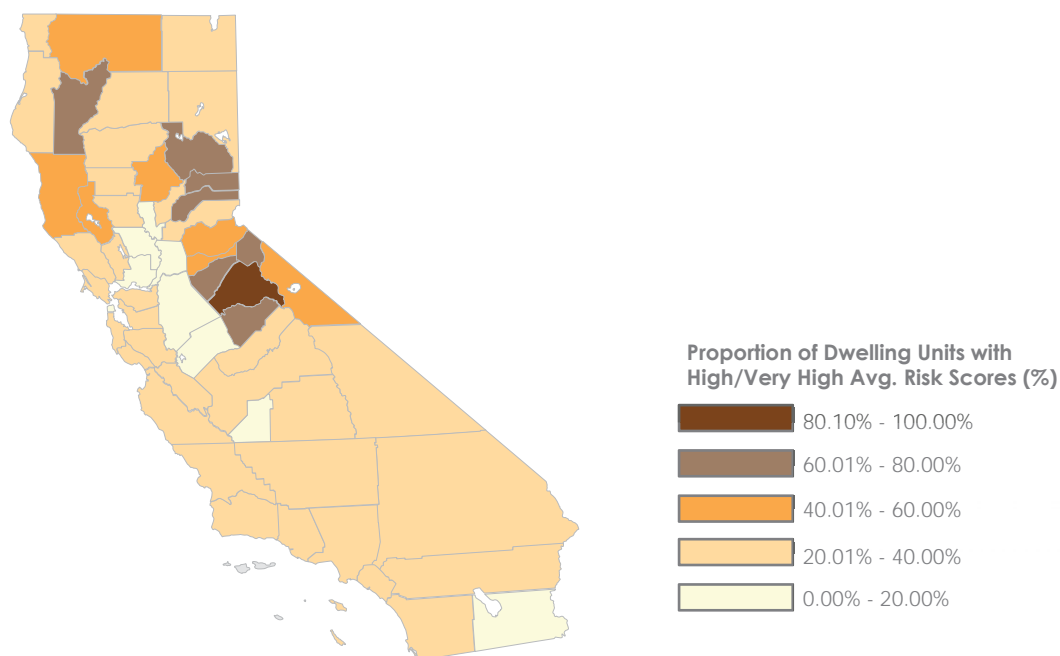
¹⁴ STATE OF CALIFORNIA GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, et al., *California's Fourth Climate Change Assessment: Statewide Summary Report* at 38, <http://www.climateassessment.ca.gov/state/docs/20190116-StatewideSummary.pdf> (last visited Apr. 10, 2019).

¹⁵ CALIFORNIA DEPARTMENT OF INSURANCE, *New Analysis Shows 2018 California Wildfires Emitted as Much Carbon Dioxide as an Entire Year's Worth of Electricity* (Nov. 30, 2018), <https://www.doi.gov/pressreleases/new-analysis-shows-2018-california-wildfires-emitted-much-carbon-dioxide-entire-years> (last visited Apr. 10, 2019) ("Fourth Climate Assessment").

¹⁶ CAL. DEP'T. INSUR., *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*, (Dec. 2017), <http://www.insurance.ca.gov/0400-news/0100-press-releases/2018/upload/nr002-2018AvailabilityandAffordabilityofWildfireCoverage.pdf> (last visited Apr. 10, 2019).

More than 25 million acres of California wildlands are now classified as under very high or extreme fire threat, extending that risk to over half the state--a high-risk area that will likely grow over time.¹⁷ Decades of fire suppression have disrupted natural fire cycles and added to increased wildfire risk.

Figure-03
Proportion of Dwelling Units with High / Very High Average Risk Scores¹⁸



The state's major study on climate impacts, the Fourth Climate Assessment, projects that California's wildfire burn area likely will increase by 77 percent by the end of the century.¹⁹ The growing risk of catastrophic wildfires has created an imperative for the state to act urgently and swiftly to expand preemptive fire prevention and bolster wildfire response efforts to help protect vulnerable communities and reduce the severity of wildfires in our state.

All levels of government, communities, utilities, and residents must share in this responsibility in order to better defend California from this devastating threat.

¹⁷ See CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION, *Community Wildfire Prevention & Mitigation Report* (Feb. 22, 2019), <http://www.fire.ca.gov/downloads/45-Day%20Report-FINAL.pdf> (last visited Apr. 10, 2019).

¹⁸ Ibid.

¹⁹ Fourth Climate Assessment at 9.

Wildfire Reduction and Mitigation Action Plan

Recognizing the need for urgent action, the Newsom administration has placed a high priority on fire prevention and recovery measures, as well as on identifying ways the state can become more resilient in the face of future fires.

On January 9, the Governor issued Executive Order N-05-19, directing CAL FIRE to recommend immediate, medium and long-term actions to help prevent destructive wildfires. With an emphasis on taking immediate actions to protect vulnerable populations, and recognizing a backlog in fuels management, the Executive Order called for a strategic approach to focus actions on California's most vulnerable communities to realize the greatest returns on reducing risk to life and property in the most fire-prone areas of the state.

To further augment fire prevention, the Governor signed a General Order in February rescinding previous authorization for California National Guard operations at the U.S.-Mexico border and redeploying personnel to prepare for the upcoming fire season by supporting CAL FIRE in fire prevention and fire suppression efforts.

The state needs to continue to build on this work with a focus on four specific areas:

11. General Prevention and Fire Suppression
12. Building Safer Utilities
13. Emergency Response
14. Land Use, Building Codes and Community Resilience

General Prevention and Fire Suppression

In response to Executive Order N-05-19, CAL FIRE released the Community Wildfire Prevention and Mitigation Report (CAL FIRE Report) on March 5. The CAL FIRE Report outlined a suite of actions to substantially reduce wildfire risk to 200 of California's most vulnerable communities this fire season.

On March 22, the Governor, citing the extreme peril posed by wildfire risk, issued an Emergency Proclamation directing CAL FIRE to immediately implement 35 emergency projects identified to protect lives and property. CAL FIRE will utilize existing funding totaling \$30 million from the Forest Health and Fire Prevention Program to immediately execute the priority fuel reduction projects.

The proclamation suspends certain requirements and regulations. To ensure environmental protection, CAL FIRE requested input from regulatory agencies, and will employ a set of best management practices designed to identify and avoid sensitive natural and archaeological resources.

As discussed below, the state has numerous new initiatives to prevent and suppress fires.

Wildfires and Climate Change: California's Energy Future

Improving Vegetation Management and Forest Health

After decades of disinvestment, the state has committed hundreds of millions of dollars in recent years to improve the health and resiliency of the state's forests.

Despite these increases, much work remains to be done. Over the next five years, the state will commit over \$1 billion for critical fuel reduction projects, to support prescribed fire crews, forest thinning, and other forest health projects. In addition, the Governor redeployed the National Guard to support fire prevention efforts and is proposing to expand the California Conservation Corps to focus on forest management.

Since 2010, California has nearly doubled the number of acres treated annually by fuel reduction, and has tripled the number of acres treated by prescribed burning. However, these efforts—less than 33,000 treated acres in 2017-18—are dwarfed by the number of acres that require attention. California's Forest Carbon Plan sets a goal of treating 500,000 acres of private land every year.

As the owner of 57 percent of California's forestland, the federal government must do its fair share to reduce fire risk. Specifically, the Governor has joined the governors of Washington and Oregon to call for the federal government to double the investment in managing federal forestlands in our states due to the high-risk of wildfires.²⁰

Support for Regional Projects

In March 2019, the California Natural Resources Agency and Department of Conservation announced the award of \$20 million in block grants for regional projects to improve forest health and increase fire resiliency. The Regional Forest and Fire Capacity Program helps communities prioritize, develop and implement projects that strengthen fire resiliency.

Suppression

In recent years, the state has added additional year-round fire engines and firefighters to address longer, more severe fire seasons. The state has also launched a major initiative to replace Vietnam War-era helicopters with new state-of-the-art helicopters with enhanced firefighting capabilities. The Governor's Budget proposes to further expand the state's firefighting surge capacity by adding additional crews and engines. The Budget also includes funding to operate C-130 federal air-tankers.

To spur engagement from innovators in fire safety technologies and more effectively fight fires, Governor Newsom signed Executive Order N-04-19 to modernize the state contracting process for goods and technology systems. The "Innovation Procurement Sprint" will enable CAL FIRE to identify solutions to more effectively detect wildfire starts and predict the path of wildfires.

²⁰ Letter from Gov. Gavin Newsom to Pres. Donald J. Trump (Jan. 8, 2019), <https://www.gov.ca.gov/wp-content/uploads/2019/01/1.8.19-Joint-Letter.pdf>

Figure-04
Additional Recommendations on Prevention²¹

Implement Additional Recommendations from the Community Wildfire Prevention and Mitigation

Report: The strike force recommends that the following additional actions from the CAL FIRE Report be considered and, when appropriate, expedited.

- A. Create Incentives for Fuel Reduction on Private Lands
 - Small non-industrial private landowners make up approximately 25 percent of California's forestland owners and managers, almost twice as much as private industrial forestlands. These private landowners may not have the resources to actively manage their forests and are subject to the same fire risk as other Californians.
 - The Board of Forestry and Fire Protection should consider changes in regulations, through an emergency rule-making process as needed, to encourage private landowners to engage in fuel reduction projects.
- B. Develop Methodology to Better Assess At-Risk Communities
 - The methodology used to identify priority projects provides a robust assessment of near-term projects that can be implemented before the 2019 fire season. This methodology should serve as the basis for ongoing assessment methods to evaluate short- and long-term wildfire risk reduction strategies across the state, with specific attention to identifying vulnerable communities noting that long-term planning and decision-making efforts to reduce wildfire risk require consideration of additional factors, including more robust integration of climate risk factors into fire vulnerability assessments.
 - The Forest Management Task Force should establish an interagency team with experience in spatial analysis, technology support, environmental management, public health, climate change, and social vulnerability to develop the methodology enhancements needed to inform the long-term planning needs of both state and local agencies.
- C. Jumpstart Workforce Development for Forestry and Fuel Work
 - The California Natural Resources Agency should identify specific opportunities to develop and encourage workforce training programs.
 - The goal should be to increase the number of properly trained and compensated personnel, with an emphasis on providing opportunities for local residents, available to perform fuel reduction and forest management and restoration work in the private sector. These training programs should be implemented before the end of 2019.
- D. Develop a Mobile Data Collection Tool for Project Reporting
 - The California Natural Resources Agency should procure a mobile fuel reduction data collection application to be used by all land management departments and agencies to increase accuracy and ease of data collection in the field.

²¹ See CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION, *Community Wildfire Prevention & Mitigation Report* (Feb. 22, 2019), <http://www.fire.ca.gov/downloads/45-Day%20Report-FINAL.pdf> (last visited Apr. 10, 2019).

Wildfires and Climate Change: California's Energy Future

- E. Develop a Scientific Research Plan for Wildfire Management and Mitigation, with Funding Recommendation
 - The Forest Management Task Force should develop a research plan with prioritized funding.
 - Topics that should be considered include:
 - Leverage the Governor's Request for Innovative Ideas (RFI2).
 - Best management practices in the face of a changing climate and developing an understanding of forest health and resilience.
 - Use of LIDAR, satellite, and other imagery and elevation data collection, processing and analysis for incorporation into state management plans and emergency response.
 - Funding for collaborative research to address the full range of wildfire-related topics. Important research investments could include both basic and applied research as well as social science to better understand social vulnerability, human behavior, land use, and policies that support resilience in communities that coexist with fire and mitigate impacts on life and property.
 - Research and development on new WUI building test standards in future research programs including the use of damage inspection reports from recent fires.
- F. Develop Models and Best Management Practices for Evacuation Planning
 - CAL FIRE and the Governor's Office of Emergency Services (Cal OES) and the Standardized Emergency Management System Advisory Committee should develop robust local evacuation planning models for high or very high Fire Hazard Severity Zones based upon best practices from within California.

Explore Public Private Partnerships and Capital Investment in Forest Waste Management

Businesses: Public-private partnerships that find secondary uses for forest waste and increase fuel reduction can be a constructive part of the solution. Fostering innovation and entrepreneurship, these could include biomass facilities, especially those that use the energy on-site or as an "alternate fuel" for electric vehicles, cross-laminated timber using beetle kill wood, wood chips or pellets, or composting practices for soil restoration.

Expanding small scale businesses around forest waste, like micro-mills or carpentry using "Alpine Blue" (beetle kill) wood, will help scale-up forest treatment on small, private land. The strike force recommends that the Natural Resources Agency explore how best to facilitate these types of partnerships, recognizing the critical role they play in both forest management and community economic development.

Building Safer Utilities

The state's most destructive wildfires have been sparked by utilities. Electrical fires tend to ignite during extreme wind events in remote areas with limited access for first responders. To reduce the overall risk of catastrophic wildfires for vulnerable communities, public and private utilities must make needed investments in grid hardening, vegetation management, and fire detection technologies.

Current Process for Utility Safety Investment

Regulatory review of safety investments follows the same general approach as discussed in Part 4 of this Report. Historically, this meant that investment in fire safety and mitigation was driven largely by the utilities. The California Public Utilities Commission (CPUC) adopted safety regulations for overhead electrical systems in Rule 35 of CPUC General Order 95. Utilities were required to comply with those regulations but set their own priorities for safety investment.

This largely utility-defined fire mitigation program resulted in inconsistencies in investment among the state's investor-owned utilities. SDG&E engaged in a robust fire mitigation and safety program after experiencing devastating fires in its service territory in 2007 and has become a recognized leader in wildfire safety.

More recently, SCE implemented a wildfire safety program designed to mitigate the challenges of wildfires, including the development of operational practices and inspections, vegetation management activities, and community outreach.

PG&E has begun to implement wildfire safety measures, but its efforts lag behind the other IOUs, which is particularly troubling given that it serves 40 percent of California's utility customers and many counties in high-risk areas.

CPUC and Wildfire Mitigation Plans

As the scale of utility-sparked wildfires increased, the CPUC, through statutory changes and on its own initiative, increased oversight of utility wildfire mitigation efforts. Each IOU is now required to prepare and submit a wildfire mitigation plan (WMP) annually to the CPUC for review and approval.²² The CPUC, in consultation with CAL FIRE, will evaluate the WMPs.²³ As part of this process, the CPUC held a public workshop and two days of technical workshops on wildfire mitigation. A comparison of the WMPs submitted by PG&E, SCE and SDG&E is attached as Annex A to this Report. The CPUC expects to approve the WMPs in May 2019 and thereafter oversee compliance with the WMPs. The CPUC intends to develop and refine the content of and process for review and implementation of wildfire mitigation plans to be filed in future years.

While substantial efforts are underway to build safer utilities, the strike force has identified areas for immediate improvement.

Recommendations

Establish a More Rigorous WMP Process: The WMP requirements should be revised to include a section on long-term fire management and a process to ensure faster compliance with the proposed plan. WMPs should also include specific performance-based risk mitigation metrics that are independently and scientifically verified as well as

²² Cal. P.U.C. § 8386.

²³ The IOUs that are required to submit WMPs are PG&E, SCE, SDG&E, Liberty Utilities/CalPeco Electric, Bear Valley Electric Service, and Pacific Power.

Wildfires and Climate Change: California's Energy Future

cost-effective. Further, to hold IOUs accountable, California should consider putting in place an auditing system tied to financial incentives.

- **Safety Incentives:** Consider other CPUC reforms to better align IOU incentives with safety, including:
 - Adjust the allowed return on equity (ROE) based on wildfire safety performance
 - Align compensation and stock options of executives with wildfire safety performance
 - Make Board composition contingent on wildfire safety performance
 - Require Board-level reporting to CPUC on wildfire safety issues
- **Invest in Technology and Innovation:** New technologies, including weather stations, drones, and artificial intelligence have tremendous potential as tools to more effectively prevent, detect and respond to wildfires. The CPUC convened the state's first Wildfire Technology Innovation Summit in March 2019 to gather national and international thought leaders and practitioners from state and local governments, academia, industry and other areas to inform and collaborate as to innovative technological solutions to wildfire risk, including:
 - Statewide deployment of weather stations and cameras paired with meteorology and fire behavior modeling
 - Artificial Intelligence-based visual recognition technology to analyze satellite imagery to determine fuel conditions and vegetation risks in proximity to utility lines
 - Fire modeling tools to support all fire departments and emergency responders across the state
 - Machine learning and automation inspections for increased safety assurance and regulatory compliance
 - Widespread adoption of aerial patrols, LIDAR and advanced imaging for vegetation management and utility infrastructure inspections
- **Update Models to Reflect Climate Change:** Climate change has rendered many assumptions about California's climate outdated. Historical records for humidity, wind, rain, and temperature are regularly broken. CPUC regulations—such as General Order 95 governing electrical lines—are premised on historical climate trends which may no longer be accurate. The state should work with experts to update their models on climate change, using the existing Adaptation Clearinghouse and Climate Assessment process as a central location for data, maps, and information. The state should also facilitate cross-learning with utilities, which often make capital investments in physical infrastructure over decades.
- **More Cost-Effective Financing for Wildfire Mitigation Safety Investments:** A critical element of mitigating utility-sparked wildfires is substantial and immediate investment in electrical grid safety. The state may be able to mitigate the rate impact of this investment by offering a lower cost financing alternative through a dedicated rate

Wildfires and Climate Change: California's Energy Future

stream. Where IOUs fall behind on making needed investments, a reduced return on equity for this deferred maintenance can further reduce ratepayer impact.

Emergency Response

In a matter of hours, 52,000 people from rural Paradise and surrounding communities evacuated onto roads built for a fraction of that capacity and converged on Chico, overwhelming the recovery system. The scale and speed of catastrophic, wind-driven wildfires, like the Camp Fire, incapacitate existing emergency response systems, local infrastructure and planned recovery efforts. Many California communities designed their fire emergency response and recovery systems decades ago, using old technology and outdated fire modelling. A clear overhaul of the California emergency response systems and the underlying infrastructure is needed.

The lack of broadband in rural communities and access to cell service make it difficult to communicate clear emergency evacuation orders to residents or locate residents who are in trouble. Roads in rural counties were often designed around old gold-rush tracks that were not designed to accommodate the number of residents using those roads, the ability of emergency vehicles to access the roads, or the need for defensible space. Evacuation plans assume that residents can evacuate and do not identify safe havens and shelter-in-place options for residents.

The state should partner with local government to encourage updates to local emergency plans, to increase resident awareness of those plans, and to otherwise improve emergency prevention and response efforts. Further, the state should encourage local governments to adopt recently issued guidelines to improve communications during an emergency.

On February 13, the Governor signed AB 72 (Assembly Committee on Budget, Chapter 1, Statutes of 2019), which appropriated \$50 million for an emergency preparedness campaign focused primarily on California's most vulnerable populations, including the elderly, disabled, and those in disadvantaged communities. The California for All Emergency Preparedness Campaign—a joint initiative between California Volunteers and Cal OES—will augment the efforts of first responders by ensuring at least one million of the most vulnerable Californians are connected to culturally and linguistically competent support.

The Emergency Preparedness Campaign will provide:

- \$24.25 million in grants to community-based organizations across the state to prepare residents for natural disasters through education and other resources designed to bolster resiliency.
- \$12.6 million to support community efforts to build resiliency and respond to disasters by dispatching expert disaster teams to key regions and expanding citizen emergency response teams (CERT).
- \$13.15 million to assist community groups in the development of a linguistically and culturally appropriate public awareness and outreach campaign, directed specifically at the most vulnerable California communities.

Recommendations

- **Governor's Emergency Preparedness Summit:** By the end of June 2019, Cal OES, in partnership with the League of California Cities and the California State Association of Counties, will convene first responders, government agencies, local governments, community residents, and technical experts to develop plans for the state's emergency preparedness. The summit will highlight best practices of local communities, share resources that have worked around the world, and develop the networks necessary for ongoing preparedness improvements.
- **Develop Models and Best Management Practices for Evacuation Planning:** Cal OES, in collaboration with CAL FIRE, the Standardized Emergency Management System Advisory Committee, and local governments should develop evacuation planning models for high or very high Fire Hazard Severity Zones based upon best practices. These models can be a tool for local governments to use when developing location specific evacuation plans. Cal OES should consider how adoption of these models can be incorporated into County Operational Area plans of jurisdictions that also receive FEMA program grant dollars.
- **Develop Methodology to Better Assess Communities At-Risk:** The Forest Management Task Force should establish an interagency team with experience in spatial analysis, technology support, environmental management, public health, climate change, and social vulnerability to develop methodology improvements to inform the long-term planning needs of both state and local agencies.

Land Use, Building Codes, and Community Resilience

According to the Fourth Climate Assessment, the average area burned statewide will increase by an estimated 77 percent by 2100. At the same time, the housing affordability crisis is forcing more Californians to move farther from urban areas, and often into high-risk areas. An additional outcome of these land use patterns is the year-by-year increase in driving, or "vehicle miles traveled" (VMT), which in turn increases carbon emissions and vehicle pollution across the states. California's housing affordability crisis is increasingly fueling the dangers of climate change and wildfire. Reducing fire risk to these areas will require changes in how higher-risk areas are designed, planned, built, served by utilities, and allowed to grow, and will require people across the state to participate in the solution.

The Governor has made housing production and affordability a key priority. California already has strong standards to reduce VMT. The strike force recommends that at the state and regional level, governments and planners incorporate CAL FIRE's fire risk projections and the fire projection information in the Adaptation Clearinghouse and Fourth Climate Assessment into short-term and long-term planning, and begin to de-prioritize new development in areas of the most extreme fire risk. In turn, more urban and lower-risk regions in the state must prioritize increasing infill development and overall housing production.

California has made progress in developing and adopting stringent wildland building codes. Since 2008, new construction in California's wildlands must use ember-resistant building materials. For homes built before the 2008 standards, CAL FIRE is working to

Wildfires and Climate Change: California's Energy Future

develop a list of low-cost retrofit steps homeowners can take. In addition, the Office of the State Fire Marshal (OSFM) maintains an advisory committee of fire and building officials that continuously considers building code updates to improve fire safety. Most recently, OSFM advanced building code changes including sealing of garage door gaps, sealing skylights and safety improvements to outbuildings.

Developing new housing in Very High Fire Hazard Severity Zones presents challenges. Since 2015, CAL FIRE has assisted local governments in land use planning. CAL FIRE is working to identify subdivisions at significant fire risk without secondary evacuation routes and to make recommendations to improve access.

Homeowners are encouraged to actively maintain defensible space, which is defined as a minimum 100-foot area around a home. Maintenance is an ongoing task. California inspected more than 217,600 homes for defensible space compliance in 2017-2018 alone.

It is critical that roads and other infrastructure be more fire defensible and evacuation ready for the populations in the WUI. All levels of government must establish clear contingency plans with local communities to identify and create temporary refuge areas and shelter-in-place procedures to help fire evacuees survive when unable to escape a wildfire.

Cal OES, in coordination with local communities and the Standardized Emergency Management System Advisory Committee, should consider developing local evacuation planning models for high or very high fire hazard severity zones based on best practices in California.

Recommendations

- **Prioritize Building In Less Fire-Prone Areas:** The strike force recommends that at the regional level, governments and planners incorporate CAL FIRE's fire risk projections and the fire projection information in the Adaptation Clearinghouse and Fourth Climate Assessment into short- and long-term planning, and consider how to encourage more urban and lower-risk regions in the state to provide an alternative for those otherwise shut out of the state's housing market.
- **Local General Planning:** The strike force recommends that the safety element of local general plans be strengthened in high-risk areas, specifically for local governments to include fire risk projections into general and specific plans, including through zoning and design standards. Additionally, OPR should prioritize providing technical assistance support to these communities, many of which are rural and lack planning resources.
- **Cost-Effective Home Retrofits:** While California has stringent building standards and requirements for defensible space, the intensity of the wildfire threat in California now warrants higher levels of fortitude.
 - CAL FIRE should consider options to encourage cost-effective home hardening to create fire resistant structures within the WUI and with a focus on vulnerable communities.

Wildfires and Climate Change: California's Energy Future

- The Forest Management Task Force should work with the Department of Insurance to seek input from the insurance industry on potential rebates or incentives for homeowners.
- CAL FIRE and the Department of Housing and Community Development should develop a list of low-cost retrofits that provide comprehensive fire risk reduction to protect structures from fires spreading from adjacent structures or vegetation and to prevent vegetation from spreading fires to adjacent structures.
- Consideration should be given to implementing a funding mechanism to assist individuals with cost-effective home retrofits. The model used by the California Earthquake Authority provides an example of such a mechanism.
- **Defensible Space and Forest and Rangeland Protection:** Compliance and enforcement is key to ensure that defensible space standards are met. CAL FIRE should review and make recommendations to increase defensible space.

Part 2: Mitigating Climate Change through Clean Energy Policies

California's recent experience with catastrophic wildfires confirms the critical importance of climate change mitigation efforts. As discussed in Part 1 of this report, the devastating impacts of climate change, predicted for years, are now a reality. As the state moves quickly to respond to these impacts and become more resilient, we must remain focused on addressing climate change through clean energy policy.

The state's IOUs have played a significant role in moving California away from fossil fuels—from enabling the renewable energy markets to mature with continuing decreasing costs to carrying out energy efficiency mandates and demand response and storage programs. While other retail providers have entered the energy market and helped advance clean energy, IOUs still play a critical role in the state's efforts to address climate change. To continue the state's progress in reducing greenhouse gas emissions in the energy sector, California needs investment-worthy IOUs.

California's efforts to mitigate and adapt to climate change must remain an overarching priority for the state and for the IOUs. Action must be taken to facilitate progress toward a 100 percent clean energy grid. We also must ensure that the state's current system of oversight keeps up with the evolving energy market so that reliability, affordability, and continued progress toward California's climate goals is not compromised.

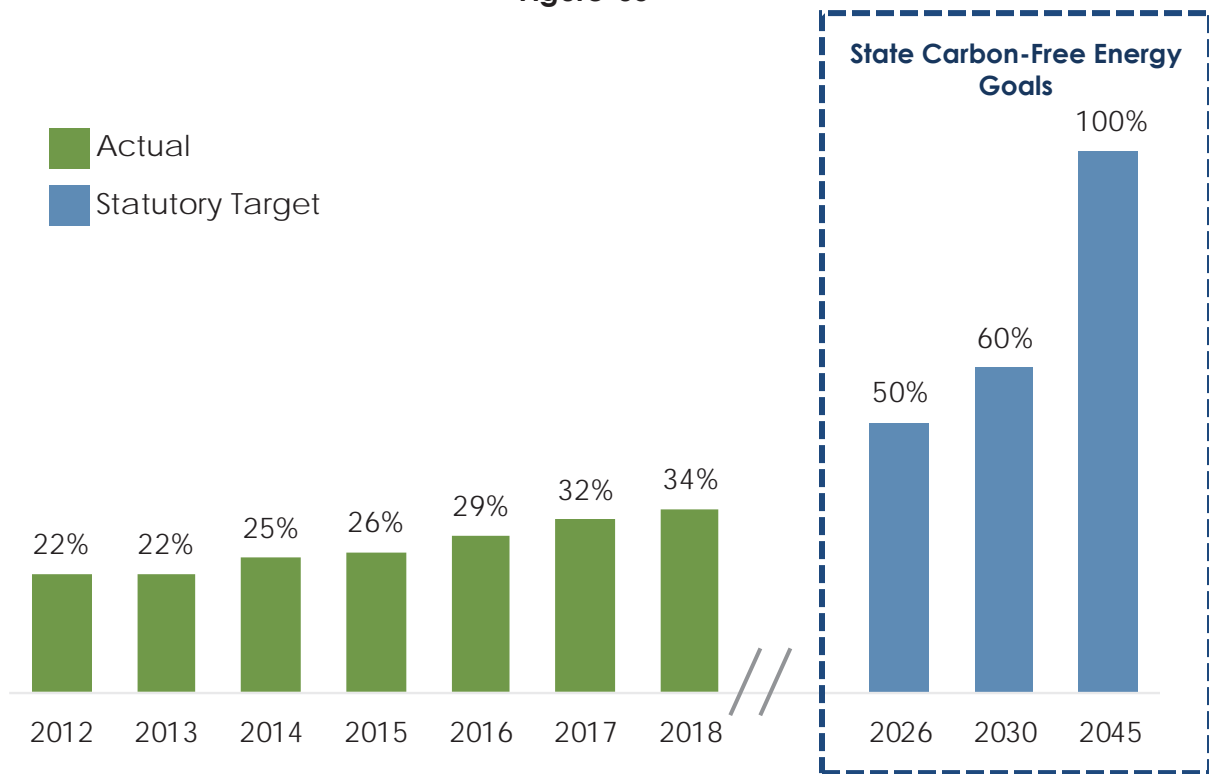
While working to increase carbon-free energy resources, utilities are also improving wildfire prevention and safety planning practices. Investments in safety at a level necessary to stay ahead of volatile climate conditions come at a cost, and this cost is being incurred at a time when maintaining low electricity rates is vital to meeting California's climate goals, as the next steps in carbon reduction involve electrifying the transportation and building sectors of the economy.

Safety investments have many benefits. A modern transmission and distribution system will create high-quality jobs and long-term economic stability, in addition to making us more resilient to the impacts of climate change and protecting the millions of residents living in fire-prone areas.

Renewable Energy Development

California has made extraordinary progress in meeting its energy sector climate goals. The state is a leader in replacing conventional forms of electric generation with cleaner sources using wind, solar, and other renewable resources instead of fossil fuels. Currently approximately 34 percent of retail electric sales are served by renewable resources and over 55 percent of sales are covered by carbon-free resources, including hydroelectric and nuclear energy. Figure-05 illustrates the progress toward renewable and carbon-free energy development.

Figure-05



California's renewable energy industry is a powerful economic force in the state. Wind and solar energy projects brought over \$70 billion in capital investments to California, establishing the state as a leader in renewable generation and spurring broader innovations.²⁴ Future electrification of buildings and transportation offers even more benefits, as those sectors represent the most cost-effective opportunities to decarbonize.²⁵

Over \$22 billion in clean technology venture capital funding was invested in California from 2007 to 2017.²⁶ One 2015 study shows that from 2003-2014, approximately 52,000 jobs were created in California due to the construction of renewable energy facilities.²⁷ The construction of those facilities also created and facilitated a number of indirect jobs and opportunities. In total, approximately 130,000 jobs were created. The study also projected that increasing California's renewable portfolio standard to 50 percent could

²⁴ AMERICAN WIND ENERGY ASSOCIATION, *Wind Energy in California*, <https://www.awea.org/Awea/media/Resources/StateFactSheets/California.pdf> (last visited Apr. 10, 2019); SOLAR ENERGY INDUSTRIES ASSOCIATION, *Solar State By State*, <https://www.seia.org/states-map> (last visited Apr. 10, 2019).

²⁵ California Energy Commission, *Deep Decarbonization in a High Renewables Future*, (June 2018), https://www.ethree.com/wp-content/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012-1.pdf (last visited Apr. 10, 2019).

²⁶ NEXT 10, 2018 California Green Innovation Index (10th Ed.), (2016) (<https://www.next10.org/sites/default/files/2018-ca-green-innovation-index.pdf> (last visited Apr. 10, 2019)).

²⁷ UC BERKELEY LABOR CENTR., INST. FOR RESEARCH ON LABOR AND EMPLOY'T., *Job Impacts of California's Existing and Proposed Renewables Portfolio Standard*, (Aug. 2015), laborcenter.berkeley.edu/pdf/2015/job-impacts-ca-rps.pdf (last visited Apr. 10, 2019).

Wildfires and Climate Change: California's Energy Future

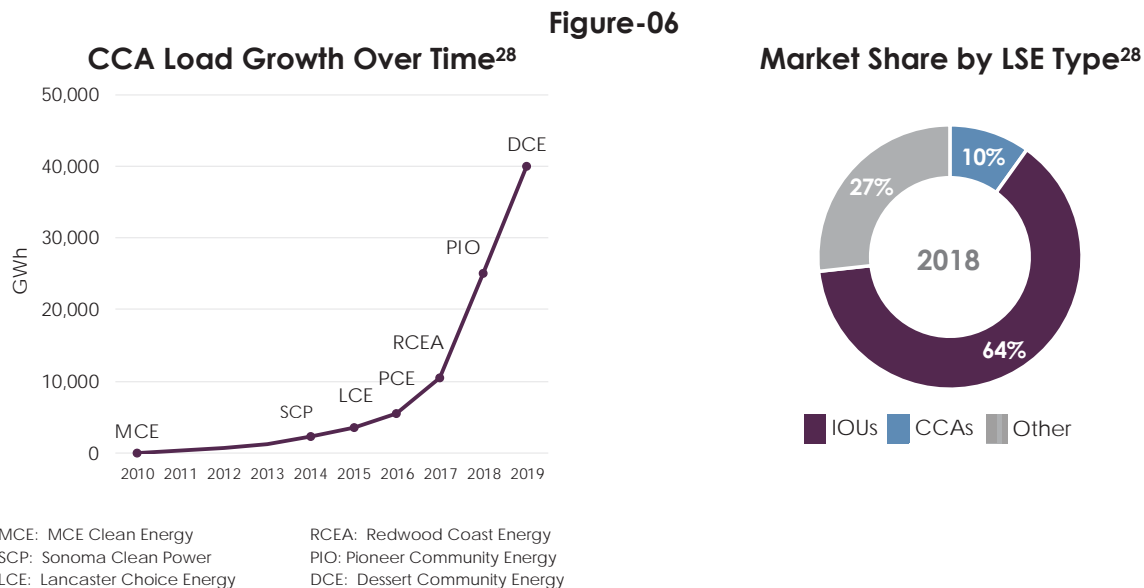
create an additional 354,000 to 429,000 direct jobs from the construction of new renewable generation, and hundreds of thousands of indirect jobs and opportunities.

Today, we have both a challenge and an opportunity: a challenge to continue progress toward 100 percent carbon-free energy generation and an opportunity to transform the state's economy. During this transition period, we need to make sure we have effective tools and protections to manage costs to consumers, ensure reliability, and reduce risks.

Challenges in the Evolving Electric Sector

Maintaining Reliability with Less Centralized Control

As more IOU customers install rooftop solar and storage, migrate to community choice aggregators (CCAs) and purchase energy from energy service providers (ESPs), IOUs are focusing on providing electric transmission and distribution service. New CCAs and ESPs are entering the market, acquiring energy in the wholesale market from electric generating companies, and selling energy to customers at retail. As a result, IOUs increasingly are becoming "poles and wires"--companies that are responsible for constructing, maintaining, and operating the facilities over which electric energy is delivered to customers. Figure-06 illustrates the CCA load growth over time.



Between rooftop solar, Community Choice Aggregators (CCAs) and Direct Access providers (ESPs), as much as 85% of Investor Owned Utility (IOU) retail electric load will be effectively unbundled and served by a non-IOU source or provider by the middle of the 2020s".

The IOUs deliver electricity and perform other important functions, such as metering and billing (including collecting fees from consumers to fund certain public-interest programs). CCAs typically do not have credit ratings which can limit their ability to

²⁸ See UCLA Luskin Center for Innovation's The Growth in Community Choice Aggregation, dated July 2018. CCA annual load data from each CCA's respective implementation plan. "Other" category represents the difference between the California Energy Commission's statewide load estimation and the IOU and CCA loads.

Wildfires and Climate Change: California's Energy Future

obtain the financing necessary to enter into long-term contracts at the scale needed to achieve a zero-carbon grid by 2045 and to meet Resource Adequacy (RA) requirements.

Meeting Provider of Last Resort (POLR) Obligations

Customers who choose not to obtain retail service from a CCA or an ESP, or who may be subject to a failure by a CCA or ESP to provide service, currently are protected by the requirement that an IOU must step in to provide energy under the IOUs' POLR obligation.²⁹ If IOUs become primarily "poles and wires" businesses, it raises the question as to whether the IOUs should continue to provide POLR service or whether another entity should assume this responsibility.

Avoiding Significant Rate Increases and Addressing the Need for Investment

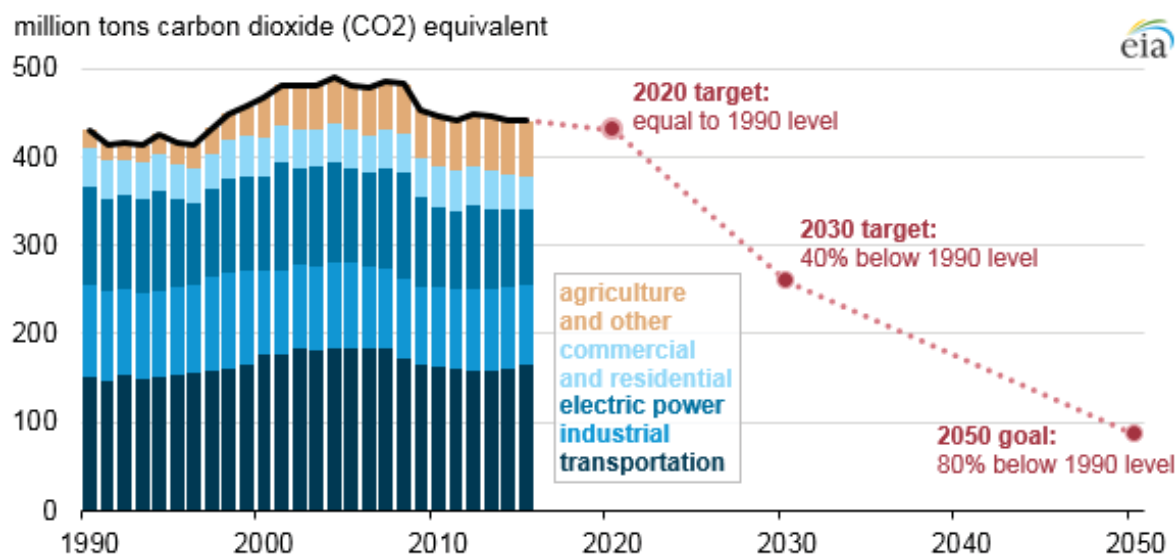
Major investments will be needed in the electric transmission and distribution system in California to make the system less susceptible to wildfires, to otherwise modernize it, and to accommodate changes in generation and demand. It will be important to have financially strong utilities so they can attract the capital necessary to make these investments at low rates (since the cost of capital is passed along to consumers). Keeping capital costs down is particularly important in light of potential increases in other costs, including the cost of large wildfire liabilities.

Continuing Progress in Reducing Certain Carbon Emissions

As shown in Figure-07 below, California has made significant progress in reducing carbon emissions. In the energy sector, the IOUs have been instrumental in reducing carbon emissions. Their long-term contracts for renewable energy resources have driven prices down as new technologies have been deployed at commercial scale. Some CCAs have more aggressive renewable targets than the IOUs, and benefit from the early IOU renewables projects because they are benefitting from today's lower solar and wind energy prices. New CCAs are required to collect an adjustment charge from their customers to reflect the cost of older, long-term contracts that IOUs entered into on their behalf.

²⁹ The IOUs have a duty to provide distribution service on a non-discriminatory basis to the customers in their service territory. This currently includes the POLR obligation to sell energy at retail to those customers who opt out of obtaining service from a CCA. This POLR obligation also would extend to any situation in which a CCA or ESP were to cease providing service for some reason such as in the case of a bankruptcy.

Figure-07
California Greenhouse Gas Emissions by Sector³⁰



Distributed Resources

California utilities provide a means to implement various Distributed Energy Resources (DER) initiatives throughout the state.³¹ California has experienced phenomenal growth in electric generation by customers on a distributed basis (in contrast to obtaining energy from large, central generating stations), particularly in the form of rooftop solar generation. In the future, it is expected that more customers will install battery storage on a distributed basis.

Many of these programs grew as a result of state mandates carried out by IOUs. Few of the programs (with the notable exception of net energy metering) directly involve CCAs, ESPs or publicly-owned utilities (POUs). Additionally, the California Independent System Operator (CAISO) has developed an innovative mechanism to allow distributed resources to join together and bid into the wholesale market, providing revenue for distributed resources as well as a benefit to the electrical system. Distributed resources, however, contribute to the fragmentation of the energy supply, and need to be managed to ensure they continue to benefit the electricity system.

Adapting to Intermittent Electric Generation

Today, almost two-thirds of California's renewable energy generation capacity is from intermittent sources such as wind and solar. The output from these sources vary

³⁰ See U.S. Energy Information Administration, based on California Air Resources Board data.

³¹ Those initiatives include (i) providing rebates to customers that install self-generation facilities or storage; (ii) these are funded by a charge that the IOUs collect from their consumers; mandating that IOUs (and to a lesser extent CCAs and POU) directly procure battery storage technologies that connect at the distribution grid level; and (iii) developing pilot projects to test the ability of DER to offset the need to build new distribution lines; and developing programs within the RPS that target distributed solar resources.

Wildfires and Climate Change: California's Energy Future

depending on the weather, season, and time of day. This imposes challenges on electric grid operations. Generation output from wind and solar sources is not controlled by the grid operator and can increase or decline rapidly, which requires adjustments in generation from other sources (or adjustments in demand) to keep supply in balance with demand. In particular, large amounts of low-cost solar electric generation during the middle of the day has created a situation where on some days there can be an overproduction of electricity and on many days generation from other sources must ramp up rapidly in the afternoon.

Overproduction can be a good problem to have since that energy, coupled with the right policies, can be harnessed to electrify other parts of the economy, such as transportation and buildings. A diverse portfolio of renewable resources and policies, including time-of-use rates, demand response programs, storage, energy efficiency, increased regional coordination, and electric vehicle charging, will continue to be critical to reduce the need for the carbon-intensive resources generally used to meet the afternoon ramp and overnight demand.

Reliability

Several factors, including flat demand for electricity and growth in renewable energy generation, have contributed to substantial retirements of fossil-fueled electric generation (mainly natural gas). Stricter environmental standards have accelerated this trend. Yet flexible resources continue to be needed in the near term to quickly ramp up as solar generation resources go off-line or load increases, and during extended cloudy periods. Over the long-term, it will be critical to ensure that cost-effective clean energy resources are available for reliability and other grid services.

Resource Adequacy Requirements

California has responded to energy shortages in the past by requiring that load-serving entities (LSEs) contract to purchase sufficient electric generation (or distributed resources or storage) to meet their forecasted peak demand plus a pre-set reserve margin. Several factors caused some LSEs to experience difficulty meeting their RA requirements.³² Some LSEs have had to obtain temporary waivers from the CPUC and others have been penalized. Additionally, IOUs have taken on procurement of some resources needed for reliability that other LSEs may not want to procure. In some cases, the CPUC required IOUs to enter into long-term contracts needed for reliability, including contracts for battery storage. This option is less effective as IOUs have fewer and fewer retail customers.

Maintaining Public Purpose Programs; Promoting Energy Efficiency and Demand Response.

California has been a leader in energy efficiency, with electricity use per capita remaining virtually flat over the past four decades despite substantial economic growth

³² Challenges in the RA market include (i) a growing number of LSE competing to buy the same existing resources, (ii) a shrinking pool of resources LSE can procure as the planned retirement dates of older natural gas plants approach, and (iii) the inability/unwillingness of LSEs to enter into long-term contracts for some needed resources.

Wildfires and Climate Change: California's Energy Future

during that period.³³ The state has had success with programs that align the incentives of utilities and consumers in using less energy, including programs providing financial incentives or rebates, incorporating efficiency requirements in various codes and standards, and providing education and technical assistance.

Demand response programs, which provide incentives for customers to adjust their consumption during certain periods, have also been successful. Similarly, time-of-use rates provide incentives for customers to adjust their energy use to optimize renewable resources. New demand response programs are being developed that can increase loads at times when there is an abundance of solar generation.

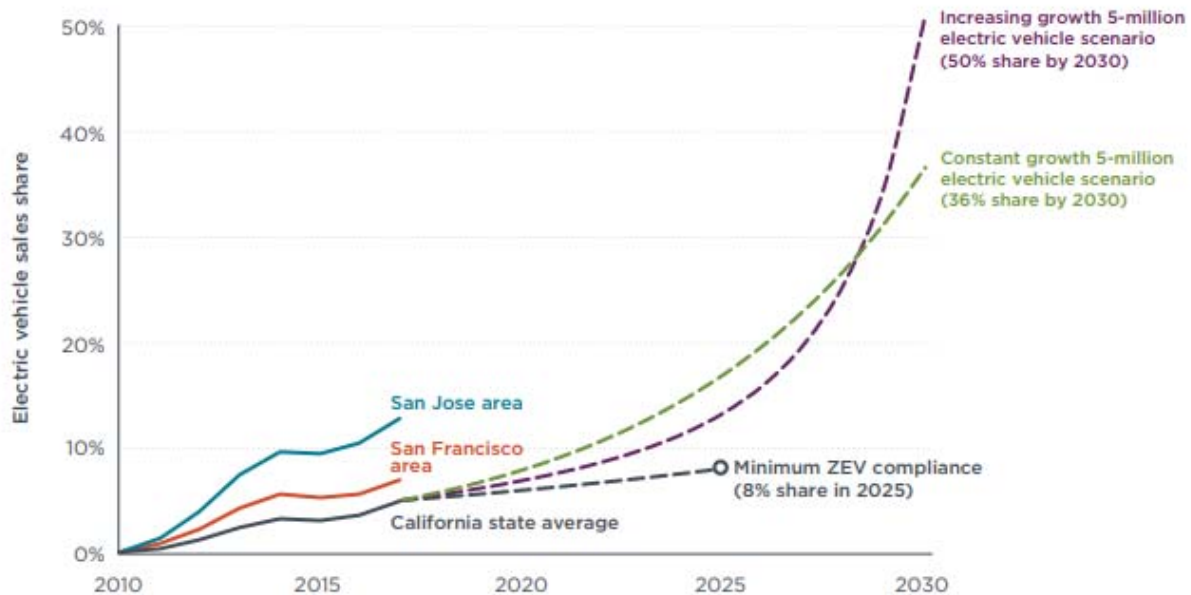
California has relied on the IOUs to implement public-purpose programs to fund energy efficiency and demand response, as well as reducing rates for low-income customers and renewable energy incentives. If the IOUs become “poles and wires” companies, it will be important to ensure that this change does not threaten these public-purpose programs.

Electric Vehicle Integration

A critical component of California's efforts to meet its goals to reduce carbon emissions is to replace vehicles that use gasoline or diesel fuel with electric vehicles or hydrogen vehicles. The CPUC and other agencies in California support this effort by promoting deployment of charging stations, providing rate incentives (encouraging charging at off-peak hours), and other programs. Growth in vehicle electrification will result in increases in electric consumption over time and further increase the dependence of Californians on the electrical grid and the utilities that own and operate it. Over half of California's greenhouse gas emissions are from the transportation sector. Thus, the success of transportation electrification programs is essential to meeting the state's climate goals, and will depend on electricity being clean and available, and a less expensive option to fuel vehicles than gasoline. This provides one justification, among many, for efforts to minimize increases to electric rates. Figure-08 illustrates the California vehicle forecast.

³³ Energy efficiency helps to reduce the need for electric generation, including from sources that emit carbon and other greenhouse gases. Targeted energy efficiency, as well as programs such as demand response and time-of-use pricing, to reduce energy use at periods of high prices or demand, contributes to a more reliable electric grid with less need for physical improvements to the grid.

Figure-08
California Electric Vehicle Adoption Forecast³⁴



Recommendations

- Evaluate Resource Adequacy Back-Stop Options Through the Legislative Process:** Procurement by the IOUs, under supervision by the CPUC, has been effective over time. But as the state transitions to more LSEs, gaps and inefficiencies could emerge. To manage this transition, new procurement support models, including a new state procurement entity that could enter into long-term contracts, provide credit support or otherwise facilitate purchases of electric energy, should be explored. Procurement support could have a number of benefits, including providing back stop resource adequacy procurement and ancillary services needed to support reliability. To maintain cost-effectiveness and achieve rate benefits, it will be important to continue to focus on procurement through integrated resource planning or a similar framework. In addition, the POLR obligation discussed above and the responsibility for implementing public purpose programs could also be examined.
- Increase Transparency for Load-Serving Entities and State Coordination of Procurement:** Customers in California should have access to complete and accurate information about the energy they are procuring, regardless of whether the procurement is from an IOU, POU, CCA, or ESP. This should include transparent information about prices, compliance with resource adequacy requirements, and the sources of energy being procured (including reliance on renewable energy sources). To the extent that customers have a choice regarding their retail electric provider, transparency is required so that they are able to make informed choices. Of course, transparency also is required for the appropriate government agencies to

³⁴ See International Council on Clean Transportation, May 2018 Briefing.

Wildfires and Climate Change: California's Energy Future

ensure compliance with applicable RPS, resource adequacy, and other requirements. Additionally, new programs or legislation may be needed for coordination of purchasing by CCAs and ESPs to ensure they continue to meet California's standards for integrated resource planning, resource adequacy, clean energy progress, consumer protection, and hedging risk.

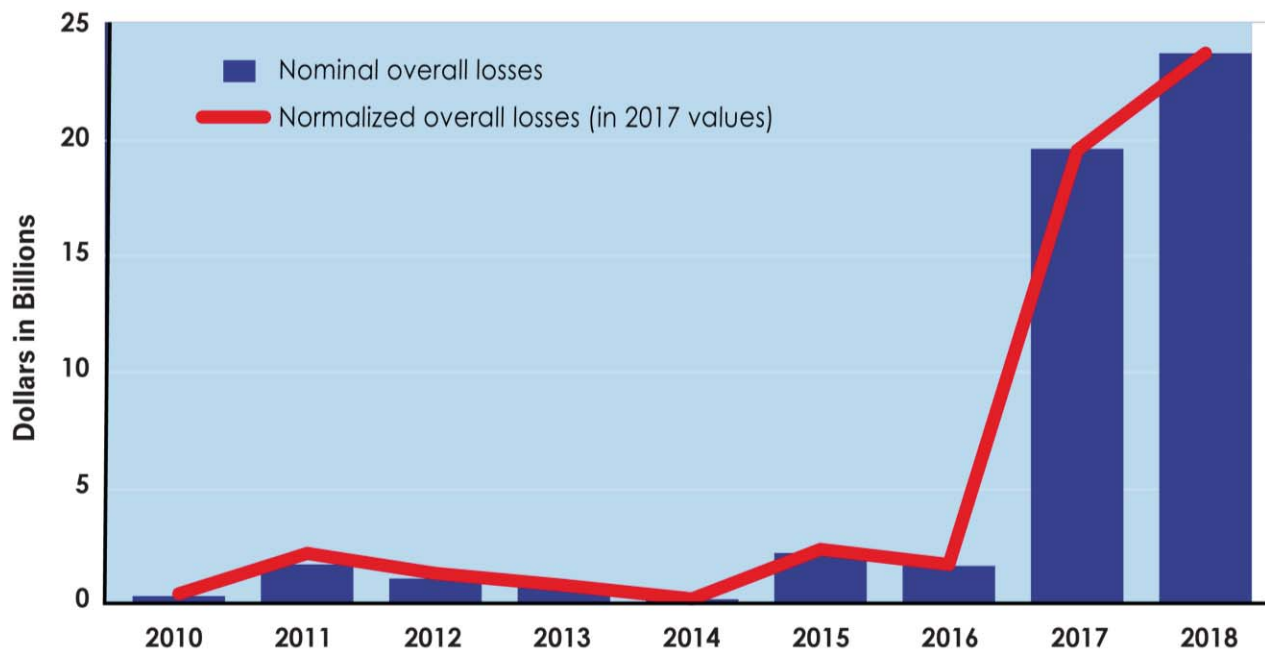
- **Addressing Variability in Generation and Consumption:** Addressing variability in electric generation and consumption will require efforts on a number of fronts. The afternoon ramp—the period when solar and wind energy decline and demand goes up—is increasing. Traditionally, flexible resources, such as natural gas-fired generators, have been used to provide a reserve margin, to ensure that generation and consumption stay in balance, and to provide other ancillary services needed for reliability. In the near term, a limited number of natural gas resources are still needed. In the longer term, more innovative solutions will be required. Further progress in time-of-use rates, demand response programs, storage, energy efficiency, increased regional coordination, and electric vehicle charging can help to ensure that demand at any given moment is at a level that can be accommodated by the amount of available electric generation. Proper infrastructure and incentives can be developed to facilitate and encourage integration of electric vehicles into the electric system in a manner that can enhance reliability and reduce costs. The strike force recommends that the CPUC use its Integrated Resource Planning process and other related proceedings to address these issues.

Part 3: Fair Allocation of Catastrophic Wildfire Damages

Climate change, forest management practices, and real estate development patterns in the WUI have dramatically increased the risk and magnitude of wildfire damage. All stakeholders, public and private, must invest in mitigation, suppression and emergency response to reduce the incidence of catastrophic fire and to protect lives and property. At the same time, communities need electricity—including communities in remote, high fire-risk areas. As long as electrical lines run through tinder-dry forests, California can mitigate but not eliminate utility-sparked fires. California also must support wildfire victims and communities as they work to rebuild. These often competing imperatives require a new policy framework to responsibly and fairly allocate the cost of wildfire damage in an era of climate change. No single stakeholder created this crisis, and no single stakeholder should bear its full cost.

Developing workable solutions to equitably share the burden of compensating victims for wildfire damages is made more challenging by uncertainty regarding the future effects of climate change and the efficacy of mitigation efforts. The staggering wildfire damages of 2017 and 2018 highlight the potential severity of wildfires in the future.

Figure-09
Wildfire Damages³⁵



We do not know whether this magnitude of damage is a new normal, or if recent years were aberrational. Experts consulted by the strike force believe climate change, development patterns, deferred utility equipment maintenance, and other factors suggest much heightened risk going forward but predicting how much risk and how

³⁵ Climate Changes Increases Wildfire Risk

Wildfires and Climate Change: California's Energy Future

consistently is more difficult. There is also uncertainty about the level of success we can expect in reducing the frequency and severity of wildfires.

Another challenge to a durable solution is that liability for wildfires ignited by utility equipment is governed by California's inverse condemnation law, which holds a utility strictly liable for wildfire damages if the utility's equipment ignites a wildfire, even if the utility's design and maintenance of infrastructure were not unreasonable or negligent. While a utility faces strict liability for all damages caused by its equipment, it can recover those costs through rates only by proving to the CPUC that its conduct was prudent. This regime—strict liability for wildfire damage coupled with uncertain ability to recover those damages in rates—increases the risk of bankrupt utilities, which in turn drives up costs for consumers, threatens fair recoveries for fire victims, undermines the state's ability to mitigate and adapt to climate change, and creates uncertainty for utility employees and contractors.

Under the status quo, all parties lose – wildfire victims, energy consumers, and Californians committed to addressing climate change. Victims face a great deal of uncertainty and diminished ability to be compensated for their losses and harm. Customers face rising rates and instability. California's ability to achieve its climate goals is frustrated. Utility vendors and employees face uncertainty and likely significant losses. Bottom line --- utilities in or on the verge of bankruptcy are not good for Californians, for economic growth or for the state's future.

Strike Force Deliberations

The strike force has identified and intensively researched several approaches to address wildfire liabilities. Each of the approaches evaluated by the strike force has benefits and tradeoffs.

Much work remains to be done to evaluate these concepts and determine which alternative or combination of alternatives will best support safe, reliable, and affordable energy for Californians, further clean energy goals, and enable fair treatment for wildfire victims. The strike force recommends that the Commission on Catastrophic Wildfire Cost and Recovery (SB 901 Commission) jointly appointed by the Governor and the Legislature, evaluate these concepts and report back to the Governor and the Legislature on its findings.

Principles Underlying a New Approach to Stabilizing and Sharing Costs

California's approach to wildfire mitigation must be grounded in principles that further the imperative to provide safe, reliable, and affordable power on a sustainable basis. To that end, the strike force has identified the following principles against which any proposal must be measured:

1. *Maintaining Safe, Reliable, and Affordable Power.* California residents and businesses require a safe and reliable electrical system, the achievement of which requires ongoing investment in new equipment, systems, and workforce. At the same time, steep rate increases would have adverse consequences for consumers, businesses, and California's climate goals. Thus, rate increases must be mitigated.

Wildfires and Climate Change: California's Energy Future

2. *Hold Utilities Accountable to Prioritize Safety.* Any changes in the liability rules should provide incentives for utilities and their management to prioritize and invest in safety and impose penalties for failure to do so. Any changes also must continue to hold a utility's shareholders—not its customers—responsible for failures to operate safely.
3. *Treat Wildfire Victims Fairly.* California wildfire victims deserve fair disposition of their claims so that they can move forward with their lives.
4. *Require Equitable Stakeholder Contributions.* The burdens of wildfire damages brought on by climate change are too great to be borne by any one stakeholder. A fair distribution of the burden requires utilities (ratepayers and investors), insurance companies, local governments, and attorneys representing victims to contribute.
5. *Reduce Overall Costs.* We must reduce wildfire damages as well as the financial claims that arise from them. This means prioritizing and paying for safety. It also means structuring the process by which claims are made and paid to assure the highest proportion of resources to pay for the actual losses victims suffer. And it means not creating a "free rider" problem or creating incentives for people not to act responsibly (e.g. by not properly insuring property against the risk of fire damages).
6. *Promote California's Clean Energy Goals.* Any solution must be consistent with California's long-term climate and clean energy goals and minimize the risk that wildfire liabilities will prevent utilities from having the resources to advance those goals, both in the near-term and over time.
7. *Recognize the Contribution of Taxpayers.* As described elsewhere, taxpayers have substantially increased their contribution to mitigating fire risk and fighting fires when they ignite. Any consideration of a fair burden of costs must recognize the substantial contribution the state and its taxpayers have already made and are continuing to make.

Current Framework for Allocating Costs of Utility-Caused Wildfires

In California, when a utility's equipment causes a wildfire, the utility may be held liable to pay for damages through (1) inverse condemnation lawsuits for property damages³⁶ brought by property owners or insurance companies (which seek compensation for payments they make to insured property owners); (2) tort lawsuits by a harmed party; and/or (3) recovery of fire suppression costs from third parties.³⁷ California's application

³⁶ Inverse condemnation is limited to property damage caused by utility equipment, so not all utility wildfire liabilities are actionable under inverse condemnation. For example, wildfire liabilities caused by a utility company employee, rather than utility equipment, are not recoverable under inverse condemnation. In practice, litigation pursuing subrogation recovery will include multiple liability theories, including inverse condemnation, some of which apply a strict liability standard and some of which apply other standards, such as negligence.

³⁷ When a utility is found to be a cause of a wildfire, the utility can be required to pay for three primary types of losses: (i) property damage and damages for personal injury, death, and related impacts, (ii) suppression expenditures incurred by government entities, including Cal FIRE and the United States Forest Service, and (iii) other economic and natural resource damages. The first two categories are direct costs (e.g. damage to structures, fire-fighting expenditures, injury and mortality) and are well defined, whereas the third category represents indirect damages (e.g. business interruption, temporary housing costs).

Wildfires and Climate Change: California's Energy Future

of inverse condemnation to utilities places 100 percent of the cost of wildfire property damage on a utility if its equipment caused the fire—regardless of fault and without consideration of the contributing role of climate change, forest management, land-use policies and other factors.

California is unique in extending the concept of inverse condemnation to IOUs.³⁸ Nonetheless, California courts have reasoned that “the nature of the California regulatory scheme demonstrates that the state generally expects a public utility to conduct its affairs more like a governmental entity than a private corporation.”³⁹ The primary purpose of inverse condemnation is to spread costs to relieve individuals from bearing a disproportionate share of the economic burden of a governmental action.

Inverse condemnation claims have two unique features that create challenges for California's IOUs:

1. *Fault is Irrelevant.* In an inverse condemnation claim, the plaintiff need not allege or prove that the utility behaved unreasonably or negligently. An entity may be held strictly liable for damages so long as the plaintiff proves that the utility was a substantial cause of such damage—even if it was only one of several concurrent causes.
2. *Attorney's Fees and Expenses are Part of the Claim.* The California Code of Civil Procedure provides that in any inverse condemnation proceeding the plaintiff is entitled to recover the reasonable costs, disbursements, and expenses, including reasonable attorney's fees and expert costs.⁴⁰ These costs can be substantial.

The combination of strict liability and statutory attorney's fees exposes California utilities to significant potential liabilities.

Insurance companies play an important role in the practical application of inverse condemnation to utilities in California. Insurance companies write insurance and collect premiums to cover property owners for fire losses. In the event of a fire, the insurance company pays an insured property owner's claim and absorbs the loss. If the fire was ignited by a utility's equipment, the insurance company seeks reimbursement from the utility for the damage claim it paid to homeowners, typically through an inverse

³⁸ Only Florida and Alabama have applied the doctrine of inverse condemnation to utility companies and only Alabama has extended the doctrine to privately-owned utilities. Similar to California, under Alabama law, a non-governmental entity can be subject to a claim for inverse condemnation. As such, in *Schultz v. SE. Supply Header, LLC*, No. CA 09-0055-KD-C, 2009 WL 3075671 (S.D. Ala. Aug. 20, 2009), the property owners' claim for inverse condemnation against the private utility company did not fail by virtue of the utility company's non-governmental status. In that case, the property owners gave the utility company a permanent easement to their property for the installation of a natural gas pipeline to run underground, but in the process of construction, the utility company flooded the property and caused the property owners' septic system to malfunction, reducing the property to a swamp. Since the utility company was expressly authorized to exercise the power of eminent domain for installation of the natural gas pipelines, the property owners could avail themselves of the remedy of inverse condemnation for damage of the property by the company.

³⁹ *Barham v. Southern California Edison Company*, 74 Cal. App. 4th 744, 753 (1999).

⁴⁰ CA Civ. Pro. Code § 1036 (2017).

Wildfires and Climate Change: California's Energy Future

condemnation claim.⁴¹ These claims from the insurance company are known as subrogation claims.⁴²

Cost Recovery and Wildfire Damages

While a public utility found liable under inverse condemnation spreads the costs by using its rate-setting power to pass the costs to customers, investor-owned utilities can recover inverse condemnation damages in rates only if the CPUC separately determines that they may do so. California law requires that any rates charged by a utility must be “just and reasonable”.⁴³ A utility may pass through and recover non-routine costs as a result of third-party litigation or inverse condemnation only if the IOU demonstrates to the CPUC that it acted reasonably and prudently (i.e., met a “prudent manager” standard).⁴⁴

To meet this prudent manager standard in the context of extraordinary wildfire expenses, the CPUC requires that a utility affirmatively prove that it: (1) behaved reasonably and prudently in managing its facilities before and during the fire and (2) behaved reasonably and prudently in settling any litigation claims, if applicable. The CPUC has wide latitude as to the applicable evidentiary standard—typically applying a preponderance of the evidence standard—which generally requires evidence that “when weighed with that opposed to it, has more convincing force and greater probability of truth.”⁴⁵

Recent Application of Utility Wildfire Cost Recovery Standards

In October 2007, three large wildfires occurred in the service area of SDG&E. The ignition of those fires was attributed to the company's equipment. After 7 years of litigation, SDG&E settled legal claims for \$2.4 billion in costs and legal fees to resolve third-party damages arising from the fires. After collecting from other responsible parties and under liability insurance policies, SDG&E sought recovery from ratepayers for the remaining

⁴¹ Inverse condemnation is limited to property damage caused by utility equipment, so not all utility wildfire liabilities are actionable under inverse condemnation. For example, wildfire liabilities caused by a utility company employee, rather than utility equipment, are not recoverable under inverse condemnation. In practice, litigation pursuing subrogation recovery will include multiple liability theories, including inverse condemnation, some of which apply a strict liability standard and some of which apply other standards, such as negligence.

⁴² Generally, insurance company subrogation recoveries are not 100 percent reimbursement for claims paid to property owners. Limited public information suggests that subrogation settlements equal about 50 percent of the claim. Specifically, SCE's general auditor stated that wildfire subrogation claims have in the past settled at “historical levels” of “around 50 percent” at a meeting of the Commission on Catastrophic Wildfire Cost and Recovery on April 3, 2019.

⁴³ CAL. P.U.C. § 451.

⁴⁴ The prudent manager standard means that “at a particular time any of the practices, methods, and acts engaged in by a 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.” The prudent manager standard is a standard of care that demonstrates all actions were well planned and properly supervised and all necessary records are retained. See *In re: San Diego Gas & Electric Co.*, Order Denying Application for Decision 17-11-033 at p.5 (Cal. Pu. Util. Comm'n) (Nov. 30, 2017).

⁴⁵ Decision Implementing a Safety Enhancement Plan and Approval Process, Decision 14-06-007 [D.14-06-007]

Wildfires and Climate Change: California's Energy Future

\$379 million in damages it had paid. In October 2017, the CPUC denied SDG&E's request, ruling that the utility had not met required standards of prudence.⁴⁶

The CPUC decision in the San Diego case was the first time a utility had incurred costs that exceeded its insurance coverage. The decision raised concerns in the capital markets that investors in California utilities were more exposed to wildfire liabilities than previously thought.

In late 2017, shortly after the CPUC's decision in the San Diego fires, California suffered one of its worst wildfire seasons on record. Combined, these events created uncertainty in the capital markets regarding the safety of investing in California utilities.

Senate Bill 901 (Dodd, Chapter 626, Statutes of 2018) (SB 901)

After the utility market destabilization, California enacted SB 901, which requires the CPUC to consider "conduct of the electric grid and relevant information submitted into the commission record" when determining whether a utility is permitted to recover costs related to wildfires. The statute outlines 12 categories of information for consideration, which are set forth on [Annex B](#). SB 901 also incorporated a "stress test" that provided the CPUC additional flexibility to allow utilities to recover their costs in respect of wildfire liabilities from ratepayers where the denial of cost recovery could negatively impact the IOUs' financial condition.

In a cost recovery action, the CPUC must first find that utility equipment ignited the wildfire. Then the CPUC must determine whether the utility acted prudently both in the behavior causing the wildfire and in the settlement of any claims. If it acted prudently, the utility may recover the costs by charging higher rates to customers. If it did not act prudently, the utility would be required to bear those costs itself, in effect by reducing the returns paid to its equity investors. SB 901 attempted to provide the CPUC guidance on application of the cost recovery rules that would create more certainty around cost recovery.

After passage of SB 901, the credit rating agencies (Moody's, Standard & Poor's and Fitch) immediately began to downgrade California's three large IOUs, opining that the measure failed to adequately address the risks to the utilities' financial health posed by inverse condemnation. Two months later, the Camp Fire occurred. Two months after that, PG&E stated its intention to seek chapter 11 bankruptcy protection.

The rating agencies followed with an additional series of downgrades that now leave SCE and SDG&E with close to non-investment grade ratings.

⁴⁶ See Order Denying Application [D. 17-11-033] (Cal. Pu. Util. Comm'n) (Nov. 30, 2017); 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)

Wildfires and Climate Change: California's Energy Future

Figure-10

Increasing wildfire risk coupled with uncertainty surrounding cost recovery for wildfire liabilities has resulted in credit ratings downgrades for all California IOUs



Ratings downgrades increase utilities' cost of capital (including capital raised for investment in fire mitigation and safety) and those additional costs are generally passed on to consumers.

The capital markets concluded that too much uncertainty regarding cost recovery remained following passage of SB 901. Their key concerns were that it left the CPUC with extensive discretion to determine whether catastrophic wildfire damages could be passed through to the ratepayers.⁴⁷ In addition, investors raised concerns that SB 901 did not address the significant time period between the occurrence of a catastrophic wildfire, the payment of damages arising from that wildfire, and the CPUC's final

⁴⁷ California's cost recovery process contrasts with the framework employed for federally-regulated transmission rates by the Federal Energy Regulatory Commission (FERC). Pursuant to section 205 of the Federal Power Act (FPA), public utility rates for transmission services in interstate commerce must be "just and reasonable," which includes a requirement that the utility is prudent in incurring costs. This statutory standard is similar to the standard in the California Public Utilities Code, however, FERC applies the standard differently than the CPUC applies its similar statutory standard. In practice, FERC generally presumes that a utility's expenditures have been prudent unless a third party raises a formal complaint that casts a serious doubt on the utility's prudence, in which case the utility has the burden to prove that its conduct and expenditures were prudent. FERC will consider a utility's conduct prudent if the utility acted as any other reasonable utility in its position would have acted, given the same circumstances and the same facts known to the company at the time. FERC precedent in evaluating the prudence standard affords considerable latitude as FERC, in reviewing a decision, does not look for a single correct result or require the evaluation of every possible alternative. Thus, the FERC standard is far more predictable.

Wildfires and Climate Change: California's Energy Future

determination of whether those payments can be recovered in rates. Under current timelines, a utility does not file an application for cost recovery until after it resolves all litigated claims, which in the case of San Diego took more than seven years from the time of the fires. The CPUC's cost recovery process can take 18 months to two years. This time lag creates financial stress on a utility which may need to raise additional capital to pay billions of dollars of wildfire claims without knowing whether it will be able to recover the costs of that capital in future rate increases. This can lead to lower credit ratings, higher borrowing costs and, therefore, higher rates paid by utility customers. Ultimately, as we have seen with PG&E, it can lead a utility to seek protection under the federal bankruptcy laws.

Consideration of Insurance Impacts

Before discussing potential concepts, it is important to consider the current impact of climate change and catastrophic wildfire damage on the availability and affordability of insurance and the risk that any proposed changes to liability for wildfire damage could exacerbate those impacts.

Insurance pricing and availability is responsive to a very basic principle: as risk increases, the cost of insurance increases and the availability of insurance coverage decreases. With record high losses from catastrophic wildfires, insurers are responding by filing for rate increases and retrenching their coverage eligibility standards. According to the California Department of Insurance (CDI), many regions of the state face insurance availability and affordability constraints. This is evidenced by increasing non-renewals and significant insurance premium increases in the areas of the state affected by wildfires. Investments that increase resiliency to climate-related catastrophes will add stability to insurance options. Without affordable insurance, regions throughout the state will find homes decreasing in value.

Current Trends in Insurance Availability and Affordability

Insurance rates are principally based on recent loss experience. According to CDI, in California, the loss experience resulting from catastrophes is not loaded directly into the rates but instead placed in a catastrophe load that is an average of at least 20 years of catastrophe experience. Despite that fact, rates are beginning to increase.

According to the CDI:

- Carriers have submitted applications to CDI for over 100 rate increases for homeowners insurance in the last two years, more than double the filings in the previous two years;
- Homeowners in areas with heightened wildfire risk are receiving double-digit rate increases;

Wildfires and Climate Change: California's Energy Future

- There has been a significant uptick in policy counts at the California Fair Access to Insurance Requirements Plan (FAIR Plan)⁴⁸ for homes located in areas of high wildfire risk, by 50 percent in the last five years (from 22,000 policies for homes with wildfire risk exposures to 33,000 such policies), although the FAIR Plan only insures about 130,000 homes in total out of approximately 13 million residences in the state;
- The number of homeowners who have purchased insurance from surplus lines insurers has also increased, though the total remains fewer than 60,000 statewide. Surplus lines coverage is available only to consumers who cannot find coverage with an admitted insurer. The rates are not regulated nor is the coverage backed by the California Insurance Guarantee Association; and
- Consumer complaints about non-renewals in high risk counties have also doubled in the last two years.

According to CDI, the overall number of adverse actions that are reflected in available data are relatively low compared to the California homeowners' insurance market as a whole. After two consecutive years of massive homeowners insurance loss ratios of insurers—201 percent in 2017 and 170 percent in 2018—there is a sense of urgency about the decreasing availability and affordability in 2019, especially for regions with high wildfire risk.

The strike force recommends that the Governor and Legislature, in consultation with the Insurance Commissioner, consider the following:

- Should all insurers be obligated to offer insurance to homeowners living in the WUI if the insured conducts specific wildfire mitigation?
- Should all insurers be obligated to offer reduced rates for those homeowners and communities that implement prescribed wildfire mitigation measures?
- Should insurers be obligated to offer consumers who are ineligible for a homeowners' policy either a "difference in conditions" policy or a "premises liability policy" as complementary coverage for a FAIR Plan fire policy?
- The California Insurance Guarantee Association policy limits have not been increased for at least two decades. Is it time to increase the current limit of \$500,000 to recognize current construction costs?

Concepts for a Solution

The strike force heard from experts and stakeholders about alternative approaches. Based on this input, research and evaluation of the strengths and weaknesses of alternative approaches, we identified three concepts for consideration:

- **Concept 1:** Liquidity-Only Fund. This concept would create a fund to provide liquidity for utilities to pay wildfire damage claims pending CPUC determination of

⁴⁸ The FAIR Plan was created in July 1968 as an insurance pool established to assure the availability of basic property insurance to people who own insurable property in the State of California and who, beyond their control, have been unable to obtain insurance in the voluntary insurance market. See <https://www.cfpnet.com>.

Wildfires and Climate Change: California's Energy Future

whether or not those claims are appropriate for cost recovery and may be coupled with modification of cost recovery standards.

- **Concept 2:** Changing Strict Liability to a Fault-Based Standard. This concept would involve modification of California's strict liability standard under inverse condemnation to one based on fault to balance the need for public improvements with private harm to individuals.
- **Concept 3:** Wildfire Fund. This concept would create a wildfire fund coupled with a revised cost recovery standard to spread the cost of catastrophic wildfires more broadly among stakeholders.

Given the inherent uncertainty we face and the number of foundational policy questions that must be addressed, the strike force recommends that the Commission on Catastrophic Wildfire Cost and Recovery, the Legislature, and the Governor's strike force continue working over the next two months to develop a solution for consideration by the Governor and the Legislature that most effectively addresses wildfire liability consistent with the principles that the strike force has outlined.

Each of the three concepts requires statutory changes to clarify the prudent manager standard and the requisite burden of proof related to when an IOU is permitted to recover costs and expenses of wildfires from its customers. To achieve a result that meets the principles outlined in this Report, utilities will have to make significant contributions to the benefit of ratepayers.

Concepts 1 and 3 rely on voluntary contributions from utility investors to different extents. The larger the contribution required, the more clarity utility investors will demand in the regulatory standard for cost recovery from ratepayers.

Concept 1: Liquidity-Only Fund

The liquidity-only fund involves a modest modification to the current SB 901 framework to address the delay between when a utility pays wildfire claims and when the CPUC makes its rate recovery determination. This concept would create a fund to provide bridge financing for utilities to pay wildfire liability claims pending the CPUC's decision on cost recovery under a modified standard. The liquidity-only fund does not reduce the burden on utility customers or re-distribute the costs of wildfires among stakeholders. As such, it does not address certain principles set forth above. In combination with changes to the CPUC cost recovery process, a liquidity-only fund could stabilize the credit ratings of utilities.

The liquidity-only fund could be capitalized by utility investors and ratepayers, potentially through a continuation and securitization of the Department of Water Resources (DWR) charge implemented during the power crisis in 2001 and expected to be fully repaid before the end of 2020. All or a portion of that securitization charge could be extended and dedicated to the liquidity-only fund.

The fund would then be available to provide funds for utilities to pay claims after a determination of cause and before a determination of cost recovery. When the CPUC makes a cost recovery determination, the fund then works as follows:

Wildfires and Climate Change: California's Energy Future

- If the CPUC determines that the utility met the cost recovery standard and therefore can recover the costs in rates, then the utility would charge the ratepayers and reimburse the fund for the amounts drawn.
- If the CPUC determines that the utility did not meet the cost recovery standard and therefore cannot recover costs in rates, then the utility would be required to repay the amounts drawn from the fund such that ratepayers would not bear the cost of such amounts.

This concept does not shield utility customers from uncapped liability for wildfire damages. In fact, if cost recovery changes increase the certainty that utilities can recover damages from their customers, ratepayers will pay more.

Further Research.

Several questions and policy considerations must be addressed to evaluate the liquidity-only fund and the impact it would have on reducing and socializing costs, and its ultimate impact on consumers:

- Can the fund provide sufficient liquidity to pay claims in a timely manner while allowing the CPUC to evaluate wildfires?
- Can this concept, in combination with necessary changes in the CPUC rate recovery process, provide enough certainty to the capital markets to stabilize ratings and the perception of a utility's credit quality?
- How durable can the liquidity fund be while the utilities address their safety deficiencies?
- How much can we expect from this simplified solution if we don't address the factors that turn massive wildfires into massive damage claims?
- What does this option mean for rates and affordability?
- What shareholder contribution, if any, would be required to capitalize the fund?

Concept 2: Changing Strict Liability to a Fault-Based Standard

A second concept is to change California's strict liability standard to one based on fault. Applying a fault-based standard—utilities pay for damage if caused by their misconduct—would balance the need for public improvements (i.e. an electrical distribution system) with the private harm to individuals occasioned by those improvements. This change would impact only claims for property damage, since California already applies a negligence standard to personal injury, wrongful death, and other tort claims.

Moving to a fault-based standard would shift the risk of property loss to insurance companies and uninsured or underinsured property owners in cases where the utility was not a bad actor. Where the utility acted negligently, recklessly, or with intentional misconduct, it would still be responsible for paying damages, including possible punitive damages.

Wildfires and Climate Change: California's Energy Future

As with Concepts 1 and 3, a solution that changed to a fault-based liability standard would be accompanied with modifications to clarify the prudent manager standard and the requisite burden of proof related to when an IOU is permitted to recover costs and expenses of wildfires from its consumers.

Shifting more of the direct financial burden of wildfires to insurance companies may also affect the cost and availability of property insurance in the WUI. Whether a reform of inverse condemnation would affect the cost and availability of insurance is unclear. If such an impact occurred, a variety of policy responses might be considered, including creating a catastrophic pooled insurance fund or reforms to the FAIR Plan, which provides last-resort fire insurance when homeowners or dwelling coverage is unavailable in the voluntary market of admitted insurers.⁴⁹ Admitted insurers are obligated to share in any losses suffered by the FAIR Plan.

Further Research.

Several questions and policy considerations must be addressed to evaluate the impact moving to a fault-based system would have on reducing and spreading costs, and its ultimate impact on consumers:

- How much would moving to a fault-based system reduce the settlements that utilities pay for wildfire claims?
- Would availability and affordability of property insurance in the state, particularly in the WUI be affected? If so, are there policy options to mitigate that impact?
- Would this approach yield certainty in the needed timeline given the potential legal risks and challenges?

Concept 3: Wildfire Fund

A third concept is to establish a well-capitalized wildfire fund that would create a buffer to absorb a significant portion of the wildfire liability costs that might otherwise be passed on to ratepayers under existing law and regulation while providing time for mitigation efforts to be advanced. The wildfire fund would also provide the utilities a source of immediate funding for the claims asserted against them for catastrophic wildfire damages and ensures prompt payment of those claims.

This concept could accomplish each of these objectives if utility shareholders were prepared to make a substantial contribution to the fund's claims-paying resources and if insurers were willing to accept a cap on their subrogation claims (their claims for reimbursement from the utilities of the payments to their insurance policyholders). If the wildfire fund is not sufficiently capitalized and/or the other stakeholders are not willing to

⁴⁹ The Commission on Catastrophic Wildfire Cost and Recovery is tasked with, among other matters, evaluating the impact of wildfire damage on insurance availability and affordability. The Commission is expected to deliver its report by July 1.

Wildfires and Climate Change: California's Energy Future

compromise their claims, then the wildfire fund will be exhausted more quickly and ratepayers will be responsible for costs thereafter.

The CPUC would retain jurisdiction to impose penalties on utilities that fail to prudently manage their wildfire risks, and those penalties would be paid to the fund to enhance its claims paying resources. Like the liquidity-only fund, an extended DWR charge could be dedicated to support the claims paying resources of the wildfire fund.

The following are reasonable elements of a wildfire fund that, depending on additional research, analysis, and development, may warrant consideration in the future.

3. **Pooled Capital:** The wildfire fund would include pooled capital from all IOUs including each of SDG&E, SCE and PG&E and be accessible by each of those utilities to pay catastrophic wildfire claims. Municipally owned utilities may participate at their option.
4. **Only Catastrophic Fires:** The fund would be limited to paying claims of utility-caused catastrophic wildfire liabilities only (as such fires would be defined in legislation establishing the fund). Smaller utility-caused fires and the first-dollar costs of catastrophic wildfires would be paid by a utility's commercial liability insurance policy and/or self-insurance reserve.
5. **Claims Administration Trust.** A wildfire fund could use a trust for the administration of claims. The trust could pay all subrogation claims to insurance companies and reimburse utilities for the costs of judgments on or settlements of uninsured and underinsured victims' claims. All insurance companies writing insurance in the state could be required to agree that subrogation claims arising out of catastrophic wildfire claims will be asserted against the trust. A potentially valuable feature of the wildfire fund could be that subrogation claims will receive settlements at a stated percentage of the validated amount of their claim. Utilities could be responsible for litigating or settling claims brought by uninsured and underinsured victims. They could then seek reimbursement from the trust for the settlement amounts or final judgments. The reimbursement process could provide incentives for the utilities to settle promptly with victims, while also ensuring that they settle for fair, but not excessive, amounts.
6. **Automatic Access to the Fund.** A utility could seek to pay wildfire claims from the fund upon determination that the fire was a catastrophic utility-caused wildfire without pre-determination by the CPUC whether or not the utility acted prudently, reasonably, or without negligence.
7. **Penalties to Discourage Behavior by Fund Participants that Violates Regulatory Requirements or is Imprudent:** Regulatory reforms could incorporate penalties that would create disincentives for negligent or unreasonable behavior by fund participants. Penalties could be paid into the fund to further extend claims paying capacity.

Wildfires and Climate Change: California's Energy Future

Further Research.

- How large would the fund need to be to be durable over the anticipated period of time necessary for utilities to make material progress in containing catastrophic wildfire risk?
- How can we design a fund that provides the proper incentives for utilities to invest in prevention to reduce wildfire damages and claims and for property owners to protect themselves by purchasing adequate insurance?
- After emerging from bankruptcy and providing for adequate compensation to its pre-petition wildfire victims, how will PG&E raise the necessary capital to make its contribution to the fund?
- How much time will it take to form and capitalize a wildfire fund? How should liability for wildfires that may occur in 2019 prior to the fund's formation be treated? Can the fund be established before PG&E emerges from bankruptcy?
- Capping subrogation claims moves the upper range of risk from the utility to the insurers, who will pass it on to customers. What would be the long-term impact on the availability of insurance?
- Would the subrogation cap apply to both property claims and casualty claims, which are different rights under the law?
- Should insurers or insureds contribute to fund capitalization?

Part 4: A More Effective CPUC with the Tools to Manage a Changing Utility Market

California's changing energy market and the need to mitigate and adapt to climate change require a state utility regulator that is effective in today's reality.

The CPUC has a long history as a regulator of rates. It manages complex, participatory, and time-consuming proceedings to set energy rates for the state's utilities. Its structure and deliberative processes flow from the California Constitution, which authorizes the CPUC to fix rates and charges and allows utilities to raise rates or charges if justified.⁵⁰ The CPUC has an imperative to balance the financial health of utilities and the need to keep rates as low as possible.

The current structure of the CPUC does not align with California's need for a regulator that can effectively address wildfire safety and can be nimble in today's changing energy market. The CPUC has assumed a greater role in safety regulation, as well as in protecting consumers. However, its structure has not fundamentally changed. Further, its other obligations, including regulation of some transportation industries, telecommunications, and other industries has grown as the demands on the Commission as the state's regulator of utilities have increased and become more complicated.

The Commission needs to strengthen its efforts as an evaluator of risk reduction and as a key line of defense to prevent wildfires caused by utility infrastructure. It must also be more nimble and provide necessary certainty more quickly than it does today in light of the changing energy market and heightened fire risk. Implementing a comprehensive strategy to improve safety, keep costs down and reach California's clean energy goals requires a regulator that applies and enforces regulation in a predictable, timely, and fair way.

The Current CPUC Process

The CPUC has three primary roles: quasi-legislative, rate-setting, and adjudicatory disputes. Under current law and practice, the CPUC uses different processes depending on the role it is performing. All types of proceedings are record based and governed by either an Assigned Commissioner or an Administrative Law Judge (ALJ). All involve extensive consultation and public input.

The CPUC typically addresses policy issues and capital expenditures in separate proceedings. For example, the issue of wildfire mitigation is being handled in two separate proceedings in front of the CPUC--one specific to the WMPs and the second as part of the general rate case (GRC). As wildfires become more frequent and larger, and as the state's energy market changes, the CPUC needs a decision-making process that is responsive to these developments.

⁵⁰ Article XII Public Utilities, CAL. CONS. [SECTION 1 - SEC. 9].

Wildfires and Climate Change: California's Energy Future

IOUs file GRCs with the CPUC every three years for prospective costs. Between GRC proceedings, the IOUs often file for approval for recovery of unexpected costs incurred. Except for certain minor matters, a highly structured legal process applies to decisions on these filings. The process insures that the filing party and opposing parties have an ability to be heard, including by submitting pleadings and testimony. The testimony and filings are important because the Commission must base its decisions on evidence in the record. The process provides other parties the ability to present views that are contrary to those of the IOUs. While it has value, the existing process can be time-consuming.⁵¹

If the Assigned Commissioner is not the presiding officer, the statutory structure of the CPUC's decision-making process often leaves ALJs with more control over the timing of the process than the Commissioners. That can lead to delays in proceedings even when the Commissioners wish to prioritize the decision-making.

In its rate-setting mode, the CPUC faces a difficult balancing act. On the one hand, the CPUC wants the IOUs to make appropriate investments and expenditures so they can provide safe and reliable service to their customers. On the other hand, an IOU's only source of income is its customers. Consumers have an interest in avoiding unnecessary costs and investments and keeping borrowing costs down. IOUs operate their business by collecting a return on investment, but the investments and the return are closely regulated by the CPUC. When the IOUs are financially healthy, utility customers benefit from lower cost of capital. When utilities are financially unhealthy, the inverse occurs as evidenced today in the case of PG&E.

In rate-setting and cost recovery cases, the burden falls on the utility to prove that its requests or its past actions were reasonable or prudent. In some instances, the utility may face difficulty proving that past actions meet this burden, which can create financial uncertainty for the utility. To avoid this, utilities may elect not to make expenditures unless the cost recovery was pre-approved by the CPUC.

The CPUC sometimes is tasked with new responsibilities that fall outside its traditional function of ensuring that rates are just and reasonable. After the San Bruno and Aliso Canyon events, safety has become a much more significant issue for the CPUC. The recent expansion of the Commission's role into reviewing WMPs under SB 901, as described above, is a further example of the CPUC's expanded role.

The CPUC's statutory and Constitutional responsibilities go beyond the rate-making cases. In developing and overseeing clean energy programs and in its role in

⁵¹ As an example, SCE filed its most recent GRC on September 1, 2016, and it is still pending today, more than 2 years later. See *In re: San Diego Gas & Electric Co.*, Test Year 2018 General Rate Case Application of So. Cal. Edison Co A 16-09-001 (Cal. Pu. Util. Comm'n) (Sept. 1, 2016); When SDG&E filed to recover its third-party damage claims in connection with its 2007 wildfires, it took 2 years for the CPUC to issue its decision denying recovery, and it took 6 months for the CPUC to issue its rehearing order after SDG&E filed its rehearing request. See *Application of San Diego Gas & Elec. Co. (U 902 E) for Authorization to Recover Costs Related to the 2007 Southern California Wildfires Recorded in the Wildfire Expense Memorandum Account*, *In re: San Diego Gas & Electric Co.*, Decision Denying Application, A 17-11-033 (Cal. Pu. Util. Comm'n) (Dec. 6, 2017); *In re: San Diego Gas & Electric Co.*, Order Denying Rehearing of Decision 17-11-033 (Cal. Pu. Util. Comm'n) (Jul. 13, 2018).

Wildfires and Climate Change: California's Energy Future

developing and enforcing safety regulations, the CPUC can also be a policy-setting body and a quasi-judicial body. At times, the ALJ-led process the CPUC utilizes does not lend itself to public accessibility or speedy development of new policies. This may contrast with the public's expectation that the Commissioners be the ultimate decision makers who should be held accountable for the timing of developing new rules and programs.

While there is merit in existing CPUC processes, the lack of flexibility and inefficiency frustrates the ability of the CPUC to effectively regulate utilities in a way that best meets the needs of Californians from a safety and financial standpoint. To more effectively meet the state's needs in today's environment, the CPUC must be reformed. The recommendations set forth below represent near-term steps that can be taken to improve CPUC efficiency and effectiveness. Longer-term, the state should evaluate a more comprehensive overhaul of the CPUC in an effort to better serve the changing needs of California.

Recommendations

- **Expand Safety Expertise:** Provide resources to the CPUC for meaningful review of WMPs or alternatively create a wildfire safety division in another agency. The CPUC must—on a priority basis—develop appropriate processes and expertise to handle matters involving safety. This should cover the CPUC's responsibilities for setting safety standards, conducting inspections and audits, and enforcing the standards. A good starting point would be to look at safety-related programs used by regulators in other industry sectors that involve high risks to property and human health and safety, such as the nuclear, aviation, and refinery industries. While the 2016 reforms made a small step toward an increased focus on safety, more is needed. Building the CPUC's capabilities related to safety may require organizational changes, budget increases, and a concerted effort to hire, contract for, or obtain through cooperative efforts with other agencies, the expertise needed to handle these new responsibilities. If experts are not available, then the CPUC should consider entering into grants or contracts with universities or consulting firms that could conduct research and develop standards and training programs to create the necessary expertise.
- **Overhaul Decision-Making Processes.** The CPUC should overhaul and reform its procedures to implement safety related initiatives and requirements more efficiently. Given the potentially large financial implications of such determinations as related to wildfire-related costs, it is particularly important that the CPUC put in place a process that is both timely and fair, while maintaining public input and transparency as appropriate. To achieve this goal, the strike force recommends that the Legislature consider directing the CPUC to do the following:
 - Streamline procedural designations for simpler cases. Many proceedings that could be quasi-legislative are currently subject to full rate-setting procedures.
 - Increase authority to delegate lower-level decisions to technical staff to free up time for administrative law judges and commissioners to focus on traditional rate-setting matters.
 - Eliminate unnecessary steps in proceedings and provide Commissioners with discretion to shorten timelines.

Wildfires and Climate Change: California's Energy Future

- Streamline enforcement procedures and increase enforcement authority, including delegating more enforcement authority to the Commission's safety division staff.
- **Review of High-Risk Industry Regulatory Models.** The Governor's Office of Planning and Research, in consultation with experts from academia, industry, and other research institutions, should review models of agencies that regulate high-risk industries, such as nuclear power and refineries, and summarize best practices that could be applied to the CPUC. These practices could include structural or procedural models and necessary expertise.
- **Industry Best Practices.** The CPUC should develop and adopt industry best practices for utilities as a resource. It should regularly monitor and update those practices to reflect learning, changing technology, and the latest assessment of climate change.

Part 5: Holding PG&E Accountable and Building a Utility that Prioritizes Safety

On January 29, PG&E filed voluntary chapter 11 petitions in the United States Bankruptcy Court for the Northern District of California--PG&E's second bankruptcy filing in the last 18 years.⁵² PG&E attributed its chapter 11 filing to claims resulting from the 2018 wildfires, including the Camp Fire which PG&E has since stated was likely ignited by its equipment.⁵³ PG&E justified the filing, in part, by citing the need to provide fair compensation for fire victims. Yet consistent with its historic culture, PG&E failed to honor scheduled settlement payments to victims of the Butte Fire in the days leading up to its bankruptcy. PG&E's willingness to use the bankruptcy process to the advantage of its investors, and at the expense of Californians, cannot be repeated.

PG&E's decision to voluntarily seek the protection of a chapter 11 bankruptcy court punctuates more than two decades of mismanagement, misconduct, and failed efforts to improve its safety culture. Prior to its filing, PG&E already was on criminal probation, having been convicted of five felony counts for safety violations in connection with the San Bruno gas explosion in 2010. That explosion resulted in eight deaths, approximately 58 injuries and 38 homes destroyed.⁵⁴ PG&E was also convicted of obstruction of justice, fined over \$4.6 million, and sentenced to substantial community service as a result of the same incident.

In addition to the incidents described above, PG&E has been investigated in connection with or settled claims related to numerous wildfires and explosions in the last 25 years including:

- The Trauner Fire (1994)
- The Pendola Fire (1999)
- The Sims Fire (2004)
- Fred's Fire (2004)
- The Rancho Codova gas explosion (2008)
- The 2009 San Francisco electrical explosion
- The 2014 Carmel gas explosion
- The Butte Fire (2015)
- Numerous electrical and substation fires (e.g. 1996, 1999, 2003).

⁵² PG&E previously filed for bankruptcy in 2001 in an effort to undermine the jurisdiction of the CPUC. That multi-year bankruptcy resulted in substantial rate increases for PG&E customers.

⁵³ PG&E, *PG&E Publicly Releases Supplemental Report on Electric Incidents Near the Camp Fire, the Camp Fire*, (Dec. 11, 2018) https://www.pge.com/en/about/newsroom/newsdetails/index.page?title=20181211_pge_publicly_releases_supplemental_report_on_electric_incidents_near_the_camp_fire (last visited Apr. 10, 2019).

⁵⁴ See CAL. PUB. UTILITIES COMM., *The San Bruno Catastrophe and Its Aftermath*, (May 2012), https://www.in.gov/iurc/files/Zeller_-_San_Bruno_Catastrophe_Aftermath.pdf (last visited Apr. 10, 2019).

Wildfires and Climate Change: California's Energy Future

Despite repeated assurances from management that the company would change, PG&E has failed to implement the fundamental management and cultural reforms to prioritize safety and reliable service.

Californians deserve better, and we will demand better. The state simply will not accept a situation where 40 percent of Californians are served by a company that cannot be trusted to provide safe and affordable power. PG&E must be radically restructured and transformed into a responsible and accountable utility.

PG&E's bankruptcy proceedings will have direct and profound impacts on the people of California. The state must participate in the proceedings to protect its interests, including those of wildfire victims who have claims against the company that must be resolved fairly and equitably, PG&E employees who are vital to maintain energy delivery and protect the safety of communities, and the company's customers who deserve clean, safe, reliable, and affordable energy. We expect and demand that PG&E will, as it is obligated to do, comply with state law, including CPUC safety directives and renewable energy mandates.

Recommendations

PG&E's stakeholders have the primary responsibility for filing a plan of reorganization or otherwise formulating an exit from chapter 11. For a plan of reorganization to be confirmed in the bankruptcy proceedings, it must meet the criteria set forth in the Bankruptcy Code, including that the plan be feasible and that PG&E be in compliance with law. To meet those standards, PG&E will have to demonstrate that it has sufficient funds available to make fund distributions provided under the plan and comply with its WMP and demonstrate that it is in compliance with state and federal laws, rules and regulations, including laws and regulations related to clean energy. Given the importance of PG&E to California, the state must work to assure that any resolution of that proceeding achieves the near, medium and long-term goals of the state and its people over opportunistic investors.

The strike force recommends that the state actively monitor and evaluate the PG&E bankruptcy proceeding to assure that the state's interests are being protected. Where appropriate and necessary, the state should participate in the bankruptcy proceedings and be heard on particular issues of interest to California. The strike force specifically recommends the following:

- **Evaluate Any Proposals to Satisfy 2017-2018 Wildfire Claims.** PG&E must satisfy the claims against it from the 2017-2018 wildfires. To that end, the state should evaluate the structure and amount of any trust or other mechanism to satisfy those claims to assure victims are fully and fairly treated. In addition, the state must evaluate any plan of reorganization to assess whether provisions of that plan could disadvantage existing and future wildfire victims.
- **Assure that PG&E Treats Its Employees Fairly.** PG&E's employees are a critical part of the future of the company and must be treated fairly in the bankruptcy proceeding. The state should monitor the bankruptcy proceedings to assure that employees are treated fairly.

Wildfires and Climate Change: California's Energy Future

- **Require that PG&E's Investors Contribute to a Solution.** Part 3 of this report identified certain conceptual approaches to the wildfire liability framework applicable to IOUs. While PG&E would be a beneficiary of any of those constructs, PG&E's investors must contribute to any solution adopted by the state to address wildfire liabilities in a way that benefits consumers. Those contributions could take a variety of forms, including investing in wildfire mitigation and safety or providing funding for other solutions.
- **Require PG&E Meet Conditions to Participate in Changes to the Wildfire Liability Structure for IOUs.** PG&E must meet conditions to participate in any approach to address wildfire liabilities, including fully remaking its corporate and safety culture and prioritizing governance that recognizes the public trust placed in PG&E.
- **Assure That PG&E Meets Its Obligations to Decommission Diablo Canyon.** PG&E must move forward with plans to safely and expeditiously decommission the Diablo Canyon Nuclear Power Plant. Trust funds and other moneys collected by consumers must not be diverted from that effort and additional funds must be provided by PG&E as needed. The state should evaluate the filings in the PG&E bankruptcy proceeding including the plan to assure that such filings require PG&E to meet its obligations with regard to Diablo Canyon.
- **Evaluate the Impact of PG&E Bankruptcy on Clean Energy Goals.** PG&E is party to numerous power purchase agreements that could be impacted by the chapter 11. The state should evaluate the impact of any decisions made by PG&E in its chapter 11 with regard to those agreements in light of California's clean energy goals.
- **Assure Plan is Compliant with Law and Feasible.** The state should evaluate any plan of reorganization to assure that the emerging company will be in compliance with law and that the plan will be feasible.
- **Continue Appropriate Regulatory Oversight.** Although PG&E is in chapter 11, the CPUC also has a substantial say in the future of PG&E (as it does for all IOUs). For example, the CPUC has the power to review PG&E's WMP and its compliance with that plan, as well as to review PG&E's safety culture assessment. The CPUC also has the authority to impose substantial penalties on PG&E for failure to comply with applicable regulations. Moreover, through the rate-setting function, the CPUC may provide incentives for PG&E to make prudent expenditures on, and investments in, safety. This can include actions, such as adjusting the allowed return on equity, that directly affect investors and management. The CPUC should continue to provide appropriate regulatory oversight.

While regrettable, the company's chapter 11 filing offers an opportunity to build a new, responsible, and accountable utility for Northern California.

Given the long history of safety failures and the critical interests at stake, the state can take no options off the table, including municipalization of all or a portion of PG&E's operations; division of PG&E's service territories into smaller, regional markets; refocusing PG&E's operations on transmission and distribution; or reorganization of PG&E as a new company structured to meet its obligations to California..

Conclusion

Catastrophic wildfires present tremendous challenges for California. The Governor's strike force makes numerous recommendations throughout this report to address those challenges. The strike force recommended immediate next steps are below.

Figure-11

Next Steps	
Catastrophic Wildfire Prevention and Response	✓ Publicize the Ready, Set, Go app – Wildfire prevention depends on each of us. To help educate property owners and residents in areas most at risk, CALFIRE has developed an app called "Ready, Set, Go!" that breaks down actions needed to be ready for wildfire. CALFIRE should work with leaders in vulnerable communities on outreach and provide technical assistance. Every Californian should download the Ready Set Go App.
	✓ Monitor and assess mitigation efforts – CALFIRE is pursuing a number of aggressive wildfire mitigation efforts, including distributing local community grants for mitigation. Metrics will be developed to measure the effectiveness of these programs and the community reach for local grant recipients.
	✓ Convene Governor's 2019 Emergency Preparedness Summit – The Governor's Office of Emergency Services will, by June 2019, convene first responders, government agencies, local governments, community residents, and technical experts to develop plans for the state's emergency preparedness. The summit will highlight best practices of local communities, share resources that have worked, and develop the networks necessary for ongoing preparedness improvements.
	✓ Prepare for state response to utilities reducing fire risks – Utilities are reportedly considering expanded de-energization of specific areas during high-risk periods to reduce the risk of wildfires. OES and the CPUC will lead an effort to assess utility plans to de-energize and will work with utilities, local governments, first responders, critical providers, businesses and residents to manage the potential of de-energization.
	✓ Implement emergency preparedness campaign and continue to pursue necessary resources for wildfire prevention and response.
Mitigating Climate Change through Clean Energy Policies	✓ Work with the Legislature, Cal ISO, and the CPUC on a legislative and regulatory agenda to ensure that California simultaneously addresses the impacts of climate change, including increased wildfires, and the root causes of climate change. Such work must include review of emissions from the electricity and transportation sectors. We must plan for a multi-year reform agenda, working in collaboration with the Legislature.

Wildfires and Climate Change: California's Energy Future

	<ul style="list-style-type: none"> ✓ Convene academics, private foundations, stakeholders, and government to assist in the development of a multi-year agenda to ensure that California simultaneously addresses the impacts of climate change.
Fair Allocation of Catastrophic Wildfire Damage	<ul style="list-style-type: none"> ✓ Significant policy development work, legal analysis, and financial simulations have all informed the liability concepts included in the report. However, additional analysis is needed. Request the SB 901 commission to review and analyze major liability concepts presented in report and solicit public comment regarding the different options. ✓ Direct the Governor's Strike Force to continue its work developing these options for consideration by the Governor and the Legislature by no later than this summer. ✓ Request the Department of Insurance to monitor, study, and issue recommendations to maintain an accessible and affordable insurance market throughout the state.
Increasing Capacity of the CPUC with the Tools to Effectively Manage a Changing Utility Market	<ul style="list-style-type: none"> ✓ Focus on building internal CPUC capacity to evaluate and help strengthen the IOU's wildfire mitigation plans immediately. ✓ Direct the CPUC to immediately assess regulatory and legislative changes to make their proceedings more expeditious. Identify and draft regulations and legislation needed to expedite their administrative proceedings. Such proposals should be reviewed with stakeholders and pursued as soon as possible.
Holding PG&E Accountable by Building a Utility that Prioritizes Safety	<ul style="list-style-type: none"> ✓ Push for Safety Changes. The CPUC should continue to provide appropriate regulatory oversight on utility safety. The CPUC has the power to review PG&E's wildfire mitigation plan and its compliance with that plan, as well as to review PG&E's safety culture assessment. The CPUC also has the authority to impose substantial penalties on PG&E for failure to comply with applicable regulations. These tools should be actively used to help create the safest utility possible. ✓ Actively Monitor and Appear in the Bankruptcy Proceedings. The state will actively monitor the PG&E bankruptcy proceedings to assure that California's interests are being protected. Where appropriate and necessary, the state will participate in the bankruptcy proceedings and be heard on particular issues of interest to California, including fair treatment of fire victims and employees, issues relating to safety, and factors affecting the state's progress to achieve climate commitments. ✓ Require PG&E's investors to contribute to any solution adopted by the state to address wildfire victim claims. Those contributions could take a variety of forms including investing in wildfire mitigation and safety or providing funding for the wildfire fund.

Wildfires and Climate Change: California's Energy Future

Wildfires have always plagued California. Climate change has made--and will continue to make--the fires hotter, bigger, more frequent, and more destructive. The costs of these fires is unbearable. The loss of human life, property, economic opportunities, community life, exacerbated by the costs to rebuild communities – cannot be sustained.

Yet, we know we cannot avoid all fire risks. This level of disaster touches every Californian. All Californians must share in the responsibility to mitigate wildfires. Paying for the costs of wildfires is also a problem that requires shared responsibility and shared sacrifice. All stakeholders must come together to address the cumulative liability of uncontrolled fires. The status quo is not an option. Doing nothing is unacceptable.

Annex A

Comparison of Wildfire Mitigation Plans

Estimated 2019 Costs (\$ in millions)

PG&E	SCE	SDG&E
O&M: \$849	O&M: \$507	O&M: \$24
Capital: \$1,623	Capital: \$1,027	Capital: \$178
Total: \$2,472	Total: \$1,535	Total: \$202

Plan Priorities

PG&E	SCE	SDG&E
<ul style="list-style-type: none"> • Vegetation Management & Enhanced Inspections • Wildfire Response • System Hardening • Situational Monitoring • Operational Practices (e.g., de-energization) • Tech Research / Development 	<ul style="list-style-type: none"> • Ignition Reduction in High-Risk Areas • Fire Suppression • System Hardening • Communication 	<ul style="list-style-type: none"> • Ignition Reduction in High-Risk Areas • Fire Suppression • Wildfire safety and recovery

High-Risk Exposure (% of Service Territory)

PG&E	SCE	SDG&E
52%	35%	54% ⁵⁵

System Hardening (Est. 2019 % of Circuit Miles Hardened in High-Risk Threat District)

PG&E	SCE	SDG&E
0.6%	0.5%	N/A ⁵⁶

Vegetation Management (Est. 2019 removals / % of total trees)

PG&E	SCE	SDG&E
375,000 trees (0.375%)	7,500 trees (0.500%)	9,000 trees (1.935%)

⁵⁵ Percentage of SDG&E's overhead circuit miles that reside in High Fire Threat Districts. Percentage of Service Territory figures were not available.

⁵⁶ SDG&E uses an execution metric which expects that 90-100 percent of its system will be hardened by the end of 2019. This includes system miles hardened and percentage of poles replaced

Weather Stations in High-Risk Threat District

PG&E	SCE	SDG&E
2019 Install: 400 (1.10 per 100 mi ²)	2019 Install: 315 (1.70 per 100 mi ²)	N/A
Cumulative: 600 (1.65 per 100 mi ²)	Cumulative ⁵⁷ : 440 (2.38 per 100 mi ²)	Cumulative: 175 (6.21 per 100 mi ²)

Cameras in High-Risk Threat District

PG&E	SCE	SDG&E
2019 Install: 71 (0.20 per 100 mi ²)	2019 Install: 62 (0.34 per 100 mi ²)	N/A
Cumulative: 79 (0.22 per 100 mi ²)	Cumulative ⁵⁸ : 160 (0.87 per 100 mi ²)	Cumulative: 107 (3.79 per 100 mi ²)

De-Energization

PG&E	SCE	SDG&E
<ul style="list-style-type: none"> PG&E has implemented the Wildlife Reclosing Disable program to manage circuit breakers if necessary PG&E targets an increase in its Public Safety Power Shutoff program from ~7,000 mi of lines to ~25,000 mi of lines in 2019 	<ul style="list-style-type: none"> SCE has broadly outlined its plans to install additional remote automatic reclosers SCE will conduct Public Safety Power Shutoffs based on the judgement of the incident management team and has a contingency operating plan in place 	<ul style="list-style-type: none"> SDG&E has deployed overhead distribution reclosers focusing on High-Risk Threat Districts To determine whether to employ a Power Shutoff, SDG&E considers multiple variables such as weather conditions, vegetation, field observations, flying debris, expected duration of conditions and location of existing fires/wildfire activity

⁵⁷ Weather stations reflect 2018 + 2019E installations.

⁵⁸ Cameras reflect 2018-2020E installations.

Annex B

SB 901 Factors

1. The nature and severity of the conduct of the electric grid and its officers, employees, contractors, and other entities with which the electric grid forms a contractual relationship, including systemic corporate defects.
2. Whether the electric grid disregarded indicators of wildfire risk.
3. Whether the electric grid failed to design its assets in a reasonable manner.
4. Whether the electric grid failed to operate its assets in a reasonable manner.
5. Whether the electric grid failed to maintain its assets in a reasonable manner.
6. Whether the electric grid's practices to monitor, predict, and anticipate wildfires, and to operate its facilities in a reasonable manner based on information gained from its monitoring and predicting of wildfires, were reasonable.
7. The extent to which the costs and expenses were in part caused by circumstances beyond the electric grid's control.
8. Whether extreme climate conditions at the location of the wildfire's ignition, including humidity, temperature, or winds occurring during the wildfire, contributed to the fire's ignition or exacerbated the extent of the damages. The electric grid shall provide the CPUC with specific evidence and data demonstrating the impact of climate conditions on the severity of the wildfire.
9. The electric grid's compliance with regulations, laws, CPUC orders, and its wildfire mitigation plans prepared pursuant to Section 8386 of the PUC, including its history of compliance.
10. Official findings of state, local, or federal government offices summarizing statutory, regulatory, or ordinance violations by any actor that contributed to the extent of the damages.
11. Whether the costs and expenses were caused by a single violation or multiple violations of relevant rules.
12. Other factors the CPUC finds necessary to evaluate the reasonableness of the costs and expenses, including factors traditionally relied upon by the CPUC in its decisions.

