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California's Blackouts: How Did We Get Here and What Can We Do to Keep the Lights On?

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Introduction

Pacific Gas and Electric of San Francisco began in October 2019 a series of electricity blackouts called “public safety power shutoffs.” The objective was to prevent its equipment from starting wildfires during hot, dry, and windy periods.

The Great Blackouts of 2019 plunged nearly 3 million into darkness at its peak. With memories of former Gov. Gray Davis being recalled over his inept handling of California’s 2001 power crisis fresh in their minds, Gov. Gavin Newsom and state lawmakers worked overtime to avoid meeting the same fate at the hands of an angry public.

The state’s political class quickly played a game of political hot potato, blaming PG&E and others for the blackouts, while positioning themselves as having the best solution to prevent future blackouts moving forward.

The state’s plunge into darkness, which reminds one of going back to Medieval times, begs the following questions. How did we get to a place where the lights went out for nearly 3 million people? What can we do to ensure the lights stay on in the future?

This report provides a historical perspective, outlines the state’s system for delivering electricity, and examines the policy decisions

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that have contributed to the ongoing wildfire disaster. Then, it provides an overview and brief analysis of several different ideas that have been put forward by lawmakers to hopefully prevent future blackouts.

Recent Wildfires Create Perfect Storm Pushing California Into Darkness

Early on the morning of Nov. 8, 2018, electrical transmission lines in the Pulga area of Butte County owned by Pacific Gas and Electric started what became known as the Camp Fire.¹

“The tinder dry vegetation and Red Flag conditions consisting of strong winds, low humidity and warm temperatures promoted this fire and caused extreme rates of spread, rapidly burning into Pulga to the east and west into Concow, Paradise, Magalia and the outskirts of east Chico,” the California Department of Forestry and Fire Protection reported in May 2019² after its investigation found PG&E at fault for the fire.

A second ignition site “determined to be vegetation into electrical distribution lines owned and operated by PG&E ... was consumed by the original fire.”³

The Camp Fire, possibly ignited by a faulty C-hook,⁴ burned through 153,336 acres, destroyed 18,804 structures, and killed 86 people. It was the most destructive and deadliest wildfire in California history, taking more than twice the number of lives as the next deadliest fire in the state, the Griffith Park fire of 1933, which killed 29.⁵

PG&E, responsible for at least 1,500 fires since 2014,⁶ filed for Chapter 11 bankruptcy in January 2019, as it reportedly had “no choice ... given the flood of lawsuits and wildfire liabilities it estimates could be up to \$30 billion.”⁷ About six months

later, it agreed to pay \$1 billion in compensation to “more than a dozen California cities, counties and agencies for losses resulting from deadly wildfires sparked by its equipment.”⁸

In September 2019, the utility agreed to pay an \$11 billion insurance settlement to resolve insurance claims over the Camp Fire and the wine country fires of 2017.⁹ It’s possible prosecutors will file eventually criminal charges against the utility and its executives for their role in the fire.¹⁰

Roughly one month later, PG&E began a series of “public safety power shutoffs” to reduce the risk of wildfires. “Given the continued and growing threat of extreme weather and wildfires, and as an additional precautionary measure following the 2017 and 2018 wildfires,” the utility announced, “we are expanding and enhancing our Community Wildfire Safety Program to further reduce wildfire risks and help keep our customers and the communities we serve safe.

“This includes expanding our Public Safety Power Shutoff program beginning with the 2019 wildfire season to include all electric lines that pass through high fire-threat areas—both distribution and transmission.”¹¹

The power outages that began on the morning of October 9 caused roughly 2 million people to lose their power at its peak.¹²

The blackouts continued throughout the month. By October 26, the power to roughly 2.8 million customers was being turned off in what was called “the state’s largest—and potentially longest—deliberate blackout ever.”¹³

Two days later, the Los Angeles Times reported that “never before in California history have more than 2 million people gone five days without electrical power because of the intentional safety policy of a utility.”

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PG&E began rolling blackouts the afternoon of Friday, October 25, “and by Sunday evening the utility had cut current to 940,000 homes and businesses, affecting more than 2 million people, with one more phase to come in Fresno and Madera counties.”¹⁴

Despite the public safety power shutoffs, the wildfires reached the point by October 27 that Gov. Gavin Newsom declared a state of emergency. It was effective across the entire state.¹⁵

PG&E was heavily criticized by the public as well as politicians throughout the outages. But elected officials were not spared. A poll found that 47% of Californians felt Newsom’s handling of the situation was below average or very poor. Only 33% rated it average or above average.¹⁶ Media coverage ranged from reporting the “outages posed a political risk for Gov. Newsom,”¹⁷ to declaring the “shadow of Gray Davis,” whose 2003 recall was fueled by an energy crisis, was “looming” over the freshman governor.¹⁸

Trouble is not new for PG&E. It is on federal criminal probation, having been found guilty in 2016 for the deaths of eight people who were killed in the 2010 San Bruno natural-gas-line explosion. Paula Rosput Reynolds, who chaired the independent panel that investigated PG&E after the explosion, told the Wall Street Journal the utility lurches “from crisis to crisis.”¹⁹

How Government Policy Tangled Up California’s ‘Private Sector’ Power System

No state outside of New York has a more regulated energy sector than California,²⁰ even though the state electricity market was supposedly “deregulated” in 1996. The legislation that

purportedly deregulated the system was “not some radical rewriting of the rule books,” according to Reason Foundation researcher Adrian Moore. Far from deregulating the electricity market, the new policy “restructured” it. The result is a regime that “discourages entry into the market ... restricts expansion of capacity, and ... sustains the old systems and rules that prevent competition.”²¹ Political control over power was actually increased²² by the Electric Utility Industry Restructuring Act while construction of new power plants was discouraged.²³

Utilities such as PG&E, which delivers natural gas and electricity to 16 million customers, Southern California Edison, and San Diego Gas and Electric are investor-owned, but like “most so-called public utilities,” writes

Thomas DiLorenzo, they “have been granted governmental franchise monopolies because they are thought to be ‘natural monopolies.’”

These “monopolies” are “said to occur when production technology, such as relatively high fixed costs, causes long-run average total costs to decline as output expands.” The theory, DiLorenzo continues, says “a single producer will eventually be able to produce at a lower cost than any two other producers, thereby creating a ‘natural’ monopoly.”²⁴

The utilities are rigid, bureaucratic, and slow to respond when change is needed, and are therefore limited when resolving problems.

Regulated utilities are known for their misallocation of resources as decisions are made for political rather than economic or customer-based reasons. A glaring example of this is “the nearly \$3 billion price tag for California’s utilities to perform fire-deterrent work,” which “is heavily weighted toward projects that afford them financial advantages and tax benefits.”²⁵

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“Pole replacement, for example, is a big-ticket item in many of the plans,” says CalMatters, yet there is “little evidence to support the companies’ claims that . . . replacing hundreds of thousands of wooden utility poles with steel ones will actually reduce the risk of wildfires.”²⁶

Don Russell, a Texas A&M University electrical engineer who researches utility-caused fires, told CalMatters that the answer would be “no” if he was asked if replacing utility poles was “the best place to spend your money to cut down the risk of fire.”²⁷

Blackouts Triggered by Global Warming?

PG&E executives as well as political figures and journalists have declared, with no supporting evidence, that “climate change” has fueled California wildfires in recent years.

- “Climate change is no longer coming, it’s here,” Geisha Williams, chief executive officer of PG&E said in August 2018 before leaving the company in early 2019. “And we are living with it every day.”²⁸
- According to CNN, “deadlier and more destructive wildfires have become the new normal.”²⁹
- U.S. Rep. Alexandria Ocasio-Cortez tweeted “this is what climate change looks like” as wildfires raged.³⁰
- “Climate change is real, it’s happening, and you and everyone else will recognize that,” former Gov. Jerry Brown who opened his testimony before Congress in October swearing, presumably under oath, that climate change is “a direct cause of California’s increasingly dangerous wildfire seasons.”³¹

This is but a small sample of the many claims that man-caused climate change is stoking the growth

of wildfires. And they are entirely wrong. If they were true, then this statement—“For nearly 40 years, the number of wildfires in California has been declining”³²—would be false. It is not.

A U.S. Geological Survey of the data showed that California wildfires peaked in 1980. Since then, “there have been fewer and fewer wildfires” in the state. UCLA professor Jon Keeley agrees.³³

“The claim commonly made in research papers and the media that fire activity is increasing throughout the western USA is certainly an overstatement,” Keeley said in a research paper.³⁴

These statements are confirmed by data from Cal Fire, the government office which has also documented a sharp decrease in acres burned since 2008.

If anything, it’s the state’s obsession with global warming that has contributed to the fires. The rush to renewable energy, and the crusade to reduce and ultimately eradicate fossil fuels, have pushed utilities to allocate funds that should have been used for wildfire prevention to programs and projects conceived by politics.

In a Wall Street Journal story about PG&E going through “The First Climate-Change Bankruptcy,” staff writer Russell Gold reported PG&E is “one of several California utilities that, with prodding from state politicians, has been rapidly shifting to a cleaner energy future.”³⁵ More recently, Journal columnist Holman W. Jenkins Jr. pointed out California “ratepayers shell out billions for wind and solar that might be better spent on fireproofing.”³⁶

Chuck DeVore, who once served in the California Assembly and is now vice president of national initiatives at the Texas Public Policy Foundation, has also taken note of the state’s “large and heavily regulated public utilities—PG&E, SDG&E, and SCE,” prioritizing “wind and solar power, leaving little for powerline maintenance and upgrades.”³⁷

Appeals to “do something” about climate change to save California from wildfires is useless. The opposite approach, diverting funds dedicated

to the renewable goals to fire prevention efforts, would be more effective.

Poor Public Policy Decisions Facilitate More Blackouts

Questionable Spending by California's Power Monopolies

PG&E “has a long history of putting off crucial maintenance and failing to keep trees trimmed along utility corridors,” former Popular Mechanics editor James B. Meigs recently wrote in City Journal, adding that it is unclear “whether the company has the managerial discipline to develop what experts call a ‘safety culture.’ A consulting firm recently concluded that, despite some progress, PG&E still lacks ‘a comprehensive safety strategy.’”³⁸

A power provider working within a free-market system would have been more interested in performing basic maintenance to avoid disasters that lead to bad press, liability that result in bankruptcy, and deaths. But incentives are skewed under California’s regulatory framework.

Utilities make no profit on the sales of the products they sell. Their profits are regulated by the California Public Utilities Commission and are “earned” when they “invest in infrastructure projects, such as building and operating the poles and wires of the power grid, or installing electric vehicle charging stations.”³⁹

The profits are also guaranteed, and independent of the business performance—which often includes crisis prevention—that is required for companies to earn profits in the free market.

The result has been an environment in which peripheral objectives, including the state’s climate targets, have been given precedence over the safe transmission of electricity.

State Government Bails Out PG&E

Governments have been known to bail out private businesses, but no competent, honest CEO, president, or corporate board would ever make decisions based on the prospect of being saved by a publicly funded safety net. Regulated utilities are another matter.

With PG&E facing up to \$30 billion in potential liability costs, the Legislature passed, and Gov. Gavin Newsom signed, a bill that created a wildfire fund of at least \$21 billion. It is intended “to stabilize the state’s largest utilities” and, says the Wall Street Journal, “is part of a broader regulatory overhaul meant to mitigate the crisis created when PG&E Corp. sought bankruptcy protection.”⁴⁰

Democratic State Sen. Bill Dodd, who co-authored the bill, said the legislation “is not a utility bailout, it is a ratepayer bailout.”⁴¹

A year earlier, lawmakers passed and former Gov. Jerry Brown signed Senate Bill 901, which allows investor-owned utilities to pass on to customers in the form of higher rates some portion of the costs the utilities might incur from 2017’s deadly fires.⁴²

Critics have labeled both policies as “bailouts.” Economists tell us bailouts create a moral hazard in which risky behavior is encouraged

rather than discouraged because decision makers are protected from risks.

Politically Driven Policies Restrict Responsible Forest Management

In California’s system, utilities have at times been restricted by regulators in how far they could trim trees near lines where the wood is a potential fuel for wildfires.

They also have to have permission from the bureaucracy to perform basic fire-prevention

California is almost programmed to favor fire suppression over prevention.

tasks. The Wall Street Journal has reported that PG&E had to ask state regulators if it could “spend \$5 billion from 2018 to 2022 to reduce fires by accelerating plans to insulate wires, replace power poles and towers, install safer equipment and cut down trees.”⁴³

California is almost programmed to favor fire suppression over prevention. A University of Wisconsin survey of eight communities that had histories of fires “showed that they almost always react by putting more funding toward emergency response, and not mitigation,” says CityLab.⁴⁴ Tom Bonnicksen, a retired forestry and wildfire expert who researches California fires told the San Francisco Chronicle “there are millions ... of dollars going into fighting fires but there are not millions ... going into preventing the fires.”⁴⁵

This order of preference has been heavily influenced by the green lobby:

Federal environmental policy, driven by activists, has “continuously thwarted” the use of “scientific management techniques — including logging, prescribed burns, and thinning — to treat forest fuel loads” in preventing fires, says Hoover Institution researcher Terry Anderson. The eco-groups rather “let nature take her course.”

While living trees feed the flames, dead trees are high-octane fuel, and there might be nearly 150 million of them in California, says the U.S. Forest Service. Removing them from areas near homes and other structures, including power lines and equipment, reduces risk. But it isn’t easy. Not only do environmentalists oppose their removal, especially in the deep timber, in some instances, government permits are necessary,

and on occasion, only a licensed contractor can legally do the job.

With California being “a place that nature built to burn,” according to university professor and fire historian Steven J. Pyne, there’s no avoiding a tomorrow.⁴⁶

Until prevention is prioritized over firefighting efforts, little is likely to change.

Clean Energy Mandates

California’s electricity is to be generated by 100% renewable sources by 2045, according to state law. Toby Shea, a senior credit officer at Moody’s Investors Service, says that the mandate will require more than \$100 billion in battery purchases. While the costs are likely to be passed on to ratepayers, Bloomberg reports that the carbon-free mandate only adds “to the uncertainties the entities already face, such as liabilities from wildfires.”⁴⁷

According to Fitch ratings, “the confluence of the 2045 deadline and reliance on still emerging technologies raises the concern that utilities will be hampered by sizable cost increases while simultaneously challenged to maintain the high reliability levels that ratepayers have come to expect.”⁴⁸

“California’s renewable mandates impose tens of billions of dollars in additional costs and require the use of less reliable technologies,” says PRI senior fellow Wayne Winegarden. “These programs also divert resources away from investing in other priorities, such as an infrastructure that reduces the risks of wildfires. The result will be a less reliable, more expensive, energy infrastructure that will harm all Californians.”⁴⁹

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Never Again: Evaluating Proposals to Prevent Future Blackouts

Should the State Regulate Public Safety Power Shutoffs?

Days after the 2019 legislative session was over, Newsom signed legislation requiring investor-owned utilities to come up with plans to mitigate the impacts planned shutoffs will have on customers who have sensitive medical needs, the Los Angeles Times reported. The new law further demands that utilities “notify all emergency responders, healthcare providers and public safety groups within an outage area.”⁵⁰

Subsequently, Sen. Scott Wiener, San Francisco Democrat, has proposed legislation which would:⁵¹

- Require that the California Public Utilities Commission create a process by which businesses, individuals, and local governments can recover costs accrued during a planned blackout (for example, by damaging equipment turned off too quickly) from the utility within two weeks, and require that utility shareholders – not ratepayers – are responsible for these costs.
- Promote better collection of data on utility equipment in order to assess risk level beforehand, as well as require reporting on the consequences of planned blackouts after the fact.
- Level hourly fees on utilities during planned blackouts, and ensure that customers cannot be billed for transmission, distribution, and other costs during a planned blackout, in addition to a stipulation that a utility cannot profit from a planned blackout (through changing electricity prices and the like).
- Prevent utilities from spending ratepayer funds to oppose formation of new municipal utilities, distributed energy resource initiatives, or any other attempt to offer consumers increased

energy choice and more reliable options, similar to prohibitions already in place regarding CCA formation.

Pausing “Green Energy” Mandates

An alternative solution that addresses the problem at its roots has been proposed by a pair of Northern California lawmakers. The legislation, to be introduced by Republican Sen. Jim Nielsen, of Tehama, and Assemblyman James Gallagher, of Yuba City, would “direct additional funding into utility infrastructure upgrades and forest fuel reduction projects.” The bill requires a temporary pause in “the state’s renewable power mandates,” which will remain in place “until infrastructure and vegetation management conditions are improved.” The utilities can apply the savings only to projects that “harden the grid and reduce forest fuels.”⁵²

The lawmakers have pointed out that PG&E spends about \$2.4 billion a year to comply with Sacramento’s mandate for buying renewable power. Yet in 2017, the utility spent “only \$1.5 billion to update its century-old infrastructure in 2017.”

Pausing the renewable mandate would be in line with a bill signed by Newsom in September 2019 that exempts homes being rebuilt in areas where the governor has declared a state of emergency from the solar panel mandate.⁵³ That mandate forces builders to place roof-mounted solar energy panels on all new single-family and multi-family homes up to three stories built on January 1, 2020, and after.

Moving Transmission Lines Underground

Locating transmission lines beneath the ground has been suggested as a way to mitigate the risk of electrical equipment starting wildfires. It would be a costly, and time-consuming, project.

Converting to under-ground lines would cost about \$3 million a mile. In urban areas, the cost rises to about \$5 million per mile.⁵⁴ With more than 175,000 miles of overhead lines across the state, the dollars add up quickly. The state has

been moving some lines underground, but only about 100 miles a year, “meaning it would take more than 1,000 years to underground all the lines at the current rate,” the Palm Springs Desert Sun has reported.⁵⁵

PG&E alone has about 81,000 miles of overhead lines, which would cost roughly \$243 billion to bury. Distributing that expense equally to the utility’s roughly 16 million customers “would amount to a bill of more than \$15,000 per account.”⁵⁶

Elizaveta Malashenko, the California Public Utilities Commission safety and enforcement division director, said last year when the option was being discussed that if “we were to underground (throughout) California, all our rates would go up 10 times.”

But even underground, the lines are at risk. Earthquakes and floods can cause outages and troubleshooting and repair is more difficult on buried lines.⁵⁷

Moving Away from Large Utilities to Community-Based Power

San Jose Mayor Sam Liccardo “has proposed turning Pacific Gas & Electric into the nation’s largest cooperative electric utility,” according to Utility Dive, “through a coordinated buyout among California cities and counties under the utility’s service.”⁵⁸ An offer made by San Francisco to buy the entirety of PG&E’s assets within the 49-square-mile city for \$2.5 billion has been rejected by the utility.⁵⁹

Were PG&E to sell to San Jose, San Francisco, or both, it would change nothing unless the “co-

op” controlled PG&E’s entire infrastructure, including the transmission lines outside of urban areas that have a history of starting fires. Even if a co-op took over all of PG&E’s service territory, which is a significant piece of the state’s acreage, it’s not clear how maintaining and repairing the transmission lines would be paid for. Would the financial resources the co-op saves because it would have to pay neither federal taxes nor shareholder dividends be enough? Would steep transactional costs tie up resources that would otherwise be applied to fire prevention efforts?

Becoming a co-op does not mean full autonomy in decision-making. A co-op would also still have to comply with the California Public Utilities Code and it could not escape the regulatory reach of the state of federal governments.

Near Sacramento, Rocklin Mayor Joe Patterson has called for a study to determine if the city could take over PG&E’s infrastructure within its boundaries and

buy power from another provider.

“These power shutoffs have brought a whole different dynamic to the conversation,” said Patterson. “I just think that we cannot accept this as the normal circumstance.”⁶⁰

Nearby city-owned Roseville Electric Utility, which has been mentioned as a partner for Rocklin, avoided the PG&E shutdown because it’s connected to an unaffected section of the power grid. But not every municipality can sever their dependence on the utility-owned transmission lines that are at high risk for shutdowns. Consequently, the plan suffers from the same flaw as the co-op plan: It would have no direct impact on the maintenance and repair of those lines.

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Bringing Back Competition to California's Electricity Market

In a competitive market, California's utilities would face pressure from rivals. Says economist Raymond C. Niles:

Let's say that Pacific Power & Light (PP&L), which serves neighboring Oregon, and where the average cost of electricity is 10.66 cents/kilowatt-hour (kwh), wanted to make extra profits by sending some of its cheap power south into northern California, where the average cost of electricity is 19.03 cents/kilowatt-hour. From an engineering perspective, all it would have to do is build a rather inexpensive electric transmission line from Oregon into northern California. PP&L can even tout the greater safety of its transmission line than PG&E's by advertising that its line will be insulated to prevent sparking and/or that it will maintain an aggressive tree-trimming program to prevent forest fires.

Californians would not only get cheaper electricity from Oregon, but it would be *safer* electricity that is less likely to spark fires.⁶¹

But, continues Raymond, "it is illegal for anyone else to compete with PG&E in providing electric utility service in its 'service territory.' PG&E, and nearly every other electric utility in the country, is a legal monopoly."⁶² Without competition, there is a lack of innovation. Businesses grow stagnant, waste resources, and become unresponsive.

Conclusion

Wildfires are unavoidable in California. It's truly a place "nature built to burn." Yet preventive measures can lessen the losses of life and property. The necessary changes will require a new way of thinking in California. The old paradigm that says utilities must be government-protected monopolies has to be left behind. The state that was at one time not afraid of fresh ideas has stayed dedicated to an old one for far too long.

Endnotes

- 1 “Cal Fire Investigators Determine Cause of the Camp Fire,” California Department of Forestry and Fire Protection news release, May 15, 2019 https://fire.ca.gov/media/5038/campfire_cause.pdf
- 2 “Cal Fire Investigators Determine Cause of the Camp Fire,” California Department of Forestry and Fire Protection news release, May 15, 2019 https://fire.ca.gov/media/5038/campfire_cause.pdf
- 3 “Cal Fire Investigators Determine Cause of the Camp Fire,” California Department of Forestry and Fire Protection news release, May 15, 2019 https://fire.ca.gov/media/5038/campfire_cause.pdf
- 4 Tony Bizjak, Sophia Bollag, Ryan Sabalow, “PG&E caused Camp Fire that destroyed Paradise and killed 85, Cal Fire says,” Sacramento Bee, May 15, 2019 <https://www.sacbee.com/news/local/article230445554.html>
- 5 Top 20 Deadliest California Wildfires, California Department of Forestry and Fire Protection https://fire.ca.gov/media/5512/top20_deadliest.pdf
- 6 Russell Gold, Katherine Blunt, Rebecca Smith, “PG&E Sparked at Least 1,500 California Fires. Now the Utility Faces Collapse,” Wall Street Journal, January 13, 2019 <https://www.wsj.com/articles/pg-e-sparked-at-least-1-500-california-fires-now-the-utility-faces-collapse-11547410768>
- 7 Eric Westervelt, Matthew S. Schwartz, “California Power Provider PG&E Files For Bankruptcy In Wake Of Fire Lawsuits, National Public Radio, January 29, 2019 <https://www.npr.org/2019/01/29/689591066/california-power-provider-pg-e-files-for-bankruptcy-in-wake-of-fire-lawsuits>
- 8 Katherine Blunt, Erin Ailworth, “PG&E Reaches \$1 Billion Settlement With Paradise, California Governments,” Wall Street Journal, June 18, 2019 <https://www.wsj.com/articles/pg-e-settles-with-some-california-communities-on-wildfire-claims-11560894354>
- 9 Bill Chappell, “PG&E Agrees To Pay \$11 Billion Insurance Settlement Over California Wildfires, National Public Radio, September 13, 2019 <https://www.npr.org/2019/09/13/760479525/pg-e-to-pay-11-billion-insurance-settlement-over-wildfires-in-paradise-and-elsew>
- 10 Russell Gold, “PG&E Power Line That Sparked Camp Fire Was Inspected Weeks Earlier,” Wall Street Journal, August 22, 2019 <https://www.wsj.com/articles/pg-e-power-line-that-sparked-camp-fire-was-inspected-weeks-earlier-11566466203>
- 11 Community Wildfire Safety Program Public Safety Power Shutoff, Pacific Gas & Electric fact sheet https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/Public-Safety-Power-Shutoff-Fact-Sheet.pdf
- 12 Mark Chediak, “Unprecedented California Blackout Ending as PG&E Restores Power,” Bloomberg Business, October 10, 2019
- 13 Mark Chediak, David R Baker, “PG&E plans to plunge 2.8 million Californians Into Darkness,” Bloomberg Business, October 26, 2019
- 14 Ralph Vartabedian, “Intentional blackouts of this magnitude are unprecedented in California history,” Los Angeles Times, October 28, 2019 <https://www.latimes.com/california/story/2019-10-28/intentional-blackouts-of-this-magnitude-unprecedented-in-california-history>
- 15 <https://www.gov.ca.gov/wp-content/uploads/2019/10/2019-17-Fire-weather-conditions-State-of-Emergency-Signed-10.27.19.pdf>
- 16 Marisa Lagos, “Californians Are Angry at PG&E Over Blackouts — And They’re Not Sparing Newsom,” KQED, October 23, 2019 <https://www.kqed.org/news/11782081/poll-shows-anger-at-pge-gavin-newsom-over-blackouts>

- 17 Taryn Luna, Phil Willon, “For Gov. Newsom, PG&E power outages offer political rewards — and some big risks,” Los Angeles Times, October 12, 2019 <https://www.latimes.com/california/story/2019-10-12/california-electricity-shutoff-gavin-newsom-challenges>
- 18 Carla Marinucci, “Shadow of Gray Davis looms over Newsom as outages rock California,” Politico, October 12, 2019 <https://www.politico.com/states/california/story/2019/10/12/california-blackouts-latest-pitfall-for-newsom-in-prime-wildfire-season-1225570>
- 19 Russell Gold, Katherine Blunt, Rebecca Smith, “PG&E Sparked at Least 1,500 California Fires. Now the Utility Faces Collapse,” Wall Street Journal, January 13, 2019 <https://www.wsj.com/articles/pg-e-sparked-at-least-1-500-california-fires-now-the-utility-faces-collapse-11547410768>
- 20 Wayne Winegarden, Mark Miles, “The 50 State Index of Energy Regulation,” Pacific Research Institute, July 2014 https://www.pacificresearch.org/wp-content/uploads/2017/06/50StatesEnergy_FirstFinalWeb.pdf
- 21 Adrian Moore, “Phony Deregulation,” Reason, November 2000 <https://reason.com/2000/11/01/phony-deregulation/>
- 22 Jerry Taylor, Peter Van Doren, “California’s Troubles Not Caused by Deregulation,” Cato Institute, January 2001 <https://www.cato.org/publications/commentary/californias-troubles-not-caused-deregulation>
- 23 Charli Coon, “Why Wholesale Price Caps on Electricity Won’t Solve California’s Energy Woes,” Heritage Foundation, June 19, 2001 <https://www.heritage.org/environment/report/why-wholesale-price-caps-electricity-wont-solve-californiasenergy-woes>
- 24 Thomas J. DiLorenzo, The Myth of Natural Monopoly, Mises Daily Articles, Mises Institute, January 14, 2019 <https://mises.org/library/myth-natural-monopoly>
- 25 Julie Cart, “Scant Details: Are California Utilities Doing Enough To Fireproof Their Equipment?,” CalMatters, June 27, 2019 <https://calmatters.org/environment/california-wildfires/2019/06/scant-details-are-california-utilities-doing-enough-to-fireproof-their-equipment/>
- 26 Julie Cart, “Scant Details: Are California Utilities Doing Enough To Fireproof Their Equipment?,” CalMatters, June 27, 2019 <https://calmatters.org/environment/california-wildfires/2019/06/scant-details-are-california-utilities-doing-enough-to-fireproof-their-equipment/>
- 27 Julie Cart, “Scant Details: Are California Utilities Doing Enough To Fireproof Their Equipment?,” CalMatters, June 27, 2019 <https://calmatters.org/environment/california-wildfires/2019/06/scant-details-are-california-utilities-doing-enough-to-fireproof-their-equipment/>
- 28 Mark Chediak, “Facing \$17 Billion in Fire Damages, a CEO Blames Climate Change,” Bloomberg Businessweek, August 13, 2018 <https://webcache.googleusercontent.com/search?q=cache:PeuLFXBelYwJ:https://www.bloomberg.com/news/articles/2018-08-13/facing-17-billion-in-fire-damages-a-ceo-blames-climate-change+%&cd=1&hl=en&ct=clnk&gl=us>
- 29 Ray Sanchez and Brandon Miller, “California’s new normal: How the climate crisis is fueling wildfires and changing life in the Golden State,” CNN, October 30, 2019 <https://www.cnn.com/2019/10/29/weather/california-us-wildfires-climate-change/index.html>
- 30 Daniel Turner, “Hey, AOC, California wildfires look like government dereliction of duty not climate change,” Fox News Opinion, October 30, 2019 <https://www.foxnews.com/opinion/aoc-california-wildfires-government-climate-change-daniel-turner>
- 31 Tal Kopan, “Jerry Brown implores Washington to act on climate: ‘California’s burning,’” San Francisco Chronicle, October 29, 2019 <https://www.sfchronicle.com/california-wildfires/article/Jerry-Brown-implores-Washington-to-act-on-14571536.php#>
- 32 Daniel Tedford, “Over the last 40 years, there is a surprising trend with California wildfires,” Orange County Register, September 17, 2017 <https://www.ocregister.com/2017/09/14/you-may-not-believe-it-but-the-number-of-california-wildfires-has-been-going-down/>

- 33 Daniel Tedford, “Over the last 40 years, there is a surprising trend with California wildfires,” Orange County Register, September 17, 2017 <https://www.ocregister.com/2017/09/14/you-may-not-believe-it-but-the-number-of-california-wildfires-has-been-going-down/>
- 34 Daniel Tedford, “Over the last 40 years, there is a surprising trend with California wildfires,” Orange County Register, September 17, 2017 <https://www.ocregister.com/2017/09/14/you-may-not-believe-it-but-the-number-of-california-wildfires-has-been-going-down/>
- 35 Russell Gold, “PG&E: The First Climate-Change Bankruptcy, Probably Not the Last,” Wall Street Journal, January 18, 2019 <https://www.wsj.com/articles/pg-e-wildfires-and-the-first-climate-change-bankruptcy-11547820006>
- 36 Holman W. Jenkins Jr., “Revolutionary California,” Wall Street Journal, October 29, 2019 <https://www.wsj.com/articles/revolutionary-california-11572389585>
- 37 Chuck DeVore, “It’s Not Climate Change To Blame For California’s Fires And Blackouts. It’s Democrats,” The Federalist, October 30, 2019 <https://thefederalist.com/2019/10/30/its-not-climate-change-to-blame-for-californias-fires-and-blackouts-its-democrats/>
- 38 James B. Meigs, “California Goes Dark,” City Journal, October 11, 2019 <https://www.city-journal.org/planned-electricity-blackouts-california>
- 39 Sammy Roth, “California’s biggest utilities are losing their monopolies. Is that a good thing?,” Los Angeles Times, February 7, 2019 <https://www.latimes.com/business/la-fi-monopoly-utilities-california-20190207-story.html>
- 40 Alejandro Lazo, Katherine Blunt, “California Legislature Approves Multibillion-Dollar Wildfire Fund,” Wall Street Journal, July 11, 2019 <https://www.wsj.com/articles/california-legislature-approves-multibillion-dollar-wildfire-fund-11562870591>
- 41 Alejandro Lazo, Katherine Blunt, “California Legislature Approves Multibillion-Dollar Wildfire Fund,” Wall Street Journal, July 11, 2019 <https://www.wsj.com/articles/california-legislature-approves-multibillion-dollar-wildfire-fund-11562870591>
- 42 Sammy Roth, “What would happen if PG&E sold its gas business or filed for bankruptcy?” Los Angeles Times, January 8, 2019 <https://www.latimes.com/business/la-fi-pge-wildfires-bankruptcy-sale-20190108-story.html>
- 43 Russell Gold, Katherine Blunt, Rebecca Smith, “PG&E Sparked at Least 1,500 California Fires. Now the Utility Faces Collapse,” Wall Street Journal, January 13, 2019 <https://www.wsj.com/articles/pg-e-sparked-at-least-1-500-california-fires-now-the-utility-faces-collapse-11547410768>
- 44 Karim Doumar, “How California Cities Can Tackle Wildfire Prevention,” CityLab, November 16, 2018 <https://www.citylab.com/environment/2018/11/california-wildfire-prevention-wildland-urban-interface-zones/575827/>
- 45 Peter Fimrite, Kurtis Alexander, “California’s year-round wildfire threat: Why aren’t communities doing more?” San Francisco Chronicle, November 14, 2018
- 46 Kerry Jackson, “California Power Outages – A Look Into the Future,” Issues and Insights, October 30, 2019 <https://issuesinsights.com/2019/10/30/california-power-outages-a-look-into-the-future/>
- 47 Romy Varghese, “California Clean Energy Mandate Comes at Utilities’ Expense,” Bloomberg, September 19, 2018 <https://www.bloomberg.com/news/articles/2018-09-19/california-clean-energy-mandate-comes-at-utilities-expense>
- 48 Romy Varghese, “California Clean Energy Mandate Comes at Utilities’ Expense,” Bloomberg, September 19, 2018 <https://www.bloomberg.com/news/articles/2018-09-19/california-clean-energy-mandate-comes-at-utilities-expense>

- 49 Email interview with Wayne Winegarden, October 25, 2019
- 50 Taryn Luna, “California adds new rules for planned power shutoffs under laws signed by Newsom,” Los Angeles Times, October 2, 2019
- 51 Sen. Scott Wiener, news release, October 15, 2019 <https://sd11.senate.ca.gov/news/20191015-bay-area-mayors-endorse-senator-wiener%E2%80%99s-sb-378-limit-planned-blackouts-and-protect>
- 52 Sen. Jim Nielsen news release, October 28, 2019 <https://nielsen.cssrc.us/content/north-state-lawmakers-announce-legislation-combat-power-shutoffs>
- 53 “Gov. Newsom Signs Law Exempting Wildfire Victims From California Solar Panel Mandate,” Associated Press/KTLA 5, September 6, 2019 <https://ktla.com/2019/09/06/gov-newsom-signs-law-exempting-wildfire-victims-from-california-solar-panel-mandate/>
- 54 “Facts About Undergrounding Electric Lines,” Pacific Gas & Electric, October 31, 2017 <http://www.pgecurrents.com/2017/10/31/facts-about-undergrounding-electric-lines/>
- 55 Janet Wilson, “California power lines spark wildfires and prompt blackouts. Why not just bury them?” Palm Springs Desert Sun, October 12, 2019 <https://news.yahoo.com/california-power-lines-spark-wildfires-213923572.html>
- 56 Janet Wilson, “California power lines spark wildfires and prompt blackouts. Why not just bury them?” Palm Springs Desert Sun, October 12, 2019 <https://news.yahoo.com/california-power-lines-spark-wildfires-213923572.html>
- 57 Tony Bizjak, Sophia Bollag, Dale Kasler, “Power lines keep sparking wildfires. Why don’t California utility companies bury them?” Sacramento Bee, November 16, 2018 <https://www.sacbee.com/news/business/article221707650.html>
- 58 Robert Walton, “San Jose proposes multibillion PG&E buyout. Utility says it’s ‘not for sale,’” Utility Dive, October 22, 2019
- 59 Rebecca Smith, “San Jose to Propose Turning PG&E Into Giant Customer-Owned Utility,” Wall Street Journal, October 21, 2019 <https://www.wsj.com/articles/san-jose-to-propose-turning-pg-e-into-giant-customer-owned-utility-11571685117>
- 60 Alexandra Yoon-Hendricks, “Time to leave PG&E? Some Sacramento-area cities and counties explore ‘public power,’” Sacramento Bee, October 26, 2019
- 61 Raymond C. Niles, “The Solution to Blackouts and Wildfires in California,” American Institute for Economic Research, October 23, 2019 <https://www.aier.org/article/the-solution-to-blackouts-and-wildfires-in-california/>
- 62 Raymond C. Niles, “The Solution to Blackouts and Wildfires in California,” American Institute for Economic Research, October 23, 2019 <https://www.aier.org/article/the-solution-to-blackouts-and-wildfires-in-california/>