

The logo for USC Schwarzenegger, featuring the letters 'USC' in a bold, red, serif font, followed by 'Schwarzenegger' in a black, serif font. The entire logo is enclosed in a red rectangular border.

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A background image showing a series of high-voltage power transmission towers and power lines stretching across a landscape under a hazy sky. The towers are silhouetted against the light background.

ENVIRONMENTAL IMPLICATIONS OF PG&E'S BANKRUPTCY AND RENEWABLE ENERGY CONTRACTS

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Summary and Introduction

In January 2019, Pacific Gas and Electric (PG&E) declared bankruptcy. As California's largest utility – serving over 16 million people, PG&E faced over \$30 billion in liability for at least 17 fires that ravaged California in 2017¹ as well as the 2018 Camp Fire that killed 85 people. While utilities in California have long been mandated to lead the march towards the state's ambitious renewable energy goals, the viability of achieving these goals was called into question in the PG&E bankruptcy. When we started this research there was considerable uncertainty about whether PG&E would be allowed to cancel their legacy renewable energy contracts and we were evaluating what the potential impacts could be if that were to occur. Ultimately, the renewable energy contracts were maintained in the PG&E reorganization plan approved by the courts and the State of California in June 2020. The conclusions from our analysis are still relevant and, in this paper, we describe how maintaining PG&E's renewable energy contracts reaffirms the state's leadership role in climate change and sends a positive signal for new technology development and the ability to achieve the state's renewable energy and carbon reduction goals.

PG&E holds 387 power purchase agreements (PPAs) with solar, wind, and other renewable energy providers. These contracts were signed in the early 2000s and, at the time, were state-of-the-art projects, but solar costs have fallen in subsequent years so PG&E is purchasing from these projects at rates substantially higher than could be procured from new solar developments. Many contracts that were signed in the late 2000's or early 2010's carried contract costs that exceeded \$100/MWh. New industrial scale projects may convey a cost below \$50/MWh, by contrast. The PG&E bankruptcy opened the potential that these contracts could be renegotiated or canceled in order for PG&E to reduce their energy procurement costs.

The decision to not abrogate the legacy PPAs is an important one for California's climate goals and sends a positive signal about the stability of utilities that impacts California's climate and energy goals in two ways. First, while solar is now a relatively developed industry and if the contracts were canceled negative impacts on that industry would have likely been minimal and short-lived, there could have been a more substantial adverse effect on other emerging clean energy sectors that California is seeking to support. New investments in emerging sectors, like electricity storage, will require confidence that long-lasting contracts will be upheld and abrogation of the PPAs would have made innovators in other sectors question whether their contracts could be canceled when a utility suffers another disaster.

Second, California is viewed nationally and globally as an environmental leader. Canceling of the PPAs could have reduced California's role as a global leader, limiting its ability to influence the path of emissions reductions. By remaining committed to the PPAs, California maintains its dedication to climate action that will help provide new innovators confidence in their investments and preserve California's role in the global climate conversation.

¹ <https://www.nytimes.com/2019/01/29/business/pge-bankruptcy.html>

Future Impacts on California's Goals

By maintaining the PPAs, California assures investors that the state is dedicated to honoring its commitments. This sets an important precedent about the longevity and certainty of these contracts, strengthening California's ability to influence the ongoing development of early-stage technologies.

Cancellation of the PPAs would have placed substantial financial pressure on the owners of early solar projects who signed PPAs when solar was a less developed technology and prices were higher. Many of these companies are locked into debt obligations based on those upfront investments. If contracts were renegotiated at current rates, these companies would either have had to reduce their profits or seek to renegotiate their own debt and obligations and pass the revenue reductions further downstream.

There are other technologies that California is seeking to support to further the state's future environmental and energy goals. Many of these technologies will also involve long-run investments and dedicated contracts. Energy storage technology provides a key example of this phenomenon. In 2018, PG&E entered into PPAs for 385 MW of electricity with three electricity storage providers. These contracts range from 10 to 20 years. Current levelized costs of energy storage are similar to the levelized costs of solar in the late 2000s. Like solar, energy storage costs will decline in the coming decade. By maintaining the existing solar PPAs, PG&E confirms to these storage PPA partners that their early investments will bear fruit even as storage costs decline in the future.

In a series of interviews conducted for this project, California solar and utility experts were asked about the impact of potential PPA abrogation. These interviews occurred prior to PG&E's proposed restructuring plan that preserved the PPAs. Indeed, during these interviews a number of respondents indicated that uncertainty from PG&E's bankruptcy was resulting in delays to some storage projects which has since recovered.

The impact of technological investment in California has benefits outside of the state's borders as well. California has historically been a market leader in renewable industries and has supported the development of early-stage technologies. As experience in these industries has increased, the cost of the products has fallen, and they have become price competitive with existing technologies. For example, in the early 2010s, electric vehicles were tens of thousands of dollars more expensive than their gas counterparts and were generally under-powered and had short ranges. Over the following decade, prices have fallen, and vehicle quality has increased so that electric vehicles are able to directly compete with conventional vehicles even if consumers are not motivated by environmental concerns. Because of this, on September 23, Governor Newsom signed an executive order banning the sale of new gasoline-powered vehicles in the state by 2035.

The fact that California develops these goals and invests when development prices are high, provides the state the ability to influence the environment in other regions. This serves to

magnify any direct impact from confidence due to California's commitment to new technologies because the benefits of those investments to the environment will extend far beyond California. The benefits of induced projects for new technologies in California will ripple throughout the country in subsequent years. Increased innovation in battery technology in California in 2020 could mean that other states will feel more confident that they can replace coal generation with renewables and storage. For example, the recent shutdown of the Navajo Coal-Fired Generating Station in Arizona is leading to discussions of what to replace it with, and there are increasing indications that they are looking towards large-scale solar and storage projects.

Impacts on California's Role as a Climate Leader

As part of our interview process a number of interviewees did express concern that the abrogation of the PPAs could provide a negative signal about California's dedication to its climate goals and threaten its role as a domestic and global climate leader. One expert commented specifically that this could directly impact how California is viewed and whether California will be a strong and consistent partner in the climate change fight.

When states like California unilaterally cut emissions and adopt policies that reduce emissions, it creates an air of climate leadership that places pressure on other governments to follow. Retaining the PPAs confirmed that California remains dedicated to fighting climate change. This signal is important in influencing actions in other regions. When California presses other states and countries to reduce their own emissions, California will have a greater degree of moral high ground with which to press for environmental commitments.

California's climate leadership has already been influential. In 2017, after President Trump announced that the United States was withdrawing from the Paris Climate Accords, California, New York, and Washington announced the formation of the United States Climate Alliance and a commitment to reducing greenhouse gas emissions even in the absence of federal policy. By the end of the day, seven additional states had announced that they would join the alliance as well and commit to emissions reductions and adherence to the goals laid out in the Clean Power Plan. In subsequent months, more states joined, and the Climate Alliance now comprises 23 states and more than 50 percent of the country's population and economic activity. While it is impossible to say with certainty whether other states would have joined if California had not acted as a founding member, there is a case to be made that California's public role in national politics placed pressure on other governors to publicly signal their environmental dedication.

As national policy has moved away from emissions reductions, California's role in representing the United States' climate leadership has grown. California was the first state to sign a direct memorandum of understanding with China regarding emissions reductions and, in 2018 when California hosted the Global Climate Action Summit, California sought out China as an important partner. On the same day that Governor Newsom made his announcement on electric vehicles, China announced a pledge to be carbon neutral by 2060. Most climate scientists will say this is not fast or far enough, but it is a step in the right direction.

The perception of climate leadership in California also results in more direct benefits to the state. Many environmental technology companies are based in California or have a significant presence in the state. This presence allows them access to early-stage markets and the ability to influence the path of environmental technology. Because California has historically been an early mover in the climate sector, these companies have benefited from their efforts in California as technologies and policies have propagated. And the state has benefited as well from the economic returns and jobs they generate. California is also home to most cleantech investors, from angels, to venture capital and private equity. By preserving its reputation as a climate leader, California will remain firmly rooted in the discussion among innovative companies developing tools to reduce emissions. California will be able to continue to influence the path of technology and preserve the high-skilled research and development jobs associated with innovation.

Final Thoughts

By maintaining these contracts, PG&E and California sent an important signal to the developers of nascent technologies that the state and its utilities will keep their commitments to maintain the early contracts that are necessary to justify investments in new technology. It also reaffirms California's dedication to climate leadership that will allow the state to maintain its role as a global player in climate policy discussions and to place pressure on other governments to pursue their own renewable energy goals.

Appendix

References

Mark Bernstein et.al., The Public Benefit of California's Investments in Energy Efficiency, RAND, March 2000

Bloomberg Energy, New Challenges and Market Dynamics for CA Electric Utilities, White Paper, Jan 2019

Gregg Brewer, Could PG&E's Bankruptcy Chill the Renewable Power Market? Yahoo Finance, June 2019

California Energy Commission, Estimated Cost of New Utility-Scale Generation in California: 2018 Update, May 2019

California Public Utility Commission, Padilla Report: Costs and Cost Savings for the RPS Program 2019, May 2019

Ralph Cavanagh, PG&E's Bankruptcy Filing, NRDC, January 2019

Jim Christie, Nichola Groom, PG&E bankruptcy threatens major battery storage project, Sustainable Business, March 2019

Liam Denning, PG&E Reneging On Renewables Contracts Makes No Sense, Bloomberg January 2019

Lynn Doan, Buffett-Backed Solar Farm Cut to Junk as PG&E Crisis Deepens, Bloomberg News, January 2019

E&E News, Bankruptcy of Electric Utility Threatens Renewables' Contracts, Feb 2019

Mike Florio, A Former Commissioner's Open Letter on Recovering From the California Wildfires. www.greentechmedia.com, June 2018

Roger Gray, The Long-term Consequences of California's Electricity Deregulation Experiment, energycentral.com, November 2004

Richard Hirst, Fifteen years later: Whither restructuring in the America electric utility system? Technologystories.org, December 2013

Lon W. House, Renewable Contracts With PG&E Corporation - A Risk To Be Reckoned With, seekingalpha.com, Jun. 11, 2019

Tom Konrad, PG&E Is Going Bankrupt. What's My YieldCo Exposure? Greentechmedia.com, June 2019

Judy Linn, What happens if PG&E goes bankrupt?, calmatters.org, Nov. 2018

Robert Manders, PG&E Impact Overblown - Clearway Energy Is A Buy, seekingalpha.com Jun. 2019

Jeffrey R. Manning, How renewable energy providers can prepare for PG&E's bankruptcy, UtilityDive.com Feb. 2019

Ghazal Razeghi et.al., Impact of electricity deregulation in the state of California, Energy Policy 103, 2017

Reuters, What can the state of California do about PG&E? <https://www.reuters.com>, January 2019

Christian Roselund, Scott Murtishaw on practical implications of PG&E's bankruptcy for solar & Storage, PV Magazine, January 2019

Jeff St. John, The Big Questions Raised by PG&E's Coming Bankruptcy, Greentech Media, Jan 2019

Dev Tayal, Disruptive forces on the electricity industry: A changing landscape for utilities, Electricity Journal, 2016

Charles Thurston, California Community Choice Aggregators Bid For Partial PG&E Takeover, Clean Technica, April 2019

Christopher Weare, The California Electricity Crisis: Causes and Policy Options, Public Policy institute of California, 2003

Summary of Interviewees:

To better understand the potential impacts of PPA cancellation, we interviewed 52 people who are actively knowledgeable and/or directly engaged and impacted by the bankruptcy. Because of this most respondents required confidentiality. Interviewees included:

- Law firms with lawyers who are experts in bankruptcy, the California Public Utilities Commission and Federal Energy Regulatory Commission in California
- Solar and land developers active in California
- State and national associations
- Current and former legislators
- Former regulatory and state government officials
- Community Choice Aggregation executives
- Former utility executives
- Battery storage company executives
- Environmental non-profits
- Academics