DOCKETED	
Docket Number:	19-SB-100
Project Title:	SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future
TN #:	229639
Document Title:	Calif. for Green Nuclear Power, Inc. Comment Re. Appendix In Response To ALJ Fitch's Proposed Decision Filed at CPUC Feb 11, 16
Description:	CPUC Intervenor Californians for Green Nuclear Power, Inc. (CGNP) submits this CPUC filing in R.16-02-007 as one of eight exhibits supporting the continued safe operation of Diablo Canyon Power Plant (DCPP) beyond 2025 as an essential component of California's Path to a 100% Clean Energy Future. Diablo Canyon's pair of safe, reliable, cost-effective, and zero-emissions power reactors are California's largest generation plant by far, producing about 9% of California's in-state generation - the equivalent of more than 5 (five) Hoover Dams annually. In 2010, the California Energy Commission (CEC) commissioned the California Science and Technology Commission (CSTC) to prepare a pair of reports regarding the path to a 100% Clean Energy Future. The CSTC's report conclusions were clear. The safe and cost-effective solution was a dramatic expansion beyond the four commercial nuclear power reactors then in operation. The eminent CSTC scientists and engineers concluded California would require about 30 such react
Filer:	Gene Nelson, Ph.D.
Organization:	Californians for Green Nuclear Power, Inc.
Submitter Role:	Intervenor
Submission Date:	9/3/2019 10:18:05 PM
Docketed Date:	9/3/2019

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements	**R.16-02-007** (Filed 02/11/2016*)*

CALIFORNIANS FOR GREEN NUCLEAR POWER, INC. COMMENTS APPENDIX IN RESPONSE TO ALJ FITCH'S PROPOSED DECISION DATED MARCH 18, 2019 RE ADOPTING PREFERRED SYSTEM PORTFOLIO FOR 2017-2018 INTEGRATED RESOURCE PLAN

Gene Nelson, Ph.D.
Legal Assistant
Californians for Green Nuclear Power, Inc.
1375 East Grand Ave, Suite 103 #523
Arroyo Grande, CA 93420
Tel: (805) 363 - 4697
E-mail: Government@CGNP.org

March 28, 2019

Exhibit A

The Washington Post

Turns out wind and solar have a secret friend: Natural gas

By Chris Mooney

Chris Mooney
Reporter covering climate change, energy and the environment.
Email Christopher.Mooney@Washpost.com

August 11, 2016

https://www.washingtonpost.com/news/energy-environment/wp/2016/08/11/turns-out-wind-and-solar-have-a-secret-friend-natural-gas/
http://tinyurl.com/Natural-Gas-Secret

In this Feb. 25, 2015 photo, a gas flare is seen at a natural gas processing facility near Williston, N.D. (AP Photo/Matthew Brown)

We're at a time of deeply ambitious plans for clean energy growth. Two of the U.S.'s largest states by population, California and New York, have both mandated that power companies get fully 50 percent of their electricity from renewable sources by the year 2030.

Only, there's a problem: Because of the particular nature of clean energy sources like solar and wind, you can't simply add them to the grid in large volumes and think that's the end of the story. Rather, because these sources of electricity generation are "intermittent" — solar fluctuates with weather and the daily cycle, wind fluctuates with the wind — there has to be some means of continuing to provide electricity even when they go dark. And the more renewables you have, the bigger this problem can be.

Now, a new study suggests that at least so far, solving that problem has ironically involved more fossil fuels — and more particularly, installing a large number of fast-ramping natural gas plants, which can fill in quickly whenever renewable generation slips.

The new research, published recently as a working paper by the National Bureau of Economic Research, was conducted by Elena Verdolini of the Euro-Mediterranean Center on Climate Change and the Fondazione Eni Enrico Mattei in Milan, Italy, along with colleagues from Syracuse University and the French Economic Observatory.

In the study, the researchers took a broad look at the erection of wind, solar, and other renewable energy plants (not including large hydropower or biomass projects) across 26 countries that are members of an international council known as the Organisation for Economic Co-operation and Development over the period between the

year 1990 and 2013. **And they found a surprisingly tight relationship between renewables on the one hand, and gas on the other.**

"All other things equal, a 1% percent increase in the share of fast reacting fossil technologies is associated with a 0.88% percent increase in renewable generation capacity in the long term," the study reports. Again, this is over 26 separate countries, and more than two decades.

"Our paper calls attention to the fact that renewables and fast-reacting fossil technologies appear as highly complementary and that they should be jointly installed to meet the goals of cutting emissions and ensuring a stable supply," the paper adds.

The type of "fast-reacting fossil technologies" being referred to here is natural gas plants that fire up quickly. For example, General Electric and EDF Energy currently feature a natural gas plant in France that "is capable of reaching full power in less than 30 minutes." Full power, in this case, means rapidly adding over 600 megawatts, or million watts, of electricity to the grid.

"This allows partners to respond quickly to grid demand fluctuations, integrating renewables as necessary," note the companies.

"When people assume that we can switch from fossil fuels to renewables they assume we can completely switch out of one path, to another path," says Verdolini. But, she adds, the study suggests otherwise.

Verdolini emphasized this merely describes the past — not necessarily the future. That's a critical distinction, because the study also notes that if we reach a time when fast-responding energy storage is prevalent — when, say**, large-scale grid batteries store solar or wind-generated energy and can discharge it instantaneously when there's a need** — then the reliance on gas may no longer be so prevalent.

Other recent research has suggested that precisely because of this overlap between fast-firing natural gas plants and grid scale batteries — because they can play many of the same roles — extremely cheap natural gas prices have helped the industry out-compete the storage sector and slowed its growth.

Two other researchers contacted for reactions to Verdolini's study largely agreed with its findings.

"I think policymakers haven't really grasped what 50 percent renewables really means in a system, without at least cheap batteries available," says Christopher Knittel, who directs the Center for Energy and Environmental Policy Research at MIT, and who said he found the study's results quite plausible.

"It's certainly true that as one adds more renewables, the value of flexible generation increases, and so I would expect to see some correlation as they found," added Eric Hittinger, an energy system researcher at the Rochester Institute of Technology who like Knittel was not involved in the study.

Hittinger and Knittel agreed that adding flexible natural gas alongside renewable projects is not a major climate change concern because the gas plants wouldn't be running all the time — so it's not like

adding coal plants. The emissions would be real, but considerably more limited. However, they said, the principal issue is that the research suggests renewable plants are more costly to build, because of the added backup requirement.

“It’s a reality check now,” said Knittel of the study. “I think it’s potentially bad news as we start to get higher and higher penetration levels of renewables.”

The study also lends some credence to the widespread description of natural gas as a so-called “bridge fuel” that allows for a transition into a world of more renewables, as it is both flexible and also contributes less carbon dioxide emissions than does coal, per unit of energy generated by burning the fuel. (Environmentalists like to point out that if there are enough methane leaks from the process of drilling for and transporting natural gas, this edge could be canceled out.)

Hittinger also questioned what the correlation found in the study actually means — does it mean that natural gas *spurs on* the development of more solar and wind, or vice versa?

Verdolini said the study implies that the causation occurs with gas plants being added first, which then makes renewable projects more easy to integrate. “It’s an enabling factor,” she said, although she cautioned that the study cannot fully demonstrate causation.

Verdolini agreed that the findings are something that decision-makers hoping to add more clean energy to the grid will have to take into account.

“If you have an electric car, you don’t need a diesel car in your garage sitting there,” said Verdolini. “But in the case of renewables, it’s different, because if you have renewable electricity and that fails, then you need the fast acting gas sitting in your garage, so to speak.”

Exhibit B

11 Jan 2018 – NECG Commentary #[19]
https://nuclear-economics.com/wp-content/uploads/2018/01/2018-01-11-DCPP-1.pdf
Published (and Archived by Gene A. Nelson, Ph.D.) 01 11 18.

https://tinyurl.com/Wind-And-Solar-Scam

Diablo Canyon retirement

This is a guest post by Gene A. Nelson, Ph.D., Central Coast Government Liaison with Californians for Green Nuclear Power, Inc. (CGNP.) CGNP is a strong advocate for the continued operation of PG&E's Diablo Canyon Power Plant (DCPP).

DCPP owner PG&E has requested permission from the California Public Utilities Commission (CPUC) to close DCPP in 2024/2025 at the end of the initial 40-year NRC operating license for each unit.

A CPUC decision on this is expected today

Background

On 8 Nov 2017, an Administrative Law Judge (Peter V. Allen) with the California Public Utilities Commission (CPUC) issued a "Proposed Decision" related to Application 16-08-006.[1]

This proposed decision includes the following items (and more):

1. Pacific Gas and Electric Company's proposal to retire Diablo Canyon Unit 1 by 2024 and Unit 2 by 2025 is approved.

2. Pacific Gas and Electric Company's "Tranche 1" proposal to procure 2,000 gigawatt hours of energy efficiency is not approved.

3. Pacific Gas and Electric Company's withdrawn "Tranche 2" and "Tranche 3" replacement procurement proposals are not approved.

4. Replacement procurement will be addressed in the Integrated Resource Planning proceeding or a proceeding designated by the Integrated Resource Planning proceeding.

5. Efforts to avoid an increase in greenhouse gas emissions relating to the retirement of Diablo Canyon, including any replacement procurement, will be addressed in the Integrated Resource Planning proceeding or a proceeding designated by the Integrated Resource Planning proceeding.

6. Pacific Gas and Electric Company should be prepared to present scenarios for Diablo Canyon retirement in the Integrated Resource Planning proceeding that demonstrate no more than a de minimis increase in the GHG emissions of its electric portfolio.

The proposed Decision approves early retirement of Diablo Canyon in 2024/2025, before the implications of this early retirement[2] for the California long-term integrated resource plan or on California greenhouse gas emissions were determined.

Final Oral arguments were held on 28 Nov 2017 at the CPUC headquarters, with comments due on 29 Nov 2017 and reply comments due on 4 Dec 2017.

A 14 December 2017 vote on the Proposed Decision at the CPUC Public Meeting at CPUC headquarters in San Francisco was postponed to 11 January 2018 at the last-minute at the request of at least one of the Commissioners.

There have been some changes to reduce short-term ratepayer obligations. Those changes include that the annual payouts of the "Employee Retention Program" have been reduced from

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1 Application 16-08-006 - Application of Pacific Gas and Electric Company for Approval of the Retirement of Diablo Canyon Power Plant, Implementation of the Joint Proposal, And Recovery of Associated Costs Through Proposed Ratemaking Mechanisms (U39E).

2 While the closure in 2024/2025 is consistent with the original NRC operating license, virtually all U.S. nuclear power plants applied for a 20-year license renewal and these applications were approved.

25% of their salary to 15%. The $85 million "Community Impacts Mitigation Program will not be funded by ratepayers.

CGNP

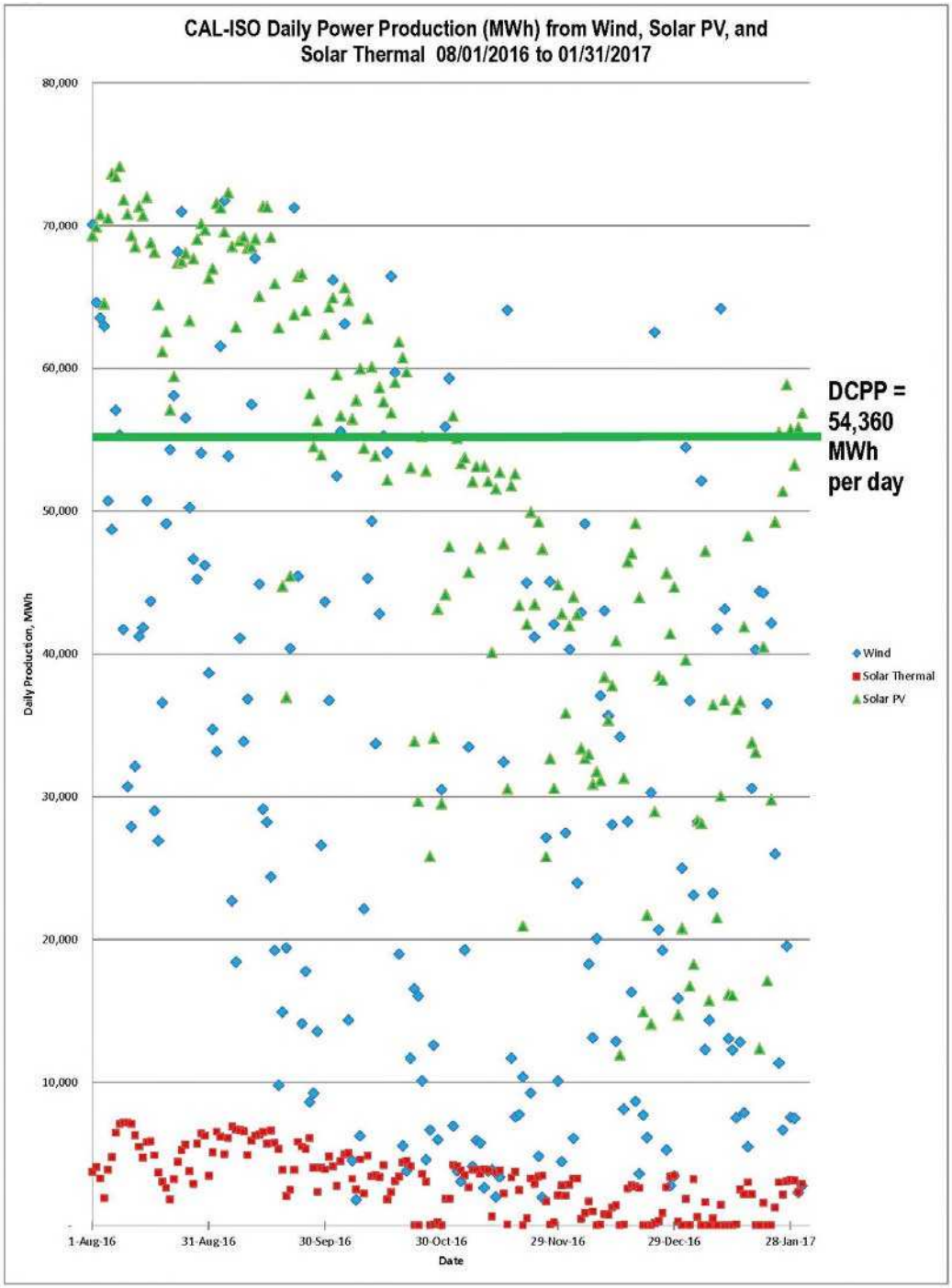
Californians for Green Nuclear Power, Inc. (CGNP) is a nonprofit California educational corporation established in 2013. Gene Nelson, Ph.D. serves as their government liaison in a volunteer capacity. His Ph.D. is in a field relevant to commercial nuclear power generation, as are the Ph.D.s of CGNP's three other volunteer technical authors. CGNP is also being advised by some extremely well-qualified environmental attorneys.

CGNP is **the** advocate for keeping DCPP operating beyond 2025.

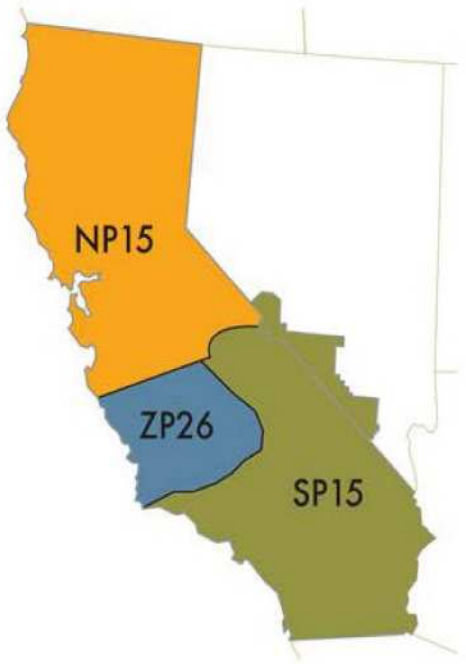
CGNP is the lone adversarial Intervenor (of about 50) in the above Application A.16-08-006. CGNP has researched and authored voluminous, carefully written testimony and vigorously participated during all the oral phases of A16-08-006. CGNP's advocacy on the behalf of the environment and the California ratepayer has already yielded significant beneficial changes in the contours of the Proposed Decision. CGNP has also participated as a nuclear power advocate in some recent FERC Proceedings related to commercial nuclear power.

Core issues

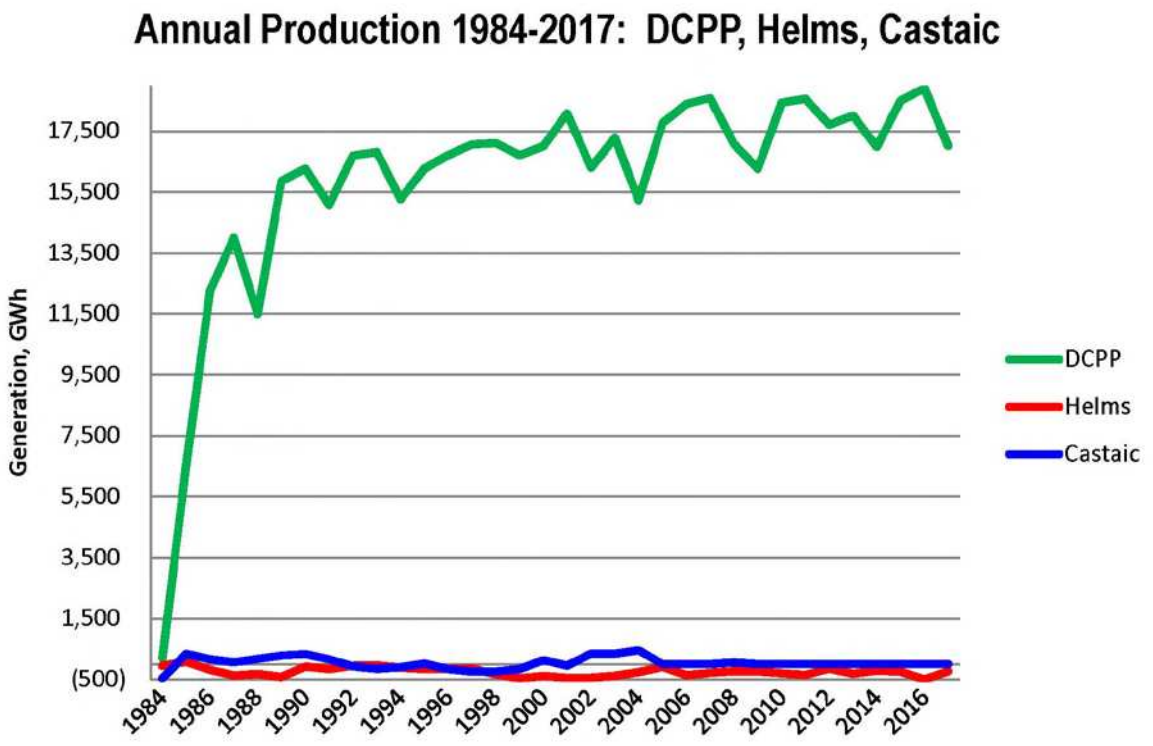
California state policy-makers appear to fail to understand the implications of the 20% statewide capacity factor observed for both California wind and California solar that CGNP obtained by tabulating day-by-day generation by source from the official records of the California Independent System Operator (CAISO) during the half-year period that ended on January 31, 2017. These policy-makers also appear to fail to understand that in comparison, zero-carbon DCPP generated about **108**% of ALL of California's 10,000 MW (nameplate) of solar Photovoltaic power **or** about **180**% of ALL of California's 6,000 MW(nameplate) of wind generation during that half-year interval. Thus, shutting down DCPP will cause significant California environmental harms. Here is a scatter-plot from one of CGNP's CPUC A.16-08-006 filings that shows the random day-to-day daily generation of California solar PV, California wind, California solar thermal (Ivanpah – which also burns about a billion cubic feet of natural gas annually) and DCPP. Clearly, significant (and costly) grid interventions are required to deal with the random variations of solar and wind relative to DCPP's steady – and necessary - power output. (See scatter-plot on the next page.)


CAL-ISO Daily Power Production (MWh) from Wind, Solar PV, and Solar Thermal 08/01/2016 to 01/31/2017
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
Daily Production, MWh
1-Aug-16
31-Aug-16
30-Sep-16
30-Oct-16
29-Nov-16
29-Dec-16
28-Jan-17
Date
DCPP = 54,360 MWh per day
Wind
Solar Thermal
Solar PV

CGNP also learned that grid-scale energy storage is not used in California, perhaps as a consequence of California electricity market design. The two utility-scale California pumped storage facilities (Helms Pumped Storage [Helms] and Castaic pumped storage) show modest annual production, per the U.S. EIA, perhaps because they receive more market compensation for providing voltage and frequency support (which DCPP is apparently excluded from receiving, despite providing considerable voltage and frequency stability to CAISO Sub LAP ZP26 shown on the California map to the left. DCPP's location is near the southwest corner of ZP26.) Helms is located in the Sierra foothills, about 50 miles east of Fresno CA in NP15 (North of Path 15.) CAISO recently began tabulating California battery-based storage daily performance on their website. However, current battery-based energy storage systems are too small by three or four orders of magnitude relative to California's huge energy demands as the world's sixth largest economy, with a growing population nearing 40 million.



While Helms has a nameplate capacity of 1,212 MW (more than half of DCPP's nameplate capacity of 2,240 MW) the graph "Annual Production 1984-2017: DCPP, Helms, Castaic" shows the minuscule annual power production of Helms relative to the nominal 18,000 GWh of DCPP. Intervenor CGNP made a formal data query in A.16-08-006 to Helms owner PG&E regarding the reasons for the modest use of Helms during the course of the above CPUC proceeding. CGNP's data query was rebuffed by PG&E.



Both national and state energy policies have provided incentives for the substitution of huge quantities of **low-quality** non-dispatchable solar and wind generation backed up with thermal generation which adds millions of tons of emissions annually to the environment - initially for the 18 million high-quality emission-free and dispatchable megawatt-hours that San Onofre Nuclear Generating Station (SONGS) was generating annually until January, 2012.

Now, the post-2025 plan is to do the same for DCPP's dispatchable 18 million megawatt-hours of annual production. Recently, DCPP had an annual capacity factor in excess of 100%. DCPP provides safe, reliable, durable, cost-effective and emission-free generation. NECG provided inputs for the 2016 Idaho National Laboratory's nuclear power cost study showing that DCPP's generation cost was about $27.10/MWh, about a tenth of the long-term supply contract that the operators of Ivanpah solar thermal plant have with PG&E for $200.00/MWh.

"Back-Down Mode"

As a consequence of the performance documented above, California Solar and wind are backed with thermal generation to provide power for the approximately 80% of the time that they are not generating power. Much of this thermal generation is operated in "back down mode" (or hot-ready mode) so that the thermal generation is ready to generate power at a moment's notice, since both wind and solar are subject to rapid-onset diminution of output power on a random basis. The result is that despite the large installed capacity of solar and wind in California, there is **almost no emissions reductions** relative to 16,000 MW of pure natural-gas-fired generation. Emissions reductions relative to thermal generation are the highly-promoted rationale for employing solar and wind generation.

Perhaps solar and wind generation are valued by operators of thermal generators because of the public believes that there are benefits of capital-intensive solar and wind (that are not supported by the actual performance data shown above.)

Conclusion – Next Steps

In this brief article, summary information regarding the environmental benefits - and ratepayer benefits - of the continued safe operation of DCPP as an example nuclear power plant have been provided. For those readers that wish additional technical details, please contact Gene Nelson at the email address below to obtain links to a number of CGNP's filings in A.16-08-006.

The nuclear power plants in other parts of the country is likely to be experiencing similar pressures. CGNP believes that there are benefits from disseminating information regarding successful citizen advocacy campaigns, such as the initiatives to continue the safe operation of Energy Northwest's Columbia Generating Station. This information exchange would be analogous to how nuclear plant operators exchange information regarding "best operational practices." CGNP gratefully receives such information. CGNP would like to become an information clearinghouse regarding nuclear power advocacy.

In the event that the CPUC chooses to approve A.16-08-006 (i.e., approve retirement of Diablo Canyon in 2024/2025), CGNP intends to challenge that decision on a number of grounds that have already been documented in earlier filings. CGNP will keep NECG readers informed regarding our progress. Any assistance in challenging the CPUC decision will also be gratefully received by CGNP.

Contact:

Gene A. Nelson, Ph.D.
Central Coast Government Liaison
Californians For Green Nuclear Power
1375 East Grand Ave, Suite 103 #523
Arroyo Grande, CA 93420
Tel: +1 (805) 363 4697
E-mail: Government@CGNP.org

Edward Kee
+1 (202) 370 7713
edk@nuclear-economics.com

Exhibit C

Climate Change Must Guide Utility Plans, Ex-PG&E Boss Says

By **Keith Goldberg**

Law360 (March 26, 2019, 3:55 PM EDT) --
https://www.law360.com/bankruptcy/articles/1142924/climate-change-must-guide-utility-plans-ex-pg-e-boss-says

Geisha Williams (Photo: Bloomberg)

The former CEO of bankrupt Pacific Gas and Electric Co. said Tuesday that electric utilities must adapt to the "new normal" of climate change, starting with how to operate in areas that are increasingly vulnerable to disasters like wildfires and floods.

Geisha Williams, who stepped down in January just before PG&E filed for Chapter 11 **amid crippling California wildfire liability**, said at the Bloomberg New Energy Finance Summit in New York that utilities must figure out how any potential action makes their infrastructure more resilient to extreme weather and other climate-related impacts before taking it.

That makes for some difficult choices when dealing with utility customers in wildfire-prone areas, Williams said.

"I think we need to look at how they're served with energy," she said.

Williams added that there are plenty of resilience tools at a utility's disposal, such as more aggressive vegetation management, tighter building codes and creating more space around utility poles, but cautioned that no single tool will be the solution.

"There's not a silver bullet here," Williams said.

PG&E may be a poster child for climate-related liabilities growing so great that they undermine a utility's ability to operate. When the utility revealed in February that it was likely its equipment that helped ignite last fall's deadly Camp Fire that scorched over 150,000 acres in Northern California, it added $10.5 billion in potential liability to a multibillion-dollar wildfire bill that has PG&E questioning whether it can survive.

The utility's woes have some California officials calling for a transfer of its grid assets to public hands. But a change in ownership won't make the climate risks go away, Williams said.

"I don't think that the infrastructure, whether it's governed by a small utility or a large utility, makes it immune to the ravages of climate change," Williams said.

The uncertain future of PG&E comes at a time when California, given its size, has enacted what may be the most aggressive long-term plans to tackle climate change in the U.S. The Golden State is requiring 60 percent of the state's electricity to come from renewable sources by 2030 and envisioning 100 percent zero-carbon electricity by 2045.

Williams has no problem with states driving the regulatory bus to lowering greenhouse gas emissions, but says they should stop short of dictating the energy mix.

"States have an important role in setting an emissions target. Setting wide and aggressive goals is appropriate," Williams said. **"I think how to get there should be left to system operators ... and not necessarily by a prescriptive mandate that says you must purchase this percentage of electricity from certain technologies."**

In making that point, Williams put in a plug for keeping existing U.S. nuclear power plants and their carbon-free emissions up and running for as long as possible.

"I think that greenhouse gas is the enemy, and we need to decide how we reduce that in the most cost-effective manner," Williams said. "To cast that aside would be pretty irresponsible."

Among the U.S. nuclear plants slated for closure: PG&E's Diablo Canyon plant in California, in 2024.

Williams isn't the only current or former utility executive pushing for keeping the current U.S. nuclear power option afloat.

Duke Energy Corp. CEO Lynn Good said at the BNEF Summit on Monday that there is "a business case under second licensing (e.g. 40 to 60 years - GAN)" of the company's existing nuclear plants, referring to the second renewal of a nuclear reactor's operating license.

--Editing by Orlando Lorenzo.

Reporting Period	GRAND TOTAL	Total Payments in conjunction with PUC Activities	PUC as % of GRAND TOTAL	Notes	
4Q 2015	$308,582.34	$22,279.67	7.22%		Page 1
1Q 2016 Amended	$242,379.72	$58,263.46	24.04%		Page 24
2Q 2016 Amended	$255,394.63	$86,659.77	33.93%		Page 49
3Q 2016 Amended	$343,998.97	**$222,908.11**	**64.34%**	**A.16-08-006 filed 08/11/16**	**Page 73**
4Q 2016	$269,081.04	$24,480.17	9.10%		Page 85
1Q 2017	$304,991.88	$27,363.94	8.97%		Page 97
2Q 2017	$459,681.12	$104,249.23	22.68%		Page 106
3Q 2017 Amended	$367,325.75	$132,093.12	35.96%		Page 130
4Q 2017 Amended	$482,250.56	$29,824.00	6.18%	**Wine Country Fires - October, 2017**	**Page 143**
1Q 2018	$584,052.29	$44,822.33	7.67%	**A.16-08-006 Granted 01/11/18**	**Page 156**
2Q 2018	$1,655,270.60	$65,114.34	3.93%		Page 165
3Q 2018	$6,111,332.71	$168,668.41	2.76%		Page 184
4Q 2018	$1,229,703.61	$70,918.42	5.77%		Page 213
TOTALS	**$12,614,045.22**	**$1,057,644.97**	**8.38%**		

ORIGINAL DATA

1Q 2016	$242,360.01	$58,263.46	24.04%		Page 11
2Q 2016	$250,948.16	$63,916.77	25.47%		Page 38
3Q 2016	$343,998.97	$221,326.88	64.34%		Page 62
3Q 2017	$373,448.57	$132,093.12	35.37%		Page 118

Page numbers in Notes column show the first page of the particular Form 635 quarterly PG&E lobbying report. There are 238 pages in the collection

The first entry for the Washington, DC - based lobbying Firm **M.J. Bradley and Associates** is for 2Q of 2018, per page 171 of 238,
despite their likely involvement starting in January, 2016, based on PG&E's CPUC testimony during the final oral arguments on November 28, 2017.
and M.J. Bradley's prominent presence at the July 8, 2016 community engagement meeting in San Luis Obispo, California
This omission raises concerns regarding the truthfulness of PG&E's Form 635 filings with the California Secretary of State

The only 2 entries for "**Newsom for California Governor 2018**" are on page 159 of 238.
- Each entry is for $29,200.00 on 03/08/2018. The Secretary of State tabulation shows many more entries. Perhaps a PG&E Committee issue.

Exhibit D

Exhibit E
https://influencemap.org/report/How-Big-Oil-Continues-to-Oppose-the-Paris-Agreement-38212275958aa21196dae3b76220bddc Archived 03 26 19 by Gene A. Nelson, Ph.D.
12 instances of "California." 3 instances of "Western States Petroleum Association."

Exhibit A

Forbes

23,638 views Mar 28, 2019, 01:57am
https://www.forbes.com/sites/michaelshellenberger/2019/03/28/the-dirty-secret-of-renewables-advocates-is-that-they-protect-fossil-fuel-interests-not-the-climate/

The Dirty Secret Of "Renewables" Advocates Is That They Protect Fossil Fuel Interests, Not The Climate

Michael Shellenberger
Contributor
Opinions expressed by Forbes Contributors are their own.
Energy I write about energy and the environment

Are climate activists aware that their renewable energy advocacy is a far more valuable form of greenwashing than any amount of oil and gas industry advertising?
AP

Everybody from Greenpeace to student activist Greta Thunberg to Green New Dealer Alexandria Ocasio-Cortez (AOC) says we have to transition from fossil fuels to renewables in order to save the climate.

But if solar and wind are substitutes for fossil fuels, why are the world's biggest oil and gas firms promoting them?

Over the last three years, the five largest publicly-traded oil and gas companies, ExxonMobil, Royal Dutch Shell, Chevron, BP, and Total invested a whopping one billion dollars into advertising and lobbying for renewables and other climate-related ventures.

Their ad blitz has targeted the global elite in airports and on Twitter. "Natural gas is the perfect partner for renewables," say airport ads run by Norwegian oil and gas giant Statoil. "See why #natgas is a natural partner for renewable power sources," tweets Shell.

Oil & gas companies promote renewables because they know solar & wind lock-in their product.
Total

No sooner had I landed in Germany, for 2017 U.N. climate talks, when I was confronted by airport ads paid for by Total, the French oil and gas company reading, "Committed to Solar" and "Committed to Natural Gas."

All of which raises the question: why, if renewable energy advocates are defenders of the climate, are they working with the oil and gas industry to replace zero-pollution nuclear plants with fossil fuels?

Why Environmentalists Turned Against Clean Energy

In the 1950s and 1960s, conservationists were pro-nuclear. They understood that nuclear plants would produce pollution-free electricity on a tiny fraction of the land required for coal mining, hydro-electric dams, and oil and gas drilling.

At the time, California's utilities were heavily regulated and had an obligation to the public to keep electricity prices low. They proposed to build nuclear plants to eliminate the state's reliance on oil and natural gas.

In the mid-1960s, the Sierra Club supported the building of the Diablo Canyon nuclear plant to replace fossil fuels. "Nuclear power is one of the chief long-term hopes for conservation," argued Sierra Club President Will Siri in 1966.

"Cheap energy in unlimited quantities is one of the chief factors allowing a large, rapidly growing population to set aside wildlands, open space and lands of high-scenic value," added Siri, who was a biophysicist, mountaineer, and veteran of the Manhattan Project.

Not everyone thought cheap energy was a good thing. "If a doubling of the state's population in the next 20 years is encouraged by providing the power resources for this growth," countered Club Executive Director, David Brower, California's "scenic character will be destroyed."

After weighing the arguments, the Sierra Club's Board of Directors voted nine-to-one to support the building of Diablo Canyon.

In response, Brower quit and started a new group, Friends of the Earth (FOE). "There's no more important issue in my life," said Brower, than to "see that Friends of the Earth does everything it can, here and abroad, to stop the nuclear experiment."

Would you be shocked to learn that the founding donor of FOE was oilman Robert Anderson, owner of Atlantic Richfield? He gave FOE the equivalent of $500,000 in 2019 dollars.

"What was David Brower doing accepting money from an oilman?" his biographer wondered. **The answer is that he was developing the environmental movement's strategy of promoting renewables as a way to greenwash the killing of nuclear plants and the expanded use of fossil fuels.**

At the exact same time, California's former governor, Edmund "Pat" Brown, was raising $100 billion (in 2019 dollars) from U.S. banks for Indonesia's state oil company. In exchange, he received exclusive rights to sell Indonesian oil in California and a $360,000 (in 2019 dollars) donation to his son Jerry's campaign for governor.

After he won, Gov. Jerry Brown's aides took actions to defend the family's oil monopoly. **One of them, acting as an air pollution regulator, killed a refinery being built by Chevron, which would have competed directly with the Brown oil business, while another worked to kill nuclear plants.**

By 1976, activists who feared that cheap nuclear energy would fuel overpopulation had taken over the Sierra Club. **The organization's new executive director proposed a strategy to foment hysteria about nuclear in order to impose regulations to make nuclear expensive.**

"Our campaign stressing the hazards of nuclear power will supply a rationale for increasing regulation," he explained, "add to the cost of the industry, and render its economics less attractive."

Along with groups like **Union of Concerned Scientists and NRDC, Sierra Club claimed that the clean if slightly warmer water that comes out of nuclear plants was a kind of "thermal pollution," and demanded unnecessary and expensive measures to mitigate the non-problem.**

Working together, Brown and the Sierra Club killed so many nuclear power plants between 1976 and 1979 that, had they been built, California would today be generating all of its electricity from zero-emissions sources.

Greenwashing Gas

Environmental Defense Fund (EDF) also got its start in California in the 1960s and 1970s**. It created detailed energy forecasts purporting to prove that California didn't need to build nuclear plants because it could simply reduce electricity consumption. California couldn't, and massively expanded its use of natural gas, instead.**

In the 1980s, EDF made an alliance with Wall Street and natural gas companies to deregulate electricity markets. **Along with the lack of nuclear power, deregulation resulted in the 2000 energy crisis, which allowed natural gas investors to fleece California ratepayers out of billions of dollars.**

NRDC, too, advocated deregulation and even helped natural gas giant Enron, distribute hundreds of thousands of dollars to environmental groups. "On environmental stewardship, our experience is that you can trust Enron," buzzed NRDC's Ralph Cavanagh. Enron executives at the time were defrauding investors of billions of dollars in an epic criminal conspiracy.

From 2009 to 2011, lawyers and lobbyists with EDF and NRDC advocated for and helped write mind-bogglingly complex cap-and-trade climate legislation that would have created, and allowed its Wall Street donors to take advantage of, a carbon-trading market worth upwards of $1 trillion.

Today**, EDF works with the world's largest multinational oil and gas companies** to demand changes to regulations in ways that benefit highly-capitalized firms and undercut smaller, less-capitalized competitors.

In recent years the work **of hiding outlandish assumptions about renewables and efficiency has fallen to Stanford's Mark Z. Jacobson. By simply entering numbers into an Excel spreadsheet, Jacobson managed to convince many politicians, journalists, and activists that we can power the world on 100% renewables.**

What is the source of Jacobson's funding? Why the Precourt Institute for Energy, which was founded by Jay Precourt, an oil and gas magnate and board member of Halliburton, the oil and gas services firm. The board of the Institute is a who's who of oil, gas, and renewables investors.

Today, the Sierra Club, EDF, and NRDC together take in more than half a billion dollars each year from donors that include billionaire coal, natural gas, and renewables investors like Tom Steyer and Michael Bloomberg.

Sierra Club and EDF have received a minimum of $136 million and $60 million, respectively, from oil, gas, & renewables investors, and are currently working alongside the American Petroleum Institute to kill nuclear plants in California, New York, Ohio and Pennsylvania.

NRDC, for its part, has a minimum of $70 million directly invested in oil and gas and renewable energy companies that stand to profit from the closure of nuclear plants. It, too, is working to kill nuclear plants in California, New York, Ohio, and Pennsylvania.

Even smaller groups, like WISE International and Environmental Law and Policy Center, take money from natural gas and renewables companies while fighting to replace nuclear plants with natural gas and renewables.

Friends of the Earth and Greenpeace — which rakes in $350 million annually, crashes drones into nuclear plants, and recently declared, "Sabotaging nuclear is a vital part of saving the climate" — **both keep their donors secret**.

EDF, NRDC, and Sierra Club know perfectly well that solar and wind require the expansion of fossil fuels. How could they not? They've been killing nuclear plants and watching air pollution rise, as a result, for a half-century.

Renewables advocates know that had California and Germany invested $680 billion into new nuclear power plants, instead of renewables and the grid upgrades they require, the two places would be generating 100% of their electricity from clean, zero-emission energy.

They know that Germany today spends nearly twice as much as France for electricity that produces ten times the emissions per unit of energy because France receives 75% of its electricity from nuclear while Germany is phasing nuclear out.

And they know that, after investing $33 billion over the last decade to add more solar and wind to the grid, France had to use less nuclear and more natural gas, resulting in higher electricity prices and more carbon-intensive electricity.

Sometimes on Twitter, after I point these things out, someone will quip, "A lesson in unintended consequences." But after 50 years of killing nuclear plants and promoting renewables, the main consequence of anti-nuclear advocacy — more fossil fuel pollution — can no longer be considered unintentional.

What about climate activists like AOC and Thunberg? Are they aware of the extent to which their renewable energy advocacy is a far more valuable form of natural gas greenwashing than any amount of Twitter and airport advertising? If they aren't, they should be.

Thunberg and AOC are right that we have a moral obligation to do the right thing on climate change. Unfortunately, neither of them does.

Michael Shellenberger, President, Environmental Progress. Time Magazine "Hero of the Environment."

Michael Shellenberger

Contributor

I am a Time Magazine "Hero of the Environment," Green Book Award Winner, and President of Environmental Progress, a research and policy organization. My writings have appeared in The New York Times, Washington Post and Wall Street Journal, Scientific American, Nature Energy, and PLOS Biology. My TED talks have been viewed over 1.5 million times.