California's power is expensive and polluting - but doesn't have to be 03 25 22 (620 words)

The State of California plan is to replace Diablo Canyon Power Plant (DCPP) mostly with Wyoming coal-fired generation but to obscure the nature of the replacement power until Californians can't stop the state. On a 24/7 basis, the replacement power must be as reliable as DCPP to power the state's life-sustaining infrastructure for pumping and treating water, powering hospitals and first responder infrastructure, and the state's 39 military bases, etc. (DCPP has the unique ability to provide rivers of desalinated water.)

The state's plan must add at least the same amount of 24/7 generation as the planned shutdown of DCPP would remove. The replacement power should be emission-free, like Diablo Canyon. On February 10, the California plan artificially set the criteria pollutant level for mostly coal-fired "unspecified imports" to zero. This bland-sounding euphemism was created in 2009.

CGNP was alerted to the PacifiCorp plan during their CAISO headquarters visit on May 20, 2016, over a month before the secret plan to close DCPP was unveiled. Coal power was attractively priced on par with DCPP at $28.00 / megawatt-hour (MWh) or 2.8 cents / kWh.

The pollution-laden Intermountain coal-fired power plant near Delta, Utah is almost as big as DCPP. This plant locked in a long-term supply contract to Los Angeles and several suburbs that expires in 2025, avoiding the strict emission limits imposed in 2006 by SB 1368 (Perata.) PacifiCorp exploits a SB 1368 loophole. The law only applies to supply contracts longer than 5 years. Presently, PacifiCorp sends huge quantities of power to California via spot markets such as the Western Energy Imbalance Market (EIM) that it created in November, 2014. Based on $28.00 / MWh, PacifiCorp's EIM has exported about 78% of DCPP's typical annual production while choking air pollution swirls in the vicinity of their plants.

Over two decades, a CATF analysis projects air pollution from wholly or partially-owned PacifiCorp coal plants would cause 5,520 premature deaths. PacifiCorp has 5,234 megawatts (MW) of coal-fired generation. Nationwide, PacifiCorp has 3 of the most polluting coal ash ponds. Unlike DCPP, PacifiCorp's coal-fired fleet could face summer curtailments as a consequence of the west-wide drought.

PacifiCorp's coal-fired fleet would supply 4,000 - 5,000 MW annually of unspecified imports called for in the CPUC's massive June 24, 2021 procurement order. Since the unspecified imports would be relied on to replace nuclear power's grid reliability, a capacity factor (or ON time) of 90% applies. Thus, the procurement could total 40 billion kWh annually. PacifiCorp's total power sales could provide 1/6 of California's annual power consumption, yielding significant market and political power. PacifiCorp could wield sufficient political power to prevent a California ban against coal-fired imports.

On February 21, 2021, PacifiCorp parent Berkshire Hathaway revealed their 1,000 mile-long transmission system from Wyoming to California would cost $18 billion. Incipient bans on coal-fired generation supplied to Oregon and Washington state imply California ratepayers would be paying most of this cost.

Neither solar nor wind can replace DCPP because the Sun doesn't always shine and the wind doesn't always blow hard enough. Massive amounts of natural gas fired generation are required to integrate these intermittent power sources into our grid. Thus, natural gas wholesalers advocate for solar and wind deployments. Using sufficient batteries so the gas generation would be unnecessary is unaffordable. Batteries would cost Californians hundreds of billions of dollars while needing continual replacement cycles.

With the increased transmission costs, in 2025 Californians could have the worst of both worlds with significantly higher toxic pollution released into the environment - while paying more for this emission-laden power from Wyoming. A first step to reverse California's harmful energy policies would be to continue operation of safe, reliable and cost-effective zero-emission Diablo Canyon well beyond 2025.

Why California Power is So Expensive and So Polluting - A California Power Timeline

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In March, 2022, California has some of the most expensive and polluting power in the nation. This timeline shows how a combination of flawed legislation and corporate economic opportunism yielded this negative outcome. California is home to almost 40 million people and has the largest U.S. economy. California, like Germany has escalating electricity prices. Relative to Washington state, this timeline shows a set of failed public policies.

September, 1981 Construction of the 1,900 MW coal-fired Intermountain Power Plant near Delta, Utah begins. Per the U.S. EIA, this plant provides large amounts of dispatchable power needed in Los Angeles and several suburbs. In 2004 , 2006, 2007, and 2008, Intermountain produced more than 80% of Diablo Canyon Power Plant's (DCPP's) typical dispatchable annual generation. In each of those four years, Intermountain produced about 13 million metric tons (MMTs) of CO2 - and considerable criteria pollutants. Intermountain was completed in 1987 at a cost of $4.5 billion. About 1/3 of California's power is generated in nearby states. with much from coal and gas. Intermountain is one of many power plants that moves California power sector emissions to nearby states, harming residents in those states. Intermountain's coal-fired operations were targeted by the 2006 California environmental legislation SB 1368 (Perata,) which only applies to long-term (more than 5 year) supply contracts. Intermountain continues to operate today, producing 42.1% of DCPP's typical annual electricity production in 2021. Intermountain's 2021 emissions were 7.1 MMTs of CO2. If Intermountain were enlarged to equal zero-emission DCPP's output, it would release about 16.25 MMTs of CO2 annually with copious amounts of several toxic criteria pollutants. A plan to reduce the plant's environmental harms during the next four years remains to be implemented, and could be delayed. The plan increases operational costs with no guarantee of yielding significant environmental benefits.

2000 - 2001 The first California Energy Crisis. Flawed electricity deregulation policies enable firms such as ENRON to artificially create California electricity supply scarcity, resulting in extremely high electricity power rates and rolling blackouts. Strong state and federal intervention is required. CAISO, the California Independent System Operator is granted additional powers. PG&E experienced its first bankruptcy. The significant cost to the California economy is hundreds of billions of dollars in lost productivity. Retail electricity rates keep growing after this Energy Crisis.

2002 California's Renewable Portfolio Standard (RPS) was established by SB 1078, favoring intermittent solar and wind generation. Electricity rates increased. This legislation arbitrarily prevented two significant sources of zero - emissions electric power (nuclear and large hydroelectric power) from receiving any market compensation such as a zero emissions credits (ZECs,) now granted in several other states. Nuclear and large hydroelectric power also provide important grid stability and reliability benefits without receiving market compensation.

May 24, 2005 Berkshire Hathaway Energy (fka MidAmerican) acquires PacifiCorp's primarily coal-fired generation fleet in Wyoming for $9.4 billion. Despite claiming there would be economic benefits, Oregon's retail electric rates subsequently increase. (Beware, California.)

2006 SB 1368 (Perata) was enacted. This significant piece of California environmental legislation bars long term supply contracts with out-of-state electricity generators that produce greater CO2 emissions per megawatt - hour (MWh) than modern combined-cycle natural gas fired power plants. Coal-fired power plants are intended to be excluded as their CO2 emissions are about twice the threshold value. However, the legislation has a significant loophole. It only applies to long - term e.g. more than five year long supply contracts. Shorter-term supply contracts are exempted. As noted in the June 24, 2021 entry below, PacifiCorp exploited this loophole.

August 11, 2016 *The Washington Post* publishes "Turns Out Wind and Solar Have a Secret Friend: Natural Gas." This article summarizes the empirical finding that the fast - acting natural gas fired generation that compensates for the substantial intermittencies of wind and solar generation must be deployed at 105% of the sum of the nameplate ratings of the intermittent power. The dispatch pattern for the natural gas fired generation requires extremely large ramp rates in California. Ramp rates are as high as 1 Hoover Dam (2,078 MW) added per hour for 10 hours per day. Such high ramp rates are inefficient, substantially increasing natural gas fired generation costs and emissions. The net environmental benefits of solar and wind are questionable as a result.

June 24, 2021 In their plan to replace DCPP after 2025, The California Public Utilities Commission (CPUC) authorizes what is likely to be the largest procurement in CPUC history. This procurement is unusual in that the amount of power that is to be procured is only described in terms of generation capacity - up to 5,000 MW procured, instead of disclosing how many MWh are procured annually. Furthermore, this power is described twice on a single page in the procurement order only as "unspecified imports."

Unspecified imports is a California legal euphemism created in 2009 that mostly applies to out-of-state coal-fired generation. Furthermore, the CPUIC procurement indicates any supply contracts with electricity service providers such as PacifiCorp are confidential. The initial contract will likely be for less than 5 years to comply with SB 1368. In November, 2014, Berkshire Hathaway's PacifiCorp began a program with CAISO to sell excess coal power on the short - term market to western U.S. utilities that is exempt from SB 1368 stipulations. PacifiCorp's program was given an innocuous name: The Energy Imbalance Market (EIM.) Disclosures at **https://www.westerneim.com/Pages/About/QuarterlyBenefits.aspx** show that as of January 31, 2022, PacifiCorp had sold $391.38 million dollars of power since November, 2014. PacifiCorp is the leading EIM economic beneficiary. PacifiCorp participates in other spot markets as well. Using a nominal cost of $28.00 per MWh for PacifiCorp's coal-fired electricity which CGNP obtained during a May 20, 2016 CAISO headquarters tour, PacifiCorp's EIM power sales correspond to 13.98 Terawatt-hours (TWh) or about 78% of DCPP's typical 18 TWh annual generation.

Applying DCPP's capacity factor, or percentage ON-time of 90% to CPUC's procurement of 5,000 MW of unspecified imports, likely from PacifiCorp, yields 40 TWh per year. In combination with PacifiCorp's spot market sales, PacifiCorp could be selling 50 TWh per year after 2025 to the lucrative California power market. The California Energy Commission (CEC) tabulates recent total California energy consumption to be about 300 TWh per year. With PacifiCorp controlling about 1/6 of California's power after 2025, they will have *both* market power and political power. The situation has a current parallel with Russia becoming the low-cost coal, petroleum liquids, and natural gas supplier of choice to Germany. As a result, Germany cannot make meaningful interventions to halt Russia's annexation by force of a portion or all of Ukraine. Both Oregon and Washington state have enacted bans against imports of environmentally harmful coal-fired electricity set to be implemented soon. After 2025, in order to prevent California blackouts, California will have no choice but to accept PacifiCorp's coal - fired power, despite the ban imposed by SB 1368 (Perata.)

January 31, 2022 CAISO unveiled a plan to authorize the construction of a $12+ billion interstate transmission network between California and Wyoming, allegedly to import Wyoming wind power to California. Given that wind power projects often fail to meet the rosy generation projections and have low capacity factors, this project's purpose is most likely to convey coal-fired generation to California. The PacifiCorp Energy Gateway project was first announced in 2007 to export coal-fired power from Wyoming. Warren Buffett announced a total project cost of $18 billion by 2030 in his February 21, 2021 Berkshire Hathaway letter to investors. The coal-fired power bans in Oregon and Washington state imply by California utility law that California ratepayers will be liable for most of the costs of the PacifiCorp Energy Gateway.

February 10, 2022 The CPUC approved a Preferred System Portfolio in R.20-05-003 to comply with applicable statutes regarding electricity reliability and power sector emissions.. On page 108 of the CPUC's Decision is the following sentence, "Criteria pollutants were counted from generation within California only, and not from unspecified imports. " On the next page, the CPUC utilizes this bureaucratic gimmick to advance the misleading claim that under their model that "SERVM indicates a downward trend in criteria pollutants, with total pollutants decreasing about 7 percent between 2026 and 2032." The CPUC's planned result is a continuation of California energy policies utilized by LADWP's Intermountain Power Plant in 1981- move air and water pollution out of state, mostly harming residents near those power plants. Unfortunately, some harms of coal-fired generation are planet-wide. In contrast to developing nations such as India, China, or the African continent, California does not need to depend on coal to lift the state's residents out of energy poverty.

With the increased transmission costs, in 2025 Californians will have the worst of both worlds in the form of significantly higher toxic pollution released into the environment - while paying more for this emission-laden power from Wyoming. A first step to reverse California's harmful energy policies would be to continue operation of safe, reliable and cost-effective zero-emission DCPP well beyond 2025.