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A response to the EDF submission (4/17/19) on stranded assets

Additional submitted attachment is included below.

Docket Statement for CPUC R.19-01-011 and 19-IEPR-06 5-6-19

A response to the EDF submission (4/17/19) on stranded assets

Bill Martin

I have always been a supporter of public utilities. They receive a territorial monopoly in exchange for regulatory oversight. This can prevent wasteful duplication of resources which would otherwise raise costs for consumers (ratepayers) because two sets of infrastructure each serving half of all customers equals half the revenue to cover twice the costs.

One principle at work in a regulated territorial monopoly is that demonstrated effective management of utility company resources, infrastructure, and personnel can qualify for something of a guaranteed rate of return. Every capital investment desired by a utility to enable ratepayer benefit is overseen by a PUC (public utility commission). The PUC must approve proposed expenditures that utilities want woven into rates for recovery of their expense. There are investor-owned utilities (IOUs) and publicly-owned utilities (POUs). They are regulated differently and *these comments pertain only* to the IOUs, as affected by SB 1477 and de-carbonization.

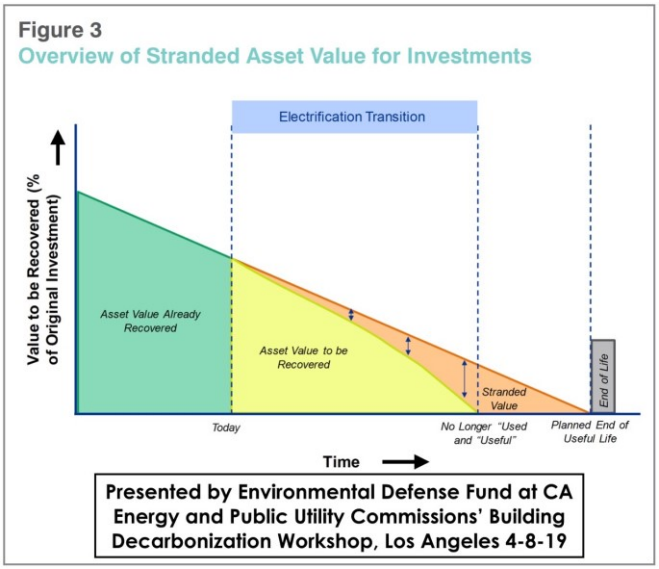
Access to capital-
Energy providing utilities are cash intensive businesses. They spend heavily on equipment, employees, energy for sale, and infrastructure. But they *do* collect revenue monthly from their product's consumption. Fortunately for ratepayers, the IOUs also have access to funding by selling stock or bonds into the nation's securities markets without having to access all their cash through bank loans. It's cheaper to pay dividends when possible and bond interest on time than to borrow for all their needs. Monthly cash flow from payment of customer bills helps to keep financing costs lower and utilities' books in the black. But the PUC monitors all.

Assets-
The cost of utility infrastructure is immense, and every project to develop or update physical assets triggers intensive utility planning and advance regulator oversight. Ratepayers' share of those costs must first be approved by PUCs. Most infrastructure assets are intended to operate for a specific lifespan. The charges to recover that investment are amortized over that expected life and built into rates (subject to PUC approval).

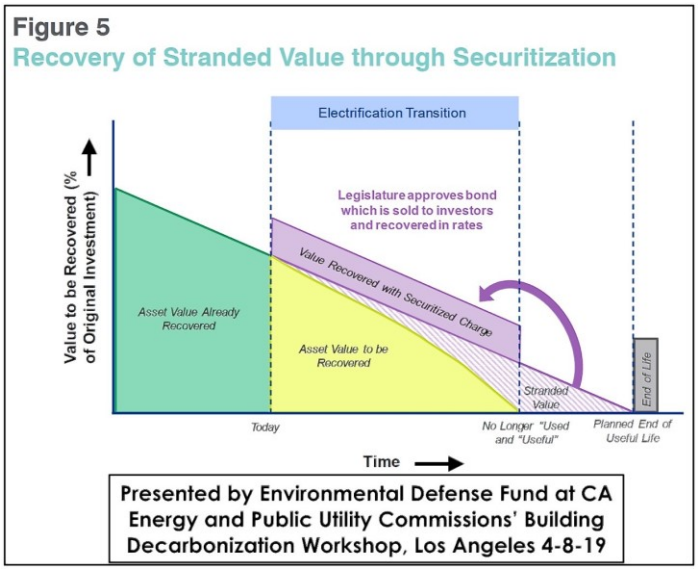
Historically, California's energy utilities sought territorial expansion that caused their boundaries to meet each other. The thinking was that economy of scale would help stabilize finances and improve profitability. To protect the existing ratepayers (the rate base) expansions were PUC-limited by their need to recover the expansion cost within three years of new customer revenue. Expansion is less attractive now because utility rate of return has been de-coupled from sales for decades. Utilities don't need to sell more product to maintain profits.

"Stranded Assets"-
If a piece of infrastructure that was supposed to last 50 years lasts only 25, we'd say that half its value was stranded, unavailable to generate repayment revenue. The asset needs to be replaced and money must be sought to build it. Who pays for that?

The EDF docket comment of 4/17/19 on decarbonization covers alternatives it sees as possible to address stranded gas distribution assets as California focuses on decarbonizing its buildings. They cite U.S. utility regulatory history dating back to a *"fair value doctrine"* established by Smyth v. Ames in 1898 that guides when a utility can recover its investment, made for the convenience of the public as long as that recovery is not greater than the services it enables are worth. This became a financial test of *"used and useful."*



EDF also cited utility cases from 1923, 1938, and 1944 that they claim ("When taken together…") created a prudent investment standard that should guide regulators. The last of these was the Hope Decision, establishing a doctrine of "used and useful" investments by utilities. EDF points out that in California, our PUC defined used and useful as property in use that provides service. Assets that are not U & U are not eligible for inclusion in the rate base. Figure 3 (above, right) shows that if electrification takes place, the only recovery of invested value remaining is in yellow, opening up an area of orange that will increase in size until the planned end of life (a money loser for utilities). It could be argued that as an extension of previous legal and regulatory precedents, the utility and its investors are "owed" this ROI (return on investment). That the blue band of electrification represents a policy "bait and switch" that couldn't have been anticipated. PUCs have always had a responsibility to not bankrupt utilities by rate denial or (perhaps) by policy change. But at least incrementally, they have to keep both carrots and sticks available.



In its Figure 5 (above, left) EDF introducesrecovery by legislature-approved bonds that will be sold to investors to cover stranded asset recovery. Ratepayers would pay for the bonds' interest and retirement during the period of electrification transition.

EDF also identifies that through electrification (both retrofitted existing buildings and making new ones all-electric) we'll leave higher expenses paid buy fewer gas customers. This would be at least a partial departure from past PUC procedures, in that the number of

customers in the rate base was likely independent of the ratemaking process that spread expenses equally among all customer classes. To continue loading more expense on fewer customers so that utility shareholders are protected while ratepayers are not is a lopsided remedy. Why should utility ratepayers be financial hostages while carbon reduction through electrification is a worldwide societal benefit?

In a June 2016 (Report #5) by the Lawrence Berkeley Lab on *Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives,* nine methods of cost recovery were considered. The only one on which the four panelists were unanimous was that they said the mechanism of lost revenue adjustment "poorly address[es] fixed cost recovery."

Investor Reality-

EDF's citation of 1944's Hope Decision highlighted a resulting doctrine of "Comparable Risk;" that rational investors will only invest in a particular opportunity if the expected return on that opportunity is equal to the return they can expect from alternative investments of a comparable risk. Yes, that's what rational investors are expected to do. But some do "take a flyer" on more speculative investments in seeking higher returns. Devotion to carbon could be one of those.

Others (still rational) approach investing more as an asset allocation of risk and reward, meaning an assortment of low risk low return holdings, sprinkled with those of greater risk for greater overall reward. It is at least plausible that those considering higher returns will take a close look at what the future could bring before committing. I think we should expect investors to be more sophisticated these days, making choices among a wider world of opportunities than in 1944 due to the following:

1. investment information is now universally available and pursued without a broker
2. we know with certainty that carbon is the antithesis of climate protection
3. renewable electricity costs have plummeted, both residentially and at grid-scale
4. renewable electricity is being stored in batteries as central generation never was
5. the U.S. has been focused on emissions reduction and efficiency for decades
6. increasingly, campaigns have produced institutional "divestment" from carbon
7. tax incentives for renewables persist against massive/historical fossil tax incentives
8. state regulators have become tougher on carbon than the federal government is
9. zero net energy buildings have hit mainstream consciousness
10. the Green New Deal has captured citizen attention to green like nothing before.

Any investor expecting steady returns from carbon-based businesses has not bothered to act in their own self-interest. This includes shareholders in fossil-providing utilities. Although the EDF comments don't address it, and regulators have not yet "baked it into" the financial metrics of electrification (perhaps as a tilt toward "fairness?") there is a missing cost element that ought to be factored in.

Social Costs-
Every bit of carbon brought to the surface of the earth will meet with the atmosphere whether it is leaked, stored, or burned. Oxidation is what happens, and incomplete combustion or methane emissions are what degrades air quality and boosts global warming. There is a cost to these events that citizens are paying now and will continue to pay in greater quantity, but

there is no cost recovery for:

A. medical expenses and premature death from respiratory or cancerous illness
B. early respiratory damage to children that compromises them for a lifetime
C. global warming, sea level rise, greater storm intensity, higher insurance rates
D. financial penalties or repetitive individual and (collective govt. paid) costs for repairs
E. lost cropland, a weakening economy, and environmental damage from extraction

None of these costs is currently being tied to carbon. The federal government is still giving large tax subsidies to carbon-based businesses, and is working against itself every time a post-normal storm, flood, or drought is backfilled with federal funds. Refined fuel products from petroleum crude were the largest single U.S. export in 2011. We accepted the local damage while fossil corporations benefitted from foreign sales. Why subsidize carbon?

Piles of coal ash have flooded into river drainages and there is no follow-up regulation to prevent a recurrence. Methane is estimated to leak 7% of its volume between the wellhead and customers' meters (Howarth & Ingraffea, Cornell University, 2015). The largest U.S. uncontrolled release from methane storage (a four month blow-out at Aliso Canyon) took place in northern Los Angeles County in 2015, displacing thousands of residents. Will existing or new regulations prevent a repeat? How are those costs woven into the price of carbon? Why should we worry about stranded assets when the public continues to suffer from the fossil industry in these (yet uncounted) ways?

Electricity's Technology Capacity-
In the 1970s when the Rand Corporation analyzed that California's 7% annual growth in electricity consumption (doubling every 10 years) would necessitate a future of 20 nuclear power plants along our coast to cover needs—that seemed plausible. Since then, a first term Governor Brown, an Energy Commission, and Title-24 Building Energy Efficiency Standards have combined to flatten this state's per capita electricity consumption while the rest of the nation has grown another 50%. Still, in this era of focused attention on climate change's disruptions, safety concerns and costs—we still haven't departed from extending gas lines to new home developments.

Ironically, the "Gold Medallion" all-electric home of the 1970s, predicated on electrical resistance cooking, heating, cooling, and water heating is coming back not as an inefficient zombie, but as **a better built, smart home**. It has heat pumps, advanced LED lighting, and electric induction cooking. Solar PV will become a mandatory element of all new housing in 2020, and many of the new residences will have charging stations for electric cars, overnight,

with off-peak electricity. Gas-providing utilities are trying to maintain relevancy in this new environment.

California already achieved its 2020 goal of 33% renewable electricity by 2018 and is on the way to 50% by 2030 and 100% by 2045. Grid-scale battery storage for electricity is growing fast (worldwide) and promises to help shave demand peaks. Offshore wind generation is common in northern Europe, it has spread to our east coast despite immense opposition of fossil-based businesses, and it will be deployed off the California coast sometime soon.

Renewable electricity is not only possible, it has become CHEAP; so much so that Pacific Gas & Electric announced in 2016 that it will not re-license its Diablo Canyon Nuclear Plant units 1 and 2 in 2024 and 2025. That 2,200 Megawatt capacity gap will be filled with renewables, grid storage, and distributed energy resources whose load can be managed.

The lost capacity of southern California's San Onofre Nuclear Generating Station (SONGS) from a faulty retrofit in 2013 removed 5,500 Megawatts from the grid but it, too, was replaced with some renewables in addition to a number of gas "peaking" generators. Reduced gas storage capacity at Aliso Canyon threatened the Los Angeles summer heat wave power supply for a time.

Renewable electricity is faster to site and permit than fossil fueled base load generation. There is no fuel delivery, no emissions, and no waste. It is deployable in varied capacities and locations, and can be integrated with grid-scale battery storage. It has already beat coal-fired generation and has nipped at gas as well. If the true costs of carbon were woven into its pricing, renewables would have beaten fossil-provided electricity long ago. Renewable electricity will only go down in 20-year LCOE (lifetime costs divided by energy production).

What I do not trust-

There are a number of reasons that I don't automatically support the stranded assets argument. Lack of trust is central to all of them. With increased regulatory processes and transparency I could be more accepting.

> Policy- One would have to be blind to have not seen that the future is aligned against fossil fuels. Its catastrophes have been numerous and its penalties and corrective regulations have been few. We've been trying to reduce emissions long before the reference index of lowered emissions from 1990, forward. There is a current court case by the Massachusetts Attorney General charging oil companies with fraud and conspiracy for having known decades ago that emissions from their products caused global warming. This repeats the pattern of tobacco companies' own research showing the connection between their product's use and cancer in smokers (but it kept this to itself while boosting nicotine and other chemicals' addictive power and increasing marketing campaigns to youth).

Fossil fuel companies accept large government tax subsidies yet are among the most mature and profitable businesses on the planet. Why do *they* need help, considering that use of their product is causing climate change (at an uncalculated and permanent cost to the rest of us)?

History- In the years prior to California's electricity deregulation of 1996, there was talk about the benefits of buying one's electrons (including green ones) from anyone a customer chose. Flexibility and efficiency were anticipated. The legislature approved (unanimously) and the governor signed it.

By 2001, two of the state's three major utilities had declared bankruptcy and three clever Wall Street crooks had played supply shortage games that raised prices to extortive levels, causing California's state government to go in the hole $9.5 billion to keep the lights on. The state later got $3.5 billion back through protracted court action but lost the rest. The deficit was made up by bonds and my own utility bill had $3.62 monthly as my share as early as 2008. This mistake could have been avoided, or, the legislation could have contained regulatory protections so that utilities didn't cede control of their generation assets to Enron, Reliant, and Dynegy. Consumers were sold down the river due to sloppy lawmaking and poor regulatory controls.

In 1994, it was widely reported that Pacific Gas & Electric was criminally convicted on 739 counts of negligence for lax right-of-way tree trimming that caused the Trauner Fire in the Grass Valley area. Forensic accounting showed that savings went directly to shareholder profits.

PG&E later made headlines (and is still under criminal probation) from its San Bruno gas line explosion that killed 8 and destroyed dozens of homes. Maintenance of the high pressured main pipeline was shown to be inadequate and that weaknesses could have been detected and repaired—but weren't.

One of the California Public Utility Commission's greatest embarrassments came when Chairman Michael Peevey (formerly CEO of Edison International, a utility partner in the San Onofre Nuclear Generating Station) flew to Poland. He met other utility chiefs there to coach them on how to pass 70% of the prematurely retired 5,500 Megawatt facility's stranded asset cost to ratepayers. A failed retrofit of the reactor's primary coolant loop is what forced the closure of that plant.

Why Poland, when meetings might have been in-state and transparent to ratepayers and their advocates? Utility experience and expertise on the PUC is a desirable factor—but not when secret negotiations keep ratepayers clueless and abused.

"ROSEMEAD, Calif., Jan. 30, 2018 — Southern California Edison and consumer parties today submitted a settlement agreement to the California Public Utilities Commission regarding issues and costs associated with the closure of the San Onofre nuclear plant. If approved by the commission, the **agreement** would bring to conclusion the commission's proceeding regarding San Onofre by revising the prior settlement it approved in 2014.

"We are pleased to be able to bring closure to this issue," said SCE President Ron Nichols. "The parties undertook extensive efforts over many months to reach agreement and SCE looks forward to timely regulatory approval."

A summary of the agreement is available **here**. Nichols noted the following key terms of the settlement:

- Customers of SCE and San Diego Gas & Electric Co. will no longer pay for $775 million in San Onofre-related investments that had not yet been recovered by the utilities under the 2014 settlement. SCE customers' portion of that total reduction is worth roughly $68 per residential customer over the next four years.
- Because the agreement awaits approval by the commission, any amounts collected by the utilities in excess of the $775 million while the proposed settlement is pending will be refunded to customers.
- In addition, the plaintiffs in a federal court lawsuit challenging the commission's approval of the 2014 settlement have agreed to dismiss that case in its entirety following commission approval of the revised settlement announced today.
- SCE will reimburse SDG&E for SDG&E's $151 million share of the $775 million. This provision will not reduce the revised settlement benefits SCE customers receive…For more information, visit **songscommunity.com**."

Current Issues- Speaking of stranded assets, PG&E attempted some stranding of their own recently. They are attempting to abrogate long-term renewable electricity contract purchase agreements from third party providers of solar PV because the cost of *that* power is more expensive than newer contracts at lower prices. Ten years ago, they were willing to shift the risk of renewable electricity to nimble contractors because they didn't want to build it themselves. Now, they want to chase new providers because today's prices are far lower—sticking their previous contract partners with uneconomic stranded assets. This benefits their own financial self-interest while they complain about their own stranded assets in gas infrastructure.

Catastrophic fires have not been kind to California's utilities. Arcing of vegetation across conductors resulting with fire ignition on the ground below has become a greater problem. Fire season has extended to a year-round endeavor and late season dryness combined with strong winds caused SDG&E (San Diego Gas & Electric) to install hundreds of wind monitoring devices across their service territory. Since 2014, when localized winds are strong enough, they de-energize customer blocks as a precaution against fast-spreading fires in residential neighborhoods. PG&E began their first effort at de-energizing in 2018, but it wasn't established and repeated in time to prevent the disastrous fires of 2017 and 2018.

The “Camp” fire, California’s most deadly ever, began with two PG&E transmission line ignition events related to transmission equipment—not arcing of airborne vegetation in the right-of-way. As a result, the company expects to be charged $30 billion for losses to life, property, displacement expenses, and clean up. The question of ***who pays what*** has yet to be answered. How big a haircut will insurance companies, individual victims, utility shareholders, or ratepayers take? A preliminary request from PG&E to the PUC is to raise residential monthly electric billings as of January, 2020 by $22 each.

SUMMARY-

If past management and regulation of energy utilities has been less than careful or precise, I am loathe to automatically accept any rate request to indemnify stranded assets. I’d like to ensure that as a ratepayer I am not covering more than my share of the costs and feel that utility investors must certainly pay a reasonable share. It was their trust in the utilities that constituted investor risk. Ratepayers are just customer/consumers of a service and their trust can only be earned through a robust PUC process that transparently assigns financial pain.

We all need the grid and we need to continue its modernization with more renewables and storage **to support electrification of buildings**, the reduction in climate damage, and to stem the health effects from emissions. If our nation (as one of the premier carbon emitters) won’t do anything to reverse the course we are on, no other nation will follow our example and we’ll all suffer more, and sooner. There isn’t enough money to address all the damage that runaway global warming will unleash.

Everyone’s assets will be stranded if we don’t act. Electrification with renewables and grid-scale battery storage is the obvious answer. Allowing new gas extension and hook-ups to buildings will not help get emissions down to avoid the worst effects of climate change. That would simply “strand” more utility assets.


Water supplies are provided locally. Long distance, large pipelines always carry carbon. Let’s not spend on such assets to protect all of our others. Photo: NRDC, 2019

As covered in *Valuing Efficiency: A Review of Lost Revenue Adjustment Mechanisms* (ACEEE 6-9-15: Gilleo, Kushler, Molina and York)— “An LRAM alone will not fully incentivize efficiency nor remove the throughput incentive. It will do little to encourage investment in energy efficiency unless combined with other policy levers.”

We can no longer afford to accept an increase in fossil fuel assets, anywhere. The costs in storm damage, accelerated health risks, rain/snowfall instability, agricultural displacement, forced migration and military hegemony are too great. No nation or jurisdiction can afford or

avoid them. The total of these financial and disruption risks make current fossil business tax subsidies and any future fossil stranded assets microscopic by comparison. Shall we trade environmental and worldwide stability and our quality of life for the preservation of those assets within a business model that brought us to this critical point? I hope not.

Beneficial Electrification is the best path to achieve the ambitious and necessary policy targets that California has adopted for 2030 and beyond. There are immediate benefits from electrifying existing buildings and ensuring that new ones don't use methane, especially indoors where combustion emissions become more concentrated in "tighter" homes.

The challenges of electric transportation are being met. We need to keep the market signal consistent so that the variety of vehicles continues to expand and the unit costs continue to decline. For the millions of weekly commuters the efficiency of charging at home, overnight beats a trip to the gas station when it's inconvenient. Those who charge at their workplace will be shrinking the belly of the "Duck Curve," just as grid-scale battery storage can.

The "fuel" to generate renewable electricity will always be free, and these green electrons will never release of any emissions. This means we can generate perpetually clean energy for every use in our society.

We can also make use of thermal resources on nearly every land parcel, without the need for pipelines or trucks to transport them. The existing electric grid already present at every existing or future building will let us make maximum use of refrigerant compression technology. You've already seen it in your home refrigerator. And the most efficient form of electrically-driven refrigerant compression is to connect to the **earth's thermal battery** by the deployment of **geothermal heat pumps** (GHPs). The EPA concluded over 25 years ago that GHPs were the most efficient means of transferring heat energy and it's still true today. Using the earth as a heat source or heat sink, we can heat and cool buildings while making hot water. One building's rejection of heat doesn't add to the heat load of others in the neighborhood because excess heat is absorbed, underground, not released to the air.

GHPs work via those green electrons using the process of **physics** *(thermal conduction)* for emission-free operation. They are unlike fossil-based heating through **chemistry** *(combustion, making a 3,000° flame to heat your building to 70°)* with the attendant emissions. Fossil furnace equipment can't touch the lifespan of GHPs, which typically go 25 years without replacement. And a fossil-based unit needs a separate, less efficient air conditioning system for cooling. A GHP can perform both functions while also pre-heating hot water.

With California's rule that every new residential build will have solar PV on it's rooftop, we are closing in on much of our electricity coming from the sky while all the thermal energy can come from underground, on the building site itself. It's time to ditch fossil fuels in all new construction and begin an ambitious electrification program for existing buildings. This would be an investment in climate change defense we can live with. We will **all** be truly stranded without it!

Thank you for the opportunity to comment,

—Bill Martin

Bill Martin, President (530) 394-8224
CALIFORNIA GEO
California Geothermal Heat Pump Association
www.CaliforniaGeo.org