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To: Catherine.Cross@energy.ca.gov

Dear Catherine Cross,

I am trying to send the document below to Commission Chairman Weisenmiller for the 2015 IEPR workshop which occurred yesterday in Sacramento. I was the final citizen to speak via the phone link.

The version shown is slightly different from the one sent previously to other CEC members and to others, but only a few typos have been corrected, including properly referring to the Nuclear Regulatory Commission (NRC) instead of the Nuclear Energy Commission as I had accidentally typed in the 3rd paragraph of the previous version. (I think readers probably knew what agency I was referring to, but this version has been corrected for posterity.)

Also, I've included a short mention of an article in World Nuclear News today, about a company in Sweden that has decided on early closure for several reactors due to "declining profitability and increased costs." It CAN and SHOULD be done!

Costs have been kept unreasonably low for the owner/operators of Diablo Canyon. Close the gap, close the plant, and let's move on to clean energy.

Best regards,

Ace Hoffman
Carlsbad, CA

Related news item today from World Nuclear News:

CORPORATE: Vattenfall opts for early closure of Ringhals units

Declining profitability and increased costs have forced Swedish utility Vattenfall to decide to close units 1 and 2 of the Ringhals nuclear power plant earlier than previously planned. The decision would see the units shut between 2018 and 2020, rather than around 2025.

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Submission to the CEC for 2015 IEPR: Every state agency now has the green light to stop nuclear power (corrected version):
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To: California Energy Commission
Commissioner Andrew McAllister, Lead Commissioner for 2015 IEPR Chair Robert B. Weisenmiller, Lead Commissioner for Electricity and Natural Gas

Dear Commissioners,

It is time to close Diablo Canyon, because planet earth, let alone California, does not contain land sparse enough to contain nuclear waste. It is also true that there are clean alternatives, such as are being provided by magnificently-run, fully unionized solar installation companies which consistently get high marks for quality, value, and service.

Not like your average nuclear power plant, which is constantly generating a waste problem no one in California can solve.

Large releases of the contents of a spent fuel dry cask are considered by the Nuclear Regulatory Commission (NRC) to be well beyond any "design basis accident." Design-basis-accidents only result in relatively minute releases of radiation from a dry cask: Perhaps a millionth of the entire contents, for example, or a ten millionth, or even less.

Every additional ton of spent nuclear fuel that needs to be stored and/or transported is an additional risk and danger to Californians. This does not mean that the CEC, CPUC, or any other state agency is regulating "health and safety" by including in their considerations the possibility of "beyond design basis accidents," because ever since Fukushima, the NRC, SCE, and the whole nuclear industry has had to admit that beyond-design-basis-accidents can happen. So it is prudent and wise to consider the economic "what-ifs," should there be a catastrophic loss of containment at an ISFSI, or during transport to an ISFSI, or from an ISFSI to a permanent disposal site somewhere -- a site that has never existed despite 70+ years of looking everywhere on earth.

Every transport operation, every mile, is a significant added risk, though as time goes by the risk gets less and less (after ten thousand human generations, it will still be hazardous waste). How many times should the waste be moved before "final" disposal (in what is currently a fictitious, make-believe site)?

Under no circumstances must Diablo Canyon be allowed to remain open, as the COPs submission attempts to make clear -- but to adopt any plan for an "interim" storage facility, would be against prior California law against siting a nuclear waste dump within California.

Additionally, there is no place within California that is both geologically safe and desolate enough, and whose people that are there will willingly accept San Onofre's waste, along with the stakeholders nearby -- or Humboldt Bay's waste, or Rancho Seco's, or Diablo Canyon's -- and even if there were such a place, there are no safe transport routes (and no safe transport canisters either; that's another issue that needs to be considered).

The waste will stay where it is, possibly for a long, long time, so let's put it in the best containers the world has to offer -- and let's shut Diablo Canyon.

Pretending that there is a solution to the problem of nuclear waste is exactly what got us into this mess in the first place. First there was the promise that the waste would be removed right away. Then it wasn't. Then Yucca Mountain was proposed, but it was a technological failure (not just a political failure).

In fact, Yucca Mountain was a political failure precisely because it was a technological failure: Nevada Senator Harry Reid couldn't lose on the science -- but his proposed interim solution was -- and is -- preposterous: On site storage. In an earthquake zone, in a tsunami inundation zone (due to underwater landslides, not just large Richter events), in a populated area with few egresses. On site, in 5/8ths inch thin stainless steel casks that are likely to suffer stress corrosion cracks long before they are ever moved, even if we collectively decide to violate someone's rights and stick the waste somewhere other than on the fragile, shaky coast of our precious state.

Transportation accidents could release fission products (or worse) as the waste is moved along a route that mustn't go through heavily populated areas, but planners will be hard-pressed to avoid such areas, no matter where the waste might go. The rail bridges and road bridges are in terrible shape: Thousands of road and rail bridges in California need upgrading/strengthening. That will cost tens of billions of dollars (which should be spent in any case, but will it be spent, and will it be spent in time?).

Moving the waste is not an option at this time, and won't be for the foreseeable future. This alone -- even without an accident, even one say, a hundredth the size of Fukushima -- means that Diablo Canyon's growing waste problem ensures that it -- like San Onofre -- is an economic failure for California. A beyond-design-basis-accident at Diablo Canyon is several orders of magnitude more likely than a beyond-design-basis-accident is with San Onofre's spent fuel, and that accident (Diablo Canyon's) is also more likely to be several orders of magnitude worse than all but the worst possible beyond-design-basis-accident at a spent nuclear fuel facility.

Prior to Fukushima, the Nuclear Regulatory Commission treated beyond-design-basis-accidents as having a likelihood akin to "one over infinity." That claim is simply not possible anymore, and catastrophic events with spent fuel might be unlikely on a year-to-year basis, but the fuel will be highly toxic and difficult (and costly) to manage for tens of thousands of human generations. How likely is it over time to have zero accidents? Zero terrorist attacks? Zero human inspection failures? Zero wars?

Spent nuclear fuel contains highly toxic Plutonium-239 (as well as Uranium-235 and other Uranium atoms). If there is a large release, it will be VERY expensive to deal with for tens of thousands of human generations. That's just the burden already being imposed by the last two generations because of Diablo Canyon and San Onofre. If we make more, the chance of a catastrophic release goes up, and the possible total release amount goes up too. So the most economical choice is to stop making more nuclear waste for Californians to have to deal with.

There are clean, renewable ways to get electricity. California can also require (or encourage) lower energy usage from common household and industrial heating and lighting systems. Renewables feeding clean power into the grid can be fairly compensated.

We can improve our electrical infrastructure (electrical grid) so that renewables can more easily supply all the power we need, and more. And the storage capacity we need: A few million electric vehicles in California could provide an automated, enormous, distributed battery backup system for the state.

These are all doable, and will surely be done eventually even without closing Diablo Canyon, but much faster if it is closed immediately. And the cost savings can be used for the next 10,000 generations.

Solar installation companies have been making investor-pleasing profits throughout southern California, thanks in part to San Onofre's closing. And not one light went out for even one hour, and we are long past the point where anything but poor planning can cause a blackout anywhere in California just because San Onofre closed. And Diablo Canyon's "contribution" to the power supply in California is a single-digit percentage and usually superfluous.

One accident at that old rustbucket and the cost will be tremendous. The Nuclear Regulatory Commission is very specific that states are not allowed to regulate "health and safety" with regards to nuclear power. That is a travesty in itself, and preposterous, but let us not argue that here.

Instead, let's ask why any California state commission consistently assumes that the (alleged) prohibition against regulating "health and safety" at nuclear facilities means that the state of California can't assume something can go wrong?

Even the NRC admits there will be accidents. But when San Onofre put in new steam generators, the possibility of failure was not considered by any state commission -- only a balance sheet showing a small savings for ratepayers -- assuming a successful operation of the plant for another 20 years (the steam generators lasted less than one year). There were numerous reasons not to believe the reactors would/should last that long, and they didn't.

This time, the commission is being asked to assume there will be no accidents in spent fuel facilities, or transportation accidents, possibly for centuries, and certainly for several decades at the very least, until something happens that tens of thousands of scientists have not been able to make happen, and all the legislation in the world has not made happen, and all the military willpower to solve their own waste problem has not made happen... The California Energy Commission is required (according to the NRC's interpretation of the law) to ignore the possibility of failure in a dry cask any time over the next million years (if the waste doesn't get moved to some other poorer state with fewer people) or at least for decades or centuries, even if it does eventually get moved.

The more casks, the bigger the problem -- and it's not just linear (i.e., more area for "chloride-induced stress corrosion cracking" to occur). Casks can interact with each other, and ISFSIs and pads can fill up. More radionuclides to be released, the more casks involved in, say, a jet airplane crash. So the fewer casks there are, the better. Stop making the waste.

Each ton of spent fuel contains about 400,000 Curies of radiation after being out of the reactor for 10 years. The rate declines very slowly. The fission products will take hundreds of years to decay to stable elements. The plutonium? Tens of thousands, the uranium even longer.

Approximately every four days, Diablo Canyon produces another ton of high level nuclear waste (250 pounds per day per reactor, mostly spent fuel, according to the Nuclear Energy Institute's estimate (provided by SCE) for an average plant). The removed fuel's fission load when it comes out of the reactor

is hundreds of times greater than the most dangerous fuel at San Onofre. As soon as Diablo Canyon closes forever, the lethality of its used fuel assemblies starts to decline. Until then, there is always some that is especially lethal, and there is always a growing problem instead of just -- a problem.

The importance of closing Diablo Canyon should be obvious to every person who has spent the last few years trying to figure out what to do with San Onofre's spent fuel waste. Indeed, the vast majority of the people on Southern California Edison's hand-picked Citizen's Engagement Panel have only one goal as far as this observer can tell, and that's to pack the fuel up in flimsy containers and forget about it (waiting for the government to take it away), and then spend endless meticulous hours deciding relatively minor (though not unimportant) issues, the most major of them being how to grind the radioactive debris to dust and keep hosing everything into the sea without annoying the surfers, and how to "island" the spent fuel pools until all the fuel is put in those flimsy 5/8th inch thin dry casks so everyone will forget about it until one of them leaks, or a magic lollipop mountain opens up to take the waste.

San Onofre's problems include having high burn-up fuel for the last decade+ of operation, which is much more hazardous now, as spent fuel waste. Diablo Canyon also uses high burn-up fuel. It might make more money for the utility while it's in the reactor, but high burn-up fuel also is more dangerous as spent fuel, because it has more fission products per pound, out-gases more, is thermally hotter, and is more radioactive (more gamma rays, x-rays, alpha particles, beta particles and neutrons emitted), so it destroys its containment structure even faster.

San Onfore's dry casks are liable, if not likely, to suffer from stress corrosion cracking, and Diablo Canyon's casks already have the conditions for such cracking.

San Onofre is providing all the proof needed that Diablo Canyon is going to get more and more costly for California the longer it stays open. That should not be one day more. No relicensing. No new cooling towers. No more refueling cycles. No more nuclear waste in California.

Decades ago, the Sierra Club defined the problem of nuclear waste to be "intractable." There is no better word. Radiation destroys any container you put it in, and long-term solutions are simply fantasy. The world needs to stop making more nuclear waste, and California cannot afford to be the next Fukushima. Ever since Fukushima, the NRC can no longer guarantee that "beyond design basis accidents"can't happen, which means that every state agency now has the green light to stop nuclear power cold, before a financially-catastrophic accident destroys a large portion of our state.

If the CEC or any other commission in California wants to get serious about solving the nuclear waste problem, the first thing they need to do is close Diablo Canyon.

Thank you in advance for your attention in this matter.

Sincerely,

Ace Hoffman
Carlsbad, CA

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