BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.	Rulemaking 10-05-006 (Filed May 6, 2010)

WOMEN'S ENERGY MATTERS
OPENING COMMENTS ON PROPOSED DECISION IN TRACK 1 & 3

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Women's Energy Matters (WEM) appreciates this opportunity to provide Opening Comments, pursuant to Rule 14.3, on the Proposed Decision ("PD") in Track 1 & 3, issued February 21, 2012.

Introduction

WEM has identified serious errors and omissions in the PD, because it excluded the topic of replacement resources for nuclear power, which formed a substantial part of the record. As the PD pointed out in regard to other issues, the Commission must take into account the whole record in its orders and decisions. Contrary to the assertions of the PD and the Settlement, there may in fact be a need for more resources in SCE and SDG&E's territory, and possibly also in PG&E territory, whenever nuclear power is unavailable. The modeling in this proceeding neglected to consider these possibilities, but this just means they need to be explored further — not that they don't exist.

The urgency of identifying clean, affordable resources (following the Loading Order) that are already available or can be developed quickly to replace nuclear power, has become more clear because of the dire situation at the ruined Fukushima Daiichi nuclear power plant in Japan, which is still very precarious — and also because of events in California since the Proposed Decision was issued: both reactors at San Onofre have been shut down for six weeks because of equipment malfunction and premature degradation, and SCE has yet to provide information about how long it expects the outages to persist.

The sensible thing is to create a Plan B, which is what WEM proposed in the proceeding. We ask the Commission to initiate that planning process in this decision.

Summary of recommendations:

WEM recommends that the final decision include some or all of the following Findings of Fact, Conclusions of Law, and Ordering paragraphs:

Recommended findings of fact:

- The Fukushima Daiichi disaster highlighted the fact that nuclear power poses a serious potential for serious grid disruptions, unacceptable costs to ratepayers, and other liabilities for the people of California and the state;

- In the expedited 2011 time frame of this LTPP, there was insufficient time to fully consider how nuclear power resources could be replaced, whenever they are offline or permanently shut down,
- It is reasonable, prudent, and urgent for the state to proactively explore these issues;
- Both reactors at San Onofre have been offline for six weeks and there is no word on when they will be restarted; in their absence the state wishes to avoid grid disruptions and minimize costs to ratepayers while protecting the environment to the greatest extent possible;
- In the recent past, utilities have continued to ignore preferred resources, including for replacement power during nuclear outages, which violates previous D0712052 as well as the Track 2 decision in this proceeding (D1201033);
- Planning for clean, affordable resources to replace nuclear power represents opportunities for California to implement cutting edge principles and technologies for renewables integration and sensible integrated resources planning;
- Considering these questions in the context of relicensing would be inappropriate because these issues have to do with utilities' procurement practices during the next ten years, which are within the time frame of the current license. In any case, PG&E's application for relicensing Diablo Canyon has been closed, and Edison has not filed a relicensing application for San Onofre; therefore these venues are unavailable. Furthermore, PG&E's treatment of replacement resources in its relicensing application provided little relevant information because it followed the NRC's guidelines and failed to address California's laws and policies regarding procurement;
- PG&E and SCE's pessimism about their ability to access clean, affordable replacement for nuclear power appears to be unwarranted; the evidence in this proceeding revealed 50% surpluses through 2020 (including all types of resources), which is 35% more than the Planning Reserve Margin;
- It is reasonable to extend the current proceeding or to convene another proceeding or proceedings, in order to create a public planning process or processes for replacement of nuclear power in the event that San Onofre, Diablo Canyon, or Palo Verde nuclear reactors are offline for any reason or permanently shut down.
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Recommended Conclusions of Law:

- A license to operate a nuclear power plant does not guarantee that it must be used to generate power; procurement decisions are entirely the province of the state, not the Nuclear Regulatory Commission.
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Recommended Ordering paragraphs:

- We order Energy Division to design and convene an expedited, public process to identify the cleanest, most affordable resources, corresponding to the Loading Order, which can be quickly made available to replace San Onofre nuclear generation. We invite CAISO and other stakeholders to take part in this process;

- We order SCE and San Diego Gas & Electric to participate in this process and to implement replacement resources such as those identified to the greatest extent possible during the current outage and any future outage;
- We clarify that the loading order is the policy of the State of California for short and medium-term purchases as well as long-term procurement.
- In order to better utilize resources that already exist but are located on distribution systems and are therefore invisible to the CAISO, we order utilities to create databases specifying, to the extent feasible, the location of all resources in relation to their distribution and transmission substations, amount of capacity, expected load shape and useful lives, and other relevant data for all resources including energy efficiency, demand response, distribution generation, CHP and renewables; and to make that information available to CAISO by June 1, 2012;
- We will convene similar processes to plan for replacement of nuclear power from Diablo Canyon and Palo Verde; or alternatively, consider all issues related to replacement of nuclear power together in a dedicated proceeding or in the successor proceeding to this LTPP;

Procedural history

The PD described the Tracks in this proceeding as follows:

> (1) Track I will identify California Public Utilities Commission (CPUC)-jurisdictional needs for new resources to meet system or local resource adequacy and to consider authorization of IOU [investor-owned utility] procurement to meet that need…
> (2) Track II will address the development and approval of individual IOU "bundled" procurement plans consistent with § 454.5.
> (3) Track III will consider rule and policy changes related to the procurement process which were not resolved in [Rulemaking] R.08-02-007, as outlined in greater detail below. (OIR at 9.)

While this proceeding began almost two years ago, there was a very short time — only five weeks — for parties to digest the information in Track 1 and 3 testimony by CAISO and utilities presented on July 1, 2011, complete their discovery, write their own opening testimony due August 4th and prepare for hearings held on August 11, 15-19, and 30, 2011. Opening briefs were due scarcely two weeks after the end of hearings, on September 16.

In the Feb. 28, 2010 PHC, a compressed time frame was presented as necessary because for unexplained reasons the Commission needed to have all decisions completed before the end of 2011. The schedule became even shorter because CAISO needed more time to complete the CPUC-required modeling runs. The utilities also wanted modeling for scenarios they designed.

While the modeling and other information presented in Track 1 would have properly informed both Tracks 1 and 2, instead we raced through Track 2 testimony, hearings and briefs prior to Track 1, giving CAISO more time to complete its work.

Just days after setting this breakneck schedule, the world experienced a cataclysmic event — an earthquake and tsunami that led to disaster at Fukushima Daiichi nuclear power plant, which began to spew deadly, gene-altering radioactivity into northern Japan, the Pacific ocean, and around the world. It was not until late May that authorities finally began to let the news trickle out that there had been three meltdowns. Three reactors and four used fuel pools have continued to release enormous amounts of radioactivity ever since March 11, 2011.

There is widespread contamination of Japan's food supply, which depended heavily on farms and fisheries near Fukushima. The company is insolvent, despite government bailouts. Local communities have the power to prevent restart of reactors that are required to close down for inspections for three months every year; only two of Japan's 54 reactors are still running as of this date.

The disaster raised profound questions about the reliability and costs of nuclear power, especially in earthquake-prone areas like California. The Fukushima Daiichi reactors not only quit producing power when it was sorely needed in the emergency, but melted down because they required power from the grid that was not available, and will continue to need uninterrupted grid power to maintain them in their precarious current condition.

Further deterioration could prevent workers from getting near the reactors, a situation that must be avoided at all costs. It was only recently reported, in December, that the company was ready to give up and abandon the site completely soon after the accident, until the prime minister flew in and demanded that they stay and deal with it, even though it meant suicide for the workers.

In the aftermath of Fukushima, WEM felt it was appropriate to challenge the unspoken assumption that San Onofre, Diablo Canyon (and Palo Verde) nuclear power plants would be a core part of utilities' power portfolios for at least another decade. Therefore, we proposed for the CPUC to authorize a process to plan for their potential replacement in this LTPP proceeding.

We raised the issue initially in our Track 2 testimony, filed May 4, 2011 (Amended May 23). PG&E and Edison promptly filed a Motion to Strike our testimony, arguing among other things that the issue was out of scope. WEM filed a response and testified on the matter at the May 23rd hearing, where the ALJ denied their motion completely. Prior to denying the utilities' motion, he stated:

> I understand the general policy direction that you are recommending to the Commission both on energy efficiency and on nuclear power… If your testimony is designed as basically providing kind of a general policy guidance for the Commission in this proceeding as we move forward, these are overarching principles to keep in mind, then I would be inclined to leave your testimony in place." May 23, 2022 EH Transcript, pp. 36-37.

WEM's witness, the undersigned Barbara George, responded in part:

> [W]hat we are proposing is that if we had a plan for what to do if these resources were — took themselves off-line, or if the Commission decided that it was prudent to take the step, or if PG&E decided to protect its shareholders by saving them the embarrassment and problem of… a catastrophe that hadn't been planned for, then we would be able to take that step; but if we hadn't made any kind of plans, we wouldn't. And… we would be looking at higher greenhouse gas emissions instead of much lower ones, and we would look at very high costs instead of lower ones. [This last sentence referred to greater use of energy efficiency, including for replacing nuclear power]. Ibid, pp. 39-40.

Thus it is clear that the nuclear issues raised by WEM, including greater use of energy efficiency and other preferred resources for potential replacement of nuclear power, were incorporated into the overall scope of this proceeding.

As discussed below, WEM went on to file testimony and briefs on these issues in Track 1, and addressed them in cross-examination in the hearings; three other parties also addressed these topics throughout Track 1.

Serious errors result from the omission of nuclear issues from Proposed Decision

Many parties signed on to the Settlement, which the PD characterized as follows:

> The proposed settlement is, in essence, a punt. The settling parties have agreed to defer determination of the core issue in this proceeding: the utilities' future need for additional generation. To the extent there may be any such need, it appears to be primarily driven by the necessity to integrate higher levels of renewable generation onto the system, in anticipation of a 33% renewable portfolio standard (RPS) target. PD, p. 5.

The PD approved the Settlement, concluding:

> In looking at the whole record, it would be reasonable to find that there is no need for additional generation by 2020 at this time, and accordingly it is reasonable to defer authorization to procure additional generation based on system and renewable integration need.9 The proposed settlement is therefore reasonable in light of the whole record. Ibid, p. 9.

It added, in a footnote:

> While the focus of this proceeding extends out to 2020, it is important to note that the record similarly does not support a finding of need for additional generation beyond 2020. Accordingly, it is also reasonable to defer procurement of generation for any estimated need after 2020. Ibid, p. 9, fn. 9.

This mischaracterized the record in Track 1 of this proceeding. WEM's Track 1 testimony and briefs, similarly to our Track 2 testimony, raised the issue of the potential for extended outage or shutdown of nuclear power plants, which could occur without warning at any moment, and could result in a need for additional generation (or demand resources).[1] We cited the tragedy unfolding in Japan because of the triple meltdowns at the Fukushima Daiichi nuclear reactors, and the subsequent grid disruption, power shortage, and escalating costs, as an example of why California should urgently consider alternatives to nuclear power.

WEM also pointed out the capabilities of energy efficiency to perform as a grid-reliable resource, noting that a substantial amount of EE — 1000 MW — won the 2009 forward capacity auction held by New England ISO, which serves LSEs in six states.[2]

We therefore recommended that the Commission convene a process as soon as possible, to (1) determine the extent of potential need if and when the nuclear reactors at San Onofre, Diablo Canyon (and Palo Verde) were unavailable, and (2) to make certain that nuclear power could be replaced expeditiously by clean, affordable resources, according to the loading order.

Southern California Edison (SCE) and Pacific Gas & Electric (PG&E) also submitted testimony and briefing on this topic in Track 1, and Jan Reid discussed it too. Reid proposed that the Commission convene a new proceeding to consider the full range

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[1] The Commission specifically included demand resources in the term "generation," inD1201033.
[2] SCE tried to convince the Commission that NE-ISO wasn't really using energy efficiency as capacity. Its witness Mr. Silsbee willfully "couldn't find" what he didn't want to seeSCE Opening, Brief, p. 46.

of issues involving nuclear power. WEM supports this proposal, but also believes that an expedited replacement planning process is necessary in the interim.

SCE's Testimony and Opening Brief stated its adamant opposition to considering these issues in this proceeding, even as it insisted, "Mitigation of the detrimental impacts of a SONGS 2 & 3 shutdown will take a minimum of 7 years, and likely up to 10 years because substantial amounts of in-basin generation and/or additional transmission would need to be constructed." SCE Opening Brief, p. 45.

It seems illogical to state that there would be dire consequences if nuclear power were unavailable, and then refuse to consider creating a reasonable plan to replace that power, should it become necessary for any reason.

The procurement proceeding would certainly seem to be an appropriate place to begin that inquiry. Furthermore, the Nuclear Regulatory Commission affirmed that, "NRC has no role in the energy planning decisions of State regulators and utility officials as to whether a particular nuclear power plant should continue to operate."[3] SCE argued that all nuclear issues should be considered together, and that the Scoping Memo in its GRC proceeding moved nuclear issues to the seismic or relicensing proceedings.[4]

SCE argued that nuclear issues shouldn't be considered because they hadn't been included in the scenarios that were prepared for the proceeding, and therefore hadn't been studied: "None of the studies performed in this docket have even considered the impacts of a premature shutdown of SONGS." SCE Opening Brief, p. 44.

Ignoring the actual scope of Track 1, ("to identify CPUC jurisdictional needs for new resources to meet system or local resource adequacy and to consider authorization of IOU procurement to meet that need," as summarized in the PD, p. 2), SCE asserted that the focus was much more limited, namely: "the need for new resources to support renewable integration." SCE Opening Brief, p. 44.

While WEM agrees that Track 1 put most of its attention on renewables integration, it wasn't the exclusive focus. The PD acknowledged that other issues were considered:

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[3] Nuclear Regulatory Commission, Generic Environmental Impact Statement, NUREG -1437, Vol I, see [http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/v1/part01.html#_1_12].

[4] Exh. 209, p. 36, referencing the March 1, 2011 Scoping Memo in SCE General Rate Case (A1011015), p. 15.

> Two narrower issues in System Track I were not resolved by the proposed settlement. One unresolved issue related to the need for local generation capacity in the San Diego Gas & Electric (SDG&E) service territory. That issue will be addressed in Application (A.) 11-05-023, as described in the Joint Assigned Commissioners' Ruling issued on January 18, 2012 in both this proceeding and in A.11-05-023. The other issue was raised by Calpine Corporation (Calpine), and consisted of a proposal to require the utilities to do a solicitation aimed at existing power plants that are operating without contracts. We do not approve Calpine's proposal here. PD, pp. 4-5.

It's significant that the PD *resolved* two other issues that were unresolved in the Settlement, and one of them had to do with the possible need for local generation capacity in the SDG&E service territory. PD, pp. 12-16. That issue is certainly similar to the issue of local generation capacity that would arise if and when the San Onofre nuclear reactors were unavailable.

Current, unplanned outages of both San Onofre reactors for six weeks, so far

As of January 31st, both reactors at San Onofre have been offline, following equipment failure in the nearly new Unit 3 steam generator. This resulted in a release of radioactivity to the environment, and led to the discovery of similarly deteriorated equipment in the Unit 2 reactor, which was already shut down for refueling and other repairs as of January 9th.

Now, almost six weeks later, SCE is not saying when it expects to restart these reactors. What would happen if the outage dragged on into the summer? Or if the reactors were restarted, what if another problem (or worse, a major earthquake and/or accident) shut them down again during the hottest weather, when supplies are tight? (There was another unexpected outage of both San Onofre reactors just last fall, during hot weather, which caused great concern though it lasted only a few days.[5]

Nobody knows what would happen, because there hasn't been any public discussion or planning for this eventuality.

[5] Last September 8, 2011, a mishap at a substation in Arizona, caused both S.O. reactors to scram. A large swath of the S. California grid went down, causing "station blackout" at San Onofre. This much -feared condition meant offsite power was unavailable to power the cooling system*at not one, but two reactors* — and their spent fuel pools, brimming with many more fuel assemblies than are stored at the Fukushima Daiichi reactors. Many nuclear experts agree that heavily loaded fuel pools present issues that have yet to be explored; even NRC put them on a list for action.

The prognosis for the current outages is troubling, as explained by Rochelle Becker of Alliance for Nuclear Responsibility and John Geesman, former chair of the Energy Commission, in a recent editorial:

> The recent radiation leak at San Onofre Unit 3, and the alarming discovery that 871 of some 9,700 tubes in one of Unit 2's 2-year-old steam generators are already degraded by 10 percent or more, ominously recall the steam tube problems that originally caused the premature retirement of Unit 1 in 1992 and prompted the $671 million installation of replacement steam generators in Unit 2 and Unit 3 in 2009 and 2010.
>
> Even California's what-the-traffic-will-bear philosophy of setting electricity rates might have a hard time absorbing the costs of such large amounts of replacement power while paying for repair of the crippled plant at the same time.
>
> "The amount of wear that we are seeing on these tubes is unusual for a new steam generator," NRC spokesman Victor Dricks told The Washington Post. "If you have that kind of thinning anywhere along the length of the tube, you have a problem because it degrades the integrity of the tube, which can contribute to leaks."
>
> The Post also interviewed retired NRC engineer and researcher Joram Hopenfeld, who said the company will have to determine why the tubing is degrading so quickly "before they do anything else. I've never heard of anything like that over so short a period of time," Hopenfeld said, "The safety implications could be very, very severe." March 10, 2012 op-ed, San Diego Union-Tribune.

WEM proposed for the PD in this proceeding to order an expedited month-long planning process to identify the cleanest, most affordable replacement resources possible for California's nuclear power plants— just in case we faced a situation like the one in which we currently find ourselves!

We saw this as contributing to the forward motion on renewables integration, rather than distracting from it. We pointed out that such a specific, concentrated exercise could provide opportunities to consider the real-world challenges of some of the ideas parties have proposed in this proceeding for integrating intermittent renewables with other firm renewables and storage technologies, and including grid-reliable energy efficiency, demand response and distributed generation — which have been mostly ignored as Local Capacity resources. We acknowledged the role that existing gas-fired generation would likely have in such a plan, while ensuring that pollution and GHG emissions of power plants would be minimized thanks to the use of more preferred resources.

We argued that without such a planning process, if nuclear power ever needed to be replaced — whether for a short or long period, for planned or unplanned outages — the Commission had reason to expect that the utilities would ignore preferred resources, as they seem to have done during past outages. We felt that such an expedited planning process would at least get things started in a better direction, although no doubt more thorough and systematic studies would still need to take place after that. For that reason, we also supported Jan Reid's proposal, as discussed below.

Edison's testimony sneered at WEM's proposal for a planning process for replacing nuclear power, as if WEM was somehow being irresponsible by suggesting that such a thing were even possible, much less that it could ever be necessary. Edison's brief quoted its testimony, estimating that the process of identifying and building replacement resources for San Onofre would take a minimum of 7-10 years. It sanctimoniously listed all the things that should be thoroughly studied *before* shutting down its nuclear plant, stressing how important it is to the grid:

> As SCE notes in Exhibit 209, there are many important analyses that *should be completed prior to shutdown of SONGS 2 & 3* which is the largest generating plant in southern California and is an integral part of the electric grid. SCE Opening Brief, p. 44 (emphasis added).

Edison's hysteria on this issue is unwarranted and counterproductive. And it appears to include false allegations, as we explain in the CAISO section, below.

A more appropriate response to the possibility of a nuclear shutdown at San Onofre in hot weather would have been for Edison to express willingness to participate in a process to identify more optimal replacement products, such as demand response, energy efficiency distributed generation, small renewables, and combined heat & power, many of which can be implemented in a matter of months, rather than years which are needed to site, study, and build power plants or transmission lines.

CAISO appears to disagree with Edison about inevitability of rolling blackouts

Edison claimed, "CAISO agreed" there would be blackouts if San Onofre were prematurely shut down:

> In the short run, CAISO and SCE agree that customers would have to be disconnected through implementation of controlled rolling blackouts under moderate to heavy load conditions to avoid electric grid failure. Ibid, pp. 44-45.

CAISO did not back up Edison on this point, in this proceeding — it didn't address the nuclear issues. SCE quoted a 3-21-11 memo it said it received from the CAISO, attached to an email from CAISO's CEO to SCE's CEO. However, the memo SCE quoted said nothing about rolling blackouts, rather it stated:

> ...It is expected that local capacity requirements for the LA Basin cannot be met over the heavy load months with the shutdown of both SONGS 2 & 3 units without dropping load and the availability of all existing gas-fired generation in the LA basin and San Diego. Exh. 209, p. 39 (emphasis added).

"Dropping load" can be accomplished with demand response or measures such as air conditioning cycling, and gas-fired generation is in fact available.

In the weeks since the outage began, WEM has had an opportunity to read parts of CAISO's annual 2010-11 Transmission Plan, in which the grid operator was more reassuring about the capability of the system to do without San Onofre — as we will explain below.

Edison and PG&E may be opposed to discussing the best ways to replace power from San Onofre and Diablo Canyon when the reactors aren't running — but that's all the more reason for the Commission to recognize that it is necessary and timely to do just that.

The lack of an adequate record on nuclear power in this proceeding is a good reason for the Commission to order a new proceeding or some other process that would take up these issues, *in the same way that the PD directed parties to pursue the SDG&E local capacity issues in another venue*.

In fact, the San Onofre outages and/or shutdown need to be addressed in the SDG&E local capacity proceeding because they affect that area too. That venue would not be sufficient, however, to address the local capacity issues that also arise in SCE territory, in the Los Angeles Basin. CAISO notes that these local capacity areas are connected, and affect each other, so it might be preferable to look at them together.

If the Commission also decided to look at replacement options for all nuclear facilities, because of the potential for future disruption of reliability and costs from this highly vulnerable and seriously threatening technology, it would need to address the

areas served by Diablo Canyon (and Palo Verde) as well. CAISO says that the areas served by Diablo Canyon are not resource-constrained Local Capacity Areas, like San Diego and the LA Basin, but that Diablo is "strategically located," which presumably means that it would be advisable to develop some strategy for replacement.

CAISO reveals mitigation is available for all contingencies with S.O. reactors offline

Comprehensive Transmission Plans by the Calif. Independent System Operator (CAISO) appear to disprove Edison's testimony that it would "likely" need to implement rolling blackouts if its reactors were proactively shut down, as WEM recommended in the LTPP.

CAISO stated unequivocably that, *even with both San Onofre reactors out of service,* the system could survive hot summers without blackouts until at least 2015:

> The study results from various studies show that there are no thermal overloads, voltage or stability concerns related to the SONGS units under normal or emergency conditions. Following plots for two of the most severe contingencies and for a sudden loss of load demonstrate that there are no stability concerns related to SONGS units.[6]

CAISO reviewed summer peak conditions in 2011 and 2015 in the LA Basin, with one or both San Onofre reactors out of service and other contingencies as well. Similar studies in San Diego came to the same conclusion. Ibid, p. 195. (LA and San Diego load pockets are connected and CAISO often considers them together.[7])

CAISO warned, however, that problems would begin to occur between 2015 and 2020 because transmission lines serving these areas would be full of new renewable energy coming in from large solar and wind projects in the eastern CA deserts that are expected to be built to meet the 33% Renewable Portfolio Standard (RPS). Since these resources would be intermittent, there might also be a need for firm power to back them up, but there might not be enough grid capacity in the LA Basin to import more power.

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[6] *CAISO 2010-11 Transmission Plan,* Approved by ISO Board of Governors May 18, 2011, p. 155. http://www.caiso.com/Documents/Board-approvedISO2010-2011TransmissionPlan.pdf

[7] The ISO proposes to maintain the minimum generation dispatch inside the Western LA Basin to mitigate the 230 kV line overloads, as well as the voltage instability under the outage of two SONGS units. It should be noted that San Diego generation also helps to reduce east to west flows into the Western LA Basin and provides voltage support since the Western LA Basin and San Diego area are closely connected to each other electrically. Therefore, the mitigation for the Western LA Basin thermal loading and voltage performance considers the generation dispatch in San Diego. Ibid, p. 277.

CAISO studied this challenge and uncertainty "by creating a structure for considering a range of plausible generation development scenarios and identifying transmission elements needed to meet the state's 2020 RPS goals." Ibid, p. 13. CAISO modeled the impacts of four hypothetical future "portfolios"[8] on the LA and San Diego local pockets, and discussed what mitigations could be used to solve the potential problems:

> The study identified multiple contingency overloads on the 230 kV lines inside the LA Basin in portfolios 1, 2 and 4, all in the peak load scenarios. The study also determined that a SONGS G-2 outage [i.e. both reactors out of service] causes voltage collapse for the peak load scenarios in all the portfolios. Ibid, p. 277.

Even in this situation, however, CAISO revealed that *mitigation already exists, which could provide any necessary mitigation prior to building new transmission:*

> Increasing generation in Western LA Basin could mitigate the thermal overloads and voltage instability. In all the portfolios, the peak scenario has low generation dispatched in Western LA Basin. Dispatching peakers and other small generators and potential repower generators of the OTC units in both Western LA Basin and San Diego areas could mitigate all concerns. There is no transmission capital cost for the proposed mitigation. [OTC= Once-through-Cooling"] Ibid, p. 278.

CAISO explained that *its model assumed* that the existing generators in LA and San Diego were not activated because, currently, they have "relatively high operational costs." However, they are nevertheless available in an emergency. In addition, these generators are likely to be repowered, which would lower those costs and reduce pollution impacts:

> Inside this load pocket [the Western LA Basin] there are four OTC power plants that total 4,770 MW capacity [OTC=Once Through Cooling[9]] and the San Onofre nuclear power plant with 2,250 MW capacity. … Although the 33% RPS transmission planning studies did not have particular assumptions about OTC

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[8] The four "Renewable Portfolios" are described in CAISO's Transmission Plan as follows:
5.1.1 Portfolio 1 — High Transmission Utilization Scenario (p. 241)
5.1.2 High Out-of-State Scenario – Portfolio 2 (p. 243)
5.1.3 High Distributed Generation Scenario – Portfolio 3 (p. 245)
5.1.4 Hybrid Portfolio – Portfolio 4 (p. 248)

[9] Power plants with "Once-Through-Cooling" (OTC) are required to shut down or undergo retrofits by 2021, by order of the State Water Resources Control Board (SWRCB). Nuclear powerplants are OTC and were included in the order, although the SWRCB agreed to consider alternatives, which are currently being studied.

> retirements, the OTC units were assumed not to be dispatched because of their relatively high operational costs. However, as discussed above, it is expected that much of the OTC generation will be repowered because of the need for controllable generation. Ibid, p. 274.

CAISO's preferred mitigation approach for solving issues in the LA area, through 2020, would utilize the existing generators (but would not include the nuclear plant):

> The ISO proposes to maintain the minimum generation dispatch inside the Western LA Basin to mitigate the 230 kV line overloads, as well as the voltage instability under the outage of two SONGS units." Ibid, p. 276.

CAISO noted that the "relatively high operational costs" of these units are less expensive than the mitigation alternative that CAISO considered, which involved building new transmission.[10]

One question remains about the Loading Order

This Proposed Decision mentioned the loading order just once, noting, "We reiterated our commitment to the loading order in this proceeding in D.12-01-033." PD, p. 41. And indeed, that decision stated, "All utility procurement must be consistent with the Commission's established loading order." D1201033, p. 17. It added, "[W]e expressly endorse the general concept that the utility obligation to follow the loading order is ongoing." Ibid, p. 20. It elaborated further:

> It appears necessary to reiterate here the centrality of the loading order, and to direct the utilities to procure all of their generation resources in the sequence set out in the loading order. While hitting a target for energy efficiency or demand response may satisfy other obligations of the utility, that does not constitute a ceiling on those resources for purposes of procurement… the utilities should still procure additional energy efficiency and demand response resources to the extent they are feasibly available and cost effective. If the utilities can reasonably procure additional energy efficiency and demand response resources, they should do so. This approach also continues for each step down the loading order, including renewable and distributed generation." Ibid, p. 21-22.

One thing remains to be clarified, and it is a key issue: does the loading order apply to short and medium-term purchases? The utilities disputed this during the proceeding, so it's important for the Commission to address it.

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[10] [Mitigation] Alternative 1: New Mira Loma–Lighthipe 500kV line and dynamic reactive support at Santiago, Eagle Rock, Encina and South Bay (500 MVAr at each location). Ibid, p. 276.

What, if anything, has been done to analyze alternatives to nuclear power?

In recent weeks, WEM has also had a chance to review PG&E's analysis of replacement options in its relicensing application, which apparently was the (unidentified) source of some of its claims in this proceeding. While there was no opportunity to vet either the CAISO's transmission plan or PG&E's relicensing application in 2011, due to the fast timeline in this proceeding, WEM offers some of this information here, to better inform the Commission's consideration of WEM's recommendations and the urgency of identifying replacement resources for San Onofre, as well as Diablo Canyon.

Both the CA Energy Commission (CEC) and CA Public Utilities Commission (CPUC) informed utilities in 2009 that they should identify replacement resources for nuclear outages, which was one of the elements required by AB 1632,[11] a bill that passed three years earlier in 2006.[12]

The recently published CEC's 2011 Integrated Energy Policy Report (final) noted that these assessments were still incomplete. 2011 IEPR, p. [13]195.

Is there already sufficient generation to replace Diablo Canyon?

CAISO has no "Local Capacity Requirement" for the area around Diablo Canyon. This means that sufficient generation could be imported on already existing transmission lines to serve that area. It might also be possible to serve other regions without additional replacement resources, since California has a vast glut of power through 2020 and beyond. For the Fresno and Bakersfield areas, energy efficiency, demand response and solar to reduce the highest summer peaks might well be sufficient to fulfill local needs. But you would never learn this from PG&E, which tells a very different story about replacement resources in its Application for license renewal. PG&E follows the NRC's guidelines, which among other strange things, lacks a requirement to show a need for power.

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[11] Blakeslee, Chapter 722, Statutes of 2006.

[12] In letters to SCE and PG&E in June 2009, the CPUC emphasized that the utilities must address in their feasibility assessments all the issues raised in the *AB 1632 Report*. "The CPUC specifically directed the utilities to undertake [seven] activities [including] Quantify the reliability, economic, and environmental impacts of replacement power options." 2009 IEPR, p. 114.

[13] 2011 INTEGRATED ENERGY POLICY REPORT (IEPR), final report published FEBRUARY 2012; CEC-100-2011-001-CMF, p. 195.

PG&E's analysis of replacement options made a mockery of CA standards[14]

PG&E application to the CPUC for ratepayer funding for its federal relicensing process *claimed* that it had considered a variety of alternatives to replace Diablo Canyon:

> PG&E stated:
>
> …PG&E performed an environmental assessment and prepared an environmental report addressing the extended period of operations, including a review of the environmental impact of alternative generation resources and a severe accident mitigation analysis. …PG&E also performed a cost effectiveness analysis to determine whether it makes economic sense to continue operating Diablo Canyon or to replace the energy and capacity provided by Diablo Canyon with alternative resources. PG&E Application [for license renewal] 1-29-10, p. 2 (A1001022).

PG&E's discussion of alternatives in its application failed to immediately reveal that it *rejected all but one alternative, on laughable grounds*. This information is buried three layers down, in PG&E's "Environmental Report" underlying the "License Review Feasibility Study," attached to the Application to CPUC. *The Application made it sound like the company had considered a variety of resources:*

> PG&E analyzed replacing DCPP energy and capacity with: new gas-fired combined cycle plants, energy efficiency programs, renewable generation, and coalfueled integrated gasification combined cycle plants with carbon capture and sequestration. In order to avoid debate about the most likely cost of new generation alternatives, PG&E relied on public data from sources including the CEC's cost estimates of new generation technologies and the CPUC's 33% Renewable Portfolio Standard Calculator. Ibid, p. 11.

In its Testimony, Vol. 1, which elaborated on the Application, PG&E gave a cursory analysis of the costs of the limited group of "alternatives" listed above (which excluded clean and cost-effective resources including demand response, combined heat & power, storage technologies, as well as solar and other DG on the customer side of the meter).

PG&E assumes that each resource must be new, must be additional to what currently exists, and must replace the entire output of the nuclear plant (which complies with NRC regulations but not California's, as discussed below). The analysis failed to

[14] Edison has yet to file a relicensing application for San Onofre or a feasibility assessment ofreplacement power options, though it may be working o n something similar to PG&E's.

acknowledge the enormous surplus CPUC projected in PG&E territory through 2020 — 55% excess resources, which is 30% more than needed for the planning reserve margin.[15]

Most importantly, the analysis fails to discuss appropriate utilization of diverse resources to improve reliability and minimize costs. For example, targeting EE, demand response and solar to shave off the excessive peakiness of California's load shape; using demand resources and distributed generation to reduce the need for new generation or transmission/ distribution in resource-constrained areas; or deploying hydro, firm renewables like geothermal and biogas, or storage technologies to fill in for intermittent renewables.

From its distorted, and downright belligerent review of alternatives we are left with the impression that PG&E scorns all non-nuclear options; that perhaps it has failed to reconcile itself with California's moratorium on nuclear construction. With such an attitude, it is hardly surprising that instead of seriously cultivating renewables and energy efficiency, PG&E keeps falling short of the state's targets and seems determined to prove that renewables and demand resources can't be anything other than annoying distractions to the real, man's business of 24/7 power production — for which they seem convinced that nothing can match nuclear.

PG&E's "Environmental Report" an affront to the environment and common sense

PG&E's "Environmental Report" attacked the alternatives in new ways. While the Application and primary volume of testimony reviewed the supposed *costs* of a variety of resources, the environmental report had nothing about costs, but it had a long list of potential alternatives, and an even longer list of why they should not be allowed to happen.

PG&E's Feasibility Study, which formed the basis of its Application to CPUC to recover the costs of License Renewal from ratepayers, only briefly mentioned that PG&E had settled on gas-fired power plants as *the* alternative to nuclear power (following the lead of the Nuclear Regulatory Commission):

> ...NRC evaluated environmental impacts from gas-fired generation alternatives in the Generic Environmental Impact Statement (GEIS), focusing on combined-cycle plants. PG&E's defined a combined-cycle plant on the DCPP site or at

[15] See CPUC's Planning Assumptions, pp. 17-19, Attachment 1 to Feb. 10, 2011 Ruling in the Long-Term Procurement Proceeding (LTPP) (R1005006).

> another location within PG&E's service region as the preferred alternative gas-fired design. PG&E License Renewal Feasibility Study (LRFS), p. 6.[16]

In the "Environmental Report" that underlies the Feasibility Study PG&E finally explained that it had *rejected all but one of the alternatives it supposedly "considered":*

> 7.2.1 ALTERNATIVES CONSIDERED
> For purposes of this environmental report, PG&E conducted evaluations of alternative generating technologies to identify candidate technologies that would be capable of replacing the net baseload capacity of the two nuclear units at DCPP. …
> Based on these evaluations, PG&E determined that the only viable alternative generation technology to replace DCPP power is natural gas-fired generation. PG&E Environmental Report, pp. 7-2-1 – 7-2-2 (emphasis added).[17]

PG&E's Environmental Report cited NRC regulations as justification for choosing a *single resource instead of a cost-effective mix of resources:*

> "...**The report is not required to include discussion of need for power or economic costs and benefits of ... alternatives** to the proposed action except insofar as such costs and benefits are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation...."
> 10 CFR 51.53(c)(2)
> "**While many methods are available for generating electricity, and a huge number of combinations or mixes can be assimilated to meet a defined generating requirement, such expansive consideration would be too unwieldy to perform given the purposes of this analysis. Therefore, NRC has determined that a reasonable set of alternatives should be limited to analysis of single, discrete electric generation sources** and only electric generation sources that are technically feasible and commercially viable…" (NRC 1996)[18] PG&E Environmental Report, p. 7-1-1, emphasis added.[19]

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[16] Pacific Gas And Electric Company, Diablo Canyon Power Plant License Renewal, Attachment 2.1, *License Renewal Feasibility Study*, Volume II of III, dated January 29, 2009.

[17] Pacific Gas And Electric Company, Diablo Canyon Power Plant License Renewal, Attachment 6.1, *PG&E's Federal Environmental Report,* Appendix E Of Diablo Canyon Power Plant License Renewal Application, dated January 29, 2009.

[18] (NRC 1996) refers to NUREG-1437: Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Volumes 1 and 2. U. S. Nuclear Regulatory Commission.Washington, D.C. May 1996.

[19] Pacific Gas And Electric Company, Diablo Canyon Power PlantLicense Renewal Attachment 6.1: PG&E's Federal Environmental Report, Appendix E Of Diablo Canyon Power Plant License Renewal Application To The Nuclear Regulatory Commission, Volume III Of III, dated Jan. 29, 2010, posted at https://www.pge.com/regulation/DiabloLicenseRenewal/Testimony/PGE/2010/DiabloLicenseRenewal_Test_PGE_20100129-03.pdf

PG&E's version of "alternatives" in its Environmental Report may satisfy the requirements of the NRC, but it falls far short of California's statutory requirements, including those in AB 1632, AB 57, and the State's Energy Action Plan. *Planning for only a single, fossil fuel resource to replace nuclear power violates California statutes which require utilities to observe the state's "loading order" in their procurement plans — i.e., energy efficiency, demand response, distributed generation, combined heat & power and renewables before fossil fuels.*[20]

Conclusion

The utilities predicted scary consequences if their reactors are closed down, but nuclear power plants may shut themselves down at any moment, when least expected. Why should California be at risk of such disruptions? In this proceeding, PG&E and Edison grossly exaggerated the costs and time it would take to develop replacement resources for their nuclear power plants, but even if what they said were true, wouldn't that be a reason to start planning for replacement immediately, rather than ignoring the potential problems?

We are entering an era of energy diversity, where an abundance of small supply and demand-side, distributed resources, as well as large-scale renewables and storage technologies, are beginning to replace the old behemoth power plants. The transition may be difficult, but the rewards are many and worth pursuing. We are beginning to unhook from the past.

This proceeding scratched the surface of what is possible. WEM looks forward to developing more solutions in the months and years ahead. We ask the Commission to approve WEM's recommendations in this decision.

Dated: March 12, 2012

Respectfully Submitted,

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[20] The "loading order" is enshrined in the State's Energy Action Plan, and reflected in AB57

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