

May 27, 2009

California Energy Commission
Docket Office, MS-4
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DOCKET	
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DATE	<u>May 27 2009</u>
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Re: California Energy Commission (CEC) Docket No. 09-IEP-10:
Written Workshop Comments of Southern California Edison
Company (SCE) on Electric System Reliability When
Eliminating Once-Through Cooling Power Plants

To Whom It May Concern:

Southern California Edison (SCE) appreciates the opportunity to provide comments on the complex issue of mitigating the impact of once-through cooling (OTC) at California's coastal plants. SCE is committed to work with the State Water Resources Control Board (SWRCB), the CEC and any other energy agencies to develop a solution that will maintain reliable electric service within Southern California, protect marine resources, meet state requirements for integration of renewable energy, and achieve greenhouse gas reduction under AB 32.

SCE believes that (consistent with the recent Supreme Court Entergy v. Riverkeeper decision) the SWRCB should conduct a cost-benefit analysis of any proposed OTC policy to determine if the cost of the implied change to closed cycle cooling is commensurate with the value of the resources protected. Moreover, the State agencies must take a comprehensive view of not only the economic and environmental impacts but also future grid reliability when adopting any policy designed to mitigate the impact of OTC. The new policy should be feasible and designed to accomplish the State's overall policy objectives at a reasonable cost to the electricity customers. For example, physical characteristics and limitations of each site must be carefully evaluated and judged independently and the steps already taken pursuant to state regulation must be honored. Lastly, before any of the current generating units with OTC are designated to be shut down, there must be a clear, equitable pathway for new replacement generation and/or other electric grid improvements that can provide an equivalent level of reliability. SCE recommends a stakeholder group¹ collaboratively determine any new policy implementation plan.

¹ The stakeholder group should include representatives from the applicable state agencies, the utilities and plant owners.

In the South Coast Air Quality Management District (SCAQMD) the issue of new replacement generation is much more complex due to the lack of emission offsets that are needed to build new generation. In SCE's service territory, little can be decided regarding retirement of the existing OTC units and their replacement generation until this issue is resolved.

Additionally, southern California OTC units provide important capacity support to the rating of the Southern California Import Transmission (SCIT) nomogram, and any significant retirement of that capacity that supports the SCIT can result in re-ratings, changes in reliability, and changes in costs to consumers. Such changes have widespread impacts not only to California, but to associated interstate transmission paths.

It is important the CEC and other state decision-makers recognize that the integration of renewable resources poses additional challenges when considering eliminating the existing OTC plants. Renewable resources, such as solar and wind, are inherently intermittent and cannot be relied upon to maintain grid reliability in the same manner as current set of OTC units. This is especially true in light of the fact that renewable generating units have dramatically reduced load following capabilities compared to existing the OTC units. This issue becomes more readily apparent when taking into consideration the State's target to provide 20% or more of the retail energy from renewable resources. Generating units that are capable of load-following may be needed to augment the renewable generation. With the greater penetration of renewable resources that is expected to occur (e.g. 33% RPS by 2020), the system support provided by the OTC units, or their in kind replacements (in the same location with respect to the load center), will be even more critical to maintaining grid stability. Extensive study is required before any action is taken.

SCE urges the CEC to support efforts to carefully study all the implications of the elimination of OTC units. The replacement of these units creates a significant challenge for the State and particularly for the electric grid in the Los Angeles Basin. A number of study efforts are underway or are expected to be undertaken within the next eighteen months in order to refine our understanding of the implications of OTC regulations on the electric grid. SCE stands ready to support those study efforts and assist the State with this difficult issue.

SCE's responses to the CEC's questions are attached.

Should you have any questions or need additional information about these written comments or the attached responses to your questions, please contact me at 916-441-2369.

Very truly yours,

/s/Manuel Alvarez

Manuel Alvarez

Questions for the Utility Panel:

- 1. As an organization either procuring services via contract or owning some OTC facilities, what options exist for complying with the proposed mitigation policy to essentially eliminate OTC usage in the long-term?**

Answer:

First, the SWRCB should conduct a cost-benefit analysis of any proposed policy to determine if the cost of the implied change to closed cycle cooling is commensurate with the value of the resources protected. Also, the State agencies must take comprehensive environmental impacts and future grid reliability into account in adopting any policy designed to mitigate the impact of OTC. For example, the elimination of OTC may have significant impacts on fresh water, land use, and air quality in California.² Furthermore, any new policy implementation must be feasible, take into account physical characteristics and limitations of each site, and should be designed to accomplish the State's overall policy objectives at a reasonable cost to the electricity customers. The numerous policy issues the state is currently grappling with, including OTC mitigation, AB32 implementation, RPS requirements, priority reserve challenges, and CHP policies relate very closely to each other and they should be considered together with the contractual arrangements and plant ownership status when developing the State's policy preferences. These issues must be considered together, not in a piecemeal fashion.

If any of the current generating units using OTC must be eliminated, the State must have a clear, equitable pathway and a reasonable timeline for new replacement generation and/or other electric grid improvements that can provide an equivalent level of reliability. In this regard, the energy agencies must recognize that most OTC plants are not owned by the Investor-Owned Utilities (IOUs) and thus the contractual implications of any effort to reduce or eliminate OTC plants must not only be considered but efforts must be coordinated with appropriate stakeholders to ensure system reliability. As a matter of fairness, SCE cautions the energy agencies against expecting the Investor Owned Utilities (IOUs) to be the State's exclusive agents in implementing the adopted OTC mitigation policy via their procurement actions. Ideally, since the market environment is still undetermined, the State should not attempt to effectuate the necessary generation infrastructure changes without a centralized capacity market. Should the State, nevertheless, impose these requirements on the IOUs to facilitate the retirement and replacement of OTC generating units, the State

² Dry cooling reduces plant efficiency and increases GHG emissions relative to air cooling, and cooling towers also increase PM-10 emissions which is already a significant issue in the South Coast AQMD.

must ensure that all benefiting customers, and not just IOUs' bundled customers, share in the costs and benefits of such retirement and replacement of OTC generating units.

2. Have you modified your procurement practices to reduce purchases from OTC facilities in light of energy agency policies favoring retirement or repowering of aged facilities?

Answer:

SCE has not modified its procurement practices to specifically reduce purchases from OTC facilities. However, SCE's procurement practices are driven by its CPUC approved Long Term Procurement Plan (LTPP). In approving the IOUs' LTPPs, the CPUC has specified a preference for repowered units and brownfield site development when soliciting offers for new generation resources.

3. In light of the uncertain time frame in which OTC plants might still generate power in their current configuration, how far forward is your organization prepared to contract with OTC facilities?

Answer:

SCE conducts its procurement pursuant to the procurement authority granted by the CPUC in its LTPP. Currently, SCE's procurement authority without seeking CPUC pre-approval is limited to a contract term up to 59 months with a delivery date no later than one year after execution. SCE is able to sign longer-term contracts only with CPUC pre-approval.

4. For OTC facilities you own and operate, what plans have been publicly announced to reduce or eliminate OTC harm? If have not yet announced such plans, what process are you following that will lead to decisions to reduce OTC harm?

Answer:

SCE is the majority owner and operator of the San Onofre Nuclear Generating Station or "SONGS". It is the only once-through cooled plant that SCE currently owns and operates. San Diego Gas & Electric and the City of Riverside are also partial owners.

SONGS has implemented a number of steps to eliminate OTC harm pursuant to its coastal development permit issued by the California Coastal Commission (CCC). SONGS has

completed engineering and procedural upgrades totaling approximately \$200 million to minimize impingement and entrainment impacts. In addition to the engineering and procedural upgrades discussed above, SONGS is nearing completion on a number of industry-leading environmental restoration projects that collectively have fully mitigated for the marine impacts of SONGS operations.

In 1989, under the direction of the CCC, an independent Marine Review Committee (MRC) established by the CCC completed a fifteen-year, \$50 million study of the marine impacts of SONGS. For impartial oversight purposes, the study utilized a three-person independent panel reporting to the CCC to evaluate the degree and extent of SONGS' intake system on the marine environment. The CCC also tasked the MRC with evaluating and recommending whether to impose closed cycle cooling actions to mitigate those impacts or to impose alternate forms of mitigation. The MRC recommended to the CCC that closed cycle cooling was not the preferred option due to the environmental impacts associated with that option. The MRC recommended and the CCC, after extensive public hearing, approved conditions that required SONGS to review whether its engineering and technology upgrades, including a state-of-the-art marine protection system, could be improved significantly. SONGS was required to evaluate a variety of additional fish protection technology options including installation of lights, sound devices and electric current devices designed to positively affect fish behavior.³ Review showed that the existing upgrades could not be significantly improved. SONGS is also required to restore a wholly-degraded coastal wetland to offset fish losses and larval/egg entrainment losses, build an artificial kelp reef to compensate for effects of naturally turbid water on a kelp reef near the plant, and provide financial support for the Hubbs/Sea World white sea bass hatchery in Carlsbad. SONGS has completed or is nearing completion on all these environmental restoration requirements under continuing regulation by the CCC. These measures include:

- The \$87 million, 150-acre San Dieguito Wetlands engineering and restoration project near the Del Mar fairgrounds in San Diego County;
- The \$5 million Hubbs White Sea Bass Hatchery in Carlsbad, Ca.; and,
- The \$40 million Wheeler North Reef project. Wheeler North is the award-winning, nation's largest artificial giant kelp reef located off of the coast of San Clemente, CA.

In its decision governing SONGS, the CCC [Coastal Development Permit 6-81-330-A (formerly 183-73)] found that these projects, in totality, fully compensate with a substantial

³ The state-of-the-art system includes an intake baffle system, an offshore, mid-water intake with a velocity cap, and a fish return system that allows for the safe return of fish, crustaceans, and marine mammals back to the ocean.

margin of safety, for all of the marine impacts of SONGS.

5. What transmission system improvements might allow existing OTC facilities to be retired and replaced with remote capacity that avoids coastal communities and the permitting complexities of new infrastructure in highly urbanized areas?

Answer:

There are various types of transmission system modifications or enhancements that might allow some retirement of existing plants and still meet the applicable reliability and operational requirements, SCE has not conducted a comprehensive transmission system improvement study and hence is not able to respond to this question with any specificity. SCE suggests that the energy agencies under the leadership of the CAISO, in conjunction with the IOU annual planning or similar process, conduct a comprehensive transmission system study to identify transmission system modifications or enhancements SCE cautions that the transmission studies are highly dependent on the assumptions used for the analysis and there is not a single specific “fix” or modification that will work for all the possible resource and transmission expansion that might occur in the future. Any major changes to the plants or transmission systems must be coordinated and performed in an orderly fashion to preserve and maintain system reliability. Units cannot be temporarily taken out of service without identifying if the reduced load availability will still meet forecast demand requirements. Any comprehensive transmission study must evaluate numerous factors, including, but not limited to, the following:

Load considerations

- Load growth including future load shapes
- New electric loads (cars, shipping ports, fork lifts, trains, etc.)
- Distributed generation effects

New resource considerations

- New renewable resources
 - o Types
 - o Locations
 - o Timing
 - o Generation profiles and/or storage requirements
 - o Operating characteristics
 - o Inertia values
- New fossil resources needed for operational and reliability purposes
 - o Type (peakers, intermediate)
 - o Locations
 - o Timing

- Operating characteristics

Transmission considerations

- Expected non-renewable grid expansion
 - In California
 - In the WECC
 - Timing
- Expected new renewable connections
 - Renewable Energy Transmission Initiative analysis
 - Other analyses
- LGIA requests
 - Types of generation
 - Locations
 - Timing

Municipal Considerations

- Renewable plans
- New fossil plans

Federal considerations

- Siting and licensing issues
- Greenhouse Gas issues
- NERC grid reliability issues

State Regulatory considerations

- AB 32
- Timing and unit sizes
- Local considerations (availability of adequate permitting)

CAISO or Market considerations

- MRTU
- Capacity markets

Thus, there are many scenarios that must be analyzed to maximize the effectiveness of any proposed transmission grid modifications. In addition, it is quite difficult if not impossible to determine how the market will respond to future resource needs both for conventional and renewable resources. Finally, it is imperative that any resulting plan and schedule, particularly one that involves transmission mitigation, has to have flexibility built into it, as well as embrace a clear logistical understanding that the plan has to be executed in an orderly and coordinated manner to preserve system reliability and security. SCE stands ready to support the energy agencies' study efforts and assist the State with this complex task. SCE understands that the CAISO is incorporating OTC impacts in a number of its

planned and ongoing studies. SCE anticipates addressing OTC impacts in an upcoming CPUC long-term planning proceeding as well.

Moreover, recent experience reflects that transmission can easily be delayed by siting and permitting hurdles and public opposition. Thus, OTC plants should not be retired solely on the expectation that new replacement power will be available. Ruling out of OTC must be pursued in an orderly manner and coordinated with transmission upgrades/ expansion to preserve system reliability.