California ISO
Your Link to Power

California Independent
System Operator Corporation

May 20, 2008

Members of the State Water Resources Control Board
State Water Resources
Division of Water Quality
1001 I Street
Sacramento, CA 95814
Attn: Jeanine Townsend, Clerk to the Board

RE: Comment Letter – Proposed Policy to Implement Section 316(b)

Dear Members of the State Water Resources Control Board:

The California Independent System Operator Corporation ("CAISO") appreciates the opportunity to provide comments on the proposed policy ("Policy") of the California State Water Resources Control Board ("Board") to implement Section 316(b) of the Clean Water Act, 33 U.S.C. § 1326(b), as reflected in the scoping document, "Water Qualify Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling." The CAISO will focus on the need for implementing the Policy in a manner that ensures the continued reliability of electric service in California.

The CAISO's Grid Reliability Mandate

The CAISO is a non-profit public benefit corporation created by the state legislature in 1998 as part of the restructuring of California's electricity industry. Cal. Pub. Util. Code §§ 330-345. The CAISO has the statutory responsibility for short-term and long-term reliability of the electricity grid. Cal. Pub. Util. Code § 334. Specifically, the CAISO is responsible for ensuring "efficient use and reliable operation of the transmission grid consistent with achievement of *planning* and *operating* reserve criteria no less stringent that those established by the Western Electricity Coordinating Council ["WECC"] and the North American Electric Reliability Council ["NERC"]." Cal. Pub. Util. Code § 345 (emphasis added). These two responsibilities mean that the CAISO must ensure reliable *operations* on a day to day basis and for the near term, *i.e.*, today, this week, next summer and next year, and must also *plan* for the future reliability needs of the grid, *i.e.*, over the next ten year time horizon.

The CAISO is also an "independent system operator" within the meaning of the Federal Power Act and subject to the jurisdiction of the Federal Energy Regulatory Commission ("FERC"). 16 U.S.C. § 796(28). As an independent

system operator, the CAISO provides open, nondiscriminatory access to the transmission grid owned by its Participating Transmission Owners. In this role, the CAISO manages over 25,000 circuit miles of transmission and oversees dispatch of 1400 generating units within the state. These responsibilities uniquely qualify the CAISO to evaluate California's near term and long term local and system reliability needs.

In addition, the CAISO is also the Balancing Authority responsible for ensuring reliable electric service for the majority of California under WECC and NERC standards. Violation of these standards would not only threaten state-wide and local reliability, but would potentially subject the CAISO to penalties up to $1,000,000 per day per violation pursuant to Sections 215 and 316A of the Federal Power Act. 16 U.S.C. §§ 824n, 825o-1 (as amended by the Energy Policy Act of 2005),

Impact of the Policy on Electric Reliability

In conjunction with the California Ocean Protection Council and ICF Jones and Stokes, the Board recently issued a report entitled "Electric Reliability Impacts from Regulation of Once-Through Cooling in California" ("Board Report"). The Board Report recognizes the possibility, which it considers unlikely, that many or all of the existing plants using once-through cooling ("OTC") may choose to retire if the Policy is implemented as proposed. It concludes that if all plants retired in 2009, a wartime-like mobilization would be necessary to construct replacement generation in time to avoid a major impact on electric reliability; it finds construction of such generation within five years (i.e. by 2012) less problematic. The Board Report also acknowledges that such a crash-construction scenario would only be possible with generating units that are not an efficient means for serving California consumers in the long run. The Board Report nonetheless concludes that such investments are not necessary, because adverse impacts on reliability from such retirements could be avoided by a series of relatively minor transmission upgrades.[1]

Although it agrees with the conclusion of the Board Report that, generally, retirements, repowering and/or retrofitting of OTC power plants can be accommodated through proper planning and staging or phasing of implementation, the CAISO believes that the conclusions of the Board Report are unrealistically optimistic in two respects. First, OTC resources have important local and zonal reliability benefits that cannot realistically be satisfied with transmission upgrades alone. Accordingly, the CAISO believes that it will not be possible to retire all OTC generation without replacing or repowering at least some of it. In fact, integration of relatively remote renewable resources may require even more local generation than is currently in place today. Second, even assuming all OTC resources can be retired and replaced with transmission

[1] Board Report at 47-48.

upgrades, the CAISO strongly disagrees with the Board Report's conclusion that the upgrades would be relatively inexpensive and could be built within a one to three year time frame.[2] As discussed in more detail below, the CAISO has performed and is performing studies that are highly relevant and can inform the Board's shaping of the final draft Policy. The CAISO looks forward to engaging with the working group and the Board's staff in this regard.

CAISO Studies

The CAISO has been active in studying the short and long term impacts on reliability of the potential retirement of old, inefficient, natural gas fired resources, which utilize OTC technology. The CAISO's "Phase I Report on Old Thermal Generation (2008-2012)" ("CAISO OTG Report") published in February 2008,[3] more realistically examined the impact of plant retirements. The study took into account all planned generation additions and transmission additions and upgrades, and also assumed (optimistically) that these would be completed on schedule. The CAISO Report concluded, among other things, that old thermal generation, which includes the generation using once-through cooling, cannot all retire by 2012 without some repowering or replacement within the same local area. The CAISO Report illuminates the unrealistic assumptions of the Board Report.

The CAISO has also published a draft report focusing on San Francisco area needs. This report, "Greater San Francisco Bay Area Long-Term Transmissions Planning Study" studies the transmission upgrades that may be necessary in the event of various plant retirement scenarios. This study was published on February 12, 2008.[4] The CAISO is currently conducting a similar study for Southern California.

In addition, the CAISO published its "Integration of Renewable Resources" report in November 2007.[5] This report identifies the need for additional Ancillary Services, including regulation and intra-hour load following, to meet the state's 20% Renewables Portfolio Standard ("RPS") requirement. The CAISO is also engaged in further study to evaluate its existing generation fleet to identify the flexibility and controllability attributes expected from the conventional generators, including cycling, redispatch and ramping capability. This evaluation would

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2 Board Report at 4.

3 The CAISO OTG Report is located at the following link: http://www.caiso.com/1f80/1f80a4a5568f0.pdf.

4 The "Greater San Francisco Bay Area Long-Term Transmissions Planning Study" is located at the following link: http://www.caiso.com/1f6b/1f6bc53d2dfd0.pdf.

5 The "Integrating Renewable Resources" report is located at the following link: http://www.caiso.com/1ca5/1ca5a7a026270.pdf.

determine the speed of delivery of energy required to provide regulation, load following and ramping needs to meet the 20% RPS requirements.

While the CAISO continues to study renewables integration, it is also gathering vital information from owners of OTC and OTG resources concerning their preliminary plans for retirement, repowering and/or retrofitting their power plants. This information will form the basis of an additional study to determine what system supply requirements and transmission upgrades would be required in the absence of an OTC and/or OTG resource or whether new local generation or a combination of new local generation and transmission upgrades would be required.

Finally, the CAISO performs studies to support the CPUC's Resource Adequacy ("RA") program. These studies include annual Local Capacity Requirements analysis, to determine which resources are needed for local reliability,[6] and the annual allocation of Resource Adequacy import levels.[7]

Timelines and Cost Considerations

The CAISO OTG Report, which did not factor in the integration of renewable resources, indicates that a number of units could retire if all planned generation and transmission additions and upgrades are in place by 2012, but that such planned improvements would not permit the retirement of all old thermal units in the Greater Bay Area or the Greater LA Basin. Additional system requirements technology, generation or transmission improvements will be required, and the Board Report does not adequately account for the time necessary to plan, obtain regulatory approvals, and complete construction of such additions and upgrades nor does it account for the scheduling and phasing of projects that would be required to maintain reliability throughout the compliance period. Two specific examples of the planning and staging required to remove the Reliability Must Run ("RMR")[8] status of a particular power plant are illustrative.

Preparation for the San Francisco Action Plan for removing the RMR status from the Hunters Point and Potrero power plants started well before the CAISO Board of Governors approved it in November 2004. As approved, the plan required that numerous transmission upgrades and new generation be sited within the San Francisco local area before the RMR designations could be removed. Based on

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[6] The "2009 Local Capacity Technical Analysis," which was published on May 1, 2008, is available at the following link: http://www.caiso.com/1fba/1fbace9b2d170.pdf.

[7] The CAISO is in the process of conducting the 2009 import allocation. The 2008 import allocation material is available at the following link: http://www.caiso.com/1c44/1c44b2dd750.html.

[8] Resources designated by the CAISO as RMR units are necessary for local reliability.

the projected completion of the projects, the RMR designations were to be removed by December 2007. Although the RMR designations for Hunters Point have been removed and the plant has since retired, Potrero 3 continues to operate pursuant to RMR contracts because the time table for new generation to be on-line has been extended to 2010.[9] Current San Francisco Board of Supervisor deliberations suggest that replacement generation sufficient to remove RMR status from Potrero 3 may never be built, in which case Potrero 3 may remain on RMR status well beyond the 2010 time frame.

San Diego is another area with significant local reliability needs that must be met with a combination of local generation and extensive transmission upgrades before OTC generation can be retired. For example, the South Bay Power Plant ("SBPP") is critical for local reliability and has been under an RMR contract since CAISO 1998. There has been enormous public pressure to retire this plant rather than repower it as the prior operator had planned (and which the Board Study assumed[10]). The CAISO has studied the consequences of removing SBPP from RMR status and has concluded that RMR status is necessary until two of the following infrastructure additions are operational: (1) completion of the Sunrise Powerlink Transmission project, a $ 1.55 billion project still under review by the California Public Utilities Commission; (2) construction of the Otay Mesa Energy Center (650 MW plant currently under construction); and (3) new local generation resources, plus additional upgrades.[11] Even if all milestones are met as currently proposed, the earliest that SBPP could be removed from RMR status is mid-2011, based on the earliest in-service date for Sunrise.

It is noteworthy that the Sunrise was presented to the CAISO by San Diego Gas & Electric Company ("SDG&E") in 2005 and approved by the CAISO Board in July 2006. SDG&E then filed for approval with the CPUC in August 2006. This process has already stretched over three years not counting SDG&E's planning efforts prior to submission to the CAISO. After CPUC approval, construction will require an additional three years. In total, completion of Sunrise will have taken six years, even if there are no additional delays or other changes in circumstances.

These two examples indicate what work activities and time are required when only a single plant needed for local reliability is targeted for retirement. The need to simultaneously address potential retirements, repowerings and/or retrofits of all OTC and OTG resources enormously complicates the analysis. Including the state's RPS requirements and greenhouse gas reduction (GHG) goals complicates the analysis even further.

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9 The update on the revised San Francisco Action Plan is located at the following link: http://www.caiso.com/1c44/1c44b2dd750.html.

10 The Board Study assumed that the South Bay Power Plant would be repowered and, therefore, did not study the reliability impact of the retirement of this plant.

11 CAISO OTG Report at 37.

Other Local Needs

With regard to Local Reliability Areas, the Board Report focuses almost exclusively on the need to bring energy from outside the local areas to displace potential retirements. It appears to assume that local reliability needs are driven solely by the inability of the existing transmission infrastructure to import all of the power that is needed to serve the load in those areas. It might appear logical that if more transmission were added, then local generation needs are necessarily reduced or even eliminated. This conclusion, however, is based on a faulty premise that generation and transmission are essentially equivalent. Local generation provides certain benefits to the interconnected electrical system that transmission, in and of itself, cannot provide. Common examples are voltage support and stabling system dynamics among others.

The CAISO is concerned that the Board Report fails to clearly explain that the overall local reliability requirements of the system have not changed. These needs have traditionally been met through RMR contracts. It is important to recognize that the recent reduction in the number of RMR contracts between the CAISO and generation owners does not imply a reduction in local reliability needs. With California's implementation of RA, many of these RMR resources are now being under RA contracts with load serving entities', *i.e.,* many of the RMR contracts have been migrated to RA contracts which provide for the local reliability needs. In reality, the overall local reliability requirements for 2009 are actually greater than in 2008.[12] .[13] Local reliability needs are now met through a combination of RMR and RA resources and but for the RA program, would be under an RMR contract.

Due to the requirement that RA capacity be "deliverable," the amount of RA capacity that can come from imports is limited. Any increase in the import capability would require substantial transmission upgrades on systems outside the CAISO Balancing Authority Area. The Board Report's conclusion that imports can displace in-state generation is simply not supported by the CAISO's analysis.

Zonal and System Needs

The Board Report is concerned almost exclusively with local reliability needs. Although the CAISO OTG Report concluded that most local reliability needs could be met if specific generation additions and transmission upgrades were completed on schedule, it also concluded that these additions and upgrades

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[12] The "2009 Local Capacity Technical Analysis" at 21-22.

[13] Over the years, transmission upgrades have eliminated the need for some RMR contracts at least for certain years.

would not be sufficient to satisfy system zonal and system-wide reliability needs. The CAISO OTG Report included the results of a Supply Adequacy Model analysis to determine the expected amount of capacity that could be taken off-line during the 2012 summer season without exceeding a five percent and a ten percent probability of a Stage-3 Emergency, which is called during dire circumstances and requires the shedding of firm load to meet reliability requirements. The capacity that could be offline was calculated for two benchmark base cases; a case used by WECC and a Conservative Case. In the not-to-exceed five percent case, 2,600 MW could be off-line for summer 2012 in the WECC Case, and 460 MW would need to added and no capacity could be retired in the Conservative Case. In the not-to-exceed ten percent case, 5,455 MW could be off-line for summer 2012 in the WECC Case, and 2,300 MW could be off-line in the Conservative Case.[14] In contrast, the Board Report contemplates the potential retirement of over 10,000 MW in 2009.[15]

The potential shortfall is even more acute with regard to zonal reliability needs. Due to transmission constraints on Path 26, a significant 500kV interconnection between northern and southern California, the CAISO's interconnected grid is electrically separated into two zones; one north of Path 26 (NP26) and the other south of Path 26 (SP26). This significance of Path 26 is straightforward; it limits the amount of power that can be transferred between Northern California and southern California. This means that each zone must have sufficient capacity to meet its needs on a stand-alone basis when Path 26 is at its limit. In Zone SP 26, for the not-to-exceed five percent case, 1,500 MW could be off-line for summer 2012 in the WECC Case, and, in the Conservative Case, 685 MW would need to added and no capacity could be retired. For the ten percent case, 2,315 MW could be off-line for summer 2012 in the WECC Case and only 125 MW could be off-line in the Conservative Case.[16] These figures are well below the potential minimum retirements and do not reflect normal forced outages and planned outages that also require planning and sequencing. Moreover, even with repowerings, plants might be offline for significant amounts of time. Resolving these constraints will require additional study and require major, expensive, and time-consuming transmission additions and upgrades.

Need for Units with Low Capacity Factors

The Board Report focuses on the fact that many OTC generating units have low-capacity factors – *i.e.,* are only used for a small portion of their capacity – and appears to assume incorrectly that such are not needed as much as high capacity factor resources. The low capacity factors of older resources cannot be

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14 CAISO Report at 15-16.

15 Board Report at 43.

16 *Id.* at 18.

equated to their relative importance to the reliability of the interconnected grid. Much of the OTC generation is decades old and the existing transmission system was designed around the presence of these resources. While the CAISO's planning has helped minimize the need for these older OTC resources, they are, still required to be on-line during some periods of time.

No only do low capacity factor units fulfill the local needs described above, but they serve an important broader reliability function. WECC reliability standards require a specified amount of Contingency Reserves (Ancillary Services) that must be available during unforeseen events that do occur from time to time. Those reserves can only be supplied by unloaded capacity, that is, capacity that is not being used for generation. Low capacity factor units often provide this unloaded capacity during periods of time when California loads are high and the immediate requirements may reach or exceed available resources. Reserves are also required to address normal forced and planned outages. Moreover, Contingency Reserve capacity is more difficult to obtain from out-of-state resources, because the providing Balancing Authority must increase its own reserves by any amount it is providing to another Balancing Authority Area so that they can meet their own reserve obligations to WECC.[17]

Finally, in peak conditions and localized emergencies, such as the 2007 San Diego fires), even low capacity factor units will run at full capacity to meet system needs. In short, some low capacity factor resources may be more valuable from a reliability perspective that other resources run at higher capacity factors. The absence of these units would increase in localized blackouts, or load shedding.

Integration of Renewable Resources

The "Integration of Renewable Resources" study demonstrated that units with low capacity factors that are capable of providing ramping, load following, and regulation services, are also crucial to the reliable integration of intermittent renewable generation.

The increasing penetration of renewable resources can significantly affect unit commitment and generation dispatch decisions, in particular during the off-peak hours and prior to the start of the morning ramp. Since the renewable resources produce must-take variable energy, their increasing presence in the CAISO system could pose additional requirements in terms of cycling, redispatch, ramping capability and operating reserves to the rest of the generation fleet as flexible gas-fired resources must be ramped up and down according to the variable and intermittent production of renewable power. Some of the OTC units that are at risk for retirement are those expected to provide the services required to maintain reliable operation in order to accommodate wind power.

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17 WECC Standard BAL-002-WECC-1 Contingency Reserves (not yet approved by FERC).

Based on these concerns, it is critical that the CAISO have the necessary resources to ensure safe and reliable integration of wind power. A policy that caused such units to go off line or to reduce operations could make meeting the State's 20% RPS goal more difficult than the CAISO's earlier study predictions. In addition, replacing power from in-state nuclear facilities could compromise the State's ability to meet its GHG requirements.

Recommendations

The state of Federal regulation of OTC systems remains in flux, in light of an appellate decision overturning EPA's regulations and the grant of certiorari by the U.S. Supreme Court, *Riverkeeper, Inc. v. EPA*, 475 F.3d 83 (2d Cir. 2007), *cert. granted*, __ U.S. __ (April 14, 2008). Nonetheless, it is likely that the Federal regulations will allow the states to make case-by-case determinations. As the Court of Appeals noted, "EPA may consider cost as a factor to a limited degree . . . as to whether the cost of a given technology could be reasonably borne by the industry and not the relation between that technology's cost and the benefits it achieves." *Id.* at 98 (relying on *Riverkeeper, Inc. v. EPA*, 358 F.3d 174 (2d Cir. 2004). ("*Riverkeeper I*"). . Moreover, until the EPA issues final regulations – which is likely to more than a year – the state is free to continue to use its best judgment in determining case-by-case compliance requirements. Accordingly, the CAISO offers the following recommendations.

- Given the complexities of the electric grid and in light of other policy objectives that are in the interest of the State of California, particularly integration of renewables and GHG reduction objectives, the CAISO believes that a case-by-case compliance approach would allow the greatest flexibility to the State of California and the Board in addressing both the Board's desire to move away from OTC and the CAISO's obligation to maintain a reliable interconnected grid.

- In light of the Board's desire to move towards developing a final Policy, the CAISO believes that the Board must consider the enormous cost to the industry of maintaining reliability These considerations argue strongly for an implementation schedule that realistically accounts for the lead time necessary to develop and construct the necessary replacement generation and transmission upgrades.

- Specifically, the CAISO recommends that the working group that has recently been formed, continue to engage with Board staff on how staging and phasing of implementation will be handled so that the Board's final Policy can accommodate the Board's goals while maintaining grid reliability. After the Task Force is created, the Task Force should have the authority and the flexibility to determine the timing and sequencing of

events while honoring generator preferences to the extent possible and to revise and amend the timing and sequencing as may be needed.

- The CAISO also recommends eliminating any distinction between low capacity and higher capacity generating units in terms of deadlines for compliance to be replaced by thorough technical analysis that will help the Board staff better understand the importance of these resources. The CAISO believes that once the importance of these resources has been demonstrated, the working group and/or Task Force can help shape or implement the Board's policies while assuring that reliability would not be hampered while these resources OTC requirements are addressed.

- In addition, the CAISO recommends that the Board's Policy expressly permit plants identified by the CAISO as needed for local reliability to continue to operate until such time as the CAISO finds the resource is no longer needed for local reliability. In cases where the owner of the plant desire to retire the plant, the CAISO recommends that the Policy be revised to exempt the plant from any obligation to retrofit or perform interim mitigation measures and be allowed to retire once it is no longer needed for local reliability even if the retirement extends beyond the deadline of compliance. As it has in the case of the San Francisco Action Plan and the studies associated with the possible retirement of the SBPP, the CAISO would identify specific generation and/or transmission upgrades that would be required for the resource to retire with the goal of including these upgrades in the implementation plan so that the resources could retire by the deadlines for compliance with the OTC Policy, assuming the needed projects are built and placed in service in time to allow for retirement.

Conclusion

The CAISO looks forward to working with the Board prior to formal adoption of the Policy with the working group and Board staff to help shape the Board's final draft policy and, after adoption of the Policy, as part of the Task Force to ensure that reliability can be maintained through the implementation process. In addition to the studies noted in these comments, the CAISO continues to work on the OTG Phase 2 study and the Integration of Renewable Resources Plan (IRPP). In addition, as noted above the CAISO is starting to collect information from owners of OTC and OTG concerning their intentions for retirement, repowering and/or retrofitting their power plants in order to produce a study that will be directly relevant to the goals of the Board. The study assumptions can be tuned and updated with information received from power plant owners as a result of the final Board Policy and course corrections along the way. Ten years of experience teaches that assumptions in the area of grid reliability including but not limited to the plans of the power plant owners will change materially along the way in response to changing circumstances.

The CAISO hopes that these comments convey that the complexities and variables involved will require course corrections along the way. The Policy itself must be flexible enough to permit such course corrections. The CAISO urges the Board to examine all aspects of reliability in determining its policies and to use its flexibility to implement state policy in a manner that does not jeopardize reliability. The CAISO stands ready to work with Board staff and the currently formed working group to help ensure the final Policy adopted by the Board is feasible. The CAISO also stands ready to work with the Task Force to implement the final Policy.

Kind regards,

/s/ Jim Detmers
Jim Detmers
Vice President Operations