

**Comments on the July 29, 2009 IEPR workshop on the replacement of OTC units
(2009 IEPR – OTC)**

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Calpine appreciates the opportunity to participate on the independent generator panel at the July 28, 2009 IEPR workshop on the replacement of Once-through Cooling (OTC) units (OTC). The following written comments expand on Calpine's oral comments at the workshop and are structured around the questions that were posed to the panel.

1. Can OTC replacement be done via the IOU's RFO process?

The current RFO process can accommodate OTC replacement but RFO protocols and valuation methodologies may need to be refined. To the extent possible, the use of the RFO process provides a mechanism for regulators to ensure that ratepayers are getting the best value for their money.

Competitive RFOs will work if the supply of resources is competitive. The supply of resources will be competitive if the universe of resources considered to replace OTC units is defined as broadly as possible potentially including both new and existing resources as well as resources in locations other than the specific locations of the OTC units. Competitive procurement through RFOs is unlikely to be feasible in the event that replacement is construed as 1-for-1 replacement of MW at the specific locations of the existing OTC units.

If the California Public Utilities Commission (CPUC) decides to pursue competitive RFOs to replace OTC units, then the locations and operating characteristics of the OTC units that are being replaced could be defined as constraints on IOU procurement in much the same way as they are currently. Replacing OTC units may require the IOUs to make much finer distinctions between units with different locations and operating characteristics than they do in their current procurements, in which the value of location and operational flexibility are not quantified precisely. Consequently, the IOUs may need to refine their RFO protocols and valuation methodologies.

2. How should an RFO be structured, what changes are needed from the current process, to facilitate competition between possible greenfield sites, building new units on existing sites, and repowers that replace cooling systems?

First, replacement requirements should be defined as generally as possible while maintaining reliability. Ideally, local reliability constraints will be just one set of constraints on the bundle of resources that an IOU procures through an RFO. The RFO will then determine the least cost mix of resources that achieves multiple objectives, including local reliability.

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Maintaining reliability may not require MW-for-MW replacement of the OTC units at the same or similar locations. For example, procurement might account for the “effectiveness” of units at a broader set of locations to resolve specific operating problems in much the same way that individual resources’ shift factors with respect to specific transmission constraints are reflected in LMPs under MRTU.¹ Similarly, replacement units may provide different bundles of energy, capacity, and ancillary services than the existing OTC units.

Second, comparing resources with subtly different locational and operating characteristics, as will be necessary to ensure that procurement is consistent with local reliability, may require more refined analytic tools than those currently used in IOU RFOs. In the absence of clear price signals from locational capacity, energy, and other markets, the premiums that IOUs currently assign to resources in existing local areas are inherently subjective. The determinations of locational premium in future procurements in which locational requirements are likely to be increasingly granular should be as objective and transparent as possible. Similarly, the valuation of operating characteristics, especially those that are not currently priced transparently, such as voltage support and inertia, also will require refinement.

Third, current RFOs focus on the procurement of new units, including repowers, new units on existing sites, and new units on greenfield sites. RFOs are likely to produce the most efficient solutions to reliability problems associated with the retirements of OTC units if they consider all types of new resources as well as existing resources, including modifications to the cooling systems of OTC units as well as other existing electrically proximate non-OTC units.

3. How should RFO products be targeted to a particular location/product type?

See our answer to question 2.

4. Do the current markets provide adequate incentives to design plants to provide ancillary services (e.g. regulation, etc) to integrate renewables into the system?

No. Current short-term energy and ancillary services markets provide inadequate incentives to build any type of new resource or to provide the full operating flexibility of existing resources to the system operator.

The CPUC and CAISO should consider modifications to markets which encourage new and existing generators to supply operating flexibility. Such changes might include more accurate generation modeling, reducing or eliminating imbalance penalties, relaxing bid and price caps, increased scarcity pricing, additional ancillary services markets, and forward markets for ancillary services such as those recently introduced in New England.

¹ A similar idea was proposed in the process of implementing the CPUC’s Local Resource Adequacy program. For example, see the discussion in section 3.3.7.4 of D.06-06-064 (http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/57644.doc).

The CPUC and the CAISO should not underestimate the operating flexibility of existing assets. Many existing units may have or, with moderate investment, could have greater physical flexibility than they currently make available to the CAISO. Appropriate compensation would encourage suppliers to make this latent flexibility available to system operators.

5. What length of contract would be optimal?

In the current financial and policy environment, long-term contracts are necessary to elicit new investment or to make significant capital investments in existing units. The optimal contract length depends on the broader procurement framework. In general, longer terms are needed to encourage new build in an environment in which investors believe that regulatory conditions and market rules are likely to change and/or short-term energy, ancillary services, and capacity markets may not allow capital cost recovery, i.e. an environment with an adverse “merchant tail.” To the extent that investors in generation cannot expect to recover capital costs from new contracts or short-term markets after their initial PPAs expire, they will seek to recover a very high fraction of their capital costs through their initial PPAs. Mathematically, this implies that shorter terms will lead to higher annual prices.

The CPUC should strive towards a balanced procurement framework in which compensatory short-term energy, ancillary services, and capacity markets and/or the ability to earn capital cost recovery through new PPAs once their initial PPAs expire allow investors in new generation to recover less than the full capital costs of new generation over the course of their initial PPAs. Such a structure would facilitate a more even allocation of risk between generation investors and consumers.

Under the current framework, consumers commit to pay the full capital costs of long-lived assets, regardless of changes in market conditions over the lives of the assets. Efficient risk sharing might allow consumers to benefit from future declines in generating costs. For example, solar PV may become significantly cheaper than it is today. Consumers may not be able to reap those savings if they are committed to make payments pursuant to very long-term PPAs.

In the absence of changes in market rules and procurement policy that mitigate the adverse “merchant tail,” however, long-term contracts will continue to be necessary to induce new investment.

Regardless of the term that is chosen, RFO bids and utility ownership options must be ranked on a comparable basis. Proposed PPAs and ownership options of different terms cannot be compared without a methodology that explicitly recognizes their different risk profiles. For example, the manner in which PG&E compares the levelized net market values of different bids in its solicitations does not account for the different risk profiles of bids of different terms.² In the absence of a methodology that reflects the risk profiles

² Details of this valuation methodology are described in section B.1.a of chapter 3 of the

of commitments of different terms, only projects of equivalent term should be compared directly, e.g., if life-of-asset ownership is being considered, then it should be compared directly only to life-of-asset PPAs.

6. How would a repowering via AB 1576 be conducted/approved/completed?

AB 1576 mandates cost-of-service, so it is unclear how or whether competitive procurement of AB 1576 projects would work. Moreover, there are relatively few sites at which projects that meet AB 1576 requirements could be developed and their ownership is highly concentrated, so even if cost-of-service were not mandated, competitive procurement might not be viable. One potential approach is the type of “open book” procurement advocated by CPV in Maryland.³ Even if cost-based bids from AB1576 projects are solicited, they still should be compared to competitive bids, when possible, to ensure that they provide good value to ratepayers.

To the extent that AB 1576 projects face fewer siting problems and require no or less expensive transmission upgrades than greenfield projects, they should be competitive in non-AB 1576-specific procurements.

7. What are the generator’s plans for the existing OTC facilities?

Calpine does not own any existing OTC facilities. Calpine’s facilities are either dry cooled, use recycled water, or use non-recycled water in recirculating cooling systems.

testimony supporting PG&E’s 2004 LTRFO application (i.e., A.06-04-012).

³ See http://www.cpv.com/pdf/Maillog%20Version%20CPV_Maryland_Motion.pdf.