

**Comments on the Comparative Costs of California Central Station Electricity
Generation, Draft Staff Report
Present and Future Central Station Renewable Plant Costs
Docket No. 09-IEP-1E**

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Calpine appreciates the efforts of the CEC Staff and its consultants to develop realistic estimates of the levelized costs of various generating technologies. Credible estimates of the costs of different generating technologies are necessary for informed policy decisions.

The methodologies and resulting estimates reflected in the Draft Staff Report reflect significant improvements over those in versions of the report from the last IEPR. In particular, the current draft goes to much greater lengths to validate the survey results on which its estimates are based against results from other markets and common sense. Further, it treats different categories of costs in ways that conform more closely to industry practice. For example, estimates of variable O&M for combustion turbines in previous versions of the report were extremely high because certain categories of costs that are typically treated as fixed were instead treated as variable and were amortized over the relatively few hours that CTs were assumed to run. As indicated in Table C-27, the estimates in the Draft Staff Report are now broadly in line with other credible estimates.

While the current version of the report reflects significant improvement from the last version, Calpine remains concerned about two aspects of the report:

First, the treatment of financing costs is imbalanced, ignores salient features of California's hybrid market, and seems to perpetuate a bias in favor of utility-owned generation (UOG). The report notes:

IOU plants are typically less expensive than merchant facilities due to lower financing costs.¹

In general, the IOU plants are less expensive than the merchant facilities because of lower financing costs.²

One explanation for this supposed cost difference is financing assumptions. As Draft Staff Report observes:

Table 18 summarizes the capital structure assumptions being used in the Model. Note that the debt to equity split is different for merchant gas-fired plants than other technology plants (renewables and alternative

¹ P. 1.

² P. 15.

technologies). The rationale is that financial institutions are likely to see power purchase agreements signed under legislative and regulatory mandates, such as the Renewables Portfolio Standard (RPS), as less risky than those signed under open market conditions.

i.e., the report assumes that conventional merchant plants would have higher financing costs because they would not be able to obtain the same PPA terms as renewable projects or the assured cost recovery through rates of utility owned generation. There are at least three problems with this set of assumptions/assertions: (i) It assumes that limits on contract term are endemic to the merchant model. In fact, PPA terms are a policy choice. For example, a PUC decision has been construed to limit PPAs for conventional generation to ten years.³ Presumably, if policy enabled merchants to obtain PPAs with terms similar to ownership/life-of-asset, merchant and IOU financing costs would be similar. (ii) It ignores the fact that low financing costs reflect buyers' ex ante commitments to pay for the majority or all of the capital costs of a project. By making such commitments, buyers give up flexibility over future procurement decisions. This loss of flexibility can be costly in an environment with rapidly changing costs, as is arguably the case right now as renewable technologies rapidly evolve. (iii) It ignores the fact that ratepayers tend to absorb cost over-runs associated with UOG while investors tend to absorb cost over-runs associated with merchant plants.

Calpine is also concerned about the claim at the workshop that the mere choice of financial modeling *methodology*, can have impacts as great as 30 percent on the levelized costs of certain generating technologies based on merchant financing assumptions.⁴ The potentially large divergences between the "cash flow" and "revenue requirements" modeling approaches suggests that either or both approaches may not have been applied appropriately. Calpine looks forward to the opportunity to review the Staff's model.

Further, the Draft Staff Report notes, "The POU plants are the least expensive because of lower financing costs and tax exemptions."⁵ Calpine notes that tax exemptions are not free and merely shift capital costs from ratepayers and developers to taxpayers.

Calpine favors a more nuanced discussion risk and financing costs in the Staff Report that acknowledges that contractual and ownership terms are policy choices, not innate characteristics of the utility-owned generation and merchant models, and that, while long-term commitments may lower costs, they also limit the flexibility of the parties who make the commitments.

Second, the report continues to offer speculative and counter-intuitive estimates of the costs of nascent gas-fired generation technologies. For example, Table 14 suggests that

³ See D. 06-07-029 (http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/58268.doc), which limits a form of cost allocation to PPAs with terms of ten years or less.

⁴ See slide 13 of Richard McCann's presentation at the August 25, 2009 workshop. (http://www.energy.ca.gov/2009_energy_policy/documents/2009-08-25_workshop/presentations/02_Richard_McCann_Aspen_Environmental_Group.PDF)

⁵ P. 15.

an “Advanced Combined Cycle,” which Appendix C indicates is a CCGT based on H-class turbines, is less expensive than a conventional CCGT on an instant cost basis. Given that virtually no CCGTs based on H-class turbines have been built, their cost is unknown. Because they embody newer technology and offer superior performance, it seems unlikely that they would be cheaper than conventional CCGTs. Similarly, Table 14 shows much lower costs for Advanced Simple Cycle combustion turbine plants, presumed to use LMS100 turbines, than for Small and Conventional Simple Cycle combustion turbine plants, presumed to use LM6000 turbines. Again, given the limited deployment of the LMS100 technology, its cost is not really known. The NYISO study cited by the CEC Staff in Table C-27 estimates approximate parity in the cost of the two technologies.⁶ Further, the NYISO study notes “...there is uncertainty over the price of LMS100 equipment. Should the manufacturer increase the LMS100 equipment price relative to the LM 6000, to capture the benefits of the lower LMS100 heat rate, this could change.”

Calpine believes that speculative estimates of generation costs should be tagged explicitly as such in the report and should not form the basis for policy conclusions. To the extent that limited data are available, the data should be compared to engineering and other estimates of cost. The Staff essentially adopted this approach in reformulating their estimates of O&M costs in this version of the report. They should apply the same approach to their estimates of capital costs.

⁶ See Table II-1 of http://www.nyiso.com/public/webdocs/committees/bic_icapwg/meeting_materials/2007-07-16/ICAPWG_Demand_Curve_Study_Report_71607_revised.pdf.