California Energy Commission

Re: Docket No. 13-IEP-1B

Clean Coalition Comments for the Workshop on the Cost of New Renewable and Fossil-Fueled Generation in California

Introduction

The Clean Coalition provides the following comments on the workshop held at the California Energy Commission (CEC) on March 7, 2013. The primary focus of these comments is the need to include distributed generation integrated with intelligent grid solutions (DG+IG) and other preferred resource non-transmission alternatives (NTA) in all discussions of the cost of generation (COG). These bring a diversity of options and high value to the table that would otherwise be overlooked. The following summarized points are further discussed below:

- DG+IG and other NTA, including demand-side solutions, should be included in any comparison of energy sources. Due to their value and priority in the loading order, they should be given equal or greater weight when considered alongside generation and transmission solutions.
- Locational value, including added or avoided costs for transmission, line losses, Transmission Access Charges (TACs), and external costs, should be fully included in CEC decision-making and analysis.
- The value of grid resilience and contribution from various energy sources should be directly addressed.

Parallel consideration of DG+IG and other NTA

The workshop on March 7th addressed only central-station generation. This is only a subset of the many options available to energy planners and should not be considered in isolation due to the risk of ignoring other methods of satisfying electricity demand. As discussed in the 2012 Integrated Energy Policy Report (IEPR) Update, it is time to add distributed generation (DG) to all estimates of the cost of energy:

"The Energy Commission will work with the CPUC, utilities, the California ISO, customers, and developers to develop a framework to prepare transparent estimates of the system costs of renewable DG, including both wholesale DG and DG that serves on-site load (self-generation). For this analysis, levelized costs of small DG will be developed along with system costs that include network upgrades."

"CEC will evaluate and improve its data collection efforts to track publicly available information on the costs of recently built renewable projects, particularly smaller projects."

The Clean Coalition is a strong supporter of the CEC's work in this area and commends the Commission for its commitment to using accurate and transparent data. To ensure the most accurate prices possible are used when DG is incorporated into the CEC's COG calculations, cost projections should be based on the most current prices and trends, not historical prices. Especially for solar, costs are dropping so fast that reported prices for prior years are grossly unrepresentative. Recent wholesale DG power purchase agreement (PPA) prices, particularly for projects that have come on line, are the most accurate indicator of current costs to ratepayers, since they demonstrate a realistic and mutually acceptable price for that type of generation, including the full cost of interconnection and any required system upgrades.

Likewise, the COG study should include other preferred resource non-transmission alternatives, such as demand response, energy storage, advanced inverters, and monitoring, communications, and control (MC^2) systems. These technologies enable integration of high levels of distributed renewable energy and improve power quality, grid reliability, and grid resilience. In order to recognize the benefits of these resources and increase their role in California's energy system, actual costs should be tracked so these resources can be fully and accurately considered in planning and forecasting.

Inclusion of full locational value

When looking at the cost of any generation, the impacts of its location must be considered along with construction and maintenance costs. This was recognized in the 2012 IEPR Update, which specified that when valuing procurement portfolios, the CPUC "*should consider evaluating the locational costs and benefits of DG and develop standard methods to determine the locational value of DG*". The Clean Coalition would like to point out that not only does DG have positive locational value, but by the same logic, transmission-interconnected generation has significant additional costs due to its location that are currently unaccounted for.

While the calculations discussed in this workshop and detailed in the CEC's COG excel spreadsheet[1] refer to the cost of generation, the actual intent is to compare the cost of energy generated from various sources as delivered to customers; ratepayers are impacted by the total delivered cost, not simply the cost at the point of generation, busbar, or anywhere other than the point of consumption. Some expense from transmission is included, but those costs are neither comprehensive nor transparent. For example, while high voltage transmission access charges (HV TAC, also referred to as "CAISO wheeling access charges") are included, low voltage TACS are not. Also, the most recent rates listed on CAISO's webpage are $8.70/MWh, up from $6.81 just last year. This is a far larger increase then predicted by inflation in the COG calculations.

[1] CEC_COG_Model_Version_3_62_Workshop.xlsm, available on CEC website.

PG&E's low voltage system is operated by CAISO, which therefore charges a LV TAC for those lines, given as $5.26/MWh for 2012 and subject to escalation comparable to the HV TAC. SCE and SDG&E operate their own, and therefore do not incur CAISO charges. However, this in no way reduces the costs of owning, maintaining, operating, or upgrading those low voltage transmission systems. The costs are simply accounted for as IOU costs instead of payments to CAISO and are likely to be comparable to what PG&E pays CAISO. Whatever the actual rates are for SCE and SDG&E, ratepayers will be charged for any required transmission facilities and these should be included in the CEC's COG analysis. It should be noted that the TAC rates reflect transmission O&M and existing depreciated investments, but where generating facilities require new or upgraded transmission facilities, the marginal cost of this added capacity is typically far higher than the cost reflected in the TAC "postage stamp" rates.

As an example of the significance of locational value, a 20 MW solar PV project located near load, connected directly to the distribution system, as opposed to the otherwise identical PV modeled as a transmission-tied system in the COG spreadsheet, would avoid both high and low voltage TAC costs, a 9.11% gen tie loss, and a 2.74% high voltage transmission loss. These loss savings alone are close to 12% and the TAC cost savings amount to $14/MWh, increasing over time.

While average line losses are accounted for in generation tie-in and HV transmission, losses in the LV transmission system and at the substation are not clearly represented. The COG calculations[2] show that ten miles of LV transmission would result in losses of at least 1.45% for 115kV and 2.67% for 69 kV, compared to a reported CAISO system average of 1.8%. This strongly suggests that low voltage and substation losses were not included.

Many other factors also affect the real cost and value of alternative means of satisfying energy demand, including state-wide objectives such as local employment, reducing emissions, minimal environmental impact, and fewer costly power outages. Monetizing these costs and benefits can rapidly change the economic picture to favor different investment choices.

Valuing resilience

To expand briefly on one locational value that is not currently monetized, the Clean Coalition recommends that projects should be valued for their ability to improve resilience. A resilient energy system would minimize the impact of potential disruptions, such as the failure of a transmission line or a natural disaster, maintain critical services in the event of a disruption, and continue to provide a community with sufficient energy to protect life and essential services.

Due to the nature of DG, IG, and other NTA, systematic proposals will be comprised of numerous smaller facilities located close to loads. Such systems are not dependent upon transmission facilities to serve load, and, when integrated with an intelligent grid, the consequences of a failure are greatly reduced. If a community is served by one hundred 1 MW facilities, the result of a facility going off line is

[2] Simplified Loss Calculator for Gen Tie Lines, on the Transmission tab of the COG spreadsheet

only a 1% loss in output, whereas if the same load was served by a single 100 MW facility, the impact of that facility going offline would be dramatic and costly.

The importance of a resilient electric system is growing as the grid ages and we depend ever more heavily on it for daily productivity and safety. To improve, or even maintain, resilience standards, the likelihood and potential costs of outages should be compared with the corresponding investment in DG+IG required to improve grid resilience enough to prevent those outages. Resilience planning is a natural extension of the contingency scenarios that grid planners already use to build in redundancy and additional capacity. By considering DG+IG solutions as well, the same end-user performance may be achievable at a far lower cost.

Thank you again for your ongoing commitment to these topics and for the opportunity to comment,

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