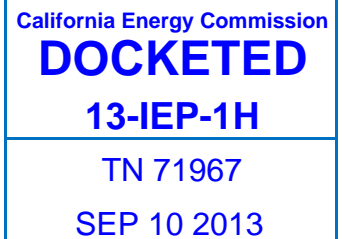


September 10, 2013

**VIA E-MAIL DOCKET@ENERGY.  
CA.GOV**California Energy Commission  
Docket Office, MS-4  
Re: Docket No. 13-IEP-1H  
1516 Ninth Street  
Sacramento, CA 95814-5512Re: 2013 Integrated Energy Policy Report: Staff Workshop on Distributed Generation:  
Electricity Infrastructure Costs—Comments Pacific Gas and Electric Company**I. INTRODUCTION**

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the California Energy Commission's (CEC) August 22 Workshop titled "Staff Workshop on Distributed Generation: Electricity Infrastructure Costs" (Workshop). The purpose of the workshop was twofold: the first half discussed Navigant Consulting's study on the costs and impacts to the electricity system associated with increased distributed generation (DG) installations in California; and the second half touched on the development of a state planning process and pilot that will identify and prioritize preferred renewable development zones.

Following this division, PG&E's comments discuss the Navigant study (Section II) and provide input on a potential state planning process (Section III). The following summarizes PG&E's key points:

- Research is needed to better understand the impacts of DG. PG&E is pleased to see the CEC address this issue and looks forward to reviewing the results.
- As the CEC considers developing a framework for DG planning, it should integrate interconnection costs into a larger framework. This framework should be focused on reducing total project costs in an environmentally friendly manner, and include a wide range of factors.

**II. NAVIGANT STUDY**

The utilities have consistently raised concern about the need to better understand the impacts of DG, from both an operations and a cost perspective. Accordingly, PG&E was pleased to see Southern California Edison (SCE) address this issue in its study, *The Impact of Localized*

*Energy Resources on Southern California Edison's Transmission and Distribution System.*<sup>1</sup> SCE's study, which was reviewed at the Workshop, found that the location of DG, referred to as Local Energy Resources (LER) in the study, can significantly affect electricity system impacts and costs. In particular, SCE found that guiding the siting and location of DG to areas of the system that are better equipped to accommodate generation can result in a significant reduction in interconnection costs.

Following the release of SCE's study, the CEC hired Navigant Consulting to conduct further analysis, in partnership with SCE. PG&E believes that Navigant's study, while limited at this time to SCE's territory, provides valuable information to both developers and system operators about what is driving increased interconnection costs. The Navigant study begins to address the impacts of DG on the utility distribution system, examining operational concerns, like grid stability and voltage regulation, and highlighting the significant cost to modernize the grid—up to \$4.5 billion in SCE's territory alone.

As Navigant concludes its analysis, PG&E looks forward to the results. PG&E hopes the Navigant study will further understanding of the costs and implications of DG. Modernizing the transmission and distribution system for higher levels of DG is an effort that will take decades and the scope of the modernization in terms of both cost and equipment is significant. PG&E realizes that interconnection costs represent a significant planning and engineering challenge for the State and PG&E is happy to participate in this discussion on these challenging issues.

While PG&E commends the CEC's and Navigant's efforts to analyze the impact of integrating increasing DG on the system, PG&E also recognizes that additional efforts will be required to fully understand how to successfully integrate increasing levels of DG in the system, DG's impact on electricity infrastructure costs, and the proper planning framework for DG.

### **III. INTEGRATING INCREASING LEVELS OF DG**

The second half of the workshop discussed the development of a state planning process and pilot that will identify and prioritize preferred renewable development zones. As CEC staff at the workshop noted, work on the planning process is still in its earliest stages. In light of this, PG&E's comments are focused on what it sees as the ultimate end goal of any planning process: to help reduce total project costs in an environmentally friendly manner. Towards this end, PG&E encourages the CEC, as it works to leverage the results of Navigant's study and scope the pilot, to incorporate Navigant's information on interconnection costs into a planning framework that prioritizes based on total project cost.

In creating a study framework, it is important to place interconnection costs in the overall context. While significant, interconnection cost is only one element of the total DG project cost. Other balance of system costs, like land and labor, make up an even greater share of total project cost. These land costs are, in many cases, driving development into rural areas. Thus, the end

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<sup>1</sup> Distribution Engineering and Advanced Technology Department. (2012). The Impact of Localized Energy Resources on Southern California Edison's Transmission and Distribution System. Southern California Edison. Retrieved from [http://www.energy.ca.gov/2013\\_energy\\_policy/documents/2013-08-22\\_workshop/SCE\\_Local\\_Energy\\_Resources\\_Study.pdf](http://www.energy.ca.gov/2013_energy_policy/documents/2013-08-22_workshop/SCE_Local_Energy_Resources_Study.pdf)

process should identify optimal DG development zones that have been evaluated on a broader set of factors, including total project costs and environmental considerations. Such a process may require additional analysis, but would provide the maximum benefit.

One possible output from such a study could be a map showing average interconnection costs geographically, by zones, which could be valuable for planning purposes for developers and others. However, as people interconnect into the system, these maps and associated cost estimates would become dated quickly. Thus, the CEC should develop tools that can be easily updated over time and at a reasonable cost. Earlier maps produced for the renewable auction mechanism could serve as a model for this new initiative

Moreover, the CEC must consider other factors, like how the ownership structure influences generator interconnection decisions. For example, the ultimate analysis framework must distinguish between merchant DG, which pays for any interconnection costs, and customer DG, which does not pay the interconnection costs. In general, where customers pay all interconnection costs, including upgrades necessary to allow the grid to accept the power, they face clear incentives on the cost of interconnection. Where the customer does not pay the interconnection costs, such as for the net metering program, then this price signal is distorted, and overall costs will tend to increase.

PG&E looks forward to continuing to work with the CEC and stakeholder groups to inform statewide policy and to ensure cost competitive, safe, reliable, and sustainable outcomes for planning the interconnection of DG in the system. PG&E recognizes the importance of further research and development for DG interconnection. To that end, PG&E is engaged in a number of active research and development projects to understand how the grid can operate effectively with higher levels of DG and other preferred resources. Research efforts have examined integrating DG into the distribution management system, back-end photovoltaic plant master controllers, and inverters with smart-grid functionality, among other topics.

#### IV. CONCLUSION

In conclusion, PG&E appreciates the consideration of these comments and looks forward to continuing collaboration with the CEC. Please do not hesitate to contact me if you have any questions.

Sincerely,

/s/

Matthew Plummer

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