

PG&E's Response to Energy Division's Informal Information Request Regarding Microgrids and Utilities (dated June 10, 2013) – December 9, 2013

Introduction

Microgrids are not a new concept for PG&E. PG&E's customers have installed "microgrids" on college campuses, government facilities, and large industrial complexes for over 25 years. PG&E has worked to develop interconnection, operations and tariff options to allow customers who choose to install microgrids to do so safely, reliably, and in a manner that properly allocates the cost of service. PG&E is working with its current customers interested in micro grids to interconnect these systems to PG&E's grid. PG&E is also monitoring the evolution of microgrids to enable customers interested in this option (for example, SDG&E's and SCE's pilot projects funded by the DOE, developments in New Jersey and other Northeastern states in response to Super Storm Sandy, Department of Defense military base micro grids, etc.).

PG&E has been monitoring the industry movement around microgrids – both the evolving concept and actual deployments. Microgrids are a complex small system that look to fit niche areas where (1) combined heat and cycle capabilities are required, (2) the customer may be environmentally driven, no matter the cost, (3) space is available for the installation, and (4) the installation meets economic and/or reliability needs over other alternatives. Complex systems such as microgrids require careful consideration and a solid commitment from the incumbent utility in order to be successful. In the industry, there is a healthy debate over what constitutes a microgrid and its operational capabilities. For example, does a microgrid require the capability to be fully independent of the utility grid for some period of time?

PG&E has had some experience with microgrids in its service territory, as described below:

- 1) PG&E reviewed installing a microgrid that would not be interconnected with PG&E's distribution system to resolve an issue in the Big Sur area of California where Condors were coming in contact with PG&E's overhead distribution line. PG&E did an analysis and ultimately chose to build an underground distribution line to replace the overhead line instead of constructing a stand-alone microgrid.
- 2) Due to vegetation winter reliability issues with a transmission line serving the city of Ft. Bragg, PG&E installed a backup diesel generator with islanding capability which would be run in the event of loss of the transmission line serving the area around Ft. Bragg. PG&E installed the diesel generator for some time and eventually removed it after expanding the transmission line right of way and removing trees that could potentially continue reliability issues.

Today, microgrids in PG&E's territory are limited in number due to the aforementioned factors and tariff issues on how they are treated. At this point in time, PG&E does not feel that microgrids are

something that it should be constructing unless there is a specific niche need due to a microgrid's cost and the cost of ongoing operations versus the traditional infrastructure available to customers today.

1. *Does PG&E see microgrids as fitting into their grid modernization strategy moving forward?*

Response: PG&E is focused on its core mission – safety, reliability, and affordability – and will evaluate microgrids as part of its grid modernization strategy in this context. PG&E considers both the economics and its customers' needs when evaluating potential microgrid proposals.

2. *Are you interested in microgrids per se, or would the results of potential projects (i.e., pilots), be for the purpose of providing research data for your "usual" grid operations?*

Response: PG&E is monitoring the evolution of microgrids nationally in order to evaluate and apply any lessons learned, including customer benefits, from microgrid projects to its own grid modernization efforts.

3. *Do you see PG&E "sharing" the microgrid space with third party developers (for instance, design/build/operate/maintain contractors)? Or is this strictly a utility initiative?*

Response: At this time, PG&E has not determined whether microgrids would be strictly a utility initiative or if it could partner with a third party developer.

4. *How do you see microgrids as potentially fitting in to the PG&E procurement planning?*

Response: PG&E will need to evaluate further the amount of surplus energy that can be generated from a microgrid in order to understand how they would fit into PG&E's procurement planning process. At this time, PG&E does not anticipate that microgrids will not generate significant amounts of surplus energy that would fit into the procurement planning process.

5. *What do you see as being the types of regulatory developments that would be necessary to support broader development of microgrids, assuming they can deliver promised ratepayer benefits?*

Response: PG&E believes that any microgrid projects need to be projected to deliver reliability and economic benefits for its customers in order to be approved by the CPUC. In addition, the CPUC must evaluate the appropriate cost allocation and cost recovery structure for such

microgrid projects.

6. *Would you see a Commission action devoted to microgrids as being productive as a standalone activity? Done in concert with smart grid proceedings or other actions such as Zero Net Energy/storage/EV, etc?*

Response: PG&E advocates that policies regarding microgrids should be evaluated in a comprehensive manner, either as part of Smart Grid modernization efforts and/or long term energy procurement planning. In addition, there may be other regulatory proceedings that may be the appropriate forums to evaluate microgrids.

7. *How [do] you envision the microgrid implementation deployment affecting rates. Do you anticipate there being a new tariff for customers that are served via a microgrid?*

Response: The impact to customer rates is a critical element of any microgrid deployment. In general, the CPUC will need to evaluate the most appropriate cost allocation and recovery structure to ensure that those customers benefitting from microgrids be responsible for the associated costs. It is likely that a new tariff will be needed to cover any backup grid infrastructure needed to support microgrids and other distributed resources.

8. *If not, how is cost recovery accomplished for microgrids? Is it [built] into the GRC?*

Response: At this time, it is premature to know how any cost recovery for microgrids might work.

9. *Is the procurement of the individual resources for a particular microgrid (storage, DG) built into general procurement planning?*

Response: PG&E currently does not manage customer side of the meter resources, which could be serving a microgrid function. PG&E is involved in planning efforts at the distribution, transmission, and generation levels. For distribution system planning, PG&E's studies identify specific reliability concerns on the distribution system. PG&E's distribution planning group develops alternatives to maintain reliability, which could include distributed generation if it helps to meet reliability needs, and compares the cost-effectiveness of each alternative. Generation planning occurs through the Long Term Procurement Plan (LTPP), where the CPUC, IOUs, CAISO, and other stakeholders perform scenario analysis to determine system needs. The LTPP studies could take into account any potential distribution level and behind-the-meter generation resources that are components of a microgrid.

10. *Are all costs for the “alternative service delivery model” embodied by a microgrid potentially shared across all ratepayers to the extent that there is a system benefit?*

Response: If there is a system-wide benefit of a microgrid, then there might be a reason for all ratepayers share the cost. It is unclear at this time if there are any system-wide benefits associated with a hypothetical microgrid.

11. *In any future or current microgrid deployment, how are or will the individual resources be (storage, DG) interconnected? Are they net metered? Are they visible to the ISO?*

Response: It would seem that at some level of generation, there is a requirement for the utility and others to have visibility at the meter interconnection. This visibility should include the ability to understand what the load would be with and without generation, which means that net generation information is not acceptable.

12. *Do you see microgrid technology as being generally applicable to situations other than how they are currently deployed in your service territory, such as a college campus or a military base? Is it a vehicle for broader deployment of DG?*

Response: Microgrid technology could be applicable to applications other than those that are currently deployed in PG&E’s service territory. But these prospective microgrids must be evaluated to determine if they can provide positive economic and/or reliability benefits for the utility and its customers.

13. *Is your view of microgrids that they are integrated with thermal delivery systems involving CHP?*

Response: In PG&E’s view, microgrids could include CHP thermal energy delivery systems. However, PG&E doesn’t view CHP inclusion as being a prerequisite to terming something a “microgrid”.

14. *Do you envision a case where a 3rd party microgrid operator could use your existing distribution network, say on a feeder by feeder basis to develop microgrids? How could this happen?*

Response: Yes, if there was no subsidizing by utility ratepayers and the connections were covered by a tariff where the utility was paid fairly for the interconnection.

15. *Do you see microgrids serving as a vehicle for integrating Zero Net Energy buildings?*

Response: PG&E has not reviewed any analysis or study to ascertain whether a microgrid could be a means to integrate Zero Net Energy buildings into the distribution network.

16. *Do you see microgrids serving as a vehicle for delivering an integrated package of behind the meter efficiency, DR, storage, DG and thermal measures?*

Response: PG&E has not reviewed any analysis or study to ascertain whether a microgrid could deliver an integrated package of behind-the-meter energy efficiency, DR, storage, DG, or thermal measures.