California Energy Commission
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Pacific Gas and Electric Company

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California Energy Commission
Dockets Office, MS-4
Re: Docket Number 09-RENEW EO-01
1516 Ninth Street
Sacramento, CA 95814-5512

VIA E-MAIL
DOCKET@ENERGY.CA.GOV

Re: Pacific Gas and Electric Company Comments on Infrastructure Planning, Cost, and Market Implications of the Desert Renewable Energy Conservation Plan

I. INTRODUCTION

Pacific Gas and Electric Company ("PG&E") appreciates the opportunity to provide comments on the California Energy Commission's ("CEC") Energy Roundtable Discussion: Infrastructure Planning, Cost & Market Implications of the Desert Renewable Energy Conservation Plan ("DRECP"). PG&E provides the following responses to questions posed to each panel during the course of the July 13, 2012 workshop on this topic.

II. INFRASTRUCTURE PLANNING

Question 1: *Please describe the energy planning processes your organization undertakes or participates in, and how those processes affect infrastructure decisions.*

Response: PG&E is involved in a variety of planning processes in collaboration with the California Public Utilities Commission ("CPUC"), the California Independent System Operator ("CAISO"), and the CEC.

Every two years, PG&E submits its long-term procurement plan ("LTPP") to the CPUC. The LTPP identifies new resources and other products needed to meet electric customers' needs, including a reserve margin, over a ten-year planning horizon. As part of this process, PG&E develops an integrated strategy capable of balancing reliability, customer needs, and environmental considerations.

To ensure grid operability under an array of potential conditions, the LTPP considers a broad range of supply and demand-side alternatives and planning issues. For example, the 2012 LTPP process will review the resources needed to integrate renewables coming online as part of the 33% renewable portfolio standard ("RPS") and the impact of retiring once-through cooling ("OTC") plants. Identifying system needs and ensuring system reliability and operability are maintained in an economic manner are key objectives.

PG&E participates annually in the CEC's Integrated Energy Policy Report ("IEPR") process. The IEPR provides an overview of major energy issues and trends facing California, and also makes energy policy recommendations based on CEC assessments and forecasts that are intended to conserve resources, protect the environment, provide reliable energy, enhance the state's economy, and protect public health and safety. One of the key outputs of the IEPR is the demand forecast, used in the development of the CPUC's LTPP noted above.

PG&E engages in the CAISO transmission planning process ("TPP"). The annual plan provides a comprehensive evaluation of the CAISO transmission grid, identifying upgrades needed to ensure reliability and successfully meet policy goals, such as the 33% RPS.

California investor-owned utilities ("IOUs"), CAISO, CPUC, CEC and other stakeholders including environmental, land, and wildlife also participate in the evolving Western Electricity Coordinating Council's ("WECC") Regional Transmission Expansion Planning ("RTEP") Project. The Transmission Expansion Planning Policy Committee ("TEPPC") is beginning the second year of the RTEP biennial planning cycle that will create 10-year and 20-year transmission plans expected to be completed in 2013.

Question 2: *What goals do these processes seek to achieve?*

Response: As noted above, these planning processes assess the long-term infrastructure needs to ensure system reliability is maintained and policy goals, such as the 33% RPS mandate, are met.

Question 3: *How does the DRECP further (or possibly conflict with) the goals that currently underlie these processes?*

Response: The DRECP transmission studies complement existing and on-going transmission planning activities in California by addressing the disconnect between land-use and transmission planning. In previous years, information provided by the DRECP was used to develop environmental sensitivities for renewable portfolio planning assumptions in the TPP and LTPP.

Additionally, the DRECP transmission analysis takes a longer view (i.e., the 2040-2050 timeframe) than planning studies at the CAISO and CPUC, which generally look out no more than 10 years into the future. This extended time horizon could improve transmission infrastructure decision-making because most major new transmission lines can take 10 years or more to plan, permit, and construct.

Question 4: *How should the DRECP be incorporated into these existing processes?*

Response: Because the CAISO's existing TPP is one of the primary venues for making long-term transmission infrastructure decisions in California, the DRECP should be closely coordinated with the CAISO planning process to maximize the impact of its work. The CAISO is currently conducting a special study of Central California Transmission needs for the area between Midway and Tesla as part of its 2012-2013 TPP. PG&E encourages both the CPUC and

CAISO to consider the DRECP Transmission Technical Group's ("TTG") transmission study results, as the CAISO evaluates the best solution for Central California for the next 10 years.

Given that the DRECP's transmission study results are based on a longer planning horizon than the existing CAISO studies, the DRECP could provide additional insight to the CAISO and stakeholder processes regarding transmission investment in the state during the next 10-15 years. For example, the DRECP transmission study considers two renewable development penetration scenarios: a low of 20,000 megawatts up to a high of 40,000 megawatts ("MW") in the desert regions of Southern California in the 2040-2050 time-frame. A TTG was formed to identify potential transmission projects to accommodate these resources. Recognizing that not all of these resources could be absorbed within Southern California, the TTG assumed that these resources would be delivered, as follows: 25% to Southern California load centers, 25% to Northern California load centers, 25% to Pacific Northwest load centers, and 25% to Southwest load centers. To achieve these deliveries, the TTG found that significant transmission upgrades (i.e., the addition of 500 kV circuits) would be required throughout the West at both the 2040 low-capacity renewable scenario and the 2050 high-capacity renewable scenario.

Question 5: *What factors related to infrastructure planning should be taken into consideration when identifying the location, scale, and distribution of renewable energy development areas in the DRECP?*

Response: Long-term renewable energy planning could help streamline permitting, remedy interconnection issues, and inform the need for new transmission lines. If planning entities like the CAISO know where renewable development will be located sooner, then grid upgrades can be planned with greater certainty, thereby reducing the costs of unnecessary developments.

Efficient land use planning can also help minimize costs to customers. The CEC has the ability to bring both land-use and transmission planners together to address these renewable energy issues. Planning improvements to the grid must consider the long lead time for development of large infrastructure projects (e.g., new transmission lines, new power plants). They should also consider how to reduce the long lead time required to develop projects in the face of uncertainty, without unnecessarily burdening customers with the costs of unnecessary investments.

III. DEVELOPMENT AND SYSTEM COSTS

Question 1: *How might the DRECP reduce or increase development costs?*

Response: DRECP information is useful when analyzing the environmental impact of projects bidding into PG&E's renewable procurement processes. As part of the evaluation of the annual RPS Request for Offers ("RFO"), PG&E prioritizes offers with the best combination of market value, viability, and qualifications based on specific evaluation criteria.[1] Project characteristics

[1] As directed by D.09-06-018, PG&E will use a modified version of the Project Viability Calculator (PVC) issued by the CPUC on June 5, 2009, as a screening tool. The Solicitation Protocol explains how the PG&E modified version of the adopted PVC will be used to evaluate bids, as ordered in D.09-06-018.

that merit a higher viability score include placement on disturbed land and simplified transmission interconnection requirements.

PG&E also conducts an environmental due diligence process for projects bidding into the RFO. This assessment considers the environmental impact of a project and identifies projects that are likely to have a high environmental risk potential or fatal flaw, which helps to eliminate more costly projects and better inform procurement decision-making.

Question 2: *How might DRECP reduce or increase system costs, e.g. by affecting the need for transmission, storage, back-up generation, or other infrastructure?*

Response: Consensus around priority areas for renewable energy development and infrastructure planning may help provide certainty for developers and utilities regarding the development of generation, procurement of resources, and transmission planning. Alignment of the DRECP with existing planning processes that determine priority areas will minimize siting, development, and procurement risks for developers and utilities.

Question 3: *What are the implications for cost, reliability, greenhouse gas and other emissions from different methods that may provide system reliability under varying high renewable energy scenarios?*

Response: The increasing penetration of renewables poses several challenges to California's electric grid. As intermittent and non-dispatchable renewable resources are brought online to meet the 33% RPS, the variability of the system increases, which in turn increases operational flexibility requirements of the system.

The impact of high renewable penetration can be alleviated by flexible resources such as gas-fired peakers and energy storage. Such resources help maintain system reliability and load following while managing intra-day variability and contingency reserves. The appropriate mix of projects that use these technologies however, varies greatly depending upon the unique characteristics of the load and other resources already on the electric grid or in the planning process. Cost-effectiveness of such resources also depends heavily on the characteristics of the load and other resources in the supply mix.

Question 4: *What factors related to development and system costs should be taken into consideration when identifying the location, scale, and distribution of renewable energy development areas in the DRECP?*

Response: It is important to balance these factors in a way that minimizes overall costs to customers. As more renewables come online, PG&E seeks to acquire the most cost-effective resources possible. While many tout rooftop systems over ground-mounted systems, the former are far more expensive. Therefore, when identifying the scale and distribution of renewable

development, cost efficiency as determined by land/permitting cost, proximity to transmission/distribution lines, and system-type should be the primary concern.

IV. MARKETS

Question 1: *How might existing and potential new market structures influence the way in which we meet electricity system needs in high renewable energy penetration scenarios?*

Response: Renewable integration is an important and complex challenge that many planning entities are examining as part of the 2012 LTPP and the CAISO's 33% Renewable Integration studies. New ancillary service products and capacity requirements will likely be identified through these planning processes over the next few years. Well-designed markets extract more efficiency from an existing set of resources, while poorly-designed markets create inefficiencies, increase costs, and jeopardize reliability.

Question 2: *To what extent should long-range planning efforts such as the DRECP account for the existing and potential new market structure and anticipated changes in market rates in high renewable energy penetration scenarios? Should these considerations influence the plan, if at all?*

Response: PG&E believes that the DRECP can be most effective and provide the most value if it focuses on streamlining the permit and siting processes. The resulting cost savings could lead to a marginal reduction in customer rates.

Question 3: *How might the DRECP affect electricity markets and market rates?*

Response: Please see PG&E's response to Question 2 above.

Question 4: *What factors related to the market environment should be taken into consideration when identifying the location, scale, and distribution of renewable energy development areas in the DRECP?*

Response: Factors to consider when identifying the location, scale, and distribution of renewable energy development areas in the DRECP, include: the need for large-scale transmission, the ability to cost-effectively deliver resources (including cost of integration to the California grid), and technology maturity. The impact of these factors on the system should also be considered. For example, areas that can accommodate a combination of resources with complementary generating profiles may be more easily incorporated into the rest of the transmission system.

V. CONCLUSION

PG&E appreciates the opportunity to provide input on the implications of the DRECP. Identifying appropriate areas and adopting a zone approach to developing renewable energy

resources could better inform and drive future transmission planning both within the DRECP and throughout the state. PG&E looks forward to participating in this continuing process. Please contact me or Diane Ross-leech (diane.ross-leech@pge.com) should you have any questions about PG&E's comments.

Sincerely,

/s/

Claire E. Halbrook