BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

DOCKET NO.: A.15-09-001
EXHIBIT NO.: A4NR-1
DATE: June __, 2016
WITNESS: Rochelle Becker

PREPARED DIRECT TESTIMONY OF
ROCHELLE BECKER ON BEHALF OF
THE ALLIANCE FOR NUCLEAR RESPONSIBILITY
IN
APPLICATION NO. 15-09-001
PACIFIC GAS & ELECTRIC COMPANY TEST YEAR 2017 GENERAL RATE CASE
Q1. Please state your name and business address.
A1. My name is Rochelle Becker. My business address is 1037 Ritchie Road, Grover Beach, California.

Q2. What is the purpose of your appearance today?
A2. I am appearing for the purpose of providing factual and policy testimony supporting the recommendations being proposed by the Alliance for Nuclear Responsibility for the Commission’s consideration in the Pacific Gas & Electric Company (“PG&E) Test Year 2017 General Rate Case. I am also here to recommend that PG&E be required to make annual filings disclosing its activities and costs related to extending the operating life of the Diablo Canyon Nuclear Power Plant.

Q3. Are your qualifications, as provided in Attachment 1 to this testimony, true and correct?
A3. Yes.

Q4. What is the nature of the recommendations being proposed by the Alliance for Nuclear Responsibility in this proceeding?
A4. The recommendations of the Alliance for Nuclear Responsibility would result in the adoption of (a) a requirement that PG&E file an annual Tier 1 advice letter describing PG&E’s plans to extend the operating licenses and authorities for the Diablo Canyon Nuclear Power Plant, (b) reasonable ratemaking assumptions and forecasts relevant to determining the base rate revenue requirement related to the continuing operations of the Diablo Canyon Nuclear Power Plant, and (c) alternative performance-based rates through which Diablo Canyon Nuclear Power Plant-related revenue requirement would be recovered from PG&E electric customers.

Q5. What is the basis for these recommendations?
Q5. PG&E has asserted in its case-in-chief that extending the operating life of Diablo Canyon Nuclear Power Plant beyond the expiration of the facility’s current reactor-operating licenses is beyond the scope of this general rate case. That assertion, however, is inconsistent with various assumptions underlying the cost estimates submitted by PG&E in this proceeding. In addition, PG&E is actively pursuing the extension of licenses, authorizations, permits, and exemptions that would allow the Diablo Canyon Nuclear Power Plant to operate through 2045 and has incurred a great deal of costs, all of which PG&E will seek to recover through rates, towards that end. As a result and as is evident in this general rate case, PG&E
electric customers are being asked to take on enormous financial burdens associated with PG&E’s nuclear operations. Given this Commission’s great interest in protecting public safety, PG&E has been directed to provide risk assessments and risk-based budgets in this general rate case. This general rate case provides a proper context and prime opportunity to address the safety and financial risks associated with extending the operating life of the Diablo Canyon Nuclear Power Plant. The Alliance for Nuclear Responsibility is recommending the Commission seize this opportunity and implement a paradigmatic reallocation of risks associated with PG&E’s nuclear operations from PG&E’s customers to PG&E.

Q6. Why do you believe PG&E intends to extend the operating life of the Diablo Canyon Nuclear Power Plant beyond 2024 and 2025?

A6. PG&E has been taking and continues to take significant steps to obtain licenses, authorizations, permits, and exemptions consistent with extending the plant’s operating life through the period ending 2044-2045. In addition, PG&E has proposed significant capital upgrades that will extend the operating life of the Diablo Canyon Nuclear Power Plant well beyond 2024 and 2025. While PG&E has indicated the justifications for the individual capital projects and operating programs described in this case are bounded by the current Diablo Canyon Nuclear Power Plant license periods, project justifications presented to senior management have explicitly relied on life extension to support project proposals, options and costs. In addition, PG&E is performing comprehensive evaluations of the existing Diablo Canyon Nuclear Power Plant facilities and equipment to determine whether those facilities and equipment can perform reliably beyond 2024-2025. These facts indicate PG&E not only intends to extend the operating life of the Diablo Canyon Nuclear Power Plant, but is taking material steps towards doing so.

Q7. You earlier indicated PG&E has asserted that Diablo Canyon Nuclear Power Plant life extension is beyond the scope of this proceeding. Should the Commission consider that assertion in the context of the recommendations being proposed by the Alliance for Nuclear Responsibility?

A7. No. The facts I have enumerated speak to the credibility of that assertion. PG&E’s assertion is wholly unsupported by the facts known to me. Moreover, although two Commission Presidents have identified the information PG&E should provide regarding the costs of extending the operating life of the Diablo Canyon Nuclear Power Plant, PG&E is deferring the provision of that information until such time as it files for a rate increase to recover those costs. Those costs, however, are mounting and total over $50 million to date. PG&E should be required to provide the information immediately and the information requested by the
Commission should be made public in the interests of setting reasonable rates, and laying the foundation for regulatory transparency and informed resource planning.

Q8. How should this information be provided to the Commission and the public?

A8. I recommend the Commission require PG&E to file a report as a Tier 1 advice letter, commencing March 31, 2017, and each March 31st thereafter, with due notice to the public and service upon interested parties, disclosing material information relevant to PG&E’s activities related to extending the operating life of the Diablo Canyon Nuclear Power Plant. The report and disclosures should include, at minimum, the most recent information available to PG&E regarding:

- The procedural status of PG&E’s pending application to the Nuclear Regulatory Commission for an extension of the Diablo Canyon Nuclear Power Plant Unit 1 and Unit 2 reactor operating licenses. In addition, PG&E should provide its best assessment of the substantive issues materially bearing on the likelihood the Nuclear Regulatory Commission will or will not approve the application for one or both of the units; and,

- The procedural status of PG&E’s pending application for an extension of rights, permits and authorities issued and/or granted by the California State Lands Commission related to the location, design, maintenance, and/or operation of Diablo Canyon Nuclear Power Plant facilities. In addition, PG&E should provide its best assessment of the substantive issues materially bearing on the likelihood the California State Lands Commission will or will not approve such applications for one or both of the units; and,

- The procedural status of PG&E’s pending application for an extension of rights, permits and authorities issued and/or granted by the California Coastal Commission related to the location, design, maintenance, and/or operation of Diablo Canyon Nuclear Power Plant facilities, including the Independent Spent Fuel Storage Installation. In addition, PG&E should provide its best assessment of the substantive issues materially bearing on the likelihood the California Coastal Commission will or will not approve such applications for one or both of the units; and,

- The procedural status of PG&E’s activities in compliance with, or for an exemption from, any requirements imposed on the operation of the Diablo Canyon Nuclear Power Plant by the California Water Resources Control Board related to the use of marine or estuarine waters for plant cooling purposes. In addition, PG&E should provide its best assessment of the substantive issues materially bearing on the likelihood that any requirements imposed on the Diablo Canyon Nuclear
Power Plant by the California Water Resources Control Board will have a material effect on the economic, reliability or environmental benefits provided by the Diablo Canyon Nuclear Power Plant; and,

- The material findings and conclusions from the enhanced seismic studies performed pursuant to the Central Coastal California Seismic Imaging Project, including: (a) a report on the implications of those findings and conclusions on the long- and short-term vulnerability of the Diablo Canyon Nuclear Power Plant to known or potential seismic hazards and/or events, seismic risk evaluations, and/or reliability of the Diablo Canyon Nuclear Power Plant facilities; and (b) the resolution of the issues, comments and recommendations of the Diablo Canyon Nuclear Power Plant Independent Peer Review Panel arising from those findings and conclusions; and (c) the status of the review of these findings and conclusions by the Nuclear Regulatory Commission; and,

- The operational and economic implications arising from any required or recommended application of “lessons learned” from the Tohoku seismic and tsunami event to the Diablo Canyon Nuclear Power Plant, including the recommended expansion and maintenance of emergency planning and/or evacuation zones by the Nuclear Regulatory Commission; and,

- The adequacy of the Diablo Canyon Nuclear Power Plant access roads and surrounding roadways in providing access to the Diablo Canyon Nuclear Power Plant site by emergency personnel and/or in allowing Diablo Canyon Nuclear Power Plant personnel and/or local populations to evacuate the area in the event of an emergency event; and,

- The adequacy of liability insurance secured by PG&E to cover the consequences arising from a major emergency event, including but not limited to the release of radioactive materials or particles beyond the Diablo Canyon Nuclear Power Plant site; and,

- An assessment of low- and high-level radioactive waste handling, storage, removal, and/or disposal costs that might be required as a result of continuing Diablo Canyon Nuclear Power Plant operations during the entirety and/or any part of the proposed twenty-year license extension period, including estimates of any increased costs of decommissioning the Diablo Canyon Nuclear Power Plant facilities attributable to such extended operations; and,

- An assessment of feasible alternative spent-fuel management strategies or activities to transfer spent-fuel assemblies from wet storage pools to the Diablo Canyon Nuclear Power Plant Independent Spent Fuel Storage Installation facilities, such assessment to include an analysis of eliminating the use of seawater for cooling the wet storage pools; and,
- PG&E’s progress in implementing the recommendations adopted by the California Energy Commission in the 2013 and 2015 Integrated Energy Policy Reports regarding the storage and handling of spent fuel and radioactive waste materials; and,
- An evaluation of the structural integrity and reinforcing steel in the spent fuel wet storage pools, including PG&E’s assessment of the vulnerability of the pools to damage from a seismic hazard or event, including credible beyond-design-basis events; and,
- A risk-informed and –based assessment of feasible alternative power generation options quantifying the relative reliability, economic and environmental advantages, benefits and/or disadvantages of such options as compared to the continuing operation of the Diablo Canyon Nuclear Power Plant units; and,
- An analysis of the risks, costs and benefits of PG&E’s nonemergency curtailment protocol under which PG&E would decrease energy output by the Diablo Canyon Nuclear Power Plant units when an overgeneration situation exists in PG&E’s transmission area, including the resolution of any issues, concerns or recommendations raised by the United States Department of Energy, the Institute of Nuclear Power Operations, the Nuclear Regulatory Commission, and/or the Diablo Canyon Nuclear Power Plant Independent Safety Committee regarding PG&E’s curtailment protocol; and,
- The latest analyses, studies and evaluations of tsunami-related risks, including credible beyond-design-basis events, to the Diablo Canyon Nuclear Power Plant facilities and PG&E’s commensurate response to such risks; and,
- The latest analyses, studies and evaluations of the risks to and from the Diablo Canyon Nuclear Power Plant facilities arising from component aging and/or embrittlement, and PG&E’s commensurate response to such risks; and,
- The latest evaluation of the Diablo Canyon Nuclear Power Plant facilities and/or operations by the Institute for Nuclear Power Operations (“INPO”) and, in the event the Diablo Canyon Nuclear Power Plant fails to achieve a rating or grade less than the highest rating or grade for any of the performance objectives, criteria, indicators, or guidelines evaluated by INPO, a report on the manner in which PG&E has responded or intends to respond to any such deficiency cited in the INPO evaluation, provided, that any information provided hereunder should be subject to any appropriate measures deemed by the Commission to be necessary to protect the confidentiality of that information; and,
Any and all information as may have a material effect on any decision by PG&E to pursue the extension of any license, permit or authority necessary to allow the operation of Diablo Canyon Nuclear Power Plant Unit 1 beyond 2024 and Diablo Canyon Nuclear Power Plant Unit 2 beyond 2025, including but not limited to:

- Any other proposed, pending or adopted regulatory requirements affecting the operation of the Diablo Canyon Nuclear Power Plant facilities, including the Independent Spent Fuel Storage Installation;
- Relevant market events or changes;
- The discovery, recharacterization and/or reevaluation of a seismic, tsunami or other hazard posed to the Diablo Canyon Nuclear Power Plant site, facilities or operations; and/or,
- Any other fact or occurrence, including but not limited to any change in the condition of the Diablo Canyon Nuclear Power Plant components or facilities which indicate the safe, reliable, economic, and/or environmentally benign operation of either of the Diablo Canyon Nuclear Power Plant units is substantially uncertain for any period beyond the current license period.

Q9. Would extending the operating life of the Diablo Canyon Nuclear Power Plant beyond 2024 and 2025 have any impact on the revenue requirement proposed by PG&E in this general rate case?

A9. Yes. PG&E evaluates the efficacy of Diablo Canyon Nuclear Power Plant-related projects and activities using extended operating lives for the two units, but compresses the recovery of the costs of those projects and activities using retirement dates of 2024 and 2025. Over the short term, this unduly inflates rates and, over the long term, distorts the relative costs of operating the Diablo Canyon Nuclear Power Plant compared to available alternative replacement resources. Mr. Geesman discusses these effects in greater detail in his prepared direct testimony. He will also present recommendations to address and mitigate these effects.

Q10. What policies should the Commission observe in addressing the effects extending the operating life of the Diablo Canyon Nuclear Power Plant will have on rates?

A10. The Alliance for Nuclear Responsibility believes this Commission should review both the potential for runaway costs and the significant, underappreciated financial risks placed on ratepayers by the continuing
operation of the Diablo Canyon Nuclear Power Plant. We recommend the Commission take the
opportunity of this general rate case to lay the foundation for prudent future resource decisions and
reasonable current and future rates by changing the manner in which PG&E is compensated for Diablo
Canyon Nuclear Power Plant operations.

Q11. Why do you describe the costs associated with operating the Diablo Canyon Nuclear Power Plant as
“runaway”?  
A11. The costs of operating the Diablo Canyon Nuclear Power Plant are enormous and outsized compared
to PG&E’s other energy resources. By the end of the period covered by this general rate case, PG&E will
have invested almost $9 billion of capital in constructing, upgrading and maintaining the facility, including
necessary investments to comply with regulatory and permit requirements. PG&E is proposing to spend
over $400 million annually for facility operations and maintenance. Despite the fact that virtually all pre-
2001 capital investments have been fully recovered through rates, PG&E expects its customers to cover
over $300 million per year in annual depreciation expense to support the recovery of the remaining capital
invested in the plant. To these costs, I would add (a) income and ad valorem taxes, (b) future capital costs
and operating expenses PG&E intends to recover through the Nuclear Regulatory Commission Regulatory
Balancing Account, (c) future capital costs and operating expenses PG&E will no doubt seek to recover
through special applications, for example, the compliance costs related to expected orders from the State
Water Resources Control Board regarding the use of estuarine and marine waters for once-through
cooling, (d) the costs of obtaining license and permit extensions now being recorded as Construction Work-
in-Progress, including an Allowance for Funds Used During Construction, (e) the costs associated with
replacing aging and obsolete components, equipment and facilities, and (f) rapidly escalating
decommissioning costs. As explained by Mr. Geesman in his testimony, the Diablo Canyon Nuclear Power
Plant costs included in PG&E’s case-in-chief alone amount to over $55 for each megawatt-hour produced
by the plant; this excludes fuel costs, decommissioning costs, and future operating costs and capital
expenditures subject to rate recovery under other ratemaking mechanisms. All things considered, there is
no other way to describe Diablo Canyon Nuclear Power Plant-related costs but “runaway.”

Q12. Is it reasonable to believe PG&E might arrest the investment and cost trends you describe?
A12. No. PG&E’s experience with the Diablo Canyon Nuclear Power Plant is hardly unique. Nuclear
plants across the country are being shuttered or in danger of retirement due to the diseconomies of
operating costs and future capital requirements they represent. A recent national nuclear industry conference, well attended by nuclear operations personnel from PG&E, highlighted the almost complete forfeiture of nuclear fuel-cost advantages to rising costs of regulatory compliance, safety, aging and obsolescence, and the costs of recruiting and training new employees due to the loss of workforce expertise resulting from rising retirements. My experience is that a utility’s costs of nuclear operations only go up – there have been few, if any, technological or process-oriented innovations in nuclear power operations that produce significant cost savings. Certainly, there are none being forecasted by PG&E in its case-in-chief. In addition, as the full consequences of the Fukushima Daiichi catastrophe become better known and regulatory agencies at both the state and federal level address changes needed in both the nuclear industry in general and at the Diablo Canyon Nuclear Power Plant in particular, it is likely regulatory requirements and associated compliance costs will increase significantly. I believe it is time for this Commission to consider these longer-term trends in addressing safety, performance and financial and cost risks in reviewing the proposed PG&E test year revenue requirement for the Diablo Canyon Nuclear Power Plant.

Q13. Let’s return to your recommendation that the Commission should take the opportunity of this general rate case to lay the foundation for prudent future resource decisions and the reasonableness of future rates by changing the manner in which PG&E is compensated for Diablo Canyon Nuclear Power Plant. How should the Commission implement this recommendation?

A13. Our recommendation, as explained by Mr. Geesman, is that this Commission should adopt the assumption that PG&E will proceed with license extension. The Commission should then take specific actions to align revenue requirement and rates with that assumption and adopt policies to protect the public and consumers from any undue safety, reliability and financial risks inherent in extending the operating life of the Diablo Canyon Nuclear Power Plant. If PG&E continues down the path of life extension, PG&E’s customers should be protected from the potential consequences of safety, reliability and financial risks associated with Diablo Canyon Nuclear Power Plant operations. Although PG&E believes it can avoid or mitigate any exposure to those risks, PG&E is also largely assuming PG&E customers will bear the responsibility for paying all of the costs of any risks or consequences that are not or cannot be avoided or mitigated. I believe this latter assumption is the true source of PG&E’s confidence in its decision to extend the operating life of the Diablo Canyon Nuclear Power Plant. The Commission and the public will only be treated to more honest assessments of the risks posed by the operation of the Diablo Canyon Nuclear
Power Plant if the Commission disrupts PG&E’s reliance on this Commission and PG&E customers to indemnify PG&E from losses resulting from PG&E’s errors or miscalculations or poor analyses. Reallocation of financial risks from consumers to PG&E would place the burden of guaranteeing the veracity of PG&E’s assumptions and analyses where they belong, namely, on PG&E.

Q14. Why do you believe PG&E has understated the risks associated with the Diablo Canyon Nuclear Power Plant operations?

A14. PG&E has asserted its proposed revenue requirement is based on a risk-based analysis that considers public safety as its first priority. However, the assumptions and mitigations used in PG&E’s risk analysis regarding Diablo Canyon Nuclear Power Plant operations are faulty and ignore known and obvious potential risks to public safety. Incredibly, PG&E’s risk analyses discount the risk of seismic events to near-zero. This conclusion contradicts PG&E’s own internal analyses and public information indicating the risk of beyond-design-basis seismic events and other unanticipated, terminal events is higher than represented. Clearly, if public safety were indeed the first priority, the results of PG&E’s risk assessments would be very different.

In order to bring an obvious potential threat to public safety within acceptable risk tolerances, PG&E consistently underestimates or ignores seismic risks. PG&E asserts the probability a seismic event resulting in a core-damaging event might occur is 1-in-100,000 years. This assumed frequency seems to completely ignore the Tohoku seismic event, a beyond-design-basis event that resulted in a core-damaging event at the local nuclear power plants, and the well-documented uncertainty regarding the seismic safety of the Diablo Canyon Nuclear Power Plant itself. If PG&E had assigned a higher probability to the occurrence of a beyond-design-basis seismic event, the enterprise risk posed by operations at Diablo Canyon Nuclear Power Plant might have been rated and ranked much higher than is shown in the risk assessments PG&E has submitted in this general rate case. Had PG&E done its risk assessments using a range of probabilities, I believe PG&E’s rate case filing would have revealed a much different and more realistic cost profile for current and future Diablo Canyon Nuclear Power Plant operations.

Finally, PG&E is taking on more operating risk by proposing to operate the Diablo Canyon Nuclear Power Plant as a load-following “flexible” resource, notwithstanding that this operating mode has not been fully analyzed and is not recommended by the plant designer or public and private agencies. Taking the Diablo
Canyon Nuclear Power Plant to this new mode of operation poses dangers and risks, many known and, importantly, some unknown. PG&E does this without any demonstration that it fills a system need that cannot be resolved by other resources. Any kind of system, financial or market benefit PG&E or the California transmission system might gain from operating the Diablo Canyon Nuclear Power Plant as a load-following resource is greatly outweighed by the associated risks. As much as anything else, PG&E’s decisions in this context indicate to me that the company underappreciates the risks to public safety inherent in the operation of a nuclear power plant.

Q15. Why should the Commission modify current ratemaking practices in this general rate case?

A15. Current ratemaking practices as they are applied to the rate recovery of Diablo Canyon Nuclear Power Plant-related costs have resulted in disjointed and inconsistent policymaking, unclear guidance to PG&E on safety and cost control, and undue rate burdens being placed on consumers. Due to the nature of the California regulatory architecture which segregates issues related to long-term resource planning from general rate cases, PG&E has not been required to align its long-term resource decisions with nuclear-related cost and safety considerations. The Alliance for Nuclear Responsibility proposes the Commission adopt ratemaking practices to force such an alignment. This can be accomplished by increasing the allocation of safety, performance and financial risks arising from nuclear power operations to PG&E and relieving PG&E customers of sole responsibility for covering potential financial losses posed by those risks. As I said earlier in my testimony, Mr. Geesman will make specific proposals as to how the Commission should do this. This is particularly important in this general rate case given the deficiencies in PG&E’s risk analyses submitted as a part of PG&E’s case-in-chief.

Q16. In evaluating the ratemaking policies and protocols being proposed by the Alliance for Nuclear Responsibility in this proceeding, should the Commission consider the potential adverse impacts those policies and protocols would have on a generating resource emitting almost no greenhouse gases?

A16. In the first place, decisions regarding whether and how long PG&E should operate the Diablo Canyon Nuclear Power Plant will be in the utility’s hands if the Commission adopts the proposals submitted by the Alliance for Nuclear Responsibility. The financial risks PG&E, rather than PG&E customers, might bear from Diablo Canyon Nuclear Power Plant operations would increase under the Alliance for Nuclear Responsibility’s recommendations only if PG&E has underestimated the risks posed by those operations.
More to the point, the emission benefits provided by the Diablo Canyon Nuclear Power Plant are difficult to determine. Although PG&E indicates in its case-in-chief that the Diablo Canyon Nuclear Power Plant avoids significant levels of greenhouse-gas emissions, PG&E has advised the Alliance for Nuclear Responsibility that the level of actual emission reductions is heavily dependent on the resources being substituted for nuclear energy production. Over the short term, PG&E does not know which resources replace Diablo Canyon Nuclear Power Plant output when the facility is on outage, making any emission reductions speculative. And until PG&E solicits and/or procures alternative resources to replace Diablo Canyon Nuclear Power Plant capacity, neither the Commission nor PG&E can know the long-term emission-reduction benefits the Diablo Canyon Nuclear Power Plant provides. The assertion of the relative emission benefits provided by Diablo Canyon Nuclear Power Plant operations appears reasonable if taken at face value, but the actual level of those benefits are speculative, and could be negligible in certain scenarios. My recommendation that PG&E file an annual Tier 1 advice letter specifically addresses this matter by requiring PG&E to evaluate resource alternatives available to replace the Diablo Canyon Nuclear Power Plant.

A17. Does this conclude your prepared direct testimony?
A17. Yes, it does.
EXHIBIT A4NR-1: ATTACHMENT 1
QUALIFICATIONS OF ROCHELLE BECKER

Rochelle Becker is an internationally recognized nuclear energy activist who has been engaged with California electric utility issues for forty-one years. Since the late 1970s, she has appeared before the California Public Utilities Commission, the Nuclear Regulatory Commission, the California Energy Commission, the California Coastal Commission, the California State Legislature, the California State Lands Commission, and the United States Congress on matters affecting California’s nuclear power plants.

In 2005, she co-founded and became Executive Director of the Alliance for Nuclear Responsibility, having served for the previous twenty-five years as a spokesperson for the San Luis Obispo Mothers for Peace. She also previously served as a member of the California State Water Resources Control Board’s Review Committee for Nuclear Fueled Power Plants. Ms. Becker is also a former President of the Board of Directors of The Utility Reform Network (nee “Toward Utility Rate Normalization”).

Recently, Ms. Becker and the Alliance for Nuclear Responsibility sponsored the successful 2015 Assembly Bill 361, a bipartisan effort to continue offsite emergency services funding for agencies responsible for first response and disaster recovery at and near the Diablo Canyon Nuclear Power Plant, as well as for the California Public Utility Commission’s appointed Independent Peer Review Panel overseeing PG&E’s seismic studies for the plant.

Ms. Becker has previously testified before the Commission as an expert witness in many previous proceedings.

Ms. Becker is a graduate of the University of San Francisco.