

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of Pacific Gas and Electric Company (U 39 E)
for Authority to Increase Revenue Requirements to
Recover the Costs to Replace Steam Generators in Units 1
and 2 of the Diablo Canyon Power Plant.

Application 04-01-009
(Filed January 9, 2004)

**REPLY BRIEF OF
SAN LUIS OBISPO MOTHERS FOR PEACE, SIERRA CLUB,
PUBLIC CITIZEN, ENVIRONMENT CALIFORNIA AND GREENPEACE**

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November 9, 2004

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1. INTRODUCTION AND SUMMARY

In accordance with Administrative Law Judge O'Donnell's oral ruling on October 1, 2004¹ and the Commission's Rules of Practice and Procedure, San Luis Obispo Mothers for Peace, Sierra Club, Public Citizen, Environment California and Greenpeace ("Joint Parties") hereby submit this Reply Brief on the Application of Pacific Gas and Electric Company ("PG&E") for Authority to Increase Revenue Requirements to Recover the Costs to Replace Steam Generators in Units 1 and 2 of the Diablo Canyon Nuclear Power Plant ("DCNPP") (collectively "Projects").

PG&E has the burden of proof to submit reliable evidence to the Commission to show that the Projects are cost-effective. The testimony, hearings and Opening Briefs in this proceeding demonstrate that PG&E has failed to meet this burden of proof. PG&E's analysis is unreliable and that the existing record is inadequate for any determination on the cost-effectiveness of the Projects, especially if there is no after-the-fact reasonableness review. As TURN states in its Opening Brief:

PG&E repeatedly trumpets projections of savings equivalent to \$1.2 billion (in net present value revenue requirements) over the remaining license life of Diablo Canyon. While this figure appears impressive, a review of the underlying methodology demonstrates the presence of substantial uncertainty, high optimistic assumptions, pessimistic projections of alternative resource costs, and a blindness to the very real possibility of "unpleasant surprises" that could render the [Projects] uneconomic.²

2. NEED FOR STEAM GENERATOR REPLACEMENT PROJECTS

Aglet succinctly describes the issue of "need" as follows, "[a]lthough there is no dispute that the original steam generators at Diablo Canyon are susceptible to premature loss of service, their replacement is not needed unless it is economic to do so."³ The Opening Briefs of Joint

¹ Reporter's Transcript ("RT", 10/1/04), pg. 1218:7-8.

² TURN Opening Brief ("Op.Br."), pg. 5.

³ Aglet Op.Br., pgs. 1-2.

Parties, TURN, and ORA all concur that a significant issue is whether the entire output of DCNPP is actually needed in the years 2014 to 2025. Joint Parties showed that PG&E's analysis ignores the role of energy efficiency ("EE") in meeting future resource needs; TURN explains that significant changes in the retail market structure such as core/non-core service could reduce PG&E's customer load, and ORA pointed out that PG&E has not performed a base case resource plan.⁴ Because PG&E has not presented an adequate analysis of demand, it is impossible for the Commission to determine the "need" for the Projects.

2.1 Degradation of Original Diablo Canyon Steam Generators

As discussed by the Joint Parties' Opening Brief, the Commission should require PG&E to use actual data on tube plugging from the November/December 2004 inspection of Unit 2.⁵ Aglet notes that PG&E's assumptions on degradation rates have a large impact on the cost/benefit analysis--in PG&E's low case scenario for stress corrosion rates in Unit 2, net benefits decline by \$600 million.⁶ ORA states that if the low case occurs, the replacement date for the steam generators can be "significantly delayed".⁷ There is no justification for not incorporating the actual data on Unit 2 degradation in the cost/benefit analysis.

2.2 Reasonableness of 2008 and 2009 Replacement Dates for Unit 2 and Unit 1

Joint Parties have no additional comments at this time.

3. COST-EFFECTIVENESS OF STEAM GENERATOR REPLACEMENT PROJECTS

In testimony, hearings and opening briefs, Joint Parties, TURN, Aglet and ORA have pointed out a number of areas in which PG&E's analysis is deficient. The following table lists these areas and the evidence in the record and to the extent possible quantifies their impacts on PG&E's cost/benefit analysis.

⁴ ORA Op.Br., pg. 10; TURN Op.Br., pg. 13-14; Joint Parties Op.Br., pgs. 38-40.

⁵ Joint Parties Op.Br., pg 3.

⁶ Aglet Op.Br., pgs. 2 and 10.

⁷ ORA Op.Br., pg. 13.

	PG&E Assumption	Intervenor Assumption	Estimated \$ Impact of Intervenor Assumption on PG&E Net Benefits⁸
Cost of Continued Operation:			
Joint Parties – Probability-Weighted Cost Of Non SG Related Year Long Outage	\$0	\$40,000,000 (present value) ^{9, 10}	Lowers net benefits by \$40,000,000 (present value)
Aglet – Base Capital Expenditures 2003-2025	\$24,000,000/yr (nominal)	\$87,000,000/yr ¹¹ (nominal)	Lowers net benefits by \$350,000,000 (present value) ¹²
TURN – Real Increase In Base O&M Expenditures After 2010	0%	1-2% ¹³	Lowers net benefits by increasing the cost of the replacement scenario.
Joint Parties – Major Capital Expenses	Varies by year through 2015, \$0/yr for 2016-2025.	\$88,000,000/yr (nominal) for years 2016-2025. ¹⁴	Lowers net benefits by increasing the cost of the replacement scenario.
TURN – Cost Of Low Pressure Rotor Head Project In “No-Project”	\$117,000,000 (nominal)	\$0 ¹⁵	Lowers net benefits by \$101,000,000 (present value) ¹⁶
Joint Parties – Difference In Security Costs Between Project And No Project Scenarios	\$0	≈ \$670,000,000 ¹⁷ (nominal)	Lowers net benefits by \$670,000,000 (nominal)
TURN – Operating Capacities Modeled	90.6%	75%-90.6% ¹⁸	Lowers net benefits by as much as \$700,000,000 (present value).
ORA and TURN - Treatment Of Undepreciated Capital Costs PG&E Authorized To Recover In No Project Scenario	100%	<100% of \$800,000,000 ¹⁹	Lowers net benefits by reducing the cost of the no replacement scenario.
Joint Parties, TURN, ORA –Project Costs Modeled	\$706,000,000 (nominal)	\$706,000,000 – \$847,200,000 ²⁰ (nominal)	Lowers net benefits by as much as \$141,200,000 (nominal).
TURN – Probability Of A Nuclear Accident	0%	>0% ²¹	Lowers net benefits by increasing the cost of the SGRP scenario.
TURN – Additional Decommissioning Costs Associated With Replacement Scenario	\$0	>\$0 ²²	Lowers net benefits by increasing the cost of the SGRP scenario.

⁸ Where impacts are expressed in present value terms this is either based on a value explicitly stated in the record or by applying PG&E’s stated discount rate of 8.6% to the relevant stream of costs.

⁹ Exh. MFP-6, pg. 17:2-4.

¹⁰ Exh. PG&E-3, pg. 5-8:18-25.

¹¹ Exh. Aglet-1, pg. 7:10-13.

¹² Id., pg. 7:14-18.

¹³ TURN Op.Br., , pg. 10.

¹⁴ Joint Parties Op.Br., pg. 18.

¹⁵ TURN Op.Br., pgs. 12-13.

¹⁶ Exh. PG&E-1, pg. 5A-20, Table 5A-23.

¹⁷ Joint Parties Op.Br., pg. 30; Under the No Project scenario, PG&E expects that both reactors will be shut down by 2014, while under the SGRP scenario both reactors would shutdown by 2025, a time period of approximately 10 years, or approximately two-thirds of the time frame for which Dr. Thompson estimated the cost difference for protecting an ISFSI versus an ISFSI and operating reactor. Two-thirds of Thompson’s cost differential yields \$672 million.

¹⁸ TURN Op.Br. , pg. 22.

¹⁹ Id., pgs. 19-20; , Aglet Op.Br, pg. 9, ORA Op.Br., pg. 10.

²⁰ Joint Parties Op.Br., pg. 38; TURN Op.Br., pg. 19; ORA Op.Br., pgs. 1-3.

²¹ TURN Op.Br., pg. 24.

	PG&E Assumption	Intervenor Assumption	Estimated \$ Impact of Intervenor Assumption on PG&E Net Benefits⁸
Cost of Replacement Energy:			
Joint Parties – Expected Life Used To Calculate Cost Of CCGT Replacement Energy Alternative	15 yrs	30 yrs ²³	Lowers net benefits by \$148,000,000 (present value)
TURN – Cost Of Wind Generation In Combined Cycle/Renewable Alternative Scenario	4.62 cents/kWh	1.8-3.6 cents/kWh ²⁴	Lowers net benefits by reducing the cost of the No Project scenario.
Joint Parties – Share And Cost Of Replacement Energy Offset By Energy Efficiency Programs	3,400 GWh/year by 2013; 4.7-5.5 cents/kWh	9,900 GWh/year by 2013, 3.51-5.5 cents/kWh ²⁵	Lowers net benefits by reducing the cost of the No Project scenario.
TURN – Forecast Gas Prices To Estimate Costs Of Market Purchases	2008-09: avg. \$44.12/ MWh 2010-14: avg. \$53.33/MWh	2008-09: avg. \$50.42/ MWh 2010-14: avg. \$50.77/MWh ²⁶	Lowers net benefits by both increasing the cost of the SGRP scenario and reducing the cost of the No Project scenario.
Aglet – Discount Rate	8.6%	>8.6% ²⁷	Lowers net benefits by reducing the cost of the No Project scenario relative to the costs of the SGRP scenario.

Taken together, the intervenors' points indicate that the net benefits claimed by PG&E should be reduced by: (1) anywhere from \$639 million to \$1.339 billion (i.e., corresponding to the values expressed above in present value terms); plus (2) the present-value equivalent of an additional \$670 million to \$811 million (i.e., corresponding to the values expressed above in nominal terms); plus (3) an additional amount that cannot yet be quantified based on the current record in this case, but that should be considered by the Commission in rendering its decision. As noted below, there is reason to question whether \$1.2 billion, or PG&E's base case net benefits value of \$550 million, or some value in between, is the more appropriate starting point against which these costs adjustments should be applied. What the Table above makes clear is that any claim of net benefits associated with the projects is highly questionable.

²² Id.

²³ Joint Parties Op.Br., pgs. 20-21.

²⁴ Id., pgs. 22-23.

²⁵ Id., pgs. 24-25.

²⁶ Exh. TURN -13 pgs. 4-76, Table 4-10, Exh. PG&E, Pgs. 6-7, Table 6-3.

²⁷ Aglet Op.Br., pgs. 8-9.

On page 3 of its Opening Brief, PG&E asserts that the analyses of ORA, Aglet and TURN all support PG&E's conclusion that the steam generator replacement project ("SGRP") is the most cost-effective alternative to supplying PG&E's future power needs. This statement is untrue. ORA is the only party that has made the statement that the Projects are cost-effective.²⁸ However, ORA expresses serious doubts about a number of PG&E's assumptions, particularly PG&E's capital cost assumptions and has pointed out that if capital costs are 2.65 times higher than PG&E's estimates, the net benefits of the Projects are zero.²⁹ Aglet states that PG&E's cost/benefit analysis is "unreliable" and Aglet concludes that "there is a very real prospect that the Project will not provide net benefits to PG&E ratepayers."³⁰ TURN concludes, "[b]ased on the showing made by PG&E, TURN is unable to offer a conclusion with respect to the ultimate cost-effectiveness of the [Projects]" and recommends that the Commission reject the validity of PG&E's cost-effectiveness modeling.³¹ Joint Parties also recommend that the Commission reject PG&E's cost/benefit analysis.

The intervenors identified a number of different problems with PG&E's assumptions and while PG&E assessed the impact of some of the intervenors' points on the cost/benefit analysis in its Rebuttal Testimony, it did not address all of the issues identified by the intervenors, nor did PG&E assess the combined impact of the intervenors' issues on PG&E's forecasted benefits.³²

The intervenors also agree that PG&E's "expected" net benefits of \$1.2 billion is suspect. The \$1.2 billion mean of the 9,630 simulations is not the most probable outcome; there is a 55 percent to 60 percent chance that the net benefits will be less than \$1.2 billion, while the net benefits of PG&E's own base case is \$550 million.³³ Because PG&E made overly optimistic

²⁸ ORA Op.Br., pg. 10.

²⁹ Id., pg. 12.

³⁰ Aglet Op.Br., pgs. 3 and 11.

³¹ TURN Op.Br., pgs. 1-2.

³² RT, (9/24/04-Matousek), pg. 572:6-12.

³³ Joint Parties Op.Br., pg 5; ORA Op.Br., pg. 15; Aglet Op.Br., pg. 4; TURN Op.Br., pgs. 5-6.

assumptions on future costs of operation and future replacement power costs, PG&E's simulations produced a number of runs with improbably high net benefits.³⁴ This has the effect of skewing the mean upwards. The Commission should consider whether the correct measure is the mean or the base case.

3.1 Cost-Effectiveness of the Projects

See discussion below. Joint Parties have no additional comments at this time.

3.2 Reasonableness of Cost Effectiveness Modeling Assumptions

3.2.1 O&M and Capital Forecasts Used in the PG&E Cost Effectiveness Model

PG&E's analysis is not a reliable basis for determining whether the Projects are, or are not, cost-effective. PG&E faults Joint Parties for failing to perform their own cost-benefit analysis and argues that the Commission should reject the testimony offered by Joint Parties because the testimony is "unsupported".³⁵ On the first point, Joint Parties agree that in the best of all worlds, intervenors would have resources equal to those of the utilities to present evidence in Commission proceedings. However, PG&E is mistaken when it equates the absence of an untested statistical model with a lack of reliable evidence. PG&E is also mistaken when it equates a statistical model with reliable evidence. It is not necessary to employ statistical modelers to demonstrate the serious problems in PG&E's cost/benefit analysis.

On the second point, PG&E asserts that Mr. Lochbaum's conclusion that DCNPP "will likely require significant additional capital investments beyond those identified in PG&E's application and testimony" is "unsupported" apparently because Mr. Lochbaum did not identify specific components at DCNPP that could require replacement and repair during the next 20

³⁴ See, ORA Op.Br., pg. 15.

³⁵ Id.

years.³⁶ This facile reduction of Mr. Lochbaum's testimony to its smallest component must be rejected. Mr. Lochbaum makes a far more significant point: that PG&E's assumptions on future plant performance "have no basis in fact."³⁷

Mr. Lochbaum provided a detailed history of the experience with aging components at commercial nuclear power plant operations, including the findings of a study on nuclear power plant aging prepared for the Nuclear Regulatory Commission by the Oak Ridge National Laboratory, which is a part of the Department of Energy. That study showed that the average number of age-related degradation problems increases three-fold in the third decade of plant operation.³⁸ Mr. Lochbaum pointed out that PG&E's assumptions on future capital and O&M spending is "directly opposite to the actual nuclear plant experience reported by ORNL."³⁹ The list of projects in Chapter 5A of PG&E's Testimony is "basically a list of things the industry currently knows about . . . There are no what ifs, there are no might ifs."⁴⁰

PG&E also asserts that Mr. Lochbaum "conceded" that PG&E O&M and capital spending forecasts were a "significant amount of money."⁴¹ However, PG&E neglected to include the entire exchange:

- Q. And, in fact, that PG&E modeled both a base O&M amount and a low and high O&M amount; right?
- A. That's correct.
- Q. And that's a fairly significant amount of money, isn't it?
- A. If there are no new surprises and if aging degradation is limited to the few things that are listed in PG&E's Application, then that's a significant amount of money.
If it's not, as industry experience clearly shows, then it may not be enough.⁴²

Mr. Lochbaum testified that the actual size of the O&M budget is not relevant, the question is

³⁶ PG&E Op.Br., pgs. 15-16.

³⁷ Exh. MFP-6, pg. 16:8.

³⁸ See, generally Exh. MFP-6 and pgs. 9:19-22, 10 1-2.

³⁹ Exh. MFP-6, pg. 10:3-17.

⁴⁰ RT (9/29/04-Lochbaum), pg. 948:1-3.

⁴¹ PG&E Op.Br., pg. 16.

⁴² RT (9/29/04-Lochbaum), pg. 938:17-27.

how the budget changes over time to accommodate increasing numbers of failures due to aging:

. . . If PG&E had – numbers showed that they were spending a trillion dollars a year on O&M expenditures and did not account for aging-related degradation on all these components and that trillion dollars was based on what they actually spent from 1996 to 2001, I would conclude that a trillion dollars is not enough because it doesn't account for future aging-related degradation that's likely to occur.

The trillion dollars would indicate that they may not be spending it smartly and they may be spending more money than is necessary to fix what happened in 1996 to 2000 [sic], but you can't look at a dollar number and say that it's right or not right.⁴³

Even a good operating history is no guarantee of future performance. Mr. Lochbaum explained that the NRC rated the Davis-Besse plant as the best plant in NRC Region 3; however, after the plant experienced an “unexpected surprise” that took two years to fix, the plant became the worst performing plant overnight.⁴⁴ TURN Witness Schlissel also testified that, “the history of the industry has been bad things happen to good plants, and really that that's the story.”⁴⁵

It is true that Mr. Lochbaum did not identify each and every aging component at Diablo Canyon that could fail over the next 20 years and quantify the cost of each aging-related failure. As Mr. Lochbaum pointed out during hearings, “there are literally thousands of components at Diablo Canyon that are subjected to aging-related degradation.”⁴⁶ “. . . I can't [identify specific components] because PG&E didn't do the homework, didn't do the analysis as they did with steam generators that allows me or anybody else to come to that answer.”⁴⁷ In other words, no human being can credibly purport to know – with a 100 percent certainty -- the entire list of components that will be repaired or replaced at DCNPP in the future. As TURN stated, PG&E's assumption is “unprecedented”.⁴⁸ PG&E's assumption of a zero probability of any unexpected

⁴³ Id., pg. 967:2-14.

⁴⁴ Id., pg. 963:9-16.

⁴⁵ Id., pg. 879:20-22.

⁴⁶ Id., pg. 949:1-3.

⁴⁷ Id., pg. 941:12-21.

⁴⁸ TURN Op.Br., pg. 11.

surprises in the last decade of plant operation is not credible.

Joint Parties, TURN, ORA, and Aglet all agree that PG&E's forecasts of O&M and/or capital spending is unreliable and should be rejected by the Commission.⁴⁹ Joint Parties, TURN, ORA and Aglet further agree that the long history of massive cost overruns DCNPP cannot be disregarded by this Commission in reviewing PG&E's rosy forecasts of future costs. As Aglet stated:

Diablo Canyon is a classic example of skyrocketing costs of nuclear power. In the plant's conceptual stage, PG&E executives suggested that power produced at the plant would be "too cheap to meter." (Exhibit Aglet-1, Weil, p. 6.) Contrary to that optimism, at the time the plant went into commercial operation, total capital costs were approximately \$5.9 billion. PG&E conceded \$1.8 billion of capital-related revenue requirements in order to settle cost disputes with Commission staff. The plant has a long history of cost overruns.⁵⁰

Joint Parties, TURN, Aglet and ORA are not quibbling with PG&E about whether PG&E's high case for major capital expenditures is high enough. The Intervenors are questioning PG&E's failure to assume any probability of additional major capital expenses in 2016 through 2025 and PG&E's assertion that there will be zero major capital projects after 2016. The Commission must require PG&E to do its homework.

3.2.1.1 O&M

Joint Parties have no additional comments at this time.

3.2.1.2 Capital Costs

Joint Parties agree with TURN and ORA that PG&E has not shown that the reactor vessel head replacement project would be required in the No Project scenario.⁵¹ The Commission should require PG&E to include reactor vessel head project in No Project scenario.

⁴⁹ Id., pg. 8; ORA Op.Br., pgs. 11-12; Aglet Op.Br., pgs. 5-7.

⁵⁰ Aglet Op.Br., pg. 3; See also, TURN Op.Br., pg. 1.

⁵¹ TURN Op.Br., pg. 12.

3.2.2 Replacement Energy Prices Used in the PG&E Cost Effectiveness Model

3.2.2.1 Replacement Energy Prices

PG&E acknowledges that its gas price forecasts in Chapter 6 of the PG&E Testimony and the gas price forecasts in its Long Term Procurement Plan (“LTTP”) differ, but dismisses the discrepancy as merely a difference in closing prices on the date used to forecast costs.⁵² PG&E also insists that this discrepancy is insignificant because the forecasts in the LTTP, as adjusted to the burner tip price, are within the range of the low, base and high gas prices used in this proceeding.⁵³ PG&E’s failure to update its model based on its own, most recent forecasts of replacement power prices is not justifiable. PG&E cannot be allowed to casually dismiss a forecast that it is vigorously defending before the Commission in the Umbrella Procurement proceeding (A.04-04-003).

Second, even if it is the case that the LTTP forecasts are within the range used by PG&E in this case, it does not automatically mean that no adjustments to the modeling are required. The higher LTTP forecast should shift the entire range upwards. In addition, PG&E’s failure to use its own 2004 gas forecast means that PG&E’s analysis in this case underestimates the cost of replacement power requiring during steam generator related outages and overestimates the costs of replacement power in the No Project scenario.⁵⁴ Given that gas prices are a critical element in the cost/benefit analysis, this Commission should not allow PG&E to pick and choose the most advantageous forecasts, but instead should require PG&E to use its own most recent forecasts.

3.2.2.2 Renewable Power Costs

Joint Parties have no additional comments at this time.

⁵² PG&E Op.Br., pg. 29.

⁵³ Id.

⁵⁴ TURN Op.Br., pg. 15.

3.2.2.3 Energy Efficiency Options

PG&E ignores this Commission's September decision on Energy Efficiency goals in its Opening Brief. Commission Decision 04-09-060 in R.01-08-028 (Energy Efficiency proceeding) sets much higher EE goals than assumed by PG&E in its testimony.⁵⁵ PG&E Witness Miller acknowledged on cross-examination that PG&E's per/kWh cost for EE savings represents only residential EE savings, which are more costly than non-residential EE savings.⁵⁶

Instead, PG&E argues that Joint Parties did not challenge PG&E's testimony that there is not enough incremental EE to replace DCNPP output.⁵⁷ PG&E claims EE savings is an all or nothing proposition, i.e., if the 2200 MW of DCNPP power is not completely replaced by EE savings, then EE savings are not relevant. This has never been the yardstick for consideration of EE as an alternative. The question is not "Can EE savings replace the entire output of DCNPP?" The question is "How much can EE programs reduce the demand for the DCNPP output?" PG&E has failed to answer this question.

PG&E asserts that there is "currently not a large pool of incremental CEE" to replace the output of DCNPP.⁵⁸ Yes, there is not a large pool of incremental CCE *currently*, but in its Findings of Fact in D.04-09-060, Commission found that significant incremental CEE is available and achievable over the next few years:

2. The annual and cumulative numerical goals for energy savings must be aggressive and stretch the capabilities and efforts of all those involved in program planning and implementation. At the same time, these stretch goals need to reflect a pace for increasing program efforts that is achievable.

⁵⁵ Joint Parties Op.Br., pgs. 23-26.

⁵⁶ RT (9/23/04-Miller), pg. 475:19-28.

⁵⁷ PG&E Op.Br., pg. 33.

⁵⁸ PG&E Op.Br., pg. 32.

4. Today's adopted goals take into consideration the practical limits to effectively increasing program funding and ramping up programs to capture the full economic potential of energy efficiency in the near-term.⁵⁹

PG&E's failure to include any Energy Efficiency in its cost/benefit analysis is at odds with the Energy Action Plan and Commission policy and must be rectified prior to a Commission decision on the Application.

3.2.3 Degradation and Plugging Assumptions Used in the PG&E Cost Effectiveness Model

Joint Parties have no additional comments at this time.

3.2.4 Other PG&E Assumptions In Cost-Effectiveness Model

3.2.4.1 PG&E's Assumption of a Zero Probability That Extending the Operating Life of DCNPP By a Decade Involves No Additional Security Cost Requirements Beyond Those Now in Effect is Unsupported by the Record

According to PG&E spokesman Jeff Lewis, "Federal security requirements [for nuclear power plants] are changing by leaps and bounds, . . . We don't know what they're going to be one month from the next."⁶⁰ And yet PG&E assumes a "zero probability of additional requirements for an enhanced defense during the operational life of the Diablo Canyon plant."⁶¹ The record that PG&E has presented to support its assumptions on potential future security costs is woefully inadequate and requires supplementation prior to a Commission decision regarding the cost-effectiveness of the Projects. The deficiencies in PG&E's case on this issue include the following:

- PG&E's witness defending PG&E's assumptions on future security costs admitted he had no expertise in security issues;

⁵⁹ D.04-09-060, pgs. 44-45.

⁶⁰ "Big Science with Tiny Particles Hits a Snag: PG&E Opposes UC Proposal to Study Neutrinos at Nuclear Plant", San Francisco Chronicle, pg. A-4 (November 1, 2004).

⁶¹ Exh. MFP-7, pg. 49:6-8.

- PG&E’s so-called “rebuttal testimony” on this issue is sponsored by its non-expert witness and is legal argument, unsupported by specific facts;
- PG&E’s assumption of no additional Nuclear Regulatory Commission (“NRC”) security measures is at odds with the NRC announcement – during the duration of the hearings – that it will begin a rulemaking on additional security measures, as well as a General Accounting Office (“GAO”) report identifying the need for enhanced NRC measures;
- Joint Parties presented unrebutted supplemental testimony demonstrating that security measures for an operating plant are likely to be more costly than for a closed nuclear plant.

PG&E’s Opening Brief fails to refute these key points. Instead, PG&E repeats the claim of “speculative testimony”, while ignoring the admitted lack of expertise by its own witness⁶² and the corroboration of Dr. Thompson’s testimony by the NRC itself and the GAO. Below Joint Parties respond to specific points raised by PG&E in its brief.

First, PG&E argues that even if the NRC adopts enhanced security measures, any potential costs would be incurred in both the Project and No Project scenarios.⁶³ However, Dr. Thompson has testified to significant cost differences between an enhanced security program to protect DCNPP assuming the reactors are and are not operating.⁶⁴

Second, PG&E claims that Dr. Thompson’s testimony regarding the adoption of enhanced defense measures is speculative because it attempts to “predict whether the NRC, Congress or other federal agency may adopt additional statutory or regulatory requirements in

⁶² Joint Parties Op. Br. pgs 30-31.

⁶³ PG&E Op. Br., pg. 22.

⁶⁴ Exh. MFP-8, pg 4:7-18; Also see pg. 12, Table D showing how the costs of an enhanced defense program vary under different reactor shutdown assumptions at DCNPP. Scenario II shows the cost of 15 years of enhanced defense assuming the reactors are operating over the entire 15 year period. Scenario III shows the costs of enhanced defense assuming the reactors are not operating over the 15 year period. The cost of Scenario II, at \$1.35 billion, is over \$1 billion more expensive than Scenario III.

the future.”⁶⁵ Dr. Thompson’s testimony regarding future NRC action is similar to PG&E’s testimony regarding future NRC action on license recapture.⁶⁶ Indeed, PG&E presented no factual basis for its assumption of an 80 percent likelihood of license recapture; PG&E simply asserts that it is true.⁶⁷ PG&E further complains that Dr. Thompson has not discussed his potential plan for additional security measures with the NRC, governmental agencies, or the military.⁶⁸ However, PG&E neither challenged Dr. Thompson’s credentials as an expert in national security matters, nor provided evidence that it discussed its own assumptions on security requirements with an expert in the field. The burden of proof is on PG&E to demonstrate that it considered all potential sources of significant costs in their model.

Third, PG&E argues that Dr. Thompson’s testimony is speculative because Dr. Thompson does not know the NRC’s April 29, 2003 Design Basis Threat (“DBT”). Dr. Thompson testified that these requirements can reasonably be deduced based on publicly available information.⁶⁹ Further, even assuming DCNPP is in compliance with the prevailing DBT, there is a strong possibility that the DBT will be changed in a manner that leads to increased security costs. The GAO testified that it cannot be assumed at this point that DCNPP, or any other nuclear facility for that matter, is adequately protected under current NRC guidelines.⁷⁰ The GAO testimony strongly implies that if the NRC does adopt a more rigorous DBT, additional requirements and costs will be imposed on nuclear plant operators.⁷¹

Fourth, PG&E alleges that Dr. Thompson has made similar proposals for enhanced defensive measures in the past, that the NRC has not adopted them, and that this lack of NRC

⁶⁵ PG&E Op. Br., pg. 23.

⁶⁶ Joint Parties Op.Br., pg. 28.

⁶⁷ See, Exh. PG&E-1, pgs. 1-15:16-23, 5-25:9-20.

⁶⁸ Id.

⁶⁹ Exh. MFP-7, pg. 17:8-15.

⁷⁰ Exh. MFP-8, Attachment, GAO Testimony, “Preliminary Observations on Efforts to Improve Security at Nuclear Power Plants, section entitled “What GAO Found”.

⁷¹ Id. Pg. 4

action demonstrates there will be no future NRC action.⁷² At best, PG&E's position is speculative and unsupported by any expert testimony. The NRC will review the adequacy of the DBT. The failure of the NRC to act on previous petitions is not conclusive of NRC positions for the next decade.

Fifth, PG&E states that Dr. Thompson has testified that the spent fuel pools would not have active air defense nor would they have an emergency cooling system for a period of 5 to 8 years after the reactors have closed. PG&E argues that this testimony contradicts Dr. Thompson's statements regarding his concerns about the risk of air attack against spent fuel pools.⁷³ However, Dr. Thompson explained that the risk associated with a spent fuel pool is substantially lower than the combination of a spent fuel pool and an active reactor:

“An attack leading to the release of short run radioactivity from the reactor would be likely to inhibit access to the spent fuel pool and its support systems for a period of days or perhaps weeks. So that even if the spent fuel pool were not damaged in any way, an attack on the reactor adjacent to the pool could lead to a boiling dry of the pool, and a spent fuel pool fire....[If] you close the reactor, the risk level of the system goes down dramatically because you have removed the source of the short-lived radioactivity. And, therefore, the degree of protection necessary against things such as an air attack is commensurately much less.”⁷⁴

Fifth, PG&E incorrectly characterizes Dr. Thompson's supplemental testimony regarding potential shutdown dates for the reactors under the No Project scenario, saying that “his scenarios of immediate closure in Table B and closure within three years in Table C suggest that Diablo Canyon would be closed as early as 2006 or 2009.”⁷⁵ PG&E uses this misrepresentation of Dr. Thompson's testimony to claim that the enhanced security regime he discusses bolsters the case for the Projects by increasing the replacement energy purchases under the No Project scenario. However, Dr. Thompson has not asserted that DCNPP would shut down in 2006 or

⁷² PG&E Op. Br., pg. 23.

⁷³ *Id.*, pg. 25.

⁷⁴ RT, (9/30/04-Thompson), pgs. 1018: 20-28, 1019:1-13.

⁷⁵ PG&E Op. Br., pg. 25.

2009. The scenarios depicted in the tables that PG&E refers to show Dr. Thompson's estimate of the costs of an enhanced security program initiated in "year X" under different plant closure assumptions. Table B shows the costs assuming the reactors are shut down at the same time the program is initiated in year X, and Table C shows the costs assuming the reactors are shut down three years after the initiation of the enhanced defense program.⁷⁶ Since Dr. Thompson never testified as to when year X is, he did not, as PG&E suggests, make any assertion as to when the DCNPP reactors would shut down. In fact, Dr. Thompson testified that he does not know when year X would be, saying, "Year X might be in 2006, 2007 or some later year."⁷⁷

Finally, PG&E argues that the Commission should ignore Dr. Thompson's testimony because he has stated that his cost estimates are "illustrative" and are not "definitive of future cost scenarios." Dr. Thompson's testimony is based on his extensive experience evaluating nuclear security issues. While the numbers he provides are illustrative, they do provide the general magnitude of costs that the security measures under an enhanced defense program would create. In contrast, PG&E has provided no numbers whatsoever. PG&E's use of labels for Dr. Thompson's testimony cannot substitute for the failure of PG&E to provide any expert testimony in rebuttal or in support of PG&E's original position. Dr. Thompson has presented expert testimony that an enhanced defense program at DCNPP is both possible and likely, and would impose substantial costs that could dramatically affect the net benefits of the SGRP. While PG&E may dispute the accuracy of the estimates Dr. Thompson provided, PG&E has provided no alternative estimates nor taken these potential costs into account in any fashion in the cost/benefit model.

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⁷⁶ Exh. MFP-8, pgs. 2:15-23, 3:1-3.

⁷⁷ Id. pg. 2:23.

3.2.4.2 PG&E Failed to Analyze the Probability of an Extended Outage at DCNPP

By dismissing the testimony in this case on the risks of a year long outage as “unsupported”,⁷⁸ PG&E is artificially inflating the net benefits of the Projects. PG&E argues that the testimony of Mr. Lochbaum and Mr. Schlissel regarding the likelihood and costs of an extended DCNPP outage is “unsupported” by resorting again to a simplistic position: neither witness identified the specific event or component of DCNPP that would actually cause an outage. As discussed in section 3.2.1 above, this argument is without merit. PG&E also ignores the testimony of Mr. Lochbaum and Mr. Schissel that the extended outages experienced in the industry were due to unanticipated causes and, in some cases were experienced by plants with high safety ratings from the NRC.⁷⁹ Instead, PG&E dismisses the possibility of any lengthy and unplanned non-steam generator related outages for the next twenty years. That is, PG&E assigns a zero probability in its cost/benefit analysis that such an event will occur. However, Mr. Lochbaum testified that:

It's almost a hundred percent chance that one of those 105 reactors will have a year-plus outage every year. Because if you go back, 27 reactors in 20 years, that's more than one per year over the fleet of a hundred. So it's pretty good.

In fact, there's -- once -- until Davis Bessie restarted, there hadn't been a second in the last 20 years where one of the reactors hadn't been shut down during one of these year-plus outages. It's a pretty wide industry problem.⁸⁰

PG&E made no attempt to refute the evidence that extended, unanticipated outages are a common occurrence in the nuclear power industry. Instead, PG&E asserts that its safety culture and compliance with NRC regulations make an outage unlikely.⁸¹ However, in discussing the NRC’s condition monitoring program for nuclear plants, Mr. Lochbaum testified that “I don’t

⁷⁸ Id., pg. 22.

⁷⁹ RT, (9/29/04-Lochbaum), pg. 963:9-17

⁸⁰ Id., pg. 974:10-20.

⁸¹ PG&E Op.Br., pgs. 21-22.

know of any plant owner out there that isn't doing what PG&E claims it is doing here" and noted that these NRC programs simply are not effective all of the time.⁸² Obviously, there is something in between a 100 percent probability and a zero percent probability and PG&E's application is seriously deficient for failing to recognize the vast middle.

3.2.4.3 PG&E failed to Adequately Analyze Capacity Factors of Diablo Canyon If the Projects Are Implemented.

As TURN pointed out in its Opening Brief, PG&E Witness Miklush admitted that he omitted data from plants that have experienced extended shutdowns from his analysis of the future capacity factors of DCNPP for the express purpose of inflating the industry average capacity factor.⁸³ Despite PG&E's knowledge of extended outages at similar plants, PG&E did not include a low or high case for capacity factors nor did it include the possibility of an extended outage in its cost/benefit analysis.⁸⁴

3.2.4.4 PG&E Failed to Perform a Sensitivity Analysis of the Projects' Costs

Joint Parties have no additional comments at this time.

3.2.4.5 PG&E Failed to Analyze the Need for Continued Operation of DCNPP

Joint Parties have no additional comments at this time.

3.3 Reasonableness of TURN Cost-Effectiveness Modeling Method and Assumptions

Joint Parties have no additional comments at this time.

3.4 Reasonableness of ORA's Cost Effectiveness Calculations

Joint Parties have no additional comments at this time.

⁸² RT, (9/20/04-Lochbaum), pg. 958:1-6.

⁸³ TURN Op.Br., pgs. 21-22.

⁸⁴ Id., pgs. 22-23.

3.5 Sensitivity Studies

Joint Parties have no additional comments at this time.

4. REASONABLENESS OF \$706 MILLION COST ESTIMATE FOR THE STEAM GENERATOR REPLACEMENT PROJECTS

Joint Parties have no additional comments at this time.

5. RATEMAKING AND COST RECOVERY ISSUES

Joint Parties have no additional comments at this time.

6. TIMING OF COMMISSION DECISION AND CEQA REVIEW

PG&E argues that the Commission can issue an interim decision under the California Environmental Quality Act (“CEQA”), so long as it is an advisory opinion only, and subject to change in a final decision.⁸⁵ Joint Parties have not sought to rebut this position because the real issues are: Can the Commission issue a decision at this time despite PG&E’s failure to demonstrate the cost-effectiveness of the Projects and is it practical or necessary to issue an interim decision prior to the release of the final EIR in April 2004 given concerns about pre-judging the outcome of the EIR and the necessity to augment the administrative record to incorporate the findings in the EIR?

PG&E’s statement that Joint Parties agreed to the issuance of an Interim Decision and have waived any objection to an Interim Decision is untrue.⁸⁶ Joint Parties take strong exception to any implicit allegation of bad faith. The relevant portion of the June 30 email to ALJ O’Donnell states:

Consistent with this schedule, PG&E intends to submit a motion tomorrow officially requesting an interim decision addressing the need for the replacement, the costs and benefits of the replacement, including the costs/and or benefits of not performing the replacement and ratemaking. This interim decision would not constitute a final approval of the project, would not prejudice the CEQA process and would be subject to the final EIR. *Aglet, TURN, and ORA agree to support*

⁸⁵ PG&E Op. Br., pgs. 56-57.

⁸⁶ PG&E, Op.Br., pg. 54.

this proposal, and the Mothers for Peace agree not to oppose, but any of these parties may respond to PG&E's motion seeking clarifications on the impact of this decision on the CEQA process. (emphasis added).

The sole agreement from Joint Parties was to not oppose PG&E's motion; at no time did Joint Parties agree to support the issuance of an interim decision nor did Joint Parties waive any rights to question the appropriateness of an interim decision.

7. WESTINGHOUSE ISSUES

Joint Parties have no comments at this time.

8. CONCLUSION

Joint Parties respectfully request that the Commission deny PG&E's Application, or in the alternative require PG&E to amend its cost-benefit analysis to address the deficiencies in the analysis raised in testimony, hearings and briefs.

Respectfully submitted:

By: _____
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For:

**SAN LUIS OBISPO MOTHERS FOR PEACE,
SIERRA CLUB, PUBLIC CITIZEN,
ENVIRONMENT CALIFORNIA AND
GREENPEACE**

November 9, 2004

CERTIFICATE OF SERVICE

I, Jack McGowan, certify that I have, on this date, caused the foregoing REPLY BRIEF OF SAN LUIS OBISPO MOTHERS FOR PEACE, SIERRA CLUB, PUBLIC CITIZEN, ENVIRONMENT CALIFORNIA AND GREENPEACE to be served by electronic mail on the parties listed on the Service List, and by U.S. Mail for those who have not provided an electronic address, for the proceeding in California Public Utilities Commission Docket No. A.04-01-009.

I declare under penalty of perjury, pursuant to the laws of the State of California, that the foregoing is true and correct.

Executed on November 9, 2004 in San Francisco, California.

Jack McGowan