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Commissioner : Michael R. Peevey
Admin. Law Judge : Carol A. Brown
ORA Project Mgr. : Sepideh Khosrowjah
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DIVISION OF RATEPAYER ADVOCATES
CALIFORNIA PUBLIC UTILITIES COMMISSION

R.06-02-013

REPORT ON THE LONG-TERM PROCUREMENT PLANS
OF

Pacific Gas and Electric Company (PG&E)

Volume B

San Francisco, California

March 2, 2007

REDACTED VERSION

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7 **Attachment B-4** Forced outage rates and availability of nuclear and solid fuel
8 generating units

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MEMORANDUM

This report was prepared by the Division of Ratepayer Advocates (DRA) of the California Public Utilities Commission (Commission) in R.06-02-013 proceeding. In this docket, the IOUs, Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric Company (SDG&E), request that the Commission to approve their Long Term Procurement Plans (LTPP) for the period of 2007-2016. In this report DRA presents its analysis and recommendations associated with the Investor Owned Utilities' (IOU) requests.

Sepideh Khosrowjah served as DRA's project coordinator in this review, and is responsible for the overall coordination in the preparation of this report.

1 **I. SUMMARY OF RECOMMENDATIONS**

2 PG&E presents three candidate plans in its Long Term Procurement Plan
3 (LTPP), a Basic Procurement Plan, an Increased Reliability Plan, and an Increased
4 Reliability and Preferred Resources Plan (“recommended plan”). It tests those
5 plans under four scenarios - stranded cost; low preferred resources availability,
6 adequate preferred resources availability and high price/high growth. Of the three
7 candidate plans PG&E considers the Increased Reliability and Preferred Resources
8 Plan to have the best combination of reliability, cost and environmental
9 performance and recommends that the Commission adopt it.

10 DRA has specific comments and recommendations regarding certain
11 important aspects of PG&E’s LTPP. These are aspects PG&E’s estimates of its
12 need for resources and availability of preferred resources, its procurement strategy
13 for certain resources and selected procurement policy issues.

14 **A. Estimates of Need and of Availability of Preferred Resources**

15 **Need.** PG&E estimates that under its recommended plan, and a “high
16 price/high growth” scenario, it would need to procure a cumulative total of
17 approximately 8,600 MW by 2016 to meet the requirements of its bundled
18 customers (contractual procurement). It also estimates that by 2016 under that
19 scenario there would be a need for approximately 2,600 MW to meet the planning
20 reserves requirement in its service territory (physical procurement).

21 DRA recommends that PG&E adjust its estimate of need by calculating
22 them using a “1 in 2” load forecast, a 15% planning reserve margin (PRM) and
23 “Best Estimates” for DR levels. This recommendation reflects continued use of
24 Commission guidelines regarding planning assumptions until PG&E presents a
25 compelling case for using more stringent assumptions and our recommendations
26 regarding reasonable planning assumptions for DR. If PG&E estimates its needs
27 using those assumptions, the quantity of contractual capacity and physical capacity

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1 needed by 2016 will decline substantially. For example, under the High
2 Price/High Growth scenario the contractual procurement would decline by
3 approximately 1300 MW (15%) and the physical procurement by 1200 MW
4 (46%).

5 **Energy Efficiency (EE).** DRA supports PG&E's decision to update its
6 2006 long-term procurement plan by amending all of its procurement scenarios to
7 include the current Commission assigned savings targets for energy efficiency.
8 DRA recommends that PG&E refer any energy efficiency policy issues it believes
9 need Commission attention, such as those in its LTPP 2/2/07 supplemental filing,
10 to the Energy Efficiency proceeding where all interested parties will have an
11 opportunity to participate.

12 **Demand Response (DR).** DRA recommends that PG&E adjust its
13 recommended plan to reflect the position that all Commission-approved programs
14 are cost-effective as well as to use "Best Estimates" of MW reductions for all DR
15 programs in the near-term and for reliability DR programs for 2009-2016. It
16 should also ramp-up price-responsive DR to the full 5% goal during the first
17 summer after the "full deployment" year of AMI in 2011. These assumptions are
18 reasonable for planning purposes given the numerous initiatives underway to
19 increase the availability of DR.

20 **Renewable Resources.** DRA concludes that PG&E's three candidate plans
21 do not address the goal of 33% renewables by 2020 adequately. The "Basic" plan
22 and the "Increased Reliability" plans procure renewables only beyond the 20%
23 standard if "cost-effective". The "Increased Reliability and Preferred Resources"
24 plan procures more than the 20% of renewables only to satisfy reliability
25 requirements.

26 DRA recommends that the Commission require PG&E to separate the costs
27 of increased reliability from the costs of increased use of preferred resources, by

1 resource, in its “recommended plan” in order to identify the costs associated with
2 increased use of renewables. Second, DRA asks the Commission to require
3 PG&E to present a plan with a goal of 33% renewable energy by 2020 and not
4 make it conditional on other factors, such as load growth in order to comply with
5 Commission guidelines.

6 **B. Procurement strategy**

7 **Renewable Resources.** DRA recommends that the Commission require all
8 three IOUs to fully analyze renewable generation ownership options as resource
9 plan candidates, either in a compliance filing in this proceeding or for the next
10 LTPP. In addition, the Commission should require PG&E to continue its previous
11 efforts to procure utility-owned renewables and to expand those efforts to include
12 active search for sites suitable for development of utility Engineering Procurement
13 Construction (EPC) arrangements. These recommendations are consistent with the
14 Commission desire, expressed in D.04-12-048, that IOUs evaluate the full range of
15 procurement options.

16 **Other Generation Resources.** PG&E is proposing to procure significant
17 quantities of conventional generation to meet the projected requirements of
18 bundled customers, i.e. contractual needs, and of its service territory, i.e., physical
19 needs over the 2007 to 2009 planning horizon. PG&E does not need the majority
20 of this capacity until well after 2008, when it will have to defend its 2008 LTPP.
21 As outlined in our general position on procurement, there are several reasons why
22 the Commission should only approve those physical procurements that PG&E
23 must initiate prior to the next LTPP because of procurement or construction lead
24 times. PG&E has the opportunity to provide that information in its reply
25 testimony in this proceeding. There are also benefits associated with phasing in a
26 laddered portfolio for its contractual procurements. DRA recommends that the
27 Commission only approve physical procurements for which PG&E has identified

1 needs in light of the corresponding procurement and construction lead times, and
2 that it only approve contractual procurements for which PG&E has identified
3 needs prior to the next LTPP consistent with procurement lead times and with the
4 phasing in of a laddered portfolio.

5 **C. Selected Procurement Policy Issues**

6 PG&E has proposed an Emerging Renewable Resources Program (ERRP),
7 described as "a funding mechanism through which PG&E can assist in the
8 demonstration of the commercial viability of emerging renewable technologies
9 and resources." DRA recommends that the Commission approve PG&E's proposal
10 contingent on an opportunity for review and comment on specific program design
11 and budget prior to commitment of funds.

12 PG&E is proposing to execute supply contracts for "economic"
13 biomethane. We recommend that the Commission approve this request contingent
14 upon PG&E agreeing to apply a "delivered into system" price test, or a similar
15 economic test to demonstrate cost-effectiveness.

16 **II. INTRODUCTION**

17 Pacific Gas and Electric (PG&E) filed its Long Term Procurement Plan
18 (LTPP) on December 11, 2006. In that filing, PG&E presents three candidate
19 plans: (a) Basic Procurement Plan, (b) Increased Reliability Plan, and (c)
20 Increased Reliability and Preferred Resources Plan. PG&E requests the
21 Commission adopt its Increased Reliability and Preferred Resources Plan
22 ("proposed plan" or "recommended plan").

23 On February 2, 2007, PG&E filed a supplemental LTPP indicating that it
24 would update its long term procurement plans to reflect the Commission-assigned
25 energy efficiency targets beyond 2008 under all of its long term procurement

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1 scenarios.¹

2 The purpose of this volume is to assess whether PG&E’s Long Term
3 Procurement Plan (LTPP) is reasonable. In order to make this assessment, DRA
4 has considered PG&E’s proposals in the context of the Commission’s direction as
5 to how PG&E is to incorporate Commission policies into its LTPP. As the
6 Commission notes in its Assigned Commissioner’s Ruling and Scoping Memo
7 (ACR/Scoping Memo) issued on September 25, 2006, this is an umbrella
8 proceeding: “One of the primary goals of this rulemaking is to serve as the
9 Commission’s forum to **integrate** all procurement policies and related
10 programs.”² (**emphasis added**) The Commission clearly states its directive to
11 the IOUs in its scoping memo:

12 This proceeding will not be a place to relitigate the
13 targets already established elsewhere. Instead, any
14 problems concerning goals or targets established in
15 other Commission proceedings will be addressed and
16 resolved in the appropriate proceeding – not in this
17 proceeding.³

18 Accordingly, DRA does not intend to debate policy issues within this LTPP
19 proceeding.

20 This volume presents DRA’s assessment of the extent to which the LTPP
21 filed by PG&E complies with Commission policies and the guidelines set out in
22 the Assigned ACR/Scoping Memo. Our assessment is organized according to the
23 outline specified in the ACR/Scoping Memo for consistency and ease of cross-

¹ PG&E Supplemental Filing to its 2006 Long Term Procurement Plan, February 2, 2007, pp. III-1 to 2.

² ACR and Scoping Memo on the Long Term Procurement Phase of R.06-02-013, p. 16.

³ Ibid, p. 18

1 references. However, the assessment is primarily limited to those aspects of
2 PG&E’s LTPP where we have concerns or a disagreement.

3 **III. PROCUREMENT IMPLEMENTATION PLAN**

4 Based upon the information we have reviewed to date we do not disagree
5 with this aspect of PG&E’s LTPP.

6 **IV. LONG-TERM PROCUREMENT RESOURCE PLAN 2007-**
7 **2016**

8 This section begins by summarizing PG&E’s recommended procurement
9 resource plan. We then present our proposed adjustments to that plan in light of
10 our assessment of PG&E’s positions regarding planning reserve margin (PRM),
11 energy efficiency, demand response (DR) and renewable resources.

12 **A. PG&E’s Recommended Plan**

13 PG&E presents three candidate plans: (a) Basic Procurement Plan, (b)
14 Increased Reliability Plan, and (c) Increased Reliability and Preferred Resources
15 Plan. It tests those plans under four scenarios - stranded cost; current world/low
16 preferred resources availability, current world/adequate preferred resources
17 availability and high price/high growth.

18 PG&E recommends that the Commission approve PG&E’s “Increased
19 Reliability and Preferred Resources Plan” (“proposed plan” or “recommended
20 plan”)⁴. This recommended plan is summarized in PG&E’s LTPP Volume 1
21 pages IV-79 through IV-81.

22 The recommended plan is based on procurement to meet load requirements
23 under a 16% PRM and a 1-in-10 demand forecast⁵. PG&E proposes to meet those

⁴ PG&E LTPP, Vol. I, page IV-81

⁵ This refers to the demand forecast that is based on a 1-in-10 recurrence interval such that there
(continued on next page)

1 requirements through the following resource initiatives:

- 2 • Investing in all Customer Energy Efficiency (CEE) that is cost-
3 effective and available⁶;
- 4 • Implementation of the California Solar Initiative (CSI) funding
5 decision⁷;
- 6 • Procuring DR to the 5% target⁸;
- 7 • Procuring renewable resources to as much as 29.7% by 2016,
8 depending on the scenario⁹;
- 9 • Procuring various quantities and types of conventional generation to
10 meet bundled customer requirements. The projected cumulative
11 totals by 2016 are:
 - 12 ○ Up to 1,600 MW of generic¹⁰ baseload generation ;
 - 13 ○ Up to 1,800 MW of generic shaping generation;
 - 14 ○ Up to 1,600 MW of generic peaking generation; and
 - 15 ○ Up to 4,300 MW of additional Resource Adequacy (RA) or
16 peaking capacity.¹¹;
- 17 • Procuring capacity to meet projected physical needs within its
18 service territory based on the 1-in-10 demand forecast and a 16%
19 PRM. It is proposing to procure:
 - 20 ○ Up to 2,300 MW of new capacity to come online starting in
21 2011. This includes 200 MW to replace the reduction in DR

(continued from previous page)

is a 10% chance that this forecast will be exceeded in any given year.

⁶ Ibid., p. IV-81, line 13.

⁷ Ibid., p. IV-81, lines 14-16.

⁸ Ibid., p. IV-81, line 17.

⁹ Ibid., Table Vol. 1 IVC-8, p. IV-40.

¹⁰ "Generic" refers to residual resource additions that are required to meet resource needs after accounting for preferred resource additions.

¹¹ Ibid., p. IV-80, lines 2-8; refers to all four bullets regarding generic procurement "to meet bundled customer requirements."

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- 1 in the Commission’s approval of PG&E’s DR enhancement¹²
2 and 500 MW for commercial contingency¹³;
3 ○ Additional energy and RA or capacity products from existing
4 resources between 20?? and 2016 to meet the remaining open
5 position¹⁴.
6

7 PG&E prefers the Increased Reliability and Preferred Resources Plan
8 because it considers that plan to have significantly better reliability metrics when
9 compared to its Basic Plan¹⁵ and improved environmental performance when
10 compared to its Increased Reliability Plan¹⁶. While the cost of the proposed plan is
11 higher than the Increased Reliability Plan, PG&E states that the reduction in air
12 emissions and the reduction in exposure to gas and electric commodity price
13 volatility outweigh the cost increase.¹⁷ PG&E meets the increased reliability
14 requirement in its preferred plan by procuring additional DR and renewable
15 resources even if they are not the most cost-effective resources for that purpose.¹⁸

16 Under the each plan analyzed by PG&E, the proposed procurement
17 quantities for generic conventional resources to meet bundled customer

¹² “On November 30, 2006, the Commission adopted D.06-11-049 approving some, but not all, of the enhancements to DR that PG&E proposed on August 30, 2006, which PG&E included in its Increased Reliability Plan and Preferred Resources Plan. PG&E did not have time to reflect the effect of this decision in its 2006 LTPP analysis. In order to account for the reduced DR amounts, PG&E’s need for new dispatchable and operationally flexible resources increases by approximately 200 MW starting in 2011.” (PG&E 2006 LTPP, Vol. 1, p. IV-81, lines 2-8.)

¹³ Ibid., p. IV-81, lines 21-25.

¹⁴ Ibid., p. IV-81, lines 26-27.

¹⁵ Ibid., p. VI-12

¹⁶ Ibid., p. VI-14

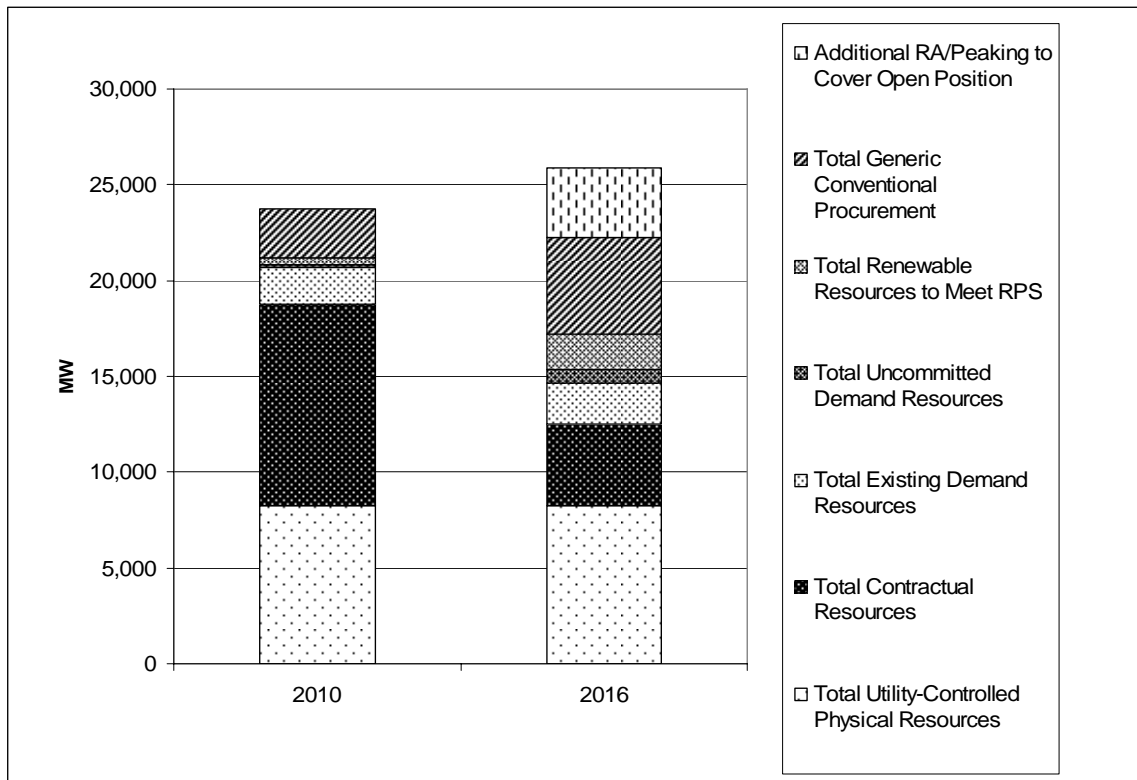
¹⁷ Ibid., p. VI-14

¹⁸ Ibid., Table Vol. 1, IVH-1.

1 requirements (“contractual”) are the same under each scenario. The quantity of
2 preferred resources to be procured, as well as the net open position, varies by
3 scenario. The resource mix associated with the proposed plan under the High
4 Price/High Growth Scenario (Scenario 4) is shown in Figures B - IV.1 and B -
5 IV.2.

6 **Figure B - IV.1**

7 **Total proposed resources to meet PG&E’s bundled customer requirements in**
8 **2010 and 2016 (High Price/High Growth Scenario)**



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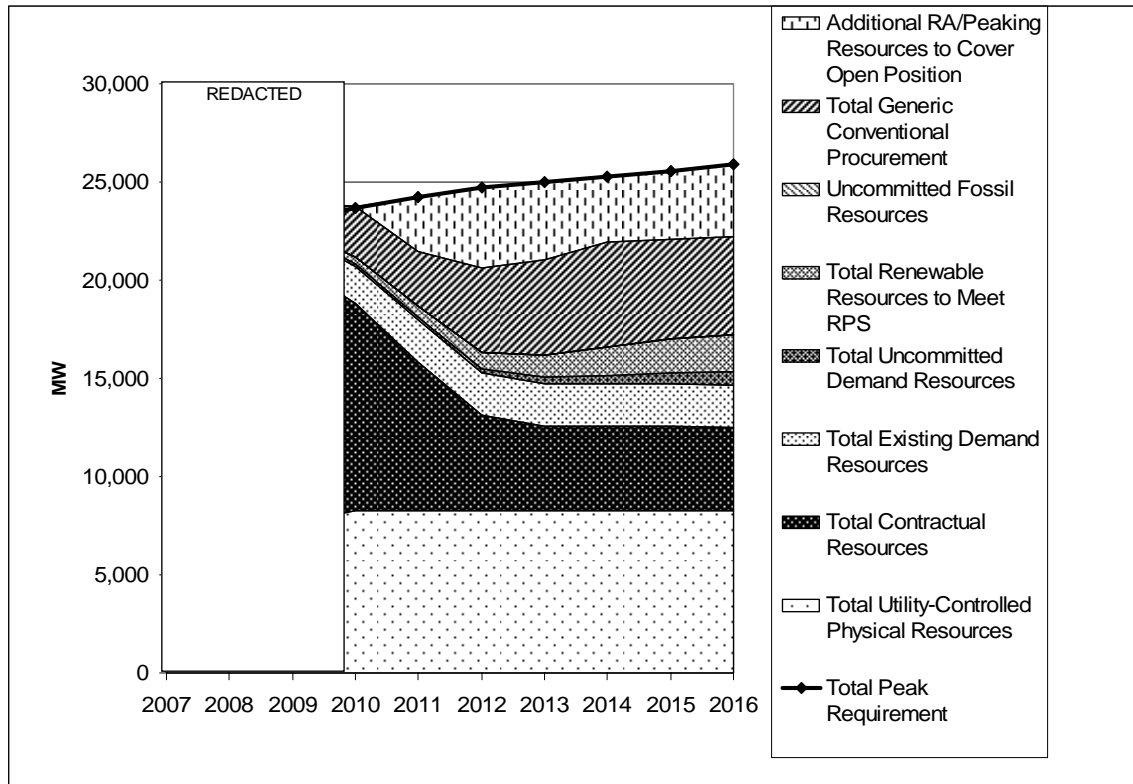
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Figure B – IV. 2

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**Total proposed resources to meet bundled customer Requirements, 2007-2016
(High Price/High Growth Scenario)**

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B. DRA Adjustments to Proposed Plan

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We are proposing several adjustments to PG&E’s recommended plan.

8

- The first set of adjustments is to reflect the use of a ‘1 in 2’ load forecast rather than a “1 in 10” load forecast. The justification for that adjustment is presented in section IV-C below.

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- The second set of adjustments is to reflect the use of a 15% PRM rather than a 16% PRM. The justification for that adjustment is presented in section IV- C below.

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- The third set are to reflect the adjustments to DR as described in Section IV-E and Attachment B - 3. The justification for that adjustment is presented in section IV-E below.

14

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The impact of those adjustments on PG&E’s proposed procurements for

1 contractual capacity is presented in Figure B - IV.3 and Table B - IV.1.

2

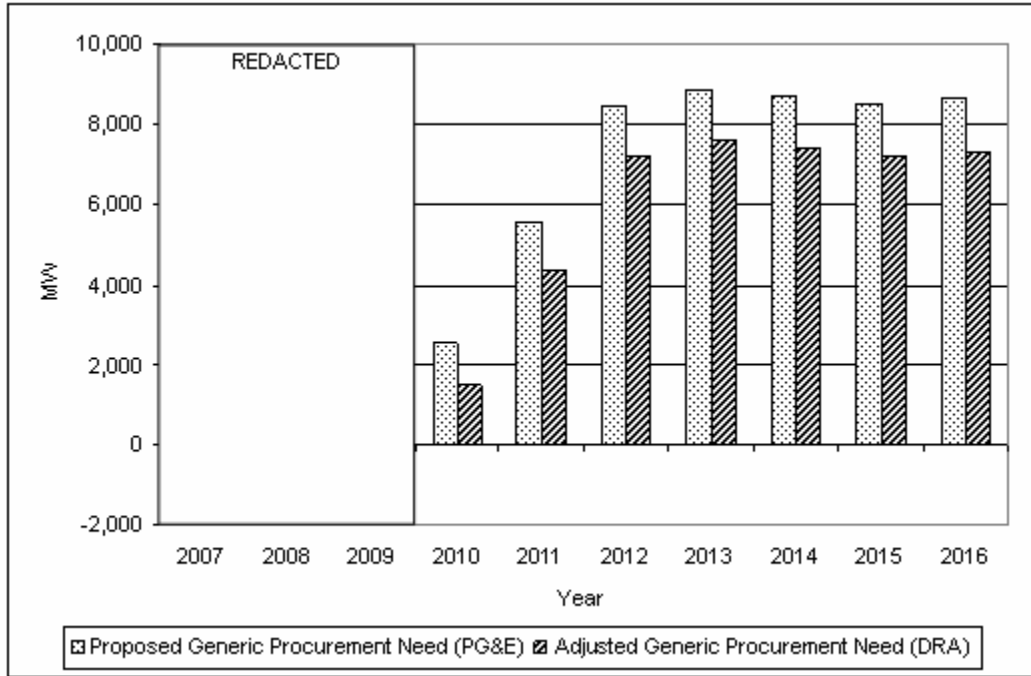
Figure B - IV.3

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PG&E's proposed annual generic procurement to meet bundled customer needs and DRA's adjusted proposed procurement (High Price/High Growth Scenario)

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Table B - IV.1

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PG&E Proposed Generic Procurements to Meet Bundled Customer Needs and DRA Proposed Adjustments, 2007-2016

10

Line		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PG&E Proposed Generic Procurement (MW)										
1	Proposed Generic Procurement ¹				2,600	2,800	4,300	4,900	5,350	5,050	5,000
2	Net Additional Capacity Need ²				(51)	2,753	4,137	3,969	3,335	3,444	3,636
3 = 1 + 2	Total Procurement Need				2,549	5,553	8,437	8,869	8,685	8,494	8,636
	DRA Adjustments										
4	1-in-2 load ³				(743)	(762)	(782)	(802)	(820)	(841)	(863)
5	15% PRM ⁴				(314)	(322)	(329)	(335)	(339)	(345)	(351)
6	DR Adjustments ⁵				12	(98)	(101)	(100)	(95)	(90)	(88)
7 = 3+4+5+6	Adjusted Total Procurement Need				1,504	4,371	7,224	7,632	7,430	7,218	7,333

¹From PGE 2006 LTPP, Vol. 1, Table Vol. 1, IVAX-49, line 61; Procurement values are for Scenario 4 (High Price/High Growth).

²Net Open capacity position; from PGE 2006 LTPP, Vol. 1, Table Vol. 1, IVAX-49, line 64;

³Difference between 1-in-10 peak load and 1-in-2 peak load; Table Vol. 1, IVAX-49, line 1 minus Table Vol. 1, IVAX-47 line 1.

⁴Difference between 16%/1-in-10 PRM and 15%/1-in-2 PRM; DRA calculation.

⁵Based on Attachment A - DRA's Proposed DR Amounts

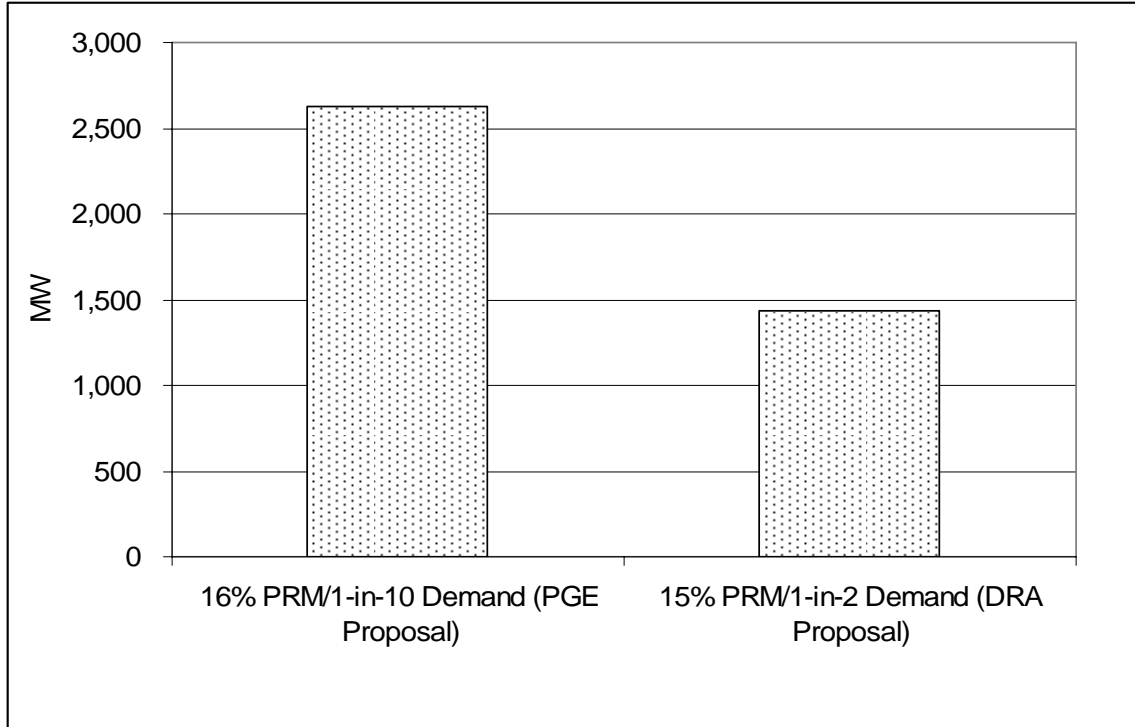
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12

1 The impact of those adjustments on PG&E’s proposed procurements for
 2 physical capacity is presented in Figure B - IV.4 and Table B – IV.2.

3 **Figure B - IV.4**

4 **PG&E’s 2016 proposed physical needs and DRA’s adjusted proposed need**
 5 **(High Price/High Growth Scenario).**



6
 7
 8 **Table B - IV.2**

9 **PG&E Proposed Service Area Requirements and DRA Proposed**
 10 **Adjustments, 2016**

Scenario	Proposed Need to Meet Service Area Requirements in 2016 (MW)		
	16% PRM/1-in-10 Demand ¹	15% PRM/1-in-2 Demand ²	DRA Adjustment – Reduction ³
1 - Stranded Cost	2,002	860	1,142
2 - Current World - Low Preferred Resource Availability	2,852	1,680	1,172
3 - Current World - Adequate Preferred Resource Availability	2,004	835	1,169
4 - High Price/High Growth	2,628	1,437	1,192

¹PG&E 2006 LTPP, Vol. 1, pages IV-61 to IV-64, Tables Vol. 1, IVE-1 through IVE-4, line 29.

²PG&E 2006 LTPP, Vol. 1, pages IV-61 to IV-64, Tables Vol. 1, IVE-1 through IVE-4, line 36.

³Difference shown as 16% PRM/1-in-10 Demand need minus 15% PRM/1-in-2 Demand need.

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1 **C. Load Forecast / Planning Reserve Margin**

2 PG&E proposes to increase its planning reserve margin from 15 - 17%
3 reserves on a 1-in-2 temperature peak demand to 16% reserves on a 1-in-10
4 temperature peak demand. The Commission should not approve an estimate of
5 need based upon those design criteria for several reasons.

6 First, PG&E's proposed change in design criteria is based upon a set of
7 reliability analyses. In order to review and confirm the validity of PG&E's
8 reliability analyses we would have to review and analyze data regarding load
9 patterns, resource outage rates and transmission system. After discussion with
10 PG&E, we received some output data from the LOLP calculations on February 21.
11 Unfortunately those materials did not include any input data or documentation of
12 the underlying assumptions. The information that we have at this time is
13 insufficient to either confirm or critique PG&E's reliability analyses.^{19 20}

14 Second, according to PG&E's own data, the costs of PG&E's proposal are
15 significantly higher than the benefits PG&E has quantified. PG&E estimates that it
16 would have to procure an additional 1,000 MW of dispatchable or RA capacity
17 under its proposed design criteria. Its estimate cost of procuring that additional
18 capacity would be between **\$50 and \$100** million per year, depending on the year
19 and the scenario. (This equates to a rate impact of approximately 0.1 cents/kWh²¹
20). In contrast, we estimate the benefits corresponding to that incremental capacity
21 would be approximately **\$16 to \$27 million**, shown in Table B – IV.3. These
22 benefits are based upon Company estimates of approximately 1,500 MWh of

¹⁹ PG&E 2006 LTPP, Vol. 2 at IV-1 to 8.

²⁰ Data Request: DRA_009-01 (DRA # Phase 2 – PG&E – Synapse – 7). Request date: January 24, 2007. Data Sent: February 21, 2007.

²¹ PG&E 2006 LTPP, Vol.2., p. IV-7, lines 11-15.

1 energy not served (ENS) if it did not increase its reliability²² and the costs of that
 2 unserved energy as shown in Table Vol. 2, IV.A-2. This comparison suggests that
 3 the costs of PG&E's proposed new PRM guideline would be significantly higher,
 4 by 2 to 6 times, than the benefits it has quantified.

5 **Table B – IV.3**

6 **DRA Estimate of Reductions in Cost of 1500 MWh of ENS resulting from an**
 7 **increase in PRM guidelines to 16% reserves on 1-in-10 temperature peak**
 8 **demand**

Outage Type	System-Wide Cost (\$/kW)	System-Wide Cost (\$/kWh)	Total Cost (\$mil)
One Hour	\$18.24	\$18.24	\$27.36
One Hour with Notice	\$12.78	\$12.78	\$19.17
Four Hour	\$45.50	\$11.38	\$17.06
Eight Hour	\$88.69	\$11.09	\$16.63

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11 The data in Table B - IV.3 can be interpreted as follows: an outage of one
 12 hour in duration of 1,500 MW would impose a cost of unserved energy amounting
 13 to \$27.36 million. An outage of 187.5 MW lasting eight hours would also result in
 14 1500 MWh of unserved energy at a cost of \$16.63 million (187.5 MW * 8 hours =
 15 1,500 MWh).

16 Third, PG&E's justification for moving to a 16% PRM appears to be based
 17 upon a "perfect storm" of extreme demand and supply conditions occurring at the
 18 same time, e.g., 1-in-10 temperature demand level and high forced outages. For
 19 example, PG&E's Table Vol. 2, IVA-1 presents a summary of the uses of the
 20 planning reserves and shows that based on these adverse conditions, the 15% PRM
 21 does not provide enough residual capacity. However, PG&E has not presented
 22 any analyses demonstrating the probability of all of these extreme levels occurring
 23 at the same time, e.g., correlation between extreme temperature demand levels and

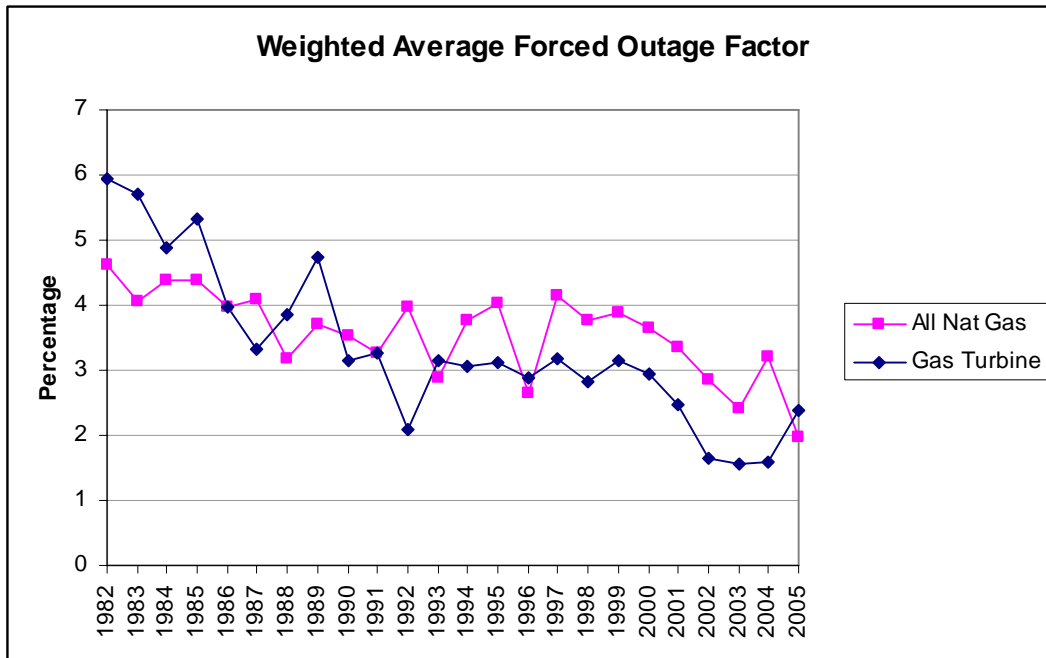
²² Ibid., p. IV-6, Figure Vol. 2, IV.A-3. The 1500 MWh value is a visual estimate of the ENS values for 15% and 20% PRM on the 1-in-2 demand.

1 forced outages.

2 Also, when evaluating PG&E’s proposal, it is important to examine its
3 assumptions about future trends in plant forced outage and availability factors. An
4 analysis of national plant performance trends from the NERC GADS database
5 over the last 24 years indicates that forced outage rates have been declining and
6 that availability has been increasing. The data for natural gas generation is
7 presented in Figures B - IV.5 and B - IV.6. The data for nuclear and solid fuel
8 generation is similar. It is presented in Attachment B - 4. With declining forced
9 outage rates and increasing availability, the reserve margin required to meet a
10 desired level of reliability declines. This would suggest that the percentage
11 reserve margin requirement, excluding other factors, should be declining rather
12 than increasing.

13 **Figure B – IV.5**

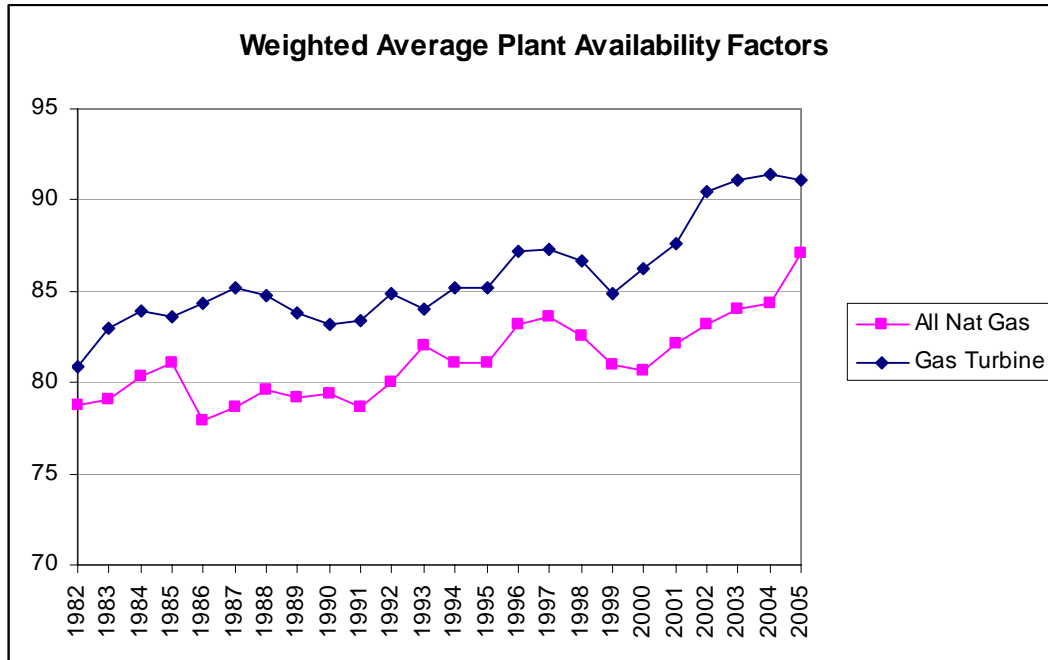
14 **Weighted Average Forced Outage Factor, All Natural Gas Plants and Gas**
15 **Turbines, 1982–2005**



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Figure B – IV.6
Weighted Average Plant Availability Factors, All Natural Gas Plants and Gas Turbines, 1982–2005



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5

6 DRA recommends that the Commission require PG&E to base its
7 procurement on the current PRM guidelines. If PG&E wishes the Commission to
8 approve a new set of design guidelines it should submit a filing in a future
9 proceeding.

10 PG&E proposes to procure 500 MW of capacity in addition to its projected
11 need to provide insurance against the commercial uncertainties associated with
12 developing new resources²³. However, PG&E has not provided a cost/benefit
13 analysis of this proposal and, therefore, this proposal should not be approved.

²³ Ibid., p. IV-10, line 32 to p. IV-11, line 7.

1 **D. Energy Efficiency**

2 **1. Background**

3 In the sections on energy efficiency in its December 11, 2006 LTPP PG&E
4 indicated that only one of its four procurement scenarios would incorporate the
5 Commission's energy efficiency savings goals.²⁴ PG&E indicated that, based
6 upon a potential study performed by KEMA/Itron,²⁵ it did not believe that it would
7 be able to reach the Commission's energy efficiency goals beyond 2008.

8 The Commission in its Long-Term Procurement Scoping Memo directed
9 the utilities to include projections from their various procurement resources
10 including energy efficiency noting that "...the 2006 LTPPs will need to reflect all
11 of the procurement-related decision made by the Commission to date in all other
12 procurement-related dockets."²⁶ The Commission in its Energy Efficiency goals
13 decision (D.04-09-060) provides clear energy savings targets to PG&E from 2004
14 – 2013.²⁷

15 As noted earlier, in its supplemental LTPP PG&E indicated that it would
16 update its long term procurement plans to reflect the Commission assigned energy
17 efficiency targets beyond 2008 in all of its long term procurement scenarios.
18 PG&E further noted that in order to meet its goals it would need the Commission
19 to approve several policy decisions, including the immediate commencement of

²⁴ Scenario 4, PG&E Long Term Procurement Plan, Volume I, p. IV-12.

²⁵ Energy Efficiency Potential Study, KEMA/Itron, May 2006

²⁶ ACR and Scoping Memo on the Long Term Procurement Phase of R.06-02-013, September 25, 2006, p. 17.

²⁷ D.04-09-060, Attachment Table 1A.

1 the 2009-2011 energy efficiency planning cycle.²⁸

2 **2. Energy Efficiency Supply Recommendations**

3 DRA supports PG&E’s decision to update its 2006 long-term procurement
4 plan by amending all of its procurement scenarios to include the current
5 Commission assigned savings targets for energy efficiency. This is consistent
6 with the intent of the Commission to integrate “procurement related decisions
7 made by the Commission to date in all other procurement related dockets.”²⁹

8 In its supplemental filing, PG&E lists several energy efficiency policy
9 issues that it urges the Commission to act upon in order for it to be able to meet its
10 energy savings goals.³⁰ DRA believes that changes to energy efficiency policies
11 are outside of the scope of this proceeding. PG&E should refer any issues it
12 believes need Commission attention, such as those in its LTPP 2/2/07
13 supplemental filing, to the Energy Efficiency proceeding. In that venue all
14 interested parties can participate on the record.

²⁸ PG&E Supplemental Filing to its 2006 Long Term Procurement Plan, February 2, 2007, page III-1

²⁹ ACR and Scoping Memo on the Long Term Procurement Phase of R.06-02-013, p. 17

³⁰ Supplemental Filing, p. III-2

1 **E. Demand Response**

2 **1. Recent Developments in Procurement Policy**

3 On January 25, 2007 the Commission issued an Order Instituting
4 Rulemaking (OIR) R.07-01-041 on Demand Response (DR). That OIR could
5 have an impact on the level of DR in PG&E's LTPP.

- 6 • First, the Commission stated that the OIR will set DR goals for 2008
7 and beyond and will also clarify which DR programs can be counted
8 towards meeting these goals. The current goals are set at 5% of
9 utility's peak demand for price responsive day-ahead DR programs.
- 10 • Second, the OIR states that the protocols to be developed in the OIR
11 for DR Load Impact measurements will be incorporated in future
12 RA proceedings.
- 13 • Third, OIR also proposes to coordinate efforts so that DR resources
14 are efficiently incorporated in the CAISO's wholesale markets. The
15 OIR will consider modifications to existing retail (utility-controlled)
16 DR programs to align them with CAISO's operational needs.

17 **2. Recommendation**

18 PG&E states that it has included DR quantities in its Increased Reliability
19 and Preferred Resources Plan even if those resources are not cost-effective.³¹ In
20 response to a data request from DRA, PG&E clarified that the programs PG&E is
21 assuming to be not cost-effective have already been authorized in D.06-11-049.³²
22 DRA believes that until DR cost-effectiveness tests and measurement protocols
23 are developed pursuant to R.07-01-041, PG&E is not in a position to determine
24 which DR programs are cost effective. For the purposes of LTPP, DRA believes
25 PG&E should assume all Commission-approved programs are cost-effective.

26 With this clarification, DRA believes PG&E's recommended plan should
27 be adjusted to reflect the following four assumptions:

³¹ PG&E's LTPP filing, TABLE VOL.1, IVH-1

³² PG&E's confidential response to DRA's data request no. R 06-02-013-Phase 2-PG&E-skg 3

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- 1 1. Use “Best Estimates” of MW reductions for all DR programs in the
2 near-term for the current DR program cycle (2006-2008).
- 3 2. Use “Best Estimates” of MW reductions for reliability DR programs
4 for 2009-2016.
- 5 3. Ramp-up price-responsive DR to the full 5% goal during the first
6 summer after the “full deployment” year of AMI in 2011.
- 7 4. Assume all Commission-approved programs are cost-effective.
- 8 Attachment B - 3 shows DRA’s recommended resource procurement plan
9 for PG&E’s DR resources based on the above assumptions.

F. Renewables

1. Introduction

Each IOU is required to comply with the mandated RPS standard of 20% by 2010. Energy Action Plan II of the Commission and the California Energy Commission set a goal of 33% renewable electricity by 2020. This higher renewable goal will also be necessary to meet the State’s Greenhouse Gas cap as required by AB32. The Commission has directed the IOUs, in the preparation of their LTPPs, to “...show a resource plan that is compliant with EAP II, including attempting to achieve 33% renewables by 2020. If the preferred resource plan does not put the IOU on a path to achieve 33% by 2020, the IOU should provide for the differences between its preferred resource plan and a 33% plan including information about the differences between plan costs, resource availability.”³³.

PG&E’s three candidate plans do not address the goal of 33% renewables by 2020 adequately. The “Basic” plan and the “Increased Reliability” plans procure renewables only beyond the 20% standard if “cost-effective”. The “Increased Reliability and Preferred Resources” plan procures more than the 20% of renewables only to satisfy reliability requirements. Under that plan PG&E

³³ ACR/Scoping Memo, Long Term Procurement Phase for R.06-02-013, Attachment A, page 17

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1 could get to a level of 33% renewables by 2020. That level is implied in PG&E's
2 figure titled "Recommended Plan's RPS percentages", which shows about 30%
3 renewables by 2016. However, achievement of that goal under the recommended
4 plan will depend on load growth, reliability needs, and other factors.

5 PG&E asks that the Commission "not establish specific goals beyond 20%
6 until proceedings are completed on policy goals, feasibility and cost of higher
7 penetrations of renewable resources"³⁴. However, this request doesn't meet the
8 State's renewable energy goals as directed by the Commission's Energy Action
9 Plan II, and appears to be inconsistent with estimated renewable energy levels that
10 will be required to meet the State's Greenhouse Gas cap as required by AB 32.

11 DRA also notes that the State's RPS system already includes an inherent
12 maximum limit on renewable costs in excess of fossil fuel costs based on
13 Supplemental Energy Payments and the comparison of future renewable costs to
14 the proxy cost of fossil fuel plants estimated by the market price referent (MPR).

15 **2. Recommendations**

16 DRA has two recommendations regarding PG&E's treatment of renewables
17 in its LTPP.

18 First, the Commission should require PG&E to separate the costs of
19 increased reliability from the costs of increased use of preferred resources, by
20 resource, in its "preferred plan". PG&E provides estimates of the costs of extra
21 reliability and extra use of preferred resources as approximately 0.1 cent/kWh³⁵
22 each. This is about 1% of retail cost. However, since "preferred resources"
23 include energy efficiency as well as renewables, this analysis does not indicate the
24 incremental cost of using additional renewable resources. Thus PG&E should also

³⁴ PG&E graph on future RPS, p. 16 of Dec. 20, 2006 presentation handout.

³⁵ Shown under "4.3 Cost" on p. 39 of handout of 20 Dec. 2006 presentation.

1 break out the costs of customer energy efficiency from renewable resource
2 procurement and generation, for the same reason.

3 Second, DRA asks the Commission to require PG&E to present a plan with
4 a goal of 33% renewable energy by 2020 and not make it conditional on other
5 factors, such as load growth, as directed by the Commission in the September 25,
6 2006 ACR/Scoping memo. This is consistent with Commission and State policy
7 regarding both renewables and Greenhouse Gas reduction.

8 **V. PROCUREMENT STRATEGY BY RESOURCE**

9 **A. Demand Response**

10 PG&E's existing DR programs are described in its LTPP filing, Volume 1.
11 These programs were authorized by the Commission in D.06-03-024.

12 Responding to the Commission's directives in August 2006, PG&E
13 proposed several enhancements to their existing DR programs. In D.06-11-049,
14 the Commission approved, with changes, most of PG&E's proposed
15 enhancements. That decision also ordered PG&E to file several advice letters to
16 roll out new and innovative DR programs: (1) A five-year term DR RFP; (2) A
17 five-year term "Permanent Load Shifting" RFP; (3) A 2007 "AutoDR" proposal;
18 and (4) A large scale AC cycling program; (5) Expansion of Business Energy
19 Coalition (BEC) program. These programs fit into near-term and mid-term
20 resource portfolio in DRA's recommended procurement plan for PG&E. DRA
21 believes PG&E's AMI deployment beginning in 2007 and continuing through
22 2011 could be a major impetus behind PG&E reaching its 5 % goal for price-
23 responsive programs in DRA's recommended procurement plan for PG&E.

24 **B. Renewable Energy**

25 At least one IOU has highlighted the potential benefits of generation
26 procurement under a utility-ownership framework, such as a turn-key contract or
27 "Engineering, Procurement and Construction ('EPC') arrangements where the

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1 utility acts as the developer."³⁶ As PG&E points out, "The Commission has
2 emphasized the importance of procurement flexibility to obtain the best resources
3 for customers. For example, in D.04-12-048, the Commission lifted a ban on
4 affiliate transactions for procurement concluding that 'it is in the best interest of
5 ratepayers and consumers to allow for a full vetting of all available resources in an
6 RFP.'"³⁷ SCE identifies various concerns relating to over-reliance on procurement
7 of resources not built or owned by the utility.³⁸

8 In fact, PG&E has included a few types of utility ownership regimes in
9 previous RFOs for renewable resources. The Company solicited turnkey proposals
10 and certain types of buyout options in its 2005 procurement, and included offers
11 for sites "on which the utility could develop eligible renewable energy resources in
12 addition to fully constructed projects. . . ." In its 2006 LTPP, PG&E proposes to
13 "retain the protocol used to evaluate offers for utility ownership."³⁹

14 In general, utility ownership should be considered as a potentially cost-
15 effective alternative for the procurement of renewable generation, especially when
16 needed to meet RPS targets. Of particular interest in regard to non-fossil fuel
17 technologies is that fact that, as SCE puts it, "A utility-owned project is dedicated
18 to its customers' use over its entire lifecycle. . . . By contrast, independent projects
19 have a 'merchant tail' beyond the contract term, i.e., a hard expiration date. That is,
20 the contract only provides benefits to utility customers for a fixed period of time,
21 after which customers no longer have rights to the resource, and any remaining

³⁶ PG&E Supplemental Testimony at I-1. *See, also*, SCE Supplemental Testimony at 2-5.

³⁷ D.04-12-048 at 128-129.

³⁸ E.g., SCE 2006 LTPP, Vol. II at 14.

³⁹ PG&E 2006 LTPP, Vol. I at V-24.

1 benefits accrue to the resource owner."⁴⁰ For renewable resources, it is reasonable
2 to expect that the economic benefits of the project will be especially heavily
3 loaded onto any such "tail." The Commission should require the IOUs to fully
4 analyze renewable generation ownership options as resource plan candidates,
5 either in a compliance filing in this proceeding or for the next LTPP.

6 In addition, the Commission should require PG&E to continue its previous
7 efforts to procure utility-owned renewables and to expand those efforts to include
8 active search for sites suitable for development of utility EPC arrangements.

9 **C. Other Generation Supply Resources**

10 PG&E is proposing to procure significant quantities of conventional
11 generation to meet the projected requirements of bundled customers, i.e.
12 contractual needs, and of its service territory, i.e., physical needs.

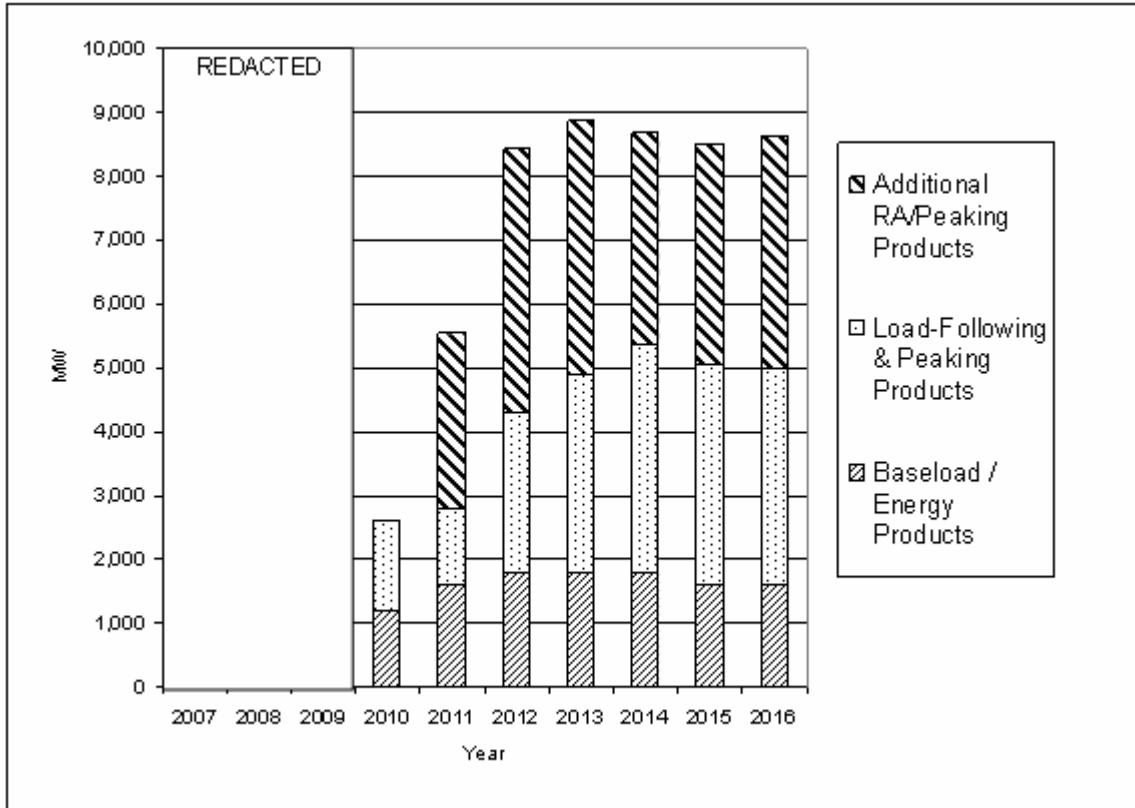
13 **3. Procurements**

14 The types and quantities of projected procurements for bundled customers
15 are presented in Figure B-V.1 and Table B- V.1. This table presents the estimated
16 quantities needed to meet the open capacity requirement after accounting for
17 procurement from preferred and planned resources. In order to represent the
18 manner in which the utility procures capacity to meet fluctuating needs from year
19 to year, this table was assembled as an illustrative example of how various
20 capacity products could be added up to produce the utility's proposed total in each
21 capacity product category. Values in individual rows represent illustrative
22 incremental additions and do not necessarily represent any specific proposed
23 contracts.

⁴⁰ SCE Supplemental Testimony at 3.

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Figure B - V.1
Composition of annual proposed generic product procurement to meet
bundled customer requirements, 2007-2016
(High Price/High Growth Scenario)



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Table B – V. 1
PG&E Proposed Generic Procurements, 2007-2016, High Price/High Growth Scenario

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Baseload / Energy Products				1,200	1,200	1,200	1,200	1,200	1,200	1,200
				-	400	400	400	400	400	400
				-	-	200	200	200	-	-
Baseload / Energy Products Total				1,200	1,600	1,800	1,800	1,800	1,600	1,600
Load-Following & Peaking Products				700	700	700	700	700	700	700
				150	150	150	150	150	150	150
				350	350	350	350	350	350	350
				100	-	-	-	-	-	-
				100	-	-	-	-	-	-
				-	-	1,300	1,300	1,300	1,300	1,300
				-	-	-	600	600	600	600
				-	-	-	-	300	300	300
				-	-	-	-	50	50	-
				-	-	-	-	100	-	-
Load-Following & Peaking Products Total				1,400	1,200	2,500	3,100	3,550	3,450	3,400
Super-Peaking Capacity Products				-	-	-	-	-	-	-
Seasonal Super-Peaking Capacity Products				-	-	-	-	-	-	-
Total Proposed Generic Procurement				2,600	2,800	4,300	4,900	5,350	5,050	5,000
Net Additional Capacity Needed (Scenario 4)				(51)	2,753	4,137	3,969	3,335	3,444	3,636
Total Proposed Generic Need				2,549	5,553	8,437	8,869	8,685	8,494	8,636

4

All data based on PGE 2006 LTPP, Vol. 1, Table Vol. 1, IVAX-49, High Price/High Growth Scenario.

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The proposed procurement to meet bundled customer needs as presented in Table B-V.1 do not include any of the adjustments discussed above in Section IV.B. The proposed level of procurement should be considered in the context of these adjustments.

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The types and quantities of projected procurements for PG&E’s service territory are presented in Table B - V.2. This table shows the physical resource needs for PG&E in all four scenarios for the 16% reserve margin on a 1 in 10 temperature demand that PG&E is proposing as well as for a 15% reserve margin on a 1 in 2 temperature that DRA is proposing⁴¹.

⁴¹ Ibid., Vol. 1, page IV-66

1

Table B – V.2

Line	Planning Reserves	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PG&E Proposed Need - 15% PRM/1-in-2 Demand¹										
1	Scenario 1	-	-	-	-	-	-	-	(259)	(605)	(860)
2	Scenario 2	-	-	-	-	-	-	(241)	(935)	(1,372)	(1,680)
3	Scenario 3	-	-	-	-	-	(198)	(266)	(321)	(549)	(835)
4	Scenario 4	-	-	-	-	-	(1,313)	(1,238)	(1,293)	(1,362)	(1,437)
	PG&E Proposed Need - 16% PRM/1-in-10 Demand²										
5	Scenario 1	(5)	-	-	-	-	(229)	(636)	(1,355)	(1,723)	(2,002)
6	Scenario 2	(2)	(24)	-	-	(502)	(918)	(1,337)	(2,054)	(2,516)	(2,852)
7	Scenario 3	(2)	-	-	-	-	(1,268)	(1,359)	(1,437)	(1,690)	(2,004)
8	Scenario 4	(2)	(39)	-	-	(945)	(2,398)	(2,348)	(2,428)	(2,524)	(2,628)
Notes: ¹ Negative numbers represent peak MW needed to meet PG&E's share of new resources to meet the 15% planning reserve; from PG&E 2006 LTPP, Vol. 1, pages IV-61 to IV-64, Tables Vol. 1, IVE-1 through IVE-4, line 29. ² Negative numbers represent peak MW needed to meet PG&E's share of new resources to meet the 16% planning reserve; from PG&E 2006 LTPP, Vol. 1, pages IV-61 to IV-64, Tables Vol. 1, IVE-1 through IVE-4, line 36.											

2

3

4 **4. Discussion**

5 Tables B - V.1 and B - V.2 indicate that PG&E does not need the majority
 6 of the capacity that it proposes to acquire over the 2007 – 2016 planning horizon
 7 until well after 2008, when it will have to defend its 2008 LTPP. As outlined in
 8 Volume A, there are several reasons why the Commission should only approve
 9 those physical procurements that PG&E must initiate prior to the next LTPP
 10 because of procurement or construction lead times.

11 PG&E has the opportunity to provide that information in its reply testimony
 12 in this proceeding. Specifically it could indicate the specific procurements which
 13 it believes must be pre-approved in this proceeding because of the lead times and
 14 other relevant factors affect their timing. That filing should include sufficient
 15 documentation to support Commission review and decisions concerning date of
 16 need and procurement and construction lead times.

17 PG&E is also faced with the need to replace a very large quantity of
 18 contractual capacity within a period about three years, as indicated in Table V.2,
 19 above. This exposes bundled service customers to considerable price risk as
 20 existing contractual positions expire within a short time frame. As outlined in
 21 Volume A, there are several reasons why PG&E should seek to avoid such

1 exposures in the future by phasing in a laddered portfolio for its contractual
2 procurements. Such a laddered portfolio would be composed of a group of
3 positions, each covering a fraction of the total need, but with staggered expiration
4 dates. The result would be to limit the fraction of bundled customer contractual
5 need exposed to the market at any one point in time.

6 **5. Recommendations**

7 Approve only physical procurements for identified needs in light of the
8 corresponding procurement and construction lead times.

9 Approve contractual procurements for identified needs prior to the next
10 LTPP consistent with procurement lead times and with the phasing in of a
11 laddered portfolio.

12

13 **VI. EVALUATION OF RESOURCE PLAN**

14 **A. Demand Response**

15 Although there is a lot of uncertainty about whether the PG&E will meet its
16 5 % goal for “price-responsive” programs or whether the Commission will allow
17 PG&E to count reliability programs towards their 5% goal, DRA agrees with
18 SDG&E’s argument in its LTPP filing that “holding room for these goals ensures
19 that resource commitments today do not foreclose the opportunities in these policy
20 areas in the future.”⁴² At the January 25, 2007 CAISO’s Market Issues Forum on
21 DR, Commissioner Chong once again exhorted the utilities to increase the
22 effectiveness and participation in their price-responsive DR programs to move
23 closer to the 5% goal. DRA believes PG&E’s AMI deployment, other
24 technology-enabled DR programs (e.g. Auto DR, PCTs etc.) and time

⁴² San Diego Gas & Electric Company - 2007-2016 Long-Term Procurement Plan, Volume I. p.167

1 differentiated tariffs (e.g. CPP, RTP) could increasingly play an effective role in
2 meeting Commission's 5% goal in future.

3

4 **VII. COST RECOVERY ISSUES**

5 Based upon the information we have reviewed to date we do not disagree
6 with this aspect of PG&E's LTPP.

7

8 **VIII. COMMISSION REVIEW OF IMPLEMENTATION OF** 9 **PROCUREMENT PLAN**

10 Based upon the information we have reviewed to date we do not disagree
11 with this aspect of PG&E's LTPP.

12

13 **IX. TESTIMONY ON SELECTED PROCUREMENT POLICY** 14 **ISSUES**

15 **B. Procurement Practices**

16 **2. Credit and Collateral Policies**

17 (See Volume A)

18 **C. Risk Management Practices**

19 **2. Application of TeVaR to Measure the Customer Risk Tolerance** 20 **Threshold**

21 (See Volume A)

22 **D. Other Testimony in Support of Procurement Policies and Plans**

23 **1. Recent/Upcoming Policy Issues**

24 **(a) GHG Reduction Goal**

25 PG&E proposes that "the Commission should consider focusing on one
26 GHG reduction goal consistent with state policy, rather than creating further

1 separate set-aside targets in renewables, distributed generation, solar roofs, DR,
2 repowering or EE."⁴³ The Company argues that "If PG&E has more flexibility in
3 choosing among a suite of GHG reducing tools, policy objectives much more
4 likely to be achieved at a lower cost rather than if specific targets are created in
5 several programs."⁴⁴

6 If the only issue at hand were to find the least cost mix of resources to meet
7 a singular GHG reduction goal, this argument might have some merit. However,
8 GHG reduction is only one among many policy goals established by the State of
9 California, and each preferred resource or other specific requirement has
10 considerable side benefits that would not be captured in a single GHG target. The
11 Commission should deny this request.

12 **(b) Emerging Renewable Resources Program (ERRP)**

13 PG&E has proposed an Emerging Renewable Resources Program (ERRP),
14 described as "a funding mechanism through which PG&E can assist in the
15 demonstration of the commercial viability of emerging renewable technologies
16 and resources." The Company states that the ERRP is "a critical part of PG&E's
17 strategy to procure renewable resources beyond its 20% RPS goal" and will
18 expand renewable resource supply, and lower long-term costs of renewable
19 energy; accelerate promising renewable technologies; and provide critical
20 feedback about the availability of new renewable technologies and resources.⁴⁵

21 The Commission should approve PG&E's proposal contingent on an
22 opportunity for review and comment on specific program design and budget prior

⁴³ PG&E 2006 LTPP, Vol. II at I-7 to I-8.

⁴⁴ PG&E 2006 LTPP, Vol. II at I-8.

⁴⁵ PG&E 2006 LTPP, Vol. II at 1-18. *See*, also Vol. I at V-24-26.

1 to commitment of funds. That program design and budget should be developed by
2 the IOU and filed along with evidence on the expected cost and benefits of the
3 program. The Commission may wish to consider a statewide version of this
4 program if it can be adequately defined, possibly run as a consortium among the
5 three IOUs or, even additional utilities, to achieve economies of scale.

6 **3. Other Procurement Policies and Plans**

7 **(a) Contracting for Economic Biomethane**

8 PG&E presents its Gas Supply Plan in Volume 1, Section III, Attachment
9 III B. As part of that Plan PG&E is proposing to execute supply contracts for
10 “economic” biomethane for environmental and supply reasons.⁴⁶ PG&E does not
11 identify the metric it will to use to determine whether a given source of
12 biomethane is economic or non-economic. We recommend that PG&E use a
13 “delivered into system” price test for this purpose, i.e., is the price that PG&E pays
14 for biomethane delivered into its system equal to or less than the price it pays for a
15 comparable supply of natural gas delivered into its system. If PG&E uses this, or a
16 similar, economic test then its proposal seems reasonable.

17 **(b) Nuclear Fuel Hedging Plan**

18 PG&E's strategy is driven by projected under-supply of fuel and fuel
19 services due to a 24% increase in nuclear capacity over the plan horizon.⁴⁷ The
20 strategy includes forward contracting for supply but the forward contracting is
21 priced based on market indices. Fuel services strategy employs a base price
22 indexed by various inflation factors. Both seem reasonable.

⁴⁶ See, also, PG&E 2006 LTTP, Vol. II, Sec. IV.C. 2.

⁴⁷ See, also, PG&E 2006 LTTP, Vol. II, Sec. IV.D.