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Commissioner	:	<u>Florio</u>
ALJ	:	<u>Pulsifer</u>
Witness	:	<u>Kanter</u>



**DIVISION OF RATEPAYER ADVOCATES
CALIFORNIA PUBLIC UTILITIES COMMISSION**

**Report on the Results of Operations
for
Pacific Gas and Electric Company
General Rate Case
Test Year 2014**

Billings, Sales, and Other Operating Revenues

San Francisco, California
May 3, 2013

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1 **BILLINGS, SALES, and OTHER OPERATING REVENUES**

2 **I. INTRODUCTION**

3 This exhibit presents the analyses and recommendations of the Division of
4 Ratepayer Advocates (DRA) regarding Pacific Gas and Electric Company's (PG&E)
5 forecasts of electric and gas billings, sales, and other operating revenues (OOR) for
6 Test Year (TY) 2014.

7 This exhibit discusses the methodologies used by PG&E and DRA for
8 estimating electric billings, sales forecast, and OOR.

9 **II. SUMMARY OF RECOMMENDATIONS**

10 The following summarizes DRA's recommendations for electric billings and
11 sales:

- 12 • DRA's electric sales test year forecast is 87,294 GWh.
- 13 • DRA's test year forecast for average number of electric billings is
14 5,399,182.

15 The following summarizes DRA's recommendations for gas billings and sales:

- 16 • Gas demand and billings counts forecasts for 2014 were litigated
17 and adopted in the 2010 Biennial Cost Allocation Proceeding. Total
18 gas sales of 741,665 MDTH were adopted. DRA does not oppose
19 this forecast.

20 The following summarizes DRA's recommendations for OOR:

- 21 • DRA's forecast of OOR is based on PG&E's recorded 2012 OOR,
22 with the exception of the estimate for the amount of
23 reimbursements PG&E receives for assisting other utilities in the
24 wake of natural disasters.

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1 Table 3-1 compares DRA's and PG&E's TY2014 forecasts of electric billings
 2 and sales:

3 **Table 3-1**
 4 **Electric Customers and Sales for TY2014**

Description (a)	DRA Recommended (b)	PG&E Proposed ¹ (c)	Amount PG&E>DRA (d=c-b)	Percentage PG&E>DRA (e=d/b)
Electric Customers	5,399,182	5,447,660	48,478	.90%
Electric Sales (GWH)	87,294	86,635	-659	-.75%

5 Table 3-2 presents PG&E's Gas demand and billings counts forecasts for
 6 2014.

7 **Table 3-2**
 8 **Gas Billings and Sales by Customer Class**
 9 **(2010 BCAP Forecast)**

	Demand ² (MDTH)	BILLINGS ³
Residential	201,320	4,111,229
Commercial	86,690	232,291
Core Natural Gas Vehicles	2,022	4,568
Industrial	170,916	790
Cogeneration	73,240	166
Electric Generation	196,670	66
NonCore Natural Gas Vehicles	523	2
Wholesale	3,721	0
Total	735,102	4,349,112

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¹ Ex. PG&E-10, pp. 4-7 and 4-8.

² Ex. PG&E-10, p. 5-2.

³ Ex. PG&E-10, p. 5-3.

1 Table 3-3 presents PG&E's TY2014 forecasts of OOR.

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Table 3-3
Other Operating Revenues for TY2014
(In Thousands of Dollars)

Description (a)	DRA Recommended (b)	PG&E Proposed ⁴ (c)	Amount PG&E>DRA (d=c-b)	Percentage PG&E>DRA (e=d/b)
Total Generation	\$17,860	\$14,381	-\$3,479	-19.48%
Electric Distribution	\$118,099	\$74,537	-\$43,562	-36.89%
Gas Distribution	\$22,142	\$25,228	\$3,086	13.94%
Total	\$158,101	\$114,146	-\$43,955	-27.80%

5 **III. DISCUSSION / ANALYSIS OF ELECTRIC BILLINGS AND SALES**

6 DRA reviewed the econometric models PG&E used to forecast electric
7 customers and sales for the residential, commercial, industrial, agricultural, railway,
8 street lighting, interdepartmental, public authority, and resale classes. DRA does not
9 object to PG&E's electric sales and customer forecasts for all classes with the
10 exception of residential and commercial. DRA has a different sales and customer
11 forecast for the residential class and commercial class. Tables 3-4 and 3-5 present a
12 comparison of DRA's Test Year electric customer and sales forecasts with PG&E's
13 by customer class.
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⁴ Ex. PG&E-2, p. 17-9.

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**Table 3-4
Electric Billings by Customer Class for 2012-2014**

Customer Category	DRA Recommended			PG&E Proposed ⁵		
	2012	2013	2014	2012	2013	2014
Residential	4,646,548	4,693,447	4,742,593	4,661,975	4,722,693	4,786,696
Commercial	534,825	536,305	537,789	534,574	537,785	542,164
Industrial	1,270	1,270	1,270	1,270	1,270	1,270
Public Authority	16	16	16	16	16	16
Agriculture	84,048	83,942	83,837	84,048	83,942	83,837
Street Lighting	32,862	33,269	33,675	32,862	33,269	33,675
Railway	1	1	1	1	1	1
Resale	1	1	1	1	1	1
Total	5,299,571	5,348,251	5,399,182	5,314,747	5,378,976	5,447,659

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**Table 3-5
Electric Sales by Customer Class for 2012-2014
(in GWH)**

Customer Category	DRA Recommended			PG&E Proposed ⁶		
	2012	2013	2014	2012	2013	2014
Residential	31,606	32,302	33,147	31,681	32,126	32,576
Commercial	32,846	32,542	33,013	32,517	32,538	32,925
Industrial	14,870	15,000	15,201	14,870	15,000	15,201
Public Authority	20	20	20	20	20	20
Agriculture	5,392	5,045	4,976	5,392	5,045	4,976
Street Lighting	432	435	437	432	435	437
Railway	360	360	360	360	360	360
Interdepartmental	220	140	140	220	140	140
Resale	--	--	--	--	--	--
Total	85,746	85,844	87,294	85,493	85,663	86,635

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⁵ Ex. PG&E-10, p. 4-8, Table 4-3.

⁶ Ex. PG&E-10, p. 4-7, Table 4-2.

1 **A. Overview of PG&E’s Request**

2 PG&E’s forecasts of electric sales and billings (i.e., customers) were derived
3 using econometric equations that project sales and billings by major customer class
4 for the years 2012 through 2014. Service territory specific historic and forecast
5 economic and demographic series were provided by Moody’s Analytics.⁷

6 **B. Electric Customers**

7 PG&E used an econometric time series model in order to forecast
8 residential electric accounts. The model was a simple ARIMA model
9 (autoregressive integrated moving average model.) The explanatory variable was
10 a household variable supplied by Moody’s Analytics. The forecasted (dependent)
11 variable was residential accounts (billings). The autocorrelation plot for the
12 dependent variable showed a slow steady linear decay pattern, indicative of a
13 non-stationary time series which needed to be differenced. (That is, the
14 forecasted variable in the regression equation should have been the dependent
15 variable (residential accounts) minus its one month lag.) PG&E’s forecasted
16 variable was the original dependent variable. Finally, PG&E did not use a constant
17 term in its forecasting equation.

18 After verifying the results from PG&E’s residential accounts model, DRA
19 modified that model. DRA used an ARIMA econometric time series model with the
20 same dependent and explanatory variables. In DRA’s model the forecasted
21 variable was the dependent variable (residential accounts) minus its one month
22 lag. Consistent with this definition of the forecasted variable, DRA did not have a
23 constant term in its forecasting equation. DRA’s model gave a better fit to the
24 historical data than PG&E’s model in having a smaller overall standard error.
25 DRA’s model was unbiased in that it passed the white noise and autocorrelation
26 check for residuals, whereas PG&E’s model did not pass these two tests.

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⁷ Ex. PG&E-10, p. 4-2.

1 PG&E used a double log econometric model in order to forecast commercial
2 electric accounts. The explanatory variables were the log of building permits and
3 indicators for certain time periods. The forecasted (dependent) variable was the log
4 of commercial accounts. The same variable, lagged one month, was also used as an
5 explanatory variable. This amounts to using commercial accounts from the previous
6 month to help predict future commercial accounts and is not a standard ARIMA
7 model. PG&E used a simple regression when it ran its model. In short, PG&E used a
8 time series model which used accounts lagged one month as well as independent
9 explanatory variables to forecast future accounts. PG&E's model included a
10 constant term with value 0.0273, which has a noticeable multiplicative effect (after
11 exponentiation) on the forecast in a double log model, even though it is not
12 significantly greater than 0 in a statistical sense.

13 After verifying the results from PG&E's commercial accounts model, DRA
14 modified that model. The explanatory variables were the same time period
15 indicators that PG&E used. The dependent variable was the log of commercial
16 accounts. The autocorrelation plot for the dependent variable showed a slow steady
17 linear decay pattern, indicative of a non-stationary time series which needed to be
18 differenced. DRA's model used a second order difference, at lags 1 and 12, so that
19 the forecasted variable was the difference between the lag 1 difference and the lag
20 12 difference. Also the data indicated that a constant term was not needed, therefore
21 DRA's model did not include such a constant term.

22 **C. Electric Sales**

23 PG&E's residential electric sales forecast was derived using a double log
24 econometric model. The explanatory variables were functions of price, income, and
25 weather. The forecasted (dependent) variable was the log of monthly sales divided
26 by the number of households, as supplied by Moody's Analytics. The
27 autocorrelation plot for the dependent variable was indicative of a non-stationary
28 time series which needed to be differenced

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1 After verifying the results from PG&E's residential sales model, DRA modified
2 that model. DRA used the same dependent variable as PG&E, but the forecasted
3 variable was the difference between the lag 1 difference and the lag 12 difference of
4 that variable (a second order difference model). DRA's model used the same
5 independent explanatory variables as PG&E used (with one exception) to forecast
6 future sales. DRA's model did not include the income variable because this variable
7 was not statistically significant. Also the data indicated that a constant term was not
8 needed, therefore DRA's model did not include such a constant term. DRA's model
9 was unbiased in that it passed the white noise and autocorrelation check for
10 residuals. (PG&E's model did not pass these two tests.)

11 PG&E and DRA used the same econometric model for commercial sales. The
12 results are slightly different, because PG&E used E-views while DRA used SAS.

13 **IV. DISCUSSION / ANALYSIS OF GAS BILLINGS AND SALES**

14 PG&E's 2014 forecasts of gas sales and billings (i.e., customers) are based
15 on the forecasts adopted in PG&E's 2010 BCAP case. The adopted BCAP forecast
16 represents the BCAP test period, which runs from July 2010 to June 2012.

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1 **V. DISCUSSION / ANALYSIS OF OTHER OPERATING REVENUES**

2 PG&E forecasts \$114.1 million of OOR for 2014. PG&E derived its forecast
3 on an item-by- item basis, first establishing base estimates from 2011 recorded
4 revenues. Then, to forecast test year OORs, PG&E adjusted the base year estimate
5 to reflect changes that are expected to affect the forecast.

6 DRA recommends the amount \$158.1million as its forecast of OOR for 2014.
7 DRA bases its forecast of OOR on PG&E's recorded 2012 OOR,⁸ equal to \$170.7
8 million, except that the 2012 recorded amount of \$15.4 million that PG&E received
9 (part of Reimbursed Revenues in FERC Account 456) for its efforts to help east
10 coast utilities in the aftermath of Hurricane Sandy was replaced by an estimate of
11 \$2.8 million. This was an estimate of a normalized amount of reimbursements PG&E
12 can reasonably be expected to receive for helping other utilities in the wake of
13 natural disasters such as Hurricane Sandy. This estimate was derived as an
14 average of the amount of such reimbursements received over the nine year period
15 from 2003 to 2012.⁹

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⁸ PG&E's response to data request PG&E-DRA-123-MRK, Q.1.

⁹ PG&E's response to data request PG&E-DRA-254-MRK, Q.1.

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Table 3-6 presents a breakdown of OOR into FERC accounts.

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Table 3-6
Other Operating Revenues for 2014
(In Thousands of Dollars)

FERC Account	Description	DRA Recommends	PG&E Proposes	Amount PG&E>DRA	Percent PG&E>DRA
450	Forfeited Discounts -Electric	\$5,747	\$4,386	-1,361	-23.68%
451	Miscellaneous Service Revenues	3,725	4,167	442	11.87%
451	Revenue Protection	1,356	857	-499	-36.83%
451	CFM	4,995	4,348	-647	-12.95%
454	Rent On Electric Property	28,441	18,036	-10,405	-36.58%
456	CIAC Tax Gross-Up	32,492	35,310	2,818	8.67%
456	Other Revenue	1,594	1,330	-264	-16.56%
456	Reimbursed Revenues	39,749	6,103	-33,646	-84.65%
487	Forfeited Discounts- Gas	\$117	\$69	-48	-41.05%
488	Miscellaneous Service Revenues	1,626	1,819	193	11.85%
488	CFM	1,854	3,558	1,704	91.88%
489	Transport of Gas for Others	406	406	0	0.09%
493	Rent On Gas Property	1,291	2,650	1,359	105.29%
495	CIAC Tax Gross-Up	6,015	6,145	130	2.16%
495	Other Revenue	5,286	8,662	3,376	63.86%
495	Reimbursed Revenues	5,547	1,920	-3,627	-65.39%
454	Fossil Rents	\$66	\$680	614	930.90%
456	Reimbursed Revenue	42	0	-42	-100.00%
453	Sales of Water and Water for Power	356	328	-28	-7.77%
454	Hydro Rents	1,019	1,850	831	81.54%
456	Recreation Facilities	129	123	-6	-4.33%
456	Timber Sales	2,257	663	-1,595	-70.65%
456	Reimbursed Revenue	13,398	8,000	-5,398	-40.29%
454	Nuclear Rents	285	2,737	2,452	860.22%
456	Reimbursed Revenue	308	0	-308	-100.00%
	Total GRC OOR	\$158,101	\$114,146	-\$43,955	-27.80%

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1 Table 3-7 presents PG&E's expenses associated with OOR. For 2011 these
 2 are recorded, whereas for 2012-2014 these are estimated.

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Table 3-7
Expenses,¹⁰ Associated with Other Operating Revenues
(In Thousands of Dollars)

FERC Account	Description	PG&E 2011 Expenses	PG&E 2012 Expenses	PG&E 2013 Expenses	PG&E 2014 Expenses
450	Forfeited Discounts -Electric Miscellaneous Service	\$5,947	\$6,947	\$6,947	\$6,947
451	Revenues	3,725	4,725	4,725	4,725
451	Revenue Protection	1,356	1,356	1,356	1,356
451	CFM	4,995	4,995	4,995	4,995
454	Rent On Electric Property	28,441	28,441	28,441	28,441
456	CIAC Tax Gross-Up	29,492	32,492	32,492	32,492
456	Other Revenue	1,594	2,584	2,584	2,584
456	Reimbursed Revenues	3,969	4,969	4,969	4,969
487	Forfeited Discounts- Gas Miscellaneous Service	\$117	\$69	\$69	\$69
488	Revenues	1,626	2,819	2,819	2,819
488	CFM	1,854	3,558	3,558	3,558
489	Transport of Gas for Others	406	506	506	506
493	Rent On Gas Property	2,291	2,650	2,650	2,650
495	CIAC Tax Gross-Up	7,015	6,145	6,145	6,145
495	Other Revenue	7,286	8,662	8,662	8,662
495	Reimbursed Revenues	5,547	1,920	1,920	1,920
454	Fossil Rents	\$66	\$680	\$680	\$680
456	Reimbursed Revenue	42	52	52	52
453	Sales of Water and Water for Power	356	428	428	428
454	Hydro Rents	2,019	1,850	1,850	1,850
456	Recreation Facilities	129	133	133	133
456	Timber Sales	2,257	663	663	663
456	Reimbursed Revenue	15,398	8,000	8,000	8,000
454	Nuclear Rents	485	2,737	2,737	2,737
456	Reimbursed Revenue	308	523	523	523

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¹⁰ PG&E's response to data request PG&E-DRA-257-MRK, Q.1.