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Date: April 15, 2014
Witness: Ana Garza-Beutz

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Application of San Diego Gas & Electric Company))
(U 902 E) for Approval of its Greenhouse Gas))
Forecasted Costs and Allowance Revenues for 2015))
and Reconciliation of its Allowance Revenues))
for 2013.))
_____))

Application 14-04-_____
(Filed April 15, 2014)

PREPARED DIRECT TESTIMONY OF
ANA GARZA-BEUTZ
ON BEHALF OF
SAN DIEGO GAS & ELECTRIC COMPANY

****PUBLIC VERSION****

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

April 15, 2014

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1 **PREPARED DIRECT TESTIMONY OF**
2 **ANA GARZA-BEUTZ**
3 **ON BEHALF OF**
4 **SAN DIEGO GAS & ELECTRIC COMPANY**

5 **I. PURPOSE AND OVERVIEW**

6 This testimony presents San Diego Gas & Electric Company’s (“SDG&E”) 2013 actual
7 revenues and 2013 “actual” costs for greenhouse gas (“GHG”) compliance instruments used to
8 satisfy compliance obligations under the California Air Resources Board’s (“ARB”) cap-and-
9 trade program pursuant to Assembly Bill (“AB”) 32.¹ The following sections describe the cap-
10 and-trade program and detail SDG&E’s 2013 actual revenues and costs for the purposes of
11 reconciliation as further explained in the testimony of SDG&E witness Yvonne LeMieux.

12 **II. BACKGROUND**

13 **A. AB 32 Background**

14 The Global Warming Solutions Act of 2006, also referred to as AB 32, establishes a goal of
15 reducing California’s GHG emissions to the 1990 level by 2020. The statute grants ARB broad
16 authority to regulate GHG emissions to reach this target. ARB’s Scoping Plan includes a
17 recommendation that California adopt a portfolio of emissions reduction measures, including a
18 California GHG cap-and-trade program.²

19 In October 2011, ARB released its Final Regulation Order, which was approved by its
20 Board and by the Office of Administrative Law (“OAL”) in December 2011.³ The ARB
21 regulations create a GHG emissions allowance cap-and-trade system, with compliance obligations

¹ 2013 actual costs for GHG compliance instruments are estimated at this time because the actual verified emissions will not be finalized until September 2014.

² ARB Resolution 11-32 at 3.

³ The ARB Final Regulation Order from December 2012 is codified at 17 CCR § 95800 et seq. and is also available at: <http://www.arb.ca.gov/regact/2010/capandtrade10/capandtrade10.htm>.

1 in the electricity sector applicable to “first deliverers of electricity”⁴ that emit more than 25,000
2 Metric Tons (“MT”) of GHG. The regulation requires that first deliverers of electricity, including
3 investor-owned utilities (“IOUs”), obtain all the compliance instruments⁵ required to meet their
4 compliance obligations by November 1 of the year following the end of a compliance period.⁶

5 **B. 2013 GHG Actual Revenue**

6 The revenues in this testimony result from the sale of allowances allocated to SDG&E from
7 ARB for the benefit of its ratepayers. Allowances that are allocated annually to IOUs are required
8 to be made available for sale at the ARB auctions.⁷ Revenues are calculated by multiplying the
9 volumes sold by the auction settlement price. For 2013, the actual revenues include the Vintage
10 2013 allowances sold at the November 2012 auction.

11 **C. 2013 GHG Actual Emissions Volumes**

12 The 2013 “actual” direct emissions will be the actual/calculated GHG emissions for: 1)
13 SDG&E’s California utility-owned generation (“UOG”), 2) California generators with whom
14 SDG&E has contracts where SDG&E is responsible for GHG costs, and 3) estimated emissions
15 associated with SDG&E imports of both specified electricity and unspecified electricity.

16 In addition, the 2013 “actual” direct emission obligation can be reduced by the Renewable
17 Portfolio Standard (“RPS”) adjustment. The RPS adjustment is calculated by multiplying the out-

⁴ “First deliverers of electricity” is defined in Section 95811(b) of ARB’s Final Regulation Order as electricity generators inside California and importers of electricity from outside of California.

⁵ Compliance instruments consist of allowances and offsets. An allowance is a limited tradable authorization to emit up to one MT of carbon dioxide equivalent (“CO₂e”) and an offset is a project that reduces GHG in sectors outside of those covered in the cap-and-trade program. *See* Section 95801 of ARB’s Final Regulation Order for these definitions.

⁶ Section 95892(b) of ARB’s Final Regulation Order describes that IOUs are required to sell all their free allowances and acquire an amount equal to their direct compliance obligations. There are also annual requirements to surrender at least 30% of expected annual obligation each year by November 1 of the following year.

⁷ Allowances given to the IOUs must all be consigned by the last auction of that year. Except for the November 2012 where ARB specified the amount that each IOU needed to auction, the remaining

1 of-state renewable megawatt-hours (“MWh”) eligible for the RPS adjustment by the ARB assigned
2 unspecified emission factor.

3 The 2013 “actual” indirect emissions are estimated emissions based on net purchases from
4 the California electricity market controlled by the California Independent System Operator
5 (“CAISO”) measured in MWh.

6 The direct, indirect and RPS adjustment volumes may change to some extent because they
7 are subject to: 1) report verification, 2) changing emission factors, 3) contractual requirements for
8 reviewing tolling agreement emissions for potential reductions, and 4) coordination with RPS
9 portfolio retirement. For the purpose of reconciliation, SDG&E will be using this estimate of
10 “actual” GHG costs for the purpose of adjusting residential and small business returns in 2015.

11 **D. 2013 GHG Actual Cost Categories**

12 The costs in this testimony are broken down into two categories of 2013 GHG actual costs:
13 2013 direct costs and 2013 indirect costs. SDG&E defines 2013 direct current costs as the net cost
14 of procuring compliance instruments that can be used to satisfy SDG&E’s 2013 compliance year
15 obligations. 2013 direct costs are further broken down into two categories: 2013 direct costs for
16 compliance instruments that have already been purchased and 2013 direct cost for compliance
17 instruments that have yet to be purchased (if necessary). SDG&E defines 2013 indirect costs as
18 the GHG compliance costs embedded in the price of electricity delivered in 2013, which are
19 passed on from sellers.

20 Section III addresses the carbon price for 2013. Section IV.A addresses 2013 direct GHG
21 emissions associated with SDG&E’s UOG plants, procurement of electricity from tolling
22 agreements, and electricity imports attributed to SDG&E for compliance. Section IV.B addresses

volumes sold at each auction was up to the discretion of each IOU provided that the entire volume was consigned by the end of the year.

1 the approximate 2013 indirect GHG emissions for which SDG&E paid as GHG costs embedded in
 2 electricity prices charged by third parties to SDG&E under contract for various supplies.⁸ Section
 3 IV.C summarizes the GHG costs based on the carbon prices in section III and emissions in
 4 Sections IV.A and IV.B.

5 **III. CARBON PRICE METHODOLOGY**

6 **A. Price for Direct GHG Emissions**

7 SDG&E uses a weighted-average-cost method by vintage year of purchased GHG
 8 compliance instruments for actual purchases and based upon the forward prices in the
 9 Intercontinental Exchange (“ICE”) market for emissions in excess of actual purchases. The actual
 10 weighted-average prices and the ICE forward price are listed below:

| Vintage Year | | SDG&E ELECTRIC Allowance/Offset Purchases (in MT) | | | Weighted Avg Prices (WAPs) | | |
|--------------|---------------|---|---------|-------|----------------------------|----------------|--------------|
| | | Allowance Purchases | Offsets | Total | WAP of Allowances | WAP of Offsets | Combined WAP |
| 2013 | Volume (MT) | | | | | | |
| | Price (\$/MT) | | | | | | |

| ICE Forward Price | | |
|-------------------|----------|-------------|
| Vintage Year | Delivery | Price \$/MT |
| 2013 | Mar-14 | N/A |
| 2014 | Mar-14 | \$11.63 |
| | Dec-14 | \$11.95 |

13 If the volume of actual Vintage 2013 compliance instrument purchases is greater than or
 14 equal to the 2013 actual emissions, then the pricing is as follows: the weighted-average of offset
 15 prices up to 8% of 2013 emissions obligation and the weighted-average price of allowances
 16 acquired for the remainder. If, on the other hand, the 2013 actual emissions exceed the actual
 17 vintage 2013 compliance instrument purchases, then actual weighted-average prices as described

⁸ 2013 indirect GHG costs are estimated based on the assumptions described herein.

1 above will be applied first and the 2014 ICE forward prices will be used for the balance of the cost
2 calculation.⁹

3 **B. Price for Indirect Emissions**

4 The embedded GHG cost is estimated by using the average 2013 CAISO GHG Allowance
5 Price Index as listed below.¹⁰ Indirect costs are an estimate since it is assumed that the GHG cost
6 was passed on by all sources of power from market purchases.

| 2013 CAISO GHG Prices | |
|-----------------------|----------------|
| Q1 2013 | \$14.55 |
| Q2 2013 | \$14.59 |
| Q3 2013 | \$13.27 |
| Q4 2013 | \$11.86 |
| Total | \$13.57 |

7
8 **IV. 2013 ACTUAL GHG COMPLIANCE COSTS**

9 **A. 2013 Direct Greenhouse Gas Emissions**

10 Under ARB’s cap-and-trade program, the “first deliverer of electricity” within California
11 must surrender one allowance or offset credit for each MT of GHG emissions. Accordingly,
12 SDG&E had direct compliance obligations for GHGs emitted from burning natural gas at its UOG
13 plants, namely, the Palomar Energy Center (“Palomar”), Miramar Energy Facility I and II
14 (collectively, “Miramar”) and the Cuyamaca Peak Energy Plant (“Cuyamaca”).¹¹ SDG&E’s UOG
15 GHG emission volumes are derived from information extracted from each plant’s Continuous

⁹ See SDG&E’s proposal in Application (A.) 13-08-002 et al., Phase 2 Joint Utility Proposal Matrix dated March 25, 2014.

¹⁰ Department of Market Monitoring, CAISO, quarterly reports, “Q1 2013 Report on Market Issues and Performance,” at 41, “Q2 2013 Report on Market Issues and Performance,” at 41, “Q3 2013 Report on Market Issues and Performance,” at 53, and “Q4 2013 Report on Market Issues and Performance,” at 58.

¹¹ ARB’s Mandatory Reporting Regulations requires use of emission factors from federal regulations - 40 Code of Federal Regulation (“CFR”) Section 98. For pipeline natural gas, there are three components – CO₂, CH₄, and NO₂. Table C-1 of 40 CFR Section 98 provides an emissions rate for CO₂ of 0.05302 MT/MMBtu. Table C-2 of 40 CFR Section 9 gives a default emission factor for CH₄ of 0.000001 MT/MMBtu. Based on a Global Warming Potential of 21, results in a CO₂e emission rate of 0.00002 MT/MMBtu. The default NO₂ emission rate is given as 0.0000001 MT/MMBtu, and the Global

1 Emissions Monitoring Systems (“CEMS”) and that plant’s annual fuel usage. The data is reported
2 to ARB (under the mandatory GHG reporting rule) and undergoes a rigorous quality
3 assurance/quality control (“QA/QC”) process with supporting documentation from the CEMS
4 systems. The data is then subject to third party verification by an ARB-certified verifier and will
5 become final September 2014. The estimated actuals are as follows:

| California UOG Plants | Actual in MT |
|----------------------------|--------------|
| Palomar Energy Center | |
| Miramar Energy Facilities | |
| Cuyamaca Peak Energy Plant | |
| Total | |

6
7 In addition, SDG&E has agreements with some California generators, which stipulate
8 that if SDG&E is dispatching the plant, then SDG&E will provide compliance instruments to the
9 generator for its GHG compliance obligations. These agreements include, among others, the
10 Otay Mesa Energy Center (“OMEC”) and the Orange Grove Energy Peaker (“Orange Grove”).
11 In 2013, only OMEC and Orange Grove were covered entities under the cap-and-trade program.
12 The estimated actuals for these plants were calculated by multiplying the MMBtu burned with
13 the emission factor of 0.05307 MT/MMBtu associated with natural gas as the input fuel. This
14 estimate is subject to change, not only because the emissions estimates are based on fuel
15 calculations instead of emission meter read calculations, but also because the tolling agreement
16 contracts state that SDG&E will only cover the emissions generated as a result of SDG&E
17 dispatches of efficiently run plants. SDG&E will be analyzing the 2013 data and could
18 potentially adjust the emissions for non-SDG&E dispatches and/or for inefficiencies. The
19 estimated actuals for California agreements are as follows:

Warming Potential is 310, resulting in a CO₂e emission rate of 0.00003 MT/MMBtu. Combining the 3 elements results in an overall emission rate of 0.05307 MT/MMBtu.

| California Tolling Agreement Generators | Actual in MT |
|---|--------------|
| Otay Mesa Energy Center | |
| Orange Grove Peaker | |
| Total | |

An entity that delivers out-of-state electricity to a delivery point inside California is also responsible for the GHG emissions associated with generation of that electricity. For known imports, called “specified sources,” the estimated GHG emissions related to the portion of the output of the plants that was delivered to California are covered in the cap-and-trade program and as such the importer of that electricity has a compliance obligation. SDG&E has a contract with Yuma Cogeneration Associates (“YCA”) in Arizona and owns the Desert Star Energy Center (“Desert Star”) combined cycle plant in Nevada. SDG&E also had a contract with Portland General Electric’s Boardman coal plant in Oregon that expired at the end of 2013. All of these out-of-state generators are specified sources. The compliance obligation for the power imported from each of these sources is calculated by the product of the imported power times the transmission loss correction factor as listed in section 95111 of ARB’s mandatory reporting regulation, and the specified emissions factor assigned to those facilities by ARB.¹² The estimated actuals for SDG&E’s Specified Imports are as follows:

| Out-of-State Specified Imports | 2013 Imports in MWh | 2012 Emission Factor | Transmission Loss Factor | Actual in MT |
|--------------------------------|---------------------|----------------------|--------------------------|--------------|
| Desert Star | | 0.3918 | 1.00 | |
| YCA | | 0.4040 | 1.02 | |
| Boardman | | 0.9738 | 1.02 | |
| Total | | | 1.02 | |

In addition to specified sources, importing of “unspecified sources” also generates a compliance obligation. SDG&E procured contracted imports and market imports from unspecified sources in 2013. The cap-and-trade compliance obligation for these unspecified imports is

¹² Specified Emission Factors are updated annually by ARB. They can be found at: <http://www.cdscsupport.com/confluence/display/calhelp/Reporting+Form+Instructions>

1 calculated by multiplying the number of MWh imported, adjusted upward by two percent to
 2 account for transmission losses between the point of generation and the California border, times
 3 the ARB default rate, as stated in its regulation (currently 0.428 MT per MWh).¹³ Finally, ARB
 4 recognizes that the building of new renewable generation outside California reduces GHG. As
 5 such, the cap-and-trade regulations provide an RPS adjustment. The RPS adjustment reduces the
 6 GHG compliance burden created by assigning the default emission rate, 0.428 MT/MWh to the
 7 GHG-free renewable energy, as measured at the point of generation, but the adjustment does not
 8 account for the transmission losses from the point of generation to California.¹⁴ The estimated
 9 actuals for SDG&E's unspecified imports and RPS adjustment are as follows:

| Out-of-State Unspecified Imports & RPS Adjustment | 2013 Volume in MWh | 2012 Emission Factor | Transmission Loss Factor | Actual in MT |
|--|---------------------------|-----------------------------|---------------------------------|---------------------|
| Unspecified Imports | | 0.4280 | 1.02 | |
| RPS Adjustment | | 0.4280 | 1.00 | |

11 Based on the above, SDG&E's actual direct compliance obligation for 2013 is estimated to
 12 be:

| 2013 Direct Compliance Obligations | Actual in MT |
|---|---------------------|
| California UOG Plants | |
| California Tolling Generators | |
| Out-of-State Specified | |
| Unspecified Imports | |
| RPS Adjustment | |
| Total | |

14 **B. 2013 Indirect Greenhouse Gas Emissions**

15 SDG&E, along with all other purchasers of wholesale electricity, are subjected to indirect
 16 GHG compliance costs that generators incur and pass on to their buyers. This indirect additional
 17 cost of GHG compliance is embedded in the market price of electricity procured in the wholesale

¹³ ARB's Cap-and-Trade Regulation, Section 95852(b)(1)(B).

¹⁴ See Section 95852(b)(1) of ARB's Final Regulation Order for the calculation of the RPS Adjustment.

1 market from third parties, thereby increasing SDG&E’s cost to purchase wholesale electricity, as
 2 well as from suppliers under contracts that include market-based prices. The cost of GHG affects
 3 both market purchases and contracts based on the price of energy (such as combined heat and
 4 power (“CHP”) facilities); because the price of energy changes in tandem with the change in the
 5 GHG allowance prices, sellers of electricity demand higher revenues to offset the costs related to
 6 their cap-and-trade obligations. The 2013 indirect GHG volume is estimated, for both net market
 7 purchases and CHP contracts, as the MWh of electricity production times the ARB default rate for
 8 unspecified electricity of 0.428 MT/MWh. The 2013 estimated actuals of SDG&E’s indirect
 9 purchases are as follows:

| 2013 Indirect Volumes in MWh and MT | |
|-------------------------------------|-------|
| Total INDIRECTS (in MWh) | |
| Unspecified Emissions Factor | 0.428 |
| Total INDIRECTS (in MT) | |

11 **C. 2013 GHG Costs**

12 Using the prices from Section III above, the 2013 direct GHG costs are estimated to be:

| 2013 GHG Direct Costs by Pricing Type | Volume | Price | Cost |
|---------------------------------------|--------|---------|------|
| - Vintage 2013 Offsets | | | |
| - Vintage 2013 Allowances | | | |
| - ICE Forward | | \$11.63 | |
| Total 2013 Direct GHG Costs | | | |

14 Combining the 2013 indirect volumes and the 2013 CAISO GHG allowance price index,
 15 the 2013 estimated GHG indirect costs are:

| 2013 Indirect Volumes in MWh and MT | |
|-------------------------------------|---------|
| Total INDIRECTS (in MT) | |
| CAISO GHG Price (\$/MT) | \$13.57 |
| Total 2013 Indirect Cost | |

17 Total 2013 “actual” GHG Costs are estimated to be \$59.34 million (rounded).

1 **V. 2013 ACTUAL GHG REVENUES**

2 SDG&E received 6,919,341 MT of Vintage 2013 allowances to sell at the 2012- 2013
3 auctions. As required by ARB regulations, SDG&E consigned one-third of this volume at the
4 November 2012 auction and sold the remaining at its discretion among the 2013 auctions. The
5 table below shows the volumes sold at each auction and the associated revenues.

| 2013 GHG Revenues | | | |
|-------------------|--------------------------|-----------------------|---------------------|
| Auction | Settlement Price (\$/MT) | Consigned Volume (MT) | Revenue |
| Nov-12 | \$10.09 | 2,307,000 | \$23,277,630 |
| Feb-13 | \$13.62 | | |
| May-13 | \$14.00 | | |
| Aug-13 | \$12.22 | | |
| Nov-13 | \$11.48 | | |
| Total | \$11.92 | 6,919,341 | \$82,453,505 |

6
7 The 2013 revenues were \$82,453,505.

8
9 This concludes my prepared direct testimony.

10

1 **VI. QUALIFICATIONS**

2 My name is Ana Garza-Beutz. My business address is 8315 Century Park Court, San
3 Diego, CA 92123. I am employed by SDG&E as a Senior Energy Administrator in their
4 Electric & Fuel Procurement Department. My responsibilities include managing SDG&E's
5 GHG portfolio, which includes development of GHG procurement and hedging strategies.

6 I joined SDG&E in November 2003, and have held various positions with increasing
7 levels of responsibility within the Electric & Fuels Procurement Department. Prior to joining
8 SDG&E, I worked as a Risk Analyst with Sempra Energy.

9 I received a Bachelor of Arts degree in Mathematics from the California Polytechnic
10 State University San Luis Obispo and a Master of Arts in Mathematics from the University of
11 California Santa Barbara.

12 I have previously testified before the Commission.