

Application No.: A.17-04-016
Exhibit No.: _____
Witness: Ana Garza-Beutz

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

*****redacted, public version*****

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

November 9~~April 14~~, 2017



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1 **UPDATED PREPARED DIRECT TESTIMONY OF**

2 **ANA GARZA-BEUTZ**

3 **ON BEHALF OF**

4 **SAN DIEGO GAS & ELECTRIC COMPANY**

5 **I. PURPOSE AND OVERVIEW**

6 My testimony presents San Diego Gas & Electric Company's ("SDG&E") 2015-
7 2017~~2016~~¹ costs for greenhouse gas ("GHG") compliance instruments used to satisfy its
8 compliance obligations under the California Air Resources Board's ("ARB") cap-and-trade
9 program pursuant to Assembly Bill ("AB") 32. My testimony also includes the 2016-2017
10 revenues.² The following sections describe the cap-and-trade program and detail SDG&E's
11 unadjusted 2016 actual revenues and estimated costs. These costs and revenues are further
12 adjusted to recorded numbers for the purposes of reconciliation as further explained in the
13 testimony of SDG&E witnesses Ms. Chihwaro and Ms. Fang.³

¹ The 2015 volumes and costs became final in September 2016 and were reported as part of SDG&E's Updated 2017 ERRRA Forecast Filing (A.16-04-018); thus the 2015 volumes and costs are not reported in this my April 2017 testimony. Subsequently, however, a re-calculation of the Goal Line Tolling Agreement volumes, have slightly lowered SDG&E's 2015 Direct Emissions. This testimony will cover this adjustment. The 2016 ~~estimated~~ volumes and costs became final in September 2017. reported in this testimony are subject to change due to emission verification for all of 2016. Additionally, this testimony does not include 2017 volumes, costs and revenues since only January and February estimated actuals are available at this time. In my November 2017 This updated of this testimony, I will includes estimated actuals of costs and revenues for January through September of 2017 and forecasts for October – December 2017, all of which are subject to changes when actualized and verified.

² The 2016 volumes and costs are subject to change due to emission verification which will become final in September 2017. 2016 revenues, ~~however~~, are now final. 2017 revenues for January- September are final, however the 2017 revenue total is subject to the outcome of the November 2017 auction.

³ SDG&E witness Ms. Montanez provides a forecast of the 2018 GHG costs.

1 **II. BACKGROUND**

2 **A. AB 32 Background**

3 The Global Warming Solutions Act of 2006, also referred to as AB 32, establishes a goal of
4 reducing California’s GHG emissions to the 1990 level by 2020. The statute grants ARB broad
5 authority to regulate GHG emissions to reach this target. ARB’s Scoping Plan includes a
6 recommendation that California adopt a portfolio of emissions reduction measures, including a
7 California GHG cap-and-trade program.⁴

8 In October 2011, ARB released its Final Regulation Order, which was approved by its
9 Board and by the Office of Administrative Law (“OAL”) in December 2011.⁵ The ARB
10 regulations create a GHG emissions allowance cap-and-trade system, with compliance obligations
11 in the electricity sector applicable to “first deliverers of electricity”⁶ that emit more than 25,000
12 Metric Tons (“MT”) of GHG. The regulation requires that first deliverers of electricity, including
13 investor-owned utilities (“IOUs”) such as SDG&E, obtain all the compliance instruments required
14 to meet their compliance obligations by November 1 of the year following the end of a compliance
15 period. Compliance instruments consist of allowances and offsets. An allowance is a limited
16 tradable authorization to emit up to one MT of carbon dioxide equivalent (“CO₂e”) and an offset is
17 a project that reduces GHG in sectors outside of those covered in the cap-and-trade program.⁷
18 Section 95892(b) of ARB’s Final Regulation Order establishes that IOUs are required to sell all
19 their free allowances and acquire an amount equal to their direct compliance obligations. There

⁴ ARB Resolution 11-32 at 3.

⁵ 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>.

⁶ “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.

⁷ Refer to Section 95801 of ARB’s Final Regulation Order for definitions.

1 are also annual requirements to surrender at least 30% of expected annual obligations each year by
2 November 1 of the following year.

3 **B. GHG Actual Revenue**

4 The revenues discussed in my testimony result from the sale of allowances allocated to
5 SDG&E by ARB for the benefit of its ratepayers. ARB requires that the allowances that are
6 allocated annually to the IOUs be made available for sale at the ARB auctions. Allowances given
7 to the IOUs must all be consigned by the last auction of that year. Except for the November 2012
8 auction, where ARB specified the amount that each IOU needed to auction, all other amounts
9 consigned at auctions are up to the discretion of each IOU, provided the entire annual volume is
10 consigned by the end of each year. Revenues are calculated by multiplying the volume sold by the
11 auction settlement price. The revenues presented in this testimony consist of allowances sold at
12 the 2016 auctions and the 2017 February, May, August auctions with an estimate for the,~~and~~
13 November 2017 auctions.

14 **C. GHG Actual Emissions Volumes**

15 The 2016-2015-2017 direct emissions will be the actual/calculated GHG emissions for: (1)
16 SDG&E's California utility-owned generation ("UOG"), (2) California generators with whom
17 SDG&E has contracts where SDG&E is responsible for GHG costs, (3) estimated emissions
18 associated with SDG&E imports of both specified electricity and unspecified electricity, and (4)
19 Renewable Portfolio Standard ("RPS") adjustment. The RPS adjustment is calculated by
20 multiplying the out-of-state renewable megawatt-hours ("MWh") eligible for RPS adjustment by
21 the ARB assigned unspecified emission factor. The 2016-2017 direct volumes may change
22 because they are subject to: (1) emission estimates and emission reporting verification, (2)
23 changing emission factors, and (3) contractual requirements for reviewing tolling agreement

1 emissions for potential reductions. If there are such changes, they will be reflected in future
2 testimony.

3 The 2016-~~2017~~ “actual” indirect emissions are estimated emissions based on net purchases
4 from the California electricity market controlled by the California Independent System Operator
5 Corporation (“CAISO”) measured in MWh and multiplied by the ARB assigned unspecified
6 emission factor. Indirect emissions are not overseen by ARB. Indirect emissions are comprised of
7 an estimated volume of GHG for which SDG&E was exposed because of purchasing power from
8 third parties. The 2016 calculated indirect emissions are included within this Testimony. The
9 estimated numbers for ~~2016-2017~~ are those calculated in ~~the SDG&E’s 2016-2017~~ ERRA Forecast
10 Application and will be updated in my Updated ~~2018-2019~~ ERRA Forecast testimony in
11 November 2018.

12 **D. GHG Actual Cost Categories**

13 The costs outlined in my testimony are broken down into two categories of GHG actual
14 costs: direct costs and indirect costs. SDG&E defines direct costs of a given compliance year as
15 the net cost of procuring compliance instruments that can be used to satisfy SDG&E’s compliance
16 year obligation. SDG&E defines indirect costs of a given compliance year as the GHG
17 compliance costs embedded in the price of electricity delivered in that year, which are passed on
18 from sellers.

19 Section III below addresses the carbon price for 201~~5~~-~~2017~~~~6~~. Section IV.A addresses
20 direct GHG emissions associated with SDG&E’s UOG plants, procurement of electricity from
21 tolling agreements, electricity imports attributed to SDG&E, and credits from SDG&E’s eligible
22 RPS Adjustment. Section IV.B addresses the approximate 2016-~~2017~~ indirect GHG emissions for
23 which SDG&E paid as GHG costs embedded in electricity prices charged by third parties to

1 SDG&E under contract for various supplies.⁸ Section IV.C summarizes the GHG costs based on
2 the carbon prices in Section III and emissions in Sections IV.A and IV.B.

3 **III. CARBON PRICE METHODOLOGY**

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

5 SDG&E uses the Weighted Average Cost (“WAC”) of Compliance Instruments by
6 compliance period recorded monthly, as described in Attachment C of Decision (D.) 15-01-024, to
7 calculate its direct emissions pricing. The WAC⁹ prices are listed in the table below:

8

Year	WAC
2016	

9

Year	WAC
2015	
2016	
Jan - Sep '17	
Oct - Dec '17	

10 **B. Price for Indirect Emissions**

11 The embedded GHG costs for indirect emissions are estimated by using the average
12 CAISO GHG Allowance Price Indices, as listed in the table below.¹⁰ Indirect costs are estimated
13 since it is assumed that the GHG cost was passed on by all sources of power from market
14 purchases.

15

2016 CAISO GHG Prices	
Jan - Dec 2016	\$12.84

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

⁹ Monthly WAC prices are provided in Appendix A of this testimony.— The WAC calculations for **2016** **2017** are based upon SDG&E’s most recent estimate for the respective monthly emissions and on previous years’ WAC.

¹⁰ Annual CAISO prices are a straight average of public daily GHG prices published on CAISO’s OASIS website.

2017 CAISO GHG Prices	
Jan-Sep '17	\$14.36
Oct-Dec '17	N/A
Total	\$14.36

IV. ACTUAL GHG COMPLIANCE COSTS

A. Direct Greenhouse Gas Emissions

Under ARB’s cap-and-trade program, the “first deliverer of electricity” within California must surrender one allowance or offset credit for each MT of GHG emissions. Accordingly, SDG&E had direct compliance obligations for GHGs emitted from burning natural gas at its UOG plants, namely, the Palomar Energy Center (“Palomar”) and Miramar Energy Facility I and II (collectively, “Miramar”).¹¹ SDG&E’s Cuyamaca Peak Energy Plant (“Cuyamaca”) was a covered entity in 2013 and 2014, however since its emissions were verified to be below the 25,000 MT threshold for 2012-2014, as of 2015 Cuyamaca no longer has a compliance obligation. SDG&E’s UOG GHG emission volumes are derived from information extracted from each covered plant’s Continuous Emissions Monitoring Systems (“CEMS”) and that plant’s annual fuel usage. The data is reported to ARB (under the mandatory GHG reporting rule) and undergoes a rigorous quality assurance/quality control (“QA/QC”) process with supporting documentation from the CEMS systems. The data is then subject to third party verification by an ARB-certified verifier. The 2016 UOG data ~~will become~~became final in September 2017.- The 2016 final and 2017 estimated UOG actuals are as follows:

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. Using a Global Warming Potential of 21, the resulting CO₂e emission rate is 0.00002 MT/MMBtu. The default NO₂ emission rate is given as 0.0000001 MT/MMBtu, and its Global 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.

2016 Estimated California UOG Plants	Est. Actual (in MT)
Palomar Energy Center	
Miramar Energy Facilities	
Total	

2016 California UOG Plants	Actual (in MT)
Palomar Energy Center	
Miramar Energy Facilities	
Total	

Jan-Sep 2017 California UOG Plants	Est. Actual (in MT)
Palomar Energy Center	
Miramar Energy Facilities	
Total	

In addition, SDG&E has agreements with some California generators, which stipulate that if SDG&E is dispatching the plant, then SDG&E will provide compliance instruments to the generator for its GHG compliance obligations. The generators covered by these agreements include, the Otay Mesa Energy Center (“OMECE”), the Orange Grove Energy Center (“Orange Grove”), Goal Line (which became a dispatchable plant in 2015), and the Escondido Energy Center (“EEC”), ~~whose 2015 emissions exceeded the 25,000 MT threshold~~. The estimated actuals for these plants were calculated by multiplying the MMBtu burned with the emission factor of 0.05307 MT/MMBtu associated with natural gas as the input fuel. These estimates are subject to change, not only because the emissions estimates are based on fuel calculations instead of emission meter read calculations, but also because the tolling agreement contracts state that SDG&E will only cover the emissions generated resulting from SDG&E dispatches of efficiently run plants. The 2015 SDG&E obligation to Goal Line changed this year and thus the 2015

1 Tolling Agreement volumes are included in this testimony.¹²¹³ The 2015 & 2016 final and the
 2 2016-2017 estimated SDG&E obligations to tolling agreement partners are shown below.
 3 ~~SDG&E will be analyzing the 2016 data and could potentially adjust the 2016 emissions for~~
 4 ~~actuals, non-SDG&E dispatches or for inefficiencies. If there are such changes, they will be~~
 5 ~~reflected in future testimony.~~

2016 Estimated California Tolling Generators	Est. Actual (in MT)
Otay Mesa Energy Center	
Orange Grove Energy Center	
Goal Line	
Escondido Energy Center	
Total	

2015 California Tolling Generators	Actual (in MT)
Otay Mesa Energy Center	
Orange Grove Energy Center	
Goal Line (modified)	
Escondido Energy Center	
Total	

¹² SDG&E recently discovered and corrected an error in the formula used to calculate Goal Line’s 2015 Actual Fuel Quantity Net of Seller Test (MMBtu). In the spreadsheet, the Seller Initiated Test generation MWh were supposed to be converted to MMBtu prior to being subtracted from the Actual Fuel Quantity MMBtu. Instead, the generation MWh were subtracted from the Actual Fuel Quantity MMBtu which resulted in fewer volumes of fuel subtracted from the Actual Fuel Quantity. SDG&E notified Goal Line of the formula error and that the Actual Fuel Quantity should have been 864 MT less. Goal Line agreed with SDG&E’s correction and thus SDG&E has modified its 2015 Goal Line emissions.

¹³ Note that all other 2015 emission volumes remain unchanged. Thus, the only 2015 data that will be re-reported in this testimony is information affected by this minor change to Goal Line emissions. This includes California Tolling Generator volumes, total Direct Compliance Obligation, the WAC, (although rounding the WAC price to the \$0.01 causes the WAC to appear unchanged), and the total GHG Direct Costs. (2015 Non-Tolling Direct emissions, 2015 Indirect volumes/costs and 2015 Revenues are unaffected by this slight change).

2016 California Tolling Generators	Actual (in MT)
Otay Mesa Energy Center	
Orange Grove Energy Center	
Goal Line	
Escondido Energy Center	
Total	

Jan-Sep 2017 California Tolling Generators	Est. Actual (in MT)
Otay Mesa Energy Center	
Orange Grove Energy Center	
Goal Line	
Escondido Energy Center	
Pio Pico	
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 outputs of plants that 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. 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.¹⁴ As with SDG&E’s other estimated obligations, specified imports are also subject to change, and those changes will be reflected in future

¹⁴ Specified Emission Factors are updated annually by ARB. They can be found at: <http://www.cdsupport.com/confluence/display/calhelp/Reporting+Form+Instructions>

1 testimony. The 2016 final and 2017 estimated actuals for SDG&E’s specified imports are as
 2 follows:

2016 Estimated Specified Imports	Est. Actual Specified (in MWh)	Emission Factor	Transmission Loss Factor	Est. Actual (in MT)
Desert Star		0.381	1.00	
YCA		0.410	1.02	
Total				

2016 Specified Imports	Actual Specified (in MWh)	Emission Factor	Transmission Loss Factor	Actual (in MT)
Desert Star		0.401	1.00	
YCA		0.509	1.02	
Total				

Jan-Sep 2017 Specified Imports	Est. Actual Specified (in MWh)	Emission Factor	Transmission Loss Factor	Est. Actual (in MT)
Desert Star		0.401	1.00	
YCA		0.509	1.02	
Total				

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 4
 5
 6 In addition to specified sources, importing of “unspecified sources” also generates a
 7 compliance obligation. SDG&E procured both contracted imports and market imports from
 8 unspecified sources in 2016 and 2017. The cap-and-trade compliance obligation for these
 9 unspecified imports is calculated by multiplying the number of MWh imported, adjusted upward
 10 by two percent to account for transmission losses between the point of generation and the
 11 California border, by the ARB default rate, as stated in its regulation (currently 0.428 MT per
 12 MWh).¹⁵ Finally, ARB recognizes that the building of new renewable generation outside
 13 California reduces GHG. As such, the cap-and-trade regulations allow for an RPS adjustment.
 14 The RPS adjustment reduces an entity’s GHG compliance burden and is calculated by assigning
 15 the default emission rate, 0.428 MT/MWh, to the GHG-free renewable energy, as measured at the

¹⁵ ARB’s Cap-and-Trade Regulation, Section 95852(b)(1)(B).

1 point of generation. The adjustment does not account for the transmission losses from the point of
 2 generation to California.¹⁶ The Cap-and-Trade Regulation also allows for RPS Adjustment to be
 3 taken in following years. SDG&E successfully claimed the undelivered portion of its potential
 4 2014 RPS Adjustment renewable MWhs in 2015. SDG&E ~~is~~was planning to claim the 2015
 5 undelivered contractually purchased renewable energy applicable to the RPS Adjustment Provision
 6 in its 2016 GHG report to ARB. However, the data for the 2015 RPS Adjustment was not
 7 available, thus SDG&E claimed 0 RPS Adjustment for Compliance Year 2016.¹⁷ If, as expected,
 8 the 2015 RPS Adjustment data becomes available in the future, SDG&E will incorporate that
 9 benefit in an upcoming annual ARB Electric Power Entity (EPE) report. SDG&E expects to
 10 receive the 2016 RPS Adjustment data and utilize that benefit in the 2017 EPE Report. The actual
 11 2016 and estimated 2016-2017 RPS Adjustment claims are shown below. Both the estimated 2016
 12 2017 unspecified imports and the RPS Adjustments claimed for 2016-2017 are subject to change
 13 and those changes will be reflected in future testimony. ~~The 2016 estimated actuals for SDG&E's~~
 14 ~~unspecified imports and RPS adjustment claims are as follows:~~

For 2016 Compliance Reporting: 2016 Unspecified Imports & 2015 RPS Adjustment	Est. Actual Unspecified (in MWh)	Emission Factor	Transmission Loss Factor	Est. Actual (in MT)
Unspecified Imports		0.428	1.02	
RPS Adjustment		0.428	1.00	
Total				

¹⁶ See Section 95852(b)(1) of ARB's Final Regulation Order for the calculation of the RPS Adjustment.

¹⁷ SDG&E's ability to utilize the non-imported portion of its Glacier and RimRock contracts for the RPS Adjustment is dependent on receipt of Glacier and Rim Rock import volumes from Morgan Stanley. SDG&E has thus far not received this information for the 2015 or 2016 generation years. SDG&E continues to have discussions with Morgan Stanley about this data and expects to receive it in the future at which point SDG&E can apply the prior RPS Adjustment volumes to the prompt compliance year's report.

For Compliance Year 2016 Reporting (RPS Adjustment differed)	Actual Unspecified (in MWh)	Emission Factor	Transmission Loss Factor	Actual (in MT)
2016 Unspecified Imports		0.428	1.02	
RPS Adjustment - Differed		0.428	1.00	
Total				

Jan-Sep 2017 2017 Unspecified Imports & 2016 RPS Adjustment	Est. Actual Unspecified (in MWh)	Emission Factor	Transmission Loss Factor	Est. Actual (in MT)
Unspecified Imports		0.428	1.02	
RPS Adjustment (Partial 2016)		0.428	1.00	
Total				

Based on the above, SDG&E's 2016-2015-2017 actual and ~~estimated-actual~~ direct compliance obligation are:

2016 Estimated Direct Compliance Obligations	Est. Actual (in MT)
California UOG Plants	
California Tolling Generators	
Specified Imports	
Unspecified Imports	
RPS Adjustment	
Total	

Verified 2015 Direct Compliance Obligations	Actual (in MT)
California UOG Plants	
California Tolling Generators (updated)	
Specified Imports	
Unspecified Imports	
RPS Adjustment	
Total	

Verified 2016 Direct Compliance Obligations	Actual (in MT)
California UOG Plants	
California Tolling Generators	
Specified Imports	
Unspecified Imports	
RPS Adjustment (2015 deffered)	
Total	

Jan-Sep 2017 Direct Compliance Obligations	Est. Actual (in MT)
California UOG Plants	
California Tolling Generators	
Specified Imports	
Unspecified Imports	
RPS Adjustment	
Total	

B. Indirect Greenhouse Gas Emissions

SDG&E, along with all other purchasers of wholesale electricity, is subject to indirect GHG compliance costs that generators incur and pass on to their buyers. This additional cost of GHG compliance is embedded in the market price of electricity procured in the wholesale market from third parties, thereby increasing SDG&E’s cost to purchase wholesale electricity, as well as from suppliers under contracts that include market-based prices. The cost of GHG affects both market purchases and contracts based on the price of energy (such as combined heat and power (“CHP”) facilities); because the price of energy changes in tandem with the change in the GHG allowance prices, sellers of electricity demand higher revenues to offset the costs related to their cap-and-trade obligations. The 2016-2017 indirect GHG volumes are estimated, for both net market purchases and CHP contracts, as the MWh of electricity production multiplied by the ARB default rate for unspecified electricity of 0.428 MT/MWh. The 2016 estimated and 2017 forecast MWh and emissions of SDG&E’s indirect purchases are as follows:

2016 Indirect Volumes in MWh and MT	
Total INDIRECTS (in MWh)	
Unspecified Emissions Factor	0.428
Total INDIRECTS (in MT)	

2016 Indirect Volumes in MWh and MT	
Total INDIRECTS (MWh)	
Unspecified Emissions Factor (MT/MWh)	0.428
Total INDIRECTS (MT)	

2017 Indirect Volumes in MWh and MT	
Total INDIRECTS (MWh)	
Unspecified Emissions Factor (MT/MWh)	0.428
Total INDIRECTS (MT)	

C. GHG Costs

Using the prices from Section III above, I estimate the ~~2016-2015-2017~~ direct GHG costs as follows:

2016 Estimated GHG Direct Costs	Volume (in MT)	WAC Price (in \$/MT)	Cost
Nov - Dec 2016			
Total			

2015 GHG Direct Costs	Volume (in MT)	WAC Price (in \$/MT)	Cost
Jan-Dec 2015			
Total			

2016 GHG Direct Costs	Volume (in MT)	WAC Price (in \$/MT)	Cost
Jan - Dec 2016			
Total			

2017 GHG Direct Costs	Volume (in MT)	WAC Price (in \$/MT)	Cost
Jan - Sep '17 (estimated actuals)			
Oct - Dec '17 (forecasted)			
Total			

Combining indirect volumes and the CAISO GHG allowance price indices,¹⁸ I estimate the ~~2016-2017~~ estimated GHG indirect costs as follows:

¹⁸ Per D. 14-10-033, indirect costs are calculated using a proxy price equal to the average of the published CAISO prices.

2016 Indirect Volumes & Cost	
2016 Forecasted INDIRECTS (in MT)	
CAISO GHG Price (Jan-Dec '16) (in \$/MT)	\$12.84
Total 2016 Indirect Cost	

2016 Indirect Volumes & Cost	
Total INDIRECTS (MT)	
CAISO GHG Price (Jan-Dec '16) (\$/MT)	\$12.84
Total Indirect Cost	

2017 Indirect Volumes & Cost	
Total INDIRECTS (MT)	
CAISO GHG Price (Jan-Dec '17) (\$/MT)	\$14.36
Total Indirect Cost	

I estimate that the ~~2015-2016-2017~~ actual/forecast blended cost ~~are~~ \$60.41 million, \$56.27 million and \$53.39\$39.50 million (rounded).

V. ACTUAL AND ESTIMATED GHG REVENUES

SDG&E received 6,406,805 MT of vintage 2016 allowances to sell at 2016 auctions and 6,460,042 MT of vintage 2017 allowances to sell at 2017 auctions. SDG&E's annual allocated ~~vintage 2016~~ allowances ~~are~~ were required to be consigned at ~~the~~ that year's quarterly 2016 auctions; however, SDG&E ~~had~~ has full discretion on how to distribute ~~the volume~~ its allowance across the four quarterly auctions. The tables below show the volumes sold at each 2016 auction and at the first three 2017 auctions, with an estimate for the last 2017 auction and the associated revenues.

2016 Estimated GHG Revenues			
Auction	Settlement Price (\$/MT)	Sold Volume	Revenue
Feb-16	\$12.73		
May-16	\$12.73		
Aug-16	\$12.73		
Nov-16	\$12.73		
Total	\$12.73	6,406,805	\$81,558,628

2017 GHG Revenues Jan - Sep '17			
Auction	Settlement Price (\$/MT)	Sold Volume (MT)	Revenue
Feb-17	\$13.57		
May-17	\$13.80		
Aug-17	\$14.75		
Total	\$14.08		

2017 Estimated GHG Revenues Oct - Dec '17			
Auction	ICE Price (\$/MT)	Consign Volume (MT)	Revenue
2017 Balance	\$13.23		
Total	\$13.23		

1
2
3
4
5

Using the \$13.23 ICE price from Jennifer Montanez's 2017 GHG Forecast Testimony for the November 2017 auction, the estimated total 2017 revenue is \$89,584,150.

This concludes my testimony.

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 Principal Energy Administrator in the
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 Science 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.

APPENDIX A

SDG&E's Monthly WAC Calculation
(Calculation date of ~~January~~October 3, 2017)

CONFIDENTIAL GHG Data

ELECTRIC Portfolio: CP2 WAC Calculation

Monthly WAC Recordings

Month	Transaction Date	Transaction Type	Quantity Pur/(Sales) (MT)	Purchase \$ (\$/MT)	Sales \$ (\$/MT)	Total Cost (\$)	Total Sales (\$)	Inventory Balance (\$)	Total Qty in Inventory	WAC* (\$)
Jan-15	1/1/2015	CPI WAC Transfer								
Jan-15	11/14/2012	ARB Auction - Vintage 2015		\$10.00						
Jan-15	2/19/2013	ARB Auction - Vintage 2016		\$10.71						
Jan-15	5/16/2013	ARB Auction - Vintage 2016		\$11.10						
Jan-15	8/16/2013	ARB Auction - Vintage 2016		\$11.10						
Jan-15	11/19/2013	ARB Auction - Vintage 2016		\$11.38						
Jan-15	2/19/2014	ARB Auction - Vintage 2017		\$11.34						
Jan-15	5/16/2014	ARB Auction - Vintage 2017		\$11.34						
Jan-15	8/18/2014	ARB Auction - Vintage 2017		\$11.86						
Jan-15	11/24/2014	ARB Auction - Vintage 2017								
Feb-15	2/18/2015	ARB Auction - Vintage 2015		\$12.21						
Feb-15										
Feb-15										
Feb-15										
Mar-15										
Mar-15										
Mar-15										
Mar-15										
Apr-15										
Apr-15										
Apr-15										
Apr-15										
May-15	5/21/2015	ARB Auction - Vintage 2015		\$12.29						
May-15										
May-15										
Jun-15										
Jun-15										
Jun-15										
Jun-15										
Jul-15										
Jul-15										
Jul-15										
Jul-15										

Month
 End of Month WAC
 Monthly Emissions (MT)
 Balancing Account Entry for Month

Month
 End of Month WAC
 Monthly Emissions (MT)
 Balancing Account Entry for Month

Month
 End of Month WAC
 Monthly Emissions (MT)
 Balancing Account Entry for Month

Month
 End of Month WAC
 Monthly Emissions (MT)
 Balancing Account Entry for Month

Month
 End of Month WAC
 Monthly Emissions (MT)
 Balancing Account Entry for Month

Month
 End of Month WAC
 Monthly Emissions (MT)
 Balancing Account Entry for Month

Month
 End of Month WAC
 Monthly Emissions (MT)
 Balancing Account Entry for Month

Jan-16	Jan-16	Month	Jan-16
Jan-16		End of Month WAC	
Jan-16		Monthly Emissions (MT)	
Jan-16		Balancing Account Entry for Month	
Feb-16		Month	Feb-16
Feb-16		End of Month WAC	
Feb-16		Monthly Emissions (MT)	
Feb-16		Balancing Account Entry for Month	
Mar-16		Month	Mar-16
Mar-16		End of Month WAC	
Mar-16		Monthly Emissions (MT)	
Mar-16		Balancing Account Entry for Month	
Apr-16		Month	Apr-16
Apr-16		End of Month WAC	
Apr-16		Monthly Emissions (MT)	
Apr-16		Balancing Account Entry for Month	
May-16		Month	May-16
May-16		End of Month WAC	
May-16		Monthly Emissions (MT)	
May-16		Balancing Account Entry for Month	
Jun-16		Month	Jun-16
Jun-16		End of Month WAC	
Jun-16		Monthly Emissions (MT)	
Jun-16		Balancing Account Entry for Month	
Jul-16		Month	Jul-16
Jul-16		End of Month WAC	
Jul-16		Monthly Emissions (MT)	
Jul-16		Balancing Account Entry for Month	
Aug-16		Month	Aug-16
Aug-16		End of Month WAC	
Aug-16		Monthly Emissions (MT)	
Aug-16		Balancing Account Entry for Month	
Sep-16		Month	Sep-16
Sep-16		End of Month WAC	
Sep-16		Monthly Emissions (MT)	
Sep-16		Balancing Account Entry for Month	
Oct-16		Month	Oct-16
Oct-16		End of Month WAC	
Oct-16		Monthly Emissions (MT)	
Oct-16		Balancing Account Entry for Month	
Nov-16		Month	Nov-16
Nov-16		End of Month WAC	
Nov-16		Monthly Emissions (MT)	
Nov-16		Balancing Account Entry for Month	
Dec-16		Month	Dec-16
Dec-16		End of Month WAC	
Dec-16		Monthly Emissions (MT)	
Dec-16		Balancing Account Entry for Month	
Dec-16		Month	Dec-16
Dec-16		End of Month WAC	
Dec-16		Monthly Emissions (MT)	
Dec-16		Balancing Account Entry for Month	

2/17/2016	ARB Auction	\$12.73	
5/18/2016	ARB Auction	\$12.73	
8/15/2016	ARB Auction	\$12.73	
11/15/2016	ARB Auction	\$12.73	

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

**DECLARATION OF RYAN A. MILLER
REGARDING CONFIDENTIALITY OF CERTAIN DATA PURSUANT TO D.16-08-024**

I, Ryan A. Miller, do declare as follows:

1. I am the Manager – Energy Supply & Dispatch, designated by Emily C. Shults, Officer and VP – Energy Supply in the Electric & Fuel Procurement Department for San Diego Gas & Electric Company (“SDG&E”) to submit this declaration. I have reviewed Ana Garza-Beutz’s Prepared Direct Testimony (“Testimony”) in support of SDG&E’s November 8, 2017 Application for Approval of its Updated 2018 Electric Procurement Revenue Requirement Forecasts and GHG-Related Forecasts (“Application”). I am personally familiar with the facts and representations in this Declaration and, if called upon to testify, I could and would testify to the following based upon my personal knowledge and/or belief.

2. I hereby provide this Declaration in accordance with Decision (“D.”) D-16-08-024 to demonstrate that the confidential information (“Protected Information”) provided in Ana Garza-Beutz’s Testimony is within the scope of data protected as confidential under applicable law, and pursuant to Public Utilities (“PUC”) Code § 583 and General Order (“GO”) 66-C, as described in Attachment A below.

3. In accordance with the legal authority described herein, the Protected Information should be protected from public disclosure.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct to the best of my knowledge.

Executed this 8th day of November 2017, at San Diego, California.



Ryan A. Miller
Manager – Energy Supply & Dispatch

ATTACHMENT A

SDG&E Request for Confidentiality on the following information contained in Ana Garza-Beutz’s Testimony in support of SDG&E’s November 8, 2017 Application for Approval of its Updated 2018 Electric Procurement Revenue Requirement Forecasts and GHG-Related Forecasts (“Application”)

Location/Title of Protected Information	Legal Justification for Withholding	Basis for Confidentiality Treatment
<p>1. 2015 -2017 SDG&E WAC prices and WAC calculations</p> <p><i>(The 2015-2017 WAC prices appears in the Testimony and the 2015-2017 WAC calculations and prices appear in Attachment A of the Testimony)</i></p>	<p>The GHG Confidential Information Matrix in Attachment A of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>The Matrix makes the following confidential: “Weighted Average Cost (WAC) of compliance instruments, and the calculation of WAC”</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>2. 2016 and Jan-Sep 2017 Historical UOG Emissions</p> <p><i>(The 2016 and Jan-Sep 2017 Historical UOG Emissions appear in the Testimony and in Attachment G of this Application.)</i></p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>Template D-2 designates forecasted and recorded UOG emissions as confidential</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>3. 2015-2016 and Jan-Sep 2017 Historical California Tolling Agreement Emissions</p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p>

<p><i>(The 2015-2016 and Jan-Sep 2017 Historical Tolling Agreement Emissions appear in the Testimony and in Attachment G of this Application.)</i></p>	<p>Template D-2 designates forecasted and recorded Tolling Agreements emissions as confidential</p>	<p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>4. 2016 and Jan-Sep 2017 Historical Specified Imported MWh and calculated Emissions</p> <p><i>(The 2016 and Jan-Sep 2017 Historical Specified Imported MWh and calculated Emissions appear in the Testimony and in Attachment G of this Application.)</i></p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>Template D-2 designates forecasted and recorded Energy Imports (Specified) emissions as confidential. Knowledge of the MWh makes discovery of the emissions possible, thus the MWh are also confidential.</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>5. 2016 and Jan-Sep 2017 Historical Unspecified Imported MWh and calculated Emissions</p> <p><i>(The 2016 and Jan-Sep 2017 Historical Unspecified Imported MWh and calculated Emissions appear in the Testimony and in Attachment G of this Application.)</i></p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>Template D-2 designates forecasted and recorded Energy Imports (Unspecified) emissions as confidential. Knowledge of the MWh makes discovery of the emissions possible, thus the MWh are also confidential.</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>6. Historical RPS Adjustment eligible MWh and calculated Emissions for the 2016 Compliance Year and for Jan-Sep of the 2017 Compliance Year</p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>Template D-2 designates forecasted and recorded Energy Imports (Unspecified) emissions,</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p>

<p><i>(The Historical RPS Adjustment eligible MWh and calculated appear in the Testimony and in Attachment G of this Application.)</i></p>	<p>which includes any applicable RPS Adjustments as confidential. Knowledge of the MWh makes discovery of the emissions possible, thus the MWh are also confidential.</p>	<p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>7. 2015-2016 and Jan-Sep 2017 Total Direct Compliance Obligation</p> <p><i>(The 2015-2016 and Jan-Sep 2017 Total Direct Compliance Obligation appears in the Testimony and in Attachment G of this Application.)</i></p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>Template D-2 designates forecasted and recorded Direct GHG Emissions Subtotal as confidential.</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>8. 2016 and forecasted 2017 Indirect Purchases in MWh and calculated Emissions</p> <p><i>(The 2016 and 2017 forecasted Indirect Purchases in MWh and calculated Emissions appear in the Testimony and in Attachment G of this Application.)</i></p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>Template D-2 designates forecasted and recorded Indirect GHG Emissions as confidential. Knowledge of the MWh makes discovery of the emissions possible, thus the MWh are also confidential.</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>9. 2015-2016 and Jan-Sep 2017 Direct GHG Costs</p> <p><i>(The 2015-2016 and Jan-Sep 2017 Direct GHG Costs appear in the Testimony and in Attachment G of this Application.)</i></p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>Template D-2 designates forecasted and recorded Direct GHG Costs as confidential.</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>

<p>10. 2016 and 2017 forecasted Indirect GHG Costs</p> <p><i>(The 2016 and 2017 forecasted Indirect GHG Costs appear in the Testimony and in Attachment G of this Application.)</i></p>	<p>Annual GHG Emissions and Associated Costs in Template D-2 of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>Template D-2 designates forecasted and recorded Indirect GHG Costs as confidential.</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>11. 2016, Jan-Sep 2017 and forecasted balance of 2017 GHG Quarterly Auction Revenue</p> <p><i>(The 2016, Jan-Sep 2017 and forecasted balance of 2017 GHG Quarterly Auction Revenue appear in the Testimony.)</i></p>	<p>1a. of Attachment A of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>1a. makes the following confidential: “AB 32 GHG auction participation.” Although Annual Auction Revenues are public, Quarterly Auction Revenues must be confidential since public auction settlement prices and Quarterly Auction Revenues would reveal SDG&E’s quarterly auction participation as a consigner</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>
<p>12. 2017 forecasted Emissions Intensity Forecast</p> <p><i>(The 2017 forecasted Emissions Intensity Forecast appears in Attachment G of this Application.)</i></p>	<p>The GHG Confidential Information Matrix in Attachment A of D.14-10-033 and revised in D.15-01-024, P.U. Code § 454.5(g), and GO 66-C</p> <p>The Matrix makes the following confidential: “Forecast of GHG Emissions Intensity”</p>	<p>17 CCR Section 95914(c)(1) of the Cap-and-Trade regulations prohibits disclosure of any auction-related information, except when the release is made by a privately-owned utility to its regulatory agency pursuant to its rules, orders or decisions (Section 95914(c)(2)). Violation of Section 95914 may subject SDG&E to penalties by the California Air Resources Board.</p> <p>Auction-related information also falls under the “Confidential” category included in the Confidentiality Protocols of D.15-01-024 Attachment A.</p> <p>Disclosure of this information would place SDG&E at an unfair business disadvantage relative to other Cap-and-Trade market participants and results in higher Cap-and-Trade compliance costs for SDG&E and its end-use ratepayers.</p>