Proceeding No.: A.12-10-002
Exhibit No.:
Witness: Ryan A. Miller

AMENDED DIRECT TESTIMONY OF

RYAN A. MILLER

SAN DIEGO GAS & ELECTRIC COMPANY

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

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA
January 8, 2013

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AMENDED DIRECT TESTIMONY OF
RYAN A. MILLER
ON BEHALF OF SDG&E

I. INTRODUCTION

This testimony presents the cost forecast for Greenhouse Gas ("GHG") compliance obligations under the California Cap-and-Trade Program pursuant to Assembly Bill ("AB") 32. Acquisition of allowances began with a November 2012 auction, and compliance obligations began on January 1, 2013.

This amended testimony supersedes my original testimony, filed on October 1, 2012. A summary of changes from my October 1 testimony is as follows:

- Modifies the GHG Forecast to account for actuals procured at the November auction. The auction settlement prices were lower than market forward prices and thus the new forecast is less than the October testimony forecast.
- Defers GHG cost recovery from Energy Resource Recovery Account ("ERRA") until the GHG OIR methodology is finalized as mandated by Decision ("D.") 12-12-033.

In D.12-04-046, approving Tracks I and III of the Long-Term Procurement Plan ("LTPP") proceeding,[1] and Advice Letter ("AL") 2387-E,[2] the Commission granted SDG&E authority to recover costs associated with the Cap-and-Trade Program through its ERRA. Subsequently, on December 20, 2012, in the GHG Order Instituting Rulemaking ("GHG OIR"),[3] the Commission adopted a Cap-and-Trade GHG allowance revenue allocation methodology and directed the investor-owned utilities ("IOUs") to create a sub-account for GHG costs and an

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[1] Ordering Paragraph 10 of D.12-04-046 in R.10-05-006, issued on April 24, 2012, approved on April 19, 2012.
[2] AL 2387-E was filed on July 20, 2012, approved on August 23, 2012, and effective on August 20, 2012.
[3] Rulemaking ("R.") 11-03-012.

account for GHG revenues, in order to allow costs to be offset by revenues generated from the sale of free allowances allocated to them. D.12-12-033 directs the utilities to defer recovery of GHG compliance costs until the Commission finalizes the methodology.[4] As directed in that decision, SDG&E will place all GHG costs and revenues in newly created sub-balancing accounts until it receives further direction from the Commission on the final methodology and timing of recovery and disbursement.

There are three categories of GHG costs: direct current costs; direct future costs; and indirect costs. SDG&E defines current costs as the cost of procuring compliance instruments that can be used for the current compliance year. SDG&E defines future costs as the cost of procuring compliance instruments that can be used for the future compliance years. SDG&E defines indirect costs as GHG compliance costs embedded in the price of electricity which were passed on from generators. Section IV.A, below, addresses direct current GHG costs associated with SDG&E's Utility Retained Generation ("URG") plants, procurement of electricity from tolling agreements, and electricity imports attributed to SDG&E for compliance. Section IV.B covers SDG&E's direct future costs and provides allowance acquisition costs for 2016. Section IV.C, below, addresses indirect GHG costs expected to be embedded in electricity prices charged by third parties to SDG&E under contract for various supplies. The revenues from auctioning GHG allowances that are allocated by the California Air Resources Board ("CARB") to SDG&E as an electric distribution company, under CARB's final Cap-and-Trade rule, are not described herein. The Commission is addressing revenues associated with the sale of GHG allowances in the GHG OIR. The treatment and allocation of GHG-related costs in the 2013 ERRA revenue requirement are not discussed in this Application, (except to clarify that their disbursement will be deferred as directed in GHG OIR D.12-12-033), since they are addressed in the GHG OIR. SDG&E will comply with

[4] D.12-12-033 at 217, Ordering Paragraph ("OP") 20.

Commission directives regarding the treatment and allocation of GHG-related costs resulting from the GHG OIR.

II. BACKGROUND

The Global Warming Solutions Act of 2006, also referred to as AB 32, establishes a goal of reducing California's GHG emissions to the 1990 level by 2020. The statute grants CARB broad authority to regulate GHG emissions to reach this target. CARB's Scoping Plan includes a recommendation that California adopt a portfolio of emissions reduction measures, including a California GHG Cap-and-Trade Program that can link with other programs to create a regional market system.[5]

In October, 2011, CARB released its Final Regulation Order, which was approved by its Board and by the Office of Administrative Law in December 2011.[6] The CARB regulations create a GHG emissions allowance Cap-and-Trade system, with compliance obligations in the electricity sector applicable to "first deliverers of electricity"[7] that emit more than 25,000 metric tons of GHGs. The regulation requires that first deliverers of electricity, except publicly-owned utilities, purchase all of the allowances and offsets[8] required to meet their compliance obligations.[9]

D.12-01-033, which approved SDG&E's proposed 2012 LTPP, directed SDG&E to make certain revisions (such as information associated with SDG&E's GHG compliance obligations)

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[5] CARB Resolution 11-32 at 3.

[6] The CARB documents referenced in my testimony are available at: http://www.arb.ca.gov/regact/2010/capandtrade10/capandtrade10.htm.

[7] "First deliverers of electricity" are defined in Section 95811(b) of CARB's Final Regulation Order as electricity generators inside California and importers of electricity from outside of California.

[8] An allowance is a limited tradable authorization to emit up to one metric ton of carbon dioxide equivalent; and an offset is a project that reduces GHG in sectors outside of those covered in the Cap-and-Trade Program. See Section5801of CARB's Final Regulation Order for these definitions.

[9] Section 95892 (b) (2) of CARB's Final Regulation Order describes that the publicly owned utilities are able to use their free allowances for compliance while investor owned utilities are not.

and to submit a conformed version of the LTPP via an advice letter compliance filing. In response to this directive, SDG&E filed AL 2362-E-A on July 25, 2012. This conformed version of SDG&E's 2012 LTPP included Appendix F: Green House Gas/AB 32 Compliance Plan. In Appendix F, SDG&E explained that, similar to its expected energy supply dispatch needs, SDG&E will regularly forecast and track projected GHG requirements related to emissions. The latest SDG&E forecast of expected GHG costs will be incorporated into each annual ERRA forecast filing or in a separate application by August 1st of 2013, 2014 and 2015 for the next years' forecasts, as mandated in D.12-12-033, OP 26.[10]

SDG&E received a Final Resolution approving AL 2362-A-E on September 27, 2012. Thus, SDG&E's GHG procurement plan (Appendix F) is now incorporated into SDG&E's authorized 2012 LTPP and guides SDG&E's procurement of GHG products.[11]

III. CARBON PRICE FORECAST METHODOLOGY

To forecast GHG-related costs, SDG&E used the carbon price publicly reported on the Intercontinental Exchange ("ICE"). This forecast is the average settled price for the last 22 trading days in August, 2012 for 2013 allowances.[12] This methodology is consistent with the method employed for developing the forward natural gas and electric market prices used to project ERRA costs, and it yields a price forecast for the 2013 period of [redacted] per metric ton ("MT").[13] This

[10] AL 2362-E-A, Original Sheet No. F-9. D.12-12-033 page 147.
[11] *See* AB 57, Sec. 2, (Stats. 2002, Ch. 835). *See also* California Public Utilities Code §§ 454.5(c)(3) and 454.5(d)(2).
[12] Even though carbon emission trading is still limited, there has been increasing liquidity for 2013 as the beginning of 2013 draws near. Due to the recent significant changes in the forward power market driven by various factors, the methodologies of extracting GHG premiums from the forward power prices such as that used in the 2011 Market Price Referent ("MPR") have specific limitations. In particular, it does not appear that forward electric prices include the full GHG premium. Accordingly, SDG&E used the direct GHG allowance trading price for 2013, in lieu of the MPR calculation methodology, to be consistent with the planning assumption that the AB 32 GHG compliance program will be fully implemented in 2013.
[13] A metric ton is equal to 2,204.6 pounds.

information was supplemented with the results of the first ARB auction in November 2012, where the market clearing price was $10.09.

The trading for vintage 2016 allowances has not begun on exchanges, which has led to uncertainty for allowance prices. For developing a budget for acquisition of 2016 allowances, SDG&E used a price of [redacted] based on the expected [redacted].

IV. GHG COMPLIANCE FORECAST IN 2013 ERRA REVENUE REQUIREMENT

In its October 1, 2012 filing, SDG&E included costs associated with GHG compliance in its 2013 ERRA revenue requirement. Pursuant to D.12-12-033, SDG&E is providing an updated GHG compliance forecast, but is not seeking to recover those costs until the Commission issues further directives on when and in what forum SDG&E may do so. Furthermore, consistent with the Commission's guidance in the GHG OIR, SDG&E is also removing from its ERRA revenue requirement – and deferring until the Commission issues further directives – the amount associated with the indirect costs of GHG compliance, which are embedded in the market price of electricity costs. These indirect costs are discussed in more detail in the Amended Direct Testimony of SDG&E witness Andrew Scates.

The revised total amount SDG&E forecasts related to GHG is [redacted], which consists of [redacted] of direct current GHG costs for 2013 and [redacted] of direct future GHG costs for 2014 through 2016. The forecast is a blend of actuals from allowance procurement in the November 2012 auctions at the published settlement prices and a forecast of additional procurement of allowances at the forecast prices mentioned above. While the forecast does not include offset procurement, in practice, if offsets are available at a discount to allowance prices, up to 8% of compliance period obligation may be met with offsets.

SDG&E's GHG compliance costs forecast is described in more detail below.

A. DIRECT CURRENT GREENHOUSE GAS COSTS

Under CARB's Cap-and-Trade Program, as mentioned above, the "first deliverer of electricity" within California must surrender one allowance or offset credit for each metric ton of GHG emissions. Accordingly, SDG&E will have a direct compliance obligation for GHG emissions from burning natural gas at its utility-owned power plants, such as the Palomar Energy Center ("Palomar") and Miramar I and II (collectively, "Miramar"). For purposes of the calculation of the compliance obligation, SDG&E used a factor of 117 pounds per Million British Thermal Units ("MMBtu") of natural gas or 0.05307 MT per MMBtu.[14] SDG&E forecasts that its utility-owned power plants will emit [redacted] of CO_2e in 2013.[15] [redacted]

In addition, SDG&E has agreements with some generators which stipulate that if SDG&E is dispatching the plant, it will provide compliance instruments to a generator for it to use for GHG compliance. These agreements include Otay Mesa Energy Center ("OMEC") and

[14] CARB'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 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 or converting to pounds, 117 lbs./MMBtu (0.05307 MT x 2204.6 lbs./MT).

[15] In this ERRA forecast application, as in its past forecast applications, SDG&E forecasts energy production from its portfolio using the Ventyx Planning and Risk software. The simulated dispatch is based on a forecast of power, gas, and GHG prices, physical constraints of each generating unit, and contractual limitations. SDG&E's forecast methodology economically dispatches resources in a least-cost manner as directed by the Commission, rather than dispatching resources to just meet SDG&E's forecast of bundled customer demand. Under the least-cost dispatch principle, a generating resource or contract is dispatched if its marginal operating cost is less than the market price of power, while simultaneously observing all operating constraints.

several peaking units. The compliance obligation for these agreements, like that for SDG&E's utility-owned plants, is estimated by calculating the product of the forecast of MMBtu burned, the emission factor of 0.05307 metric tons/MMBtu. SDG&E forecasts that generators with such agreements will emit [redacted] of GHG emissions in 2013. [redacted]

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," GHG emissions related to the output of the plants delivered to California are based on a share of the emissions of the plant. SDG&E has a contract with Portland General Electric's Boardman coal plant in Oregon that expires at the end of 2013 and owns the Desert Star Energy Center ("Desert Star") combined cycle plant in Nevada, both of which are specified sources. The compliance obligation for these imports is estimated by calculating the product of the forecast of the fuel burned, the emission factor, the forecasted allowance price and the fraction delivered to California. SDG&E forecasts that these imports will incur a compliance obligation of [redacted], representing an estimated cost of [redacted].

In addition to specified sources, importing of "unspecified sources" also generates a compliance obligation. SDG&E has a long-term power contract categorized as "unspecified," which SDG&E expects to import into California. SDG&E also expects to procure additional market imports from unspecified sources. The Cap-and-Trade compliance obligation for these unspecified imports is calculated by multiplying the number of megawatt-hours ("MWh") imported times the CARB default rate, as stated in its regulation (currently 0.428 MT per MWh),[16] and adjusted upward by two percent to account for transmission losses between the point of generation and the California border. SDG&E estimates these costs at [redacted] for 2013. Finally, the Cap-and-Trade regulations provide a "Renewable Portfolio Standard ("RPS") adjustment" equal to the default emission rate multiplied times the MWh from eligible renewable resources, as measured at the point of generation. CARB recognizes that building of new renewable generation outside California reduces GHG. The RPS adjustment reduces the GHG compliance burden created by assigning the default emission rate, 0.428 MT/MWh to the GHG-free renewable energy, as measured at the point of generation, but the adjustment does not account for the transmission losses from the point of generation to California.[17] The RPS Adjustment associated with SDG&E out-of-state renewable energy is forecasted to be [redacted] for 2013.

B. DIRECT FUTURE GREENHOUSE GAS COSTS

[redacted]. For 2016, SDG&E forecasts procuring [redacted] of allowances in 2013. [redacted]

C. INDIRECT GREENHOUSE GAS COSTS

The SDG&E forecast of [redacted] for direct GHG costs, described above, does not include indirect costs of the Cap-and-Trade Program. SDG&E, along with all other purchasers of wholesale electricity, will be subjected to indirect GHG compliance costs that generators incur and

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[16] CARB's Cap-and-Trade Regulation, section 95852(b)(1)(B) and CARB's Mandatory Reporting Regulation, section 95111 (b)(1).

[17] See Section 95852 (b) (1) of CARB's Final Regulation Order for the calculation of the RPS Adjustment reduction.

pass on to their buyers. This indirect additional cost of GHG compliance will be 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 in 2013, as well as from suppliers under contracts that include market-based prices. SDG&E's forecast of the overall cost of electricity from third parties and in the wholesale market therefore includes embedded GHG costs. These GHG costs are already embedded in electricity cost forecasts in this filing, and are not listed separately to avoid double-counting. As mentioned above, the indirect GHG compliance costs have been excluded from SDG&E's amended 2013 ERRA revenue requirement in accordance with D.12-12-033.

Expressing SDG&E's indirect GHG costs in MT per year is helpful for estimating the sensitivity of procurement costs to changes in GHG allowance prices. The cost of GHG will affect both market purchases and contracts based on the price of energy (such as combined heat and power ("CHP") facilities), because the price of energy will change in tandem with the change in the GHG allowance prices, as sellers of electricity demand higher revenues to offset the costs related to GHG. The indirect cost is calculated for both market purchases and CHP contracts, as the MWh of electricity production multiplied by the default rate of 0.428 MT/MWh and the forecasted price. The indirect GHG costs are estimated at [redacted] for 2013, but again, these costs are embedded in electricity market prices, and not included in the direct GHG costs or in the 2013 ERRA revenue requirement SDG&E is seeking in this Amended Application.

D. SUMMARY

To comply with the requirements of AB 32 and the Commission's directives in the GHG OIR, SDG&E provides an amended forecast GHG compliance costs for 2013 of [redacted]. SDG&E requests that the Commission approve this GHG forecast as part of the 2013 ERRA

Forecast proceeding; however, as directed in D.12-12-033, SDG&E is not seeking approval of GHG compliance costs through SDG&E's 2013 ERRA revenue requirement at this time.

This concludes my amended direct testimony.

VI. QUALIFICATIONS

My name is Ryan A. Miller. My business address is 8315 Century Park Court, San Diego, CA 92123. I am employed by SDG&E. My current title is Electric and Fuels Trading Manager in the Electric & Fuel Procurement Department of SDG&E. My responsibilities include overseeing a staff that performs short-term energy procurement and policy functions such as day-ahead electric and fuel trading, short-term wholesale market transactions, analysis and optimization of day-ahead energy and fuel procurement strategies, development and execution of short-term natural gas hedging strategies, management of SDG&E's Utility Electric Generation ("UEG") fuel transportation agreements, procurement of resource adequacy products, and development of Greenhouse Gas procurement and hedging strategies.

I joined SDG&E in December 2002, and have held various positions with increasing levels of responsibility within the Electric & Fuels trading group.

Prior to joining SDG&E, I worked as a Power Scheduler and Mid-Marketer with Mirant Energy.

I received a Bachelor's degree in Management Science (MSCI) from the Georgia Institute of Technology.

I have previously testified before the Commission.

BEFORE THE PUBLIC UTILITIES
COMMISSION OF THE STATE OF CALIFORNIA

DECLARATION
OF RYAN A. MILLER

A.12-10-002
Application of San Diego Gas & Electric Company (U 902-E)
for Adoption of its 2013 Energy Resource Recovery Account Revenue Requirement and
Competition Transition Charge Revenue Requirement Forecasts

I, Ryan A. Miller, declare as follows:

1. I am the Electric and Fuels Trading Manager for San Diego Gas & Electric Company ("SDG&E"). I included my Amended Prepared Direct Testimony ("Amended Testimony") in support of SDG&E's January 8, 2013 Amended Application for Adoption of its 2013 Energy Resource Recovery Account ("ERRA") and Competition Transition Charge ("CTC") revenue requirement forecasts. Additionally, as the Electric and Fuels Trading Manager, I am thoroughly 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 personal knowledge.

2. I am providing this Declaration to demonstrate that the confidential information ("Protected Information") in support of the referenced Application falls within the scope of data provided confidential treatment in the IOU Matrix ("Matrix") attached to the Commission's Decision ("D.") 06-06-066 (the Phase I Confidentiality decision). Pursuant to the procedure adopted in D.08-04-023, I am addressing each of the following five features of Ordering Paragraph 2 of D.06-06-066:

- that the material constitutes a particular type of data listed in the Matrix;
- the category or categories in the Matrix the data correspond to;
- that SDG&E is complying with the limitations on confidentiality specified in the Matrix for that type of data;
- that the information is not already public; and

- that the data cannot be aggregated, redacted, summarized, masked or otherwise protected in a way that allows partial disclosure.

3. The Protected Information contained in my Testimony constitutes material, market sensitive, electric procurement-related information that is within the scope of Section 454.5(g) of the Public Utilities Code.[1] As such, the Protected Information is allowed confidential treatment in accordance with the Matrix, as follows:

Confidential Information	**Matrix Reference**	**Reason for Confidentiality and Timing**
RAM-4 line 15,	II.B.1, II.B.4	Generation Cost Forecasts of Utility Retained Generation; confidential for three years Generation Cost Forecasts of Non-QF Bilateral Contracts; confidential for three years
RAM-5 lines 3, 14-15	II.B.1, II.B.4	Generation Cost Forecasts of Utility Retained Generation; confidential for three years Generation Cost Forecasts of Non-QF Bilateral Contracts; confidential for three years
RAM-6 line 8	IV.A	Forecast of IOU Generation Resources; confidential for three years
RAM-6 lines 8-10	II. B.1	Generation Cost Forecasts of Utility Retained Generation; confidential for three years
RAM-6 line 17	I.A.3	Utility Gas Demand Forecasts – Consumption; confidential for the front three years.
RAM-6 line 17, RAM-7 lines 1-2	II.B.4	Generation Cost Forecasts of Non-QF Bilateral Contracts; confidential for three years
RAM-7 line 12	IV.A II.B.1	Forecast of IOU Generation Resources; confidential for three years Generation Cost Forecasts of Utility Retained Generation; confidential for three years,
RAM-7 line 20	IV.J	Forecast of wholesale market purchases; front three years confidential.
RAM-8 line 7	II.B.4,	Generation Cost Forecasts of Non-QF Bilateral Contracts; confidential for three years
RAM-8 lines 9-12, 14	II.B.1, II.B.4	Generation Cost Forecasts of Utility Retained Generation; confidential for three years Generation Cost Forecasts of Non-QF Bilateral Contracts; confidential for three years
RAM-9 line 10	II.A.2	Utility electric price Forecast; confidential for three years
RAM-9 line 15	II.B.1,	Generation Cost Forecasts of Utility Retained

[1] In addition to the details addressed herein, SDG&E believes that the information being furnished in my Testimony is governed by Public Utilities Code Section 583 and General Order 66-C. Accordingly, SDG&E seeks confidential treatment of this data under those provisions, as applicable.

Confidential Information	Matrix Reference	Reason for Confidentiality and Timing
	II.B.4	Generation; confidential for three years Generation Cost Forecasts of Non-QF Bilateral Contracts; confidential for three years

4. I am not aware of any instances where the Protected Information has been disclosed to the public. To my knowledge, no party, including SDG&E, has publicly revealed any of the Protected Information.

5. SDG&E will comply with the limitations on confidentiality specified in the Matrix for the Protected Information.

6. The Protected Information cannot be provided in a form that is aggregated, partially redacted, or summarized, masked or otherwise protected in a manner that would allow further disclosure of the data while still protecting confidential information.

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

Executed this 8th day of January, 2013, at San Diego, California.

Ryan A. Miller
Electric and Fuels Trading Manager
San Diego Gas & Electric Company