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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

BENJAMIN A. MONTOYA

ON BEHALF OF

SAN DIEGO GAS & ELECTRIC COMPANY

****PUBLIC VERSION****

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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I. PURPOSE AND OVERVIEW

The purpose of my testimony is to describe San Diego Gas & Electric Company's ("SDG&E") forecast of 2015 total greenhouse gas ("GHG") costs. SDG&E requests that the California Public Utilities Commission ("Commission") authorize recovery of these forecasted 2015 GHG costs. GHG costs are also used in determining the revenue requirement and the volumetric revenue return for small business and residential customers.

My testimony describes the resources SDG&E expects to use in calendar year 2015 to provide electric commodity service to its bundled service customers and provides a forecast of the related GHG costs of that procurement. These resources include SDG&E's continuing obligations under various long-term power purchase contracts, including Public Utility Regulatory Policies Act ("PURPA") contracts, contracts with conventional generators, contracts with renewable generators, market purchases, and utility-owned generation ("UOG"). My testimony also quantifies the GHG costs associated with these resources based on California Air Resources Board ("ARB")-consistent reporting assumptions. My statement of qualifications can be found at the end of my testimony.

II. CALCULATION OF FORECASTED GHG COSTS IN 2015

The purpose of this section is to describe the cost forecast for GHG compliance obligations under the ARB cap-and-trade program. The cap-and-trade system provides that compliance obligations in the electricity sector are applicable to "first deliverers of electricity."[1] Generally, first deliverers of electricity in 2015 are electricity generators inside California that emit more than 25,000 metric tons ("MT") of GHG and importers of electricity from outside of California. The cap-and-trade regulations require that first deliverers of electricity, except

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[1] ARB, Article 5: California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms, Section 95811(b).

publicly-owned utilities and small generators (less than 25,000 MT of emissions), purchase all of the allowances and offsets needed to meet their compliance obligations.[2] SDG&E is the first deliverer for both its owned generation in California and imports of electricity into California. This type of cost is a direct GHG cost. The first section below addresses direct GHG compliance costs associated with SDG&E-owned generation plants, procurement of electricity from third parties under tolling agreements, and electricity imports attributed to SDG&E.

SDG&E customers also face a second type of GHG compliance cost, indirect costs. Indirect costs are costs embedded in market electricity prices, or charged by third parties to SDG&E under contract. The party selling the power is responsible for the GHG allowance acquisition, but implicitly charges for the cost of acquiring allowances. The second section below addresses indirect GHG costs.

The third section describes the calculation of 2015 GHG costs from the forecasted GHG price multiplied by the estimated annual GHG emissions, including both direct and indirect.

A. Direct GHG Emissions

Each first deliverer of electricity within California must surrender to ARB one allowance or offset for each MT of carbon dioxide emissions or its equivalent (“CO_2e”). Under ARB’s first deliverer approach, SDG&E will have a direct compliance obligation for GHG emissions from burning natural gas at its facilities, including carbon dioxide, methane, and nitrous oxide. Forecasting SDG&E’s expected direct GHG compliance costs starts with the SDG&E production simulation model. The model forecasts hourly dispatch of SDG&E-owned and contracted resources based on forecasted hourly electric prices (which implicitly include a GHG price component), natural gas prices, GHG prices, bundled utility load, and expected operation of SDG&E variable renewable generation delivering into the California Independent System Operator (“CAISO”) market. Based on the output of the model, SDG&E has a forecast of the next year’s expected production from: (1) SDG&E-owned resources, (2) SDG&E contracted-for

[2] ARB, Article 5: California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms, Section 95851.

specific resources including renewables, (3) contracted combined heat and power ("CHP") facilities, (4) imports of electricity, and (5) an estimate of market purchases that will either be directly contracted for or net CAISO market purchases that are needed to meet expected load.[3]

Once the model run is complete, the amount of fuel needed for each natural gas fired plant is provided as an output based on the expected operation of the plant, including fuel associated with starts and fuel combusted to produce electricity. The fuel volume is then multiplied by an emissions factor of 0.05307 MT of CO_2e per MMBtu to calculate direct emissions obligation for each plant.[4] The forecast of GHG emissions from SDG&E facilities in 2015 is included in Table 1 below.

Similarly, the estimated emissions for tolling agreements like Otay Mesa are estimated by multiplying the forecast of MMBtu of natural gas burned from the production simulation by the emission factor of 0.05307 MT of CO_2e per MMBtu. The forecast of GHG emissions from generators under tolling agreements in 2014 is also shown in Table 1.

In addition, SDG&E delivers out-of-state electricity to a delivery point inside California and is thus responsible for the GHG emissions attributed to generation of that electricity. There are three categories of GHG emissions associated with imports. First, there are imports from "specified sources" (i.e. imports where the source of the power is known), either a specific plant or from an asset-controlling supplier. For example, power from SDG&E's Desert Star combined-cycle generation plant in Nevada is included on the same basis as SDG&E's other utility-owned facilities—multiplying the forecast of MMBtu of natural gas burned from the production simulation by the emission factor of 0.05307 MT of CO_2e per MMBtu.[5]

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[3] "Net CAISO purchases" are purchases from the CAISO market in excess of SDG&E resources sold into the CAISO electricity market on an annual basis.

[4] SDG&E portfolio of GHG emitting resources all use natural gas only.

[5] SDG&E currently does not have any contracts with asset-controlling suppliers such as BPA or Powerex. ARB assigns an emissions factor based on the entire portfolio for these suppliers.

Second, imported power from "unspecified sources" is multiplied by a transmission loss factor of 1.02 to estimate the MWh related to unspecified electricity imports. The quantity is multiplied by the ARB default emission rate, 0.428 metric tons of CO_2e per MWh.

Third, electricity from out-of-state renewable resources that are not imported can be used to offset the emissions of imports under the ARB Renewable Portfolio Standard ("RPS") adjustment. Specifically, the RPS adjustment is equal to the default emission rate multiplied times the MWh from the eligible renewable resources, as measured at the point of generation.[6] Both the emissions of imported power and the offsetting RPS adjustment are shown in Table 1.

B. Indirect GHG Emissions

In addition to the direct GHG costs described above, the cap-and-trade program results in GHG compliance cost being embedded in the market price of electricity procured in the wholesale market and from third parties. The cost to purchase electricity from the wholesale market, as well as from suppliers under contracts that include market-based prices, will have these embedded costs of compliance with the cap-and-trade program built into the electricity price. The compliance instrument will be procured by the first deliverer, and will not be procured by SDG&E.

Forecasting SDG&E's expected indirect GHG compliance costs also begins with the SDG&E production simulation model. Once the model is run, SDG&E performs its calculation based on a simplifying assumption that all power sold by SDG&E-controlled assets are used by SDG&E customers, up to the forecasted SDG&E load.[7] If the total CAISO market purchases exceed the MWh from SDG&E-controlled generation, then the assumption is that SDG&E entered into market purchases to cover this difference. To estimate the GHG emissions

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6 ARB, Article 5: California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms, Section 95852(b)(4)(C).

7 In fact, however, the generation is bid into the CAISO market and dispatched by CAISO to meet statewide needs. The simplifying assumption is used to calculate net CAISO market purchases – all CAISO purchases less all resources that are forecasted to successfully bid into the CAISO market by SDG&E, including imports. However, SDG&E does make an adjustment for expected sales of renewable energy beyond regulatory requirements.

embedded in these net CAISO market purchases, SDG&E used the default emissions rate from the ARB, 0.428 MT of CO_2e per MWh. This level of emissions is a reasonable estimate in light of CAISO's studies of the market price of electricity. The four CAISO studies show that the embedded cost of GHG in market prices divided by the average market price of GHG allowances sold in daily markets imply a marginal emissions rate of 0.439 MT of CO_2e per MWh with a range of 0.411 to 0.506 across the four quarters, well within the value of the 0.428 MT of CO_2e per MWh figure from the ARB.[8]

In addition to market purchases, contracts with some CHP facilities are included in indirect costs. Specific CHP contracts require payments based on a market electricity price (with embedded GHG costs), or a fixed heat rate with the GHG cost based on the contract heat rate, or in other cases, a reimbursement of GHG expenditures incurred by the CHP facility associated with sales to SDG&E. These contracts represent a second source of indirect GHG costs in that the CHP owner acquires GHG compliance instruments.

Contractual GHG costs are not a good estimate of actual GHG costs. Determining actual GHG costs is difficult, however, because it requires knowledge of confidential counterparty data and the choice of method used to split the GHG emissions between electricity production and useful thermal energy. For simplicity, SDG&E estimates GHG costs associated with CHP on the assumption that the CHP units, on average, are as efficient as unspecified power, assigning a 0.428 MT per MWh emissions rate to all purchases of power from CHP facilities.

The GHG emissions from indirect sources are summarized in Table 1 below.

[8] 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.

Table 1 - 2015 GHG Total Emissions Forecast

Resource	Fuel (000 MMBtu)	GHG (000 MT)
Palomar – UOG	[redacted]	[redacted]
Otay Mesa – PPA	[redacted]	[redacted]
Desert Star - Out of State	[redacted]	[redacted]
Cuyamaca – UOG	[redacted]	[redacted]
Goal Line- PPA	[redacted]	[redacted]
Miramar – UOG	[redacted]	[redacted]
Orange Grove – PPA	[redacted]	[redacted]
Yuma – PPA Out of State	[redacted]	[redacted]
Fuel-Based	[redacted]	[redacted]
	Generation (GWh)	
Imports	[redacted]	[redacted]
RPS Adjustment	[redacted]	[redacted]
Total Direct Emissions		[redacted]
Resource	**Generation (GWh)**	
Net CAISO Market Purchases	[redacted]	[redacted]
CHP	[redacted]	[redacted]
Total Indirect Emissions		[redacted]
Total Forecasted Emissions		**5,079**

Conversions		
Natural Gas	0.0531	MT/MMBtu
Market Purchases	0.4280	MT/MWh
Imports	0.4280	MT/MWh

C. 2015 GHG Costs

A proxy price for the 2015 GHG emissions price was calculated as $12.242/MT. This figure was derived using a recent (March 3, 2014) assessment of 2015 GHG market prices based on the average of forward prices on the Intercontinental Exchange ("ICE") over the previous 22-day period, consistent with the period used for forecasting natural gas and electricity prices associated with the forecast of emissions in Table 1, above. The GHG cost forecast multiplies the expected emissions, both direct and indirect, by the forecasted proxy GHG price resulting in forecasted GHG costs for 2015 of $62,171,000 (rounded).

This concludes my prepared direct testimony.

III. QUALIFICATIONS

My name is Benjamin A. Montoya. My business address is 8330 Century Park Court, CP 32F, San Diego, California, 92123.

I have been employed as a Principal Resource Planner in the Resource Planning group of SDG&E since 2000. Prior to that, I was employed at various levels of increasing responsibility in the following SDG&E departments: Gas Engineering, Gas Operations, Gas Control, and Gas System Planning. I have been employed with SDG&E for almost 28 years.

I received a B.S. in Engineering from the United States Naval Academy and a Masters of Business Administration from the University of San Diego. I am a licensed professional Mechanical Engineer in the state of California.

I have previously testified before the Commission on issues related to both gas system planning and electric resource planning.