Application No: A.11-11-
Exhibit No.:
Witness: Jeff Huang

In the Matter of the Application of San Diego Gas & Electric Company (U 902 G) and Southern California Gas Company (U 904 G) for Authority to Revise Their Rates Effective January 1, 2013, in Their Triennial Cost Allocation Proceeding	)	A.11-11- (Filed November 1, 2011)

PREPARED DIRECT TESTIMONY

OF JEFF HUANG

SAN DIEGO GAS & ELECTRIC COMPANY

AND

SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

November 1, 2011

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PREPARED DIRECT TESTIMONY

OF JEFF HUANG

I. QUALIFICATIONS

My name is Jeff Huang. My business address is 555 West Fifth Street, Los Angeles, California, 90013. I am employed by Southern California Gas Company (SoCalGas) as a Senior Resource Planner in the Resource Planning Department. My responsibilities include the development of natural gas demand forecasts for electric generators (EGs) in the service areas of both San Diego Gas & Electric Company (SDG&E) and SoCalGas and evaluating various EG related projects. I have been employed by SoCalGas since 1999.

I have a Masters of Science degree in Electrical Engineering. I am also a registered Professional Engineer in Electrical Engineering in California.

II. INTRODUCTION

The purpose of my testimony is to present a portion of the forecast of natural gas demand for EG and large cogeneration customers for the TCAP period (2013 -2015) for SDG&E and SoCalGas. My testimony covers the EG market, which is comprised of: (1) utility electric generation (UEG) customers; Southern California Edison Company (SCE); SDG&E; the cities of Anaheim, Burbank, Colton, Corona, Glendale, Pasadena, Riverside, and Vernon; the Los Angeles Department of Water and Power (LADWP); the Imperial Irrigation District (IID); (2) exempt wholesale generation (EWG) customers, and (3) large cogeneration customers with generating capacity greater than 20 MW.[1]

III. EG FORECAST METHODOLOGY

Due to the complex interaction of the electric supply and electric demand components, the EG natural gas demand forecast of the UEG and EWG customers is based on an analysis of

[1] The remainder of the EG market (small EG customers) is covered in the testimony of Mr. Wetzel.

the operation of power plants in the Western United States electric market using a production cost model. This method has been used in previous applications before the California Public Utilities Commission (Commission). This forecast uses Ventyx's Market Analytics model (Model). The Model evaluates, in detail, the least cost dispatch of the electricity supply to meet system demand on an hourly basis and provides results of generation unit output, including fuel burn. The major inputs used in the Model are discussed below.

A. Electricity Demand

The demand forecast for California used in the Model is from the California Energy Commission's (CEC's) Preliminary California Energy Demand 2012-2022 Forecast, dated August 2011.[2] This demand forecast was developed as part of the CEC's 2011 Integrated Energy Policy Report process. Since the CEC forecast did not include any uncommitted energy efficiency starting in the year 2013, the forecast was reduced for the Projected Incremental Uncommitted Electric Savings; Mid Savings Scenario amounts included in the Preliminary Demand Forecast. For the remainder of the Western Electricity Coordinating Council (WECC), the demand forecast used the Ventyx electric demand forecasts. Ventyx develops these forecasts by collecting data from various sources including demand forecasts filed by utilities with the Federal Energy Regulatory Commission (FERC).

B. Availability of Hydroelectricity

Limited multi-year water storage in California and the Pacific Northwest (PNW) makes annual hydroelectric generation dependent on each year's snowpack run-off. Since the hydroelectric generation exhibits a year-to-year random variability, the forecast assumes that the

[2] The CEC report can be found at http://www.energy.ca.gov/2011publications/CEC-200-2011-011/CEC-200-2011-011-SD.pdf

availability of hydroelectricity in California and the PNW will be equal to the 15-year average, based on data from 1994-2008.

C. Generation Capacity

The generator operating characteristics used in the Model are based on values provided by Ventyx. Ventyx develops these from regulatory proceedings and filings (e.g. CEC's Electricity Report and FERC forms).

In addition to existing generation capacity, plants under construction were added to the electricity supply mix. In Southern California, plants that were selected as part of recent Investor Owned Utility (IOU) Requests for Offers (RFOs) were added even though they are currently not under construction.

In the SDG&E service area, the forecast included a repowering of the Wellhead Escondido peaking plant, with an expected summer 2012 in-service date. The Apex and Cogentrix peaking plants, which were selected in SDG&E's 2011 RFO but are not currently under construction, were also added as they have a proposed summer 2014 in-service date.

In the SoCalGas service area, the forecast assumes the new capacity SCE selected in February 2007, as a result of its RFO, will come online in both the summer 2012 and summer 2013. This includes the Wellhead Delano peaking plant, the Sentinel peaking plant in Riverside, and the Walnut Creek peaking plant in City of Industry. The forecast also assumes the repowering of the El Segundo power plant to be online by summer 2013. In addition, the forecast includes a repowering project being developed to serve electric load in the Imperial Valley. The El Centro Repower plant is assumed to come on-line by January, 2015.

There is some uncertainty as to how much renewable power will be added during the TCAP period. For this forecast, SDG&E and SoCalGas have assumed the State of California as a whole will reach 21% renewable power standard (RPS) in 2013, and will reach 25% in 2015. This is based on the IOUs recent filings in the CPUC's Long Term Procurement Plan proceeding R.10-05-006. In that proceeding, the IOUs developed a renewable build out, primarily based on their signed contracts, that targets achieving 33% of their energy needs from renewable power by 2020. A review of announcements and resource plans of municipal utilities shows that both LADWP and Sacramento Municipal Utility District (SMUD) have 33% RPS goals by 2020. Some other municipal utilities have announced plans to increase renewable power as part of their portfolios at various levels. However, there are significant uncertainties as to how quickly these entities will incorporate renewable power into their portfolios.

D. Electric Transmission

The addition of large transmission projects, especially ones that interconnect Southern California with other regions and states, can have an impact on EG demand in the service territories of both SDG&E and SoCalGas. Such lines allow more power to flow from one region to the other and allow for greater interchange of electric energy. The only major new transmission line added in this forecast is the Sunrise Powerlink, which is currently under construction by SDG&E, and is expected to be in service by summer 2012. This line would increase the import capability from the Imperial Valley into the SDG&E service area by about 1,000 MW.

E. Greenhouse Gas (GHG) Initiative

In this forecast, SoCalGas and SDG&E assumed the State will implement a Cap and Trade GHG program beginning in 2013. The forecast assumed GHG compliance costs based on CPUC Resolution E-4298, dated December 17, 2009. This Resolution adopted the 2009 Market

Price Referent (MPR) values. These costs, shown in Table 1, are included in the dispatch costs for all fossil-fueled power plants within the WECC.

Table 1
2009 MPR GHG Compliance Costs

	2013	*2014*	*2015*
Nominal $/ Short Ton of CO2	17.83	21.08	24.35
Nominal $ / Metric Ton of CO2	19.65	23.24	26.84

IV. LARGE COGNERATION FORECAST METHODOLOGY

The natural gas demand forecast for large cogeneration customers is based on historical operation. The large cogeneration customer market is forecasted to remain steady over the TCAP period with volumes equal to about the average recorded volumes from 2008-2010. These customers tend to baseload their operation to meet thermal needs thus their volumes are not as sensitive to market changes as non-cogeneration EG.

V. EG AND LARGE COGENERATION FORECAST

The EG and large cogeneration forecast, based on the aforementioned assumptions for the years 2013 through 2015, is shown in Table 2.

Table 2
Annual EG and Large Cogeneration Forecast (MMDth)

Year	*SDG&E EG*	*SoCalGas EG*	*SoCalGas Large Cogen*	*Total*
2013	47	214	53	313
2014	47	216	53	315
2015	47	213	52	313
Average	47	214	53	314

The average of the 2013-2015 EG and large cogeneration customer forecasts is 314 MMDth.[3] It shows a 2% increase in throughput for the combined SDG&E and SoCalGas system as compared to 3-year average recorded throughput (2008-2010) of 309 MMDth. For SDG&E, the average forecast throughput of 47 MMDth represents a 3% decrease from the 3-year average recorded throughput of 49 MMDth. For SoCalGas' system, the average forecast throughput of 267 MMDth represents a 3% increase from the 3-year average recorded throughput of 260 MMDth.

This low gas throughput growth is partially the result of having the forecasted growth in renewable energy production exceed forecasted energy growth. From 2011 to 2015, California's statewide net energy load (NEL) is forecasted to increase by about 13,000 GWh. Over the same period, however, statewide renewable energy is forecasted to grow 22,000 GWh. In addition, the Sunrise Powerlink allows for more import of energy into SDG&E's electric service territory.

VI. WINTER PEAK FORECAST

For the purpose of establishing the marginal demand measures used by Mr. Wetzel, a winter peak day forecast was developed for EG and large cogeneration natural gas demand. For 2013–2015, the winter peak demand was the coincidental peak day of the combined SoCalGas and SDG&E system from the production cost model run for the month of December. December was selected since this is the month that the core customer gas demand is likely to peak.

Table 3
Winter Coincidental Peak Day Demand (MDth/day)

Year	*SDG&E*	*SoCalGas*	*Total*
2013	159	761	920
2014	160	797	957
2015	119	834	953

[3] Note that this figure does not include any EG volumes included in wholesale loads.

VII. FACTORS AFFECTING ELECTRIC GENERATION THROUGHPUT

Gas demand by EG customers (with the exception of large cogeneration customers) has demonstrated a high degree of volatility over the past decade. This is due to the nature of the electricity marketplace, which makes the output of these plants highly dependent on marginal changes in the following:

- Availability of hydroelectric generation from the PNW and California;
- End use electricity demand;
- Availability of base load generation sources, such as renewables or nuclear plants; and
- GHG Compliance costs.

EG throughput on the SoCalGas system is inversely related to the amount of hydroelectric generation, and changes in the amount of hydroelectric generation can be dramatic. In the last fifteen years, hydro has run from 57% to 155% of normal. This can cause substantial swings in EG volumes. Dry-year hydro, which is defined as hydro conditions expected once every 10 years, is about 70% of normal and can cause an increase in EG demand of about 37 MMDth above demand during an average hydro year. For this forecast, an average hydro year was used.

EG throughput is also impacted by electric energy needs, which among other factors, are influenced by weather conditions. The EG forecast presented in this testimony is based on electric demand that assumes average weather conditions. However, in a given year, weather can and will be different from the average. This weather variability can cause electric energy usage in Southern California to be 1% higher or lower per year than demand during average weather. Weather impacts in Southern California can change energy consumption by roughly

1,500 GWh. Given that natural gas is on the margin, this can impact EG demand in Southern California by about 12 MMDth/year or about 4% of the annual forecast.[4]

As pointed out earlier in my testimony, there exists uncertainty as to how much renewable power will come on line. A difference of 1% in the assumed RPS goal for EGs in Southern California is equal to about 1,500 GWh of renewable energy. If this amount of energy would need to be made up by natural gas-powered generation, forecasted throughput on the SoCalGas and SDG&E systems would increase by approximately 12 MMDth/year.

Finally, GHG compliance measures add more costs to coal-fired power plants than gas-fired power plants due to the higher carbon dioxide emission rates of coal-fired power plants. As a result, the model would run the gas-fired combined cycle plants a little more than without GHG compliance costs. Therefore, a change in the implementation date or a change in compliance costs would affect the EG throughput.

This concludes my prepared direct testimony.

[4] Assumes 8,300 btu/KWHR heat rate for converting electricity to gas volumes.