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PREPARED DIRECT TESTIMONY OF

JEFF HUANG

ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY

AND SAN DIEGO GAS & ELECTRIC COMPANY

(LARGE EG/COGEN FORECAST)

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CHAPTER 4

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I. PURPOSE

The purpose of my direct testimony is to present a portion of the forecast of natural gas demand for electric generation (EG) customers for the Cost Allocation Proceeding (CAP) period (2024 - 2027) for Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E). My testimony covers the portion of the EG market 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); and the Imperial Irrigation District (IID); (2) exempt wholesale generation (EWG) customers; and (3) SoCalGas and SDG&E large cogeneration customers with generating capacity greater than 20 megawatts (MW).

II. 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, EWG, and large cogeneration customers is based on an analysis of the operation of power plants in the Western United States electric market using a production cost model. This method was used in both the 2020 and 2022 California Gas Report. This forecast uses the PLEXOS model (Model) developed by the software provider Energy Exemplar, Inc. 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 electric demand forecast for California used in the Model is from the California Energy Commission's (CEC) California Energy Demand Forecast, 2021 – 2035, adopted January 2022.[1] This energy demand forecast was developed as part of the CEC's Integrated Energy Policy Report process. The mid energy demand forecast with Additional Achievable Energy Efficiency (AAEE) Scenario 3 and Additional Achievable Fuel Substitution (AAFS) Scenario 2 was selected as the energy demand forecast. For the remainder of the Western Electricity Coordinating Council (WECC), I used the electric demand forecasts within the PLEXOS database downloaded from CEC as of February 2022.[2] CEC 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. The PLEXOS database uses the 15-year average hydro conditions. Because the hydroelectric generation exhibits a year-to-year random variability, the forecast assumes that the availability of hydroelectricity generation in California and the PNW will be equal to the 15-year average, based on data provided by CEC.

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[1] The CEC report can be found at 2021 Integrated Energy Policy Report (ca.gov).

[2] The Model covers the entire WECC region: 14 western states, 2 Canadian provinces, and Northern Baja Mexico. The power simulation encompasses the entire WECC footprint. CEC provided data for all the states and provinces. I updated the electricity demand for California only, with CEC's electricity demand forecast.

C. Generation Capacity

The generator operating characteristics used in the Model are based on values provided by CEC. It develops these from regulatory proceedings and filings. CEC has been updating the database with recent resource additions and retirements.

In this forecast, the generating resource additions follow the adopted 2021 Preferred System Plan (PSP), which also assumes compliance with the Mid-Term Reliability (MTR) Decision 21-06-035. The PSP portfolio includes approximately 10,000 MW of energy storage resources and Shed Demand Response by 2024 and 12,000 MW by 2027. The PSP portfolio also includes approximately 10,000 MW of new renewable resources by 2024 and 15,000 MW by 2027.

In both SoCalGas and SDG&E service areas, there are no additional gas-fired generating resources. The once through cooling (OTC) plants with total capacity of 3,755MW are expected to retire by 12/31/2023. They are the Alamitos, Huntington Beach, Redondo Beach, and Ormond Beach plants. Additionally, Scattergood 1&2 units are expected to retire by 12/31/24.

California has adopted an aggressive PSP to meet a stringent greenhouse gas (GHG) target of 38 million metric ton (MMT) by 2030. While California load-serving entities (LSEs) are working to meet their GHG goals, there are uncertainties as to how much renewable power and energy storage resources will be added specifically during the TCAP period. The current supply chain constraints and increased raw material costs may delay certain projects.

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 UEG and EWG demand in the service territories of both SoCalGas and SDG&E. There is no new major transmission line

added in this forecast as there are no known projects expected to come online during the CAP period.

E. Greenhouse Gas (GHG) Cap-and-Trade Program Costs

In response to Assembly Bill 32, the California Air Resources Board (ARB) implemented a Cap-and-Trade program for GHG emissions beginning in 2013. The forecast of natural gas demand for UEG and EWG customers assumes GHG compliance costs based on recent futures market prices of $30-40 per metric ton of carbon dioxide equivalent (MTCO2e).

III. UEG, EWG, AND LARGE COGENERATION FORECAST

The UEG, EWG, and large cogeneration forecast, based on the above discussed assumptions for the years 2024 through 2027, is shown in Table 1.

Table 1
Annual EG and Large Cogeneration Forecast (MMDth)

Year	*SDG&E*	*SoCalGas*	*Total*
2024	24	174	198
2025	21	162	184
2026	21	158	179
2027	21	153	174
Average	22	162	183

IV. WINTER PEAK FORECAST

To establish the marginal demand measures presented in the testimony of William Guo (Chapter 5), a winter peak day[3] forecast was developed for UEG, EWG, and large cogeneration natural gas demand. The winter peak demand is the coincidental peak day of the total SoCalGas and SDG&E system. The result is shown in Table 2.

[3] Winter peak day is the day in December which has the highest EG throughput of the combined SDG&E and SoCalGas system.

Table 2
Winter Coincidental Peak Day Demand (MDth/day)

Year	*SDG&E*	*SoCalGas*	*Total*
2024	75	493	568
2025	80	463	542
2026	84	443	527
2027	84	468	552

This concludes my prepared direct testimony.

V. QUALIFICATIONS

My name is Jeff Huang. My business address is 555 West Fifth Street, Los Angeles, California, 90013. I am employed by SoCalGas as a Senior Resource Planner in the Transmission & Storage Strategy Group. My responsibilities include the development of natural gas demand forecasts for EGs in the service areas of both SoCalGas and SDG&E and evaluating various EG related projects.

I have a Master of Science degree in Electrical Engineering from University of Southern California. I am a registered Professional Engineer in California. I have been employed by SoCalGas since 1999.

I have previously testified before the Commission.