Application No.: A.19-04-
Exhibit No.:
Witness: ~~Jeff Deturi~~ Stefan Covic

UPDATED PREPARED DIRECT TESTIMONY OF

~~JEFF DETURI~~

STEFAN COVIC

ON BEHALF OF

SAN DIEGO GAS & ELECTRIC COMPANY

redacted, public version

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

~~April 12,~~**November 7, 2019**

TABLE OF CONTENTS

UPDATED PREPARED DIRECT TESTIMONY OF
~~JEFF DETURI~~
STEFAN COVIC
ON BEHALF OF
SAN DIEGO GAS & ELECTRIC COMPANY

I. INTRODUCTION

My updated testimony describes the resources San Diego Gas & Electric Company ("SDG&E") expects to use in calendar year 2020 to provide electric commodity service to its bundled service customers; provides a forecast of the procurement costs that SDG&E expects to record in 2020 to the Energy Resource Recovery Account ("ERRA"), Transition Cost Balancing Account ("TCBA"), Portfolio Allocation Balancing Account ("PABA"), and Local Generation Balancing Account ("LGBA"); provides a 2020 forecast of SDG&E's San Onofre Generating Station ("SONGS") Unit 1 Offsite Spent Fuel Storage Costs; provides a forecast of 2020 total greenhouse gas ("GHG") costs; and provides a 2020 forecast of Tree Mortality Non-Bypassable Charge Balancing Account ("TMNBCBA") costs. SDG&E witness Ms. Ngo uses my forecast of ERRA, Competition Transition Charge ("CTC") and Local Generation ("LG") in developing 2020 revenue requirements for each element. In addition, my testimony provides information that supports SDG&E witness Ms. Montanez's development of the GHG allowance revenue return allocation and the volumetric revenue return for small business and residential customers, as well as rates for the Green Tariff Shared Renewables ("GTSR") program and the Power Charge Indifference Adjustment ("PCIA").

II. SUMMARY OF TESTIMONY

In Section II of my testimony, I provide a forecast of the energy requirements that will be required to serve SDG&E's bundled customer load for 2020, as well as forecasts of the supply resources that SDG&E expects to utilize to meet that load in calendar year 2020. The supply

resources for which I provide forecasts include (1) generation resources that are under contract for 2020; (2) generation resources owned by SDG&E; (3) renewable generation resources that are under contract for 2020; (4) Qualifying Facilities ("QFs") under the Public Utility Regulatory Policies Act ("PURPA") that are under contract for 2020; and (5) generation obtained through market purchases.

In Section ~~III~~IV of my testimony, I quantify the costs associated with the resources described in Section ~~II~~III, along with other electric procurement costs that are recorded in ERRA, such as market purchases, California Independent System Operator ("CAISO") charges and portfolio hedging costs. These costs are summarized in Attachment A.

In Section ~~IV~~V of my testimony, I provide a forecast of the 2020 SONGS Unit 1 Offsite Spent Fuel Storage Costs associated with SDG&E's 20% minority ownership interest in SONGS.

In Section ~~V~~VI of my testimony, I provide a forecast of the 2020 GHG emissions and associated costs, both direct and indirect, incurred in connection with SDG&E's compliance with California's cap-and-trade program. I also provide a forecast of GHG allowance auction revenues.

In Section ~~VI~~VII of my testimony, I provide a forecast of the 2020 TMNBCBA costs.

Lastly, in Section ~~VII~~VIII, I provide a statement of qualifications.

Finally, my testimony refers to the following attachments:

Attachment A: SDG&E 2020 ERRA and LG Expenses (CONFIDENTIAL)

Attachment B: SDG&E 2020 Generation Portfolio Delivery Volumes (CONFIDENTIAL)

Attachment C: SDG&E 2020 Renewable Resource Detail

Attachment D: SDG&E 2020 CTC & QF Detail (CONFIDENTIAL)

Attachment E: SDG&E GHG Detail. (CONFIDENTIAL)

III. 2020 FORECAST OF ENERGY REQUIREMENTS AND SUPPLY RESOURCES

A. ENERGY REQUIREMENTS FORECAST

As a starting point for my analysis, I developed a forecast of SDG&E's 2020 bundled load requirement, which is based on the California Energy Commission's ("CEC") ~~2017 IEPR~~2018 CEDU Hourly Demand Forecast for SDG&E~~, adopted in February 2018.~~. Using this forecast and adjusting for direct access load, I project that the energy requirements for SDG&E's bundled load for 2020 will be [redacted] The 2020 forecast is [redacted] or [redacted] less than SDG&E's forecasted bundled energy ~~forecast~~ for 2019 [redacted]

B. SUPPLY RESOURCE FORECAST

After determining the amount of energy that SDG&E's bundled load customers will require in 2020, I then proceeded to develop a forecast of the supply resources that will be needed to meet that demand. To quantify the generation associated with the supply resources, I used the same production cost model SDG&E has used in past ERRA forecasts. Inputs to this model include the characteristics of the various generation resources, including heat rate, variable Operating and Maintenance ("O&M") costs, other factors that impact the plant's dispatch, and natural gas and electric market prices. The natural gas and electric market price forecasts were derived using a recent (~~March~~October 1, 2019) assessment of 2020 market prices, based on the average of forward prices over the previous ~~22~~20 market trading days. I then ~~ran~~ran the model which simulates a least-cost dispatch of the portfolio of SDG&E's resources for every hour of 2020. The supply resources fall into the following five categories.

1. SDG&E-Contracted Generation

SDG&E has ~~a number of~~multiple generation resources under contract in its 2020 resource portfolio. These resources are available under a variety of contractual arrangements, including tolling contracts, fixed energy contracts, and contracts for Resource Adequacy only. The largest of the tolling and fixed energy contracts are:

- the Carlsbad Energy Center Power Purchase Agreement ("PPA") for the output of a 528 MW simple cycle combustion turbine unit;
- the Pio Pico Energy Center PPA for the output of a 336 MW simple cycle combustion turbine unit;
- the Orange Grove PPA for the output of two 48 MW simple cycle combustion turbine units;
- the El Cajon Energy Center PPA for the output of a 48 MW simple cycle combustion turbine unit;
- the Escondido Energy Center PPA for the output of a 48 MW simple cycle combustion turbine unit; and
- ~~the~~ Morgan Stanley PPA, which provides firm energy deliveries at the ~~Northern~~Nevada Oregon Border ("NOB").

The OMEC facility was part of SDG&E's resource portfolio up until October of 2019 when the facility transitioned to an RA only contract. The forecasted generation for these contracts is detailed in Attachment B and is summarized in Table 1 below:

Table 1: Generation (GWh)			
	2020	2019	Difference
Carlsbad Energy Center	[redacted]		
Pio Pico Energy Center			
Orange Grove			
El Cajon Energy Center			
Escondido Energy Center			
Morgan Stanley NOB			
Total			

Table 1: Generation (GWh)			
	2020	2019	Difference
OMEC	[redacted]		
Carlsbad Energy Center			
Pio Pico Energy Center			
Orange Grove			
El Cajon Energy Center			
Escondido Energy Center			
Morgan Stanley NOB			
Total			

SDG&E also enters ~~into~~ contracts each year to meet its ~~CPUC~~California Public Utilities Commission ("CPUC") Resource Adequacy requirements.[1] Under its Resource Adequacy contracts, SDG&E is entitled to show this capacity as meeting its Resource Adequacy obligation, but SDG&E does not have rights to the energy or ancillary services from these units. For 2020, SDG&E forecasts that it will enter ~~into~~ contracts for up to [redacted] maximum of [redacted] of Resource Adequacy capacity.

[1] California Public Utilities Code Section 380 established the Resource Adequacy program to provide ~~sufficient~~enough resources to the CAISO to ensure the safe and reliable operation of the grid in real time and to provide appropriate incentives for the siting and construction of new resources needed for reliability in the future.

2. SDG&E-Owned Dispatchable Generation

SDG&E owns several generation facilities, which it uses to meet its bundled customer load, including the following:

- ~~the Otay Mesa Energy Center ("OMEC"), a 595 megawatt ("MW") combined cycle power plant;~~
- the Palomar Energy Center ("Palomar"), a 575 MW combined cycle power plant;
- the Desert Star Energy Center ("Desert Star"), a 495 MW combined cycle power plant;
- the Miramar Energy Facility ("Miramar I and II"), consisting of two 48 MW simple cycle combustion turbine units;
- the Battery Storage facilities, consisting of Escondido at 30 MW, El Cajon at 7.5 MW, and Miramar at 30 MW; and
- the Cuyamaca Peak Energy Plant, consisting of a 45 MW simple cycle combustion turbine.

These units are dispatched by the CAISO for generation and ancillary services ("A/S") awards based on economic merit.[2] The forecasted generation for these plants is detailed in Attachment B and is summarized in Table 2 below:

[2] SDG&E's dispatch model considered only generation dispatched for energy and not for A/S because the CAISO co-optimizes market awards between energy and A/S based on the opportunity cost of capacity. Thus, the economic benefit (and ERRA contribution) of using energy for generation is equivalent to using capacity for A/S.

	Table 2: Generation (GWh)		
	2020	2019	Difference
OMEC			
Palomar			
Desert Star			
Miramar			
Battery Storage			
Cuyamaca			
Total			

	Table 2: Generation (GWh)		
	2020	2019	Difference
Palomar			
Desert Star			
Miramar			
Battery Storage			
Cuyamaca			
Total			

3. Renewable Energy Contracts

The 2020 forecast of renewable energy supply from CPUC-approved contracts is ~~6,859~~6,617 GWh, which includes 1,236 GWh of Renewable Energy Credit ("REC") quantities[3] that are delivered to SDG&E in conjunction with existing non-renewable imports. This forecast represents a decrease of ~~82~~324 GWh from the 2019 forecast (6,941 GWh) and represents ~~4~~ [redacted] of forecasted bundled sales. The forecasted generation associated with SDG&E's monthly renewable contracts is set forth in Attachment C.

For 2020, SDG&E forecasts it will receive ~~5,623~~5,876 GWh of bundled renewable energy under ~~48~~41 contracts with facilities that generate electricity using wind, solar, biogas, and

[3] Renewable Energy Credits represent the green attribute of renewable generation and, while they can be purchased independent of physical delivery of generation from the source, they must accompany a delivery of "tagged" physical power to be imported into California.

non-pumped hydro technologies. This number considers forecasted RPS sales for 2020 in the amount of 741 GWh. The forecasted generation for projects that are currently on-line, and operating is derived from generation profiles based on historical data. The forecasted generation for those projects that have recently come online and that are expected to continue operations in 2020[4] is based on historical data of resources that utilize similar renewable technologies.

In addition, SDG&E expects to receive 1,236 GWh of firmed-and-shaped power from three out-of-state wind projects, Rim Rock and Naturener Glacier 1 and 2 (Montana).[5] The RECs are delivered to California independently of the physical delivery of generation by the source wind projects. This is done by tagging equivalent quantities of the physical deliveries of other energy imports that SDG&E has already accounted for in its 2020 forecast. The forecasted energy mix from these renewable resources is shown in Table 3 below:

	Table 3: Generation (GWh)		
	2020	2019	Difference
Solar	3,589	3,573	15
Wind	1,785	1,960	(175)
Wind RECs	1,236	1,236	-
Biogas	246	172	74
Other	4	0	4
RPS Sales	-	-	-
Total	6,859	6,941	(82)

[4] SDG&E did not include renewable energy quantities or costs associated with the Sustainable Communities Photovoltaic program because costs for this program are not charged to ERRA.

[5] The firmed-and-shaped wind power from these contracts is delivered to California through the Morgan Stanley power contract described above.

	Table 3: Generation (GWh)		
	2020	2019	Difference
Solar	[redacted]		
Wind			
Wind RECs			
Biogas			
Other			
RPS Sales			
Total			

4. Qualifying Facilities Contracts

In 2020, SDG&E will have approximately 110 MW of capacity under contract with three QFs.[6] The two largest QF contracts account for 106.5 MW or 98% of total QF capacity. All ~~of~~ these QFs are ~~located~~ in SDG&E's service area except for the Yuma Cogeneration Associates ("YCA") plant, a 56.5 MW natural gas-fired plant located in Arizona, the output of which is imported into the CAISO.

SDG&E's QF contracts include a combination of must-take and dispatchable resources. For must-take resources, SDG&E is obligated to pay the contract price for all delivered QF generation and schedule it into the CAISO market; SDG&E has no such obligation with dispatchable resources. SDG&E has amendments with Goal Line and YCA, which provide SDG&E with more economic dispatch rights. SDG&E forecasted the plants' dispatch in accordance with these terms. The forecast of QF energy supply in 2020 is ~~104~~ [redacted]. The forecasted generation for these plants is detailed in Attachment D.

[6] The actual number of active QF contracts is over 50, but many of these QF resources only serve on-site load and do not deliver net energy to SDG&E. As a result, these are not included in the production cost model analysis. The three QFs referenced above deliver net energy to SDG&E and are thus included in SDG&E's model.

5. Market Purchases and Surplus Sales

Under the Market Redesign and Technology Upgrade ("MRTU"),[7] there is no requirement that SDG&E balance its bundled load and its controlled generation quantities that clear the market. If, in any hour, the quantity of SDG&E's bundled load requirements purchased from the CAISO is greater than SDG&E-controlled generation dispatched by the CAISO, the difference may be viewed as equivalent to a market purchase.[8] Similarly, if more SDG&E generation is dispatched than SDG&E load requirements it is assumed to offset market purchases in other time periods. SDG&E forecasts that the quantity of equivalent market purchases will be [redacted] in 2020, ~~a decrease~~an increase of [redacted] from the 2019 forecast [redacted]

IV. 2020 FORECAST OF ERRA EXPENSES

To quantify the costs associated with the supply resources described in Section II, the production cost model also tracks the costs of the economic dispatch. Electric procurement expenses incurred by SDG&E to serve its bundled load are also recorded to the ERRA. These expenses include, among other items, costs and revenues for energy and capacity cleared through the CAISO market, power purchase contract costs, generation fuel costs, market energy purchase costs, CAISO charges, brokerage fees, and hedging costs.

---

[7] In 2009, the CAISO implemented the Market Redesign and Technology Upgrade which primarily transformed the CAISO market from a zonal to a nodal priced market.

[8] In some hours the quantity of SDG&E's bundled load requirements purchased from the CAISO is less than SDG&E-controlled generation sold to the CAISO. The difference may be viewed as equivalent to a market sale and the costs and revenues for such transactions are accounted for in the forecast by the total fuel expenses and total ISO Supply revenues.

I expect that SDG&E will incur ~~$1.19~~1.15 billion of ERRA costs in 2020,[9] as reflected in Attachment A. This forecast is $~~25~~66 million less than the $1.216 billion forecasted for 2019.

The above-market costs of all generation resources that are eligible for cost recovery through PCIA rates will be recorded in PABA going forward. SDG&E's 2020 PABA cost forecast is ~~$519.9~~359.1 million[10].

In the remainder of this Section, I will discuss in greater detail the cost forecasts for specific ERRA items.

A. ISO LOAD CHARGES

The CAISO supplies and sells to SDG&E the energy and A/S necessary to meet SDG&E's bundled load requirement. Based on forecasted prices for energy and A/S, SDG&E's production cost model forecasts [redacted] of ISO load charges for 2020. This cost includes the indirect GHG costs embedded in the market price of energy. I present GHG quantities and costs in Section V.

B. ISO SUPPLY REVENUES

In the CAISO market, all generation from SDG&E's resource portfolio is sold to the CAISO. Based on forecasted prices for energy, SDG&E's production cost model forecasts revenues totaling [redacted] for generation sold in 2020.

C. CONTRACTED ENERGY PURCHASES

1. Purchased Power Contracts

---

[9] This amount does not include Franchise Fees and ~~Uncollectibles~~Uncollectible ("FF&U"), nor do any of the other figures in my testimony.

[10] In D.07-01-025, the Commission adopted the PCIA methodology for CCA customers. SDG&E is currently waiting for the approval of its Tier 2 Advice Letter 3318-E ~~establishment of~~(dated December 10, 2018) seeking to establish the PABA preliminary statement and the necessary proposed modifications to the ERRA. SDG&E's PABA account ~~shall~~is expected to take effect January 1, 2019, subject to advice letter approval. Above-market costs will continue to be recorded in ERRA until AL 3318-E is approved and PABA is established.

SDG&E's forecast of total costs for non-renewable power purchase contracts in 2020 is [redacted]. These costs cover capacity payments and variable generation costs for Orange Grove, Wellhead, El Cajon and other facilities with which SDG&E has smaller contracts. The largest components in this category are Resource Adequacy capacity costs, expected to be [redacted] and the Morgan Stanley contract is expected to cost [redacted].

2. Renewable Energy Contracts

SDG&E's renewable energy contracts usually contain only an energy payment and no capacity payment. In 2020, SDG&E's renewable energy portfolio will include a cost for all the renewable power delivered based on contract prices and the renewable energy credits described in Section II under "Renewable Energy Contracts." All costs associated with these contracts are booked as ERRA expenses and are forecasted to be $~~675~~630 million for 2020. Attachment C details the renewable projects by fuel type, their costs and forecasted energy deliveries.

Customers who opt into the Green Tariff Shared Renewables ("GTSR") program, which consists of both a Green Tariff ("GT") component and an Enhanced Community Renewables ("ECR") component, pay a subset of the renewable costs.[11] The estimated GT customer usage in

[11] Decision 15-01-051 authorizing the GTSR program was approved on January 29, 2015. The GT and ECR components are two separate rate offerings under the GTSR Program accessing different pools of solar resources and with different terms.

2020 is ~~138.76~~161.9 GWh.[12] The estimated GT charges include the cost of local solar[13] of $~~68.52~~68.52/megawatt hour ("MWh"), Grid Management Charges ("GMC") of $0.00073/~~kwh~~kWh and Western Renewable Energy Generation Information System ("WREGIS") costs of $0.00001/~~kwh~~kWh. The estimated total cost of GT in 2020 is $~~9~~11.6 million. The estimated ECR customer usage in 2020 is ~~5.2~~1.7 GWh. The estimated total cost of ECR in 2020 is $~~0.~~178,828. Additionally, the solar value adjustment was calculated as $0.00~~568~~416/~~kwh~~kWh.

3. Qualifying Facilities Contracts

SDG&E's QF contracts consist of dispatchable capacity or firm capacity PURPA contracts. These contracts include provisions for both energy and capacity payments. The energy payments for QFs that are under firm capacity PURPA contracts are forecasted using SDG&E's Short-Run Avoided Cost ("SRAC") formula.[14] For the dispatchable contracts, SDG&E pays fuel, variable O&M and capacity payments. Most of these contracts, whether PURPA or dispatchable, are considered CTC QF contracts,[15] and the ERRA expenses are based on delivered energy multiplied by the market price benchmark ("MPB"). Any costs, including capacity payments, greater than the market price benchmark are booked to the TCBA. For the purposes of ERRA accounting, ERRA expenses for CTC QF contracts are recorded on Line 5 of

[12] GT and ECR usage forecasts were developed using average consumption estimates for each customer class in conjunction with program enrollment targets.

[13] To meet immediate GT customer demand, SDG&E will draw on existing Renewables Portfolio Standard ("RPS") resources that are eligible to serve the GT component of the GTSR Program. The Interim GT Pool is a short-term approach and cost is based on the weighted average cost of contracts for included resources. Simultaneously, SDG&E will engage in procurement for projects built specifically to serve the GT component (GT Dedicated Procurement Projects). When GT Dedicated Procurement Projects are brought online, the Interim GT Pool will be phased out as allowed by program participation.

[14] The derivation of the SRAC price for QF contracts is posted monthly on an SDG&E website: http://www2.sdge.com/SRAC/.

[15] The CP Kelco contract, however, is not considered a CTC contract. Thus, unlike other QF contracts, 100% of CP Kelco contract costs are included in ERRA.

Attachment A, "Contract Costs (CTC up to market)," and are forecasted to be [redacted] in 2020. Attachment D details the breakdown of all the units discussed in this section and shows the associated costs, both ERRA and TCBA, and the forecasted energy deliveries. These costs include the indirect GHG cost embedded in the market price that flows through the SDG&E SRAC formula. I present GHG quantities and costs in Section IV of my testimony.

D. GENERATION FUEL

1. Palomar, Desert Star, Miramar and Cuyamaca (Fuel Expenses that are Recovered through ERRA)

In 2020, the ERRA expense for generation fuel purchased by SDG&E for Palomar, Miramar I & II, Desert Star~~, Otay Mesa~~ and Cuyamaca is forecasted to be [redacted].[16] These forecasted expenses include in lieu of gas fees for Palomar, which are also recovered in ERRA. These costs are calculated based on SDG&E's forecasted fuel usage for this plant and the applicable tariffs, Schedule GP-SUR[17] and Schedule EG.[18]

E. LOCAL GENERATION[19]

As previously noted, SDG&E has entered into contracts for generation resources which specifically provide local Resource Adequacy for the SDG&E system. Because these contract costs are allocated to both bundled and direct access customers, the costs are accounted for in a separate Local Generating Balancing Account. The Escondido Energy Center, Kelco, Grossmont~~, Naval Station, North Island~~, Pio Pico, Carlsbad Energy Center, El Cajon Energy Storage,

---

16 Capital and non-fuel operating costs for these plants are recovered in the Non-Fuel Generation Balancing Account ("NGBA") as required by D.05-08-005, Resolution E-3896 and D.07-11-046.

17 Customer-procured Gas Franchise Fee Surcharge.

18 Natural Gas Intrastate Transportation Service for Electric Generation Customers.

19 Pursuant to D.17-07-005, SDG&E updated its authorized rate of return on ~~ratebase~~rate base in Advice Letter ("AL") 3120-E with impacts to revenue requirements reflected in the January 1, 2018 consolidated filing, which impacted the LG revenue requirement that was approved in D.17-12-014.

Hybrid Holdings Energy Storage, Miramar Energy Storage and Escondido Energy Storage contracts are included in this balancing account and are expected to cost [redacted], ~~including direct and indirect GHG costs and~~ net of supply ISO revenue. Attachment A, attached hereto, details the breakdown of local generation expenses.

F. CAISO RELATED COSTS

SDG&E forecasts the miscellaneous CAISO costs to be [redacted] in 2020. SDG&E also forecasts the cost of the ~~FERC~~Federal Energy Regulatory Commission ("FERC") Fees and Western Renewable Energy Generation Information System to be [redacted] in 2020.

G. HEDGING COSTS & FINANCIAL TRANSACTIONS

SDG&E's resource portfolio has substantial exposure to gas price volatility ~~as a result~~because of fuel requirements for its gas-fired resources, as well as the gas price-based pricing formula for its QF contracts. To manage this exposure, SDG&E engages in hedging activity, consistent with its CPUC-approved procurement plan,[20] and it will book the resulting hedging costs and any realized gains and losses from hedge transactions to ERRA consistent with its CPUC-approved hedge plan. The estimate of hedging revenues for 2020 is [redacted] calculated as the marked-to-market profit/loss of hedges already in place, plus expected broker fees. The profit/loss of these and future hedges placed will rise and fall with market prices. Therefore, the final cost or savings will not be known until the settlement process has been completed for the hedge transactions.

SDG&E may also trade short-term financial power products to hedge its long or short position against potentially volatile CAISO market clearing prices. SDG&E does not include a forecast of net cost or benefit from these power hedges due to the unpredictability of market

[20] SDG&E's 2014 Long -Term Procurement Plan, Appendix B: Electric and Gas Hedging Strategy.

prices relative to the price of the hedges.

H. CONVERGENCE BIDS

SDG&E uses convergence bids[21] to hedge certain operational risks in the day-to-day management of its portfolio. It is not possible to forecast the gains or losses associated with potential convergence bidding activity because of the unpredictable relationship between day-ahead and real-time prices. Therefore, SDG&E did not forecast an ERRA revenue/charge for convergence bids.

I. CONGESTION REVENUE RIGHTS ("CRRs")

Market participants, including SDG&E, were allocated CRRs by the CAISO for which they can nominate source and sink P-nodes[22] to match those in their portfolio. If congestion arises between the source and sink P-nodes, the CAISO will pay the market participant holding the CRR the congestion charges to offset the congestion costs incurred. SDG&E expects its CRRs to generate revenues from the CAISO to offset congestion costs incurred within its portfolio. However, expected revenues were not forecast for the 2020 ERRA forecast because SDG&E assumed congestion-free clearing prices to develop forecasts for load requirement costs and generation revenues. A forecast of CRR revenues would have required SDG&E to forecast offsetting market-congestion prices at various P-nodes over the 2020 period. Since there are no forward market prices for congestion, we do not have a strong basis to perform this forecast

[21] A convergence bid (also known as a virtual bid) is not backed by any physical generation or load~~,~~ and is thus completely financial. Convergence bidding allows market participants to arbitrage expected price differences between the Day-Ahead and Real-Time markets. Using convergence bids, market participants can sell (buy) energy in the Day-Ahead market, with the explicit requirement to buy (sell) that energy back in the Real-Time market, without intending to physically consume or produce energy in Real-Time. Convergence bids that clear the Day-Ahead market will either earn (or lose) the difference between the Day-Ahead and Real-Time market prices at a specified node multiplied by the megawatt volume of their bids.

[22] The source and the sink are the two ends of a path for which congestion may occur. The CRR represents the difference in the Marginal Cost of Congestion component of the Locational Marginal Prices for the Nodal Prices of the source and sink.

without introducing complexity and additional uncertainty into the forecast.

Market participants, including SDG&E, are offered the ability to purchase CRRs through an auction process. SDG&E may elect to participate in the annual and monthly auction processes to procure the incremental CRRs. Since the incremental CRRs volumes cannot be forecasted, the incremental CRR costs and revenues also cannot be forecasted.

J. INTER-SCHEDULING COORDINATOR TRADES ("IST")

In the CAISO market, SDG&E may transact ISTs[23] bilaterally with counterparties to hedge long or short positions. Under an IST purchase, SDG&E pays the counterparty the contracted energy price and in return receives payment from the CAISO based on the market clearing price. Under an IST sale, SDG&E receives payment from the counterparty based on the contracted energy price and in return pays the market clearing price to the CAISO. For IST purchases and sales, the payment to, or revenue from, the counterparty is largely offset by the respective credit from, or payment to, the CAISO. Because ISTs are used as a hedge against unknown market prices, SDG&E does not include a forecast of the net cost or benefit from these transactions.

V. SONGS UNIT 1 OFFSITE SPENT FUEL STORAGE COSTS

A. Background

SONGS Unit 1 ceased operation on November 30, 1992. Defueling was completed on March 6, 1993. On July 18, 2005, SDG&E submitted ~~Advice Letter~~AL 1709-E, which removed SONGS Unit 1 shutdown O&M expense from the revenue requirement pursuant to D.04-07-022. Southern California Edison Company ("SCE"), the majority owner of SONGS, has decommissioned the Unit 1 facility, and as of 2010, most of the Unit 1 structures and equipment

[23] ISTs are financial bilateral transactions which allow SDG&E to hedge long or short price positions in the market.

have been removed and disposed of, except for areas shared by Units 2 and 3 for which physical decommissioning and dismantlement has only recently begun.

Spent fuel assemblies from SONGS Unit 1 have been stored since 1972 at the General Electric-Hitachi spent fuel storage facility located in Morris, Illinois. There are 270 spent fuel assemblies from SONGS Unit 1 currently in storage at that facility. Because there are no other facilities currently available in the U.S. for the commercial storage of spent nuclear fuel, those 270 assemblies are expected to remain at the Morris facility until they are accepted for ultimate disposal by the U.S. Department of Energy. Pursuant to the terms of the storage contract with General Electric-Hitachi, payments are made monthly by SCE, which in turn bills SDG&E for its 20% ownership share.

B. 2020 Forecast

SDG&E estimates its 2020 SONGS Unit 1 offsite spent fuel storage expense to be $~~1.097~~1.060 million, including adjustments for escalation, in accordance with the GE-Hitachi spent fuel storage contract.[24] The storage contract utilizes the Bureau of Labor Standards' labor non-financial corporations and industrial commodities indices to forecast escalation rates, which are included in SCE's billing statement to SDG&E. This estimate is based on a spent fuel storage cost forecast prepared by SCE's Nuclear Fuel Manager utilizing the contract escalation terms.

VI. 2020 FORECAST OF GHG COSTS

In this section, I describe the cost forecast for GHG compliance obligations under the California Air Resources Board ("ARB") cap-and-trade program. The cap-and-trade program provides that compliance obligations in the electricity sector are applicable to "first deliverers of

[24] SDG&E may recover these costs through ERRA per D.15-12-032.

electricity."[25] Generally, first deliverers of electricity in 2020 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 program requires that first deliverers of electricity, except 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.[26]~~ SDG&E is the first deliverer for its utility-owned generation, for generation it purchases under third-party tolling agreements in California, and for its imports of electricity into California. The cost of allowances and offsets is a direct GHG cost. In Section V.A below, I address direct GHG compliance costs associated with SDG&E utility-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 costs that SDG&E incurs from third parties under contracts. The party selling the power is responsible for the GHG allowance acquisition, but it implicitly charges SDG&E for the cost of acquiring allowances. In Section V.B below, I address indirect GHG costs. In Section V.C, I describe the calculation of both direct and indirect 2020 GHG costs. Finally, in Section V.D, I discuss the 2020 allowance auction revenues and the allocations of those revenues.

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

---

[25] ARB, Article 5: California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms, at 60, Section 95811(b). ~~Available~~, *available* at ~~:~~ https://www.arb.ca.gov/cc/capandtrade/c-t-reg-reader-2013.pdf.

~~26 ARB, Article 5: California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms, Section 95851. Available at: https://www.arb.ca.gov/cc/capandtrade/c-t-reg-reader-2013.pdf.arb.ca.gov/cc/capandtrade/c-t-reg-reader-2013.pdf.~~

deliverer approach, SDG&E will have a direct compliance obligation for GHG emissions from burning natural gas at facilities in its portfolio, including carbon dioxide, methane, and nitrous oxide. I forecasted SDG&E's expected direct GHG compliance costs using the same production simulation model results that produced the ERRA expenses discussed above. 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. The fuel volume is then multiplied by an emissions factor of 0.05307 MT of CO_2e per MMBtu to calculate direct emissions obligations

for each plant.[27] The forecast of GHG emissions from SDG&E facilities in 2020 is included in Table 4 below.

Similarly, the estimated emissions for tolling agreements ~~(e.g., 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. Table 4 below provides the forecast of GHG emissions from generators that are under tolling agreements with SDG&E in 2020.

In addition, SDG&E imports out-of-state electricity to a delivery point inside California, and it 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), which consist of either a specific plant or an asset-controlling supplier.[28] Accordingly, power from SDG&E's Desert Star combined-cycle generation plant in Nevada, for example, 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.

Second, imported power from "unspecified sources" is multiplied by an estimated

---

[27] ARB's Mandatory Reporting Regulations requires use of emission factors from federal regulations - 40 Code of Federal Regulations ("C.F.R.") Section 98. For pipeline natural gas, there are three components ~~–~~ CO2, CH4, and NO2. ~~Table~~Using Tables C-1 ~~of 40 C.F.R. Section 98 provides an emissions rate for CO2 of 0.05302 MT/MMBtu. Table C-2 of 40 C.F.R. Section 98 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 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~~and C-2 from 40 C.F.R. Subpart C Section 98 we calculate an overall emissions rate of 0.05307 MT/MMBtu. SDG&E's portfolio of GHG emitting resources ~~use~~uses only natural gas, ~~and~~ not other fuels.

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

transmission loss factor of 1.02[29] to estimate the MWh related to unspecified electricity imports. The quantity is multiplied by the ARB default emission rate, which is 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 by the MWh from the eligible renewable resources, as measured at the point of generation.[30] Of the total generation potentially eligible for RPS Adjustment, approximately 50% has been imported into California. As such, SDG&E is only able to utilize the remaining non-imported generation to calculate its RPS Adjustment. Both the emissions of imported power and the offsetting RPS adjustment are shown in Table 4 below. Monthly emissions for all categories are summarized in Attachment E.

B. Indirect GHG Emissions

In addition to the direct GHG costs described above, the cap-and-trade program results in GHG compliance costs 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, rather than by SDG&E, as purchaser. SDG&E's expected indirect GHG compliance costs are based on an assumption

[29] Transmission losses on SDG&E's system are measured at approximately 2% of load requirement.

[30] ARB, Article 5: California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms, at 103, Section 95852(b)(4)(C). Available, *available* at: https://www.arb.ca.gov/cc/capandtrade/c-t-reg-reader-2013.pdf.

that all power sold by SDG&E-controlled assets are used by SDG&E customers, up to the level of the forecasted SDG&E load.[31] 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 embedded in these net CAISO market purchases, SDG&E used the ARB's default emissions rate, which is 0.428 MT per MWh.

In addition to market purchases, contracts with some Combined Heat and Power ("CHP") facilities are included as 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 do not provide a good estimate of actual GHG costs. Accordingly, determining actual GHG costs is difficult 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 on an annual basis in Table 4 below and ~~on a~~ monthly ~~basis~~ in ~~Appendix~~Attachment E.

[31] 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.

Table 4: 2020 GHG Total Emissions Forecast		
Resource	**Fuel (000 MMBtu)**	**GHG (000 Metric Tons)**
Palomar- UOG	[redacted]	
Otay Mesa- PPA		
Desert Star- Out of State		
Orange Grove-PPA		
Escondido Energy Center-PPA		
Pio Pico- PPA		
Carlsbad Energy Center- PPA		
Miramar- UOG		
Yuma- PPA Out of State		
Fuel-Based		
	Generation (GWh)	
Imports	[redacted]	
RPS Adjustment		
Total Direct Emissions		
Resource	**Generation (GWh)**	
Net Market Purchases	[redacted]	
CHP		
Total Indirect Emissions		
Total Forecasted Emissions		

Conversions	
Natural Gas	0.05307 MTons/MMBtu
Market Purchases	0.428 MTons/MWh
Imports	0.428 MTons/MWh

Table 4: 2020 GHG Total Emissions Forecast		
Resource	**Fuel (000 MMBtu)**	**GHG (000 Metric Tons)**
Palomar- UOG	[redacted]	
Otay Mesa- UOG		
Desert Star- Out of State		
Goal Line- PPA		
Orange Grove-PPA		
Escondido Energy Center-PPA		
Pio Pico- PPA		
Carlsbad Energy Center- PPA		
Miramar- UOG		
Yuma- PPA Out of State		
Fuel-Based		
	Generation (GWh)	
Imports	[redacted]	
RPS Adjustment		
Total Direct Emissions		
Resource	**Generation (GWh)**	
Net Market Purchases	[redacted]	
CHP		
Total Indirect Emissions		
Total Forecasted Emissions		
Conversions		
Natural Gas	0.0531	MTons/MMBtu
Market Purchases	0.428	MTons/MWh
Imports	0.428	MTons/MWh

C. 2020 GHG Costs

I calculated a proxy for the 2020 GHG emissions price as $~~17.19~~18.29/MT. This figure was derived using a recent (~~March~~October 1, 2019) assessment of 2020 GHG market prices based on the average of forward prices on the Intercontinental Exchange ("ICE") over the previous ~~22~~ 20 trading day period, consistent with the period used for forecasting natural gas and electricity prices associated with the forecast of emissions in Table ~~4.~~4 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 2020 of $~~57.1~~65.7 million for ERRA~~ and $10.9 million for Local Generation~~.

D. 2020 Allowance Auction Revenues

The ARB allocates cap-and-trade allowances to SDG&E for 2020. SDG&E is required to place all ~~of~~ these allowances for sale in ARB's 2020 quarterly auctions. I developed the forecast of allowance revenues by multiplying the total number of allowances allocated to SDG&E for consignment by a forecast price for the allowances.[32]

Under ARB's regulations, the allowances available for allocation to electrical distribution utilities each budget year is currently 97.7 million MT multiplied by the cap adjustment factor (0.851 (for 2020)), and SDG&E's share of electric sector allowances (7.3896% (for 2020)).[33] The total allowances that will be allocated to SDG&E for 2020 is expected to be 6,143,946 MT. The allowance price is the same proxy price as used in the calculation of GHG costs, which is $~~17.19~~18.29/MT. The allowance auction revenue forecast is the allowances allocated times the allowance price [redacted].

The available funds reserved for the clean energy and energy efficiency programs are equal to 15 percent of the forecasted 2020 allowance auction revenue amount or $~~15.8~~16.9 million.

A portion of the allowance auction revenue is reserved for clean energy and energy efficiency projects ~~to~~initiated by the Solar on Multifamily Affordable Housing ("SOMAH")

---

[32] I assumed all allowances are sold in the auction process, which is consistent with the assumption that the market-clearing price is above the price floor.

~~33 ARB, Cap-and-Trade Regulation, Section 95891 at Tables~~[33] ARB, *Article 5: California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms*, , at 169, Section 95891, Table 9-2 and at 173-177, Section 95892, Table 9-~~3.~~3, *available at* https://www.arb.ca.gov/cc/capandtrade/c-t-reg-reader-2013.pdf.

Program[34]. This program provides financial incentives for installation of solar energy systems on multifamily affordable housing properties, as specified in the statute. For 2020, the funding amount is $~~10.6~~11.2 million, which is 10% of the forecasted 2020 allowance auction revenue amount.

~~Pursuant to~~ D.18-06-027 (issued on June 22, 2018), ~~which~~ adopted three new programs to promote the installation of renewable generation among residential customers in disadvantaged communities ("DACs"): the DAC - Single-family Solar Homes ("DAC-SASH"), the DAC – Green Tariff ("DAC-GT") and the Community Solar Green Tariff ("CSGT").[35] SDG&E shall fund these programs first through available GHG allowance revenues proceeds and if such funds are exhausted, the programs will be funded through public purpose program ("PPP") funds. The DAC-SASH program funding is estimated to be $1.03 million. The estimated budget for DAC-GT is $~~1.12~~0.87 million and CSGT is $~~0.16~~1.24 million.

VII. 2020 FORECAST OF TMNBCBA COSTS

In this section, I describe the cost forecast for tree mortality related procurement costs.[36] The TMNBCBA costs will be recovered through the ~~Public Purpose Program (~~PPP~~)~~ charge. The 2020 forecasted costs are [redacted] million.

[34] D.17-12-022 ~~OP 4 requires~~Ordering Paragraph ("OP") 4. at 69. states that the IOUs ~~to~~ "each shall reserve 10% of the proceeds from the sale of greenhouse gas allowances defined in Public Utilities Code Section 748.5 through its annual Energy Resource Recover Account (ERRA) proceedings for use in the Solar on Multifamily Affordable Housing ~~program~~Program, starting with its ongoing 2018 ERRA forecast proceeding."

[35] D.18-06-027 at OPs 1. 11 and 12.

[36] Per D.18-12-003, SDG&E filed Advice Letter 3343-E18 requesting approval to establish TMNBCBA as directed by Resolution E-4770 and Resolution E-4805. At the time of this filing, SDG&E's Advice Letter has not been approved.

~~VIII. CONCLUSION~~

~~In conclusion, SDG&E requests that the Commission approve the forecasts provided in my testimony for use in developing the ERRA, TCBA, LG and SONGS Unit 1 Offsite Spent Fuel Storage Cost revenue requirements. SDG&E also requests that the Commission authorize recovery of the forecasted 2020 GHG costs, which are also used in determining the revenue requirement, and the volumetric revenue return for small business and residential customers.~~[A1] ~~This concludes my direct testimony.~~

~~IX.~~VIII. QUALIFICATIONS

My name is ~~Jeff Deturi~~Stefan Covic. My business address is 8315 Century Park Court, San Diego, CA 92123. I am employed by SDG&E and my current title is ~~Policy and Strategy Manager~~Senior Resource Planner in the Electric & Fuel Procurement Department. My responsibilities include ~~leading a team that develops energy procurement strategy and serves as a key liaison to regulatory agencies and legislators to solve procurement related issues and design and implement procurement related strategies involving the purchase or sale of commodities~~running computer models that forecast energy needs for both physical and financial operational needs.

I joined SDG&E in ~~August 2003 and have held various positions with increasing levels of responsibility within San Diego Gas & Electric.~~April 2019. Prior to joining SDG&E, I worked as an ~~accounting professional for various companies throughout San Diego County~~energy analyst at Bear Valley Electric Service, a small IOU in Big Bear Lake, CA. I received a Bachelor of ~~Accountancy degree~~Physics and a Master of ~~Business Administration~~Economics degrees from the University of ~~San Diego~~California, Irvine.

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

DECLARATION OF HILLARY HEBERT REGARDING CONFIDENTIALITY OF CERTAIN DATA/DOCUMENTS PURSUANT TO D.16-08-, *et al.*

I, Hillary Hebert, do declare as follows:

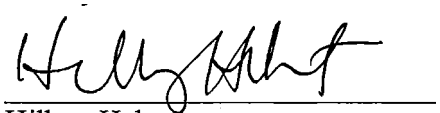
1. I am a Resource Planning Manager in the Resource Planning department for San Diego Gas & Electric Company ("SDG&E"). I have been delegated authority to sign this declaration by Miguel Romero, Vice President of Energy Supply. I have reviewed Stefan Covic's Prepared Direct Testimony ("Testimony") in support of SDG&E's "Application for Approval of its 2020 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 information and belief.

2. I hereby provide this Declaration in accordance with Decisions ("D.") 16-08-024, D.17-05-035, and D.17-09-023 to demonstrate that the confidential information ("Protected Information") provided in the Testimony is within the scope of data protected as confidential under applicable law.

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 6th day of November, 2019, at San Diego.



Hillary Hebert

ATTACHMENT A

SDG&E Request for Confidentiality on the following information in its Application for Approval of Its 2020 Electric Procurement Revenue Requirement Forecasts and GHG-Related Forecasts

Location of Protected Information	Legal Authority	Narrative Justification
SC-23 Table 4 Application Attachment G, Template D-2: Forecasted Emissions and Costs; and Template D-5: Forecasted Emissions Intensity Attachment E - SDG&E Greenhouse Gas (GHG) Detail	D.14-10-033; D.16-08-024; D.17-05-035; D.17-09-023; Public Utilities Code Section 454.5(g).	The information does not expressly fall within any category of the IOU Matrix applicable to electric procurement information, but is market-sensitive information in that providing these GHG emissions forecasts to market participants would allow them to know SDG&E's forecasted GHG obligation, thereby compromising SDG&E's contractual bargaining power such that customer costs are likely to rise. Thus, the release of this non-public confidential information will unjustifiably allow market participants to use this information to the disadvantage of SDG&E's customers.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

DECLARATION
OF Stefan Covic

A.19-04-___
Application of San Diego Gas & Electric Company (U 902-E)
for Approval of Its 2020 Electric Procurement Revenue Requirement Forecasts and GHG-Related Forecasts

I, Stefan Covic, declare as follows:

1. I am the Senior Resource Planner for San Diego Gas & Electric Company ("SDG&E"). I included my Prepared Direct Testimony ("Testimony") in support of SDG&E's November 7, 2019 Application for Approval of its 2020 Electric Procurement Revenue Requirement Forecasts and GHG-Related Forecasts ("Application"). Additionally, as the Senior Resource Planner , 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**
SC-3	V.C	LSE Total Energy Forecast – Bundled Customer; confidential for the front three years
SC-5 Table 1	IV.F	Forecast of Post-1/1/2003 Bilateral Contracts; confidential for three years
SC-5	VI.A	Utility Bundled Net Open Position for Capacity; confidential for the front three years
SC-6 Table 2	IV.A	Forecast of IOU Generation Resources; confidential for three years
SC-6	V.H	Net capacity and energy forecasts by retail provider; confidential for the front three years
SC-8	IV.B	Forecast of Qualifying Facility Generation; confidential for three years
SC-9	IV.J	Forecast of Wholesale Market Purchases; confidential for the front three years
SC-10	II.A.2, V.C	Utility Electric Price Forecasts; confidential for three years, LSE Total Energy Forecast, confidential for the front three years
SC-10	II.A.2, II.B.1, II.B.3, II.B.4	Utility Electric Price Forecasts; confidential for three years, Generation Cost Forecasts of Utility Retained Generation, confidential for three years, Generation Cost Forecasts of QF Contracts, confidential for three years, Generation Cost Forecasts of Non-QF Bilateral Contracts, confidential for three years
SC-10 SC-11 SC-13 SC-25	II.B.4	Generation Cost Forecast of Non-QF Bilateral Contracts; confidential for three years

[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
SC-12	II.B.3	Generation Cost Forecast of QF Contracts; confidential for three years
SC-12	II.B.1	Generation Cost Forecasts of Utility Retained Generation, confidential for three years
SC-13	II.A.2	Utility Electric Price Forecasts; confidential for three years
SC-13 SC-22 Table 4	I.A.4	Long-term Fuel (gas) Buying and Hedging; confidential for three years
SC-22 Table 4		GHG emissions forecast: Providing these forecasts to market participants would allow them to know SDG&E's GHG forecasted GHG obligation, thereby compromising SDG&E's contractual bargaining power such that customer costs are likely to rise. Thus, the release of this non-public confidential information will unjustifiably allow market participants to use this information to the disadvantage of SDG&E's customers.
Attachment A - SDG&E 2020 ERRA and LG Expenses	XI	Monthly Procurement Costs; confidential for three years
Attachment B - SDG&E 2020 Generation Portfolio Delivery Volumes		
• Cuyamaca, Palomar, Desert Star, and Miramar data	IV.A	Forecast of IOU Generation Resources; confidential for three years
	IV.E	Forecast of Pre-1/1/2003 Bilateral Contracts; confidential for three years
• QF data	IV.B	Forecast of Qualifying Facility Generation; confidential for three years
• Kelco, Lake Hodges, Wellhead, and Orange Grove data	IV.F	Forecast of Post-1/1/2003 Bilateral Contracts; confidential for three years
• Market Purchase data • Surplus Energy Sold data	IV.J	Forecast of Wholesale Market Purchases; confidential for the front three years
	IV.K	Forecast of Wholesale Market Sales; confidential for the front three years
Load Requirement data	V.C	LSE Total Energy Forecast – Bundled Customer; confidential for the front three years

Confidential Information	Matrix Reference	Reason for Confidentiality and Timing
Attachment D - SDG&E 2020 CTC Qualifying Facility (QF) Detail		
• QF data	IV.E	Forecast of Pre-1/1/2003 Bilateral Contracts; confidential for three years
• Long-Term Power Purchase CTC data	IV.B	Forecast of Qualifying Facility Generation; confidential for three years
• CTC QF & Non CTC QF data	II.B.4	Generation Cost Forecast of Non-QF Bilateral Contracts; confidential for three years
• TCBA Expenses data	II.B.3	Generation Cost Forecast of QF Contracts; confidential for three years
	II.B.3 and II.B.4	Generation Cost Forecast of QF Contracts; confidential for three years Generation Cost Forecast of Non-QF Bilateral Contracts; confidential for three years
Attachment E - SDG&E Greenhouse Gas (GHG) Detail		GHG emissions forecasts: Providing these forecasts to market participants would allow them to know SDG&E's GHG forecasted GHG obligation, thereby compromising SDG&E's contractual bargaining power such that customer costs are likely to rise. Thus, the release of this non-public confidential information will unjustifiably allow market participants to use this information to the disadvantage of SDG&E's customers.

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 5th day of November, 2019, at San Diego, California.

Stefan Covic
Senior Resource Planner
San Diego Gas & Electric Company

Attachment A

PRIVILEGED AND CONFIDENTIAL PURSUANT TO P.U.C. CODE 583, 454.5(g), GO 66-C and D.06-06-066 as needed

ATTACHMENT A - SDG&E 2020 ERRA and LG EXPENSES

	EXPENSES ($)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020
2	ISO Load Charges (Energy & A/S Costs)	[redacted]												
3	ISO Supply Revenues													
4	Contract Costs (non-CTC)													
5	Contract Costs (CTC up to mkt)													
6	Generation Fuel													
7	CAISO Misc Costs													
8	Hedging Costs & Financial Transactions													
9	Contract Costs - CHP Costs (AB1613)													
10	Customer Incentives - SPP, DR,20/20													
11	Rewards/Penalties - Palomar Energy Ctr													
12	WREGIS Costs													
13	ISO CRRs Costs													
14	ISO Convergence Bidding Costs													
15	Rebalancing Costs (OMEC)													
16	Purchased Tradable Renewable Energy Credits (TRECs)													
17	Sales Tradable Renewable Energy Credits (TRECs)													
18	Net Surplus Compensation Costs (AB920)													
19	Authorized Disallowances													
20	Greenhouse Gas & Carrying Costs													
21	Total Balancing Account Expenses													$ 1,190,512,718

Line 4 Contract Costs (non-CTC)														
Lake Hodges	[redacted]													
El Cajon Energy Center Peaker Costs														
Orange Grove Peaker Costs														
Other RA Capacity Costs (RA RFO, DRAM)														
Morgan Stanley Index Costs														
Renewable Energy	$ 30,669,933	$ 30,669,933	$ 30,669,933	$ 63,255,31$	$ 63,255,31$	$ 63,255,31$	$ 63,255,31$	$ 63,255,31$	$ 63,255,31$	$ 63,255,31$	$ 30,669,933	$ 30,669,933	$ 675,240,453	
Line 4 Total														

Line 6 Generation Fuel														
Palomar	[redacted]													
Desert Star														
Otay Mesa														
Miramar														
Miramar 2														
Cuyamaca														
Line 6 Total														

In Lieu Gas Fee														
Paloma	[redacted]													

Line 8 Hedging Costs & Financial Transactions														
Hedging Costs	[redacted]													
Broker Fees														
Line 8 Total														

Market Purchases and Sales														
Total Market Costs	[redacted]													
Total Sales Revenue														
Net Costs (Revenues)														

LG Expenses														
Carlsbad Energy Center cost	[redacted]													
El Cajon Energy Storage cost														
EPC Energy Storage cost														
Escondido Energy Center cost														
Escondido Energy Storage cost														
Pio Pico cost														
Non UOG Energy Storage Cost														
LG CHP cost														
Local Generation Direct GHG cost														
Local Generation Indirect GHG cost														
Local Generation Revenue														
Total LG Expense														

ATTACHMENT A - SDG&E 2020 ERRA and LG EXPENSES

	EXPENSES ($)	2020
1	ISO Load Charges (Energy & A/S Costs)	[redacted]
2	ISO Supply Revenues	
3	Contract Costs (non-CTC)	
4	Contract Costs (CTC up to mkt)	
5	Generation Fuel	
6	CAISO Misc Costs	
7	Hedging Costs & Financial Transactions	
8	Contract Costs - CHP Costs (AB1613)	
9	Customer Incentives - SPP, DR,20/20	
10	Rewards/Penalties - Palomar Energy Ctr	
11	WREGIS Costs	
12	ISO CRRs Costs	
13	ISO Convergence Bidding Costs	
14	Purchased Tradable Renewable Energy Credits (TRECs)	
15	Sales Tradable Renewable Energy Credits (TRECs)	
16	Net Surplus Compensation Costs (AB920)	
17	Authorized Disallowances	
18	Greenhouse Gas & Carrying Costs	
19	**Total Balancing Account Expenses**	**$ 1,150,676,116**
20	**PABA Portion of ERRA Expenses**	**$ 265,390,865**

Line 4 Contract Costs (non-CTC)	[redacted]
Lake Hodges	
El Cajon Energy Center Peaker Costs	
Orange Grove Peaker Costs	
Other RA Capacity Costs (RA RFO, DRAM)	
Morgan Stanley Index Costs	
Renewable Energy	
Line 4 Total	
Line 6 Generation Fuel	
Palomar	
Desert Star	
Miramar	
Miramar 2	
Cuyamaca	
Line 6 Total	
In Lieu Gas Fees	
Palomar	
Line 8 Hedging Costs & Financial Transactions	
Hedging Costs	
Broker Fees	
Line 8 Total	
Market Purchases and Sales	
Total Market Costs	
Total Sales Revenue	
Net Costs (Revenues)	
LG Expenses	
Carlsbad Energy Center cost	
El Cajon Energy Storage cost	
EPC Energy Storage cost	
Escondido Energy Center cost	
Escondido Energy Storage cost	
Pio Pico cost	
Non UOG Energy Storage Cost	
LG CHP cost	
Local Generation Revenue	
Total LG Expense	

ATTACHMENT A - SDG&E 2020 ERRA and LG EXPENSES

	EXPENSES ($)	2020
2	ISO Load Charges (Energy & A/S Costs)	[redacted]
3	ISO Supply Revenues	
4	Contract Costs (non-CTC)	
5	Contract Costs (CTC up to mkt)	
6	Generation Fuel	
7	CAISO Misc Costs	
8	Hedging Costs & Financial Transactions	
9	Contract Costs - CHP Costs (AB1613)	
10	Customer Incentives - SPP, DR,20/20	
11	Rewards/Penalties - Palomar Energy Ctr	
12	WREGIS Costs	
13	ISO CRRs Costs	
14	ISO Convergence Bidding Costs	
16	Purchased Tradable Renewable Energy Credits (TRECs)	
17	Sales Tradable Renewable Energy Credits (TRECs)	
18	Net Surplus Compensation Costs (AB920)	
19	Authorized Disallowances	
20	Greenhouse Gas & Carrying Costs	
21	**Total Balancing Account Expenses**	$ 1,150,676,116
22	**PABA Portion of ERRA Expenses**	$ 359,065,052

Line 4 Contract Costs (non-CTC)														
Lake Hodges	[redacted]													
El Cajon Energy Center Peaker Costs														
Orange Grove Peaker Costs														
Other RA Capacity Costs (RA RFO, DRAM)														
Morgan Stanley Index Costs														
Renewable Energy	$ 37,421,640	$ 42,047,329	$ 55,871,333	$ 55,871,333	$ 55,871,333	$ 42,047,329	$ 55,871,333	$ 55,871,333	$ 55,871,333	$ 55,871,333	$ 41,902,025	$ 55,871,333	$ 628,414,339	
Line 4 Total														

Line 6 Generation Fuel	
Palomar	[redacted]
Desert Star	
Miramar	
Miramar 2	
Cuyamaca	
Line 6 Total	

In Lieu Gas Fees	
Palomar	[redacted]

Line 8 Hedging Costs & Financial Transactions	
Hedging Costs	[redacted]
Broker Fees	
Line 8 Total	

Market Purchases and Sales	
Total Market Costs	[redacted]
Total Sales Revenue	
Net Costs (Revenues)	

LG Expenses	
Carlsbad Energy Center cost	[redacted]
El Cajon Energy Storage cost	
EPC Energy Storage cost	
Escondido Energy Center cost	
Escondido Energy Storage cost	
Pio Pico cost	
Non UOG Energy Storage Cost	
LG CHP cost	
Local Generation Revenue	
Total LG Expense	

Attachment B

PRIVILEGED AND CONFIDENTIAL PURSUANT TO P.U.C. CODE 583 454.5(g) GO 66-C and D.06-06-066 as needed

ATTACHMENT B - SDG&E 2020 GENERATION PORTFOLIO DELIVERY VOLUMES (GWh)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020
CTC QF	[redacted]												
Non-CTC QF													
TOTAL QF													
Renewable - Bio Gas	20.8	19 5	20.8	20.2	20.8	20.2	20 8	20.8	20.2	20 8	20.2	20 8	246.0
Renewable - Other	0.3	0 3	0.3	0.3	0.3	0.3	0 3	0.3	0.3	0 3	0.3	0 3	4.0
Renewable - Solar	212.2	252 2	305.0	348.3	381.0	373.0	349 9	347.0	304.0	287 9	225.2	203 0	3,588.8
Renewable - Wind	118.7	117 0	172.6	207.7	226.0	194.3	147 9	134.0	124.2	125.7	106 2	110 5	1,784.6
Renewable - Wind REC	110.3	155.1	134.5	93.6	78.4	91.9	73.7	63.6	100.9	84 5	119 4	130 0	1 236.0
Renewable - RPS Sales	0.0	0.0	0 0	0.0	0 0	0.0	0.0	0 0	0.0	0.0	0.0	0.0	-
TOTAL NON-QF RENEWABLE	462.3	544.2	633.3	670.0	706.6	679.7	592.7	565.8	549.6	519.2	471.3	464.7	6,859.3
Miramar	[redacted]												
Miramar 2													
Cuyamaca													
Palomar													
Otay Mesa Energy Center													
Desert Star													
Kelco													
Lake Hodges													
Morgan Stanley													
El Cajon Energy Center													
Orange Grove													
Escondido Energy Center													
Pio Pico													
Carlsbad Energy Center													
AMS Energy Storage													
El Cajon Energy Storage													
EPC Energy Storage													
Escondido Energy Storage													
RPS Sales Residual Generation	0.0	0.0	0 0	0.0	0 0	0.0	0.0	0 0	0.0	0.0	0.0	0.0	-
TOTAL GENERATION	[redacted]												
Market Purchases													
TOTAL PORTFOLIO DELIVERIES													
Surplus Energy Sold													
Energy Storage Charging Load													
Non-ERRA Resource Generation													
LOAD REQUIREMENT (GWh)													

Note 1: Total Portfolio Deliveries do not include Wind REC

Note 2: Load Requirement is SDG&E bundled load including transmission losses

ATTACHMENT B - SDG&E 2020 GENERATION PORTFOLIO DELIVERY VOLUMES (GWh)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020
CTC QF													
Non-CTC QF													
TOTAL QF													
Renewable - Bio Gas	20.8	19.5	20.8	20.2	20.8	20.2	20.8	20.8	20.2	20.8	20.2	20.8	246.0
Renewable - Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	4.0
Renewable - Solar	205.6	222.4	243.4	291.3	320.5	350.9	345.7	338.2	298.2	262.9	230.6	194.6	3,304.4
Renewable - Wind	111.3	137.5	185.3	237.8	266.7	206.3	110.6	154.9	116.7	118.5	130.9	103.4	1,869.7
Renewable - Wind REC	110.3	155.1	134.5	93.6	78.4	91.9	73.7	63.6	100.9	84.5	119.4	130.0	1,236.0
Renewable - RPS Sales	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(740.8)
TOTAL NON-QF RENEWABLE	**386.6**	**473.1**	**522.6**	**581.4**	**615.0**	**607.9**	**489.5**	**516.2**	**474.5**	**425.3**	**439.7**	**387.4**	**5,919.3**
Miramar													
Miramar 2													
Cuyamaca													
Palomar													
Desert Star													
Kelco													
Lake Hodges													
Morgan Stanley													
El Cajon Energy Center													
Orange Grove													
Escondido Energy Center													
Pio Pico													
Carlsbad Energy Center													
AMS Energy Storage													
El Cajon Energy Storage													
EPC Energy Storage													
Escondido Energy Storage													
RPS Sales Residual Generation	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(61.7)	(740.8)
TOTAL GENERATION													
Market Purchases													
TOTAL PORTFOLIO DELIVERIES													
Surplus Energy Sold													
Energy Storage Charging Load													
Non-ERRA Resource Generation													
LOAD REQUIREMENT (GWh)													

Attachment C

ATTACHMENT C - SDG&E 2020 RENEWABLE RESOURCE DETAIL

Power Purchase Deliveries (GWh)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020
BIO GAS													
Lakeside BioGas LLC	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	26.4
MM Prima Deshecha Energy LLC	9.1	8.5	9.1	8.8	9.1	8.8	9.1	9.1	8.8	9.1	8.8	9.1	107.6
MM San Diego LLC- Miramar Landfill	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	26.4
BIOGAS_FIT	7.3	6.8	7.3	7.0	7.3	7.0	7.3	7.3	7.0	7.3	7.0	7.3	85.6
Subtotal	**20.8**	**19.5**	**20.8**	**20.2**	**20.8**	**20.2**	**20.8**	**20.8**	**20.2**	**20.8**	**20.2**	**20.8**	**246.0**
OTHER													
SMALL_HYDRO_RAM	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	4.0
Subtotal	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**4.0**
SOLAR													
NRG Borrego Solar	3.7	4.6	6.1	7.7	8.4	8.2	7.5	7.1	5.9	5.3	4.1	2.9	71.6
Sol Orchard	1.6	2.1	2.6	3.1	2.9	3.6	3.6	3.1	2.8	2.5	2.0	1.7	31.7
Solar Energy Project	1.0	1.4	1.8	2.0	1.8	2.2	2.3	2.1	1.7	1.5	1.2	1.1	19.9
SOLAR_PV_FIT	0.9	1.1	1.2	1.4	1.4	1.3	1.2	1.3	1.2	1.2	1.0	0.9	14.0
Arlington Valley Solar	20.6	24.5	32.8	36.1	41.2	40.6	38.1	36.5	31.4	28.5	22.0	19.2	371.5
Calipatria	2.1	3.4	4.5	5.1	5.7	5.5	5.1	4.4	4.4	3.9	2.5	2.3	48.9
Campo Verde	24.7	27.5	32.2	36.2	36.5	33.5	30.8	32.8	30.3	31.2	25.4	24.5	365.7
Catalina_Solar	15.6	19.9	22.9	23.6	26.6	26.9	26.3	25.7	24.4	21.7	19.3	16.9	269.8
Centinela Solar1	21.8	25.7	30.5	36.3	40.8	40.9	38.2	37.6	31.7	29.4	22.2	20.2	375.3
Centinela Solar2	7.8	9.3	11.0	13.1	14.7	14.7	13.7	13.5	11.4	10.6	8.0	7.3	135.1
Desert Green	0.7	1.0	1.1	1.2	1.5	1.5	1.3	1.4	1.2	1.2	0.9	0.7	13.8
Imperial Valley Solar I	29.5	36.7	46.1	54.8	62.4	61.8	57.5	55.4	45.7	42.5	31.2	25.7	549.3
Maricopa West Solar	1.8	3.2	4.3	4.7	5.9	5.3	5.8	5.5	4.9	3.9	2.6	2.2	50.2
TallBear Seville	3.5	4.1	4.9	5.8	6.5	6.5	6.1	6.0	5.1	4.7	3.5	3.2	60.1
SolarGen 2	26.1	30.8	36.6	43.6	49.0	49.1	45.8	45.2	38.1	35.3	26.6	24.3	450.4
Cascade SunEdison	3.0	3.9	4.9	5.2	6.1	6.3	5.7	5.5	4.8	4.2	3.2	2.9	55.7
Csolar IV South	21.2	23.3	26.6	29.3	30.4	28.9	27.5	28.5	26.5	26.6	22.0	20.4	311.2
Csolar IV West	26.6	29.7	34.8	39.1	39.3	36.2	33.2	35.4	32.7	33.6	27.5	26.5	394.6
Subtotal	**212.2**	**252.2**	**305.0**	**348.3**	**381.0**	**373.0**	**349.9**	**347.0**	**304.0**	**287.9**	**225.2**	**203.0**	**3,588.8**
WIND													
Glacier Wind (TREC)	49.4	80.9	63.3	43.0	37.5	44.7	36.2	31.0	48.3	35.4	48.1	61.2	578.8
Rim Rock (TREC)	60.8	74.2	71.3	50.6	40.9	47.2	37.5	32.6	52.6	49.1	71.4	68.8	657.2
Kumeyaay	13.9	13.2	14.1	14.2	12.7	10.7	7.1	4.7	9.1	11.2	13.2	15.6	139.8
Coram Energy	1.5	1.5	2.3	2.8	3.2	3.3	3.0	2.8	1.6	1.6	1.5	1.7	26.9
Energia Sierra Juarez	40.0	35.4	45.2	49.8	47.6	39.4	23.3	22.5	30.2	32.2	35.1	35.0	435.7
Manzana Wind	15.0	16.5	23.3	30.0	33.3	35.9	30.2	25.8	15.9	17.3	15.3	16.8	275.2
Oak Creek Wind Power	0.3	0.3	0.5	0.8	0.7	0.8	0.6	0.5	0.3	0.3	0.3	0.3	5.8
Ocotillo Express	29.2	29.1	56.4	72.3	85.9	62.8	50.8	48.0	45.3	39.8	22.0	18.9	560.5
Pacific Wind	18.0	19.8	28.6	36.2	39.5	38.5	30.3	27.3	18.9	20.8	17.5	21.7	317.1
San Gorgonio	0.8	1.2	2.1	1.6	3.1	2.9	2.6	2.4	2.8	2.4	1.2	0.5	23.6
Subtotal	**228.9**	**272.1**	**307.1**	**301.2**	**304.4**	**286.2**	**221.6**	**197.6**	**225.1**	**210.2**	**225.6**	**240.5**	**3,020.6**
RPS SALES	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total Power Purchase Costs ($000)													
BIO GAS	$ 1,757	$ 1,644	$ 1,757	$ 1,700	$ 1,757	$ 1,700	$ 1,786	$ 1,786	$ 1,729	$ 1,786	$ 1,700	$ 1,756	$ 20,861
OTHER	$ 27	$ 25	$ 27	$ 26	$ 27	$ 26	$ 27	$ 27	$ 26	$ 27	$ 26	$ 27	$ 318
SOLAR	$ 22,495	$ 27,085	$ 33,006	$ 37,039	$ 40,476	$ 40,175	$ 49,021	$ 51,190	$ 43,480	$ 41,486	$ 24,013	$ 21,437	$ 430,904
WIND	$ 11,720	$ 11,574	$ 17,338	$ 21,041	$ 23,000	$ 19,736	$ 15,052	$ 13,735	$ 12,486	$ 12,546	$ 10,420	$ 10,803	$ 179,451
WIND (REC)	$ 3,944	$ 5,333	$ 4,754	$ 3,318	$ 2,756	$ 3,235	$ 2,578	$ 2,225	$ 3,546	$ 3,061	$ 4,371	$ 4,586	$ 43,707
RPS SALES	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal	**$ 39,944**	**$ 45,661**	**$ 56,882**	**$ 63,125**	**$ 68,016**	**$ 64,872**	**$ 68,464**	**$ 68,964**	**$ 61,267**	**$ 58,906**	**$ 40,531**	**$ 38,609**	**$ 675,240**

ATTACHMENT C - SDG&E 2020 RENEWABLE RESOURCE DETAIL

Power Purchase Deliveries (GWh)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020
BIO GAS													
Lakeside BioGas LLC	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	26.4
MM Prima Deshecha Energy LLC	9.1	8.5	9.1	8.8	9.1	8.8	9.1	9.1	8.8	9.1	8.8	9.1	107.6
MM San Diego LLC- Miramar Landfill	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	26.4
BIOGAS_FIT	7.3	6.8	7.3	7.0	7.3	7.0	7.3	7.3	7.0	7.3	7.0	7.3	85.6
Subtotal	**20.8**	**19.5**	**20.8**	**20.2**	**20.8**	**20.2**	**20.8**	**20.8**	**20.2**	**20.8**	**20.2**	**20.8**	**246.0**
OTHER													
SMALL_HYDRO_RAM	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	4.0
Subtotal	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**4.0**
SOLAR													
NRG Borrego Solar	3.8	4.5	5.6	7.2	8.2	8.0	6.9	6.2	6.3	4.2	4.1	3.3	68.4
Sol Orchard	1.9	2.3	2.8	3.5	3.4	4.0	3.5	2.3	2.8	2.5	1.9	1.7	32.7
Solar Energy Project	1.0	1.4	1.8	2.0	1.8	2.2	2.3	2.1	1.7	1.5	1.2	1.1	19.9
SOLAR_PV_FIT	0.9	0.9	0.9	1.0	1.1	1.2	1.2	1.2	1.1	1.1	1.0	0.9	12.5
Arlington Valley Solar	21.1	20.2	21.2	29.4	36.2	39.3	37.0	36.8	32.2	23.1	21.4	18.0	335.9
Calipatria	2.5	2.8	2.7	3.9	4.6	5.1	4.9	4.4	3.6	2.9	2.3	2.3	42.0
Campo Verde	24.3	23.9	24.1	27.3	28.9	30.6	31.6	31.2	28.1	28.7	26.2	22.4	327.2
Catalina_Solar	16.8	20.9	21.0	25.4	26.8	26.6	24.9	25.3	23.8	21.2	17.2	15.9	265.6
Centinela Solar1	20.3	22.1	25.2	29.9	33.0	38.5	37.0	35.1	29.5	26.0	23.1	18.5	338.0
Centinela Solar2	7.3	7.9	9.1	10.8	11.9	13.9	13.3	12.6	10.6	9.4	8.3	6.6	121.7
Desert Green	1.0	1.0	0.9	1.2	1.5	1.6	1.1	1.2	1.1	1.1	1.0	0.9	13.5
Imperial Valley Solar I	26.9	31.6	37.4	45.6	50.5	56.9	53.8	52.1	43.4	37.5	31.1	25.5	492.2
Maricopa West Solar	2.2	3.7	3.9	4.4	5.9	4.7	5.9	5.8	5.0	3.9	2.3	1.9	49.6
TallBear Seville	3.2	3.5	4.0	4.8	5.3	6.2	5.9	5.6	4.7	4.2	3.7	3.0	54.1
SolarGen 2	24.3	26.5	30.3	35.9	39.6	46.2	44.4	42.2	35.4	31.2	27.7	22.2	405.7
Cascade SunEdison	3.2	4.0	4.8	5.6	6.2	6.4	5.2	5.4	5.0	4.1	3.2	2.5	55.6
Csolar IV South	18.8	19.4	21.8	24.0	24.6	26.6	26.7	25.6	23.5	22.4	21.6	18.4	273.5
Csolar IV West	26.2	25.8	26.0	29.5	31.2	33.0	34.1	33.6	30.4	31.0	28.3	24.2	353.1
Wister Solar	-	-	-	-	-	-	6.0	5.9	5.4	3.4	2.8	3.0	26.6
Subtotal	**205.6**	**222.4**	**243.4**	**291.3**	**320.5**	**350.9**	**339.7**	**328.8**	**288.1**	**255.9**	**225.5**	**189.1**	**3,261.3**
WIND													
Glacier Wind (TREC)	49.4	80.9	63.3	43.0	37.5	44.7	36.2	31.0	48.3	35.4	48.1	61.2	578.8
Rim Rock (TREC)	60.8	74.2	71.3	50.6	40.9	47.2	37.5	32.6	52.6	49.1	71.4	68.8	657.2
Kumeyaay	15.9	14.9	17.3	18.0	16.6	13.2	5.4	7.5	8.3	11.2	15.6	11.8	155.9
Coram Energy	1.4	1.5	1.3	2.5	3.3	3.4	3.0	3.6	2.1	1.3	1.5	1.5	26.5
Energia Sierra Juarez	31.0	35.2	51.8	57.1	53.6	46.5	17.5	27.9	28.6	28.7	36.7	28.9	443.5
Manzana Wind	31.9	29.9	34.7	36.1	33.2	26.5	10.9	14.9	16.5	22.4	31.2	23.7	311.8
Oak Creek Wind Power	0.3	0.3	0.4	0.8	0.8	0.7	0.6	0.7	0.4	0.3	0.3	0.4	5.9
Ocotillo Express	16.2	32.1	51.9	81.0	102.8	74.0	42.4	62.8	39.9	34.2	22.5	17.1	577.0
Pacific Wind	13.9	22.1	24.2	37.8	40.9	37.4	27.6	33.1	17.7	18.3	21.9	19.2	314.1
San Gorgonio	0.7	1.5	3.5	4.4	5.6	4.4	3.2	4.5	3.3	2.0	1.1	0.9	35.2
Subtotal	**221.5**	**292.6**	**319.8**	**331.3**	**335.1**	**298.2**	**184.3**	**218.5**	**217.5**	**203.0**	**250.3**	**233.4**	**3,105.7**
RPS SALES													
Subtotal	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(61.7)**	**(740.8)**
Total Power Purchase Costs ($000)													
BIO GAS	$ 1,757	$ 1,644	$ 1,757	$ 1,700	$ 1,757	$ 1,700	$ 1,786	$ 1,786	$ 1,729	$ 1,786	$ 1,700	$ 1,756	$ 20,861
OTHER	$ 27	$ 25	$ 27	$ 26	$ 27	$ 26	$ 27	$ 27	$ 26	$ 27	$ 26	$ 27	$ 318
SOLAR	$ 22,213	$ 23,498	$ 26,087	$ 31,081	$ 33,589	$ 37,487	$ 48,486	$ 45,801	$ 40,564	$ 35,741	$ 24,317	$ 20,560	$ 389,424
WIND	$ 10,462	$ 13,423	$ 18,084	$ 23,562	$ 25,554	$ 20,622	$ 11,742	$ 16,405	$ 12,184	$ 12,018	$ 12,565	$ 10,027	$ 186,648
WIND (REC)	$ 3,944	$ 5,333	$ 4,754	$ 3,318	$ 2,756	$ 3,235	$ 2,578	$ 2,225	$ 3,546	$ 3,061	$ 4,371	$ 4,586	$ 43,707
RPS SALES	$ (956)	$ (954)	$ (952)	$ (950)	$ (948)	$ (946)	$ (944)	$ (942)	$ (940)	$ (938)	$ (937)	$ (935)	$ (11,341)
Subtotal	**$ 37,449**	**$ 42,969**	**$ 49,758**	**$ 58,738**	**$ 62,735**	**$ 62,123**	**$ 63,675**	**$ 65,302**	**$ 57,108**	**$ 51,695**	**$ 42,044**	**$ 36,021**	**$ 629,618**

Attachment D

PRIV LEGED AND CONFIDENTIAL PURSUANT TO P.U.C. CODE 583, 454.5(g), GO 66-C and D.06-06-066 as needed

ATTACHMENT D - SDG&E 2020 CTC QUALIFYING FACILITY (QF) DETAIL

CTC QF - Dispatchable (GWh)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020
Goal Line QF	[redacted]												
Yuma Cogen Associates QF													
CTC QF - SRAC Priced (GWh)													
Aggregation of Hydro Units (SO1)													
Subtotal													
ERRA Expenses ($000)													
CTC QF													
(to Line 5 of Attachment A)													
TCBA Expenses ($000)													
CTC QF													$ 16,898

ATTACHMENT D - SDG&E 2020 CTC QUALIFYING FACILITY (QF) DETAIL

CTC QF - Dispatchable (GWh)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020
Goal Line QF	[redacted]												
Yuma Cogen Associates QF													
CTC QF - SRAC Priced (GWh)													
Aggregation of Hydro Units (SO1)													
Subtotal													
ERRA Expenses ($000)													
CTC QF													
(to Line 5 of Attachment A)													
TCBA Expenses ($000)													
CTC QF													18,500

Attachment E

PRIVILEGED AND CONFIDENTIAL PURSUANT TO P.U.C. CODE 583, 454.5(g), GO 66-C and D.06-06-066 as needed

ATTACHMENT E - SDG&E GREENHOUSE GAS (GHG) DETAIL

2020 Direct Emissions (MT)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	2020
California UOG Plants	[redacted]												
California Tolling Generators													
Specified Imports													
Unspecified Imports													
RPS Adjustment													
Total Direct Emissions													
2020 Indirect Emissions (MT)													
Market Purchases													
CHP													
Total Indirect Emissions													
2020 Total Forecasted Emissions													3,956,590

ATTACHMENT E - SDG&E GREENHOUSE GAS (GHG) DETAIL

2020 Direct Emissions (MT)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	2020
California UOG Plants	[redacted]												
California Tolling Generators													
Specified Imports													
Unspecified Imports													
RPS Adjustment													
Total Direct Emission													
2020 Indirect Emissions (MT)													
Market Purchases													
CHP													
Total Indirect Emission													
2020 Total Forecasted Emission													3,908,011