

Proceeding No.: A.10-10-001

Exhibit No.: SDG&E - 1

Witness: Tony Choi

AMENDED DIRECT TESTIMONY OF
TONY CHOI
SAN DIEGO GAS & ELECTRIC COMPANY

*****Redacted, Public Version*****

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA
January 14, 2011**



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1 **AMENDED DIRECT TESTIMONY**
2 **OF**
3 **TONY CHOI**
4 **ON BEHALF OF SDG&E**

5
6 **I. INTRODUCTION**

7 My testimony describes the resources San Diego Gas & Electric Company
8 (“SDG&E”) expects to use in calendar year 2011 to provide electric commodity service
9 to its bundled service customers and the procurement costs that SDG&E expects to
10 record in 2011 to the Energy Resource Recovery Account (“ERRA”). A summary of the
11 proposed total 2011 ERRA revenue requirement is contained in the direct testimony of
12 Yvonne M. Le Mieux.

13 Section II of my testimony describes the supply resources that SDG&E forecasts
14 will be utilized to meet SDG&E’s bundled customer load in calendar year 2011. These
15 resources include SDG&E continuing obligations under various long-term power
16 purchase contracts including Public Utility Regulatory Policies Act (“PURPA”)
17 contracts, contracts with conventional generators, contracts with renewable generators,
18 SDG&E-owned generation, including 20% of the San Onofre Nuclear Generating Station
19 (“SONGS”), and anticipated short-term market transactions. Section III of my testimony
20 quantifies the costs associated with the resources described in Section II along with other
21 electric procurement requirements that are recorded in ERRA, such as CAISO charges
22 and portfolio hedging costs. My statement of qualifications is found at the end of my
23 testimony.

24 My testimony makes reference to the following, which are attachments located at
25 the end of the testimony: Attachment A: 2011 ERRA Expense Forecast; Attachment B:
26 Forecast Volumes by Resource Type for 2011; Attachment C: Detail of Long Term
27 Competitive Transition Charge (“CTC”) and Qualifying Facility Contract Expense
28 Forecast; and Attachment D: Detail of Renewable Expense Forecast.

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II. 2011 FORECAST OF LOAD AND SUPPLY RESOURCES

On January 1, 2003, SDG&E resumed procurement of its Residual Net Short (“RNS”) position and assumed operational control of various California Department of Water Resources (“CDWR”) long-term contracts, which SDG&E dispatches along with its own supply resources as a single, integrated portfolio. The CDWR contracts allocated to SDG&E include bilateral “must take” contracts, as-available wind resource contracts and dispatchable resource contracts. Costs for these contracts are captured through CDWR’s retail remittance rate. SDG&E-procures resources form a diverse portfolio that includes nuclear, renewable, Qualifying Facilities (“QFs”) and dispatchable generation. Most of the costs for these resources are captured through the ERRA.

The results contained in this application were developed using the production cost model ProSym from Global Energy Decisions, a Ventyx Company. SDG&E and CDWR resources were modeled in ProSym, which produced generation forecasts for these resources based on contract requirements and forecasts of 2011 natural gas and electric prices. The price forecasts were based on a recent (September 1, 2010) assessment of 2011 market prices based on the average of forward prices over a 22-day period. In the new CAISO market structure following implementation of MRTU on April 1, 2009, SDG&E’s bundled load requirements – primarily of energy and ancillary services (“A/S”) – are purchased from the CAISO Day-Ahead and Real-Time Markets (“DAM” and “RTM”) rather than directly supplied from SDG&E portfolio resources. Similarly, the output from SDG&E’s portfolio of resources is sold into the CAISO DAM and RTM rather than directly scheduled to serve SDG&E’s bundled load. SDG&E’s ERRA forecast for 2011 addresses this new market structure by separating the expected purchase cost of energy and A/S for its bundled load from the expected sales revenue and supply cost of energy and A/S from its resource portfolio.

LOAD FORECAST

The forecast of SDG&E’s 2011 bundled load requirement was derived from the California Energy Commission’s (“CEC’s”) statewide forecast published in September

1 2010. Using the CEC's forecast and adjusting for direct access load, SDG&E projected
2 that its bundled load for 2011 will be [REDACTED]. This forecast is [REDACTED]
3 higher than SDG&E's forecasted bundled load for 2010 ([REDACTED]). SDG&E's A/S
4 obligations were forecasted to be 6% of load for operating reserves and 2.5% of load for
5 regulation capacity based on the CAISO's historical levels of procurement for these
6 products.

8 **SUPPLY RESOURCE FORECAST**

9 **SONGS**

10 SDG&E has a 20% ownership interest in SONGS Units 2 & 3 for a combined
11 capacity of 450 MW.¹ SDG&E sells the output from SONGS into the CAISO market as
12 baseload energy. The forecasted supply of SONGS energy for 2011 is [REDACTED] for
13 both units, an increase of [REDACTED] from the forecast for 2010 ([REDACTED]). The lower
14 forecast for 2010 was due to the steam generator replacement projects that reduced the
15 availability of both units in 2010.

17 **PORTLAND GENERAL ELECTRIC-BOARDMAN**

18 SDG&E has a long-term power purchase agreement with Portland General
19 Electric ("PGE") for 15% of the output of the Boardman coal-fired power plant.
20 SDG&E's current share of plant output is nominally 86 MW at the plant and 83 MW
21 after transmission losses delivered to the CAISO grid at Malin. Based on its variable cost
22 of delivery to CAISO of about \$16/MWh, the forecast supply of Boardman energy for
23 2011 is [REDACTED], about unchanged from the forecast for 2010 ([REDACTED]).

24 This contract contains curtailment provisions whereby SDG&E can reduce its
25 schedule on an hourly basis. The implementation of MRTU allows SDG&E to bid in
26 Boardman energy into the CAISO market at a price to ensure that SDG&E receives
27 revenues sufficient to offset the delivery cost for Boardman. While the relatively low
28 energy price suggests that the contract will be fully scheduled for most available hours,

¹ Capacity ratings provided in this testimony are the maximum operating levels defined in the CAISO Resource Data Template for each resource.

1 economic bids may result in the amount of energy supplied by Boardman to the CAISO
2 being lower than forecast.

4 **QUALIFYING FACILITIES**

5 In 2011, SDG&E will have about 227 MW of capacity under contract with 12
6 QFs.² The five largest QF contracts account for 213 MW or 93% of total QF capacity.
7 All QFs are located in the SDG&E service area except for the Yuma Cogeneration
8 Associates plant (“YCA”), a 56.5 MW natural gas-fired plant in Arizona whose output is
9 imported into the CAISO.

10 QF contracts are must-take resources. SDG&E is obligated to pay the contract
11 price for all delivered QF generation and schedule it into the CAISO market, with the
12 exception of limited price replacement rights in the YCA and Goal Line contracts. To the
13 extent allowed in these contracts, SDG&E exercises these rights during low-priced hours
14 to maximize ratepayer savings. Typically, these plants will choose to shut down during
15 these hours to avoid operating at a loss. Accounting for these economic curtailments and
16 forecast availability, the forecast of QF energy supply in 2011 is [REDACTED] (a decrease
17 of [REDACTED] from the forecasted amount for 2010 [REDACTED]), reflecting the observed
18 reduction in actual QF output during 2010 due to economic self-curtailment.

20 **RENEWABLE ENERGY CONTRACTS**

21 SDG&E procures renewable energy through competitive solicitations and
22 bilateral agreements to meet the Renewable Portfolio Standard (“RPS”)³ established by
23 Senate Bill (“SB”) 1078, *et seq.*⁴ The forecast of renewable energy supply from
24 Commission-approved contracts for 2011 is 2,190 GWh, which includes 934 GWh of
25 Renewable Energy Credits (“RECs”) quantities that are delivered to SDG&E in
26 conjunction with existing non-renewable imports. This forecast is an increase of 349
27 GWh from the forecast for 2010 (1,841 GWh).

² 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 run. The 12 QFs referenced above deliver net energy to SDG&E and are modeled in ProSym.

³ Some renewable resources have QF contracts and also qualify to meet the Renewable Portfolio Standard. Those resources are reported in the QF sections of this testimony.

⁴ See e.g., D.03-06-071; D.04-07-029; D.05-07-039; D.06-10-019.

1 In addition to the renewable energy included in the forecast, SDG&E also expects
2 to receive the following in 2011 towards meeting its RPS target:

- 3 • 21 GWh of renewable energy under existing QF agreements. The quantity and
4 ERRA cost associated with these contracts was included under QFs for the
5 purposes of this testimony.
- 6 • 934 GWh of anticipated renewable energy credits from the various wind
7 contracts. The renewable energy credits are delivered using physical deliveries of
8 energy that SDG&E has already accounted for in its 2011 forecast. However,
9 costs associated these renewable energy credits are incremental to ERRA and
10 were included in the ERRA cost forecast.

11 SDG&E did not include renewable energy quantities or costs under contract from
12 a large solar project in its 2011 forecast. Based on current information, energy deliveries
13 from this contract during 2011 appear unlikely. SDG&E also did not include renewable
14 energy quantities or costs associated with the Sustainable Communities PV program
15 because costs for this program are not charged to ERRA.

16 SDG&E continues to pursue new renewable energy resources to add to its
17 portfolio for 2011, which will increase ERRA-related quantities and costs. A detailed
18 table of the renewable contracts discussed above is provided in Attachment D.

19 20 **SDG&E-OWNED DISPATCHABLE GENERATION**

21 SDG&E owns the following power plants: the 565 MW Palomar Energy Center
22 (“Palomar”) combined cycle power plant that commenced commercial operation in April
23 2006, the 48 MW Miramar Energy Facility (“MEF I”) peaking combustion turbine that
24 commenced commercial operation in July 2005, and the second 48 MW Miramar peaker
25 (“MEF II”) that commenced commercial operation in August 2009. These units are
26 dispatched for generation and A/S awards based on economic merit and SDG&E’s
27 requirements. For the 2011 forecast, SDG&E’s dispatch model considered only
28 generation dispatched for energy rather than for A/S. The rationale for this approach is
29 that the CAISO co-optimizes market awards between energy and A/S based on the
30 opportunity cost of capacity and, therefore, the economic benefit (and ERRA
31 contribution) of using capacity for generation is equivalent to using capacity for A/S.

1 The forecasted generation for Palomar in 2011 is [REDACTED], an increase of [REDACTED]
2 [REDACTED] from the forecast for 2010 ([REDACTED]). The forecasted generation for MEF 1 & 2
3 in 2011 is [REDACTED], an increase of [REDACTED] from the forecast for 2010 ([REDACTED]). The
4 significant increases in these forecasts reflect improved price modeling that used actual
5 CAISO day-ahead market prices under the new market design. More importantly, the
6 2011 forecasts better match the observed generation quantities achieved by these units
7 following MRTU implementation.

9 **SDG&E-CONTRACTED GENERATION**

10 SDG&E will have a number of generation units under contract in its resource
11 portfolio in 2011. SDG&E's Power Purchase Agreement ("PPA") for Otay Mesa Energy
12 Center ("OMEC"), a combined-cycle plant, is expected to provide a significant quantity
13 of generation to the CAISO market. The primary benefit of the other contracts will be to
14 offset SDG&E's load requirements from a capacity standpoint. The larger of these
15 contracts are described below:

16 The OMEC tolling agreement between SDG&E and Calpine began in October
17 2009. OMEC is an air-cooled 2x1 combined cycled plant that provides up to [REDACTED] of
18 efficient, gas fired generation capacity. The forecasted generation from OMEC for 2011
19 is [REDACTED], an increase of [REDACTED] from the forecast for 2010 ([REDACTED]).

20 The Orange Grove contract provides [REDACTED] of peaking capacity and is
21 forecasted to generate [REDACTED] during 2011.

22 The Wellhead contract provides [REDACTED] of peaking capacity and is forecasted to
23 generate about [REDACTED] during 2011. The difference in forecast between the Wellhead
24 and Orange Grove contracts is due primarily to a higher fuel transportation cost for
25 Wellhead.

26 SDG&E's 2011 portfolio assumes a [REDACTED]
27 [REDACTED] This extension would [REDACTED] the loss of
28 this capacity from the existing [REDACTED] which will expire at the end of 2010. This
29 contract is forecasted to provide [REDACTED] of generation in 2011.

1 **MARKET PURCHASES AND SURPLUS SALES**

2 Under MRTU, quantities purchased from the CAISO for SDG&E's load are based
3 on load schedules and economic bids. Quantities sold to the CAISO from SDG&E's
4 resource portfolio are based on completely separate generation schedules and economic
5 bids. Therefore, there is no requirement that load and generation quantities that clear the
6 market must balance.

7 If in any hour, the quantity of SDG&E's bundled load requirements purchased
8 from the CAISO is greater than SDG&E-controlled generation sold to the CAISO, the
9 difference may be viewed as equivalent to a market purchase. If in any hour, the quantity
10 of SDG&E's bundled load requirements purchased from the CAISO is less than SDG&E-
11 controlled generation sold to the CAISO, the difference may be viewed as equivalent to a
12 market sale.

13 SDG&E forecasts that the quantity of equivalent market purchases will be [REDACTED]
14 [REDACTED] in 2011, an increase of [REDACTED] from the forecast for 2010 ([REDACTED]). This
15 increase is due primarily to the expiration of the Bear Energy B&C DWR must-take
16 contracts that will provide approximately 1,596 GWh in 2010. Likewise, the loss of this
17 contract caused the forecasted quantity of market sales to decline by [REDACTED] in 2011:
18 ([REDACTED]) from 2010 ([REDACTED]).

19
20 **CDWR ALLOCATION**

21 CDWR contracts will supply an estimated [REDACTED] of energy to the CAISO in
22 2011, a decrease of [REDACTED] from 2010's expected CDWR energy volumes ([REDACTED]
23 [REDACTED]). This decrease is due to the expiration of the must-take contracts described above.
24 SDG&E's resource portfolio will supply an estimated [REDACTED] of energy to the
25 CAISO in 2011 (excluding REC quantities), an increase of [REDACTED] from 2010's
26 expected energy volumes ([REDACTED]). For 2011, the CDWR share of load is projected
27 to be [REDACTED] (less than the [REDACTED] projected for 2010), also due to the expiration of the must-
28 take contracts.

1 **III. 2011 FORECAST OF ERRA EXPENSES**

2 Electric procurement expenses incurred by SDG&E to serve bundled load are
3 recorded to the ERRA. These expenses include, but are not limited to, costs and revenues
4 for energy and capacity cleared through the MRTU markets, power purchase contract
5 costs, generation fuel costs, market energy purchase costs, CAISO charges, brokerage
6 fees and hedging costs. Deviations between forecast and actual costs for any of these
7 items will create variances between forecast and actual ERRA costs.

8 Expenses associated with CDWR resources, including contract costs, gas tolling
9 expenses, and gas hedging expenses are recovered by CDWR through its retail remittance
10 rate and not recorded as an ERRA expense. The ERRA balance may be impacted by
11 CDWR resources, however. For example, lower-than-forecast generation from CDWR
12 contracts would require additional supply from SDG&E's portfolio that is paid by ERRA
13 funds.

14 SDG&E expects to incur \$778 million of ERRA costs in 2011, before FF&U
15 costs (see Attachment A). This forecast is \$40 million less than the \$818 million forecast
16 for 2010. The key drivers behind the decrease are lower prices for fuel and market
17 purchases. These savings are offset by higher costs for capacity and renewable energy.

18 The remainder of this testimony will discuss the cost of specific ERRA items in
19 more detail.

20
21 **LOAD**

22 Under MRTU, the CAISO supplies and sells all energy and A/S to SDG&E to
23 meet SDG&E's bundled load requirement. Based on expected prices for energy and A/S,
24 SDG&E expects to incur charges totaling [REDACTED] for load requirements in 2011
25 from the CAISO.

26
27 **SUPPLY ISO REVENUES**

28 Under MRTU, all generation from SDG&E's resource portfolio is sold to the
29 CAISO. Based on expected prices for energy, SDG&E expects to receive revenues
30 totaling [REDACTED] for generation produced in 2011. These revenues are largely offset

1 by costs incurred for generation fuel & variable O&M, contracted energy purchases and
2 generation capacity. These costs are described in more detail below.

3
4 **GENERATION FUEL & VARIABLE O&M**

5 SONGS:

6 Only SONGS nuclear fuel expense and fuel carrying charges are booked to
7 ERRA. Other SONGS costs, such as O&M and capital addition, are recorded in the Non-
8 fuel Generation Balancing Account (“NGBA”). The projected ERRA expense for
9 SONGS nuclear fuel and carrying charge expenses for 2011 is [REDACTED].

10
11 PALOMAR, EL DORADO & MIRAMAR (fuel expenses that are recovered
12 through ERRA):

13 In 2011, the ERRA expense for generation fuel purchased by SDG&E for
14 Palomar, Miramar 1 & 2 and the to-be owned El Dorado plant is forecasted to be [REDACTED]
15 [REDACTED]. SDG&E expects that SDG&E will become the owner of El Dorado on October
16 1, 2011, per Decision 07-11-046. Capital and non-fuel operating costs for these plants
17 are recovered through the NGBA as required by D.05-08-005 and Resolution E-3896.

18
19 **CONTRACTED ENERGY PURCHASES**

20 PGE BOARDMAN CONTRACT:

21 The costs incurred under the PGE Boardman long term PPA include energy,
22 capacity, transmission losses, and transmission capacity from the plant to the CAISO, and
23 include SDG&E’s share of any capital additions to the unit. The contract energy
24 payment is based on an energy price ([REDACTED]) which is applied to
25 SDG&E’s share of the plant output. However, the high capacity payment for this
26 contract causes this contract to be a CTC contract; therefore the expense recorded to the
27 ERRA is determined by multiplying the forecast energy production by the proposed
28 market benchmark price of \$42.50/MWh. The 2011 ERRA expense for this contract is
29 projected to be [REDACTED].

1 QUALIFYING FACILITIES:

2 All QFs are under contract with SDG&E through as-available capacity or firm
3 capacity PURPA contracts. These contracts include provisions for both energy and
4 capacity payments. The energy payment is determined using the SDG&E Short-Run
5 Avoided Cost (“SRAC”) formula⁵. QF contracts are eligible for CTC recovery due to
6 their high capacity payments. Like the PGE Boardman contract, the ERRA expenses for
7 CTC QF contracts are based on delivered energy multiplied by the market benchmark
8 price. Any costs, including capacity payments, greater than the market benchmark price
9 are booked to the Transition Cost Balancing Account (“TCBA”). For the purposes of
10 ERRA accounting, ERRA expenses for CTC QF contracts are recorded on Line 31 of
11 Attachment C, “Qualifying Facilities (Up To Market),” and are forecast to be [REDACTED]
12 in 2011. Any gas hedging costs incurred to mitigate SRAC-priced QF contracts would
13 also be recovered in ERRA, but those expenses are captured in Line 48 of Attachment A,
14 “Hedging Costs.” Attachment C details the breakdown of all the units discussed in this
15 section and shows the associated costs, both ERRA and TCBA, and the forecast energy
16 deliveries.

17
18 RENEWABLE ENERGY CONTRACTS:

19 SDG&E’s renewable energy contracts usually contain an energy payment only
20 and no capacity payment. There are some slight differences between renewable contracts
21 regarding energy payments based on schedules or metered energy, and the treatment of
22 CAISO imbalance charges, depending on the type of resource. In 2011, SDG&E’s
23 renewable energy portfolio will include a cost for the renewable energy credits described
24 in Section II under “Renewable Energy Contracts.” None of the renewable energy
25 contracts in the SDG&E portfolio are CTC contracts. All costs associated with these
26 contracts are booked as an ERRA expense and are forecast to be \$121 million for 2011.
27 Attachment D details the renewable projects by fuel type, their costs and forecasted
28 energy deliveries.

29

⁵ The derivation of the SRAC price for QF contracts is posted monthly on an SDG&E website (URL:
<http://www2.sdge.com/SRAC/>).

1 OTHER PURCHASED POWER CONTRACTS:

2 SDG&E’s forecast of total costs for non-renewable power purchase contracts in
3 2011 is [REDACTED]. These costs cover capacity payments and variable generation costs
4 for OMEC, Encina, Boardman, QFs and several peakers. The largest components in this
5 category are capacity and generation costs for the OMEC unit, expected to be [REDACTED]
6 [REDACTED], and capacity and generation costs for [REDACTED], expected to be [REDACTED].

7
8 INTER-SCHEDULING COORDINATOR TRADES (“ISTS”):

9 Under MRTU, SDG&E may transact ISTs bilaterally with counterparties to hedge
10 long or short positions. Under an IST purchase, SDG&E would pay the counterparty the
11 contracted energy price and in return receive payment from the CAISO based on the
12 MRTU market clearing price. Under an IST sale, SDG&E would receive payment from
13 the counterparty based on the contracted energy price and in return pay to the CAISO the
14 MRTU market clearing price. For IST purchases and sales, the payment to, or revenue
15 from, the counterparty would be largely offset by the respective credit from, or payment
16 to, the CAISO. Because ISTs are used as a hedge against unknown MRTU prices,
17 SDG&E does not include a forecast of net cost or benefit from these transactions.

18
19 **CAISO RELATED COSTS**

20 SDG&E forecasts CAISO grid management charges (“GMCs”) that are allocated
21 to load and resources, which include energy usage charges, energy transmission service
22 charges, and reliability services costs. The forecast of these charges is based on historical
23 data. SDG&E’s forecast of these CAISO costs is expected to be [REDACTED] in 2011.

24
25 **URG HEDGING COSTS**

26 SDG&E’s resource portfolio has substantial exposure to gas price volatility as a
27 result of fuel requirements for its gas-fired resources as well as the gas price-based
28 pricing formula for its QF contracts. To manage this exposure, SDG&E expects to
29 continue its hedging activity, and to book the resulting hedging costs and any realized
30 gains and losses from hedge transactions to ERRA. The current estimate of hedging
31 costs for 2011 is [REDACTED], calculated as the marked-to-market profit/loss of hedges

1 already in place plus expected broker fees. The profit/loss of these and future hedges
2 placed will rise and fall with market prices. Therefore, the final cost or savings will not
3 be known until the settlement process has been completed for the hedge transactions.

4 SDG&E may also trade short-term financial power products to hedge its long or
5 short position against potentially volatile MRTU market clearing prices. Similar to ISTs
6 described above, SDG&E does not include a forecast of net cost or benefit from these
7 power hedges due to the unpredictability of market prices relative to the price of the
8 hedges.

10 **CONVERGENCE BIDS**

11 SDG&E has received authorization from the Commission to utilize convergence
12 bids when the CAISO launches this product in February 2011⁶. As described in the
13 request for authorization, SDG&E's primary use of convergence bids would be to hedge
14 certain operational risks in the day-to-day management of its portfolio. Whether or not
15 approval is granted, it is not possible to forecast the gains or losses associated with
16 potential convergence bidding activity because of the unpredictable relationship between
17 day-ahead and real-time prices. Therefore SDG&E did not forecast an ERRA
18 revenue/charge for convergence bids.

20 **CONGESTION REVENUE RIGHTS**

21 The CAISO day-ahead market establishes a market clearing price (which may
22 include a congestion charge component) at each price node ("Pnode"). If congestion
23 occurs where a generator is located, the market clearing price will be lower at that Pnode
24 and the CAISO will consequently pay a lower price for energy delivered there. If
25 congestion occurs where a load is located, the market clearing price will be higher at that
26 Pnode and the CAISO will consequently charge a higher price for load served there.

27 Market participants, including SDG&E, were allocated Congestion Revenue
28 Rights ("CRRs") for which they can nominate source and sink Pnodes to match those in
29 their portfolio. If congestion arises between the source and sink Pnodes, the CAISO will
30 pay the market participant holding the CRR the congestion charges to offset the

⁶ See D.10-12-034

1 congestion costs incurred. SDG&E expects its CRRs to generate revenues from the
2 CAISO to offset congestion costs incurred within its portfolio. However, expected
3 revenues were not forecast for the 2011 ERRR forecast because SDG&E assumed
4 congestion-free clearing prices to develop forecasts for load requirement costs and
5 generation revenues. A forecast of CRR revenues would have required SDG&E to
6 forecast offsetting market-congestion prices at various Pnodes over the 2011 period,
7 which would have introduced complexity and additional uncertainty into the forecast.

8 This concludes my direct testimony.
9

1 **IV. QUALIFICATIONS**

2 My name is Tony Choi. My business address is 8315 Century Park Court, San
3 Diego, California, 92123-1548. I am currently employed by SDG&E as Market
4 Operations Manager. My responsibilities include overseeing a staff of schedulers
5 involved in scheduling and bidding the SDG&E bundled load portfolio of supply assets
6 for the benefit of retail electric customers. This includes operational administration of
7 CDWR contracts, transacting in the real-time wholesale market and managing scheduling
8 activities in compliance with CAISO requirements. I assumed my current position in
9 March 2007.

10 I hold a Bachelors degree in Chemical Engineering and a Masters degree in
11 Business Administration from the University of California – Berkeley.

12 I previously managed the Electric Power and Generation Fuel trading desks for
13 SDG&E, primarily managing day-ahead and forward dispatch and procurement of energy
14 in compliance with least-cost dispatch. Prior to joining SDG&E in 2002, my experience
15 included two years as a power plant engineer, four years as an energy trader and three
16 years as a wholesale energy transaction structurer.

17 I have previously testified before the CPUC.

Attachment A

Attachment B

PUBLIC VERSION

ATTACHMENT B - SDG&E 2011 URG DELIVERY VOLUMES

URG Deliveries (GWh)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2011
SONGS 2	[REDACTED]												
SONGS 3	[REDACTED]												
TOTAL SONGS	[REDACTED]												
PGE (Boardman)	[REDACTED]												
CTC QF	[REDACTED]												
Non-CTC QF	[REDACTED]												
TOTAL QF	[REDACTED]												
Renewable - Bio Gas	16	15	17	16	16	16	19	19	18	17	16	16	200
Renewable - Bio Mass	32	27	32	31	32	30	35	35	35	31	30	32	381
Renewable - Geothermal	18	16	18	17	18	17	19	19	18	18	17	18	211
Renewable - Other	1	1	1	2	1	2	2	3	3	1	1	1	20
Renewable - Solar Thermal	-	-	-	-	-	0	1	2	5	8	9	10	35
Renewable - Wind	25	27	38	42	42	41	38	34	35	38	27	24	409
Renewable - Wind REC	79	71	87	91	95	93	65	54	67	73	75	82	934
TOTAL NON-QF RENEWABLE	171	157	192	199	204	199	178	165	181	185	175	183	2,190
Miramar	[REDACTED]												
Miramar 2	[REDACTED]												
Palomar	[REDACTED]												
Otay Mesa Energy Center	[REDACTED]												
Encina	[REDACTED]												
El Dorado	[REDACTED]												
Celerity	[REDACTED]												
Kelco	[REDACTED]												
Lake Hodges	[REDACTED]												
Wellhead	[REDACTED]												
Orange Grove	[REDACTED]												
TOTAL GENERATION	[REDACTED]												
Economic RNS - On Peak	[REDACTED]												
Economic RNS - Off Peak	[REDACTED]												
TOTAL Market Purchase	[REDACTED]												
TOTAL URG DELIVERIES	[REDACTED]												
Surplus Energy Sold	[REDACTED]												
LOAD REQUIREMENT (GWh)	[REDACTED]												

Note 1: Total URG deliveries do not include Wind REC

Note 2: Load Requirement is SDG&E bundled load including load served by CDWR contract energy and transmission losses.

Attachment C

Attachment D

ATTACHMENT D - SDG&E 2011 RENEWABLE RESOURCE DETAIL

URG Deliveries (GWh)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2011
BIO GAS													
GRS Sycamore Landfill Plant	1.6	1.4	1.6	1.5	1.6	1.5	1.7	1.6	1.7	1.5	1.6	1.5	18.7
MM Prima Deshecha Energy LLC	3.8	3.6	3.8	3.9	3.7	3.9	4.3	4.5	4.3	3.9	3.8	3.8	47.2
MM San Diego LLC - Miramar Landfill	2.2	2.0	2.2	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.2	25.9
MM San Diego LLC - North City Bio Plant	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.6	7.3
Covanta Otay 1	1.0	0.8	1.0	0.9	1.0	0.9	1.2	1.2	1.2	1.0	0.9	1.0	12.2
Covanta Otay 3	2.0	1.8	2.1	1.9	2.1	1.9	2.2	2.2	2.0	2.1	1.9	2.0	24.0
San Diego MWD	1.8	1.4	1.9	1.4	1.9	1.3	2.6	2.5	2.3	1.8	1.7	1.7	22.3
GRS Coyote Canyon	3.4	3.2	3.4	3.4	3.5	3.4	3.8	3.9	3.9	3.5	3.4	3.4	42.2
Subtotal	16.3	14.7	16.6	15.7	16.4	15.7	18.7	18.8	18.2	16.6	15.9	16.3	199.8
BIO MASS													
Covanta Delano	24.3	20.4	24.0	23.9	24.5	22.9	26.4	26.9	27.1	23.2	22.9	24.8	291.2
Blue Lake	7.5	6.7	7.5	7.1	7.5	7.1	8.2	8.2	7.9	7.5	7.3	7.4	89.9
BullMoose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	31.8	27.1	31.5	31.0	32.0	30.0	34.6	35.0	35.0	30.7	30.2	32.2	381.1
GEO THERMAL													
Calpine Geysers	17.7	16.0	17.6	17.4	17.6	17.1	18.5	18.6	18.0	17.8	17.0	17.9	211.2
Subtotal	17.7	16.0	17.6	17.4	17.6	17.1	18.5	18.6	18.0	17.8	17.0	17.9	211.2
OTHER													
Rancho Penasquitos	1.4	1.4	1.2	1.6	1.3	1.6	2.4	2.6	2.7	1.4	1.4	1.4	20.1
Subtotal	1.4	1.4	1.2	1.6	1.3	1.6	2.4	2.6	2.7	1.4	1.4	1.4	20.1
SOLAR													
Stirling Solar	0.0	0.0	0.0	0.0	0.0	0.5	1.1	1.9	5.1	7.7	8.6	10.2	35.1
Subtotal	0.0	0.0	0.0	0.0	0.0	0.5	1.1	1.9	5.1	7.7	8.6	10.2	35.1
WIND													
Glacier Wind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shell Energy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kumeyaay	14.2	14.5	14.7	15.2	10.4	9.2	6.0	6.2	9.9	14.4	12.1	10.6	137.3
Oasis Power Partners	0.0	0.0	0.0	0.0	0.0	0.0	6.1	5.8	5.1	4.5	1.9	1.5	24.9
PacifiCorp	6.3	7.0	12.1	14.3	17.8	17.3	15.1	11.3	9.6	10.2	8.3	8.3	137.4
PPM Energy	3.3	4.1	8.4	10.0	11.1	11.5	8.3	8.1	8.1	7.1	3.5	2.4	85.8
WTE Monecito	0.9	1.1	2.7	2.5	3.0	3.2	2.5	2.4	2.1	1.9	0.8	0.6	23.7
Subtotal	24.8	26.6	37.9	41.9	42.3	41.1	37.9	33.8	34.7	38.0	26.5	23.5	409.1
Total Power Purchase Costs (K\$)													
BIO GAS	\$ 1,030	\$ 919	\$ 1,049	\$ 975	\$ 1,038	\$ 973	\$ 1,200	\$ 1,206	\$ 1,159	\$ 1,044	\$ 997	\$ 1,035	\$ 12,626
BIO MASS	\$ 2,521	\$ 2,156	\$ 2,503	\$ 2,456	\$ 2,540	\$ 2,378	\$ 2,744	\$ 2,778	\$ 2,768	\$ 2,443	\$ 2,394	\$ 2,552	\$ 30,233
GEO THERMAL	\$ 2,024	\$ 1,824	\$ 2,006	\$ 1,961	\$ 2,029	\$ 1,938	\$ 2,120	\$ 2,120	\$ 2,052	\$ 2,006	\$ 1,961	\$ 2,032	\$ 24,074
OTHER	\$ 98	\$ 99	\$ 83	\$ 114	\$ 91	\$ 113	\$ 174	\$ 186	\$ 198	\$ 99	\$ 99	\$ 99	\$ 1,453
SOLAR	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 52	\$ 124	\$ 216	\$ 568	\$ 865	\$ 961	\$ 1,147	\$ 3,932
WIND	\$ 1,257	\$ 1,349	\$ 1,914	\$ 2,109	\$ 2,117	\$ 2,060	\$ 2,282	\$ 2,065	\$ 2,067	\$ 2,206	\$ 1,461	\$ 1,287	\$ 22,174
WIND (REC)	\$ 2,150	\$ 1,947	\$ 2,508	\$ 2,648	\$ 2,782	\$ 2,781	\$ 1,916	\$ 1,587	\$ 1,957	\$ 2,071	\$ 2,029	\$ 2,198	\$ 26,573
Subtotal	\$ 9,079	\$ 8,294	\$ 10,064	\$ 10,262	\$ 10,596	\$ 10,295	\$ 10,560	\$ 10,156	\$ 10,769	\$ 10,734	\$ 9,902	\$ 10,351	\$ 121,063

**BEFORE THE PUBLIC UTILITIES
COMMISSION OF THE STATE OF CALIFORNIA**

**DECLARATION
OF TONY CHOI**

A.10-10-001

Amended Application of San Diego Gas & Electric Company (U 902 E)
For Adoption of its 2011 Energy Resource Recovery Account (ERRA) Forecast Revenue
Requirement and Review of its Power Procurement Balancing Account

I, Tony Choi, do declare as follows:

1. I am a Market Operations Manager for San Diego Gas & Electric Company ("SDG&E"). I included my Prepared Direct Testimony ("Testimony") in support of SDG&E's January 14, 2011 Amended Application for Adoption of its 2011 Energy Resources Recovery Account (ERRA) Forecast Revenue Requirement and Review of its Power Procurement Balancing Account. Additionally, as Market Operations Manager, I am thoroughly familiar with the facts and representations in this declaration and if called upon to testify I could and would testify to the following based upon personal knowledge.

2. I am providing this Declaration to demonstrate that the confidential information ("Protected Information") in my Testimony 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 set forth in D.08-04-023 for testimony in a formal proceeding, 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:

- Page TC-3: redacted items on lines 2 through 3 are protected under Matrix category V.C and confidential for “the front three years”; redacted items on lines 12 through 13 are protected under Matrix category IV.A and confidential for three years; redacted items on line 23 are protected under Matrix category IV.E and confidential for three years
- Page TC-4: redacted items on lines 15 through 16 are protected under Matrix category IV.B and confidential for three years
- Page TC-6: redacted items on lines 1 through 3 are protected under Matrix category IV.A and confidential for three years; redacted items on lines 17 through 23 are protected under Matrix category IV.F and confidential for three years; redacted items on lines 26 through 29 are protected under Matrix category IV.F and confidential until January 1, 2013.
- Page TC-7: redacted items on lines 13 through 14 are protected under Matrix category IV.J and confidential for the “front three years”; redacted items on lines 17 through 18 are protected under Matrix category IV.K and confidential for the “front three years”; redacted items on lines 21 through 27 are protected under Matrix category V.G and confidential for the “front three years”
- Page TC-8: redacted items on lines 24 and 30 are protected under Matrix category II.B.1 and confidential for three years
- Page TC-9: redacted items on lines 9 and 14 are protected under Matrix category II.B.1 and confidential for three years; redacted items on lines 24 and 29 are protected under Matrix category II.B.4 and 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.

- Page TC-10: redacted item on line 11 is protected under Matrix category II.B.3 and confidential for three years
- Page TC-11: redacted items on lines 3 through 6, line 23 and line 31 are protected under Matrix category II.B.4 and confidential for three years
- Attachment A, spreadsheet “SDG&E 2011 ERRRA Expenses” is protected under Matrix category XI and confidential for three years
- Attachment B, spreadsheet “SDG&E 2011 URG Delivery Volumes” is protected under Matrix category IV. Specifically, SONGS, Palomar, El Dorado and Miramar data are protected under Matrix category IV.A and confidential for three years; PGE-Boardman data are protected under Matrix category IV.E and for three years; QF data are protected under Matrix category IV.B and confidential for three years; Otay Mesa, Celerity, Kelco, Lake Hodges, Wellhead and Orange Grove data are protected under Matrix category IV.F and confidential for three years; Encina data are protected under Matrix category IV.F and confidential until January 1, 2013 Market Purchase data are protected under Matrix category IV.J and confidential for the “front three years”; Surplus Energy Sold data are protected under Matrix category IV.K and confidential for the “front three years”; Load Requirement data are protected under Matrix category V.C and confidential for the “front three years”
- Attachment C, spreadsheet “SDG&E 2011 Long-Term Power Purchase, CTC and Qualifying Facility Detail” is confidential and protected under Matrix categories IV.B and IV.E. Specifically, PGE-Boardman data are protected under Matrix category IV.E and confidential for the “front three years”; individual QF data are protected under Matrix category IV.B and confidential for the “front three years”; Long Term Power Purchase CTC data are protected under Matrix category II.B.4 and confidential for three years; CTC QF & Non CTC QF data are protected under Matrix category II.B.3 and confidential for three years; TCBA Expenses data are protected under matrix categories II.B.3 and II.B.4 and confidential for three years

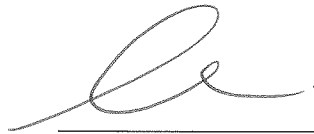
4. I am not aware of any instances where the Protected Information has been disclosed to the public. To my knowledge, no party, including SDG&E, has publicly revealed any of the Protected Information.

5. I will comply with the limitations on confidentiality specified in the Matrix for the type of data that is provided herewith.

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 13th day of January, 2011, at San Diego, California.



Tony Choi
Market Operations Manager
San Diego Gas & Electric Company