

Company: San Diego Gas & Electric Company
Application: 17-09-_____
Exhibit No.: SDG&E-_____

PREPARED DIRECT TESTIMONY OF

CYNTHIA FANG

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

CHAPTER 4

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

SEPTEMBER 13, 2017



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**PREPARED DIRECT TESTIMONY OF
CYNTHIA FANG
CHAPTER 2**

I. OVERVIEW AND PURPOSE

The purpose of my testimony is to present San Diego Gas & Electric Company's (SDG&E) proposed San Diego Unified Port District (District) Electric Shore Power Rate Discount (Discount), as guided by the policy objectives presented in the direct testimony of SDG&E witness Todd Cahill (Chapter 1) and explain how the Discount responds to the guidance provided by the California Public Utilities Commission (Commission) provided in Resolution E-4812.

My testimony also describes the cost recovery proposals associated with the recovery of revenue requirements for: (1) the incremental Energy Efficiency (EE) Proposal presented by SDG&E witness Paul Pruschki (Chapter 2); (2) the Enhanced Partnership Program (EPP) presented by SDG&E witness Julia Mendoza (Chapter 3); and (3) the Discount, and presents illustrative rate and bill impacts associated with: (1) the incremental EE Proposal presented by SDG&E witness Paul Pruschki (Chapter 2) and (2) the EPP presented by SDG&E witness Julia Mendoza (Chapter 3).

My testimony is organized as follows:

- **Section II – Background of Cruise Ship Terminal Account Rate:**
- **Section III – Electric Shore Power Rate Discount¹:** describes the proposed line-item discount mechanism for the District's Shore Power account over the

¹ Also identified as "Shorepower Rate" in the District's Energy Management Plan, attached as Appendix G.

1 5-year term of the EMP contract and the treatment of the revenue shortfall
2 that results from the Discount, as split into 3 sections:

- 3 ○ **A – Cost-Based Rate Design;**
- 4 ○ **B - Electric Shore Power Rate;**
- 5 ○ **C –Projected Discount Calculation**

- 6 • **Section IV – Cost Recovery:** describes the proposed methodology for
7 recovering costs associated with SDG&E’s incremental EE Proposal and EPP
8 Proposal;
- 9 • **Section V – Illustrative Rate Impacts;**
- 10 • **Section VI – Conclusion;** and
- 11 • **Section VII – Statement of Qualifications.**

12 **II. BACKGROUND OF THE CRUISE SHIP TERMINAL ACCOUNT RATE**

13 As described by SDG&E witness Todd Cahill (Chapter 1), the District is currently
14 receiving shore power services for its cruise ship terminal account on Schedule TOU-A.
15 Schedule TOU-A is SDG&E’s standard small commercial schedule and is not applicable to
16 any customer whose Maximum Monthly Demand² equals, exceeds, or is expected to equal
17 or exceed 20 kW for 12 consecutive months.³ The usage profile of the cruise ship industry
18 previously allowed the cruise ship terminal account to receive service under the current
19 applicability for Schedule TOU-A.

² Maximum Monthly Demand is defined as “the Maximum Demand occurring during the current billing period” whereas Maximum Demand is defined as “the average kilowatt input during the fifteen-minute interval in which the consumption of electric energy is greater than any other fifteen-minute interval in the billing period”. Schedule TOU-A, Sheet 1
http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_TOU-A.pdf.

³ Schedule TOU-A, Sheet 1, Applicability: http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_TOU-A.pdf

1 D.12-12-004 required SDG&E to transition its small commercial customers,
2 including the District's cruise ship terminal account, which was receiving service on
3 Schedule A, SDG&E's standard small commercial service, to a time-varying, dynamic rate
4 structure. Thus, the District's cruise ship terminal account was transitioned to Schedule
5 TOU-A on April 18, 2016, when the District opted out of the default dynamic rate.⁴

6 In D.14-01-002 in SDG&E's 2012 General Rate Case Phase 2 (GRC Phase 2)
7 Application (A.11-10-002), the California Public Utilities Commission ("Commission")
8 adopted a settlement agreement in which SDG&E agreed to modify the applicability of its
9 standard small commercial rate in its next GRC Phase 2 application.⁵ Per D. 17-08-030 in
10 SDG&E's 2016 GRC Phase 2 Application (A.15-04-012), on July 1 2018, SDG&E will
11 amend the applicability of SDG&E's standard small commercial rates (including Schedule
12 TOU-A) so that any commercial customer whose demand exceeds 200 kW in two out of
13 twelve consecutive months will be ineligible for small commercial rates. At that time, the
14 District's cruise ship terminal account will no longer be eligible for its current rate, Schedule
15 TOU-A, and, without any further action, would be moved to the standard rate for customers
16 in the medium/large commercial and industrial (M/L C&I) class, Schedule AL-TOU with
17 commodity service on Schedule EECC-CPP-D (*i.e.*, Critical Peak Pricing).

⁴ The default schedule for the small commercial class is Schedule TOU-A with commodity service on Schedule EECC-TOU-A-P. The District opted-in to Schedule EECC for commodity service and as such currently receives service on Schedule TOU-A which includes commodity service on Schedule EECC.

⁵ D.14-01-002, Attachment A, Revenue Allocation and Rate Design Settlement Agreement, pages 9-10.

1 **III. DESCRIPTION OF ELECTRIC SHORE POWER RATE DISCOUNT**

2 As set forth in the Application and in more detail in the testimony of Mr. Cahill
3 (Chapter 1), the District and SDG&E have considered various options to address the rate
4 impact for shore power rates resulting from the transition to the new rate. As part of the
5 District's comprehensive Energy Management Plan (EMP) developed with SDG&E
6 pursuant to Assembly Bill (AB) 628, SDG&E is requesting authority to implement a five-
7 year rate adjustment to the rates under which the District will receive shore power service.
8 The environmental, economic and regulatory context pursuant to which the Discount has
9 been determined to be necessary is set forth in Mr. Cahill's testimony (Chapter 1). Given
10 that SDG&E's proposed Discount is intended to meet the public policy objectives specified
11 in AB 628, SDG&E proposes to recover the costs of the Discount through Public Purpose
12 Program (PPP) rates from all customers consistent with other public policy programs. The
13 Discount is also designed to reflect the guidance provided by the Commission in Resolution
14 E-4812.

15 On May 13, 2016, SDG&E filed Advice Letter (AL) 2896-E seeking approval to
16 allow the District cruise ship terminal account to remain on its current rate (Schedule TOU-
17 A) on an interim basis, pursuant to a memorandum of understanding executed between
18 SDG&E and the District. Resolution E-4812 approved such rate treatment and the
19 memorandum, and ordered SDG&E to file a long-term rate solution in support of the
20 District's EMP no later than October 1, 2017.⁶ This testimony discusses the five-year rate
21 proposal included in the EMP as the most viable long term solution, as discussed in more
22 detail in the testimony of Mr. Cahill (Chapter 1).

⁶ SDGE AL 4812-E, Page 8.

1 **A. Cost-Based Rate Design**

2 Resolution E-4812 instructs SDG&E to “pay particular attention to the cost basis of
3 the long-term rate solution it proposes”⁷ in this Application. One of the purposes of a cost-
4 based rate design is to ensure customers see the price signals that reflect their cost of service.
5 A rate design based on cost-causation principles is critical to ensure that consumption occurs
6 in a manner consistent with electric grid conditions and provides customers with price
7 signals to incent behavior that minimizes demand on the system.⁸

8 In order for a rate design to have price signals that are cost-based, it should reflect
9 the following unbundled structure:

- 10 • Distribution Demand Costs – SDG&E incurs these costs independent of
11 energy usage. These costs are incurred based on local capacity needs to meet
12 the combined maximum demand of customers served off a given circuit.
13 Given the diverse nature of circuit peaks, non-coincident demand (NCD),
14 demand better reflects local distribution costs than peak demand and as such
15 are more appropriately recovered in a NCD charge (\$/NCD – kilowatt (kW)).
- 16 • Generation Capacity Costs – SDG&E does not incur these costs by amount of
17 customer energy usage, but rather because of the need to meet net peak
18 capacity needs of the system; therefore, system capacity costs should be
19 recovered in a demand charge consistent with the time period during which

⁷ *Id.* at 5.

⁸ Resolution 4812-E Finding 8 states “...The EMP developed between SDG&E the Port should minimize the Port’s demand on SDG&E’s system in order to align the Port’s rate treatment with its cost of service.”

1 those costs occur, which is demand at the time of net system peak when
2 SDG&E may require additional capacity (\$/peak-kW).

- 3 • Commodity Energy Costs – SDG&E incurs these costs on a variable basis
4 (based on energy usage) and the cost depends on the time of delivery.

5 Therefore, these costs should be recovered in an energy charge (\$/kWh) that
6 varies by time period.

- 7 • Customer Costs – SDG&E incurs these costs on a fixed basis for each
8 interconnected customer whether the customer uses electricity; therefore,
9 customer costs should be recovered in a fixed or monthly charge (\$/month).

10 Small Commercial customers receive service under a partially unbundled rate
11 structure with a reduced monthly service fee (\$/month) that varies by customer demand.
12 This monthly service fee partially recovers distribution costs, while all remaining costs are
13 recovered through energy rates (\$/kWh) with commodity rates that differ by season and
14 time-of-use (TOU) period. M/L C&I customers receive service under an unbundled rate
15 structure that includes: (1) customer costs recovering partial distribution costs; (2) demand
16 costs recovering the remaining distribution costs and transmission costs; (3) generation
17 capacity costs recovering partial commodity costs; and (4) energy rates recovering the
18 remaining commodity costs and all other costs.

19 **B. Electric Shore Power Rate**

20 While the District's cruise ship terminal account is currently eligible for SDG&E's
21 standard small commercial rate schedule, Schedule TOU-A, with the upcoming changes in
22 tariff applicability, the District's cruise ship terminal account will no longer be eligible for
23 such rate and without further action, would be moved to SDG&E's standard M/L C&I rate

1 schedule, Schedule AL-TOU, which is a dynamic rate that includes an optional event based
2 Critical Peak Pricing adder.⁹ However, there are optional M/L C&I rates for which the
3 District’s cruise ship terminal account would be eligible, including Schedule A6-TOU,
4 Primary.¹⁰ Like Schedule AL-TOU, Schedule A6-TOU is a more complex rate option
5 available to SDG&E’s larger and more sophisticated accounts, such as the District’s cruise
6 ship terminal account. Schedule A6-TOU provides a more “real-time” price signal using
7 Maximum Demand at Time of System Peak,¹¹ rather than On-Peak Demand¹² charges as
8 used on Schedule AL-TOU. While an On-Peak Demand Charge provides customers with
9 the price signal to reduce demand during the specified on-peak period, which reflects the
10 average high cost hours that occur on a typical day, the Maximum Demand at Time of
11 System Peak on Schedule A6-TOU is intended to provide a more granular price signal that
12 reflects the narrowly defined 15 minute interval system peak that may occur at different
13 times during a customer’s monthly billing period. As such, Schedule A6-TOU, with a more
14 “real-time” price signal of the Maximum Demand at Time of System Peak, aligns with the
15 Commission’s guidance in Resolution E-4812 for the District’s rate treatment as described
16 in Section III.A above.

⁹ Schedule AL-TOU, EECC-CPP-D, available at http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_AL-TOU.pdf.

¹⁰ Customers on Schedule A6-TOU receive service at Primary, Primary Substation, or Transmission service voltage levels, whose maximum demand is 500 kW or greater during any 15-minute interval of the most recent 12-month period. Applicability, Sheet 1, http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_A6-TOU.pdf.

¹¹ Special Condition 7 of Schedule A6-TOU defines the Maximum Demand at the Time of System Peak to be based on the kilowatts of Maximum Demand measured at the time of system peak occurring during each billing period during the on-peak period.

¹² Special Condition 6 of Schedule AL-TOU defines the On-Peak Period Demand Charge as the maximum demand measured during the billing period limited to the hours specified for the on-peak period.

1 SDG&E's Discount proposal would modify the effective rate charged to the District
2 through means of an adjustment to the cruise ship terminal account's monthly bill. The
3 structure of the Discount, as an adjustment to the bill, will ensure that the District continues
4 to see price signals that reflect the cost of providing services to the District's cruise ship
5 berths. The account would be billed under Schedule A6-TOU¹³ so that the District would be
6 able to review the cost-based price signals associated with usage on this account. The bill
7 would then be discounted so that the District's total charges reflect the adjusted effective
8 rate. The adjusted effective rate has been calculated to provide the equivalent benefit to the
9 District as if the account received service on SDG&E's current effective class-average rate
10 per kilowatt-hour (kWh) applicable to the M/L C&I customer class for each kilowatt hour of
11 electricity used. The adjusted effective rate, applied through subtraction of the bill
12 Discount, would be in effect for the five-year term of the EMP.

13 Under this proposal, the District will receive bills each month that (1) reflect a rate
14 with cost-based price signals, and (2) reflect rates appropriate to the customer class
15 associated with the amount of energy used by the cruise ship terminal account.¹⁴

16 **C. Projected Calculations of Rate Adjustment**

17 For transparency, SDG&E is proposing to bill the District on Schedule A6-TOU with
18 the Discount adjustment provided separately. In Table CF-1 below, SDG&E presents a
19 comparison of the estimated annual bills and resulting effective discounts for the District's

¹³ SDG&E anticipates billing the District on Schedule A6-TOU, Primary Service, available at http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_A6-TOU.pdf.

¹⁴ Initially SDG&E will provide the transparent discount to the District through a monthly refund check. SDG&E will pursue implementation of the discount through a line-item on the District's bill, with timing of the line-item discount dependent on system demands and limitations.

1 cruise ship terminal account based on historical usage (July 2016-June 2017)¹⁵ with current
2 rates using the following rate schedules plus the Discount adjustment (Table CF-1):

- 3 • Schedule TOU-A: Cruise ship terminal account's currently applicable rate
4 schedule
- 5 • Schedule AL-TOU Primary: Standard M/L C&I rate schedule with Critical
6 Peak Pricing
- 7 • Schedule A6-TOU Primary: Optional M/L C&I rate schedule with Maximum
8 Demand at Time of System Peak pricing, for which the cruise ship terminal
9 account is eligible; and
- 10 • Electric Shore Power Rate Discount: Calculation of the adjustment, assuming
11 service on Schedule A6-TOU.¹⁶

12 Although SDG&E proposes to place the cruise ship terminal account on Schedule
13 A6-TOU Primary, Schedule AL-TOU Primary with CPP is included in Table CF-1 to
14 provide an estimate of the District's annual bill resulting from the applicability amendments
15 ordered in D. 17-08-030¹⁷ if no further action is taken.

¹⁵ The historic usage between July 2016 and June 2017 used for this analysis only included one Critical Peak Pricing ("CPP") event on September 26, 2016. Different number of CPP events over a 12 month period will impact a customer's bill. Currently, Schedule EECC-CPP-D tariff allows for a maximum of 18 events. Schedule EECC-CPP-D, Applicability: Sheet 1 http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EECC-CPP-D.pdf

¹⁶ Based on current rates effective 3/1/2017 per AL 3034-E/3034-E-A.

¹⁷ D.17-08-030 OP 2.

1 Table CF-1 shows Schedule A6-TOU Primary as the cruise ship terminal account's
 2 base rate from which the Discount adjustment is made, so that the end result is the adjusted
 3 effective rate.¹⁸

4 **Table CF-1: District's Illustrative Annual Electric Bill under Alternative Rates,**
 5 **Including Proposed Bill Discount**

	TOU_A	AL-TOU (P) w/ EECC-CPP-D	A6-TOU (P)	Electric Shore Power Rate Discount
Basic Service Fee Charges	\$600	\$448	\$448	\$448
Demand Charges	\$0	\$2,337,552	\$2,197,995	\$2,337,552
Energy Charges	\$460,895	\$236,198	\$191,304	\$236,198
Total Annual Electric Bill	\$461,495	\$2,574,199	\$2,389,747	\$2,574,199
Discount Adjustment				\$2,166,041
Total Annual Electric Bill after Discount Adjustment				\$408,157
Illustrative Effective Rate (\$/kWh)	0.22444	1.25192	1.16221	0.19850
Illustrative % Bill Reduction Compared to AL-TOU with CPP	83.2%		11.7%	85.1%
Illustrative % Bill Reduction Compared to A6-TOU	80.7%	-7.7%		82.9%

6
 18 The calculation of the District's estimated annual bill on Schedule AL-TOU (P) includes commodity service on Schedule Electric Commodity Cost Critical Peak Pricing Default ("EECC-CPP-D") per D.08-02-034. As approved by D.08-02-034, Schedule EECC-CPP-D is the default commodity rate for M/L C&I customers. The calculation of AL-TOU (P) with EECC-CPP-D as the commodity rate does not include the capacity reservation charge.

1 Consistent with the interim plan approved in Resolution E-4812, the District's cruise
2 ship terminal account will continue to be charged on Schedule TOU-A until December 31,
3 2018, or when the Discount requested in this Application becomes effective, whichever
4 occurs first. Resolution E-4812 assumes that save the rate relief granted, the cruise ship
5 terminal account would be moved to Schedule AL-TOU. In comparison with the District's
6 estimated cost of service on Schedule AL-TOU, the short-term rate relief approved in
7 Resolution 4812-E reflects an 83.2% difference.

8 Under the newly proposed Discount described in this Application, the cruise ship
9 terminal account would be moved to Schedule A6-TOU. The monthly bill for the cruise
10 ship terminal account would then be adjusted by the Discount, so that the total charges
11 reflect the District's reconstituted rate, namely, the current effective M/L C&I class average
12 rate for that month. SDG&E estimates that the adjusted effective rate reflects a difference of
13 approximately 83% from the District's charges on Schedule A6-TOU without the Discount.
14 This adjustment mechanism would be in place for the five-year term of the EMP. The
15 estimated cost of the adjustment over the five-year term of the EMP contract is \$10.8
16 million.¹⁹ A long-term rate solution is addressed in the testimony of Mr. Cahill (Chapter 1).

17 **IV. COST RECOVERY**

18 In addition to the presentation of the Discount, this testimony addresses the recovery
19 of costs associated with SDG&E's proposed EMP, which include the EE proposal presented
20 by Paul Pruschki (Chapter 2) and the EPP proposal presented by Julia Mendoza (Chapter 3).

21 The EE proposal included in the EMP as presented in the testimony of Mr. Pruschki
22 (Chapter 2) consists of: (1) standard EE measures funded through SDG&E's existing EE

¹⁹ Assumes historic usage between July 2016 and June 2017.

1 portfolio and (2) additional specialized EE measures specific to the District. Consistent with
 2 current EE costs, SDG&E proposes to recover the costs of these additional specialized EE
 3 measures through the PPP rate component from all customers.

4 As discussed in the testimony of Ms. Mendoza (Chapter 3), the EPP is a critical
 5 component of the EMP and therefore vital to meeting the public policy objectives of AB
 6 628. Given the EPP is necessary to meet the public policy objectives of AB 628, SDG&E
 7 proposes to recover the costs of the EPP through PPP rates from all customers, consistent
 8 with other public policy programs.

9 Table CF-2 summarizes the proposed five-year annual revenue requirements for
 10 recovery of costs through electric rates presented in the testimonies of SDG&E witnesses
 11 Pruschki and Mendoza, which present the electric revenue requirements associated with the
 12 costs of SDG&E’s EE and EPP proposals, respectively.

13 **Table CF-2: District EMP Electric Revenue Requirements (\$000)²⁰**

EMP Program	2019	2020	2021	2022	2023
Energy Efficiency²¹	\$831	\$851	\$872	\$0	\$0
Electric	\$748	\$766	\$785	\$0	\$0
EPP²²	\$1,118	\$1,174	\$1,231	\$980	\$1,003
Electric	\$1,006	\$1,056	\$1,108	\$882	\$903
Total	\$1,949	\$2,025	\$2,103	\$980	\$1,003
Total Electric	\$1,754	\$1,823	\$1,893	\$882	\$903

14
 20 Excludes FF&U.

21 The split of costs for EE between electric and gas is discussed in the testimony of SDG&E witness Paul Pruschki (Chapter 2).

22 The split of costs for the EPP between electric and gas is discussed in the testimony of SDG&E witness Julia Mendoza (Chapter 3).

1 **V. ILLUSTRATIVE RATE IMPACTS**

2 Table CF-3 presents the illustrative class average electric rate impacts over the five-
 3 year term of the District EMP (2019-2023) associated with the proposed revenue
 4 requirements associated with the EE and EPP program costs as presented by SDG&E
 5 witnesses Paul Pruschki and Julia Mendoza, respectively, compared to SDG&E’s current²³
 6 rates. Table CF-4 provides the percent change resulting from the illustrative class average
 7 electric rate impacts associated with the proposed revenue requirements compared to
 8 SDG&E current²⁴ rates.

9 **Table CF-3: Class Average Electric Rate Impacts (cents/kWh)**

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		2019	2020	2021	2022	2023
Customer Class	Current²⁵	Proposed Rate	Proposed Rate	Proposed Rate	Proposed Rate	Proposed Rate
Residential	24.990	24.998	24.999	24.999	24.994	24.995
Small Commercial	23.928	23.941	23.942	23.942	23.935	23.935
Medium/Large C&I	19.850	19.859	19.858	19.860	19.855	19.855
Agriculture	17.735	17.745	17.745	17.746	17.740	17.740
Lighting	19.917	19.925	19.925	19.926	19.921	19.921
System Total	22.122	22.130	22.131	22.131	22.126	22.126
Residential Bill²⁶ (\$/month)	\$128.95	\$128.98	\$128.99	\$128.99	\$128.97	\$128.97

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²³ Rates effective 9-1-17 per AL 3055-E/E-A.

²⁴ Rates effective 9-1-17 per AL 3055-E/E-A.

²⁵ Rates effective 9-1-17 per AL 3055-E/E-A.

²⁶ Average monthly summer bill based on a typical non-CARE residential customer using 500 kWh per month living in the inland climate zone.

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Table CF-4: Class Average Electric Rate Impacts (% Change)

	2019	2020	2021	2022	2023
	%	%	%	%	%
Customer Class	Change from Current	Change from Current	Change from Current	Change from Current	Change from Current
Residential	0.03%	0.04%	0.04%	0.02%	0.02%
Small Commercial	0.05%	0.06%	0.06%	0.03%	0.03%
Medium/Large C&I	0.05%	0.04%	0.05%	0.03%	0.03%
Agriculture	0.06%	0.06%	0.06%	0.03%	0.03%
Lighting	0.04%	0.04%	0.05%	0.02%	0.02%
System Total	0.04%	0.04%	0.04%	0.02%	0.02%
Residential Bill²⁷	0.03%	0.03%	0.03%	0.02%	0.02%

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A typical non-California Alternate Rates for Energy (“CARE”) residential customer using 500 kWh per month living in the inland climate zone would see an increase from \$128.95 to \$128.99 on their monthly summer electric bill, an increase of 4 cents, or 0.03%, in 2021 from SDG&E’s proposal.

7

VI. CONCLUSION

8

SDG&E requests the Commission approve the following:

9

- Electric Shore Power Rate Discount to support the policy objectives

10

described in the testimony of Todd Cahill (Chapter 1) to be recovered from

11

customers through the PPP rate component; and

12

- Recovery of the incremental costs associated with specific EMP proposals,

13

which include specialized EE measures and EPP, through PPP rates from all

14

customers.

15

This concludes my prepared direct testimony.

16

²⁷ Average monthly summer bill based on a typical non-CARE residential customer using 500 kWh per month living in the inland climate zone.

1 **VII. STATEMENT OF QUALIFICATIONS**

2 My name is Cynthia Fang and my business address is 8330 Century Park Court, San
3 Diego, California 92123. I am the Manager of the Customer Pricing Department of San
4 Diego Gas & Electric Company. My primary responsibilities include the development of
5 cost-of-service studies, determination of revenue allocation and electric rate design methods,
6 analysis of ratemaking theories, and preparation of various regulatory filings and overseeing
7 the electric load analysis, electric demand forecasting and electric rate strategy for SDG&E.
8 I began work at SDG&E in May 2006 as a Regulatory Economic Advisor and have held
9 positions of increasing responsibility in the Electric Rate Design group. Prior to joining
10 SDG&E, I was employed by the Minnesota Department of Commerce, Energy Division, as
11 a Public Utilities Rates Analyst from 2003 through May 2006.

12 In 1993, I graduated from the University of California at Berkeley with a Bachelor of
13 Science in Political Economics of Natural Resources. I also attended the University of
14 Minnesota where I completed all coursework required for a Ph.D. in Applied Economics.

15 I have previously submitted testimony before the California Public Utilities
16 Commission and the Federal Energy Regulatory Commission regarding SDG&E's electric
17 rate design and other regulatory proceedings. In addition, I have previously submitted
18 testimony and testified before the Minnesota Public Utilities Commission on numerous rate
19 and policy issues applicable to the electric and natural gas utilities.