Application of San Diego Gas & Electric Company (U-902-M) for Approval of Demand Response Programs and Budgets for Years 2006 through 2008.

Application 05-06-\_\_\_\_

## **CHAPTER V**

## PREPARED DIRECT TESTIMONY

## OF

## **LESLIE WILLOUGHBY**

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

## JUNE 1, 2005

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2 3 4	PREPARED DIRECT TESTIMONY OF LESLIE WILLOUGHBY
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5	I. 2006 - 2008 Measurement and Evaluation Activities
6	A. <u>Introduction</u>
7 8	The overall objective of the Demand Response Measurement and Evaluation ("M&E")
9	effort is to provide the Commission, utilities, and other interested parties with a systematic
10	evaluation of demand response ("DR") implementation activities and customer response to those
11	activities. Specifically, M&E quantifies the amount of demand response that can be achieved
12	from customers served by the California Investor Owned Utilities ("IOUs") through its Demand
13	Response Programs, provide information to improve existing programs and eliminate
14	unsuccessful programs. Additionally, the M&E process offers recommendations on market
15	potential, demand impact estimate refinements and cost/benefit analysis methods that will lead to
16	new programs and ultimately improve the cost-effectiveness of demand response activities.
17	Included in the evaluation effort is the need to monitor other markets, statewide and nationally,
18	for demand response program features, impacts, and evaluation techniques.
19	
20	B. <u>Background</u>
21	
22	The statewide demand response M&E effort began in 2003 with activities authorized in
23	D.03-06-032. This decision adopted the comprehensive monitoring and evaluation plan
24	proposed by Working Group 2 ("WG2") in its December 13, 2002 report, as augmented by its
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March 11, 2003 report. The plan outlined M&E activities in an effort to provide information that
 could improve the cost-effectiveness of demand response activities going forward.

3 In 2003, the IOUs began a cooperative comprehensive evaluation of all programs authorized in D.03-06-032. Early in 2004, the traditional interruptible programs and the 4 California Power Authority's Demand Reserves Partnership ("CPA DRP") were added to the 5 scope at the direction of the WG2 facilitators: the California Energy Commission ("CEC") and 6 7 the CPUC Energy Division. The added scope included interviews with program managers and surveys to existing participant and non-participant customers that would assist the utilities in 8 9 understanding motivations for participating as well as reasons for not participating in the 10 programs. The WG2 Demand Response Program Evaluation Final Report for 2004 programs 11 was issued in December 2004 and included analysis associated with the expanded evaluation 12 scope.

In mid-2004, modifications to existing programs were approved. In this filing, additional statewide and utility-specific programs are being proposed. Due to the evolving nature of demand response tariff and program features, the utilities recommend an ongoing evaluation process that will help identify opportunities for greater success. The purpose of M&E is to provide information that will help to improve existing programs, eliminate those that are not successful and develop new programs, all in an effort to achieve higher levels of demand response; continual analysis and evaluation is vital.

The current measurement and evaluation of statewide demand response tariffs and
programs being carried out is under the guidance of WG2 project advisory committee, which
consists of representatives from the California utilities and commissions. This research is
organized under a single study effort and includes Demand Bidding Program ("DBP"), Critical

Peak Pricing ("CPP"), the CPA's DRP and Technical Assistance and Technology Incentives.
 Organizing the evaluations in this manner is the most efficient approach because the various
 program evaluations have similar data requirements and are collected from the same finite
 population of respondents.

To date, four M&E reports have been submitted to the WG2 participants and filed with
the CPUC. These reports include the Summary of the Phase I Research submitted on April 8,
2004, the WG2 Non-Participant Market Survey submitted on August 5, 2004 and a Mid-Summer
Interim presentation made at the September 2, 2004 WG2 workshop that included a high level
process evaluation for all DRP programs (including the statewide reliability programs) and the
Demand Response Program Evaluation Final Report for 2004 programs issued in December
2004. These reports are available at: http://www.energy.ca.gov/demandresponse/documents.

11 2004. These reports are available at: <u>http://www.energy.ca.gov/demandresponse/documents</u>.
 12 The Phase I research commenced at the start of 2004 and provided input to the March 31,

13 2004 utility findings. Research activities for this report included interviews with utility program
14 managers and account executives, in-depth interviews with 28 participants and 34 non-

15 participants, review and analysis of customer feedback by utility account representatives,

analysis of utility customer data, and initial results from a quantitative survey of 500 eligible
non-participants.

Overall, it appears that the targeted market is relatively aware of both the CPP and DBP programs, but the level of familiarity is somewhat shallow, with few customers knowledgeable about the details of the programs or the incentives designed to support them. Customers indicated that they know enough about the programs to decide whether or not to participate. So far, much of the market has made a firm decision not to participate – particularly with regard to CPP. Although it is true that adoption takes time and these programs have been actively
 marketed only since late 2003, the results of this research provide evidence that the WG2 DR
 programs -- in their current form and with current market conditions -- may not make as large a
 contribution toward achieving overall DR goals as desired. The market appears to need stronger
 motivation, knowledge, and capability if the DR goals are to be attained.

A market survey of non-participants in the DBP and CPP programs was conducted during 6 7 the second quarter of 2004. The non-participant study provides information that can be used to 8 better understand both barriers and opportunities for demand response. The report notes that the 9 market for the current DR programs is still in an early, developmental stage, and that customers' 10 responses to the questions asked are influenced by a wide variety of factors including their 11 experience with the California electricity crisis, their experience with other related programs (e.g., interruptible programs), and their previous exposure to time-of-use rates. The results of the 12 13 survey have both positive and negative implications with respect to the near-term prospects for 14 increasing participation in the current DBP and CPP programs. The programs are still relatively new and evolving, and it is believed that these results should be used to better understand the 15 16 potential market for DR.

The third report was provided in the form of a presentation at the September 2<sup>nd</sup> 2004
WG2 workshop entitled the "Mid-Summer Interim Presentation". The presentation provided a
CPP/DBP participation update, a summary of CPP/DBP events to date, a description of
evaluation effort underway for the traditional utility interruptible and CPA-DRP, as well as a
non-participant top-line.

A 2004 Demand Response Program Final Report was submitted in December of 2004.
This fourth report included: non-California demand response program reviews, 2004 impact

analysis, results from 2004 post event and end of summer surveys, baseline load shape analysis
 and a summary of the 2004 end-use metering effort. Given the limited number of demand
 response events in 2004, however, the impact evaluation analysis must be considered preliminary
 at best.

5 On January 27, 2005 the CPUC issued D.05-01-056 approving 2005 Demand Response 6 Goals, Programs and Budgets. The decision provided authorization of and funding for 2005 DR 7 programs as well as approving the general scope of the proposed M&E activities. On April 21, 8 2005 the Commission issued D.05-04-053, an opinion addressing the default CPP rates for 9 customers 200 kW and greater. In the Decision, the Commission states that it is "particularly interested in additional work by Working Group 2 on how we can utilize the impact assessment 10 11 information gained from evaluating CPP and demand response programs can be integrated into the Commission's resource planning process.....we are interested in seeing protocols developed, 12 13 based on M&E results, to allow demand response resources to be counted for resource adequacy purposes."<sup>1</sup> The decision also states that the CEC will continue to supervise the WG2 M&E 14 15 activities as originally authorized in D.03-06-032.

Beginning in 2006, SDG&E will have unique reliability tariffs or programs that will
require some degree of measurement and evaluation. To the extent these programs are not
evaluated with the other statewide M&E, SDG&E plans to conduct the research locally and
make the results available to the Working Group.

20C.Pricing Programs (Day Ahead): Recommendations for Future Measurement and<br/>Evaluation of Day Ahead Pricing Demand Response Programs

SDG&E recommends that it continue statewide DR efforts for M&E as approved in the
January 27, 2005 D.05-01-056.

<sup>1</sup> D. 05-04-053 at P. 55.

1	SDG&E proposes to conduct statewide measurement and evaluation on the following	
2	statewide 2006-2008 Day Ahead programs <sup>2</sup> :	
3	Voluntary Critical Peak Pricing	
4	Demand Bidding Program	
5	Demand Reserves Program	
6	Commercial and Industrial Peak Day 20/20 Program	
7	These programs are being evaluated on a statewide basis in 2005. SDG&E proposes that	
8	the joint-utility program evaluation effort for these programs continue in 2006 and include the	
9	following tasks:	
10 11	1) Document program marketing and implementation	
11 12 13	2) Identify and characterize participants vs. non-participants through the use of surveys	
13 14 15	3) Assess the 2006 to 2008 marketing features and overall effectiveness	
16 17 18	4) Derive load impacts over an adequate time frame utilizing individual interval metered load data.	
19 20	5) Apply statistical modeling techniques if appropriate, based on participant population size and characteristics.	
21 22	6) Assess impacts by business segments, end-uses, and technologies to the extent possible	
23 24	The impact evaluation analysis and scope will need to be determined as these programs	
25	develop and mature. The overall evaluation approach will be one that leverages research results	
26	obtained in 2004 and 2005, and focuses on new program features adopted in 2006-2008, thereby	
27	reducing total study costs.	
28		

 $<sup>^{2}</sup>$  SDG&E will address M&E for its proposed default critical peak pricing rates for customer >200 kW in its August 1, 2005 filing.

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1 2	D. <u>Reliability Programs (Day of)</u> : Recommendations for Future Measurement and Evaluation of Day Of Pricing Demand Response Programs
3	SDG&E recommends that it continue statewide DR M&E as approved in D. 05-01-056
4	and D.05-04-053 for the program years 2006-2008 and creating a statewide program evaluation
5	effort. SDG&E proposes to conduct statewide M&E on the following programs:
6	Base Interruptible Program ("BIP")
7	Critical Peak Pricing Emergency ("CPP-E")
8	• Demand Bidding Program Emergency ("DBP-E")
9	Both CPP-E and DBP-E are specific to SDG&E, but they are variations of statewide
10	programs and tariffs. SDG&E proposes that all three of these "day of" programs be included in
11	the statewide evaluation effort through 2008. The M&E of the above programs should include
12	these activities:
13	1) Document program marketing and implementation.
14 15 16	2) Identify and characterize participants vs. non-participants through the use of surveys.
17 18	3) Assess the 2006 to 2008 marketing features and overall effectiveness.
19 20 21	4) Derive load impacts over an adequate time frame utilizing individual interval metered load data.
22 23 24	5) Apply statistical modeling techniques if appropriate, based on participant population size and characteristics.
25 26 27	6) Assess impacts by business segments, end-uses, and technologies to the extent possible.
28	SDG&E proposes that <i>local</i> M&E efforts be conducted for the following program:
29	Smart Thermostat (residential)
30	M&E for Smart Thermostat Program

1 The Smart Thermostat program was established in Decision 01-03-073 and directed 2 SDG&E to implement a pilot program designed to test the viability of a new approach to 3 residential load control and demand responsiveness through the use of Internet technology and 4 thermostats to affect residential air conditioning use. SDG&E proposes to extend the program 5 through 2006 and, therefore, SDG&E proposes to continue the M&E on its Smart Thermostat 6 Program locally. The load impact evaluation will provide estimates of the aggregate demand 7 reduction and energy savings from summer re-sets. Savings estimates will be derived from 12 8 test re-sets of the metered sample. In these 12 cases, half of the meter sample will be curtailed in 9 conjunction with the Statewide Pricing Pilot. 10 Two streams of energy consumption data will be collected at each study participant's 11 premise: 12 1. Whole-premise; and,

13 2. Air conditioning ("AC").

These streams will be monitored on separate meters installed by SDG&E. Both meters
will record energy consumption accumulated over 15-minute intervals. All observations will be
recorded at quarter-hour intervals.

The energy consumption data will be collected from the same random sample of 100 premises of program participants that were selected early in the first year of the program. At that time, premises were limited to those with no more than two thermostats. The sample was divided randomly into two groups of approximately equal numbers of premises. The grouping was intended to allow one-half of the sample to serve as a comparison group for the other, for each re-set event. Thus, for each re-set, one group would be re-set while the other group continued to operate their AC as usual. With multiple re-set events, this would permit each group to be re-set

1	in about half the events and to act as the comparison group for the other group in the other half of
2	the event. This evaluation will be conducted by a third party contractor hired by SDG&E.
3	
4 5	E. <u>Education Awareness and Outreach</u> : Recommendations for Future Measurement and Evaluation of the Education Awareness and Outreach programs.
6	SDG&E proposes to conduct statewide measurement and evaluation on the following
7	Education Awareness and Outreach programs:
8	• Flex Your Power Now! ("FYPN")
9	Community Outreach
10	• Education and Outreach Initiative ("IDSM" and "kWickview")
11	SDG&E specific programs along with Education Awareness and Outreach, the Flex
12	Your Power Now! Campaign, the Community Outreach Programs and each of the utilities
13	web tools have the potential for overlapping educational messaging and the resulting
14	awareness campaigns will likely affect demand reduction behaviors simultaneously. The
15	proposed M&E for these programs would include a combined study that would attempt to
16	attribute the effectiveness of the educational and awareness campaigns for each of the
17	programs. It is assumed that this effort will utilize a baseline survey of customer awareness
18	(already proposed for the Flex Your Power Now Campaign) and take additional
19	measurements as programs are rolled out and at the end of summer. The M&E effort will
20	include process evaluations for each of these programs as well as necessary pre and post
21	event surveys that can assess the awareness / effectiveness of the various educational efforts
22	and message campaigns for these targeted groups of customers. In addition to assessing the
23	event awareness, attitudinal responses toward these various programs can also be assessed.
24	SDG&E proposes that <i>local</i> M&E efforts be conducted for the following programs:

1	Circuit Savers
2	Non-Profit Outreach Program
3	• Peak Student Energy Action Program ("PEAK")
4	M&E for Local Education and Outreach Programs
5	The Circuit Saver, Non-Profit Outreach, and Peak Student Energy Action Programs are
6	local education programs that target specific energy users. SDG&E will conduct process
7	evaluations to assess the effectiveness of the programs including a survey assessment of the
8	communication effort between the utility and the targeted customers. Process Evaluations will
9	be conducted in 2006 and 2008.
10	
11 12	F. <u>Other Programs</u> : Recommendations for Future Measurement and Evaluation of Other DRP Programs and Activities
13	SDG&E recommends conducting statewide process evaluations on the following programs:
14	1. Technical Assistance and Technical Incentives
15	The Technical Assistance and Technology Incentives Program (TA/TI) is available to
16	customers to offer assistance in identifying and installing measures to reduce electric demands.
17	The TA/TI Program offers customers assistance in site assessments to identify their ability to
18	monitor and reduce their electric load in the event of a potential electricity shortage. Participants
19	may receive a free on-site assessment provided by SDG&E, or may utilize their own engineering
20	firm or contractor to perform a site assessment, and may have a portion of the cost of that
21	assessment reimbursed. For 2005, the Technical Assistance and Technical Incentive Program
22	evaluation be included in the statewide analysis and SDG&E recommends that these two
23	programs be included in the statewide analysis through 2008.
24	2. Cost Benefit Framework.

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#### 2. Cost Benefit Framework.

SDG&E proposes to take part in the DR cost benefit framework analysis. This
framework analysis will begin in 2005 and is expected to continue through to 2006. The creation
of the Cost Benefit Framework will include the development of protocols specific to DR as
specified in D.05-04-053 for CPP rates for customers 200 kW and larger.

6

## 3. Annual Summary Reports

In the October 15, 2004 DR filing SDG&E requested funding for a statewide M&E
annual report. This report is to be a separate annual summary evaluation report that will include
the results of both statewide and utility specific research. The joint utilities will sponsor a single
consultant each year to prepare a summary report of both joint and utility specific research. This
report will be prepared by end of the first quarter of the following year. SDG&E will work with
the WG2 facilitator and other interested parties to develop standard reporting requirements.

# 13 II. Recommendations for Program Design and Effectiveness of Communications 14 Research

15 SDG&E proposes to conduct the following research *locally*:

16

• Program design and effectiveness of communications for DR.

17

Customer acceptance and communications testing for Dynamic Pricing

#### 18 A. Demand Response Programs

#### 19 1. Program Design and Effectiveness of Communications

SDG&E proposes to conduct focus groups followed by customer surveys to design DR
programs that will meet widespread customer acceptance, produce maximum electricity savings,
and develop effective communications to promote these programs.

1	Objectives of these focus groups in the first year include the following:
2	1. Solicit customer opinions about how DR programs should be designed
3 4	2. Explore perceived advantages/disadvantages of DR programs and how customer resistance can be overcome.
5	3. Explore anticipated energy conservation behaviors when an "event" is declared.
6 7	4. Gauge customer reactions to various messages designed to communicate DR programs.
8	
9	SDG&E proposes to use ten focus groups of assigned C/I customers, small/medium (non-
10	assigned) commercial customers, and residential customers:
11 12	• Assigned C/I customers: one group of manufacturers and one group of retail/office/hospitality
13 14	• Small/medium commercial customers: two groups of facility managers of medium businesses and two groups of owners/managers of small businesses
15 16	• Residential customers: two groups of residential customers with central air conditioning and two groups without central air conditioning
17	
18	SDG&E proposes to follow these focus groups through the use of customer surveys to
19	verify reactions of small/medium commercial and residential customers in general to the
20	program elements developed from focus groups and to develop effective communications.
21	(Account Executives will obtain feedback from assigned C/I customers.)
22	Objectives of these small/medium commercial and residential customer surveys include
23	the following:
24 25	1. Measure the importance among the general customer base of program elements developed from the focus groups.
26 27	2. Determine customer segments willing/unwilling to participate in DR programs and reasons for their unwillingness to participate.
28	3. Determine anticipated energy conservation behaviors when an "event" is declared.

1 2	4. Determine preferences for how to be informed that an "event" will be declared and the advance notice customers need.
3 4	5. Measure the effectiveness of various messages designed to communicate DR program information.
5	SDG&E proposes to use random samples of 400 small/medium commercial and 400
6	residential customers to give a margin of error of plus or minus five percentage points.
7	2. <b>Program Refinement and Effectiveness of Communications Research</b>
8	In 2007-2008, SDG&E proposes to conduct additional focus groups among
9	small/medium commercial and residential customers to improve Demand Response programs
10	based on customer feedback and to assure the effectiveness of communications to promote these
11	programs.
12	Objectives of the 2007-2008 focus groups include the following:
13 14	1. Obtain feedback from program participants about how the programs have worked and how they could be improved.
15 16	2. Explore barriers to participating among non-participants and how these barriers can be overcome.
17 18	3. Explore perceived effectiveness of demand reduction activities to conserve energy when an "event" is declared and what would motivate them to do more.
19 20	4. Explore awareness and effectiveness of past communications and to gauge customer reactions to upcoming messages about DR programs.
21	
22	SDG&E proposes to conduct eight focus groups of small/medium (non-assigned)
23	commercial and residential customers in each of the second and third years. (Feedback from
24	assigned C/I customers will be obtained through Account Executives.)
25 26 27	• Small/medium commercial customers: two groups of small/medium businesses currently participating in DR programs and two groups of small/medium businesses that have not participated (each year)
28 29	• Residential customers: two groups of residential customers participating in DR programs and two groups of customers that have not participated (each year)

1	B. Dynamic Pricing
2	1. Customer Feedback and Effectiveness of Communications Research
3	SDG&E proposes to conduct focus groups followed by customer surveys to gauge
4	customer reactions to dynamic pricing and to develop effective communications about this rate
5	structure.
6	Objectives of these focus groups in 2006 include the following:
7 8 9	• Explore small/medium (non-assigned) commercial and residential customers' understanding of dynamic pricing and whether they think they would benefit from such pricing.
10 11	• Explore perceived advantages/disadvantages of dynamic pricing and how customer resistance can be overcome.
12 13	<ul> <li>Explore energy conservation behaviors customers would use to take advantage of dynamic prices.</li> </ul>
14	• Gauge customer reactions to various messages about dynamic pricing.
15	SDG&E proposes to conduct eight focus groups of small/medium (non-assigned)
16	commercial and residential customers:
17 18	• Small/medium commercial customers: two groups of manufacturers/biotech companies and two groups of retail/office/hospitality businesses
19 20	• Residential customers: two groups of residential customers with central air conditioning and two groups without central air conditioning
21	SDG&E proposes to follow these focus groups by customer surveys to quantify
22	acceptance of dynamic pricing and test communications among small/medium commercial and
23	residential customers in general.
24	Objectives of these small/medium commercial and residential customer surveys include
25	the following:
26 27	1. Verify the perceived advantages/disadvantages of dynamic pricing among the general customer base of small/medium commercial and residential customers.

1	2. Segment these markets according to acceptance of dynamic pricing.
2 3	3. Determine anticipated energy conservation behaviors to take advantage of dynamic pricing.
4 5	4. Determine preferences for being informed that critical peak prices will be in effect and the advance notice customers need.
6 7 8	5. Measure the effectiveness of various messages designed to communicate dynamic prices.
9	SDG&E proposes to survey random samples of 400 small/medium commercial and 400
10	residential customers.
11	2. <b>Program Modification and Effectiveness of Communications Research</b>
12	In 2007-2008, SDG&E proposes additional focus groups to improve dynamic pricing
13	programs based on customer feedback and to assure the effectiveness of communications to
14	promote these programs.
15	Objectives of these focus groups in 2007-2008 include the following:
16 17	1. Obtain customer feedback about dynamic pricing, how dynamic pricing could be improved, and perceived savings from the pricing.
18 19	2. Explore perceived effectiveness of actions to conserve energy during peak prices and what did/did not reduce electricity bills.
20 21 22	3. Explore awareness and effectiveness of past communications and gauge customer reactions to upcoming messages about dynamic pricing.
23	SDG&E proposes to conduct eight focus groups of small/medium (non-assigned)
24	commercial and residential customers in each of the second and third years:
25 26	• Small/medium commercial customers: two groups of manufacturers/biotech companies and two groups of retail/office/hospitality businesses (each year)
27 28	• Residential customers: two groups of residential customers with central air conditioning and two groups without central air conditioning (each year)

## 2 III. <u>Measurement and Evaluation Budget</u>

Starting with 2006, each utility will likely have unique tariffs or programs that will
require some degree of measurement and evaluation. Each utility will conduct that research and
make the results available to the Working Group.

SDG&E proposes a budget for M&E that is inclusive of the M&E for all of the proposed
programs and activities included in this response the Cost Benefit framework, the annual M&E
reporting as well as SDG&E labor that is necessary to conduct the M&E for all of the programs
going forward.

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SDG&E Measurement & Evaluation Activities	2006	2007	2008
Day Ahead Tariffs and Programs			
Voluntary Critical Peak Pricing	\$82,158	\$82,987	\$83,808
Demand Bidding Program	\$82,158	\$82,987	\$83,808
Demand Reserves Program	\$63,019	\$0	\$0
C&I 20/20 Program	\$82,158	\$82,987	\$83,808
Day Of Tariffs and Programs			
Base Interruptible Program	\$50,648	\$51,312	\$51,968
Critical Peak Pricing Emergency	\$50,648	\$51,312	\$51,968
Demand Bidding Program Emergency	\$50,648	\$51,312	\$51,968
Smart Thermostat (Residential)	\$176,687	\$0	\$0
Education Awareness and Outreach	•	A	
Flex Your Power Now!	\$82,158	\$82,987	\$83,808
Community Outreach	\$44,269	\$44,766	\$45,259
Education and Outreach (IDSM and kWickview)	\$164,316	\$165,975	\$167,615
Circuit Savers, Non-Profit Outreach and PEAK	\$44,269	\$44,766	\$45,259

Other Programs			
Technical Assistance and Technical Incentives	\$82,158	\$82,987	\$83,808
Cost Benefit Framework Development	\$82,158	\$82,987	\$83,808
M&E Annual Summary Report	\$27,837	\$28,169	\$28,497
Program Design and Effectiveness of	\$163,848	\$88,458	88,458
Communications Research			
Total	\$1,329,138	\$1,023,994	\$1,033,837

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This concludes my prepared direct testimony.

## QUALIFICATIONS

My name is Leslie Willoughby. My business address is 8306 Century Park Court, San
Diego, California 92123. I am employed by San Diego Gas & Electric Company ("SDG&E") as
a Load Analysis Manager in the Regulatory Strategy Department. In my current position, I am
responsible for managing and conducting load and energy research analysis.

I attended San Diego State University in San Diego, CA, where I graduated with a
Bachelor of Science in Business Administration in 1983. I continued to attend San Diego State
University where I graduated with an MA in Economics in 1989. In 1990, I was employed by
SDG&E to work in the Load Research Section of the Marketing Department as an Associate
Economic Analyst. Over the past 14 years I have held positions of increasing responsibility
within the company that have included Load and Energy Research.

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I have previously testified before the Commission.