

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

Application of San Diego Gas & Electric
Company (U 902 E) for Authority to Update Electric
Rate Design Regarding Residential Default Time-
Of-Use Rates and Fixed Charges

Application 17-12-_____

**PREPARED DIRECT TESTIMONY OF
LESLIE WILLOUGHBY
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY**

CHAPTER 4

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

December 20, 2017



TABLE OF CONTENTS

I.	OVERVIEW AND PURPOSE	1
A.	Background Information.....	1
II.	SDG&E’S OPT-IN TOU PILOT	3
A.	SDG&E Opt-In TOU Pilot Rates.....	3
B.	Opt-In TOU Pilot Load Impacts	5
1.	Opt-In TOU Pilot First Interim Report Results	5
2.	Opt-In TOU Pilot Second Interim Report Results	7
C.	SDG&E’s Rate TOU-DR-E3 (Rate 3).....	9
D.	Bill Impacts.....	10
E.	Customer Attrition	11
III.	SMUD STUDY.....	12
IV.	SMUD OPT-IN VERSUS DEFAULT TOU PILOT LOAD IMPACTS	14
V.	SDG&E MASS TOU DEFAULT LOAD IMPACT ESTIMATES	14
VI.	SUMMARY AND CONCLUSION	15
VII.	STATEMENT OF QUALIFICATIONS	17
	ATTACHMENT A	
	ATTACHMENT B	
	ATTACHMENT C	

1 in support of and consistent with the CPUC's 10 guiding residential rate design principles.
2 SDG&E proposed that it conduct an Opt-In TOU Pilot² and eventually a Default TOU Pilot³ that
3 would test new TOU rate designs that included an on-peak period that was later in the
4 afternoon/evening.

5 In D.15-07-001, the Commission directed the IOUs to conduct an Opt-In TOU Pilot and a
6 Default TOU Pilot prior to rolling out TOU to all residential customers.⁴ All three IOUs along
7 with the Energy Division, external stakeholders, and Nexant Consulting began planning the
8 residential Opt-In TOU Pilot in the summer and fall of 2015.

9 The residential Opt-In TOU Pilot began in the summer of 2016 and has had two interim
10 reports issued. The first interim report covered most of the summer months in 2016⁵ and the
11 second interim report covered the first year (Jul. 2016 – Jun. 2017) of the pilot. The third and
12 final report scheduled to be completed March 31, 2018 will provide results for the 2nd summer of
13 the Opt-In TOU Pilot.

14 Additionally, D.15-07-001 directed SDG&E to include supporting documentation
15 regarding its Default TOU Pilot rate that includes, at a minimum, load response studies.⁶ For
16 this reason, SDG&E is including both Opt-In TOU Pilot interim reports in Attachments A and B
17 to this testimony. A brief overview of the Opt-In TOU Pilot results, descriptions and load impact

² R.12-06-013, Prepared Direct Testimony of Leslie Willoughby - Chapter 3 at LW-1, lines 16-18.

³ R.12-06-013, Prepared Rebuttal Testimony of Leslie Willoughby - Chapter 5 at LW-4, lines 4-16.

⁴ D.15-07-001 required the IOUs to file Tier 3 advice letters that provide process design, and authorization to track pilot costs along with cost recovery for both the Opt-In TOU and Default TOU Pilots. D.15-07-001 at 166-170.

⁵ The initial rollout for SDG&E started at the end of June and most of the customers were enrolled during July.

⁶ D.15-07-001 at 301-302.

1 results from SDG&E’s three experimental TOU rates are provided, as well as the initial bill
2 impact results from the first year of the Opt-In TOU Pilot.

3 Also included is an overview of the Sacramento Municipal Utility District study.⁷
4 SMUD conducted both an Opt-In TOU and Default TOU study in 2012-2103 that contains
5 information about load impacts relevant to SDG&E’s Mass TOU Default and is included in
6 Attachment C.

7 On May 25, 2017, the CPUC adopted SDG&E’s Default TOU Pilot plan in Resolution E-
8 4848. Additionally, the resolution states that SDG&E must provide load and bill impacts from
9 the first summer of the Default TOU Pilot in the fall of 2018 and its final Default TOU Pilot load
10 and bill impacts in its November 1, 2019 Progress on Residential Rate Reform (“PRRR”) report.⁸
11 This testimony will discuss similarities and differences between these studies and SDG&E’s
12 Mass TOU Default. The expected load impacts from SDG&E’s proposed Mass TOU Default are
13 utilized by Witness Benjamin Montoya for satisfying the requirement of calculating cost savings
14 due to GHG reductions.⁹

15 **II. SDG&E’S OPT-IN TOU PILOT**

16 **A. SDG&E Opt-In TOU Pilot Rates**

17 The two TOU rates that SDG&E tested had the same on-peak periods which were from
18 4pm-9pm daily. SDG&E’s TOU-DR-E1 rate (known as “Rate 1”) was a three-part TOU rate
19 that had an on-peak, off-peak period and a super off-peak period, while TOU-DR-E2 (known as
20 “Rate 2”) was a two-part time of use rate with an on-peak and off-peak period. Both TOU rates
21 had seasonal differences as well as moderate price signals that were an approximately 2 to 1 ratio

⁷ Potter et. al., SmartPricing Options Final Evaluation (Sept. 5, 2014).

⁸ Resolution E-4848 at 29, OP 7.

⁹ D.15-07-001 at 301.

1 of on-peak to super off-peak during the summer. Table LW-1, below, shows the periods for both
 2 experimental TOU rates.

Table LW-1 TOU Rate Periods for the Opt-In TOU pilot

RATE 1	Weekdays	Weekends & Holidays
Summer		
On-Peak	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.
Off-Peak	6 a.m. - 4 p.m.	2 p.m. - 4 p.m.
	9 p.m. - 12 a.m.	9 p.m. - 12 a.m.
Super Off-Peak	12 a.m. - 6 a.m.	12 a.m. - 2 p.m.
Winter		
On-Peak	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.
Off-Peak	12 a.m. - 4 p.m.	2 p.m. - 4 p.m.
	9 p.m. - 12 a.m.	9 p.m. - 12 a.m.
Super Off-Peak	12 a.m. - 6 a.m.	12 a.m. - 2 p.m.
RATE 2	Weekdays	Weekends & Holidays
Summer		
On-Peak	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.
Off-Peak	12 a.m. - 4 p.m.	12 a.m. - 4 p.m.
	9 p.m. - 12 a.m.	9 p.m. - 12 a.m.
Winter		
On-Peak	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.
Off-Peak	12 a.m. - 4 p.m.	12 a.m. - 4 p.m.
	9 p.m. - 12 a.m.	9 p.m. - 12 a.m.

3
 4 Certain customers were excluded from participating in the Opt-In TOU Pilot, including,
 5 but not limited to, the following major categories: medical baseline; customers that cannot be
 6 disconnected from service without an in-person visit from a utility representative or requesting a
 7 3rd party notification; Net Energy Metered (“NEM”) customers¹⁰ that do not have a true-up in
 8 March; customers with less than 12 months of interval data; customers already on a TOU rate
 9 (such as customers on the Opt-In TOU Pilot study); and Direct Access customers. While the

¹⁰ For a full list of Default TOU Pilot exclusions see Direct Testimony of SDG&E witness Chris Bender.

1 Default TOU Pilot will allow some NEM customers,¹¹ as well as group bill customers, customers
2 on medical baseline will still be excluded.

3 SDG&E recruited approximated 15,804 customers into its Opt-In TOU Pilot. The overall
4 opt-in rate was about 7%, which was within the range that SDG&E expected, but significantly
5 less than the 16% that SMUD observed.¹² Customers that agreed to be in the pilot were
6 randomly assigned to one of two experimental TOU rates or a control group. Customers were
7 also segmented by climate zone (Cool, Moderate or Hot¹³), CARE and Non-CARE.¹⁴ For
8 discussion purposes in my testimony I will refer to SDG&E's Opt-In TOU Pilot rates as they are
9 discussed and presented in the two interim pilot reports as SDG&E's "Rate 1" and "Rate 2."

10 **B. Opt-In TOU Pilot Load Impacts**

11 **1. Opt-In TOU Pilot First Interim Report Results**

12 Table LW-2, below, shows results from the California Statewide Opt-In TOU Pricing
13 Pilot's Interim Evaluation ("Opt-In TOU Pilot First Interim Report").¹⁵ All climate regions
14 showed that there were significant load reductions for the average weekday during the on-peak
15 period. However, SDG&E's Weekly Alert Emails ("WAEs") did not provide any statistically
16 significant load reductions for the first summer.¹⁶ The first part of Table LW-2 shows the overall
17 load impact results by rate for all climate zones. The second part (middle table) shows the load

¹¹ NEM customers with an annual bill true-up in March will be allowed in the Default TOU Pilot.

¹² Attachment C, hereto: SMUD SmartPricing Options Pilot Evaluation: Submitted to SMUD at 1-2, Nexant (Aug. 6, 2014).

¹³ For purposes of the pilot, SDG&E's coastal climate zone is the Cool zone, its inland zone is the Moderate zone and the mountain and desert zones are the Hot zone.

¹⁴ Although the CARE and non-CARE groups also include FERA, the terminology "CARE" and "non-CARE" will be used hereafter for simplicity.

¹⁵ California Statewide Opt-In Time-of-Use Pricing Pilot: Interim Evaluation, Nexant and Research into Action (April 11, 2017).

¹⁶ Opt-In TOU Pilot First Interim Report at 5.

1 impacts by climate zones. The third table provides more detail by showing the load impact
2 results by climate zones and by CARE and non-CARE customer segments separately. From the
3 first table, both Rate 1 and Rate 2 experienced similar absolute load impacts of 0.04 kw. Rate 1,
4 however, showed slightly higher load impacts in percentage terms than Rate 2 (5.4 % vs 4.6%,
5 respectively). On average CARE customers had lower load impacts than non-CARE
6 customers.¹⁷ Additionally, customers in the Cool region saw lower peak period load reductions
7 than customers in the Moderate region. SDG&E's Hot zone showed the highest peak load
8 reductions at 6.8%, whereas CARE customers in the Cool zone on Rate 1 showed the lowest
9 peak load reductions during the 2016 summer at around 2%. Cool CARE customers on Rate 2
10 also showed lower peak period percentage impacts compared to their equivalents in the
11 Moderate region (2.6% vs 5.3%, respectively). Moreover, both TOU Rate's non-CARE
12 customers in the Cool region had lower percentage impacts and absolute impacts in comparison
13 to their Moderate counterparts.¹⁸

¹⁷ Opt-In TOU Pilot First Interim Report at 5.

¹⁸ Opt-In TOU Pilot First Interim Report at 392-396.

Table LW-2
Opt-In TOU Pilot First Summer Results for the average weekday
On-Peak Period (4pm-9pm)

Opt-In Pilot First Interim Report Results
 June 2016-October 2016

	All CZ	
AvgWkdyPkPer	%Impact	AbsImpct (kw)
Rate1	5.40	0.04
Rate2	4.60	0.04

	Cool		Moderate		Hot	
AvgWkdyPkPer	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)
Rate1	4.70	0.03	6.10	0.06		
Rate2	4.10	0.03	5.10	0.05	6.80	0.08

	Cool				Moderate			
	CARE		non-CARE		CARE		non-CARE	
AvgWkdyPkPer	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)
Rate1	1.70	0.01	5.20	0.04	5.20	0.04	6.30	0.06
Rate2	2.60	0.02	4.30	0.03	5.30	0.04	5.10	0.05
Rate2-WAE**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

*Gray area not statistically significant

**WAE-Incremental Impacts

2. Opt-In TOU Pilot Second Interim Report Results

The Opt-In TOU Pilot Second Interim Report¹⁹ (“Opt-In TOU Pilot Second Interim Report”) analyzed a full 12 months of data from customers in the Opt-In TOU Pilot. Results show that although load impacts are small during the winter months for both Rate 1 and Rate 2, the load impacts are statistically significant,²⁰ albeit smaller than in the summer months. Echoing results from the first interim report, the top part of Table LW-3 indicates that Rate 1 experienced higher load impacts in both percentage and absolute terms than Rate 2. In contrast to the Opt-In TOU Pilot First Interim Report, where the Cool region had smaller load impacts than compared to the Moderate region, as shown in the middle part of Table LW-3 customers in the Cool region were able to reduce their peak period load slightly more than their counterparts

¹⁹ Attachment B, hereto: California Opt-In Time Of Use Pricing Pilot, Second Interim Evaluation, Nexant Inc and Research Into Action (Nov. 1, 2017).

²⁰ Opt-In TOU Pilot Second Interim Report at 3.

1 in the Moderate region²¹ (for Rate 1: 2.4% vs 2.2% and for Rate 2: 1.7% vs 1.6%, respectively).

2 Customers in the Hot region still had the largest peak period load reduction at almost 4%.²²

3 For the bottom portion of Table LW-3, below, it is interesting to note that when
 4 comparing the non-CARE and CARE separately, for example, the results for the CARE groups
 5 in the Cool and Moderate zone are almost trivial and not statistically significant at any level (see
 6 grayed area), whereas for the non-CARE groups the percentage load impacts are more than six
 7 times for those on Rate 1 (Cool CARE vs non-CARE: -0.3% vs 2.9% and Moderate CARE vs
 8 non-CARE: 0.4% vs 2.6%). These results indicate fundamental differences between CARE and
 9 non-CARE customer load impacts.

10 Table LW-3
 11 Opt-In TOU Pilot Second Interim Report Winter Results for the
 12 On-Peak Period (4pm-9pm)

Opt-In Pilot Second Interim Report Results
 Nov 2016-April 2017

	All CZ	
AvgWkdyPkPer	%Impact	AbsImpct (kw)
Rate1	2.30	0.02
Rate2	1.70	0.01

	Cool		Moderate		Hot	
AvgWkdyPkPer	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)
Rate1	2.40	0.02	2.20	0.02		
Rate2	1.70	0.01	1.60	0.01	3.90	0.04

	Cool				Moderate			
	CARE		non-CARE		CARE		non-CARE	
AvgWkdyPkPer	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)	%Impact	AbsImpct (kw)	%Impact	npct (kw)
Rate1	-0.30	0.00	2.90	0.02	0.40	0.00	2.60	0.02
Rate2	0.50	0.00	1.90	0.01	1.30	0.01	1.70	0.01
Rate2-WAE**	<0.00	<0.00	<0.00	<0.00	0.01	0.01	0.01	0.01

*Gray area not statistically significant

**WAE-Incremental Impacts

²¹ The percentage impacts are different, but the absolute load impacts are nearly the same.

²² Opt-In TOU Pilot Second Interim Report at 187.

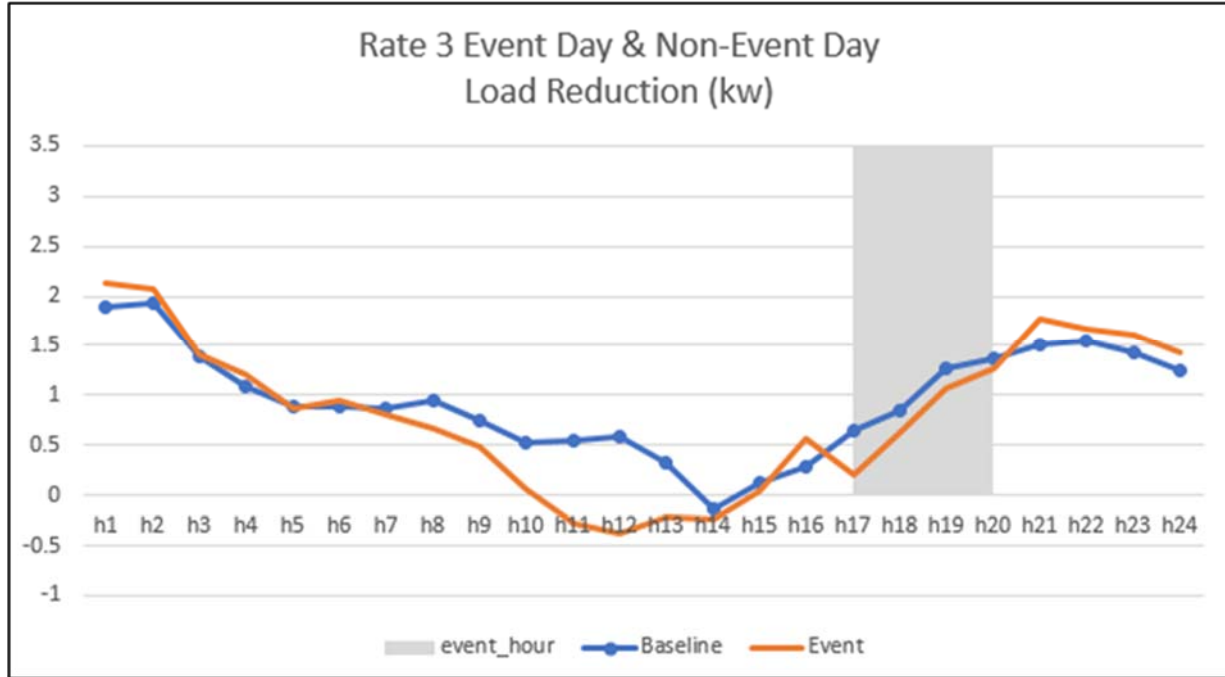
1 **C. SDG&E’s Rate TOU-DR-E3 (Rate 3)**

2 SDG&E’s TOU-DR-E3 (Rate 3) marketed as “Whenergy HourlyX” is an experimental
3 hourly dynamic rate, available as the third rate in SDG&E’s Opt-In TOU Pilot. SDG&E’s goal
4 was to enroll 50-200 customers, including customers that had solar and electric vehicles.
5 SDG&E enrolled approximately 65 customers with most of those being SDG&E employees.
6 There are four main components to this rate: 1) a fixed monthly charge, 2) a two-period base
7 rate, 3) an hourly commodity rate based on California Independent System Operator (“CAISO”)
8 day-ahead hourly prices, and 4) a dynamic hourly adder when forecasted load exceeds trigger
9 values. This experimental schedule will remain effective until December 31, 2017 or until the
10 completion of the pilot study. Due to the complexity of the rate, it was decided by the TOU
11 working group that this rate would be primarily a demonstration rate or proof of concept rate.
12 SDG&E planned to have limited enrollment (under 200 customers) on Rate 3 and there was no
13 formal Measurement and Evaluation planned.

14 Initial analysis comparing pre- and post-event results indicated load reduction at the
15 aggregate level (in total there are about 65 customers on Rate 3). However, individual load
16 shapes appeared to be noisy and difficult to infer results from. As an example, load curves of
17 several SDG&E employees who are participating on the rate showed that they were more likely
18 to shift their electricity usage during the event window rather than reducing usage. Chart LW-1
19 provides an illustrative example of one of the system event days for SDG&E’s “Rate 3”
20 customers. This graphic shows a system wide event on June 17th where the plain solid line
21 shows reductions at the beginning of the event, and slight deterioration of the load impact near
22 the end of the event. There is a slight snap back after the event as customers likely returned to
23 using their air conditioning and other high intensity end uses.

1

Chart LW-1



2

3 **D. Bill Impacts**

4 Bill impacts for SDG&E’s Opt-In TOU Pilot were generally small, and the first interim
5 evaluation which covered the summer months of July-October in 2016 showed relatively low
6 impacts, with the majority of customers falling into the neutral category. Neutral impacts were
7 defined as +/- \$3. The Opt-In TOU Pilot’s second interim report’s bill impacts covered the
8 winter months of the first year and were generally less than 1% in either direction for the CARE
9 customers, and less than 2.6% for the non-CARE customers for both Rate 1 and 2, respectively.²³

10 Table LW-4 above, shows the largest decrease as \$28 for non-CARE customers in the
11 Cool climate region on Rate 2, and the largest annual bill increase was \$20 for the general
12 population on Rate 2 in the Hot climate region.²⁴ Table LW-4, below, shows CARE and non-
13 CARE customers on either rate experienced a decrease in their bill when both structural and

²³ Opt-In TOU Pilot Second Interim Report at 5.

²⁴ *Id.* at 5.

behavioral impacts are considered, with the exception of CARE customers in the Cool region on Rate 1. Overall, customers on Rate 2, which is the two-period rate, saw higher percentage bill impacts as compared to customers on Rate 1; however the difference is less than half of a percent.

Table LW-4
Annual Bill Impacts from the Opt-In TOU Pilot Second Interim Report

AnnBillImpct(\$)*	Rate 1			
	Cool		Moderate	
	CARE	non-CARE	CARE	non-CARE
OAT	473	1055	622	1253
TOU w/no chg in Behv	470	1053	624	1265
TOU w/chg in Behv	475	1031	621	1239
Structual Impct	-3	-2	2	12
Total Bill Impct (Struc + Behv)	2	-24	-1	-14
%Impact	0.4%	-2.3%	-0.2%	-1.1%

AnnBillImpct(\$)	Rate 2				
	Cool		Moderate		Hot
	CARE	non-CARE	CARE	non-CARE	
OAT	492	1071	648	1285	1433
TOU w/no chg in Behv	491	1065	652	1291	1449
TOU w/chg in Behv	488	1043	635	1284	1453
Structual Impct	-1	-6	4	6	16
Total Bill Impct (Struc + Behv)	-4	-28	-13	-1	20
%Impact	-0.8%	-2.6%	-2.0%	-0.1%	1.4%

*Bill Impacts are based on the 1st yr of study: Jul. 2016 - Jun. 2017 (neg. indicate a bill decrease)
OAT: Otherwise Applicable Tariff, the rate a customer would be on if they weren't enrolled on the TOU rate such as DR/DRLI
TOU: Time-of-Use rate

E. Customer Attrition

Over the first summer of the pilot, a total of 1,178 customers (approximately 7.5%) left the pilot due to ineligibility or actively dropped out (1.6% opted out and 5.9% became ineligible). Customers opting out did not statistically differ between the two rates.²⁵ SDG&E

²⁵ Opt-In TOU Pilot First Interim Report at 342.

1 continues to see low opt-out rates, as they ranged from 1% - 3.5% after 12 months. The Cool
2 climate zone experienced the lowest opt-out rate at 2%.²⁶

3 As of October 2017, SDG&E's total attrition for the Opt-In TOU Pilot has been
4 approximately 27%²⁷ and within SDG&E's expectations. Prior to the Opt-In TOU Pilot,
5 SDG&E conducted an analysis of customer churn and found that, on average, customers change
6 addresses and move in and out of the service territory at about a rate of 25% annually. SDG&E
7 planned for a 25% total attrition rate and factored in its customer churn rate into its recruitment
8 targets for the Opt-In TOU Pilot.

9 **III. SMUD STUDY**

10 SMUD's Smart Pricing Options ("SPO") pilot was approved in August 2011. One of the
11 key differences between SMUD's SPO and SDG&E's Opt-In TOU Pilot is that the SPO pricing
12 plan is only applicable during the summer months between June to September. The on-peak
13 hours were 4pm to 7pm. By comparison, the rates offered under SDG&E's Opt-In TOU Pilot
14 are applicable year-round (with both summer and winter differentials) starting from June 2016 to
15 December 2017 and the on-peak period is longer going from 4pm to 9pm. The SPO pilot is also
16 more complex because it offered three rate options:

- 17 1) Time-of-Use (TOU)
- 18 2) Critical Peak Pricing (CPP)
- 19 3) A TOU-CPP combination

20 In addition, there are two recruitment strategies (Opt-In and Default) and one technology
21 offer of an In-Home Display ("IHD"). The three time-varying pricing plans mentioned above
22 were in effect from the beginning of June to September 2012 and 2013. Table LW-5, below,

²⁶ Opt-In TOU Pilot Second Interim Report at 174.

²⁷ SDG&E's internal weekly tracking report for October 30th, 2017.

1 shows the overall summer weekday average peak period load impacts for the Opt-In and Default
 2 TOU groups. At first glance, these results might indicate that the load impacts for the Opt-In
 3 treatment with IHD offer are larger than for the Opt-In treatment without IHD (absolute impact
 4 0.16 vs 0.21, respectively). However, after correcting for pre-treatment differences across the
 5 various groups, the load impact differences are not statistically significant. Therefore, as
 6 SMUD’s final evaluation indicated there is no evidence that the IHD significantly increased load
 7 impacts associated with the three rate options. Further, the final evaluation suggested that
 8 absolute load impacts increased by as much as a factor of 10 across customers segmented into
 9 quartiles, suggesting that any Opt-In program will likely be more cost-effective if marketing
 10 resources primarily focus on high-usage customers.²⁸

11 Table LW-5
 12 SMUD Load Impacts²⁹

13 Average Hourly Impacts for Opt-in TOU and Default TOU Groups

TrtPlan	Abs. Impact	SE	95% CI_Lower	95% CI_Upper	%Impact
Opt-in TOU w/o IHD	0.16	0.02	0.12	0.21	9.4%
Opt-in TOU w/IHD	0.21	0.02	0.18	0.25	11.9%
Default TOU w/IHD	0.11	0.01	0.08	0.14	5.8%
Default TOU & CPP w/IHD	0.17	0.03	0.11	0.22	8.7%

16 *IHD - in home display (technology offer)

17 The SMUD study has been recognized as one of the best studies in recent times due to its
 18 careful planning and experimental design. SMUD, as its name indicates, is a municipal utility
 19 with customers in Sacramento California. The typical customer in SMUD’s service territory
 20 experiences warmer summer weather conditions and uses more energy than SDG&E’s customers
 21 do. The SMUD study results show higher load impacts on average than what has been seen in
 22 SDG&E’s Opt-In TOU Pilot results. This result is not surprising, since SDG&E’s service
 23 territory experiences milder weather and San Diego customers have a lower saturation of central

²⁸ SMUD SmartPricing Options Pilot Evaluation: Submitted to SMUD at 4, Nexant (Aug. 6, 2014).

²⁹ *Id.* at 4.

1 air-conditioning. It is also expected that SDG&E’s Default TOU study load impact results will
2 be lower than or similar to its Opt-In TOU Pilot study results which are generally lower than the
3 SMUD results presented in table LW-5 above.

4 **IV. SMUD OPT-IN VERSUS DEFAULT TOU PILOT LOAD IMPACTS**

5 The CPUC stated that the SMUD pilot represented “the most significant and relevant
6 experience with TOU pilot design,” and encouraged the IOUs to engage with SMUD to ensure
7 their key lessons learned could be applied by the IOUs.³⁰ The California IOUs have
8 incorporated, where feasible, the experimental design that was employed in the SMUD pilot in
9 an effort to compare the Opt-In and Default TOU Pilot results. The SMUD study found that
10 while only 16% of its customers opted into TOU rates, nearly 94% of its customers stayed on
11 TOU rates when they were defaulted into TOU.³¹ The SMUD study also showed the average
12 opt-in TOU load impacts to be significantly higher than the average defaulted TOU customer
13 load impacts. However, compared to the relatively small percentage of customers that opted-in
14 and the very large percentage of customers that remained on default TOU, the default TOU load
15 impacts are estimated to be significantly higher in aggregate Mega Watt Hours (“MWH”) load
16 impacts.³²

17 **V. SDG&E MASS TOU DEFAULT LOAD IMPACT ESTIMATES**

18 SDG&E recently completed an ex ante load impact analysis that provides hourly
19 estimates for the average residential customer on the “TOU-DR1” rate for SDG&E’s Mass TOU
20 Default. These forecasted load impact results for 2020 are utilized in the GHG cost saving’s
21 calculation provided in the Direct Testimony of Ben Montoya.

³⁰ D.15-07-001 at 93.

³¹ SMUD SmartPricing Options Pilot Evaluation: Submitted to SMUD at 3, Nexant (Aug. 6, 2014).

³² *Id.* at 4. Nexant noted that there was approximately three times the MWHs when estimating the full population effect of opt-in versus default TOU.

1 The general methodology developed by SDG&E’s consultant utilizes a random sample of
2 approximately 14,000 SDG&E residential customers in the calculation of reference loads.
3 Regression models analyzed historical data in explaining the relationship between customer
4 usage, weather,³³ and other regular usage patterns to simulate reference loads. Percentage load
5 impacts were simulated by TOU pricing period and day type using the simulated reference loads,
6 expected TOU prices, and assumed elasticity values (derived from the statewide SPP study).
7 The percentage load impacts were then applied to the simulated reference loads to calculate the
8 average customer load impacts.

9 SDG&E believes that its Mass Default TOU will produce much larger load reductions in
10 aggregate than the Opt-in TOU Pilot, which is similar to SMUD’s Study results. The simulated
11 results for SDG&E’s Mass TOU Default estimated that approximately 180 MWHs of load would
12 be reduced during the on-peak period for a 1 in 2 weather scenario on a typical August weekday,
13 whereas the first interim results from the Opt-In TOU Pilot yielded about 14 MWHs.³⁴

14 **VI. SUMMARY AND CONCLUSION**

15 The intent of this testimony is to provide a summary of the load impacts and bill impacts
16 from SDG&E’s Opt-In TOU Pilot. The Opt-In TOU Pilot began in June 2016 and thus far has
17 produced two interim reports. As my testimony shows, both the absolute load impact (kw) from
18 the two interim analyses are small but significant and no specific climate zones (Cool, Moderate
19 or Hot) or customer segments (CARE or non-CARE) were above 0.08 kW. The percentage
20 impact from the two reports ranges from about zero to about 6%. Furthermore, the bill impacts
21 from the 1st year of the study (July 2016 – June 2017) also showed small percentage impacts,

³³ SDG&E assumed a 1 in 2 weather year for this analysis.

³⁴ For illustrative purposes 1,000,000 customers were used for the Default TOU versus 70,000 for the Opt-In TOU. The Opt-In TOU load reduction is based on a summer weekday and the Default TOU load reduction is based on an August Weekday.

1 indicating that on the whole customers in the Opt-In TOU Pilot did not see a significant increase
2 in their bill by simply being on a TOU rate. Some customer segments even saw their total bill
3 amount decrease after behavioral modification.³⁵

4 After carefully analyzing the information present from SDG&E's Opt-In TOU Pilot and
5 the SMUD's study, a full Mass TOU Default in 2019 to 1.3 million residential customers in San
6 Diego county could potentially yield significant reductions in peak period demand, but is not
7 expected to result in tangible bill impacts for most of SDG&E's customers. Lastly, in support of
8 the GHG cost savings calculation requirement, an hourly ex ante load impact analysis was
9 conducted and the resulting load impacts were utilized for 2020.

10 This concludes my prepared direct testimony.

³⁵ Opt-In TOU Pilot Second Interim Report at 205.

1 **VII. STATEMENT OF QUALIFICATIONS**

2 My name is Leslie Willoughby. My business address is 8306 Century Park Court, San
3 Diego, California 92123. I am employed by SDG&E as Electric Load Analysis Manager in the
4 Customer Pricing Department. In my current position, I am responsible for managing and
5 conducting load and energy research analysis.

6 I attended San Diego State University in San Diego, CA, where I graduated with a
7 Bachelor of Science in Business Administration in 1983. I continued to attend San Diego State
8 University where I graduated with an MA in Economics in 1989. In 1990, I was employed by
9 SDG&E to work in the Load Research Section of the Marketing Department as an Associate
10 Economic Analyst. Over the past 25 years I have held positions of increasing responsibility
11 within the company that have included Load and Energy Research.

12 I have previously testified before the Commission.