

In the Matter of the Application of San Diego Gas & Electric Company (U 902 E) for Approval of its Proposals for Dynamic Pricing and Recovery of Incremental Expenditures Required for Implementation.

Application 10-07-009
(Filed July 6, 2010)

Application of San Diego Gas & Electric Company (U 902 E) for Authority to Update Marginal Costs, Cost Allocation, and Electric Rate Design

Application 19-03-002
(Filed March 4, 2019)

Application: 10-07-009/A.19-03-002
Exhibit No.: _____

**PREPARED SUPPLEMENTAL TESTIMONY
OF WILLIAM G. SAXE**

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

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

AUGUST 30, 2019



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1 **III. SDG&E’S RESPONSES TO QUESTIONS IN JULY 26, 2019 RULING**

2 Witness Saxe is responding to the following request for information from the July 26, 2019

3 Ruling:

- 4 **5.** Describe and provide an illustrative example of how lower operations and
5 maintenance costs of each technology will be reflected in the rates of converted
6 lamps.

7 The Schedule LS-1 (“LS-1”) distribution rates identified in Attachment A reflect the lower
8 Operations and Maintenance (“O&M”) costs reflected in the workpaper of SDG&E witness Ms.
9 Magallanes of \$16.98 annually per LS-1 Light Emitting Diode (“LED”) light. These O&M costs
10 represent a 21% reduction from the \$21.43 annual O&M cost per LS-1 non-LED light that was
11 identified in the direct testimony workpaper of Mr. Saxe (Chapter 7) in this proceeding.²

- 12 **6.** A proposal for recovery of the cost of conversion, such as an incremental facilities
13 charge that would be billed to participating customers. Identify and describe
14 methodologies, assumptions, data sources and limitations for any proposed
15 incremental fee.

16 Attachment A reflects the change in distribution rates to recover the installation of LED
17 facilities costs. SDG&E is not proposing a separate incremental fee to pay for the higher cost of
18 LED light installations but instead these LED costs are included in the development of the
19 distribution rates for LS-1 LED lights, as reflected in my supplemental testimony workpaper.³ In
20 this workpaper, the LED costs are added into the development of the distribution rates by LS-1
21 lighting type, which essentially develops the rates into perpetuity because the LED lights will need
22 to be replaced overtime when the LED lights are fully depreciated. However, even though the
23 installation of LED lights increases the facilities costs being collected in distribution rates, LED
24 lights have lower watts and reflect lower O&M costs, as described in response to Question 5,

² Chapter 7 Direct Testimony Workpaper identified as “Ch_7_WP#1_Lighting Model_Public”, tab INPUTS-GENERAL, Cell E27.

³ Saxe Supplemental Testimony Workpaper identified as “SDG&E_Witness Saxe_Supplemental Workpaper #1 - LS-1 LED Rates.”

1 resulting in lower illustrative proposed distribution rates for most LS-1 LED lights compared to LS-1
2 non-LED lights, as shown in Attachment A, attached hereto. Also, as shown in Attachment C,
3 attached hereto, all LS-1 LED lights will see lower total rates compared to LS-1 non-LED lights.

4 7. The payback period to recover the cost of conversion for each technology, and how
5 long any proposed incremental fee would be billed to customers.

6 As described in the response to Question 6, SDG&E is not proposing a separate incremental
7 fee to recover the higher cost of LED light installations. SDG&E is proposing that the higher LED
8 costs simply be recovered in the distribution rates of applicable customers into perpetuity, which
9 basically recovers the costs over the book life of the LED assets. As stated in response to Question
10 6, the illustrative proposed distribution rates are actually lower for most LED customers since the
11 O&M costs and the LED watts used to calculate the distribution rates are lower.

12 8. How the lower energy usage of converted lamps is reflected in SDG&E's street light
13 sales forecast.

14 The energy usage forecast used in SDG&E's Test Year ("TY") 2019 General Rate Case
15 ("GRC") Phase 2 (Application ["A."] 19-03-002) is based on the California Energy Commission's
16 ("CEC's) 2018 Sales Forecast. The conversion of lights to LED would be included in the CEC's
17 energy efficiency savings included in their future sales forecasts. As stated in response to Question
18 6, the lower watts of the LED lights are used in the calculation of the LS-1 LED light rates, as shown
19 in Attachments A, B and C.

20 **IV. DEVELOPMENT OF LS-1 LED RATES**

21 The proposed LS-1 LED distribution rates reflected in my supplemental testimony
22 workpaper #1⁴ are based on the LED costs addressed in the supplemental testimony of SDG&E
23 witness Ms. Magallanes and the street lighting cost study used in the development of the street
24 lighting distribution rates proposed in the prepared direct testimony of Mr. Saxe (Chapter 7). The

⁴ *Id.*

1 street lighting cost study proposed in my prepared direct testimony included updated street lighting
2 determinants, updated street lighting facilities and maintenance costs, updated adjustment factors
3 such as escalation factors, updated street lighting marginal distribution customer and demand
4 marginal costs and revenue allocations as addressed in the prepared direct testimony of SDG&E
5 witness Mr. Saxe (Chapter 5), and the currently authorized distribution revenue requirement.⁵

6 Facilities costs are collected in distribution rates for SDG&E-owned street light installations
7 and reflect costs specific to the lighting type. For LS-1 Class A service, facilities costs include the
8 cost for a standard street light assembly, which includes materials, labor and transportation. For LS-
9 1 Class B and Class C, facilities costs include an average of the costs for a variety of underground
10 and ornamental assemblies, and factors in Contributions in Aid of Construction (“CIAC”) made by
11 customers. This supplemental testimony workpaper adjusts the facilities costs originally included in
12 the Chapter 7 direct testimony workpaper to reflect the inclusion of LED installation costs minus the
13 exclusion of non-LED lamp, luminaries, and photoelectric facilities costs.⁶

14 Maintenance costs are collected in distribution rates for SDG&E-owned street light
15 installations and for customer-owned street light installations where customers have opted to receive
16 limited maintenance service. Maintenance service includes costs for renewal of lamps, replacement
17 of glassware and luminaire equipment, and cleaning of glassware at the time of lamp replacement.
18 The maintenance costs for the calculation of LS-1 LED distribution rates have been adjusted to
19 reflect \$16.98 in annual O&M costs for LED lights, as addressed in the supplemental testimony of

⁵ Currently authorized distribution revenue requirement reflected in rates effective January 1, 2019 per SDG&E Advice Letter 3326-E, approved May 3, 2019 and effective January 1, 2019.

⁶ LS-1 Non-LED Light Facilities Costs are identified in “SDG&E_Witness Saxe_Supplemental Testimony Workpaper #2 - LS-1 Non-LED Light Facilities Costs.”

1 | SDG&E witness Ms. Magallanes, instead of the \$21.43 in O&M costs used for non-LED lights, as
2 | identified in the direct testimony workpaper of SDG&E’s witness Mr. Saxe (Chapter 7).⁷

3 | The customer, demand, facilities and maintenance costs are escalated into 2020 dollars based
4 | on the escalation factors consistent with SDG&E’s TY 2019 GRC Phase 1.⁸ Facilities and
5 | maintenance costs are directly assigned to the street lighting class whereas customer and demand
6 | costs are scaled by a multiplier in the Street Lighting Model to ensure recovery of the street lighting
7 | authorized distribution revenue requirement. The illustrative proposed LS-1 LED rates reflecting the
8 | updated costs are identified in Attachments A, B, and C and present the following rate comparisons:

- 9 | • **Attachment A** – Comparison of Present and Illustrative Proposed LS-1 Non-LED
10 | Distribution Rates to Illustrative Proposed LS-1 LED Distribution Rates;
- 11 | • **Attachment B** – Comparison of Present and Illustrative Proposed LS-1 Non-LED Utility
12 | Distribution Company (“UDC”) Rates to Illustrative Proposed LS-1 LED UDC Rates;
13 | and
- 14 | • **Attachment C** – Comparison of Present and Illustrative Proposed LS-1 Non-LED Total
15 | Rates to Illustrative Proposed LS-1 LED Total Rates.

16 | This concludes my prepared supplemental testimony.

⁷ Chapter 7 Direct Testimony Workpaper identified as “Ch_7_WP#1_Lighting Model_Public”, tab INPUTS-GENERAL, Cell E27.

⁸ 2020 escalations are the cost escalation factors presented in SDG&E’s TY 2019 GRC Phase 1 Direct Testimony of Scott R. Wilder. *See* A.17-10-007, Workpapers to Prepared Direct Testimony of Scott R. Wilder (October 2017), Ex. SDG&E-39-WP/Wilder.

ATTACHMENT A

**COMPARISON OF PRESENT AND PROPOSED LS-1 NON-LED DISTRIBUTION RATES
TO PROPOSED LS-1 LED DISTRIBUTION RATES**

**SAN DIEGO GAS AND ELECTRIC COMPANY ("SDG&E")
TEST YEAR ("TY") 2019 GENERAL RATE CASE ("GRC") PHASE 2, APPLICATION ("A.") 19-03-002**

**ATTACHMENT A - SCHEDULE LS-1 ("LS-1") LIGHT EMITTING DIODE ("LED") DISTRIBUTION RATES
COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED DISTRIBUTION RATES TO ILLUSTRATIVE PROPOSED LS-1 LED DISTRIBUTION RATES**

LINE NO.	NON-LED DESCRIPTION		1/1/2019 PRESENT DISTRIBUTION NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 DISTRIBUTION NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 DISTRIBUTION LED LS-1 RATE (\$/LAMP)	PROPOSED LED VS. PRESENT NON-LED DISTRIBUTION RATE CHANGE		PROPOSED LED VS. PROPOSED NON-LED DISTRIBUTION RATE CHANGE		
	WATTS (A)	LUMENS (B)	(C)	(D)	(E)	(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)	
1	LS-1, Mercury Vapor, Class A, Reactor Ballast									
2		175	7000	10.98	11.90	10.79	(0.19)	-1.7%	(1.11)	-9%
3	LS-1, Mercury Vapor, Class A, Regulator Ballast									
4		175	7000	11.27	12.32	10.79	(0.48)	-4.3%	(1.53)	-12%
5		400	20000	18.15	20.67	15.60	(2.55)	-14.0%	(5.07)	-25%
6	LS-1, HPSV, Class A, Reactor Ballast									
7		70	5800	9.19	8.67	9.33	0.14	1.5%	0.66	8%
8		100	9500	9.93	9.59	9.66	(0.27)	-2.7%	0.07	1%
9		150	16000	10.77	10.82	10.70	(0.07)	-0.6%	(0.12)	-1%
10	LS-1, HPSV, Class A, Regulator Ballast									
11		200	22000	12.77	13.10	11.78	(0.99)	-7.8%	(1.32)	-10%
12		250	30000	14.47	15.14	12.33	(2.14)	-14.8%	(2.81)	-19%
13		400	50000	16.79	18.74	14.63	(2.16)	-12.9%	(4.11)	-22%
14	LS-1, HPSV, Class B, 1-Lamp, Reactor Ballast									
15		70	5800	9.33	9.02	9.69	0.36	3.9%	0.67	7%
16		100	9500	10.12	10.01	10.08	(0.04)	-0.4%	0.07	1%
17		150	16000	10.83	11.08	10.96	0.13	1.2%	(0.12)	-1%
18	LS-1, HPSV, Class B, 1-Lamp, Regulator Ballast									
19		200	22000	12.81	13.27	11.95	(0.86)	-6.7%	(1.32)	-10%
20		250	30000	14.52	15.33	12.52	(2.00)	-13.8%	(2.81)	-18%
21		400	50000	16.72	18.85	14.74	(1.98)	-11.8%	(4.11)	-22%
22	LS-1, HPSV, Class B, 2-Lamp, Reactor Ballast									
23		70	5800	8.18	7.86	5.37	(2.81)	-34.4%	(2.49)	-32%
24		100	9500	8.94	8.79	5.69	(3.25)	-36.4%	(3.10)	-35%
25		150	16000	9.76	10.02	6.42	(3.34)	-34.2%	(3.60)	-36%
26	LS-1, HPSV, Class B, 2-Lamp, Regulator Ballast									
27		200	22000	11.76	12.30	7.56	(4.20)	-35.7%	(4.74)	-39%
28		250	30000	13.55	14.42	8.16	(5.39)	-39.8%	(6.26)	-43%
29		400	50000	15.78	17.94	9.66	(6.12)	-38.8%	(8.28)	-46%

**SAN DIEGO GAS AND ELECTRIC COMPANY ("SDG&E")
TEST YEAR ("TY") 2019 GENERAL RATE CASE ("GRC") PHASE 2, APPLICATION ("A.") 19-03-002**

**ATTACHMENT A - SCHEDULE LS-1 ("LS-1") LIGHT EMITTING DIODE ("LED") DISTRIBUTION RATES
COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED DISTRIBUTION RATES TO ILLUSTRATIVE PROPOSED LS-1 LED DISTRIBUTION RATES**

LINE NO.	NON-LED DESCRIPTION		1/1/2019 PRESENT DISTRIBUTION NON-LED LS-1 RATE (\$/LAMP) (C)	PROPOSED 2021 DISTRIBUTION NON-LED LS-1 RATE (\$/LAMP) (D)	PROPOSED 2021 DISTRIBUTION LED LS-1 RATE (\$/LAMP) (E)	PROPOSED LED VS. PRESENT NON-LED DISTRIBUTION RATE CHANGE		PROPOSED LED VS. PROPOSED NON-LED DISTRIBUTION RATE CHANGE	
	WATTS (A)	LUMENS (B)				(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)
30	LS-1, HPSV, Class C, 1-Lamp, Reactor Ballast								
31	70	5800	14.02	12.82	13.48	(0.54)	-3.9%	0.66	5%
32	100	9500	14.64	13.69	13.76	(0.88)	-6.0%	0.07	1%
33	150	16000	15.37	14.78	14.66	(0.71)	-4.6%	(0.12)	-1%
34	LS-1, HPSV, Class C, 1-Lamp, Regulator Ballast								
35	200	22000	18.36	17.85	16.52	(1.84)	-10.0%	(1.33)	-7%
36	250	30000	19.46	19.44	16.63	(2.83)	-14.5%	(2.81)	-14%
37	400	50000	23.77	24.57	20.46	(3.31)	-13.9%	(4.11)	-17%
38	LS-1, HPSV, Class C, 2-Lamp, Reactor Ballast								
39	70	5800	9.05	8.74	6.36	(2.69)	-29.7%	(2.38)	-27%
40	100	9500	9.61	9.85	6.88	(2.73)	-28.4%	(2.97)	-30%
41	150	16000	10.74	10.88	7.42	(3.32)	-30.9%	(3.46)	-32%
42	LS-1, HPSV, Class C, 2-Lamp, Regulator Ballast								
43	200	22000	12.13	12.56	7.96	(4.17)	-34.4%	(4.60)	-37%
44	250	30000	14.50	15.25	9.13	(5.37)	-37.0%	(6.12)	-40%
45	400	50000	16.22	18.28	10.21	(6.01)	-37.1%	(8.07)	-44%
46	LS-1, LPSV, Class A								
47	55	8000	13.27	11.63	9.79	(3.48)	-26.2%	(1.84)	-16%
48	90	13500	15.18	13.65	10.63	(4.55)	-30.0%	(3.02)	-22%
49	135	22500	16.62	15.76	11.87	(4.75)	-28.6%	(3.89)	-25%
50	180	33000	19.02	17.51	12.58	(6.44)	-33.9%	(4.93)	-28%
51	LS-1, LPSV, Class B, 1-Lamp								
52	55	8000	13.45	11.95	10.10	(3.35)	-24.9%	(1.85)	-15%
53	90	13500	15.35	13.96	10.93	(4.42)	-28.8%	(3.03)	-22%
54	135	22500	16.75	15.92	12.21	(4.54)	-27.1%	(3.71)	-23%
55	180	33000	19.15	17.67	12.91	(6.24)	-32.6%	(4.76)	-27%
56	LS-1, LPSV, Class B, 2-Lamp								
57	55	8000	12.80	11.32	8.32	(4.48)	-35.0%	(3.00)	-27%
58	90	13500	14.71	13.33	9.60	(5.11)	-34.7%	(3.73)	-28%
59	135	22500	16.35	15.64	10.97	(5.38)	-32.9%	(4.67)	-30%
60	180	33000	18.74	17.38	12.92	(5.82)	-31.1%	(4.46)	-26%

**SAN DIEGO GAS AND ELECTRIC COMPANY ("SDG&E")
TEST YEAR ("TY") 2019 GENERAL RATE CASE ("GRC") PHASE 2, APPLICATION ("A.") 19-03-002**

**ATTACHMENT A - SCHEDULE LS-1 ("LS-1") LIGHT EMITTING DIODE ("LED") DISTRIBUTION RATES
COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED DISTRIBUTION RATES TO ILLUSTRATIVE PROPOSED LS-1 LED DISTRIBUTION RATES**

LINE NO.	NON-LED DESCRIPTION		1/1/2019 PRESENT DISTRIBUTION NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 DISTRIBUTION NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 DISTRIBUTION LED LS-1 RATE (\$/LAMP)	PROPOSED LED VS. PRESENT NON-LED DISTRIBUTION RATE CHANGE		PROPOSED LED VS. PROPOSED NON-LED DISTRIBUTION RATE CHANGE		
	WATTS (A)	LUMENS (B)	(C)	(D)	(E)	(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)	
61	LS-1, LPSV, Class C, 1-Lamp									
62		55	8000	16.53	14.82	12.97	(3.56)	-21.5%	(1.85)	-12%
63		90	13500	17.76	16.40	13.37	(4.39)	-24.7%	(3.03)	-18%
64		135	22500	20.45	19.08	15.36	(5.09)	-24.9%	(3.72)	-19%
65		180	33000	21.42	20.14	15.38	(6.04)	-28.2%	(4.76)	-24%
66	LS-1, LPSV, Class C, 2-Lamp									
67		55	8000	12.91	11.35	8.32	(4.59)	-35.6%	(3.03)	-27%
68		90	13500	14.83	13.39	9.98	(4.85)	-32.7%	(3.41)	-25%
69		135	22500	16.68	15.92	10.91	(5.77)	-34.6%	(5.01)	-31%
70		180	33000	18.81	17.40	12.89	(5.92)	-31.5%	(4.51)	-26%
71	LS-1, Metal Halide, Class A									
72		100	8500	8.01	8.73	9.09	1.08	13.5%	0.36	4%
73		175	12000	9.21	10.47	10.23	1.02	11.1%	(0.24)	-2%
74		250	18000	10.59	12.42	11.51	0.92	8.7%	(0.91)	-7%
75		400	32000	13.65	16.53	12.81	(0.84)	-6.2%	(3.72)	-23%
76	LS-1, Metal Halide, Class B									
77		100	8500	8.46	9.39	9.75	1.29	15.2%	0.36	4%
78		175	12000	9.66	11.13	10.90	1.24	12.8%	(0.23)	-2%
79		250	18000	11.05	13.09	12.17	1.12	10.1%	(0.92)	-7%
80		400	32000	14.10	17.19	13.48	(0.62)	-4.4%	(3.71)	-22%
81	LS-1, Metal Halide, Class C									
82		100	8500	20.24	19.60	19.96	(0.28)	-1.4%	0.36	2%
83		175	12000	21.44	21.33	21.10	(0.34)	-1.6%	(0.23)	-1%
84		250	18000	22.83	23.29	22.37	(0.46)	-2.0%	(0.92)	-4%
85		400	32000	25.88	27.39	23.68	(2.20)	-8.5%	(3.71)	-14%

ATTACHMENT B

**COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED UDC
RATES TO ILLUSTRATIVE PROPOSED LS-1 LED UDC RATES**

**SAN DIEGO GAS AND ELECTRIC COMPANY ("SDG&E")
TEST YEAR ("TY") 2019 GENERAL RATE CASE ("GRC") PHASE 2, APPLICATION ("A.") 19-03-002**

**ATTACHMENT B - SCHEDULE LS-1 ("LS-1") LIGHT EMITTING DIODE ("LED") UTILITY DISTRIBUTION COMPANY ("UDC") RATES
COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED UDC RATES TO ILLUSTRATIVE PROPOSED LS-1 LED UDC RATES**

LINE NO.	NON-LED DESCRIPTION		1/1/2019 PRESENT UDC NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 UDC NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 UDC LED LS-1 RATE (\$/LAMP)	PROPOSED LED VS. PRESENT NON-LED UDC RATE CHANGE		PROPOSED LED VS. PROPOSED NON-LED UDC RATE CHANGE	
	WATTS (A)	LUMENS (B)	(C)	(D)	(E)	(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)
1	LS-1, Mercury Vapor, Class A, Reactor Ballast								
2	175	7000	12.74	13.43	11.37	(1.37)	-10.8%	(2.06)	-15.3%
3	LS-1, Mercury Vapor, Class A, Regulator Ballast								
4	175	7000	13.17	13.98	11.37	0.81	6.2%	(2.61)	-18.7%
5	400	20000	22.35	24.33	16.97	1.98	8.9%	(7.36)	-30.3%
6	LS-1, HPSV, Class A, Reactor Ballast								
7	70	5800	9.95	9.34	9.58	(0.61)	-6.1%	0.24	2.6%
8	100	9500	11.00	10.52	9.98	(0.48)	-4.4%	(0.54)	-5.1%
9	150	16000	12.31	12.16	11.28	(0.15)	-1.2%	(0.88)	-7.2%
10	LS-1, HPSV, Class A, Regulator Ballast								
11	200	22000	14.98	15.03	12.56	0.05	0.3%	(2.47)	-16.4%
12	250	30000	17.32	17.63	13.11	0.31	1.8%	(4.52)	-25.6%
13	400	50000	21.10	22.50	16.00	1.40	6.6%	(6.50)	-28.9%
14	LS-1, HPSV, Class B, 1-Lamp, Reactor Ballast								
15	70	5800	10.09	9.69	9.94	(0.40)	-4.0%	0.25	2.6%
16	100	9500	11.19	10.94	10.40	(0.25)	-2.2%	(0.54)	-4.9%
17	150	16000	12.37	12.42	11.54	0.05	0.4%	(0.88)	-7.1%
18	LS-1, HPSV, Class B, 1-Lamp, Regulator Ballast								
19	200	22000	15.02	15.20	12.73	0.18	1.2%	(2.47)	-16.3%
20	250	30000	17.37	17.82	13.30	0.45	2.6%	(4.52)	-25.4%
21	400	50000	21.03	22.61	16.11	1.58	7.5%	(6.50)	-28.7%
22	LS-1, HPSV, Class B, 2-Lamp, Reactor Ballast								
23	70	5800	8.94	8.53	5.62	(0.41)	-4.6%	(2.91)	-34.1%
24	100	9500	10.01	9.72	6.01	(0.29)	-2.9%	(3.71)	-38.2%
25	150	16000	11.30	11.36	7.00	0.06	0.5%	(4.36)	-38.4%
26	LS-1, HPSV, Class B, 2-Lamp, Regulator Ballast								
27	200	22000	13.97	14.23	8.34	0.26	1.9%	(5.89)	-41.4%
28	250	30000	16.40	16.91	8.94	0.51	3.1%	(7.97)	-47.1%
29	400	50000	20.09	21.70	11.03	1.61	8.0%	(10.67)	-49.2%

SAN DIEGO GAS AND ELECTRIC COMPANY ("SDG&E")
TEST YEAR ("TY") 2019 GENERAL RATE CASE ("GRC") PHASE 2, APPLICATION ("A.") 19-03-002

ATTACHMENT B - SCHEDULE LS-1 ("LS-1") LIGHT EMITTING DIODE ("LED") UTILITY DISTRIBUTION COMPANY ("UDC") RATES
COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED UDC RATES TO ILLUSTRATIVE PROPOSED LS-1 LED UDC RATES

LINE NO.	NON-LED DESCRIPTION		1/1/2019 PRESENT UDC NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 UDC NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 UDC LED LS-1 RATE (\$/LAMP)	PROPOSED LED VS. PRESENT NON-LED UDC RATE CHANGE		PROPOSED LED VS. PROPOSED NON-LED UDC RATE CHANGE	
	WATTS (A)	LUMENS (B)	(C)	(D)	(E)	(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)
30	LS-1, HPSV, Class C, 1-Lamp, Reactor Ballast								
31	70	5800	14.78	13.49	13.73	(1.29)	-8.7%	0.24	1.8%
32	100	9500	15.71	14.62	14.08	(1.09)	-6.9%	(0.54)	-3.7%
33	150	16000	16.91	16.12	15.24	(0.79)	-4.7%	(0.88)	-5.5%
34	LS-1, HPSV, Class C, 1-Lamp, Regulator Ballast								
35	200	22000	20.57	19.78	17.30	(0.79)	-3.8%	(2.48)	-12.5%
36	250	30000	22.31	21.93	17.41	(0.38)	-1.7%	(4.52)	-20.6%
37	400	50000	28.08	28.33	21.83	0.25	0.9%	(6.50)	-22.9%
38	LS-1, HPSV, Class C, 2-Lamp, Reactor Ballast								
39	70	5800	9.81	9.41	6.61	(0.40)	-4.1%	(2.80)	-29.8%
40	100	9500	10.68	10.78	7.20	0.10	0.9%	(3.58)	-33.2%
41	150	16000	12.28	12.22	8.00	(0.06)	-0.5%	(4.22)	-34.5%
42	LS-1, HPSV, Class C, 2-Lamp, Regulator Ballast								
43	200	22000	14.34	14.49	8.74	0.15	1.0%	(5.75)	-39.7%
44	250	30000	17.35	17.74	9.91	0.39	2.2%	(7.83)	-44.1%
45	400	50000	20.53	22.04	11.58	1.51	7.4%	(10.46)	-47.5%
46	LS-1, LPSV, Class A								
47	55	8000	14.09	12.34	9.90	(1.75)	-12.4%	(2.44)	-19.8%
48	90	13500	16.49	14.79	10.95	(1.70)	-10.3%	(3.84)	-26.0%
49	135	22500	18.48	17.38	12.35	(1.10)	-6.0%	(5.03)	-28.9%
50	180	33000	21.16	19.38	13.36	(1.78)	-8.4%	(6.02)	-31.1%
51	LS-1, LPSV, Class B, 1-Lamp								
52	55	8000	14.27	12.66	10.21	(1.61)	-11.3%	(2.45)	-19.4%
53	90	13500	16.66	15.10	11.25	(1.56)	-9.4%	(3.85)	-25.5%
54	135	22500	18.61	17.54	12.69	(1.07)	-5.7%	(4.85)	-27.7%
55	180	33000	21.29	19.54	13.69	(1.75)	-8.2%	(5.85)	-29.9%
56	LS-1, LPSV, Class B, 2-Lamp								
57	55	8000	13.62	12.03	8.43	(1.59)	-11.7%	(3.60)	-29.9%
58	90	13500	16.02	14.47	9.92	(1.55)	-9.7%	(4.55)	-31.4%
59	135	22500	18.21	17.26	11.45	(0.95)	-5.2%	(5.81)	-33.7%
60	180	33000	20.88	19.25	13.70	(1.63)	-7.8%	(5.55)	-28.8%

**SAN DIEGO GAS AND ELECTRIC COMPANY ("SDG&E")
TEST YEAR ("TY") 2019 GENERAL RATE CASE ("GRC") PHASE 2, APPLICATION ("A.") 19-03-002**

**ATTACHMENT B - SCHEDULE LS-1 ("LS-1") LIGHT EMITTING DIODE ("LED") UTILITY DISTRIBUTION COMPANY ("UDC") RATES
COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED UDC RATES TO ILLUSTRATIVE PROPOSED LS-1 LED UDC RATES**

LINE NO.	NON-LED DESCRIPTION		1/1/2019 PRESENT UDC NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 UDC NON-LED LS-1 RATE (\$/LAMP)	PROPOSED 2021 UDC LED LS-1 RATE (\$/LAMP)	PROPOSED LED VS. PRESENT NON-LED UDC RATE CHANGE		PROPOSED LED VS. PROPOSED NON-LED UDC RATE CHANGE	
	WATTS (A)	LUMENS (B)	(C)	(D)	(E)	(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)
61	LS-1, LPSV, Class C, 1-Lamp								
62	55	8000	17.35	15.53	13.08	(1.82)	-10.5%	(2.45)	-15.8%
63	90	13500	19.07	17.54	13.69	(1.53)	-8.0%	(3.85)	-21.9%
64	135	22500	22.31	20.70	15.84	(1.61)	-7.2%	(4.86)	-23.5%
65	180	33000	23.56	22.01	16.16	(1.55)	-6.6%	(5.85)	-26.6%
66	LS-1, LPSV, Class C, 2-Lamp								
67	55	8000	13.73	12.06	8.43	(1.67)	-12.2%	(3.63)	-30.1%
68	90	13500	16.14	14.53	10.30	(1.61)	-10.0%	(4.23)	-29.1%
69	135	22500	18.54	17.54	11.39	(1.00)	-5.4%	(6.15)	-35.1%
70	180	33000	20.95	19.27	13.67	(1.68)	-8.0%	(5.60)	-29.1%
71	LS-1, Metal Halide, Class A								
72	100	8500	9.21	9.78	9.24	0.57	6.2%	(0.54)	-5.5%
73	175	12000	11.09	12.11	10.38	1.02	9.2%	(1.73)	-14.3%
74	250	18000	13.20	14.70	11.69	1.50	11.4%	(3.01)	-20.5%
75	400	32000	17.69	20.05	12.99	2.36	13.3%	(7.06)	-35.2%
76	LS-1, Metal Halide, Class B								
77	100	8500	9.66	10.44	9.90	0.78	8.1%	(0.54)	-5.2%
78	175	12000	11.54	12.77	11.05	1.23	10.7%	(1.72)	-13.5%
79	250	18000	13.66	15.37	12.35	1.71	12.5%	(3.02)	-19.6%
80	400	32000	18.14	20.71	13.66	2.57	14.2%	(7.05)	-34.0%
81	LS-1, Metal Halide, Class C								
82	100	8500	21.44	20.65	20.11	(0.79)	-3.7%	(0.54)	-2.6%
83	175	12000	23.32	22.97	21.25	(0.35)	-1.5%	(1.72)	-7.5%
84	250	18000	25.44	25.57	22.55	0.13	0.5%	(3.02)	-11.8%
85	400	32000	29.92	30.91	23.86	0.99	3.3%	(7.05)	-22.8%

ATTACHMENT C

**COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED TOTAL
RATES TO ILLUSTRATIVE PROPOSED LS-1 LED TOTAL RATES**

**SAN DIEGO GAS AND ELECTRIC COMPANY ("SDG&E")
TEST YEAR ("TY") 2019 GENERAL RATE CASE ("GRC") PHASE 2, APPLICATION ("A.") 19-03-002**

**ATTACHMENT C - SCHEDULE LS-1 ("LS-1) LIGHT EMITTING DIODE ("LED") TOTAL RATES
COMPARISON OF PRESENT AND ILLUSTRATIVE PROPOSED LS-1 NON-LED TOTAL RATES TO ILLUSTRATIVE PROPOSED LS-1 LED TOTAL RATES**

LINE NO.	NON-LED DESCRIPTION		1/1/2019 PRESENT TOTAL NON-LED LS-1 RATE	PROPOSED 2021 TOTAL NON-LED LS-1 RATE	PROPOSED 2021 TOTAL LED LS-1 RATE	PROPOSED LED VS. PRESENT NON-LED TOTAL RATE CHANGE		PROPOSED LED VS. PROPOSED NON-LED TOTAL RATE CHANGE	
	WATTS (A)	LUMENS (B)	(\$/LAMP) (C)	(\$/LAMP) (D)	(\$/LAMP) (E)	(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)
1	LS-1, Mercury Vapor, Class A, Reactor Ballast								
2	175	7000	17.88	18.26	13.17	(4.71)	-26.3%	(5.09)	-27.9%
3	LS-1, Mercury Vapor, Class A, Regulator Ballast								
4	175	7000	18.77	19.24	13.17	(5.60)	-29.8%	(6.07)	-31.5%
5	400	20000	34.63	35.86	21.30	(13.33)	-38.5%	(14.56)	-40.6%
6	LS-1, HPSV, Class A, Reactor Ballast								
7	70	5800	12.18	11.43	10.37	(1.81)	-14.9%	(1.06)	-9.3%
8	100	9500	14.15	13.48	10.99	(3.16)	-22.3%	(2.49)	-18.5%
9	150	16000	16.84	16.41	13.08	(3.76)	-22.3%	(3.33)	-20.3%
10	LS-1, HPSV, Class A, Regulator Ballast								
11	200	22000	21.50	21.16	15.01	(6.49)	-30.2%	(6.15)	-29.1%
12	250	30000	25.69	25.49	15.56	(10.13)	-39.4%	(9.93)	-39.0%
13	400	50000	33.77	34.39	20.33	(13.44)	-39.8%	(14.06)	-40.9%
14	LS-1, HPSV, Class B, 1-Lamp, Reactor Ballast								
15	70	5800	12.32	11.78	10.73	(1.59)	-12.9%	(1.05)	-8.9%
16	100	9500	14.34	13.90	11.41	(2.93)	-20.4%	(2.49)	-17.9%
17	150	16000	16.90	16.67	13.34	(3.56)	-21.1%	(3.33)	-20.0%
18	LS-1, HPSV, Class B, 1-Lamp, Regulator Ballast								
19	200	22000	21.54	21.33	15.18	(6.36)	-29.5%	(6.15)	-28.8%
20	250	30000	25.74	25.68	15.75	(9.99)	-38.8%	(9.93)	-38.7%
21	400	50000	33.70	34.50	20.44	(13.26)	-39.3%	(14.06)	-40.8%
22	LS-1, HPSV, Class B, 2-Lamp, Reactor Ballast								
23	70	5800	11.17	10.62	6.41	(4.76)	-42.6%	(4.21)	-39.6%
24	100	9500	13.16	12.68	7.02	(6.14)	-46.7%	(5.66)	-44.6%
25	150	16000	15.83	15.61	8.80	(7.03)	-44.4%	(6.81)	-43.6%
26	LS-1, HPSV, Class B, 2-Lamp, Regulator Ballast								
27	200	22000	20.49	20.36	10.79	(9.70)	-47.3%	(9.57)	-47.0%
28	250	30000	24.77	24.77	11.39	(13.38)	-54.0%	(13.38)	-54.0%
29	400	50000	32.76	33.59	15.36	(17.40)	-53.1%	(18.23)	-54.3%

LINE NO.	NON-LED DESCRIPTION	WATTS (A)	LUMENS (B)	1/1/2019	PROPOSED	PROPOSED	PROPOSED LED VS. PRESENT NON-LED		PROPOSED LED VS. PROPOSED NON-LED	
				PRESENT	2021	2021	TOTAL RATE CHANGE		TOTAL RATE CHANGE	
				TOTAL NON-LED LS-1 RATE (\$/LAMP) (C)	TOTAL NON-LED LS-1 RATE (\$/LAMP) (D)	TOTAL LED LS-1 RATE (\$/LAMP) (E)	(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)
30	LS-1, HPSV, Class C, 1-Lamp, Reactor Ballast									
31		70	5800	17.01	15.58	14.52	(2.49)	-14.6%	(1.06)	-6.8%
32		100	9500	18.86	17.58	15.09	(3.77)	-20.0%	(2.49)	-14.2%
33		150	16000	21.44	20.37	17.04	(4.40)	-20.5%	(3.33)	-16.3%
34	LS-1, HPSV, Class C, 1-Lamp, Regulator Ballast									
35		200	22000	27.09	25.91	19.75	(7.34)	-27.1%	(6.16)	-23.8%
36		250	30000	30.68	29.79	19.86	(10.82)	-35.3%	(9.93)	-33.3%
37		400	50000	40.75	40.22	26.16	(14.59)	-35.8%	(14.06)	-35.0%
38	LS-1, HPSV, Class C, 2-Lamp, Reactor Ballast									
39		70	5800	12.04	11.50	7.40	(4.64)	-38.5%	(4.10)	-35.7%
40		100	9500	13.83	13.74	8.21	(5.62)	-40.6%	(5.53)	-40.2%
41		150	16000	16.81	16.47	9.80	(7.01)	-41.7%	(6.67)	-40.5%
42	LS-1, HPSV, Class C, 2-Lamp, Regulator Ballast									
43		200	22000	20.86	20.62	11.19	(9.67)	-46.4%	(9.43)	-45.7%
44		250	30000	25.72	25.60	12.36	(13.36)	-51.9%	(13.24)	-51.7%
45		400	50000	33.20	33.93	15.91	(17.29)	-52.1%	(18.02)	-53.1%
46	LS-1, LPSV, Class A					0.00				
47		55	8000	16.47	14.57	10.26	(6.21)	-37.7%	(4.31)	-29.6%
48		90	13500	20.33	18.39	11.96	(8.37)	-41.2%	(6.43)	-35.0%
49		135	22500	23.93	22.50	13.86	(10.07)	-42.1%	(8.64)	-38.4%
50		180	33000	27.45	25.29	15.81	(11.64)	-42.4%	(9.48)	-37.5%
51	LS-1, LPSV, Class B, 1-Lamp									
52		55	8000	16.65	14.89	10.57	(6.08)	-36.5%	(4.32)	-29.0%
53		90	13500	20.50	18.70	12.26	(8.24)	-40.2%	(6.44)	-34.4%
54		135	22500	24.06	22.66	14.20	(9.86)	-41.0%	(8.46)	-37.3%
55		180	33000	27.58	25.45	16.14	(11.44)	-41.5%	(9.31)	-36.6%
56	LS-1, LPSV, Class B, 2-Lamp									
57		55	8000	16.00	14.26	8.79	(7.21)	-45.1%	(5.47)	-38.4%
58		90	13500	19.86	18.07	10.93	(8.93)	-45.0%	(7.14)	-39.5%
59		135	22500	23.66	22.38	12.96	(10.70)	-45.2%	(9.42)	-42.1%
60		180	33000	27.17	25.16	16.15	(11.02)	-40.6%	(9.01)	-35.8%

LINE NO.	NON-LED DESCRIPTION	WATTS (A)	LUMENS (B)	1/1/2019	PROPOSED	PROPOSED	PROPOSED LED VS. PRESENT NON-LED		PROPOSED LED VS. PROPOSED NON-LED	
				PRESENT	2021	2021	TOTAL RATE CHANGE		TOTAL RATE CHANGE	
				TOTAL NON-LED LS-1 RATE (\$/LAMP) (C)	TOTAL NON-LED LS-1 RATE (\$/LAMP) (D)	TOTAL LED LS-1 RATE (\$/LAMP) (E)	(\$/LAMP CHANGE) (F)	(% CHANGE) (G)	(\$/LAMP CHANGE) (H)	(% CHANGE) (I)
61	LS-1, LPSV, Class C, 1-Lamp									
62		55	8000	19.73	17.76	13.44	(6.29)	-31.9%	(4.32)	-24.3%
63		90	13500	22.91	21.14	14.70	(8.21)	-35.8%	(6.44)	-30.5%
64		135	22500	27.76	25.82	17.35	(10.41)	-37.5%	(8.47)	-32.8%
65		180	33000	29.85	27.92	18.61	(11.24)	-37.7%	(9.31)	-33.3%
66	LS-1, LPSV, Class C, 2-Lamp									
67		55	8000	16.11	14.29	8.79	(7.32)	-45.4%	(5.50)	-38.5%
68		90	13500	19.98	18.13	11.31	(8.67)	-43.4%	(6.82)	-37.6%
69		135	22500	23.99	22.66	12.90	(11.09)	-46.2%	(9.76)	-43.1%
70		180	33000	27.24	25.18	16.12	(11.12)	-40.8%	(9.06)	-36.0%
71	LS-1, Metal Halide, Class A									
72		100	8500	12.74	13.10	9.74	(3.00)	-23.5%	(3.36)	-25.6%
73		175	12000	16.62	17.30	10.88	(5.74)	-34.5%	(6.42)	-37.1%
74		250	18000	20.88	21.91	12.27	(8.61)	-41.2%	(9.64)	-44.0%
75		400	32000	29.51	31.15	13.57	(15.94)	-54.0%	(17.58)	-56.4%
76	LS-1, Metal Halide, Class B									
77		100	8500	13.19	13.76	10.40	(2.79)	-21.2%	(3.36)	-24.4%
78		175	12000	17.07	17.96	11.55	(5.52)	-32.3%	(6.41)	-35.7%
79		250	18000	21.34	22.58	12.93	(8.41)	-39.4%	(9.65)	-42.7%
80		400	32000	29.96	31.81	14.24	(15.72)	-52.5%	(17.57)	-55.2%
81	LS-1, Metal Halide, Class C									
82		100	8500	24.97	23.97	20.61	(4.36)	-17.5%	(3.36)	-14.0%
83		175	12000	28.85	28.16	21.75	(7.10)	-24.6%	(6.41)	-22.8%
84		250	18000	33.12	32.78	23.13	(9.99)	-30.2%	(9.65)	-29.4%
85		400	32000	41.74	42.01	24.44	(17.30)	-41.4%	(17.57)	-41.8%