

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Dockets UE-191024, UE-190750,
UE-190929, UE-190981, UE-180778
(*Consolidated*)

PACIFICORP

EXHIBIT OF ROBERT M. MEREDITH

Updated Street and Area Lighting Cost Study

April 2020

**PacifiCorp
Streetlighting Installation Costs**

Descriptions	Light Type	LED Street Lights						Decorative LED Street Lights	LED Area Lights		
		Level 1 (0-3,500 LED Equivalent Lumens)	Level 2 (3,501-5,500 LED Equivalent Lumens)	Level 3 (5,500-8,000 LED Equivalent Lumens)	Level 4 (8,001-12,000 LED Equivalent Lumens)	Level 5 (12,001-15,500 LED Equivalent Lumens)	Level 6 (15,501 and Greater LED Equivalent Lumens)		Level 1 (0-5,500 LED Equivalent Lumens)	Level 2 (5,501-12,000 LED Equivalent Lumens)	Level 3 (12,001 and Greater LED Equivalent Lumens)
Installation Cost		\$969.94	\$1,035.60	\$1,040.07	\$1,049.54	\$1,107.58	\$1,347.79	\$2,960.67	\$94.52	\$1,092.52	
Annualization @ 8.89%		\$86.23	\$92.06	\$92.46	\$93.30	\$98.46	\$119.82	\$263.20	\$75.24	\$97.12	
Average Monthly Revenue Requirement		\$7.19	\$7.67	\$7.71	\$7.78	\$8.21	\$9.98	\$21.93	\$6.27	\$8.09	

Street and Area Light Energy Consumption by Level of Service

Light Level	Target Initial Lumens (in LED equivalent)*	LED Equivalent Range **	Annual Energy (kWh)
1	2700	<3500	100
2	4000	3501-5500	183
3	6200	5501-8000	296
4	9000	8001-12000	413
5	13000	12001-15500	525
6	16800	>15501	688

- Level 1 (0-3,500 LED Equivalent Lumens)
- Level 2 (3,501-5,500 LED Equivalent Lumens)
- Level 3 (5,500-8,000 LED Equivalent Lumens)
- Level 4 (8,001-12,000 LED Equivalent Lumens)
- Level 5 (12,001-15,500 LED Equivalent Lumens)
- Level 6 (15,501 and Greater LED Equivalent Lumens)

Area Lights

Light Level	Target Initial Lumens (in LED equivalent)*	LED Equivalent Range **	Annual Energy (kWh)
1	4000	0-5500	224
2	9000	5501-12000	413
3	16800	>12001	688

- Level 1 (0-5,500 LED Equivalent Lumens)
- Level 2 (5,501-12,000 LED Equivalent Lumens)
- Level 3 (12,001 and Greater LED Equivalent Lumens)

Pacific Power & Light
State of Washington
Summary of Present and Proposed Lighting Prices
Lighting Class Cost Analysis
12 Months Ended June 2019

Present Description	Present Sch No.	Co/Cust Owned?	Present Units	Present Quantity	Present Price	Present Revenue	Proposed Description	Proposed Sch No.	Proposed Price	Proposed Revenue
Outdoor Area Lighting							Outdoor Area Lighting			
Mercury Vapor - 7,000 Lumen	15 Co		Lamp Count	24,390	\$11.24	\$274,141	Level 1 (0-5,500 LED Equivalent Lumens)	15	\$8.60	\$209,710
Mercury Vapor - 21,000 Lumen	15 Co		Lamp Count	3,826	\$21.37	\$81,752	Level 2 (5,501-12,000 LED Equivalent Lumens)	15	\$9.72	\$37,174
Mercury Vapor - 55,000 Lumen	15 Co		Lamp Count	442	\$44.25	\$19,548	Level 3 (12,001 and Greater LED Equivalent Lumens)	15	\$11.47	\$5,067
High Pressure Sodium Vapor - 5,800 Lumen	15 Co		Lamp Count	2,265	\$12.77	\$28,927	Level 1 (0-5,500 LED Equivalent Lumens)	15	\$8.60	\$19,477
High Pressure Sodium Vapor - 22,000 Lumen	15 Co		Lamp Count	1,884	\$18.76	\$35,351	Level 2 (5,501-12,000 LED Equivalent Lumens)	15	\$9.72	\$18,311
High Pressure Sodium Vapor - 50,000 Lumen	15 Co		Lamp Count	571	\$30.28	\$17,284	Level 3 (12,001 and Greater LED Equivalent Lumens)	15	\$11.47	\$6,547
Pole Charge	15 Co		Lamp Count	497	\$1.00	\$497	Not Applicable	15	\$0	\$0.00
Street Lighting Service - Company-Owned System							Street Lighting Service - Company-Owned System			
LED - 4,600 Lumen	51 Co		Lamp Count	42	\$7.95	\$335	Level 1 (0-3,500 LED Equivalent Lumens)	51	\$9.06	\$382
LED - 5,600 Lumen	51 Co		Lamp Count	1,941	\$9.86	\$19,134	Level 2 (3,501-5,500 LED Equivalent Lumens)	51	\$9.75	\$18,921
LED - 8,400 Lumen	51 Co		Lamp Count	386	\$12.43	\$4,802	Level 3 (5,500-8,000 LED Equivalent Lumens)	51	\$10.06	\$3,888
LED - 9,800 Lumen	51 Co		Lamp Count	31	\$12.87	\$395	Level 4 (8,001-12,000 LED Equivalent Lumens)	51	\$10.42	\$320
LED - 17,100 Lumen	51 Co		Lamp Count	1,920	\$20.67	\$39,694	Level 5 (12,001-15,500 LED Equivalent Lumens)	51	\$11.08	\$21,274
LED - 22,100 Lumen	51 Co		Lamp Count	711	\$26.09	\$18,546	Level 6 (15,501 and Greater LED Equivalent Lumens)	51	\$13.52	\$9,608
LED - 4,600 Lumen - Cust. Funded Conv.	51 Co		Lamp Count	2,512	\$6.50	\$16,326	Cust. Funded Conv. - Level 1 (0-3,500 LED Equivalent Lumens)	51	\$4.48	\$11,249
LED - 5,600 Lumen - Cust. Funded Conv.	51 Co		Lamp Count	1,225	\$6.97	\$8,538	Cust. Funded Conv. - Level 2 (3,501-5,500 LED Equivalent Lumens)	51	\$4.86	\$5,951
LED - 8,400 Lumen - Cust. Funded Conv.	51 Co		Lamp Count	21	\$7.97	\$168	Cust. Funded Conv. - Level 3 (5,500-8,000 LED Equivalent Lumens)	51	\$5.15	\$108
LED - 9,800 Lumen - Cust. Funded Conv.	51 Co		Lamp Count	1,848	\$8.13	\$15,022	Cust. Funded Conv. - Level 4 (8,001-12,000 LED Equivalent Lumens)	51	\$5.46	\$10,095
LED - 17,100 Lumen - Cust. Funded Conv.	51 Co		Lamp Count	164	\$10.56	\$1,734	Cust. Funded Conv. - Level 5 (12,001-15,500 LED Equivalent Lumens)	51	\$5.85	\$960
LED - 22,100 Lumen - Cust. Funded Conv.	51 Co		Lamp Count	648	\$12.09	\$7,838	Cust. Funded Conv. - Level 6 (15,501 and Greater LED Equivalent Lumens)	51	\$7.15	\$4,635
High Pressure Sodium Vapor - 5,800 Lumen	51 Co		Lamp Count	11,400	\$8.93	\$101,802	Level 1 (0-3,500 LED Equivalent Lumens)	51	\$9.06	\$103,291
High Pressure Sodium Vapor - 9,500 Lumen	51 Co		Lamp Count	17,310	\$10.72	\$185,565	Level 2 (3,501-5,500 LED Equivalent Lumens)	51	\$9.75	\$168,779
High Pressure Sodium Vapor - 16,000 Lumen	51 Co		Lamp Count	1,066	\$13.69	\$14,588	Level 3 (5,500-8,000 LED Equivalent Lumens)	51	\$10.06	\$10,722
High Pressure Sodium Vapor - 22,000 Lumen	51 Co		Lamp Count	16,338	\$15.63	\$255,355	Level 4 (8,001-12,000 LED Equivalent Lumens)	51	\$10.42	\$170,258
High Pressure Sodium Vapor - 27,500 Lumen	51 Co		Lamp Count	1,995	\$19.80	\$39,507	Level 5 (12,001-15,500 LED Equivalent Lumens)	51	\$11.08	\$22,104
High Pressure Sodium Vapor - 50,000 Lumen	51 Co		Lamp Count	2,707	\$26.16	\$70,813	Level 6 (15,501 and Greater LED Equivalent Lumens)	51	\$13.52	\$36,587
High Pressure Sodium Vapor - 9,500 Lumen - Decorative Series 1	51 Co		Lamp Count	-	\$34.03	\$0	CLOSED			
High Pressure Sodium Vapor - 16,000 Lumen - Decorative Series 2	51 Co		Lamp Count	-	\$26.46	\$0	CLOSED			
High Pressure Sodium Vapor - 16,000 Lumen - Decorative Series 1	51 Co		Lamp Count	48	\$35.25	\$1,692	Decorative Series - Level 3 (5,500-8,000 LED Equivalent Lumens)	51	\$17.95	\$862
High Pressure Sodium Vapor - 16,000 Lumen - Decorative Series 2	51 Co		Lamp Count	-	\$27.72	\$0	CLOSED			
Street Lighting Service - Company-Owned System							Street Lighting Service - Company-Owned System			
Incandescent - 2,500 Lumen + \$1.31697 O&M	52 Co		Lamp Count	99	\$7.71	\$767	Level 1 (0-3,500 LED Equivalent Lumens)	51	\$9.06	\$901
Incandescent - 4,000 Lumen + \$1.37191 O&M	52 Co		Lamp Count	24	\$11.79	\$287	Level 1 (0-3,500 LED Equivalent Lumens)	51	\$9.06	\$220
Incandescent - 6,000 Lumen + \$1.41707 O&M	52 Co		Lamp Count	36	\$15.68	\$572	Level 2 (3,501-5,500 LED Equivalent Lumens)	51	\$9.06	\$331
High Pressure Sodium Vapor - 9,500 Lumen + \$7.88516 O&M	52 Co		Lamp Count	1,010	\$11.74	\$11,859	Level 2 (3,501-5,500 LED Equivalent Lumens)	51	\$9.75	\$9,853
High Pressure Sodium Vapor - 9,500 Lumen + \$8.43516 O&M	52 Co		Lamp Count	269	\$12.29	\$3,307	Level 3 (5,501-5,500 LED Equivalent Lumens)	51	\$9.75	\$2,624
High Pressure Sodium Vapor - 22,000 Lumen + \$8.64565 O&M	52 Co		Lamp Count	24	\$16.08	\$386	Level 4 (8,001-12,000 LED Equivalent Lumens)	51	\$10.42	\$250
High Pressure Sodium Vapor - 22,000 Lumen + \$9.29565 O&M	52 Co		Lamp Count	12	\$16.73	\$205	Level 4 (8,001-12,000 LED Equivalent Lumens)	51	\$10.42	\$128
High Pressure Sodium Vapor - 22,000 Lumen + \$9.83565 O&M	52 Co		Lamp Count	733	\$17.27	\$12,658	Level 4 (8,001-12,000 LED Equivalent Lumens)	51	\$10.42	\$7,636
Mercury Vapor - 7,000 Lumen + \$5.96164 O&M	52 Co		Lamp Count	12	\$12.61	\$155	Level 1 (0-3,500 LED Equivalent Lumens)	51	\$9.06	\$111
Mercury Vapor - 21,000 Lumen + \$0.91108 O&M	52 Co		Lamp Count	12	\$15.96	\$192	Level 4 (8,001-12,000 LED Equivalent Lumens)	51	\$10.42	\$125
Street Lighting Service - Customer Owned System	53		kWh	3,695,897	\$0.07215	\$266,659	Street Lighting Service - Customer Owned System	53	\$0.04915	\$181,639

Pacific Power & Light
State of Washington
Summary of Present and Proposed Lighting Prices
Lighting Class Cost Analysis
12 Months Ended June 2019

Present Description	Present Sch No.	Co/Cust Owned?	Present			Proposed Description	Proposed Sch No.	Proposed Price	Proposed Revenue
			Units	Quantity	Price				
Recreational Field Lighting									
Basic Charge - Single Phase	54	Cust	Bill Count	144	\$3.90	\$562	54	\$11.11	\$1,599
Basic Charge - Three Phase	54	Cust	Bill Count	180	\$7.00	\$1,260	54	\$19.94	\$3,588
Energy Charge	54	Cust	kWh	282,712	\$0.08582	\$24,262	54	\$0.04649	\$13,143
Mercury Vapor Street Lighting Service									
Prior to 1977 - OH - Wood Pole - Horizontal - 7,000 Lumen	57	Co	Lamp Count	11,338	\$10.29	\$116,663	51	\$9.06	\$102,725
Prior to 1977 - OH - Wood Pole - Horizontal - 21,000 Lumen	57	Co	Lamp Count	922	\$18.83	\$17,366	51	\$13.42	\$9,611
Prior to 1977 - OH - Wood Pole - Horizontal - 55,000 Lumen	57	Co	Lamp Count	-	\$38.08	\$0	51	\$13.52	\$0
Prior to 1977 - OH - Wood Pole - Vertical - 7,000 Lumen	57	Co	Lamp Count	3,195	\$9.65	\$30,834	51	\$9.06	\$28,951
Prior to 1977 - OH - Wood Pole - Vertical - 21,000 Lumen	57	Co	Lamp Count	-	\$17.57	\$0	51	\$10.42	\$0
Prior to 1977 - OH - 26' Metal Pole - Horizontal - 7,000 Lumen	57	Co	Lamp Count	409	\$13.44	\$5,497	51	\$9.06	\$3,706
Prior to 1977 - OH - 26' Metal Pole - Vertical - 7,000 Lumen	57	Co	Lamp Count	-	\$12.72	\$0	51	\$9.06	\$0
Prior to 1977 - OH - 30' Metal Pole - Horizontal - 21,000 Lumen	57	Co	Lamp Count	359	\$22.57	\$8,108	51	\$10.42	\$3,744
Prior to 1977 - OH - 30' Metal Pole - Vertical - 21,000 Lumen	57	Co	Lamp Count	-	\$21.34	\$0	51	\$13.52	\$0
Prior to 1977 - OH - 33' Metal Pole - Horizontal - 55,000 Lumen	57	Co	Lamp Count	-	\$41.85	\$0	51	\$9.06	\$0
Prior to 1977 - UG - 26' Metal Pole - Horizontal - 7,000 Lumen	57	Co	Lamp Count	-	\$13.43	\$0	51	\$9.06	\$0
Prior to 1977 - UG - 26' Metal Pole - Vertical - 7,000 Lumen	57	Co	Lamp Count	-	\$12.72	\$0	51	\$10.42	\$0
Prior to 1977 - UG - 30' Metal Pole - Horizontal - 21,000 Lumen	57	Co	Lamp Count	-	\$21.83	\$0	51	\$10.42	\$0
Prior to 1977 - UG - 30' Metal Pole - Vertical - 21,000 Lumen	57	Co	Lamp Count	-	\$20.60	\$0	51	\$13.52	\$0
Prior to 1977 - UG - 33' Metal Pole - Horizontal - 55,000 Lumen	57	Co	Lamp Count	-	\$41.13	\$0	51	\$9.06	\$0
Post to 1977 - OH - Wood Pole - Horizontal - 7,000 Lumen	57	Co	Lamp Count	180	\$10.75	\$1,937	51	\$13.52	\$1,632
Post to 1977 - OH - Wood Pole - Horizontal - 21,000 Lumen	57	Co	Lamp Count	582	\$18.82	\$10,944	51	\$10.42	\$6,060
Post to 1977 - OH - Wood Pole - Horizontal - 55,000 Lumen	57	Co	Lamp Count	-	\$40.20	\$0	51	\$13.52	\$0

Total Unique Price Count \$1,773,834 61 \$1,274,861

Pacific Power & Light
State of Washington
Summary of Consolidated Proposed Lighting Prices
Lighting Class Cost Analysis
12 Months Ended June 2019

Proposed Description	Proposed Sch No.	Units	Quantity	Proposed Price	Proposed Revenue
Outdoor Area Lighting					
Level 1 (0-5,500 LED Equivalent Lumens)	15	Lamp Count	26,655	\$8.60	\$229,187.55
Level 2 (5,501-12,000 LED Equivalent Lumens)	15	Lamp Count	5,710	\$9.72	\$55,485.32
Level 3 (12,001 and Greater LED Equivalent Lumens)	15	Lamp Count	1,013	\$11.47	\$11,613.31
Level 1 (0-3,500 LED Equivalent Lumens)	51	Lamp Count	26,737	\$9.06	\$242,251.00
Level 2 (3,501-5,500 LED Equivalent Lumens)	51	Lamp Count	20,530	\$9.75	\$200,177.53
Level 3 (5,500-8,000 LED Equivalent Lumens)	51	Lamp Count	1,452	\$10.06	\$14,609.96
Level 4 (8,001-12,000 LED Equivalent Lumens)	51	Lamp Count	19,012	\$10.42	\$198,132.16
Level 5 (12,001-15,500 LED Equivalent Lumens)	51	Lamp Count	3,916	\$11.08	\$43,378.07
Level 6 (15,501 and Greater LED Equivalent Lumens)	51	Lamp Count	3,418	\$13.52	\$46,195.44
Cust. Funded Conv. - Level 1 (0-3,500 LED Equivalent Lumens)	51	Lamp Count	2,512	\$4.48	\$11,249.41
Cust. Funded Conv. - Level 2 (3,501-5,500 LED Equivalent Lumens)	51	Lamp Count	1,225	\$4.86	\$5,950.94
Cust. Funded Conv. - Level 3 (5,500-8,000 LED Equivalent Lumens)	51	Lamp Count	21	\$5.15	\$108.38
Cust. Funded Conv. - Level 4 (8,001-12,000 LED Equivalent Lumens)	51	Lamp Count	1,848	\$5.46	\$10,095.04
Cust. Funded Conv. - Level 5 (12,001-15,500 LED Equivalent Lumens)	51	Lamp Count	164	\$5.85	\$959.71
Cust. Funded Conv. - Level 6 (15,501 and Greater LED Equivalent Lumens)	51	Lamp Count	648	\$7.15	\$4,635.28
Decorative Series - Level 3 (5,500-8,000 LED Equivalent Lumens)	51	Lamp Count	48	\$17.95	\$861.62
Street Lighting Service - Customer Owned System	53	kWh	3,695,897	\$0.04915	\$181,639.46
Recreational Field Lighting					
	54				
Basic Charge - Single Phase	54	Bill Count	144	\$11.11	\$1,599.44
Basic Charge - Three Phase	54	Bill Count	180	\$19.94	\$3,588.48
Energy Charge	54	kWh	282,712	\$0.04649	\$13,142.68
Total					\$1,274,860.79
Unique Price Count				20	