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Exhibit No.: Liberty-09
Witness: T. Lyons



(U 933-E)

Liberty Utilities (CalPeco Electric) LLC

2025 General Rate Case

Before the California Public Utilities Commission

Chapter 9: Marginal Costs and Rate Design

Tahoe Vista, California

September 20, 2024

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FOR THE DIRECT TESTIMONY OF TIMOTHY S. LYONS
LIBERTY UTILITIES (CALPECO ELECTRIC) LLC
BEFORE THE CALIFORNIA PUBLIC UTILITIES COMMISSION
DOCKET NO.- _____

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- Exhibit TSL-3 – Derivation of Marginal Costs
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DIRECT TESTIMONY OF TIMOTHY S. LYONS
LIBERTY UTILITIES (CALPECO ELECTRIC) LLC
BEFORE THE CALIFORNIA PUBLIC UTILITIES COMMISSION
DOCKET NO.

1 **I. INTRODUCTION**

2 **Q. Please state your names and business addresses.**

3 A. My name is Timothy S. Lyons. My business address is 3 Speen Street, Suite 150,
4 Framingham, Massachusetts 01701.

5 **Q. By whom are you employed and in what capacity?**

6 A. I am a Partner with ScottMadden, Inc. (“ScottMadden”).

7 **Q. On whose behalf are you testifying in this proceeding?**

8 A. I am testifying on behalf of Liberty Utilities (CalPeco Electric) LLC (“CalPeco” or the
9 “Company”).

10 **Q. Please describe your professional and educational experience.**

11 A. I have more than 30 years of experience in the energy industry. I started my career in 1985
12 at Boston Gas Company, eventually becoming Director of Rates and Revenue Analysis. In
13 1993, I moved to Providence Gas Company, eventually becoming Vice President of
14 Marketing and Regulatory Affairs. Starting in 2001, I held a number of management
15 consulting positions in the energy industry, first at KEMA and then at Quantec, LLC. In
16 2005, I became Vice President of Sales and Marketing at Vermont Gas Systems, Inc. before
17 joining Sussex Economic Advisors, LLC (“Sussex”) in 2013. Sussex was acquired by
18 ScottMadden in 2016.

1 I hold a bachelor's degree from St. Anselm College, a master's degree in economics
2 from The Pennsylvania State University, and a master's degree in business administration
3 from Babson College.

4 **Q. Have you previously testified before the California Public Utilities Commission**
5 **("Commission") or any other regulatory agency?**

6 A. Yes. My testimony experience is included in Exhibit TSL-1.

7 **Q. What is the purpose of your Direct Testimony?**

8 A. The purpose of my testimony is to sponsor the Company's proposed base rates. The
9 testimony includes: (a) a description of the current rate classes; (b) development of the
10 Marginal Cost of Service ("MCS") study; and (c) development of the proposed revenue
11 targets, rate design, and bill impact analyses for each rate class.

12 The MCS study was used to inform the proposed base rates in this proceeding.

13 **Q. Have you prepared exhibits to support this testimony?**

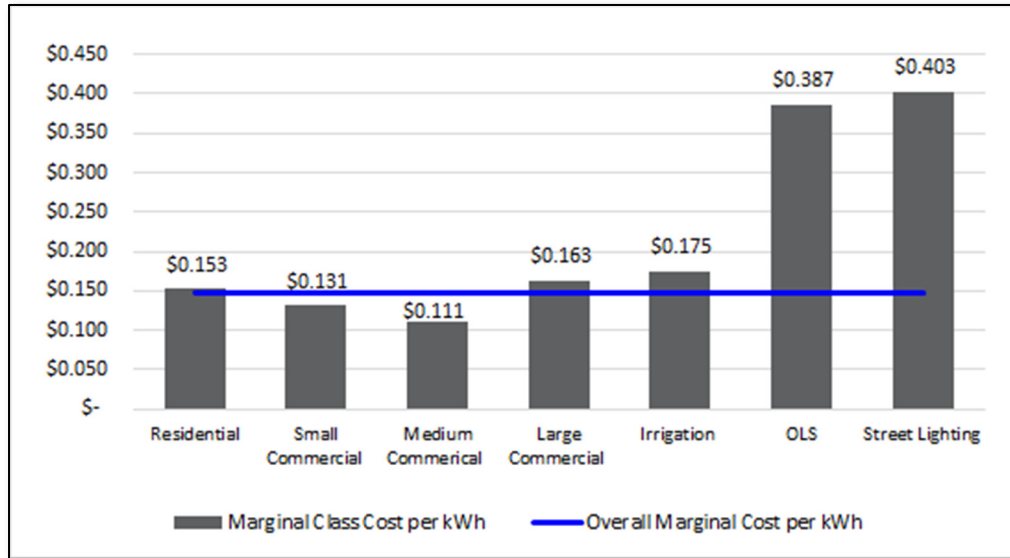
14 A. Yes. Exhibits TSL-2 through TSL-5 summarize the results of the MCS and proposed rate
15 design. These Exhibits were prepared by me or under my direction.

16 **II. SUMMARY OF FINDINGS AND RECOMMENDATIONS**

17 **Q. Please summarize your Direct Testimony.**

18 A. The results of the Company's marginal cost study show differences in the cost of serving
19 the Company's rate classes, as shown in Figure 1 (below).

Figure 1: Marginal Cost of Service by Rate Class (\$ per kWh)



The Figure shows the marginal cost of serving the residential rate class of \$0.153 per kWh is higher than the marginal cost of serving the small commercial and industrial (“C&I”) rate class of \$0.131 per kWh. The Figure also shows the marginal cost of serving the medium and large C&I rate classes of \$0.111 per kWh and \$0.163 per kWh, respectively.

Derivation of the marginal cost of service is presented in Exhibits TSL-2 and TSL-3. Except as otherwise indicated, the approach used to calculate the marginal cost of service and proposed rates in this General Rate Case (“GRC”) filing is generally consistent with the approach used to support the settlement agreement in the Company’s most recent GRC filing (Application 21-05-017).

The proposed base rates reflect three important rate design principles: (a) rates should recover the overall cost of providing service; (b) rates should be fair, minimizing inter- and intra-class subsidies to the extent possible; and (c) rate changes should be tempered by rate continuity concerns.

1 The Company applied these principles by first allocating the overall cost of service
2 to each rate class consistent with the results of the MCS study. In addition, the Company
3 established revenue targets for each rate class that moved toward cost-based rates,
4 tempered to address customer bill impact considerations. The proposed base rates reflect
5 a uniform increase in kilowatt-hour (“kWh”) usage charges and kilowatt (“kW”) demand
6 charges following increases in the customer charges.

7 The Company prepared customer bill impacts to evaluate the impact of the
8 proposed base rates. The customer bill impacts examined a range of customer usage.
9 Overall, the proposed rates will increase the total monthly bill of a residential permanent
10 customer using 604 kWh per month by \$70.40, or 36.10 percent, based on current rates.

11 Importantly, the Company’s GRC rates are set to expire on the effective date of the
12 proposed rates, consequently, the effective increase on customer bills will be less.
13 Reflecting expiration of the Company’s GRC rates, the proposed rates will increase the
14 monthly bill of a Residential Permanent customer using 604 kWh per month by \$45.80, or
15 23.50 percent.

16 Derivation of the class revenue targets, proposed rates, and customer bill impacts
17 is presented in Exhibits TSL-4 and TSL-5.

18 **III. OVERVIEW**

19 **Q. Please briefly describe the Company’s Service Area.**

20 A. The Company is a regulated utility providing electric service in California. The Company
21 provides electric service to approximately 51,551 customers, including 44,815 (86.9
22 percent) residential customers, 5,779 (11.20 percent) C&I customers, and 957 (1.90
23 lighting customers, as shown in Figure 2 (below).

1 Customers are presently served under one of eight rate schedules based on type of
2 service and load characteristics. Residential customers are presently served under one of
3 two rate schedules: permanent and non-permanent. C&I customer are presently served
4 under one of four rate schedules: small C&I (A-1), medium C&I (A-2), large C&I (A-3),
5 and irrigation (PA). Lighting customers are presently served under one of two rate
6 schedules: outdoor lighting and streetlighting.

7 As discussed below, the Company proposes in this GRC filing to consolidate the
8 residential permanent and non-permanent rate schedules into a single residential schedule.

9 **Q. Please describe the characteristics of the Company's rate classes.**

10 A. Figure 2 (below) provides a breakdown of the test year customers and kWh sales for each
11 rate class. The test year represents the forecast period January 1, 2025 through December
12 31, 2025.

13 **Figure 2: Test Year Customers and Sales**

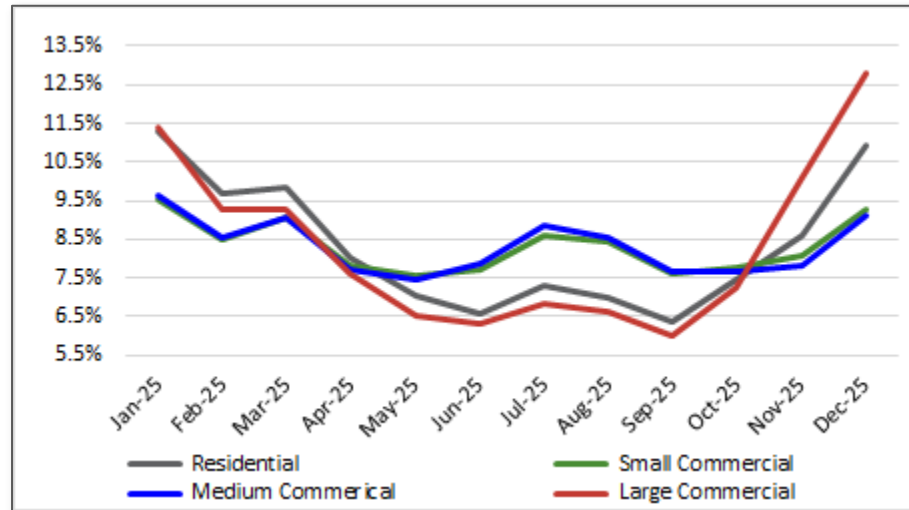
Rate Classes	Number of Customers	Percentage of Customers	Sales kWh	Percentage of Sales	kWh Sales per Customer
Residential	44,815	86.9%	302,323,553	52.6%	6,746
Small Commercial	5,490	10.6%	98,281,303	17.1%	17,902
Medium Commercial	224	0.4%	57,064,541	9.9%	254,752
Large Commercial	54	0.1%	114,995,214	20.0%	2,129,541
Irrigation	11	0.0%	1,109,346	0.2%	101,619
OLS	926	1.8%	586,035	0.1%	633
Street Lighting	31	0.1%	334,786	0.1%	10,771
Total	51,551	100.0%	574,694,777	100.0%	11,148

14 The Figure shows the residential rate class represents over 86.90 percent of the Company's
15 customers while the large C&I rate class represents only 0.1 percent of customers. The
16 Figure also shows variations in annual use per customer among the rate classes. Residential

1 customers use on average 6,746 kWh per year, while large C&I customers use on average
2 2,130 MWh per year.

3 kWh usage varies seasonally among the rate classes, as shown in Figure 3 (below).

4 **Figure 3: Monthly Usage as % of Annual Usage**



5
6 The Figure shows the residential and large C&I rate classes, for example, reflect a seasonal
7 load pattern, with monthly sales increasing during the winter months, representing
8 respectively heating and snowmaking usage. By comparison, the small and medium C&I
9 rate classes show a relatively consistent load pattern throughout the year, with only slight
10 increases during the winter and summer and months.

11 Variations in load patterns, as discussed below, have implications on the allocation
12 of costs in the MCS study.

13 **Q. Please describe the Company's current residential base rates.**

14 A. The Company's current residential base rates consist of a customer charge and two energy
15 charges that recover, respectively, the generation and distribution cost of service.

1 The energy charges consist of two Tiers, with Tier 1 charges for usage up to and
2 including baseline quantity, and Tier 2 charges for usage above baseline quantity. The
3 distribution energy charges are the same for Tier 1 and Tier 2 usage, while the generation
4 energy charges are lower for Tier 1 usage compared to the charges for Tier 2 usage.

5 **Q. What is the Company’s proposal regarding the residential permanent and non-**
6 **permanent rate schedules?**

7 A. The Company proposes to consolidate the residential permanent and non-permanent rate
8 schedules in this GRC proceeding since the results of the MCS show there are insufficient
9 differences among the permanent, non-permanent, and consolidated rate schedules to
10 support standalone tariff rates.

11 In addition, a consolidated rate schedule will facilitate communication and
12 administration of the Company’s residential tariffs as well as address concerns raised in
13 the prior GRC proceeding on how the Company qualifies customers for the permanent and
14 non-permanent rate schedules.

15 **IV. MARGINAL COST OF SERVICE STUDY**

16 **Q. Please describe the purpose of a MCS study.**

17 A. The purpose of a MCS study is to measure the incremental cost of service to meet
18 incremental customer and demand requirements. The incremental cost of service includes
19 generation capacity costs, generation energy costs, distribution demand costs and
20 customer-related costs.

21 **Q. Were costs allocated to time of use periods?**

22 A. Yes. The MCS study assigned costs to five time of use (“TOU”) periods: three winter
23 (November through April) periods and two summer (May through October) periods.

1 Within the winter, there are three time of day periods: Peak, Mid-Peak and Off-
2 peak. Peak is represented by the hours 5:01 p.m. to 10:00 p.m., Mid-Peak is represented
3 by the hours 7:01 a.m. to 5:00 p.m., and Off-Peak is represented by all other hours. Within
4 the summer, there are two time of day periods: Peak and Mid-Peak. Peak is represented
5 by the hours 10:01 a.m. to 10:00 p.m., and Mid-Peak is represented by all other hours.

6 In general, costs were assigned in two steps: first, costs were assigned to each TOU
7 period; and second, costs in each TOU period were assigned to each rate class.

8 **Q. Please describe derivation of the marginal customer costs?**

9 A. Marginal customer costs represent incremental customer costs to serve incremental
10 customers. There are two types of marginal customer costs: (1) common customer costs,
11 which are costs that reflect services to all customers, and (2) specific customer costs, which
12 are costs that reflect services to individual customers.

13 Common customer costs include customer account and customer service costs,
14 such as those related to meter reading, billing, and customer records. The marginal
15 common customer costs were based on an average cost per customer over the period of
16 2016 through 2023, adjusted for inflation. The average cost per customer was then
17 apportioned to each rate class based on the results of a weightings study that compares the
18 relative service requirements across rate classes. The weightings study determined, for
19 example, that customer service and customer account service requirements for the small
20 C&I rate class are 23 times higher than the requirements for the residential rate class.

21 Specific customer costs were based on average facility investments per customer
22 for each rate class. Average facility investments included the current installation cost of a
23 meter, service drop and transformer. The annual cost per customer for each rate class was

1 determined by applying general plant loadings, material and storage costs, cash working
 2 capital requirements, O&M-related costs and carrying costs to the average facility
 3 investments. The annual customer cost for each rate class was determined by applying the
 4 annual cost per customer to the average number of new hookups between 2018 and 2022.
 5 This approach is a refinement to the Company's approach in the prior GRC settlement
 6 agreement where the annual customer cost was based on the average number of new
 7 hookups plus number of replacements. The Company eliminated the cost of replacements
 8 since they do not reflect the incremental cost to serve new customers.

9 The common and specific customer costs per month are summarized in Figure 4
 10 (below).

11 **Figure 4: Marginal Customer Costs**

Rate class	Common Costs per Customer	Specific Costs per Customer	Total Costs per Customer
Residential	\$ 7.21	\$ 6.74	\$ 13.95
Small Commercial	42.86	3.57	46.43
Medium Commercial	87.29	7.27	94.56
Large Commercial	509.04	42.42	551.46
Irrigation	253.74	21.14	274.88

12 The Figure shows that common and specific costs per customer vary across rate classes.
 13 For example, the Figure shows the total customer cost per residential customer is \$13.95
 14 while the total customer cost per large C&I customer is \$551.46. The differences are
 15 largely attributable to differences in meter and service investments as well as service
 16 requirements.

17 **Q. Please describe how marginal customer costs were allocated to each time-of-use**
 18 **period?**

1 A. The customer-related costs were not allocated to time of use periods since there is no
2 seasonal or time of day differences in customer-related costs.

3 **Q. Please describe derivation of marginal distribution demand costs?**

4 A. Marginal distribution demand costs represent the incremental cost in distribution facilities
5 to serve incremental peak demands. The incremental cost includes distribution and
6 substation investments.

7 The incremental cost is based on the cost of adding distribution facilities to serve
8 incremental peak demands. The marginal distribution demand cost in this MCS study is
9 based on the relationship between distribution facility investments and peak demands from
10 two recent projects. This approach is a refinement to the Company's approach in the prior
11 GRC settlement agreement where the cost of adding distribution facilities to serve
12 incremental peak demands was based on the historical relationship between distribution
13 facility investments and peak demands. The Company refined the methodology in this
14 GRC proceeding since the Company incremental peak demands have been declining over
15 time. The Company believes its approach of examining two recent projects reasonably
16 estimates the cost of adding distribution facilities to serve incremental peak demands.

17 The annual cost of the distribution facility investments was based on an economic
18 carrying charge rate, general plant, O&M and A&G costs, working capital carrying costs
19 and materials and supply costs.

20 **Q. Please describe how marginal distribution demand costs were assigned to each TOU**
21 **period and rate class?**

22 A. The Company determined there are two types of marginal distribution demand costs: those
23 that change with TOU period and those that do not change with TOU periods. The

1 Company determined that distribution demand costs that vary with TOU periods include
2 substation investments and 50.0 percent of incremental distribution facility investments.
3 The Company also determined that distribution demand costs that do not vary with TOU
4 periods includes 50.0 percent of incremental distribution facility investments. This
5 approach is consistent with the approach in the Company's prior GRC filing.

6 Distribution demand costs that vary with TOU periods were assigned to each TOU
7 period based on the top 100 peak load hours. These hours represent when the distribution
8 system may experience constraints and trigger investments to maintain reliability. The
9 costs were then assigned to each class based on projected class usage during the TOU
10 periods.

11 Distribution demand costs that do not vary with TOU periods were assigned to each
12 rate class based on Non-Coincident Peak ("NCP") demands.

13 **Q. Please describe derivation of the marginal generation capacity costs?**

14 A. Marginal generation capacity costs represent incremental generation capacity costs to serve
15 incremental peak demands.

16 Derivation of the marginal generation capacity costs was based on the value of
17 deferring an investment in an energy storage unit and is calculated based on the Real
18 Economic Carrying Charge associated with an energy storage unit plus annual O&M
19 expenses, including property taxes, fixed O&M expenses, general plant loader and A&G
20 loader.

21 The energy storage unit capital cost of \$1,170 per kW was based on the Company's
22 recent project.

1 The annualized deferral value of the energy storage unit was based on applying an
2 economic carrying charge to the capital costs. An economic carrying charge measures the
3 present value of the estimated cost over the life of the investment and reflects all costs
4 related to the energy storage unit. For purposes of the marginal cost study, an economic
5 carrying charge measures the value of delaying the investment from one year to the next.

6 **Q. Please describe derivation of the Economic Carrying Charge?**

7 A. The economic carrying charge represents the present value of the estimated cost over the
8 life of the investment. The estimated cost recovers the full cost of the investment, including
9 the cost of financing, depreciation expense, and income and property taxes.

10 From the present value of the estimated cost, there are two fixed charges that can
11 be calculated with the same present value of the estimated cost: (1) a levelized fixed charge
12 (the same nominal dollars every year), and (2) an economic carrying charge (the same real
13 dollars every year or increasing nominal dollars at the rate of inflation).

14 **Q. How were marginal generating capacity costs assigned to each time period and each**
15 **rate class?**

16 A. The marginal generating capacity costs were assigned to each TOU period based on a
17 Probability of Peak (“POP”) factor that determines each hour’s likelihood of being the peak
18 hour during each month. The costs were then assigned to each class based on class
19 projected usage during the TOU periods.

20 **Q. Please describe derivation of the marginal generation energy costs?**

21 A. The marginal generation energy costs were based on the Company’s projection of energy
22 prices by TOU periods. The Company’s projection of energy prices was based on the

2021-2025 forecasted energy costs developed as part of the most recent IRP. The marginal energy costs for each TOU period are shown in Figure 5 (below).

Figure 5: Marginal Energy Costs

Generation Marginal Energy Costs		
TOU Period	\$/MWh	
Winter - On-Peak	\$	33.46
Winter - MidPeak		16.59
Winter - Off-Peak		33.52
Summer - Peak		20.40
Summer - Off-Peak		27.18
System Average	\$	25.45

The Figure shows that the Company projects energy prices of \$33.46 during the Winter On-Peak period and \$16.59 during the Winter Mid-Peak period.

Q. How were marginal energy costs assigned to each rate class?

A. The marginal energy costs were assigned to each rate class based on projected kWh sales.

Q. Please summarize the results of the marginal cost study.

A. The results of the marginal cost study are summarized in Figure 6 (below).

Figure 6: Marginal Costs of Service Summary

Marginal Cost of Service Summary	Total Costs	% Costs
Marginal Generation (Capacity)	\$ 10,856,234	12.8%
Marginal Generation (Energy)	14,652,945	17.3%
Marginal Distribution (TOU)	21,543,299	25.4%
Marginal Distribution (Non-TOU)	26,505,305	31.3%
Marginal Customer (Common)	4,800,198	5.7%
Marginal Customer (Specific)	6,371,941	7.5%
Total Marginal Cost of Service	\$ 84,729,922	100.0%

1 The Figure shows 30.10 percent of marginal costs are related to marginal generation costs,
2 56.70 percent are related to marginal distribution demand costs, and 13.20 percent are
3 related to marginal distribution customer costs.

4 Derivation of marginal costs and their allocation to rate classes is presented in
5 Exhibit TSL-2 and TSL-3.

6 **V. RATE DESIGN**

7 **Q. Please describe the principles used to guide the proposed rate design.**

8 A. The proposed rate design was guided by several principles commonly used throughout the
9 industry, including: (a) rates should recover the overall cost of providing service; (b) rates
10 should be fair, minimizing inter- and intra-class subsidies to the extent possible; and (c)
11 rate changes should be tempered by rate continuity concerns.¹

12 Because these principles can conflict, the proposed rate design reflects a level of
13 judgment to balance these principles.

14 **Q. How were these principles applied in this proceeding?**

15 A. First, rates were designed to recover the overall cost of service. This was done by
16 developing customer, demand and energy charges based on test year bills, kW billing
17 demands and kWh sales. In addition, rates were designed to be fair and equitable. This
18 was done by setting revenue targets for each rate class that reflected the results of the MCS
19 study. Another rate design objective is to moderate rate changes to address rate continuity
20 concerns. This objective was considered while setting revenue targets.

21 **Q. Please summarize the steps taken to develop the proposed rates.**

¹ See Bonbright, James, Danielsen, Albert, and Kamerschen, David. "Principles of Public Utility Rates." Public Utilities Reports, Inc. pp. 377-407 (2nd Ed. 1988).

1 A. The first step to develop the proposed rates was to establish the overall revenue requirement
2 to be recovered from base rates. The next step was to set revenue targets for each rate class
3 based on the results of the MCS study. Rates within each rate class were then designed to
4 recover the revenue targets based on test year customer, kW demand and kWh usage data.

5 **Q. What is the revenue requirement that you used as a starting point?**

6 A. The revenue requirement was presented in the testimony and accounting schedules of the
7 Company's revenue requirements witness, which indicates a revenue requirement of
8 \$181.8 million.

9 **Q. Please describe the process to set revenue targets for each rate class.**

10 A. The starting point for setting the class revenue targets was to first identify the base rate
11 changes needed to achieve cost-based rates. In some cases, the rate increases needed to
12 achieve cost-based rates required an increase substantially higher than the system average.
13 In other cases, the rate increases needed to achieve cost-based rates required an increase
14 substantially lower than the system average increase. Thus, to mitigate bill impact
15 concerns, the movement to cost-based rates was moderated. Specifically, to mitigate bill
16 impact concerns, the proposed revenue targets for each rate class were based on a 10.00
17 percent movement toward cost-based rates, as shown in Exhibit TSL-4.

18 The Exhibit shows revenue requirements for each rate class based on three
19 approaches to setting class revenue targets: (1) a full movement to cost-based rates; (2) a
20 uniform increase in base rate revenues; and (3) a partial movement to system ROR, which
21 is the Company's proposal. A full movement to cost-based rates for certain rate classes
22 would result in significant increases for certain rate classes, thus raising bill continuity
23 concerns. A uniform increase across all rate classes would address bill continuity concerns

1 but raise fairness concerns since there would be no movement to cost-based rates. The
2 Company's proposed revenue targets reflect a balance of fairness and bill continuity
3 considerations. The Company believes a 20.00 percent movement to cost-based rates
4 strikes an appropriate balance between moving to cost-based rates and addressing bill
5 impact concerns.

6 Derivation of the class revenue targets is presented in Exhibit TSL-4.

7 **Q. Please describe the process to develop the proposed rates for each rate class.**

8 A. The proposed rates were developed for each rate class based on a uniform increase in rate
9 elements following an increase in the customer charge. The development of proposed rates
10 is presented in Exhibit TSL-5.

11 **Q. What was the process to establish the proposed rate design?**

12 A. The Company's process to establish the proposed residential customer charge for non-
13 CARE customers generally followed its approach in the income-graduated fixed charges
14 ("IGFC") proceeding. Specifically, the proposed residential customer charge for non-
15 CARE customers is based on three types of costs: (1) the cost of providing customers
16 access to the electric grid (e.g., meters, services, and a portion of distribution plant related
17 to providing customers access to the electric grid), (2) the cost of providing basic customer
18 services (e.g., meter reading, billing, and customer care), and (3) the cost of wildfire
19 mitigation. The Company's proposed residential customer charge for non-CARE
20 customers reflects one-third of the referenced costs. The Company's proposed residential
21 customer charge for Tier 1 CARE and Tier 2 CARE is \$10.00 and \$5.00, respectively.

1 The proposed rates for each rate class were based on a uniform increase in rate
2 elements following an increase in the customer charge. The development of proposed rates
3 is presented in Exhibit TSL-5.

4 **Q. Please describe the process to evaluate the customer bill impact for each rate class.**

5 A. The customer bill impacts were evaluated using base rates and total effective rates. The bill
6 impacts were calculated for Winter and Summer seasons and evaluated customers with
7 average usage, 25.0 percent above average usage, and 25.0 percent below average usage.
8 Overall, the proposed rates will increase the monthly bill of a residential permanent
9 customer by \$70.40 per month, or 36.10 percent, based on current rates. The bill impact
10 analyses are presented in Exhibit TSL-5.

11 Importantly, the Company's GRC rates are set to expire on the effective date of the
12 proposed rates, consequently, the effective increase on customer bills will be less.
13 Reflecting expiration of the Company's GRC rates, the proposed rates will increase the
14 monthly bill of a Residential Permanent customer using 604 kWh per month by \$45.80, or
15 23.50 percent.

16 **IX. CONCLUSION**

17 **Q. Does this conclude your Direct Testimony?**

18 A. Yes, it does.

Exhibit TSL-1

Summary of Qualifications

Tim Lyons is a partner with ScottMadden with more than 30 years of experience in the energy industry. Tim has held senior positions at several gas utilities and energy consulting firms. His experience includes rates and regulatory support, sales and marketing, customer service and strategy development. Prior to joining ScottMadden, Tim served as Vice President of Sales and Marketing for Vermont Gas. He has also served as Vice President of Marketing and Regulatory Affairs for Providence Gas Company, Director of Rates at Boston Gas Company, and Project Director at Quantec, LLC, an energy consulting firm.

Tim has sponsored testimony before 30 U.S. and 3 Canadian regulatory agencies. Tim holds a bachelor's degree from St. Anselm College, a master's degree in economics from The Pennsylvania State University, and a master's degree in business administration from Babson College.

Areas of Specialization

- Regulation and Rates
- Retail Energy
- Utilities
- Natural Gas

Capabilities

- Regulatory Strategy and Rate Case Support
- Strategic and Business Planning
- Capital Project Planning
- Process Improvements

Articles and Speeches

- "Country Strong: Vermont Gas shares its comprehensive effort to expand natural gas service into rural communities." ***American Gas Association***, June 2011 (with Don Gilbert).
- "Talking Safety With Vermont Gas." ***American Gas Association***, February 2009 (with Dave Attig).
- "Consumers Say 'Act Now' To Stabilize Prices." ***Power & Gas Marketing***, September/ October 2001 (with Jim DeMetro and Gerry Yurkevicz).
- "Rate Reclassification: Who Buys What and When." ***Public Utilities Fortnightly***, October 15, 1991 (with John Martin).

Sponsor	Date	Docket No.	Subject
Regulatory Commission of Alaska			
Cook Inlet Natural Gas Storage Alaska, LLC	7/21	Docket No. U-21-058	Sponsored testimony supporting the lead-lag study/cash working capital requirement for a general rate case proceeding.
ENSTAR Natural Gas Company	06/16	Docket No. U-16-066	Adopted and sponsored testimony supporting a lead-lag study for a general rate case proceeding.
Arizona Corporation Commission			
Southwest Gas Corporation	02/24	Docket No. G-01551A-23-0341	Sponsored testimony supporting class cost of service, rate design and bill impact analysis for a general rate case proceeding.
Southwest Gas Corporation	12/21	Docket No. G-01551A-21-0368	Sponsored testimony supporting class cost of service, rate design and bill impact analysis for a general rate case proceeding.
Arkansas Public Service Commission			
Summit Utilities, Inc.	01/24	Docket No. 23-079-U	Sponsored testimony supporting class cost of service, rate design and bill impact analysis for a general rate case proceeding.
Liberty Utilities (The Empire District Electric Company)	2/23	Docket No. 22-085-U	Sponsored testimony supporting the class cost of service, rate design, bill impact studies, and revenue decoupling for a general rate case proceeding.
Liberty Utilities (Pine Bluff Water)	10/18	Docket No. 18-027-U	Sponsored testimony supporting the cost of service, rate design and bill impact studies for a general rate case proceeding.
California Public Utilities Commission			
Liberty Utilities (Apple Valley Water)	01/24	Application No. 24-01-0003	Sponsored testimony supporting rate design studies for a general rate case proceeding.
Liberty Utilities (Park Water)	01/24	Application No. 24-01-0002	Sponsored testimony supporting rate design studies for a general rate case proceeding.
Bear Valley Electric Service, Inc.	10/22	Application No. 22-08-010	Sponsored testimony supporting marginal cost study, rate design and bill impact analysis for a general rate case proceeding.
Liberty Utilities (CalPeco Electric)	5/21	Application No. 21-05-017	Sponsored testimony supporting the lead-lag study/cash working capital, marginal cost study, rate design and bill impact analysis for a general rate case proceeding.
Southwest Gas Corporation (Southern California, Northern California, and South Lake Tahoe jurisdictions)	8/19	Application No. 19-08-015	Sponsored testimony on behalf of three separate rate jurisdictions supporting revenue requirements, lead-lag/ cash working capital, and class cost of service, rate design and bill impact analysis for a general rate case proceeding.
Colorado Public Utilities Commission			
Colorado Natural Gas (Summit Utilities)	01/24	Proceeding No. 23A-0570G	Sponsored the Fully Distributed Cost (FDC) study in support of a Cost Assignment and Allocation Manual (CAAM) application.
Connecticut Public Utilities Regulatory Authority			
Yankee Gas Company	07/14	Docket No. 13-06-02	Sponsored report and testimony supporting the review and evaluation of gas expansion policies, procedures, and analysis.
Delaware Public Service Commission			
Artesian Water Company	04/23	Docket No. 23-0601	Sponsored testimony supporting the cost of service, rate design and bill impact studies for a general rate case proceeding.
Illinois Commerce Commission			
Ameren Illinois Company d/b/a Ameren Illinois	6/24	Docket 22-0487/23-0082/24-0238 (cons.)	Sponsored rebuttal testimony supporting a marginal cost study for a Multi-Year Integrated Grid Plan (Grid Plan) proceeding.
Liberty Utilities (Midstates Natural Gas)	12/23	Docket No. 23-0380	Sponsored testimony supporting cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding.

Sponsor	Date	Docket No.	Subject
Ameren Illinois Company d/b/a Ameren Illinois	1/23	Docket No. 22-0487	Sponsored testimony supporting a Multi-Year Integrated Grid Plan (Grid Plan). Prepared research and analysis evaluating the reasonableness of the Grid Plan through comparison to how other electric utilities have responded to the changing energy landscape.
Liberty Utilities (Midstates Natural Gas)	07/16	Docket No. 16-0401	Sponsored testimony supporting the cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new commercial classes and a decoupling mechanism.
Iowa Utilities Board			
Liberty Utilities (Midstates Natural Gas)	07/16	Docket No. RPU-2016-0003	Sponsored testimony supporting the cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new commercial classes.
Kansas Corporation Commission			
The Empire District Electric Company	12/18	Docket No. 19-EPDE-223-RTS	Sponsored testimony supporting cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding.
Kentucky Public Service Commission			
Bluegrass Water Utility (Central States Water Company)	02/23	Case No. 2022-00432	Sponsored testimony supporting the rate design and bill impact studies for a general rate case proceeding.
Maine Public Utilities Commission			
Northern Utilities, Inc. d/b/a Unitil	05/23	Docket No. 2023-00051	Sponsored testimony supporting a marginal cost study, class cost of service study, rate design and customer bill impact for a general rate case proceeding.
Maine Water Company	03/21	Docket No. 2021-00053	Sponsored testimony supporting a proposed rate smoothing mechanism.
Northern Utilities, Inc. d/b/a Unitil	06/19	Docket No. 2019-00092	Sponsored testimony supporting a proposed capital investment cost recovery mechanism.
Northern Utilities, Inc. d/b/a Unitil	06/15	Docket No. 2015-00146	Sponsored testimony supporting the proposed gas expansion program, including a zone area surcharge.
Maryland Public Service Commission			
The Potomac Edison Company (FirstEnergy)	03/23	Case No. 9695	Sponsored testimony supporting the class cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding.
Sandpiper Energy, a Chesapeake Utilities company	12/15	Case No. 9410	Sponsored testimony supporting the cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new residential and commercial classes.
Massachusetts Department of Public Utilities			
Berkshire Gas Company, Eversource Energy, Liberty Utilities, National Grid, and Unitil	03/22	Docket No. DPU 20-80	Sponsored report that summarizes research, findings, and recommendations for regulatory mechanisms, methodologies, and policies that support Massachusetts's achievement of its net zero climate goal by 2050. The regulatory designs were informed by the results of quantitative and qualitative analysis of decarbonization pathways to achieve the Commonwealth's climate goals.
Liberty Utilities (New England Gas Company)	08/20	Docket No. DPU 20-92	Sponsored the Long-Range Forecast and Supply Plan filing for the five-year forecast period 2020/2021 through 2024/2025.
Eversource Energy, National Grid, and Unitil	02/20	Docket No. DPU 19-55	Sponsored report that summarizes research and evaluation of funding approaches for infrastructure modifications that interconnect Distributed Generation (DG) projects.

Sponsor	Date	Docket No.	Subject
Liberty Utilities (New England Gas Company)	07/18	Docket No. DPU 18-68	Sponsored the Long-Range Forecast and Supply Plan filing for the five-year forecast period 2018/2019 through 2022/2023.
Liberty Utilities (New England Gas Company)	07/16	Docket No. DPU 16-109	Sponsored the Long-Range Forecast and Supply Plan filing for the five-year forecast period 2016/2017 through 2020/2021.
Boston Gas	10/93	Docket No. DPU 92-230	Sponsored testimony describing the Company's position regarding rate treatment of vehicular natural gas investments and expenses.
Boston Gas	03/90	Docket No. DPU 90-55	Sponsored testimony supporting the weather and other cost of service adjustments, rate design and customer bill impact studies for a general rate case proceeding.
Boston Gas	03/88	Docket No. DPU 88-67-II	Sponsored testimony supporting the rate reclassification of commercial and industrial customers for a rate design proceeding.
Michigan Public Service Commission			
Lansing Board of Water & Light and Michigan State University	04/23	Docket No. U-21308	Sponsored testimony evaluating Consumer Energy's class cost of service and rate design proposals.
Lansing Board of Water & Light and Michigan State University	04/20	Docket No. U-20650	Sponsored testimony evaluating Consumer Energy's class cost of service and rate design proposals.
Lansing Board of Water & Light and Michigan State University	04/19	Docket No. U-20322	Sponsored testimony evaluating Consumer Energy's class cost of service and rate design proposals.
Midland Cogeneration Ventures, LLC	09/18	Docket No. U-18010	Sponsored testimony evaluating Consumer Energy's class cost of service and rate design proposals.
Minnesota Public Utilities Commission			
Northern States Power Company (XcelEnergy)	10/21	Docket No. E002/GR-21-630	Sponsored testimony supporting a Return on Equity (ROE) adjustment mechanism that would allow the Company to symmetrically adjust its ROE to reflect significant changes in financial market conditions.
Missouri Public Service Commission			
Liberty Utilities (Missouri Water)	03/24	Docket No. WR-2024-0104	Sponsored testimony supporting lead-lag study for a general rate case proceeding.
Liberty Utilities (Midstates Natural Gas)	02/24	Docket No. GR-2024-0106	Sponsored testimony supporting the class cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding.
Confluence Rivers Utility Operating Company	12/22	Case No. WR-2023-0006/ SR-2023-0007	Sponsored testimony supporting the rate design and bill impact studies for a general rate case proceeding.
The Empire District Gas Company	08/21	Docket No. GR-2021-0320	Sponsored testimony supporting the class cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding.
The Empire District Electric Company	05/21	Docket No. ER-2021-0312	Sponsored testimony supporting the class cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding.
Spire Missouri, Inc.	12/20	Docket No. GR-2021-0108	Sponsored testimony supporting class cost of service, rate design, and lead-lag study proposals for a general rate case proceeding. The testimony also included support for a proposed revenue adjustment mechanism.
The Empire District Electric Company	08/19	Docket No. ER-2019-0374	Sponsored testimony supporting the class cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding. The testimony also included proposals for a weather normalization mechanism.

Sponsor	Date	Docket No.	Subject
Liberty Utilities (Midstates Natural Gas)	09/17	Docket No. GR-2018-0013	Sponsored testimony supporting the class cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding. The testimony also included proposals for a revenue decoupling/ weather normalization mechanism as well as tracker accounts for certain O&M expenses and capital costs.
Missouri Gas Energy	04/17	Docket No. GR-2017-0216	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding. The testimony included support for a decoupling mechanism.
Laclede Gas Company	04/17	Docket No. GR-2017-0215	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding. The testimony included support for a decoupling mechanism.
Nevada Public Utilities Commission			
Southwest Gas Corporation	09/23	Docket No. 23-09012	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding.
Southwest Gas Corporation	09/21	Docket No. 21-09001	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding.
Southwest Gas Corporation	02/20	Docket No. 20-02023	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding.
New Hampshire Public Utilities Commission			
Unitil (Northern Utilities, Inc.)	8/21	Docket No. DG 21-104	Sponsored testimony supporting a revenue decoupling mechanism.
Unitil Energy Systems, Inc.	4/21	Docket No. DE 21-030	Sponsored testimony supporting a revenue decoupling mechanism.
Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities	11/17	Docket No. DG 17-198	Sponsored testimony supporting a levelized cost analysis for approval of firm supply and transportation agreements.
Liberty Utilities d/b/a Granite State Electric Company	04/16	Docket No. DE 16-383	Adopted testimony and sponsored Lead/Lag study for a general rate case proceeding.
New Jersey Board of Public Utilities			
Elizabethtown Gas Company	02/24	Docket No. GR24020158	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Jersey Central Power and Light Company (FirstEnergy)	03/23	Docket No. ER23030144	Sponsored testimony supporting the class cost of service and Lead/Lag studies for a general rate case proceeding.
South Jersey Gas Company	04/22	Docket No. GR22040253	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Elizabethtown Gas Company	12/21	Docket No. GR21121254	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
South Jersey Gas Company	03/20	Docket No. GR20030243	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Elizabethtown Gas Company	04/19	Docket No. GR19040486	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas Company	08/16	Docket No. GR16090826	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
New Mexico Public Regulation Commission			
New Mexico Gas Company, Inc.	9/23	Case No. 23-00255-UT	Sponsored testimony supporting the class cost of service, rate design, bill impact and weather normalization adjustment mechanisms for a general rate case proceeding.

Sponsor	Date	Docket No.	Subject
New York Public Service Commission			
New York Power Authority	09/04	Case No. 04-E-0572	Sponsored testimony evaluating Con Edison's class cost of service study.
Corporation Commission of Oklahoma			
The Empire District Electric Company	02/21	Cause No. PUD 202100163	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding. The proposed rate design included a three-year phase-in of the proposed rate increase.
The Empire District Electric Company	03/19	Cause No. PUD 201800133	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding.
The Empire District Electric Company	04/17	Cause No. PUD 201600468	Adopted direct testimony and sponsored rebuttal testimony supporting the revenue requirements for a general rate case proceeding. The testimony included proposals for alternative ratemaking mechanisms.
Ohio Public Utilities Commission			
Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company	06/24	Case Nos. 24-0468-EL-AIR, 24-0469-EL-ATA, 24-0470-EL-AAM, 24-0471-EL-UNC	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding.
Pennsylvania Public Utility Commission			
FirstEnergy Pennsylvania Electric Company	04/24	Docket No. R-2024-3047068	Sponsored testimony supporting the class cost of service, rate design, bill impact and Lead/Lag studies for a general rate case proceeding.
Rhode Island Public Utilities Commission			
Providence Gas Company	08/01 09/00 08/96	Docket No. 1673	Sponsored testimony supporting the changes in cost of gas adjustment factor related to projected under-recovery of gas costs; Filed testimony and witness for pilot hedging program to mitigate price risks to customers; Filed testimony and witness for changes in cost of gas adjustment factor related to extension of rate plan.
Providence Gas Company	08/00	Docket No. 2581	Sponsored testimony supporting the extension of a rate plan that began in 1997 and included certain modifications, including a weather normalization clause.
Providence Gas Company	03/00	Docket No. 3100	Sponsored testimony supporting the de-tariff and deregulation of appliance repair service, enabling the Company to have needed pricing flexibility.
Providence Gas Company	06/97	Docket No. 2581	Sponsored testimony supporting a rate plan that fixed all billing rates for three-year period; included funding for critical infrastructure investments in accelerated replacement of mains and services, digitized records system, and economic development projects.
Providence Gas Company	04/97	Docket No. 2552	Sponsored testimony supporting the rate design, customer bill impact studies and retail access tariffs for commercial and industrial customers, including redesign of cost of gas adjustment clause, for a rate design proceeding.
Providence Gas Company	02/96	Docket No. 2374	Sponsored testimony supporting the rate design, customer bill impact studies and retail access tariffs for largest commercial and industrial customers for a rate design proceeding.
Providence Gas Company	01/96	Docket No. 2076	Sponsored testimony supporting the rate reclassification of customers into new rate classes, rate design (including introduction of demand

Sponsor	Date	Docket No.	Subject
			charges), and customer bill impact studies for a rate design proceeding.
Providence Gas Company	11/92	Docket No. 2025	Sponsored testimony supporting the Integrated Resource Plan filing, including a performance-based incentive mechanism.
Railroad Commission of Texas			
Texas Gas Service Company – Central-Gulf Service Area	06/24	Case No. 00017471	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
CenterPoint Energy – Texas Gas Division	10/23	Case No. 00015513	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Texas Gas Service Company – Rio Grande Valley Service Area	06/23	Case No. 00014399	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Texas Gas Service Company – West Texas, North Texas, and Borger/ Skellytown Service Areas	06/22	Case No. 00009896	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Texas Gas Service Company – Central Texas and Gulf Coast Service Areas	12/19	GUD No. 10928	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
CenterPoint Energy – Beaumont/ East Texas Division	11/19	GUD No. 10920	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Texas Gas Service Company – Borger/ Skellytown Service Area	08/18	GUD No. 10766	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Texas Gas Service Company – North Texas Service Area	06/18	GUD No. 10739	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
CenterPoint Energy – South Texas Division	11/17	GUD No. 10669	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Texas Gas Service Company – Rio Grande Valley Service Area	06/17	GUD No. 10656	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Atmos Pipeline – Texas	01/17	GUD No. 10580	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
CenterPoint Energy – Texas Gulf Division	11/16	GUD No. 10567	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Public Utility Commission of Texas			
CenterPoint Energy Houston Electric, LLC	03/24	Docket No. 56211	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
CenterPoint Energy Houston Electric, LLC	04/19	Docket No. 49421	Sponsored testimony supporting the Lead/Lag study for a general rate case proceeding.
Vermont Public Utilities Commission			
Vermont Gas Systems	12/12	Docket No. 7970	Sponsored testimony describing the market served by \$90 million natural gas expansion project to Addison County, VT. Also described the terms and economic benefits of a special contract with International Paper.
Vermont Gas Systems	02/11	Docket No. 7712	Sponsored testimony supporting the market evaluation and analysis for a system expansion and reliability regulatory fund.
Virginia State Corporation Commission			
Shenandoah Valley Electric Cooperative	01/24	Case No. PUR-2023-00207	Sponsored report and studies related to revenue requirements, class cost of service, rate design, and bill impact analysis for a streamlined application to increase base rates.

Sponsor	Date	Docket No.	Subject
American Electric Power - Appalachian Power Company	3/23	Case No. PUR-2023-00002	Sponsored testimony supporting the Lead/Lag study for the 2023 triennial review of base rates, terms, and conditions.
Rappahannock Electric Cooperative	10/22	Case No. PUR-2022-00160	Sponsored report and studies related to revenue requirements, class cost of service, rate design, and bill impact analysis for a streamlined application to increase base rates.
American Electric Power - Appalachian Power Company	3/20	Case No. PUR-2020-00015	Sponsored testimony supporting the Lead/Lag study for the 2020 triennial review of base rates, terms, and conditions.
West Virginia Public Service Commission			
Monongahela Power Company and The Potomac Edison Company (FirstEnergy)	06/23	Case No. 23-0460-E-42T	Sponsored testimony supporting the class cost of service, rate design, bill impact and lead-lag studies for a general rate case proceeding.
Nova Scotia Utility and Review Board			
Nova Scotia Power	01/22	Matter No. M10431	Sponsored evidence supporting the cash working capital requirement and lead/Lag study for a general rate case proceeding.
Ontario Energy Board			
Toronto Hydro-Electric System Limited	11/23	Docket No. EB-2023-0195	Sponsored evidence supporting Toronto Hydro's Custom Rate Framework. Prepared research and analysis evaluating the appropriateness of the Rate Framework in the context of how other electric utility ratemaking practices have responded to developments in the energy industry.
Ontario Energy Association	01/21	Docket No. EB-2020-0133	Sponsored evidence regarding policies and ratemaking treatment related to COVID-19 costs in U.S. and Canadian regulatory jurisdictions. The evidence was used to support Ontario Energy Association's response to Staff's proposals.
Commission of Canada Energy Regulator			
Trans-Northern Pipelines, Inc.	06/23	Docket No. RH-001-2023	Sponsored evidence related to application for approval of incentive tolls.

Exhibit TSL-2

Liberty Utilities (CalPeco Electric)
Marginal Cost of Service Allocation

Marginal Cost of Service Class Allocation	Total Company	Residential Permanent	Residential Non-Permanent	Small Commercial	Medium Commercial	Large Commercial	Irrigation	OLS	Street Lighting
Marginal Generation (Capacity)	\$ 10,856,234	\$ 2,865,176	\$ 3,184,309	\$ 1,759,773	\$ 1,002,495	\$ 2,025,446	\$ 4,973	\$ 8,970	\$ 5,092
Marginal Generation (Energy)	14,652,945	3,499,021	4,261,963	2,463,018	1,440,370	2,933,258	26,801	18,152	10,361
Marginal Distribution (Demand)	48,048,604	9,945,337	14,905,615	5,862,346	3,632,056	13,505,406	128,704	44,119	25,020
Marginal Customer (Common)	4,800,198	1,549,563	2,329,289	584,476	87,440	244,958	1,162	-	3,309
Marginal Customer (Specific)	6,371,941	1,357,730	2,264,366	2,239,232	147,190	84,902	32,077	155,296	91,149
Total Marginal Costs	84,729,922	19,216,827	26,945,543	12,908,845	6,309,551	18,793,970	193,718	226,537	134,931
Total Marginal Costs %	100.00%	22.68%	31.80%	15.24%	7.45%	22.18%	0.23%	0.27%	0.16%
MCOS (Generation)	\$ 25,509,180	\$ 6,364,197	\$ 7,446,272	\$ 4,222,791	\$ 2,442,865	\$ 4,958,704	\$ 31,775	\$ 27,122	\$ 15,453
Generation Allocator	100.00%	24.95%	29.19%	16.55%	9.58%	19.44%	0.12%	0.11%	0.06%
Prior (Settlement Model 8-18-22)	100.00%	25.14%	27.67%	16.50%	11.24%	19.22%	0.07%	0.10%	0.06%
MCOS (Distribution-Demand)	\$ 48,048,604	\$ 9,945,337	\$ 14,905,615	\$ 5,862,346	\$ 3,632,056	\$ 13,505,406	\$ 128,704	\$ 44,119	\$ 25,020
Distribution-Demand Allocator	100.00%	20.70%	31.02%	12.20%	7.56%	28.11%	0.27%	0.09%	0.05%
Prior (Settlement Model 8-18-22)	100.00%	23.66%	30.23%	13.21%	9.38%	23.47%	0.00%	0.04%	0.02%
MCOS (Distribution-Customer)	\$ 11,172,139	\$ 2,907,292	\$ 4,593,655	\$ 2,823,708	\$ 234,630	\$ 329,860	\$ 33,239	\$ 155,296	\$ 94,458
Distribution-Customer Allocator	100.00%	26.02%	41.12%	25.27%	2.10%	2.95%	0.30%	1.39%	0.85%
Prior (Settlement Model 8-18-22)	100.00%	29.82%	41.71%	13.10%	3.93%	8.46%	0.02%	1.97%	0.99%

Liberty Utilities (CalPeco Electric)
Marginal Cost of Service Allocation

Marginal Generation (Capacity)

Generation Marginal Costs (\$/kW)	\$	140.99
<i>At Generation Level</i>		

Generation Marginal Costs (TOU)	POP 4 CP	TOU Allocation
Winter TOU - Peak	50.8%	\$ 71.63
Winter TOU - Mid-Peak	39.9%	56.25
Winter TOU - Off-Peak	9.3%	13.12

Marginal Generation (Capacity)	Total	Residential	Residential	Small	Medium	Large	Irrigation	OLS	Street Lighting
Cost Allocation	Company	Permanent	Non-Permanent	Commercial	Commercial	Commercial			

Average Usage (kW)									
Winter TOU - Peak	74,865	21,505	22,626	11,615	6,642	12,292	36	95	54
Winter TOU - Mid-Peak	72,990	17,309	20,029	12,392	6,966	16,263	31	0	0
Winter TOU - Off-Peak	65,218	14,708	19,907	10,180	6,061	14,134	31	126	72

Loss Factor Adjustment									
Generation		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Primary Distribution		1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Secondary Distribution		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Loss Factor Adjustment		1.06	1.06	1.06	1.06	1.02	1.06	1.06	1.06

Generation Cost Allocation (\$)									
Winter TOU - Peak	\$ 5,644,356	\$ 1,630,429	\$ 1,715,374	\$ 880,615	\$ 503,568	\$ 900,370	\$ 2,717	\$ 7,199	\$ 4,085
Winter TOU - Mid-Peak	\$ 4,312,881	\$ 1,030,511	\$ 1,192,499	\$ 737,793	\$ 414,762	\$ 935,453	\$ 1,824	\$ 25	\$ 14
Winter TOU - Off-Peak	\$ 898,996	\$ 204,235	\$ 276,436	\$ 141,365	\$ 84,165	\$ 189,623	\$ 432	\$ 1,746	\$ 993
Generation Cost Allocation (\$)	\$ 10,856,234	\$ 2,865,176	\$ 3,184,309	\$ 1,759,773	\$ 1,002,495	\$ 2,025,446	\$ 4,973	\$ 8,970	\$ 5,092

Liberty Utilities (CalPeco Electric)
Marginal Cost of Service Allocation

Marginal Generation (Energy)

Generation Marginal Energy Costs	2021-2025 (IRP)
Winter TOU - Peak	\$ 33.46
Winter TOU - Mid-Peak	\$ 16.59
Winter TOU - Off-Peak	\$ 33.52
Summer TOU - Peak	\$ 20.40
Summer TOU - Off-Peak	\$ 27.18

Marginal Generation (Energy) Cost Allocation	Total Company	Residential Permanent	Residential Non-Permanent	Small Commercial	Medium Commercial	Large Commercial	Irrigation	OLS	Street Lighting
Total Usage (MWh)									
Winter TOU - Peak	93,385	26,129	27,490	14,113	8,070	17,359	44	115	65
Winter TOU - Mid-Peak	173,407	42,060	48,671	30,113	16,928	35,559	74	1	1
Winter TOU - Off-Peak	142,275	32,165	43,537	22,264	13,255	30,554	68	275	156
Summer TOU - Peak	91,381	20,580	25,455	17,579	9,751	17,479	482	35	20
Summer TOU - Off-Peak	74,246	15,780	20,456	14,214	9,060	14,043	441	160	92
Total Usage (MWh)	574,695	136,714	165,609	98,281	57,065	114,995	1,109	586	335

Generation Cost Allocation (\$)																		
Winter TOU - Peak	\$	3,124,838	\$	874,319	\$	919,871	\$	472,230	\$	270,039	\$	580,871	\$	1,457	\$	3,861	\$	2,191
Winter TOU - Mid-Peak		2,876,670		697,734		807,412		499,542		280,825		589,896		1,235		17		9
Winter TOU - Off-Peak		4,769,223		1,078,223		1,459,395		746,311		444,333		1,024,215		2,283		9,219		5,244
Summer TOU - Peak		1,864,060		419,813		519,255		358,582		198,907		356,557		9,832		706		408
Summer TOU - Off-Peak		2,018,154		428,932		556,031		386,354		246,266		381,719		11,994		4,350		2,509
Total Generation Energy (\$)	\$	14,652,945	\$	3,499,021	\$	4,261,963	\$	2,463,018	\$	1,440,370	\$	2,933,258	\$	26,801	\$	18,152	\$	10,361

Liberty Utilities (CalPeco Electric)
Marginal Cost of Service Allocation

Marginal Distribution (Demand)

Distribution Marginal Costs	\$/kW	TOU (\$/kW)	Non-TOU (\$/kW)	Allocation	
				TOU	Non-TOU
Substation Investments	\$ 46.05	\$ 46.05	\$ -	100%	0%
Other Plant Investments	\$ 328.16	\$ 164.08	\$ 164.08	50%	50%
Total Marginal Cost	\$ 374.21	\$ 210.13	\$ 164.08		

Distribution Marginal Costs (TOU)	TOU Allocation	Top 100 %
Winter TOU - Peak	\$ 115.57	55.0%
Winter TOU - Mid-Peak	\$ 90.36	43.0%
Winter TOU - Off-Peak	\$ 4.20	2.0%

Distribution Marginal Costs	NCP Allocation
Non-TOU-related	\$ 164.08

Liberty Utilities (CalPeco Electric)
Marginal Cost of Service Allocation

Distribution Cost Allocation	Total Company	Residential Permanent	Residential Non-Permanent	Small Commercial	Medium Commercial	Large Commercial	Irrigation	OLS	Street Lighting
Average Load: System Top 100 Hours (kW)									
Winter TOU - Peak	102,524	25,473	36,171	13,759	7,627	19,316	6	109	62
Winter TOU - Mid-Peak	102,684	21,018	30,999	13,843	7,587	29,229	5	2	1
Winter TOU - Off-Peak	99,030	20,561	26,620	11,651	7,058	32,959	5	113	64
Top 100 Average (kW)	102,523	23,459	33,756	13,753	7,599	23,852	5	63	36
Distribution Cost Allocation (\$)									
Winter TOU - Peak	\$ 11,848,941	\$ 2,944,023	\$ 4,180,345	\$ 1,590,185	\$ 881,509	\$ 2,232,444	\$ 661	\$ 12,619	\$ 7,154
Winter TOU - Mid-Peak	9,278,170	1,899,141	2,800,941	1,250,796	685,573	2,641,046	460	137	77
Winter TOU - Off-Peak	416,189	86,410	111,872	48,963	29,662	138,516	21	476	269
Dist. Costs (TOU) (\$)	\$ 21,543,299	\$ 4,929,574	\$ 7,093,158	\$ 2,889,944	\$ 1,596,744	\$ 5,012,006	\$ 1,142	\$ 13,231	\$ 7,501
NCP Demands (kW)									
NCP Demands (kW)	161,538	30,569	47,613	18,115	12,404	51,763	777	188	107
Dist. Costs (Non-TOU) (\$)	\$ 26,505,305	\$ 5,015,763	\$ 7,812,457	\$ 2,972,402	\$ 2,035,312	\$ 8,493,400	\$ 127,563	\$ 30,888	\$ 17,519
Total Dist. Costs (Demand)	\$ 48,048,604	\$ 9,945,337	\$ 14,905,615	\$ 5,862,346	\$ 3,632,056	\$ 13,505,406	\$ 128,704	\$ 44,119	\$ 25,020

Exhibit TSL-3

Liberty Utilities (CalPeco Electric)
Derivation of Marginal Cost of Generation Capacity

Line No.	Description (a)	Adjustment Factor (b)	Battery Energy Storage System (c)
1	Capital Costs (Storage)		
2	Total Installed Costs (\$/kW)		\$ 1,170
3	Annualized Deferral Value (\$/kW)	9.78%	\$ 114.37
4	<i>Calculated at Real Economic Carrying Charge (RECC)</i>		
5	Annualized Property Taxes (\$/kW)		\$ 3.52
6	Total Capital Costs (\$/kW)		<u>\$ 117.89</u>
7	Fixed O&M Expenses (\$/kW)		\$ 12.73
8	General Plant Loader (\$/kW)	6.36%	\$ 7.50
9	A&G Loader (\$/kW)	2.44%	\$ 2.87
10	Marginal Generation Capacity Cost (\$/kW)		<u><u>\$ 140.99</u></u>

Liberty Utilities (CalPeco Electric)
Derivation of Marginal Cost of Distribution (Demand)

Line No.	Description	Adjustment Factor	Distribution Demand	
			Substation Component	Other Distribution Investments
	(a)	(b)	(c)	(d)
1	Long Run Unit Investment		\$ 267.86	\$ 1,908.79
2	General Plant Loading (\$/kW)	6.36%	\$ 17.04	\$ 121.46
3	Annualized Deferral Value (\$/kW)	8.41%	\$ 23.96	\$ 170.71
4	Plant-Related A&G Loading (\$/kW)	2.44%	\$ 6.94	\$ 49.45
5	Annualized Cost (\$/kW)		<u>\$ 30.89</u>	<u>\$ 220.16</u>
6	Demand-related O&M	3.04%	\$ 8.15	\$ 58.10
7	With O&M-related A&G Loading	16.87%	\$ 9.53	\$ 67.91
8	Demand-related Costs Excl. Working Cap.		<u>\$ 40.42</u>	<u>\$ 288.07</u>
9	<u>Working Capital</u>			
10	M&S	2.46%	\$ 7.02	\$ 50.01
11	CWC Plant-related	0.61%	\$ 1.74	\$ 12.43
12	O&M-related	3.99%	\$ 0.38	\$ 2.71
13	Total Working Capital		\$ 9.14	\$ 65.15
14	Revenue Requirement	10.81%	\$ 0.99	\$ 7.05
15	Total Demand-related		<u>\$ 41.41</u>	<u>\$ 295.11</u>
16	Adjusted for Losses (average)	11.20%	\$ 46.05	\$ 328.16
17	<u>Final Unit Demand Cost (\$/kW)</u>		<u>\$ 46.05</u>	<u>\$ 328.16</u>

Liberty Utilities (CalPeco Electric)
Derivation of Marginal Cost of Distribution (Customer)

Customer-Related Investment: Transformer, Service and Metering Costs
Marginal Customer Costs Using the NCO Method

Line No.	Description	Adjustment Factor	Residential Permanent	Residential Non-Permanent	Small Commercial	Medium Commercial	Large Commercial	Irrigation
1	Long Run Unit Investment		\$ 2,082.61	\$ 2,082.61	\$ 3,527.24	\$ 15,127.44	\$ 57,841.96	\$ 12,374.38
2	With General Plant Loading	6.36%	\$ 2,215.13	\$ 2,215.13	\$ 3,751.68	\$ 16,090.00	\$ 61,522.46	\$ 13,161.76
3	PVRR Cost	130%	\$ 2,868.88	\$ 2,868.88	\$ 4,858.92	\$ 20,838.66	\$ 79,679.65	\$ 17,046.21
4	Estimated Average Annual New Hookups		92	155	96	1	0.2	0
5	Total CA customers (2025)		17,903	26,912	5,490	224	54	11
6	PVRR of new hookups		\$ 264.51	\$ 445.82	\$ 468.40	\$ 29.17	\$ 15.94	\$ 6.82
7	PVRR per customer		\$ 14.77	\$ 16.57	\$ 85.32	\$ 130.24	\$ 295.11	\$ 624.59
8	Plant-Related A&G Loading	2.44%	\$ 0.36	\$ 0.40	\$ 2.08	\$ 3.17	\$ 7.19	\$ 15.21
9	With A&G Loading		\$ 15.13	\$ 16.97	\$ 87.40	\$ 133.41	\$ 302.30	\$ 639.81
10	Customer Plant-Related O&M		\$ 45.44	\$ 50.95	\$ 262.41	\$ 400.58	\$ 907.65	\$ 1,921.03
11	Customer-related O&M		\$ 73.74	\$ 73.74	\$ 90.70	\$ 332.58	\$ 3,864.81	\$ 90.70
12	Subtotal Customer-related O&M		\$ 119.18	\$ 124.69	\$ 353.11	\$ 733.15	\$ 4,772.46	\$ 2,011.73
13	With O&M-related A&G Loading	16.87%	\$ 139.29	\$ 145.73	\$ 412.68	\$ 856.83	\$ 5,577.57	\$ 2,351.11
14	Customer-related Costs Exc. Working Capital		\$ 154.42	\$ 162.70	\$ 500.07	\$ 990.25	\$ 5,879.86	\$ 2,990.91
15	Working Capital							
16	M&S	2.46%	\$ 54.56	\$ 54.56	\$ 92.41	\$ 396.32	\$ 1,515.37	\$ 324.19
17	CWC Plant-related	0.61%	\$ 13.56	\$ 13.56	\$ 22.97	\$ 98.52	\$ 376.71	\$ 80.59
18	O&M-related	3.99%	\$ 5.55	\$ 5.81	\$ 16.45	\$ 34.16	\$ 222.37	\$ 93.74
19	Total Working Capital		\$ 73.68	\$ 73.93	\$ 131.83	\$ 529.00	\$ 2,114.46	\$ 498.52
20	Revenue Requirement	10.81%	\$ 7.97	\$ 8.00	\$ 14.26	\$ 57.21	\$ 228.66	\$ 53.91
21	Customer Common		\$ 86.55	\$ 86.55	\$ 106.46	\$ 390.36	\$ 4,536.27	\$ 106.46
22	Customer Specific		\$ 75.84	\$ 84.14	\$ 407.87	\$ 657.10	\$ 1,572.26	\$ 2,938.36
23	Total Customer-related		\$ 162.39	\$ 170.69	\$ 514.33	\$ 1,047.45	\$ 6,108.52	\$ 3,044.82
24	Monthly Cost		\$ 13.53	\$ 14.22	\$ 42.86	\$ 87.29	\$ 509.04	\$ 253.74
25	Number of Customers		17,903	26,912	5,490	224	54	11
26	Total Customer Common		\$ 1,549,563	\$ 2,329,289	\$ 584,476	\$ 87,440	\$ 244,958	\$ 1,162
27	Total Customer Specific		\$ 1,357,730	\$ 2,264,366	\$ 2,239,232	\$ 147,190	\$ 84,902	\$ 32,077

Exhibit TSL-4

Liberty Utilities (CalPeco Electric)
Determination of Revenue Targets (Excluding ECAC, VM, CEMA)

Revenue Targets	Total Company	Residential Permanent	Residential Non-Permanent	Small Commercial	Medium Commercial	Large Commercial	Irrigation	OLS	Street Lighting
Revenue Requirements (Generation)	\$ 15,969,378								
Revenue Requirements (Distribution - Demand)	\$ 65,223,286	<i>Demand-related Distribution Revenue Requirement</i>							
Revenue Requirements (Distribution - Customer)	\$ 99,153,118	<i>Meters, Services & Transformers-related Revenue Requirement</i>							
Revenue Requirements (Other)	\$ 1,442,211								
Wildfire-related Revenue Requirement	\$ 47,615,080								

Allocation of Wildfire Management Costs

Number of Customers	51,551	17,903	26,912	5,490	224	54	11	926	31
Prior Settlement Allocation Factor %	100.0%	24.6%	35.9%	15.1%	8.1%	14.9%	0.1%	0.9%	0.4%
Revenue Requirements (Wildfire Management)	\$ 47,615,080	\$ 11,696,856	\$ 17,098,559	\$ 7,186,279	\$ 3,876,269	\$ 7,102,091	\$ 35,038	\$ 410,817	\$ 209,171

Step 1: Equal Percentage of the Marginal Cost (EPMC) Allocation

Marginal Cost of Service (Generation)	\$ 25,509,180	\$ 6,364,197	\$ 7,446,272	\$ 4,222,791	\$ 2,442,865	\$ 4,958,704	\$ 31,775	\$ 27,122	\$ 15,453
Allocation %	100.0%	24.9%	29.2%	16.6%	9.6%	19.4%	0.1%	0.1%	0.1%
Generation Revenues (Reconciled)	\$ 15,969,378	\$ 3,984,145	\$ 4,661,551	\$ 2,643,572	\$ 1,529,294	\$ 3,104,271	\$ 19,892	\$ 16,979	\$ 9,674
Marginal Cost of Service (Distribution-Dem)	\$ 48,048,604	\$ 9,945,337	\$ 14,905,615	\$ 5,862,346	\$ 3,632,056	\$ 13,505,406	\$ 128,704	\$ 44,119	\$ 25,020
Allocation %	100.0%	20.7%	31.0%	12.2%	7.6%	28.1%	0.3%	0.1%	0.1%
Dist. Demand Revenues (Reconciled)	\$ 65,223,286	\$ 13,500,237	\$ 20,233,537	\$ 7,957,806	\$ 4,930,313	\$ 18,332,832	\$ 174,709	\$ 59,890	\$ 33,963
Marginal Cost of Service (Distribution-Cust)	\$ 11,172,139	\$ 2,907,292	\$ 4,593,655	\$ 2,823,708	\$ 234,630	\$ 329,860	\$ 33,239	\$ 155,296	\$ 94,458
Allocation %	100.0%	26.0%	41.1%	25.3%	2.1%	3.0%	0.3%	1.4%	0.8%
Dist. Customer Revenues (Reconciled)	\$ 99,153,118	\$ 25,802,321	\$ 40,768,849	\$ 25,060,503	\$ 2,082,348	\$ 2,927,522	\$ 295,000	\$ 1,378,256	\$ 838,319
Total Marginal Cost of Service	\$ 84,729,922	\$ 19,216,827	\$ 26,945,543	\$ 12,908,845	\$ 6,309,551	\$ 18,793,970	\$ 193,718	\$ 226,537	\$ 134,931
Allocation %	100.0%	22.7%	31.8%	15.2%	7.4%	22.2%	0.2%	0.3%	0.2%
Other Revenues (Reconciled)	\$ 1,442,211	\$ 327,095	\$ 458,647	\$ 219,725	\$ 107,397	\$ 319,897	\$ 3,297	\$ 3,856	\$ 2,297
Revenue Requirements (Reconciled)	\$ 181,787,993	\$ 43,613,799	\$ 66,122,585	\$ 35,881,606	\$ 8,649,351	\$ 24,684,522	\$ 492,898	\$ 1,458,980	\$ 884,253
Other Operating Revenue Credit Allocation %	100.0%	39.2%	53.6%	6.6%	0.4%	0.0%	0.0%	0.1%	0.1%
Other Operating Revenue (OOR) Credit \$	\$ 1,442,211	\$ 564,936	\$ 773,691	\$ 94,998	\$ 5,680	\$ 202	\$ 26	\$ 1,058	\$ 1,620
Target Base Revenues (After OOR Credit)	\$ 180,345,782	\$ 43,048,863	\$ 65,348,894	\$ 35,786,608	\$ 8,643,671	\$ 24,684,320	\$ 492,872	\$ 1,457,922	\$ 882,633
Current Authorized Revenues (2024)	\$ 116,319,977	\$ 24,780,706	\$ 33,937,676	\$ 20,129,892	\$ 13,906,745	\$ 22,841,574	\$ 115,536	\$ 400,658	\$ 207,191
Class Revenue Increase (Step 1)	\$ 64,025,805	\$ 18,268,157	\$ 31,411,218	\$ 15,656,716	\$ (5,263,074)	\$ 1,842,746	\$ 377,336	\$ 1,057,265	\$ 675,442
Class Revenue Increase (Step 1) %	55.0%	73.7%	92.6%	77.8%	-37.8%	8.1%	326.6%	263.9%	326.0%

Liberty Utilities (CalPeco Electric)
Determination of Revenue Targets (Excluding ECAC, VM, CEMA)

Revenue Targets	Total Company	Residential Permanent	Residential Non-Permanent	Small Commercial	Medium Commercial	Large Commercial	Irrigation	OLS	Street Lighting
Step 2: Uniform Increase									
Target Base Revenues (After OOR Credit)	\$ 180,345,782	\$ 38,420,708	\$ 52,617,932	\$ 31,209,953	\$ 21,561,411	\$ 35,414,222	\$ 179,130	\$ 621,191	\$ 321,235
Current Authorized Revenues (2024)	\$ 116,319,977	\$ 24,780,706	\$ 33,937,676	\$ 20,129,892	\$ 13,906,745	\$ 22,841,574	\$ 115,536	\$ 400,658	\$ 207,191
Class Revenue Increase (Step 1)	\$ 64,025,805	\$ 13,640,002	\$ 18,680,257	\$ 11,080,062	\$ 7,654,666	\$ 12,572,648	\$ 63,594	\$ 220,533	\$ 114,044
Class Revenue Increase (Step 1) %	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%

Step 3: Movement Towards Cost-based Rates

Movement Towards Cost-Based Rates	10.00%								
Target Base Revenues (After OOR Credit)	\$ 180,345,782	\$ 38,883,523	\$ 53,891,028	\$ 31,667,619	\$ 20,269,637	\$ 34,341,232	\$ 210,504	\$ 704,864	\$ 377,375
Current Authorized Revenues (2024)	\$ 116,319,977	\$ 24,780,706	\$ 33,937,676	\$ 20,129,892	\$ 13,906,745	\$ 22,841,574	\$ 115,536	\$ 400,658	\$ 207,191
Class Revenue Increase	\$ 64,025,805	\$ 14,102,817	\$ 19,953,353	\$ 11,537,727	\$ 6,362,892	\$ 11,499,658	\$ 94,968	\$ 304,206	\$ 170,184
Class Revenue Increase %	55.0%	56.9%	58.8%	57.3%	45.8%	50.3%	82.2%	75.9%	82.1%
Target Base (Generation) - Uniform	\$ 15,969,378	\$ 3,452,846	\$ 4,313,140	\$ 2,301,544	\$ 1,631,314	\$ 4,209,385	\$ 53,700	\$ 5,258	\$ 2,190
Target Base (Generation) - Movement	\$ 15,969,378	\$ 3,505,976	\$ 4,347,981	\$ 2,335,747	\$ 1,621,112	\$ 4,098,874	\$ 50,319	\$ 6,431	\$ 2,939
Current Authorized (Generation)	\$ 15,674,976	\$ 3,389,191	\$ 4,233,626	\$ 2,259,114	\$ 1,601,240	\$ 4,131,783	\$ 52,710	\$ 5,162	\$ 2,150
Class Revenue Increase	\$ 294,402	\$ 116,785	\$ 114,356	\$ 76,633	\$ 19,872	\$ (32,910)	\$ (2,391)	\$ 1,269	\$ 789
Class Revenue Increase %	1.9%	3.4%	2.7%	3.4%	1.2%	-0.8%	-4.5%	24.6%	36.7%

Step 4: Adjusted for Allocation of Other Discounts/ Charges

Class Revenue Targets (Proposed)	\$ 180,516,710	\$ 38,920,376	\$ 53,942,105	\$ 31,697,633	\$ 20,288,848	\$ 34,373,780	\$ 210,704	\$ 705,532	\$ 377,732
Current Authorized Revenues (2024)	\$ 116,319,977	\$ 24,780,706	\$ 33,937,676	\$ 20,129,892	\$ 13,906,745	\$ 22,841,574	\$ 115,536	\$ 400,658	\$ 207,191
Class Revenue Increase	\$ 64,196,733	\$ 14,139,670	\$ 20,004,429	\$ 11,567,741	\$ 6,382,103	\$ 11,532,206	\$ 95,168	\$ 304,874	\$ 170,541
Class Revenue Increase %	55.2%	57.1%	58.9%	57.5%	45.9%	50.5%	82.4%	76.1%	82.3%
<i>After Allocation of Other Discounts / Charges</i>									
Other Discounts / Charges Allocation	\$ 170,928	\$ 36,853	\$ 51,077	\$ 30,014	\$ 19,211	\$ 32,548	\$ 200	\$ 668	\$ 358
Other Discounts / Charges Allocation %	100.0%	21.6%	29.9%	17.6%	11.2%	19.0%	0.1%	0.4%	0.2%

Exhibit TSL-5

Liberty Utilities (CalPeco Electric)
Residential Rate Design

Base Revenues	Base Rates	Other Charges	Total Rates	Billing	
				Determinants	Proposed Fixed Charge
Target Base Rates	92,862,481	\$ 41,828,578	\$ 134,691,059	Standard	\$ 41.40
Current Base Rates	58,718,382	\$ 41,808,350	\$ 100,526,731	Tier 1 CARE	50.00% \$ 10.00
\$ Difference	34,144,099	20,228	34,164,327	Tier 2 CARE	50.00% \$ 5.00
% Difference	58.1%		34.0%		

Residential Rates	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues
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Proposed Rates

Residential Permanent

Customer Charge	\$ 41.40			174,971	\$ 7,244,395			\$ 7,244,395
Tier 1 Energy		\$ 0.20410	\$ 0.01971	73,892,122		15,081,096	1,456,432	16,537,527
Tier 2 Energy		\$ 0.24111	\$ 0.03637	39,770,964		9,589,288	1,446,463	11,035,751

Residential Non-Permanent

Customer Charge	\$ 41.40			318,342	\$ 13,180,456			\$ 13,180,456
Tier 1 Energy		\$ 0.20410	\$ 0.01971	97,196,572		19,837,444	1,915,768	21,753,212
Tier 2 Energy		\$ 0.24111	\$ 0.03637	68,412,502		16,495,128	2,488,151	18,983,280

Tier 1 CARE

Customer Charge	\$ 10.00			20,236	\$ 202,362			202,362
Tier 1 Energy		\$ 0.13841	\$ 0.01971	8,290,604		1,147,512	163,410	1,310,922
Tier 2 Energy		\$ 0.15721	\$ 0.03637	3,235,092		508,589	117,660	626,249

Tier 2 CARE

Customer Charge	\$ 5.00			20,236	\$ 101,181			101,181
Tier 1 Energy		\$ 0.13841	\$ 0.01971	8,290,604		1,147,512	163,410	1,310,922
Tier 2 Energy		\$ 0.15721	\$ 0.03637	3,235,092		508,589	117,660	626,249

Employee Discounts

Customer Charge	\$ (20.70)			497	\$ (10,289)			(10,289)
Tier 1 Energy		\$ (0.10205)	\$ (0.00986)	218,845		(22,333)	(2,157)	(24,489)
Tier 2 Energy		\$ (0.12056)	\$ (0.01818)	109,879		(13,247)	(1,998)	(15,245)

Revenue at Proposed Rates					\$ 20,718,105	\$ 64,279,577	\$ 7,864,799	\$ 92,862,481
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Current 2024 Authorized Rates

Residential Permanent

Customer Charge	\$ 13.83			167,130	\$ 2,311,670			\$ 2,311,670
Tier 1 Energy		\$ 0.13577	\$ 0.01916	71,903,817		9,762,677	1,377,339	11,140,016
Tier 2 Energy		\$ 0.16040	\$ 0.03535	39,197,951		6,287,323	1,385,484	7,672,808

Residential Non-Permanent

Customer Charge	\$ 13.83			318,966	\$ 4,411,800			\$ 4,411,800
Tier 1 Energy		\$ 0.15401	\$ 0.02578	96,382,363		14,844,114	2,484,731	17,328,845
Tier 2 Energy		\$ 0.15401	\$ 0.02578	67,839,415		10,448,136	1,748,895	12,197,031

Tier 1 CARE

Customer Charge	\$ 11.07			22,708	\$ 251,274			251,274
Tier 1 Energy		\$ 0.09208	\$ 0.01916	9,776,569		900,201	187,273	1,087,474
Tier 2 Energy		\$ 0.10458	\$ 0.03535	3,635,266		380,188	128,492	508,680

Tier 2 CARE

Customer Charge	\$ 11.07			22,708	\$ 251,274			251,274
Tier 1 Energy		\$ 0.09208	\$ 0.01916	9,776,569		900,201	187,273	1,087,474
Tier 2 Energy		\$ 0.10458	\$ 0.03535	3,635,266		380,188	128,492	508,680

Employee Discounts

Customer Charge	\$ (6.92)			547	\$ (3,783)			(3,783)
Tier 1 Energy		\$ (0.06789)	\$ (0.00958)	256,934		(17,443)	(2,461)	(19,903)
Tier 2 Energy		\$ (0.08020)	\$ (0.01767)	152,829		(12,257)	(2,701)	(14,958)

Revenue at Current Rates					\$ 7,222,235	\$ 43,873,330	\$ 7,622,817	\$ 58,718,382
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Liberty Utilities (CalPeco Electric)
Residential Permanent Bill Impact Analysis

Bill Impact Analysis	Monthly Usage (kWh)	Proposed Bill \$	Current Bill \$	Increase / (Decrease) \$	Increase / (Decrease) %
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Winter Season

50% Below Avg. Usage	350.3	\$ 168.28	\$ 116.58	\$ 51.70	44.3%
25% Below Avg. Usage	525.5	\$ 231.72	\$ 167.95	\$ 63.77	38.0%
Average Usage	700.7	\$ 301.75	\$ 224.34	\$ 77.41	34.5%
25% Above Avg. Usage	875.9	\$ 374.59	\$ 282.86	\$ 91.73	32.4%
50% Above Avg. Usage	1051.0	\$ 447.43	\$ 341.38	\$ 106.05	31.1%

Summer Season

50% Below Avg. Usage	253.9	\$ 133.34	\$ 88.29	\$ 45.06	51.0%
25% Below Avg. Usage	380.8	\$ 179.32	\$ 125.51	\$ 53.80	42.9%
Average Usage	507.7	\$ 228.87	\$ 165.46	\$ 63.40	38.3%
25% Above Avg. Usage	634.7	\$ 281.65	\$ 207.87	\$ 73.78	35.5%
50% Above Avg. Usage	761.6	\$ 334.43	\$ 250.28	\$ 84.15	33.6%

Average Bill	604.2	\$ 265.31	\$ 194.90	\$ 70.41	36.1%
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Bill Impact without GRC Rate

Bill Impact Analysis	Monthly Usage (kWh)	Proposed Bill \$	Current Bill \$	Increase / (Decrease) \$	Increase / (Decrease) %
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Winter Season

50% Below Avg. Usage	350.3	\$ 154.02	\$ 116.58	\$ 37.44	32.1%
25% Below Avg. Usage	525.5	\$ 210.33	\$ 167.95	\$ 42.38	25.2%
Average Usage	700.7	\$ 273.23	\$ 224.34	\$ 48.89	21.8%
25% Above Avg. Usage	875.9	\$ 338.94	\$ 282.86	\$ 56.08	19.8%
50% Above Avg. Usage	1051.0	\$ 404.65	\$ 341.38	\$ 63.27	18.5%

Summer Season

50% Below Avg. Usage	253.9	\$ 123.01	\$ 88.29	\$ 34.73	39.3%
25% Below Avg. Usage	380.8	\$ 163.82	\$ 125.51	\$ 38.30	30.5%
Average Usage	507.7	\$ 208.20	\$ 165.46	\$ 42.74	25.8%
25% Above Avg. Usage	634.7	\$ 255.82	\$ 207.87	\$ 47.95	23.1%
50% Above Avg. Usage	761.6	\$ 303.44	\$ 250.28	\$ 53.15	21.2%

Average Bill	604.2	\$ 240.72	\$ 194.90	\$ 45.82	23.5%
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GRC Charge: \$ 0.0407

Rate Summary	Distribution Energy Rate	Generation Energy Rate	Other Charges	Total Energy Charges
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Proposed Rates

Customer Charge	\$ 41.40			
Tier 1 Energy	\$ 0.20410	\$ 0.01971	\$ 0.13835	\$ 0.36216
Tier 2 Energy	\$ 0.24111	\$ 0.03637	\$ 0.13835	\$ 0.41583

Current Rates

Customer Charge	\$ 13.83			
Tier 1 Energy	\$ 0.13577	\$ 0.01916	\$ 0.13835	\$ 0.29328
Tier 2 Energy	\$ 0.16040	\$ 0.03535	\$ 0.13835	\$ 0.33409

Liberty Utilities (CalPeco Electric)
Residential Non-Permanent Bill Impact Analysis

Bill Impact Analysis	Monthly Usage (kWh)	Proposed Bill \$	Current Bill \$	Increase / (Decrease) \$	Increase / (Decrease) %
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Winter Season

50% Below Avg. Usage	278.0	\$ 142.08	\$ 102.27	\$ 39.81	38.9%
25% Below Avg. Usage	417.0	\$ 192.42	\$ 146.49	\$ 45.92	31.3%
Average Usage	556.0	\$ 242.75	\$ 190.71	\$ 52.04	27.3%
25% Above Avg. Usage	695.0	\$ 299.37	\$ 234.93	\$ 64.44	27.4%
50% Above Avg. Usage	834.0	\$ 357.17	\$ 279.15	\$ 78.02	27.9%

Summer Season

50% Below Avg. Usage	213.3	\$ 118.63	\$ 81.68	\$ 36.96	45.2%
25% Below Avg. Usage	319.9	\$ 157.25	\$ 115.60	\$ 41.65	36.0%
Average Usage	426.5	\$ 195.86	\$ 149.52	\$ 46.34	31.0%
25% Above Avg. Usage	533.1	\$ 239.42	\$ 183.44	\$ 55.98	30.5%
50% Above Avg. Usage	639.8	\$ 283.76	\$ 217.36	\$ 66.40	30.5%

Average Bill	491.2	\$ 219.31	\$ 170.12	\$ 49.19	28.9%
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Bill Impact without GRC Rate

Bill Impact Analysis	Monthly Usage (kWh)	Proposed Bill \$	Current Bill \$	Increase / (Decrease) \$	Increase / (Decrease) %
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Winter Season

50% Below Avg. Usage	278.0	\$ 130.76	\$ 102.27	\$ 28.49	27.9%
25% Below Avg. Usage	417.0	\$ 175.45	\$ 146.49	\$ 28.95	19.8%
Average Usage	556.0	\$ 220.13	\$ 190.71	\$ 29.41	15.4%
25% Above Avg. Usage	695.0	\$ 271.09	\$ 234.93	\$ 36.16	15.4%
50% Above Avg. Usage	834.0	\$ 323.23	\$ 279.15	\$ 44.08	15.8%

Summer Season

50% Below Avg. Usage	213.3	\$ 109.95	\$ 81.68	\$ 28.28	34.6%
25% Below Avg. Usage	319.9	\$ 144.23	\$ 115.60	\$ 28.63	24.8%
Average Usage	426.5	\$ 178.50	\$ 149.52	\$ 28.99	19.4%
25% Above Avg. Usage	533.1	\$ 217.72	\$ 183.44	\$ 34.28	18.7%
50% Above Avg. Usage	639.8	\$ 257.72	\$ 217.36	\$ 40.36	18.6%

Average Bill	491.2	\$ 199.32	\$ 170.12	\$ 29.20	17.2%
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GRC Charge: \$ 0.0407

Rate Summary	Distribution Energy Rate	Generation Energy Rate	Other Charges	Total Energy Charges
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Proposed Rates

Customer Charge	\$ 41.40			
Tier 1 Energy	\$ 0.20410	\$ 0.01971	\$ 0.13835	\$ 0.36216
Tier 2 Energy	\$ 0.24111	\$ 0.03637	\$ 0.13835	\$ 0.41583

Current Rates

Customer Charge	\$ 13.83			
Tier 1 Energy	\$ 0.15401	\$ 0.02578	\$ 0.13835	\$ 0.31814
Tier 2 Energy	\$ 0.15401	\$ 0.02578	\$ 0.13835	\$ 0.31814

Liberty Utilities (CalPeco Electric)
Tier 1 CARE Bill Impact Analysis

Bill Impact Analysis	Monthly Usage (kWh)	Proposed Bill \$	Current Bill \$	Increase / (Decrease) \$	Increase / (Decrease) %
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Winter Season

50% Below Avg. Usage	311.9	\$ 101.88	\$ 88.32	\$ 13.56	15.4%
25% Below Avg. Usage	467.8	\$ 147.82	\$ 126.95	\$ 20.87	16.4%
Average Usage	623.8	\$ 195.38	\$ 166.89	\$ 28.49	17.1%
25% Above Avg. Usage	779.7	\$ 246.85	\$ 210.00	\$ 36.86	17.6%
50% Above Avg. Usage	935.6	\$ 298.32	\$ 253.10	\$ 45.22	17.9%

Summer Season

50% Below Avg. Usage	226.4	\$ 76.69	\$ 67.14	\$ 9.55	14.2%
25% Below Avg. Usage	339.5	\$ 110.03	\$ 95.18	\$ 14.86	15.6%
Average Usage	452.7	\$ 143.79	\$ 123.55	\$ 20.24	16.4%
25% Above Avg. Usage	565.9	\$ 181.15	\$ 154.83	\$ 26.31	17.0%
50% Above Avg. Usage	679.1	\$ 218.50	\$ 186.12	\$ 32.39	17.4%

Average Bill	538.2	\$ 169.59	\$ 145.22	\$ 24.37	16.8%
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Bill Impact without GRC Rate

Bill Impact Analysis	Monthly Usage (kWh)	Proposed Bill \$	Current Bill \$	Increase / (Decrease) \$	Increase / (Decrease) %
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Winter Season

50% Below Avg. Usage	311.9	\$ 89.19	\$ 88.32	\$ 0.86	1.0%
25% Below Avg. Usage	467.8	\$ 128.78	\$ 126.95	\$ 1.83	1.4%
Average Usage	623.8	\$ 170.00	\$ 166.89	\$ 3.10	1.9%
25% Above Avg. Usage	779.7	\$ 215.12	\$ 210.00	\$ 5.12	2.4%
50% Above Avg. Usage	935.6	\$ 260.24	\$ 253.10	\$ 7.14	2.8%

Summer Season

50% Below Avg. Usage	226.4	\$ 67.47	\$ 67.14	\$ 0.34	0.5%
25% Below Avg. Usage	339.5	\$ 96.21	\$ 95.18	\$ 1.04	1.1%
Average Usage	452.7	\$ 125.36	\$ 123.55	\$ 1.82	1.5%
25% Above Avg. Usage	565.9	\$ 158.11	\$ 154.83	\$ 3.28	2.1%
50% Above Avg. Usage	679.1	\$ 190.86	\$ 186.12	\$ 4.75	2.6%

Average Bill	538.2	\$ 147.68	\$ 145.22	\$ 2.46	1.7%
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GRC Charge: \$ 0.04070

Rate Summary	Distribution Energy Rate	Generation Energy Rate	Other Charges	Total Energy Charges
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Proposed Rates

Customer Charge	\$ 10.00			
Tier 1 Energy	\$ 0.13841	\$ 0.01971	\$ 0.13648	\$ 0.29460
Tier 2 Energy	\$ 0.15721	\$ 0.03637	\$ 0.13648	\$ 0.33006

Current Rates

Customer Charge	\$ 11.07			
Tier 1 Energy	\$ 0.09208	\$ 0.01916	\$ 0.13648	\$ 0.24771
Tier 2 Energy	\$ 0.10458	\$ 0.03535	\$ 0.13648	\$ 0.27641

Liberty Utilities (CalPeco Electric)
Tier 2 CARE Bill Impact Analysis

Bill Impact Analysis	Monthly Usage (kWh)	Proposed Bill \$	Current Bill \$	Increase / (Decrease) \$	Increase / (Decrease) %
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Winter Season

50% Below Avg. Usage	311.9	\$ 96.88	\$ 88.32	\$ 8.56	9.7%
25% Below Avg. Usage	467.8	\$ 142.82	\$ 126.95	\$ 15.87	12.5%
Average Usage	623.8	\$ 190.38	\$ 166.89	\$ 23.49	14.1%
25% Above Avg. Usage	779.7	\$ 241.85	\$ 210.00	\$ 31.86	15.2%
50% Above Avg. Usage	935.6	\$ 293.32	\$ 253.10	\$ 40.22	15.9%

Summer Season

50% Below Avg. Usage	226.4	\$ 71.69	\$ 67.14	\$ 4.55	6.8%
25% Below Avg. Usage	339.5	\$ 105.03	\$ 95.18	\$ 9.86	10.4%
Average Usage	452.7	\$ 138.79	\$ 123.55	\$ 15.24	12.3%
25% Above Avg. Usage	565.9	\$ 176.15	\$ 154.83	\$ 21.31	13.8%
50% Above Avg. Usage	679.1	\$ 213.50	\$ 186.12	\$ 27.39	14.7%

Average Bill	538.2	\$ 164.59	\$ 145.22	\$ 19.37	13.3%
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Bill Impact without GRC Rate

Bill Impact Analysis	Monthly Usage (kWh)	Proposed Bill \$	Current Bill \$	Increase / (Decrease) \$	Increase / (Decrease) %
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Winter Season

50% Below Avg. Usage	311.9	\$ 84.19	\$ 88.32	\$ (4.14)	-4.7%
25% Below Avg. Usage	467.8	\$ 123.78	\$ 126.95	\$ (3.17)	-2.5%
Average Usage	623.8	\$ 165.00	\$ 166.89	\$ (1.90)	-1.1%
25% Above Avg. Usage	779.7	\$ 210.12	\$ 210.00	\$ 0.12	0.1%
50% Above Avg. Usage	935.6	\$ 255.24	\$ 253.10	\$ 2.14	0.8%

Summer Season

50% Below Avg. Usage	226.4	\$ 62.47	\$ 67.14	\$ (4.66)	-6.9%
25% Below Avg. Usage	339.5	\$ 91.21	\$ 95.18	\$ (3.96)	-4.2%
Average Usage	452.7	\$ 120.36	\$ 123.55	\$ (3.18)	-2.6%
25% Above Avg. Usage	565.9	\$ 153.11	\$ 154.83	\$ (1.72)	-1.1%
50% Above Avg. Usage	679.1	\$ 185.86	\$ 186.12	\$ (0.25)	-0.1%

Average Bill	538.2	\$ 142.68	\$ 145.22	\$ (2.54)	-1.7%
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GRC Charge: \$ 0.04070

Rate Summary	Distribution Energy Rate	Generation Energy Rate	Other Charges	Total Energy Charges
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Proposed Rates

Customer Charge	\$ 5.00			
Tier 1 Energy	\$ 0.13841	\$ 0.01971	\$ 0.13648	\$ 0.29460
Tier 2 Energy	\$ 0.15721	\$ 0.03637	\$ 0.13648	\$ 0.33006

Current Rates

Customer Charge	\$ 11.07			
Tier 1 Energy	\$ 0.09208	\$ 0.01916	\$ 0.13648	\$ 0.24771
Tier 2 Energy	\$ 0.10458	\$ 0.03535	\$ 0.13648	\$ 0.27641

Liberty Utilities (CalPeco Electric)
A-1 Class Rate Design

Base Revenues	Base Rates	Other Charges	Total Rates
Target Base Rates	31,697,633	\$ 17,493,158	\$ 49,190,791
Current Base Rates	20,129,892	\$ 17,631,301	\$ 37,761,193
\$ Difference	11,567,741	(138,143)	11,429,598
% Difference	57.5%		30.3%

A-1 Class Rate Design	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues
Proposed Rates (A-1 > 20kW)								
Customer Charge	\$ 42.11			61,153	\$ 2,575,080			\$ 2,575,080
Energy		\$ 0.27060	\$ 0.02377	60,800,194		16,452,631	1,444,973	17,897,604
Proposed Rates (A-1A <= 20 kW)								
Customer Charge	\$ 42.11			4,553	191,727			191,727
Energy		\$ 0.27060	\$ 0.02377	37,481,108		10,142,448	890,774	11,033,222
Revenue at Proposed Rates				98,281,303	\$ 2,766,807	\$ 26,595,079	\$ 2,335,747	\$ 31,697,633
Current Rates (A-1 > 20kW)								
Customer Charge	\$ 26.74			59,328	\$ 1,586,509			\$ 1,586,509
Energy		\$ 0.16318	\$ 0.02281	61,206,837		9,987,622	1,395,890	11,383,512
Current Rates (A-1A <= 20 kW)								
Customer Charge	\$ 26.74			4,497	120,255			120,255
Energy		\$ 0.16318	\$ 0.02281	37,850,588		6,176,391	863,225	7,039,616
Revenue at Current Rates				99,057,425	\$ 1,706,764	\$ 16,164,013	\$ 2,259,114	\$ 20,129,892

Liberty Utilities (CalPeco Electric)
A-1 Bill Impact Analysis

A-1 Class Rate Design

Bill Impact Analysis	Month Usage	Proposed Bill	Current Bill	Increase / (Decrease) \$	Increase / (Decrease) %
Winter Season					
50% Below Avg. Usage	756.9	\$ 399.65	\$ 302.24	\$ 97.41	32.2%
25% Below Avg. Usage	1,135.4	\$ 578.42	\$ 439.99	\$ 138.42	31.5%
Average Usage	1,513.8	\$ 757.19	\$ 577.74	\$ 179.44	31.1%
25% Above Avg. Usage	1,892.3	\$ 935.96	\$ 715.50	\$ 220.46	30.8%
50% Above Avg. Usage	2,270.8	\$ 1,114.73	\$ 853.25	\$ 261.48	30.6%
Summer Season					
50% Below Avg. Usage	723.9	\$ 384.03	\$ 290.21	\$ 93.82	32.3%
25% Below Avg. Usage	1,085.8	\$ 554.99	\$ 421.94	\$ 133.05	31.5%
Average Usage	1,447.7	\$ 725.95	\$ 553.68	\$ 172.28	31.1%
25% Above Avg. Usage	1,809.7	\$ 896.91	\$ 685.41	\$ 211.50	30.9%
50% Above Avg. Usage	2,171.6	\$ 1,067.87	\$ 817.14	\$ 250.73	30.7%
Other Charges		0.17799	0.17799		
Average Bill	1,481	\$ 741.57	\$ 565.71	\$ 175.86	31.1%

Bill Impact without GRC Rate

Bill Impact Analysis	Month Usage	Proposed Bill	Current Bill	Increase / (Decrease) \$	Increase / (Decrease) %
Winter Season					
50% Below Avg. Usage	756.9	\$ 367.38	\$ 302.24	\$ 65.13	21.5%
25% Below Avg. Usage	1,135.4	\$ 530.01	\$ 439.99	\$ 90.02	20.5%
Average Usage	1,513.8	\$ 692.64	\$ 577.74	\$ 114.90	19.9%
25% Above Avg. Usage	1,892.3	\$ 855.28	\$ 715.50	\$ 139.78	19.5%
50% Above Avg. Usage	2,270.8	\$ 1,017.91	\$ 853.25	\$ 164.67	19.3%
Summer Season					
50% Below Avg. Usage	723.9	\$ 353.17	\$ 290.21	\$ 62.96	21.7%
25% Below Avg. Usage	1,085.8	\$ 508.70	\$ 421.94	\$ 86.76	20.6%
Average Usage	1,447.7	\$ 664.23	\$ 553.68	\$ 110.55	20.0%
25% Above Avg. Usage	1,809.7	\$ 819.76	\$ 685.41	\$ 134.35	19.6%
50% Above Avg. Usage	2,171.6	\$ 975.29	\$ 817.14	\$ 158.14	19.4%
GRC Rate		\$ 0.04264			
Average Bill	1,481	\$ 678.44	\$ 565.71	\$ 112.73	19.9%

Liberty Utilities (CalPeco Electric)
A-2 Class Rate Design

Base Revenues	Base Rates	Other Charges	Total Rates	Forecasted
Target Base Rates	20,288,848	\$ 10,170,953	\$ 30,459,800	\$ 30,459,800
Current Base Rates	13,906,745	\$ 12,524,655	\$ 26,431,400	\$ 24,710,536
\$ Difference	6,382,103	(2,353,702)	4,028,401	5,749,264
% Difference	45.9%		15.2%	23.3%

A-2 Class Rate Design Proposed Rates	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues
Proposed Rates (A-2)								
Customer Charge	\$201.85			2,700	\$ 544,992			\$ 544,992
Winter Energy		\$ 0.32212	\$ 0.01693	38,476,437		12,393,945	651,289	13,045,233
Summer Energy		\$ 0.17404	\$ 0.01552	18,588,104		3,235,091	288,427	3,523,517
Winter Demand		\$ 5.94	\$ 2.55	257,658		1,530,315	656,064	2,186,380
Summer Demand		\$ 5.94	\$ -	117,237		696,307	-	696,307
Power Factor				0.00561%	\$ 31	\$ 1,002	\$ 90	1,122
V/T Discount				-0.00539%	\$ (29)	\$ (962)	\$ (86)	(1,078)

Proposed Rates (A-2 TOU)	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues	
Proposed Rates (A-2 TOU)									
Customer Charge	\$ 201.85								
Winter Energy - On-Peak		\$ 0.68132	\$ 0.02172	130,482		88,900	2,834	91,734	
Winter Energy - Mid-Peak		\$ 0.36007	\$ 0.01081	199,206		71,729	2,154	73,883	
Winter Energy - Off-Peak		\$ 0.04132	\$ 0.02179	193,846		8,010	4,224	12,234	
Summer Energy - OnPeak		\$ 0.17404	\$ 0.01337	233,969		40,720	3,128	43,848	
Summer Energy - Off-Peak		\$ 0.17404	\$ 0.01783	208,974		36,370	3,726	40,096	
Winter Demand - On-Peak		\$ -	\$ 3.06	3,027		-	9,266	9,266	
Winter Demand - Mid-Peak			\$ 3.06	2,881		-	-	-	
Winter Demand - Off-Peak		\$ -	\$ 3.06	2,389		-	-	-	
Non-TOU Maximum		\$ 5.94		3,588		21,312	-	21,312	
Revenue at Proposed Rates					58,031,018	\$ 544,993	\$ 18,122,739	\$ 1,621,116	\$ 20,288,848

A-2 Class Rate Design Current Rates	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues	
Current Rates									
Customer Charge	\$100.92			3,144	\$ 317,307			\$ 317,307	
Winter Energy		\$ 0.17341	\$ 0.01315	47,602,156		8,254,817	625,949	8,880,766	
Summer Energy		\$ 0.07839	\$ 0.01241	22,686,525		1,778,375	281,622	2,059,997	
Winter Demand		\$ 10.72	\$ 4.69	138,197		1,481,974	647,881	2,129,855	
Summer Demand		\$ 10.39		61,966		643,963	-	643,963	
Power Factor				0.00561%	\$ 18	\$ 682	\$ 87	787	
V/T Discount				-0.00539%	\$ (17)	\$ (655)	\$ (84)	(756)	
Current Rates (A-2 TOU)									
Customer Charge	\$ 100.92				\$ -			\$ -	
Winter Energy - On-Peak		\$ 0.38408	\$ 0.01690	133,130		51,132	2,249	53,382	
Winter Energy - Mid-Peak		\$ 0.17909	\$ 0.00840	190,879		34,184	1,603	35,787	
Winter Energy - Off-Peak		\$ 0.02634	\$ 0.01693	198,055		5,216	3,353	8,569	
Summer Energy - OnPeak		\$ 0.08089	\$ 0.01074	240,304		19,438	2,581	22,019	
Summer Energy - Off-Peak		\$ 0.08089	\$ 0.01430	199,149		16,109	2,848	18,957	
Winter Demand - On-Peak		\$ -	\$ 5.22	3,093		-	16,151	16,151	
Winter Demand - Mid-Peak		\$ -	\$ 5.22	3,255		-	17,000	17,000	
Winter Demand - Off-Peak		\$ -	\$ -	2,761		-	-	-	
Non-TOU Maximum		\$ 11.55	\$ -	2,098		24,234	-	24,234	
Revenue at Current Rates					71,250,198	\$ 317,307	\$ 12,309,469	\$ 1,601,240	\$ 14,228,017

Liberty Utilities (CalPeco Electric)
A-2 Bill Impact Analysis

Bill Impact Analysis	Month Usage	Average Demand	Proposed Bill	Current Bill	Increase / (Decrease) \$	Increase / (Decrease) %
Total Charges						
Winter Season						
50% Below Avg. Usage	10,673	71 \$	6,327 \$	5,094 \$	1,233	24.2%
25% Below Avg. Usage	16,010	107 \$	9,389 \$	7,590 \$	1,800	23.7%
Average Usage	21,347	143 \$	12,452 \$	10,086 \$	2,366	23.5%
25% Above Avg. Usage	26,684	179 \$	15,514 \$	12,582 \$	2,932	23.3%
50% Above Avg. Usage	32,020	214 \$	18,577 \$	15,079 \$	3,498	23.2%
Summer Season						
50% Below Avg. Usage	10,497	66 \$	4,453 \$	3,611 \$	843	23.3%
25% Below Avg. Usage	15,746	99 \$	6,579 \$	5,365 \$	1,214	22.6%
Average Usage	20,994	132 \$	8,705 \$	7,120 \$	1,585	22.3%
25% Above Avg. Usage	26,243	166 \$	10,830 \$	8,875 \$	1,956	22.0%
50% Above Avg. Usage	31,491	199 \$	12,956 \$	10,630 \$	2,326	21.9%
Average Bill	21,229	139 \$	11,203 \$	9,097 \$	2,105	23.1%

Bill Impact without GRC Rate

Bill Impact Analysis	Month Usage	Average Demand	Proposed Bill	Current Bill	Increase / (Decrease) \$	Increase / (Decrease) %
Total Rates w/o GRC						
Winter Season						
50% Below Avg. Usage	10,673.4	71 \$	5,872 \$	5,094 \$	778	15.3%
25% Below Avg. Usage	16,010.2	107 \$	8,707 \$	7,590 \$	1,117	14.7%
Average Usage	21,346.9	143 \$	11,542 \$	10,086 \$	1,456	14.4%
25% Above Avg. Usage	26,683.6	179 \$	14,377 \$	12,582 \$	1,794	14.3%
50% Above Avg. Usage	32,020.3	214 \$	17,212 \$	15,079 \$	2,133	14.1%
Summer Season						
50% Below Avg. Usage	10,497.2	66 \$	4,006 \$	3,611 \$	395	10.9%
25% Below Avg. Usage	15,745.7	99 \$	5,908 \$	5,365 \$	542	10.1%
Average Usage	20,994.3	132 \$	7,810 \$	7,120 \$	690	9.7%
25% Above Avg. Usage	26,242.9	166 \$	9,712 \$	8,875 \$	837	9.4%
50% Above Avg. Usage	31,491.5	199 \$	11,614 \$	10,630 \$	984	9.3%
Average Bill	21,229	139 \$	10,298 \$	9,097 \$	1,200	13.2%

GRC Rate \$ **0.04264**

Liberty Utilities (CalPeco Electric)
A-3 Class Rate Design

Base Revenues	Base Rates	Other Charges	Total Rates
Target Base Rates	34,373,780	\$ 20,468,079	\$ 54,841,859
Current Base Rates	22,841,574	\$ 20,406,749	\$ 43,248,323
\$ Difference	11,532,206	61,330	11,593,536
% Difference	50.5%		26.8%

A-3 Class Rate Design Proposed Rates	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues
Proposed Rates (A-3)								
Customer Charge	\$ 1,036.51			660	\$ 684,099			\$ 684,099
Winter Energy - On-Peak	\$ 0.06964	\$ -	\$ -	17,359,238		1,208,868	-	1,208,868
Winter Energy - Mid-Peak	\$ 0.05949	\$ -	\$ -	35,559,135		2,115,298	-	2,115,298
Winter Energy - Off-Peak	\$ 0.03138	\$ -	\$ -	30,554,314		958,838	-	958,838
Summer Energy - On-Peak	\$ 0.09223	\$ -	\$ -	17,479,391		1,612,055	-	1,612,055
Summer Energy - Off-Peak	\$ 0.04983	\$ -	\$ -	14,043,137		699,783	-	699,783
Winter Demand - On-Peak		\$ -	\$ 3.72	369,511			1,375,423	1,375,423
Winter Demand - Mid-Peak		\$ -	\$ 2.56	435,753			1,116,209	1,116,209
Summer Demand - OnPeak		\$ -	\$ 23.85	129,780			3,095,854	3,095,854
Non-TOU Maximum		\$ -	\$ -	474,845			-	-
Non-WMP								
Winter On	\$ 15.45			369,511		5,710,290	-	5,710,290
Winter Mid	\$ 4.57			435,753		1,991,073	-	1,991,073
Summer On	\$ 6.47			129,780		839,153	-	839,153
Maximum (Facilities Charge)	\$ 12.54			474,845		5,956,434	-	5,956,434
WMP								
Winter On	\$ 3.19			369,511	\$ 1,177,923			1,177,923
Winter Mid	\$ 3.37			435,753	\$ 1,466,603			1,466,603
Summer On								
Maximum (Facilities Charge)	\$ 9.44			474,845	\$ 4,481,443			4,481,443
Power Factor				0.03612%	247	10,192	2,018	12,458
V/T Discount				-0.37120%	(2,539)	(104,744)	(20,741)	(128,024)
Revenue at Proposed Rates				114,995,214	\$ 681,807	\$ 28,123,209	\$ 5,568,764	\$ 34,373,780

A-3 Class Rate Design Current Rates	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues
Current Rates (A-3)								
Customer Charge	\$ 822.98			636	\$ 523,414			\$ 523,414
Winter Energy - On-Peak	\$ 0.05529	\$ -	\$ -	17,163,367		948,995	-	948,995
Winter Energy - Mid-Peak	\$ 0.04723	\$ -	\$ -	34,114,607		1,611,290	-	1,611,290
Winter Energy - Off-Peak	\$ 0.02492	\$ -	\$ -	32,401,337		807,325	-	807,325
Summer Energy - On-Peak	\$ 0.07323	\$ -	\$ -	16,362,454		1,198,161	-	1,198,161
Summer Energy - Off-Peak	\$ 0.03957	\$ -	\$ -	14,608,881		578,002	-	578,002
Winter Demand - On-Peak	\$ -	\$ -	\$ 2.96	359,210			1,061,623	1,061,623
Winter Demand - Mid-Peak	\$ -	\$ -	\$ 2.03	422,748			859,806	859,806
Summer Demand - OnPeak	\$ -	\$ -	\$ 18.94	117,435			2,224,245	2,224,245
Non-TOU Maximum	\$ -	\$ -	\$ -	461,365			-	-
Non-WMP								
Winter On	\$ 12.27			359,210		4,407,501	-	4,407,501
Winter Mid	\$ 3.63			422,748		1,533,706	-	1,533,706
Summer On	\$ 5.13			117,435		602,897	-	602,897
Maximum (Facilities Charge)	\$ 9.96			461,365		4,595,072	-	4,595,072
WMP								
Winter On	\$ 1.50			359,210	539,542			539,542
Winter Mid	\$ 1.10			422,748	466,507			466,507
Summer On	\$ -			117,435	-			-
Maximum (Facilities Charge)	\$ 2.08			461,365	960,284			960,284
Power Factor				0.03612%	189	6,592	1,497	8,278
V/T Discount				-0.37120%	(1,943)	(67,741)	(15,389)	(85,073)
Revenue at Current Rates				114,650,646	\$ 521,660	\$ 18,188,131	\$ 4,131,783	\$ 22,841,574

A-3 Class Rate Design Proposed Rates (TOU A-3 EV)	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues
Proposed Rates (TOU A-3 EV)								
Customer Charge	\$ 1,036.51			660	\$ 684,099			\$ 684,099
Winter Energy - On-Peak	\$ 0.06964	\$ -	\$ -	17,359,238		1,208,868	-	1,208,868
Winter Energy - Mid-Peak	\$ 0.05949	\$ -	\$ -	35,559,135		2,115,298	-	2,115,298
Winter Energy - Off-Peak	\$ 0.03138	\$ -	\$ -	30,554,314		958,838	-	958,838
Summer Energy - OnPeak	\$ 0.09223	\$ -	\$ -	17,479,391		1,612,055	-	1,612,055
Summer Energy - Off-Peak	\$ 0.04983	\$ -	\$ -	14,043,137		699,783	-	699,783
Winter Demand - On-Peak	\$ -	\$ -	\$ -	369,511			-	-
Winter Demand - Mid-Peak	\$ -	\$ -	\$ -	435,753			-	-
Summer Demand - OnPeak	\$ -	\$ -	\$ -	129,780			-	-
Non-TOU Maximum	\$ -	\$ -	\$ -	474,845			-	-
Power Factor				0.03612%	247	2,382	-	2,629
V/T Discount				-0.37120%	(2,539)	(24,480)	-	(27,019)
Revenue at Proposed Rates				114,995,214	\$ 681,807	\$ 6,572,744	\$ -	\$ 7,254,551

Liberty Utilities (CalPeco Electric)
A-3 Bill Impact Analysis

Bill Impact Analysis	Month	Average	Proposed	Current	Increase /	Increase /
Total Charges	Usage	Demand	Bill	Bill	(Decrease) \$	(Decrease) %
Winter Season						
50% Below Avg. Usage	98,678	1,319	\$ 47,037	\$ 37,598	\$ 9,439	25.1%
25% Below Avg. Usage	148,018	1,979	\$ 70,037	\$ 55,985	\$ 14,052	25.1%
Average Usage	197,357	2,638	\$ 93,037	\$ 74,373	\$ 18,664	25.1%
25% Above Avg. Usage	246,696	3,298	\$ 116,037	\$ 92,760	\$ 23,277	25.1%
50% Above Avg. Usage	296,035	3,958	\$ 139,037	\$ 111,148	\$ 27,889	25.1%
Summer Season						
50% Below Avg. Usage	73,046	571	\$ 34,173	\$ 28,221	\$ 5,952	21.1%
25% Below Avg. Usage	109,568	856	\$ 50,741	\$ 41,920	\$ 8,822	21.0%
Average Usage	146,091	1,142	\$ 67,310	\$ 55,618	\$ 11,691	21.0%
25% Above Avg. Usage	182,614	1,427	\$ 83,878	\$ 69,317	\$ 14,561	21.0%
50% Above Avg. Usage	219,137	1,713	\$ 100,446	\$ 83,016	\$ 17,430	21.0%
Average Bill	180,268	2,140	\$ 84,461	\$ 68,121	\$ 16,340	24.0%

Bill Impact without GRC Rate

Bill Impact Analysis	Month	Average	Proposed	Current	Increase /	Increase /
Total Rates w/o GRC	Usage	Demand	Bill	Bill	(Decrease) \$	(Decrease) %
Winter Season						
50% Below Avg. Usage	98,678.4	1,319	\$ 42,829	\$ 37,598	\$ 5,232	13.9%
25% Below Avg. Usage	148,017.6	1,979	\$ 63,726	\$ 55,985	\$ 7,741	13.8%
Average Usage	197,356.9	2,638	\$ 84,622	\$ 74,373	\$ 10,250	13.8%
25% Above Avg. Usage	246,696.1	3,298	\$ 105,519	\$ 92,760	\$ 12,759	13.8%
50% Above Avg. Usage	296,035.3	3,958	\$ 126,415	\$ 111,148	\$ 15,268	13.7%
Summer Season						
50% Below Avg. Usage	73,045.6	571	\$ 31,059	\$ 28,221	\$ 2,838	10.1%
25% Below Avg. Usage	109,568.4	856	\$ 46,070	\$ 41,920	\$ 4,150	9.9%
Average Usage	146,091.2	1,142	\$ 61,081	\$ 55,618	\$ 5,463	9.8%
25% Above Avg. Usage	182,614.0	1,427	\$ 76,092	\$ 69,317	\$ 6,775	9.8%
50% Above Avg. Usage	219,136.8	1,713	\$ 91,103	\$ 83,016	\$ 8,087	9.7%
Average Bill	180,268	2,140	\$ 76,775	\$ 68,121	\$ 8,654	12.7%

GRC Rate \$ 0.04264

Liberty Utilities (CalPeco Electric)
PA Rate Design

Base Revenues	Base Rates	Other Charges	Total Rates
Target Base Rates	210,704	\$ 197,453	\$ 408,157
Current Base Rates	115,536	\$ 197,453	\$ 312,989
\$ Difference	95,168	-	95,168
% Difference	82.4%		30.4%

PA Rate Design	Customer Charge	Distribution Rate	Generation Rate	Billing Determinants	Customer Revenues	Distribution Revenues	Generation Revenues	Total Revenues	
Proposed Rates									
Customer Charge	\$ 49.57			131	\$ 6,493			\$ 6,493	
Energy		\$ 0.09743	\$ 0.08665	1,109,346		108,083	96,127	204,211	
Revenue at Proposed Rates					1,109,346	\$ 6,493	\$ 108,083	\$ 96,127	\$ 210,704
Current Rates									
Customer Charge	\$ 27.18			131	\$ 3,560			\$ 3,560	
Energy		\$ 0.05342	\$ 0.04751	1,109,346		59,266	52,710	111,976	
Revenue at Current Rates					1,109,346	\$ 3,560	\$ 59,266	\$ 52,710	\$ 115,536

Liberty Utilities (CalPeco Electric)
HPS Outdoor Lights Rate Design

Base Revenues	Base Rates	Other Charges	Total Rates
Target Base Rates	705,532	\$ 81,006	\$ 786,538
Current Base Rates	400,658	\$ 81,914	\$ 482,572
\$ Difference	304,874	(908)	303,966
% Difference	76.1%		63.0%

HPS Outdoor Lights Rate Design	Distribution Rate	Generation Rate	Billing Determinants	Distribution Revenues	Generation Revenues	Total Revenues
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Proposed Rates (OLS)

Existing, Overhead Pole Rates by Lumen						
5,800 Lumen Light @ 29 kWh/mo.	\$ 46.43	\$ 0.40	6,173	286,662	2,473	289,135
9,500 Lumen Light @ 41 kWh/mo.	47.94	0.70	5,998	287,556	4,229	291,784
16,000 Lumen Light @ 67 kWh/mo.	46.29	0.98	2,332	107,948	2,285	110,234
22,000 Lumen Light @ 85 kWh/mo.	49.06	1.12	91	4,485	102	4,587
These Poles/Service add to the Existing Pole Rate (above)						
New Wood Pole	\$ 33.10	\$ -	74	2,452	-	2,452
New Metal Pole (< 22,000 lumens)	43.71	-	111	4,857	-	4,857
New Metal Pole (=> 22,000 lumens)	46.45	-	-	-	-	-
Underground Service	22.36	\$ -	111	2,484	-	2,484
Revenue at Proposed Rates			14,595	\$ 696,443	\$ 9,089	\$ 705,532

Current Rates (OLS)

Existing, Overhead Pole Rates by Lumen						
5,800 Lumen Light @ 29 kWh/mo.	\$ 25.98	\$ 0.22	6,266	162,790	1,404	164,194
9,500 Lumen Light @ 41 kWh/mo.	26.25	0.39	6,220	163,297	2,401	165,698
16,000 Lumen Light @ 67 kWh/mo.	27.18	0.58	2,255	61,302	1,298	62,599
22,000 Lumen Light @ 85 kWh/mo.	28.08	0.64	91	2,547	58	2,605
These Poles/Service add to the Existing Pole Rate (above)						
New Wood Pole	\$ 18.80		74	1,392	-	1,392
New Metal Pole (< 22,000 lumens)	24.82		111	2,758	-	2,758
New Metal Pole (=> 22,000 lumens)	26.38		-	-	-	-
Underground Service	12.70		111	1,411	-	1,411
Revenue at Current Rates			14,832	\$ 395,496	\$ 5,162	\$ 400,658

Liberty Utilities (CalPeco Electric)
HPS Street Lights Rate Design

Base Revenues	Base Rates	Other Charges	Total Rates
Target Base Rates	377,732	\$ 46,032	\$ 423,764
Current Base Rates	207,191	\$ 47,859	\$ 255,050
\$ Difference	170,541	(1,828)	168,714
% Difference	82.3%		66.1%

HPS Street Lights Rate Design	Distribution Rate	Generation Rate	Billing Determinants	Distribution Revenues	Generation Revenues	Total Revenues
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Proposed Rates (\$L)

Existing, Overhead Pole Rates by Lumen								
5,800 Lumen Light @ 29 kWh/mo.	\$	78.27	\$	0.33	582	45,564	193	45,757
9,500 Lumen Light @ 41 kWh/mo.		65.02		0.46	941	61,209	430	61,638
22,000 Lumen Light @ 79 kWh/mo.		75.53		0.93	3,536	267,040	3,297	270,337
These Poles/Service add to the Existing Pole Rate (above)								
New Wood Pole	\$	35.36						
New Metal Pole (< 22,000 lumens)		48.70						
New Metal Pole (=> 22,000 lumens)		49.51						
Underground Service total		23.95						
Total, poles					5,729			
Underground Service					2,830			

Revenue at Proposed Rates				5,059	\$	373,813	\$	3,919	\$	377,732
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Current Rates (\$L)

Existing, Overhead Pole Rates by Lumen								
5,800 Lumen Light @ 29 kWh/mo.	\$	33.44	\$	0.14	747	24,993	106	25,098
9,500 Lumen Light @ 41 kWh/mo.		33.27		0.23	1,009	33,574	236	33,810
22,000 Lumen Light @ 79 kWh/mo.		40.60		0.50	3,608	146,475	1,808	148,283
These Poles/Service add to the Existing Pole Rate (above)								
New Wood Pole	\$	19.40						
New Metal Pole (< 22,000 lumens)		26.71						
New Metal Pole (=> 22,000 lumens)		27.16						
Underground Service total		13.14						
Total, poles					-			
Underground Service					-			

Revenue at Current Rates				5,364	\$	205,041	\$	2,150	\$	207,191
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