

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**METROPOLITAN EDISON COMPANY  
DOCKET NO. R-2014-2428745**

**PENNSYLVANIA ELECTRIC COMPANY  
DOCKET NO. R-2014-2428743**

**PENNSYLVANIA POWER COMPANY  
DOCKET NO. R-2014-2428744**

**WEST PENN POWER COMPANY  
DOCKET NO. R-2014-2428742**

**Direct Testimony  
of  
Christopher D. Ciccone**

**List of Topics Addressed**

**LED Street Lighting**

1  
2  
3

**DIRECT TESTIMONY  
OF  
CHRISTOPHER D. CICCONE**

4 **Q. Please state your name and business address.**

5 A. My name is Christopher D. Ciccone. My business address is 2800 Pottsville Pike,  
6 Reading, Pennsylvania 19612.

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

8 A. I am employed by FirstEnergy Service Company as an Analyst II in the Rates and  
9 Regulatory Affairs Department – Pennsylvania.

10 **Q. And what are your responsibilities as an Analyst II?**

11 A. Generally, the Rates and Regulatory Affairs Department provides regulatory support for  
12 Metropolitan Edison Company (“Met-Ed”), Pennsylvania Electric Company (“Penelec”),  
13 Pennsylvania Power Company (“Penn Power”), and West Penn Power Company (“West  
14 Penn”) (collectively, the “Companies”). I report to the Manager – Rates and Regulatory  
15 Affairs – Pennsylvania and I am responsible for the development and preparation of the  
16 Companies’ accounting and financial data in support of rate-related matters before the  
17 Pennsylvania Public Utility Commission and New York Public Service Commission  
18 including the preparation of statements and reports addressing, among other things,  
19 energy costs, shopping statistics and other customer matters. Also, I am responsible for  
20 the administration of the Companies’ retail tariffs, the development of retail electric rates  
21 and the promulgation of rules and regulations ensuring uniform tariff administration and

1 interpretation. My work experience and educational background are more fully described  
2 in Appendix A attached to this testimony.

3 **Q. What is the purpose of your testimony?**

4 A. The purpose of my testimony is to outline proposed tariff provisions to allow the  
5 Companies to implement new light emitting diode (“LED”) street lighting services. I will  
6 first describe the lighting service and then explain how the Companies propose to recover  
7 the costs associated with the offering.

8 **Q. Mr. Ciccone, have you prepared exhibits to accompany your testimony?**

9 A. Yes. The following exhibits or portions of exhibits were prepared by me and are  
10 described in detail in my testimony: Met-Ed/Penelec/Penn Power/West Penn CDC-1;  
11 Exhibits CDC-2 for each of the Companies; pp. 100-102 of Met-Ed Company Exhibit 1;  
12 pp. 103-105 of Penelec Company Exhibit 1; pp. 96-98 of Penn Power Company Exhibit  
13 1; and pp. 149-151 of West Penn Company Exhibit 1 (collectively, “Companies’ Exhibits  
14 1”).

15 **Q. What is the purpose of the proposed new LED street lighting offerings?**

16 A. The offerings were developed in response to customer requests for additional LED street  
17 lighting options. Met-Ed and Penelec have each previously introduced tariff provisions  
18 offering customer owned and maintained LED lighting.<sup>1</sup> In light of continued customer  
19 interest in LED lighting, the Companies would now like to offer Company owned and

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<sup>1</sup> Metropolitan Edison Company. Electric Pa. P.U.C. No. 51. Street Lighting Service - Provision G. Page 130.  
Pennsylvania Electric Company. Electric Pa. P.U.C. No. 80. Municipal Street Lighting Service – Provision G (4).  
Page 139.

1 maintained LED street lighting. These proposed new offerings are outlined in the  
2 schedules found in Companies' Exhibits 1 at the following pages: pp. 100-102 (Met-Ed);  
3 pp. 103-105 (Penelec); pp. 96-98 (Penn Power); and pp. 149-151 (West Penn).

4 **Q. What customers will be eligible for this offering?**

5 A. As a general matter, municipalities, local, state and federal governmental bodies,  
6 community associations, and public authorities will be eligible. On a Company-specific  
7 basis, eligibility is as follows:

8 **Met-Ed**: open to any customer currently receiving service under a street lighting  
9 schedule interested in updating their Street Lighting Service or Ornamental Street  
10 Lighting Service.

11 **Penelec**: open to any customer currently receiving service under a street lighting  
12 schedule interested in updating their High Pressure Sodium Vapor Street Lighting  
13 Service or Municipal Street Lighting Service.

14 **Penn Power**: open to any customer currently receiving service under a street lighting  
15 schedule interested in updating their Street Lighting Service (Sodium Vapor), Street  
16 Lighting Service (Sodium Vapor – Divided Ownership), or Street Lighting Service  
17 (Mercury Vapor).

18 **West Penn Power**: open to any customer currently receiving service under a street  
19 lighting schedule interested in updating their Street Lighting Service – Schedule 51,  
20 Street and Area Lighting – Schedule 53, Street Lighting Service – Schedule 54, Street

1 Lighting Service – Customer-Owned Equipment – Schedule 56, Outdoor Lighting  
2 Equipment and Maintenance Service – Schedule 57, or Mercury Vapor Street and  
3 Highway Lighting Service – Schedule 71.

4 **Q. Will a contract be necessary to sign up for this offering?**

5 A. Yes, the initial term for all contracts will be ten years. Contracts may then be renewed  
6 for successive one year terms.

7 **Q. Will participating customers be able to choose an alternative electric generation  
8 supplier?**

9 A. Yes. Participating customers will be free to shop for their generation and market based  
10 transmission services.

11 **Q. What type of fixture heads will be available under these offerings?**

12 A. The Companies propose to offer Cobra, Acorn, and Colonial styled fixture heads. The  
13 minimum number of fixture heads required for any installation will be twelve.

14 **Q. Why do the Companies propose offering group installations?**

15 A. Offering group installations of twelve or more is more cost effective as compared to  
16 installing single fixtures.

17 **Q. After installation, who is responsible for the maintenance of these lights?**

18 A. Once installed, the Companies will own and maintain the light fixtures.

1  
2 **Q. What is the forecasted impact on revenues due to the introduction of LED street**  
3 **lighting?**

4 A. Since this is a new product offering and the level of customer participation is uncertain, it  
5 is difficult to quantify any impact on revenues at this point in time and would be  
6 speculative. Therefore, a revenue analysis cannot be completed.

7 **Q. How are the Companies proposing to recover costs associated with the LED street**  
8 **lighting offering?**

9 A. The Companies propose to recover costs through a fixed monthly charge for each LED  
10 fixture. The proposed monthly charges, by fixture and by Company, are provided in  
11 Met-Ed/Penelec/Penn Power/West Penn Exhibit CDC-1.

12 **Q. How did the Companies calculate the fixed charges?**

13 A. Exhibits CDC-2 contain all of the supporting calculations and data used to determine the  
14 monthly fixture cost for each light offered. Page 1 contains the cost of service for this  
15 new offering. Pages 2 thru 9 display the Levelized Payment calculations for the eight  
16 fixtures offered. Page 10 shows the installation cost for each fixture. Page 11 contains  
17 supporting data for the Other Distribution Plant Factor and Other Distribution O&M  
18 Factor. Page 12 displays supporting details for the General Property Factor. Page 13  
19 contains supporting details for the Customer Expense Factor. Page 14 shows supporting  
20 work for the Property Tax Factor. Page 15 contains the details for the Overall Rate of  
21 Return. Page 16 displays a table of tax depreciation rates based on the Modified  
22 Accelerated Cost Recovery System (MACRS).

1 **Q. Why did the Companies perform a separate cost of service study for the LED street**  
2 **lighting instead of incorporating the new offerings into the Cost of Service Study**  
3 **sponsored by Hillary Stewart in Met-Ed/Penelec/Penn Power West Penn Power**  
4 **Statement No. 5?**

5 A. The Companies are requiring ten-year contracts for all new LED street lighting services,  
6 and therefore wanted to use a levelized fixed charge rate approach instead of the  
7 traditional net plant approach incorporated in the Cost of Service Study sponsored by Ms.  
8 Stewart. By using the levelized fixed charge rate approach, the costs of LED streetlights  
9 are spread over the ten-year period and the resulting customer charges are more  
10 affordable in the early years as opposed to a net plant approach. In addition, by requiring  
11 a ten-year commitment for the new fixtures, the Companies are protected against  
12 stranded cost risk. For these reasons, I believe the levelized fixed charge rate cost  
13 support is more appropriate in that it benefits both customers and the Companies.

14 **Q. Is the monthly fixture charge the only cost to participating customers?**

15 A. No. All Riders applicable to the Companies' existing lighting services will also apply to  
16 the LED Street Lighting Services, as detailed in the proposed tariff schedules provided in  
17 the previously-referenced excerpts to Companies' Exhibits 1. In addition, if a customer  
18 wishes to replace their current lighting during the initial ten year term with Company-  
19 owned LED lighting under one of the LED Street Lighting Services, the customer will be  
20 responsible for any remaining costs of the customer-owned lighting as well as any early  
21 termination or removal fees that may apply.

22

1 **Q. How were the fixed kWh usages in the proposed tariff schedules determined for this**  
2 **unmetered service?**

3 A. The lighting units will operate from dusk to dawn, which results in approximately 4,200  
4 hours of operation per year. The respective lamp wattage is multiplied by the 4,200  
5 hours of operation per year, divided by twelve months, and then divided by 1,000 to be  
6 converted into kilowatt-hours. This calculation establishes the fixed monthly kWh usage  
7 for each fixture.

8 **Q. Does this conclude your direct testimony?**

9 A. Yes, it does.

Resume: Education and Experience of Christopher D. Ciccone

Education:

2010 Bachelor of Science Degree in Economics – Pennsylvania State University,  
State College, Pennsylvania  
2012 – Present Various utility industry conferences and seminars (e.g., EEI Advanced  
Rates Course, PJM 101: The Basics)

Experience:

5/10 – 8/10 House Republican Appropriation Committee Intern – Harrisburg, PA  
9/10 – 1/12 Guest Services – Hotel State College & Company – State College, PA  
2/12 – Present State Regulatory Analyst – Rates & Regulatory Affairs – Pennsylvania –  
FirstEnergy Service Corporation

Assisted in development and preparation of in the following rate-related proceedings:

Pennsylvania Public Utility Commission:

Docket Nos.	P-2011-2273650	P-2011-2273668	P-2011-2273669
	P-2011-2273670	M-2012-2334387	M-2012-2334392
	M-2012-2334395	M-2012-2334398	M-2012-2303494
	M-2012-2303547	M-2012-2303545	M-2013-2360494
	M-2013-2360493	M-2013-2360497	M-2014-2419717
	M-2014-2419719	M-2014-2419780	M-2014-2419764
	M-2014-2420515	M-2014-2420507	M-2014-2420525

New York State Public Service Commission:

Case No. 13-E-0067

**Met-Ed/Penelec/Penn Power/West Penn  
LED Street Lighting Monthly Fixture Charge**

Fixture Information		
Type	Lumens	Wattage

Monthly Unit Cost			
ME	PN	PP	WPP

1	<b>Cobra Head</b>	4000	50
2		7000	90
3		11500	130
4		24000	260

\$ 6.87	\$ 5.89	\$ 5.25	\$ 5.52
\$ 8.61	\$ 7.41	\$ 6.59	\$ 6.94
\$ 9.15	\$ 7.88	\$ 7.01	\$ 7.38
\$ 14.14	\$ 12.24	\$ 10.84	\$ 11.44

5	<b>Acorn</b>	2500	50
6		5000	90

\$ 18.19	\$ 15.78	\$ 13.95	\$ 14.73
\$ 19.22	\$ 16.68	\$ 14.75	\$ 15.57

7	<b>Colonial</b>	2500	50
8		5000	90

\$ 10.96	\$ 9.46	\$ 8.40	\$ 8.85
\$ 12.05	\$ 10.41	\$ 9.23	\$ 9.74

**Pennsylvania Electric Company  
 LED Street Lighting Service  
 Rate Summary**

Description	Cobra Head				Acorn		Colonial	
	50W 4000L	90W 7000L	130W 11500L	260W 24000L	50W 2500L	90W 5000L	50W 2500L	90W 5000L
Install Cost	<b>\$ 429.51</b>	<b>\$ 540.08</b>	<b>\$ 574.63</b>	<b>\$ 892.52</b>	<b>\$ 1,150.40</b>	<b>\$ 1,216.17</b>	<b>\$ 689.81</b>	<b>\$ 759.26</b>
Other Dist. Plant	\$ 56.05	\$ 70.47	\$ 74.98	\$ 116.46	\$ 150.11	\$ 158.70	\$ 90.01	\$ 99.08
General Plant	\$ 25.49	\$ 32.05	\$ 34.10	\$ 52.96	\$ 68.26	\$ 72.16	\$ 40.93	\$ 45.05
Total Install	\$ 511.04	\$ 642.60	\$ 683.71	\$ 1,061.95	\$ 1,368.78	\$ 1,447.03	\$ 820.75	\$ 903.39
Fixed Charge Rate:	13.02%	13.02%	13.02%	13.02%	13.02%	13.02%	13.02%	13.02%
Total Revenue Requirement:	\$ 913.83	\$ 1,149.08	\$ 1,222.59	\$ 1,898.93	\$ 2,447.60	\$ 2,587.52	\$ 1,467.64	\$ 1,615.41
Revenue Requirement NPV:	\$ 558.93	\$ 702.81	\$ 747.78	\$ 1,161.45	\$ 1,497.03	\$ 1,582.61	\$ 897.66	\$ 988.04
Annual Levelized Payment:	\$ 66.52	\$ 83.64	\$ 89.00	\$ 138.23	\$ 178.17	\$ 188.35	\$ 106.83	\$ 117.59
Monthly Fixture Charge	\$ 5.54	\$ 6.97	\$ 7.42	\$ 11.52	\$ 14.85	\$ 15.70	\$ 8.90	\$ 9.80
Gross Receipts Tax	5.90%	5.90%	5.90%	5.90%	5.90%	5.90%	5.90%	5.90%
Monthly Fixutre Charge	<b>\$ 5.89</b>	<b>\$ 7.41</b>	<b>\$ 7.88</b>	<b>\$ 12.24</b>	<b>\$ 15.78</b>	<b>\$ 16.68</b>	<b>\$ 9.46</b>	<b>\$ 10.41</b>

**Pennsylvania Electric Company  
 Levelized Payment Calculation**

**Cobra Head / 4000L / Group Install**

Line No.	Year	Undepreciated Balance	Book Depr. Expense	Tax Depreciation		DIT Expense	ADIT	Rate Base Balance	Interest Expense	Equity Return	CIT Expense	Property Taxes	Customer Expense	Distribution O&M	Total Fixed Chgs	Present Value	Levelized Payment
				Rate	Expense												
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(N)	(O)	(P)	(Q)	(R)
1	0	\$511															
2	1	\$477	\$34	14.29%	\$73	\$16	\$16	\$461	\$13	\$25	\$2	\$0	\$2	\$3	\$95	\$88	\$67
3	2	\$443	\$34	24.49%	\$125	\$38	\$54	\$389	\$11	\$21	-\$23	\$0	\$2	\$3	\$87	\$74	\$67
4	3	\$409	\$34	17.49%	\$89	\$23	\$77	\$332	\$10	\$18	-\$10	\$0	\$2	\$3	\$80	\$63	\$67
5	4	\$375	\$34	12.49%	\$64	\$12	\$89	\$286	\$8	\$16	-\$1	\$0	\$2	\$3	\$74	\$54	\$67
6	5	\$341	\$34	8.93%	\$46	\$5	\$94	\$247	\$7	\$13	\$5	\$0	\$2	\$3	\$69	\$47	\$67
7	6	\$307	\$34	8.92%	\$46	\$5	\$99	\$208	\$6	\$11	\$3	\$0	\$2	\$3	\$65	\$40	\$67
8	7	\$273	\$34	8.93%	\$46	\$5	\$104	\$169	\$5	\$9	\$2	\$0	\$2	\$3	\$60	\$34	\$67
9	8	\$238	\$34	4.46%	\$23	-\$5	\$99	\$140	\$4	\$8	\$10	\$0	\$2	\$3	\$56	\$30	\$67
10	9	\$204	\$34	0.00%	\$0	-\$14	\$85	\$120	\$3	\$7	\$19	\$0	\$2	\$3	\$54	\$26	\$67
11	10	\$170	\$34	0.00%	\$0	-\$14	\$71	\$100	\$3	\$5	\$18	\$0	\$2	\$3	\$52	\$23	\$67
12	11	\$136	\$34	0.00%	\$0	-\$14	\$57	\$80	\$2	\$4	\$17	\$0	\$2	\$3	\$49	\$20	\$67
13	12	\$102	\$34	0.00%	\$0	-\$14	\$42	\$60	\$2	\$3	\$16	\$0	\$2	\$3	\$47	\$18	\$67
14	13	\$68	\$34	0.00%	\$0	-\$14	\$28	\$40	\$1	\$2	\$16	\$0	\$2	\$3	\$44	\$16	\$67
15	14	\$34	\$34	0.00%	\$0	-\$14	\$14	\$20	\$1	\$1	\$15	\$0	\$2	\$3	\$42	\$14	\$67
16	15	\$0	\$34	0.00%	\$0	-\$14	\$0	\$0	\$0	\$0	\$14	\$0	\$2	\$3	\$39	\$12	\$67
17	16	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
18	17	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	18	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	19	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
21	20	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	21	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	22	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	23	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	24	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	25	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	26	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	27	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
29	28	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30	29	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
31	30	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32	<b>Total</b>	<b>\$0</b>	<b>\$511</b>		<b>\$511</b>	<b>\$0</b>		<b>\$0</b>	<b>\$76</b>	<b>\$144</b>	<b>\$102</b>	<b>\$3</b>	<b>\$29</b>	<b>\$49</b>	<b>\$914</b>	<b>\$559</b>	<b>\$998</b>

<b>NPV</b>	<b>\$559</b>	<b>NPV Check</b>	<b>\$559</b>
<b>Levelized Payment</b>	<b>\$67</b>	<b>Fixed Charge Rate</b>	<b>13.02%</b>

Calculations:

- 35 1 - Column (B): Beg. Bal. = New Install Cost; Reduced annually by Column (C); Year End Balances
- 36 2 - Column (C) = Beg. Bal Column (B) / Assumed Book Life Investment (yrs)
- 37 3 - Column (D) = MACRS Depreciation
- 38 4 - Column (E) = Column (D) X Beg. Bal. Column (B)
- 39 5 - Column (F) = (Column (E) - Column (C)) X Composite Income Tax Rate
- 40 6 - Column (G) = Column (F) + Column (G) of prior period
- 41 7 - Column (H) = Column (B) - Column (G)
- 42 8 - Column (I) = Column (H) X Assumed Debt Ratio X Assumed Debt Cost
- 43 9 - Column (J) = Column (H) X Assumed Equity Ratio X Assumed Equity Cost
- 10 - Column (K) = Column (J) X Composite Income Tax Rate / (1 - Composite Income Tax Rate) - Column F
- 11 - Column (L) = New Install Cost Beg. Bal. X Taxes Other Than Income Allocation Factor
- 12 - Column (M) = New Install Cost Beg. Bal. X A&G Allocation Factor
- 13 - Column (N) = New Install Cost Beg. Bal. X Customer Expense Allocation Factor
- 14 - Column (O) = New Install Cost Beg. Bal. X Distribution O&M Allocation Factor
- 15 - Column (P) = Column (C) + Column (F) + Column (I) + Column (J) + Column (K) + Column (L) + Column (M) + Column (N) + Column (O)
- 16 - Column (Q) = Column (P) / (1 + Rate of Return) ^ Column (A)
- 17 - Fixed Charge Rate = Levelized Payment / Beg. Bal. Column (B)

**Pennsylvania Electric Company  
Levelized Payment Calculation**

**Cobra Head / 7000L / Group Install**

Line No.	Year	Undepreciated Balance	Book Depr. Expense	Tax Depreciation		DIT Expense	ADIT	Rate Base Balance	Interest Expense	Equity Return	CIT Expense	Property Taxes	Customer Expense	Distribution O&M	Total Fixed Chgs	Present Value	Levelized Payment
				Rate	Expense												
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(N)	(O)	(P)	(Q)	(R)
1	0	\$643															
2	1	\$600	\$43	14.29%	\$92	\$20	\$20	\$579	\$17	\$32	\$2	\$0	\$2	\$4	\$120	\$111	\$84
3	2	\$557	\$43	24.49%	\$157	\$48	\$68	\$489	\$14	\$27	-\$29	\$0	\$2	\$4	\$109	\$93	\$84
4	3	\$514	\$43	17.49%	\$112	\$29	\$97	\$417	\$12	\$23	-\$13	\$0	\$2	\$4	\$100	\$79	\$84
5	4	\$471	\$43	12.49%	\$80	\$16	\$112	\$359	\$10	\$20	-\$2	\$0	\$2	\$4	\$93	\$68	\$84
6	5	\$428	\$43	8.93%	\$57	\$6	\$118	\$310	\$9	\$17	\$6	\$0	\$2	\$4	\$87	\$59	\$84
7	6	\$386	\$43	8.92%	\$57	\$6	\$124	\$261	\$7	\$14	\$4	\$0	\$2	\$4	\$81	\$50	\$84
8	7	\$343	\$43	8.93%	\$57	\$6	\$130	\$212	\$6	\$12	\$2	\$0	\$2	\$4	\$75	\$43	\$84
9	8	\$300	\$43	4.46%	\$29	-\$6	\$124	\$175	\$5	\$10	\$13	\$0	\$2	\$4	\$71	\$37	\$84
10	9	\$257	\$43	0.00%	\$0	-\$18	\$107	\$150	\$4	\$8	\$24	\$0	\$2	\$4	\$68	\$33	\$84
11	10	\$214	\$43	0.00%	\$0	-\$18	\$89	\$125	\$4	\$7	\$23	\$0	\$2	\$4	\$65	\$29	\$84
12	11	\$171	\$43	0.00%	\$0	-\$18	\$71	\$100	\$3	\$5	\$22	\$0	\$2	\$4	\$62	\$26	\$84
13	12	\$129	\$43	0.00%	\$0	-\$18	\$53	\$75	\$2	\$4	\$21	\$0	\$2	\$4	\$59	\$23	\$84
14	13	\$86	\$43	0.00%	\$0	-\$18	\$36	\$50	\$1	\$3	\$20	\$0	\$2	\$4	\$56	\$20	\$84
15	14	\$43	\$43	0.00%	\$0	-\$18	\$18	\$25	\$1	\$1	\$19	\$0	\$2	\$4	\$53	\$17	\$84
16	15	\$0	\$43	0.00%	\$0	-\$18	\$0	\$0	\$0	\$0	\$18	\$0	\$2	\$4	\$50	\$15	\$84
17	16	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
18	17	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	18	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	19	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
21	20	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	21	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	22	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	23	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	24	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	25	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	26	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	27	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
29	28	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30	29	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
31	30	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32	<b>Total</b>	<b>\$0</b>	<b>\$643</b>		<b>\$643</b>	<b>\$0</b>		<b>\$0</b>	<b>\$95</b>	<b>\$181</b>	<b>\$128</b>	<b>\$4</b>	<b>\$36</b>	<b>\$61</b>	<b>\$1,149</b>	<b>\$703</b>	<b>\$1,255</b>

33  
34

<b>NPV</b>	<b>\$703</b>	<b>NPV Check</b>	<b>\$703</b>
<b>Levelized Payment</b>	<b>\$84</b>	<b>Fixed Charge Rate</b>	<b>13.02%</b>

Calculations:

- 35 1 - Column (B): Beg. Bal. = New Install Cost; Reduced annually by Column (C); Year End Balances
- 36 2- Column (C) = Beg. Bal Column (B) / Assumed Book Life Investment (yrs)
- 37 3 - Column (D) = MACRS Depreciation
- 38 4 - Column (E) = Column (D) X Beg. Bal. Column (B)
- 39 5 - Column (F) = (Column (E) - Column (C)) X Composite Income Tax Rate
- 40 6 - Column (G) = Column (F) + Column (G) of prior period
- 41 7 - Column (H) = Column (B) - Column (G)
- 42 8 - Column (I) = Column (H) X Assumed Debt Ratio X Assumed Debt Cost
- 43 9 - Column (J) = Column (H) X Assumed Equity Ratio X Assumed Equity Cost

- 10 - Column (K) = Column (J) X Composite Income Tax Rate / (1 - Composite Income Tax Rate) - Column F
- 11 - Column (L) = New Install Cost Beg. Bal. X Taxes Other Than Income Allocation Factor
- 12 - Column (M) = New Install Cost Beg. Bal. X A&G Allocation Factor
- 13 - Column (N) = New Install Cost Beg. Bal. X Customer Expense Allocation Factor
- 14 - Column (O) = New Install Cost Beg. Bal. X Distribution O&M Allocation Factor
- 15 - Column (P) = Column (C) + Column (F) + Column (I) + Column (J) + Column (K) + Column (L) + Column (M) + Column (N) + Column (O)
- 16 - Column (Q) = Column (P) / (1+ Rate of Return) ^ Column (A)
- 17 - Fixed Charge Rate = Levelized Payment / Beg. Bal. Column (B)

**Pennsylvania Electric Company  
Levelized Payment Calculation**

Cobra Head / 11500L / Group Install

Line No.	Year	Undepreciated Balance	Book Depr. Expense	Tax Depreciation		DIT Expense	ADIT	Rate Base Balance	Interest Expense	Equity Return	CIT Expense	Property Taxes	Customer Expense	Distribution O&M	Total Fixed Chgs	Present Value	Levelized Payment
				Rate	Expense												
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(N)	(O)	(P)	(Q)	(R)
1	0	\$684															
2	1	\$638	\$46	14.29%	\$98	\$22	\$22	\$617	\$18	\$34	\$2	\$0	\$3	\$4	\$128	\$118	\$89
3	2	\$593	\$46	24.49%	\$167	\$51	\$72	\$520	\$15	\$28	-\$30	\$0	\$3	\$4	\$116	\$99	\$89
4	3	\$547	\$46	17.49%	\$120	\$31	\$103	\$444	\$13	\$24	-\$14	\$0	\$3	\$4	\$107	\$84	\$89
5	4	\$501	\$46	12.49%	\$85	\$17	\$119	\$382	\$11	\$21	-\$2	\$0	\$3	\$4	\$99	\$72	\$89
6	5	\$456	\$46	8.93%	\$61	\$6	\$126	\$330	\$9	\$18	\$6	\$0	\$3	\$4	\$93	\$62	\$89
7	6	\$410	\$46	8.92%	\$61	\$6	\$132	\$278	\$8	\$15	\$4	\$0	\$3	\$4	\$87	\$54	\$89
8	7	\$365	\$46	8.93%	\$61	\$6	\$139	\$226	\$6	\$12	\$2	\$0	\$3	\$4	\$80	\$46	\$89
9	8	\$319	\$46	4.46%	\$30	-\$6	\$132	\$187	\$5	\$10	\$13	\$0	\$3	\$4	\$75	\$40	\$89
10	9	\$273	\$46	0.00%	\$0	-\$19	\$113	\$160	\$5	\$9	\$25	\$0	\$3	\$4	\$72	\$35	\$89
11	10	\$228	\$46	0.00%	\$0	-\$19	\$95	\$133	\$4	\$7	\$24	\$0	\$3	\$4	\$69	\$31	\$89
12	11	\$182	\$46	0.00%	\$0	-\$19	\$76	\$107	\$3	\$6	\$23	\$0	\$3	\$4	\$66	\$27	\$89
13	12	\$137	\$46	0.00%	\$0	-\$19	\$57	\$80	\$2	\$4	\$22	\$0	\$3	\$4	\$63	\$24	\$89
14	13	\$91	\$46	0.00%	\$0	-\$19	\$38	\$53	\$2	\$3	\$21	\$0	\$3	\$4	\$59	\$21	\$89
15	14	\$46	\$46	0.00%	\$0	-\$19	\$19	\$27	\$1	\$1	\$20	\$0	\$3	\$4	\$56	\$18	\$89
16	15	\$0	\$46	0.00%	\$0	-\$19	\$0	\$0	\$0	\$0	\$19	\$0	\$3	\$4	\$53	\$16	\$89
17	16	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
18	17	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	18	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	19	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
21	20	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	21	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	22	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	23	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	24	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	25	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	26	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	27	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
29	28	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30	29	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
31	30	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32	<b>Total</b>	<b>\$0</b>	<b>\$684</b>		<b>\$684</b>	<b>\$0</b>		<b>\$0</b>	<b>\$102</b>	<b>\$193</b>	<b>\$137</b>	<b>\$4</b>	<b>\$38</b>	<b>\$65</b>	<b>\$1,223</b>	<b>\$748</b>	<b>\$1,335</b>

33  
34

<b>NPV</b>	<b>\$748</b>	<b>NPV Check</b>	<b>\$748</b>
<b>Levelized Payment</b>	<b>\$89</b>	<b>Fixed Charge Rate</b>	<b>13.02%</b>

Calculations:

- 35 1 - Column (B): Beg. Bal. = New Install Cost; Reduced annually by Column (C); Year End Balances
- 36 2- Column (C) = Beg. Bal Column (B) / Assumed Book Life Investment (yrs)
- 37 3 - Column (D) = MACRS Depreciation
- 38 4 - Column (E) = Column (D) X Beg. Bal. Column (B)
- 39 5 - Column (F) = (Column (E) - Column (C)) X Composite Income Tax Rate
- 40 6 - Column (G) = Column (F) + Column (G) of prior period
- 41 7 - Column (H) = Column (B) - Column (G)
- 42 8 - Column (I) = Column (H) X Assumed Debt Ratio X Assumed Debt Cost
- 43 9 - Column (J) = Column (H) X Assumed Equity Ratio X Assumed Equity Cost

- 10 - Column (K) = Column (J) X Composite Income Tax Rate / (1 - Composite Income Tax Rate) - Column F
- 11 - Column (L) = New Install Cost Beg. Bal. X Taxes Other Than Income Allocation Factor
- 12 - Column (M) = New Install Cost Beg. Bal. X A&G Allocation Factor
- 13 - Column (N) = New Install Cost Beg. Bal. X Customer Expense Allocation Factor
- 14 - Column (O) = New Install Cost Beg. Bal. X Distribution O&M Allocation Factor
- 15 - Column (P) = Column (C) + Column (F) + Column (I) + Column (J) + Column (K) + Column (L) + Column (M) + Column (N) + Column (O)
- 16 - Column (Q) = Column (P) / (1+ Rate of Return) ^ Column (A)
- 17 - Fixed Charge Rate = Levelized Payment / Beg. Bal. Column (B)



**Pennsylvania Electric Company  
Levelized Payment Calculation**

Acorn / 2500L / Group Install

Line No.	Year	Undepreciated Balance	Book Depr. Expense	Tax Depreciation		DIT Expense	ADIT	Rate Base Balance	Interest Expense	Equity Return	CIT Expense	Property Taxes	Customer Expense	Distribution O&M	Total Fixed Chgs	Present Value	Levelized Payment
				Rate	Expense												
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(N)	(O)	(P)	(Q)	(R)
1	0	\$1,369															
2	1	\$1,278	\$91	14.29%	\$196	\$43	\$43	\$1,234	\$35	\$67	\$4	\$1	\$5	\$9	\$256	\$236	\$178
3	2	\$1,186	\$91	24.49%	\$335	\$101	\$145	\$1,042	\$30	\$57	-\$61	\$1	\$5	\$9	\$232	\$198	\$178
4	3	\$1,095	\$91	17.49%	\$239	\$61	\$206	\$889	\$25	\$48	-\$27	\$1	\$5	\$9	\$214	\$168	\$178
5	4	\$1,004	\$91	12.49%	\$171	\$33	\$239	\$765	\$22	\$42	-\$4	\$1	\$5	\$9	\$199	\$144	\$178
6	5	\$913	\$91	8.93%	\$122	\$13	\$252	\$661	\$19	\$36	\$13	\$1	\$5	\$9	\$186	\$125	\$178
7	6	\$821	\$91	8.92%	\$122	\$13	\$265	\$557	\$16	\$30	\$9	\$1	\$5	\$9	\$173	\$107	\$178
8	7	\$730	\$91	8.93%	\$122	\$13	\$278	\$452	\$13	\$25	\$5	\$1	\$5	\$9	\$161	\$92	\$178
9	8	\$639	\$91	4.46%	\$61	-\$13	\$265	\$374	\$11	\$20	\$27	\$1	\$5	\$9	\$151	\$80	\$178
10	9	\$548	\$91	0.00%	\$0	-\$38	\$227	\$320	\$9	\$17	\$50	\$1	\$5	\$9	\$145	\$71	\$178
11	10	\$456	\$91	0.00%	\$0	-\$38	\$189	\$267	\$8	\$15	\$48	\$1	\$5	\$9	\$138	\$62	\$178
12	11	\$365	\$91	0.00%	\$0	-\$38	\$151	\$214	\$6	\$12	\$46	\$1	\$5	\$9	\$132	\$55	\$178
13	12	\$274	\$91	0.00%	\$0	-\$38	\$114	\$160	\$5	\$9	\$44	\$1	\$5	\$9	\$125	\$48	\$178
14	13	\$183	\$91	0.00%	\$0	-\$38	\$76	\$107	\$3	\$6	\$42	\$1	\$5	\$9	\$119	\$42	\$178
15	14	\$91	\$91	0.00%	\$0	-\$38	\$38	\$53	\$2	\$3	\$40	\$1	\$5	\$9	\$112	\$37	\$178
16	15	\$0	\$91	0.00%	\$0	-\$38	\$0	\$0	\$0	\$0	\$38	\$1	\$5	\$9	\$106	\$32	\$178
17	16	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
18	17	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	18	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	19	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
21	20	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	21	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	22	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	23	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	24	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	25	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	26	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	27	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
29	28	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30	29	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
31	30	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32	<b>Total</b>	<b>\$0</b>	<b>\$1,369</b>		<b>\$1,369</b>	<b>\$0</b>		<b>\$0</b>	<b>\$203</b>	<b>\$386</b>	<b>\$274</b>	<b>\$8</b>	<b>\$77</b>	<b>\$131</b>	<b>\$2,448</b>	<b>\$1,497</b>	<b>\$2,672</b>

33	<b>NPV</b>														<b>\$1,497</b>	<b>NPV Check</b>		<b>\$1,497</b>
34	<b>Levelized Payment</b>														<b>\$178</b>	<b>Fixed Charge Rate</b>		<b>13.02%</b>

Calculations:

- |  |  |
|--|--|
| <p>35 1 - Column (B): Beg. Bal. = New Install Cost; Reduced annually by Column (C); Year End Balances</p> <p>36 2- Column (C) = Beg. Bal Column (B) / Assumed Book Life Investment (yrs)</p> <p>37 3 - Column (D) = MACRS Depreciation</p> <p>38 4 - Column (E) = Column (D) X Beg. Bal. Column (B)</p> <p>39 5 - Column (F) = (Column (E) - Column (C)) X Composite Income Tax Rate</p> <p>40 6 - Column (G) = Column (F) + Column (G) of prior period</p> <p>41 7 - Column (H) = Column (B) - Column (G)</p> <p>42 8 - Column (I) = Column (H) X Assumed Debt Ratio X Assumed Debt Cost</p> <p>43 9 - Column (J) = Column (H) X Assumed Equity Ratio X Assumed Equity Cost</p> | <p>10 - Column (K) = Column (J) X Composite Income Tax Rate / (1 - Composite Income Tax Rate) - Column F</p> <p>11 - Column (L) = New Install Cost Beg. Bal. X Taxes Other Than Income Allocation Factor</p> <p>12 - Column (M) = New Install Cost Beg. Bal. X A&amp;G Allocation Factor</p> <p>13 - Column (N) = New Install Cost Beg. Bal. X Customer Expense Allocation Factor</p> <p>14 - Column (O) = New Install Cost Beg. Bal. X Distribution O&amp;M Allocation Factor</p> <p>15 - Column (P) = Column (C) + Column (F) + Column (I) + Column (J) + Column (K) + Column (L) + Column (M) + Column (N) + Column (O)</p> <p>16 - Column (Q) = Column (P) / (1+ Rate of Return) ^ Column (A)</p> <p>17 - Fixed Charge Rate = Levelized Payment / Beg. Bal. Column (B)</p> |
|--|--|

**Pennsylvania Electric Company  
Levelized Payment Calculation**

Acorn / 5000L / Group Install

Line No.	Year	Undepreciated Balance	Book Depr. Expense	Tax Depreciation		DIT Expense	ADIT	Rate Base Balance	Interest Expense	Equity Return	CIT Expense	Property Taxes	Customer Expense	Distribution O&M	Total Fixed Chgs	Present Value	Levelized Payment
				Rate	Expense												
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(N)	(O)	(P)	(Q)	(R)
1	0	\$1,447															
2	1	\$1,351	\$96	14.29%	\$207	\$46	\$46	\$1,305	\$37	\$71	\$5	\$1	\$5	\$9	\$270	\$250	\$188
3	2	\$1,254	\$96	24.49%	\$354	\$107	\$153	\$1,101	\$32	\$60	-\$65	\$1	\$5	\$9	\$246	\$209	\$188
4	3	\$1,158	\$96	17.49%	\$253	\$65	\$218	\$940	\$27	\$51	-\$29	\$1	\$5	\$9	\$226	\$178	\$188
5	4	\$1,061	\$96	12.49%	\$181	\$35	\$253	\$808	\$23	\$44	-\$4	\$1	\$5	\$9	\$210	\$153	\$188
6	5	\$965	\$96	8.93%	\$129	\$14	\$266	\$698	\$20	\$38	\$13	\$1	\$5	\$9	\$197	\$132	\$188
7	6	\$868	\$96	8.92%	\$129	\$14	\$280	\$588	\$17	\$32	\$9	\$1	\$5	\$9	\$183	\$114	\$188
8	7	\$772	\$96	8.93%	\$129	\$14	\$293	\$478	\$14	\$26	\$5	\$1	\$5	\$9	\$170	\$97	\$188
9	8	\$675	\$96	4.46%	\$65	-\$13	\$280	\$395	\$11	\$21	\$28	\$1	\$5	\$9	\$160	\$84	\$188
10	9	\$579	\$96	0.00%	\$0	-\$40	\$240	\$339	\$10	\$18	\$53	\$1	\$5	\$9	\$153	\$75	\$188
11	10	\$482	\$96	0.00%	\$0	-\$40	\$200	\$282	\$8	\$15	\$51	\$1	\$5	\$9	\$146	\$66	\$188
12	11	\$386	\$96	0.00%	\$0	-\$40	\$160	\$226	\$6	\$12	\$49	\$1	\$5	\$9	\$139	\$58	\$188
13	12	\$289	\$96	0.00%	\$0	-\$40	\$120	\$169	\$5	\$9	\$47	\$1	\$5	\$9	\$132	\$51	\$188
14	13	\$193	\$96	0.00%	\$0	-\$40	\$80	\$113	\$3	\$6	\$44	\$1	\$5	\$9	\$125	\$44	\$188
15	14	\$96	\$96	0.00%	\$0	-\$40	\$40	\$56	\$2	\$3	\$42	\$1	\$5	\$9	\$119	\$39	\$188
16	15	\$0	\$96	0.00%	\$0	-\$40	\$0	\$0	\$0	\$0	\$40	\$1	\$5	\$9	\$112	\$34	\$188
17	16	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
18	17	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	18	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	19	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
21	20	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	21	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	22	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	23	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	24	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	25	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	26	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	27	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
29	28	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30	29	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
31	30	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32	<b>Total</b>	<b>\$0</b>	<b>\$1,447</b>		<b>\$1,447</b>	<b>\$0</b>		<b>\$0</b>	<b>\$215</b>	<b>\$408</b>	<b>\$289</b>	<b>\$9</b>	<b>\$81</b>	<b>\$138</b>	<b>\$2,588</b>	<b>\$1,583</b>	<b>\$2,825</b>

33	<b>NPV</b>														<b>\$1,583</b>	<b>NPV Check</b>		<b>\$1,583</b>
34	<b>Levelized Payment</b>														<b>\$188</b>	<b>Fixed Charge Rate</b>		<b>13.02%</b>

Calculations:

- |    |   |  |
|----|---|--|
| 35 | 1 - Column (B); Beg. Bal. = New Install Cost; Reduced annually by Column (C); Year End Balances | 10 - Column (K) = Column (J) X Composite Income Tax Rate / (1 - Composite Income Tax Rate) - Column F                                |
| 36 | 2 - Column (C) = Beg. Bal Column (B) / Assumed Book Life Investment (yrs)                       | 11 - Column (L) = New Install Cost Beg. Bal. X Taxes Other Than Income Allocation Factor   |
| 37 | 3 - Column (D) = MACRS Depreciation   | 12 - Column (M) = New Install Cost Beg. Bal. X A&G Allocation Factor   |
| 38 | 4 - Column (E) = Column (D) X Beg. Bal. Column (B)  | 13 - Column (N) = New Install Cost Beg. Bal. X Customer Expense Allocation Factor  |
| 39 | 5 - Column (F) = (Column (E) - Column (C)) X Composite Income Tax Rate                          | 14 - Column (O) = New Install Cost Beg. Bal. X Distribution O&M Allocation Factor  |
| 40 | 6 - Column (G) = Column (F) + Column (G) of prior period  | 15 - Column (P) = Column (C) + Column (F) + Column (I) + Column (J) + Column (K) + Column (L) + Column (M) + Column (N) + Column (O) |
| 41 | 7 - Column (H) = Column (B) - Column (G)  | 16 - Column (Q) = Column (P) / (1 + Rate of Return) ^ Column (A)   |
| 42 | 8 - Column (I) = Column (H) X Assumed Debt Ratio X Assumed Debt Cost                            | 17 - Fixed Charge Rate = Levelized Payment / Beg. Bal. Column (B)  |
| 43 | 9 - Column (J) = Column (H) X Assumed Equity Ratio X Assumed Equity Cost                        |  |



**Pennsylvania Electric Company  
Levelized Payment Calculation**

Colonial / 5000L / Group Install

Line No.	Year	Undepreciated Balance	Book Depr. Expense	Tax Depreciation		DIT Expense	ADIT	Rate Base Balance	Interest Expense	Equity Return	CIT Expense	Property Taxes	Customer Expense	Distribution O&M	Total Fixed Chgs	Present Value	Levelized Payment
				Rate	Expense												
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(N)	(O)	(P)	(Q)	(R)
1	0	\$903															
2	1	\$843	\$60	14.29%	\$129	\$29	\$29	\$815	\$23	\$44	\$3	\$0	\$3	\$6	\$169	\$156	\$118
3	2	\$783	\$60	24.49%	\$221	\$67	\$95	\$688	\$20	\$37	-\$40	\$0	\$3	\$6	\$153	\$131	\$118
4	3	\$723	\$60	17.49%	\$158	\$41	\$136	\$587	\$17	\$32	-\$18	\$0	\$3	\$6	\$141	\$111	\$118
5	4	\$662	\$60	12.49%	\$113	\$22	\$158	\$505	\$14	\$27	-\$2	\$0	\$3	\$6	\$131	\$95	\$118
6	5	\$602	\$60	8.93%	\$81	\$8	\$166	\$436	\$12	\$24	\$8	\$0	\$3	\$6	\$123	\$82	\$118
7	6	\$542	\$60	8.92%	\$81	\$8	\$175	\$367	\$11	\$20	\$6	\$0	\$3	\$6	\$114	\$71	\$118
8	7	\$482	\$60	8.93%	\$81	\$8	\$183	\$299	\$9	\$16	\$3	\$0	\$3	\$6	\$106	\$61	\$118
9	8	\$422	\$60	4.46%	\$40	-\$8	\$175	\$247	\$7	\$13	\$18	\$0	\$3	\$6	\$100	\$53	\$118
10	9	\$361	\$60	0.00%	\$0	-\$25	\$150	\$211	\$6	\$11	\$33	\$0	\$3	\$6	\$95	\$47	\$118
11	10	\$301	\$60	0.00%	\$0	-\$25	\$125	\$176	\$5	\$10	\$32	\$0	\$3	\$6	\$91	\$41	\$118
12	11	\$241	\$60	0.00%	\$0	-\$25	\$100	\$141	\$4	\$8	\$30	\$0	\$3	\$6	\$87	\$36	\$118
13	12	\$181	\$60	0.00%	\$0	-\$25	\$75	\$106	\$3	\$6	\$29	\$0	\$3	\$6	\$83	\$32	\$118
14	13	\$120	\$60	0.00%	\$0	-\$25	\$50	\$70	\$2	\$4	\$28	\$0	\$3	\$6	\$78	\$28	\$118
15	14	\$60	\$60	0.00%	\$0	-\$25	\$25	\$35	\$1	\$2	\$26	\$0	\$3	\$6	\$74	\$24	\$118
16	15	\$0	\$60	0.00%	\$0	-\$25	\$0	\$0	\$0	\$0	\$25	\$0	\$3	\$6	\$70	\$21	\$118
17	16	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
18	17	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	18	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	19	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
21	20	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	21	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	22	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	23	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	24	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	25	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	26	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	27	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
29	28	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30	29	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
31	30	\$0	\$0	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32	<b>Total</b>	<b>\$0</b>	<b>\$903</b>		<b>\$903</b>	<b>\$0</b>		<b>\$0</b>	<b>\$134</b>	<b>\$255</b>	<b>\$181</b>	<b>\$5</b>	<b>\$51</b>	<b>\$86</b>	<b>\$1,615</b>	<b>\$988</b>	<b>\$1,764</b>

33  
34

<b>NPV</b>	<b>\$988</b>	<b>NPV Check</b>	<b>\$988</b>
<b>Levelized Payment</b>	<b>\$118</b>	<b>Fixed Charge Rate</b>	<b>13.02%</b>

Calculations:

- 35 1 - Column (B): Beg. Bal. = New Install Cost; Reduced annually by Column (C); Year End Balances
- 36 2- Column (C) = Beg. Bal Column (B) / Assumed Book Life Investment (yrs)
- 37 3 - Column (D) = MACRS Depreciation
- 38 4 - Column (E) = Column (D) X Beg. Bal. Column (B)
- 39 5 - Column (F) = (Column (E) - Column (C)) X Composite Income Tax Rate
- 40 6 - Column (G) = Column (F) + Column (G) of prior period
- 41 7 - Column (H) = Column (B) - Column (G)
- 42 8 - Column (I) = Column (H) X Assumed Debt Ratio X Assumed Debt Cost
- 43 9 - Column (J) = Column (H) X Assumed Equity Ratio X Assumed Equity Cost

- 10 - Column (K) = Column (J) X Composite Income Tax Rate / (1 - Composite Income Tax Rate) - Column F
- 11 - Column (L) = New Install Cost Beg. Bal. X Taxes Other Than Income Allocation Factor
- 12 - Column (M) = New Install Cost Beg. Bal. X A&G Allocation Factor
- 13 - Column (N) = New Install Cost Beg. Bal. X Customer Expense Allocation Factor
- 14 - Column (O) = New Install Cost Beg. Bal. X Distribution O&M Allocation Factor
- 15 - Column (P) = Column (C) + Column (F) + Column (I) + Column (J) + Column (K) + Column (L) + Column (M) + Column (N) + Column (O)
- 16 - Column (Q) = Column (P) / (1+ Rate of Return) ^ Column (A)
- 17 - Fixed Charge Rate = Levelized Payment / Beg. Bal. Column (B)

**Pennsylvania Electric Company  
Installation Costs**

<u>Line No.</u>	<u>Light Type</u>	<u>Monthly kWh</u>	<u>Lumens</u>	<u>Wattage</u>	<u>Installation Cost (12 Lights)</u>
1	Cobra Head	18	4,000	50	\$5,154.14
2	Cobra Head	32	7,000	90	\$6,480.97
3	Cobra Head	46	11,500	130	\$6,895.61
4	Cobra Head	91	24,000	260	\$10,710.25
5	Acorn	18	2,500	50	\$13,804.82
6	Acorn	32	5,000	90	\$14,594.01
7	Colonial	18	2,500	50	\$8,277.72
8	Colonial	32	5,000	90	\$9,111.14

**Pennsylvania Electric Company  
Distribution Costs**

Line No. Other Distribution Plant Allocated to Streetlighting

1	Total Distribution Plant to Streetlighting	\$ 47,961,000	<i>Penelec Exhibit HES-1</i>
2	Total Directly Assigned Plant to Streetlighting	<u>\$ 42,425,000</u>	<i>Penelec Exhibit HES-1</i>
3	Total Other Distribution Plant to Streetlighting	\$ 5,536,000	<i>Line 1 - Line 2</i>
4	<b>Other Distribution Plant Factor</b>	<b>13.05%</b>	<i>Line 3 / Line 2</i>

Other Distribution O&M Allocated to Streetlighting

5	Total Distribution O&M to Streetlighting	\$ 1,980,000	<i>Penelec Exhibit HES-1</i>
6	Total Directly Assigned O&M to Streetlighting	<u>\$ 1,658,000</u>	<i>Penelec Exhibit HES-1</i>
7	Other Distribution O&M to Streetlighting	\$ 322,000	<i>Line 5 - Line 6</i>
8	<b>Other Distribution O&amp;M Factor</b>	<b>0.76%</b>	<i>Line 7 / Line 2</i>

**Pennsylvania Electric Company  
 General Property**

<u>Line No.</u>	<u>General Property Allocated to Streetlighting</u>	<u>PN 2013 FERC Form 1</u>	
1	Gross Investment in Streetlighting	\$ 36,140,505	<i>FF1, 207.73.g</i>
2	Total Investment in Plant	\$ 3,090,051,482	<i>FF1, 207.104.g</i>
3	Total General Plant	<u>\$ (173,085,650)</u>	<i>FF1, 207.99.g</i>
4	Total Investment in Plant Less General Plant	\$ 2,916,965,832	<i>Line 2 + Line 3</i>
5	Streetlighting % of Total Plant (Less General)	1.24%	<i>Line 1 / Line 4</i>
6	General Plant Allocated to Streetlighting	\$ 2,144,490	<i>Line 3 * Line 5</i>
7	<b>General Plant Factor</b>	<b>5.93%</b>	<i>Line 6 / Line 1</i>

**Pennsylvania Electric Company  
 Customer Expenses**

<u>Customer Accounts Expense</u>			PN 2013	Allocation	Streetlighting	
<u>Line No.</u>	<u>Account</u>	<u>Description</u>	<u>FERC Form 1</u>		<u>Related</u>	
1	901	Supervision	\$ 5,630	0.13%	\$ 7	FF1, 322.159.b
2	902	Meter Reading	\$ 4,154,091	0.00%	\$ 0	FF1, 322.160.b
3	903	Customer Records and Collection Expenses	\$ 6,627,730	0.13%	\$ 8,658	FF1, 322.161.b
4	904	Uncollectible Accounts	\$ 11,672,805	0.80%	\$ 93,466	FF1, 322.162.b
5	905	Miscellaneous Customer Accounts Expenses	\$ 316,558	0.13%	\$ 414	FF1, 322.163.b
6		Total	\$ 22,776,814		\$ 102,544	Sum: Lines 1-5

<u>Customer Service and Information Expenses</u>			PN 2013	Allocation	Streetlighting	
<u>Account</u>	<u>Description</u>		<u>FERC Form 1</u>		<u>Related</u>	
7	907	Supervision	\$ 195,185	0.13%	\$ 255	FF1, 323.167.b
8	908	Customer Assistance Expense	\$ 39,192,775	0.13%	\$ 51,196	FF1, 323.168.b
9	909	Informational and Instructional Expenses	\$ 2,884	0.13%	\$ 4	FF1, 323.169.b
10	910	Misc. Customer Service and Information Exp	\$ 5,556,104	0.13%	\$ 7,258	FF1, 323.170.b
11		Total	\$ 44,946,948		\$ 58,712	Sum: Lines 7-10
12	373	Gross Investment in Streetlighting			\$ 36,140,505	FF1, 207.73.g
13		<b>Customer Expense Allocation Factor</b>			<b>0.45%</b>	<b>(Line 10 + Line 20) / Line 13</b>

Memo:

<u>Streetlighting Related Customer Accounts Expense (Less Waverly, NY)</u>			PN 2013		
			<u>FERC Form 1</u>		
14	Total Revenues		\$ 710,108,959		FF1, 304.43.c
15	Total Street Lighting Revenues		\$ 5,685,946	[a]	FF1, 304.21.c
16	% of Street Lighting to Total		0.80%		Line 15 / Line 14
<u>Customer Count (Less Waverly, NY)</u>					
17	Total number of customers		585,643		FF1, 304.43.d
18	Estimated number of streetlighting customers		765		FF1, 304.21.d
19	% of Total		0.13%		Line 18 / Line 17

<u>[a]Allocation of Unbilled Public Street &amp; Highway Lighting</u>				
	PN 2013	Allocation	Unbilled Public	Total Public
	<u>FERC Form 1</u>		<u>St &amp; Hwy Lighting</u>	<u>Street &amp; Highway</u>
	<u>(Page 304.1)</u>			
20	Penelec Street Lighting Revenues	99%	\$ (21,826.18)	\$ 5,685,946
21	Waverly Street Lighting Revenues	1%	\$ (205.82)	\$ 53,617
22	Total Street Lighting Revenues	100%	\$ (22,032)	\$ 5,739,563

**Pennsylvania Electric Company  
Property Taxes**

<u>Line No.</u>	<u>Description</u>	ME 2013 FERC Form 1	
1	Local Real Estate	\$ 149,448	FF1, 263.36.i
2	PURTA	\$ 1,210,000	FF1, 263.1.4.i
3	Total	<u>\$ 1,359,448</u>	Line 1 + Line 2
 <u>Property Taxes Allocated to Income</u>			
4	Streetlighting % of Total Plant (Less General)	1.24%	Page 12, Line 5
5	Property Taxes Allocated to Streetlighting	\$ 16,843	Line 3 * Line 4
6	<b>Property Taxes Factor</b>	<b>0.05%</b>	Line 5 / Page 12, Line 1

**Pennsylvania Electric Company  
Capital Recovery Factors**

<u>Rate of Return (RoR)</u>				
<u>Line No.</u>	<u>2014 Capital Structure</u>	<u>%</u> <u>Percent</u>	<u>Cost Rate</u>	<u>Weighted</u> <u>Cost Rate</u>
1	Long Term Debt	50.10%	5.720%	2.866%
2	Common Equity	49.90%	10.900%	5.439%
3	Total	100.00%		8.305%
 <u>Depreciation</u>				
4	Depreciable Years (n)	15		
5	SLD = 1 / n	6.67%		
6	Tax Life of Investment (yrs)	7		
 <u>Taxes</u>				
		<u>2014</u>		
7	Federal Income Tax Rate	35.00%		
8	State Income Tax Rate	9.99%		
9	Effective Tax Rate	41.493500%		

