

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

PENNSYLVANIA PUBLIC UTILITY COMMISSION,

Docket No. R-2014-2428745

METROPOLITAN EDISON COMPANY

**CITIZENS FOR PENNSYLVANIA'S FUTURE
AND ENVIRONMENTAL DEFENSE FUND**

SURREBUTTAL TESTIMONY OF GEORGE WOODBURY

DATE: January 6, 2015

1

I. Introduction

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

3 A. My name is George Woodbury and my home address is 1052 Johnson Farm Road,
4 Lillington NC27546.

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6 **Q. Have you previously submitted testimony in this proceeding?**

7 A. Yes, I submitted direct testimony on behalf of Citizens for Pennsylvania's Future and
8 Environmental Defense Fund in this matter.

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10 **Q. What is the purpose of this rebuttal testimony.**

11 A. The purpose of this testimony is to address the rebuttal testimony of Mr. Christopher
12 Ciccone

13

14 **Q. Mr. Ciccone stated that the GE fixture was the only fixture that met utility grade**
15 **standards and implied that you have a personal business interest in the Cree**
16 **product. Would you care to comment?**

17

18 A. First let me state unequivocally that I have no business interest in the Cree or any
19 other product line. I am an independent consultant who advises clients of the
20 characteristics and the pros and cons of each manufacturer's products and the available
21 options to help them make informed decisions as to the best product to meet their needs.
22 I have recommended and tested numerous products and in fact had manufacturers contact

1 me to evaluate and comment on their products. I receive no compensation or other
2 benefit from any manufacturer.

3 In regards to the statement that the GE fixture is the only one that meets utility grade
4 standards, it strikes me as interesting that Duke energy selected the Acuity product, that
5 the most widely used LED fixtures are the Leotek, Acuity and Cree fixtures, that NGRID
6 selected the Cree product for their testing, and that the most common standard used is
7 product that qualify under the independent Design Lights Consortium. The fact is I write
8 specifications as part of the procurement process for municipalities and I can tell you
9 from experience it would be very easy to write a specification that limited the qualifying
10 fixtures to a single one due to the variations in design. Given that other major utilities are
11 allowing other fixtures is clearly an indication that this is not a utility standard but rather
12 one specifically written by First Energy. Reviewing exhibit CD-3-5, I find that the GE
13 fixtures do not meet some of their standards and that many of the standards in the
14 Mechanical Design Section are arbitrary. None of the GE fixtures meet the minimum 80
15 Color Rendition Index (“CRI”), criteria. The fact is the vast majority of LED fixtures
16 rate at a CRI of 74 or less. Secondly the roadway lighting at the 1000mA setting fail to
17 meet the minimum efficacy and in fact at the time this spec was written none of the GE
18 family of fixtures met the efficacy requirements. The standards list an allowable total
19 harmonic distortion, THD, of less than 20%. The specification for operating at 1000 mA
20 $\pm 1\%$ is not met by either the ERS1 or the ERS2 at their 1000mA as the average load is
21 1050 mA. Further the NEMA C82-77 2002 standards were modified by ANSI C82.77-
22 10-2014 and their specifications do not make it clear if they were applying the new
23 standards or not.

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The mechanical specifications specify the NEMA Standard 136.10 photocell receptacle. The newest standard is the ANSI 136.41 standard. The NEMA 136.41 photocell receptacle will work with the standard twist lock photocell as well as support the dimming option. They specify that provisions shall be made on top of the housing to permit leveling. Very few if any of the current HPS lights have this feature. The Company has not indicated where it arrived at this “utility standard.” Further having a leveling device on top of the fixture actually increases the safety risk to the installer because he/she has to raise his/her bucket higher in order to observe the bubble and at the same time be able to reach under the fixture with a tightening tool to secure the fixture. Raising the bucket higher places the worker closer to the high voltage secondary lines. This bubble is used only one time to initially mount the fixture, adding cost. Most contractors use a small hand held level so they can see the level from below, both speeding their work and keeping them safer. I would argue there is no particular utility standard, especially given the choices of other utilities. They allow a fixture of up to 50 pounds. This makes no sense as the current family of HID fixtures weigh less than 35 pounds. Clearly one of the concerns of the Company should be the load on their poles. The higher the weight the greater the load, and under windy conditions this is exacerbated. Yet the company makes no reference to allowable Effective Projection Area, EPA, which represents the cross sectional wind area and the consequential affect of wind loading. The Company specifies that the driver and light engine shall conform to IP66 and yet for the GE fixture only the light engine meets this rating. Currently fixtures from most manufacturers come with a ten-year warranty. Yet the Company only specifies a five-year warranty. So why would

1 the Company not specify a ten-year warranty? Of course if they had the GE fixture
2 would not have qualified. The most logical standard is a light that meets DLC criteria
3 and comes from a manufacturer who has the financial strength to stand behind their
4 warranties. DLC publishes a list of qualifying fixtures on their web site that is regularly
5 updated. See attached Exhibit 1. In addition there are recommended LED standards
6 developed by the Northwest Pacific Laboratory in conjunction with the Municipal Solid
7 State Lighting Consortium readily available, see attached Exhibit 2, as well as the DLC
8 criteria, but to the best of my knowledge there is no "utility" standard. It is my belief
9 these are strictly standards developed internal to the Company.

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11 **Q. Mr. Ciccone commented on the life expectancy of the LED fixtures and**
12 **specifically agreed the LED is rated at 100,000 hours but stated that the driver is**
13 **likely to fail much sooner. Do you agree with his assessment?**

14 A. No, not entirely. He is correct that the mean time to failure is generally unknown
15 because of our lack of long term data around average failure rates. This is an issue
16 currently being examined by the Department of Energy's Solid State Lighting Program.
17 There are two major components to an LED light-the LEDs and the driver. The most
18 commonly used driver is the Philips Advance Xtanium driver which has a rated life of
19 100,000 hours at a Tcase temperature of below 62°C. It is able to tolerate sustained open
20 circuit and short circuit output conditions without damage. At Tcase temperatures
21 between 70-80°C its failure rate increases to .01-.02% per 1000 hours. This translates to
22 2% failures in 1000 hours. These figures were taken from the Philips product
23 specifications attached as Exhibit 3. So I continue to maintain that 20 years is the

1 appropriate life expectancy. I think it is also important to note that the depreciable life of
2 streetlights is not consistent across all utilities. I have seen ranges from 15 years to 35
3 years. It is patently obvious that the lamp fixture has one life expectancy and the poles
4 and mast arms another. Depreciable life is an average applied to the entire system. There
5 is no question the mean time to failure of an HPS lamp is 24,000 hours and will require
6 much more frequent service calls than an LED fixture. The larger question is how the
7 service call is carried on the company's books. When an HID lamp ballast fails it is
8 common utility practice to replace the entire fixture because the labor cost of replacing
9 the ballast exceeds the cost of a new fixture. So is the cost of that new fixture carried as a
10 capital investment or as part of the O&M costs? If it is carried as both, the utility would
11 be double counting.

12 **Q. What is your take on Mr. Circonne's testimony with regards to the availability of**
13 **lower wattage fixtures?**

14 A. His use of wattages as the basis of LED selection makes absolutely no sense. IESNA
15 RP-8 Guidelines are based on Lumens not wattages as are all lighting designs. So if the
16 RP-8 requirement is an average illuminance of .3 footcandles for a residential street with
17 low pedestrian conflict and you can achieve that with a 20 watt LED why would you
18 choose a 50 watt LED? The most common residential streetlight is either the 50 watt
19 HPS or the 70 watt HPS. The actual delivered lumens of these fixtures is less than 65%
20 of the bulbs rated lumen output due to internal fixture losses. I reference the DOE
21 Caliper 7 test results attached as Exhibit 4. So the effective lumens of a 50 watt fixture is
22 approximately 2300 to 2600 lumens. This same output can be easily achieved with a 26

1 watt LED with today's technology. Use of wattage as a basis of selection is not
2 consistent with lighting design or the IESNA RP-8 Guidelines.

3 **Q. Do private contractors have to meet the same qualification and standards as**
4 **utility employees?**

5 A. In regards to performing street lighting work they actually have to meet higher
6 standards. Not only must they be licensed electricians but they also must meet OSHA
7 1210.269 utility worker standards and IMSA Level one certification and are required to
8 meet NFPA 70 standards. Their equipment must meet the same standards as the utility
9 workers. So I would contend they are better qualified and yet our experience has been an
10 install rate of 25 to 30 units per day in over 100,000 installations. But in regards to the
11 estimated costs of LED work I used the Companies estimates to calculate the operating
12 and maintenance, savings associated with LED lights. And even using their numbers it
13 is evident the cost of an LED system is much cheaper than a HPS system, which their
14 proposed rates do not reflect.

15 **Q. Mr. Ciccone responded to your concern with the price of the photocell. He**
16 **indicated they intended to use long life photocells. Do you now agree with his**
17 **assessment?**

18 A. No not entirely. A conventional photocell has a design life of 5000 cycles which
19 translates to 13.7 years. The Company stated they "its depreciable life on GE's L85,
20 which occurs at 50,000 hours, or twelve years." But then they arbitrarily adjusted this to
21 15 years to make the LED more affordable. So it would appear that a conventional
22 photocell is more than adequate to meet the twelve-year estimate and slightly short of the
23 15 year estimate. If we assume that 5% of the photocells will fail if in service during the

1 13.7 to 15 year period it does not make sense to use the more expensive photocell.
2 Assume a project of 100,000 lights. The price for 12 long life photocells is \$156 or \$13
3 each. The difference in cost from a standard photocell is about \$9 so the project costs
4 \$900,000 more to use these photocells. That means if 5000 photocells failed the cost to
5 replace one would have to exceed \$180 before it made sense to use them. Clearly if you
6 assumed a 20 year LED life then the long life photocells make sense. Where lights are
7 customer owned the cost for a private contractor to replace a photocell is less than \$120
8 so it makes more sense to use the less expensive version using the Company's
9 assumptions.

10 **Q. What is your reaction to his comment that they have had no requests for LED**
11 **fixtures less than 50 watts.?**

12 A. I have been helping communities with LED conversion projects for a number of years
13 and with street lighting for over 16 years. In my experience most community leaders are
14 uniformed about all matters related to street lights except how much they pay and they
15 have heard LED lights will save them money. I suspect that if a community has a 50-
16 watt HPS fixture they are asking for the replacement of that 50-watt fixture. They
17 probably have no clue as to the proper LED needed or that they can get one as low as 19
18 watts to replace it. Secondly, the return on investment for replacing a 50 watt HID
19 fixture with an LED is long and greatly affected by both the price of the LED its efficacy,
20 any incentives and the applicable tariffs. The imposition of tariffs that overcharge for
21 these lights can make in uneconomical for the customer. Likewise selecting fixtures as
22 expensive as the Company has, charging the excessive costs for their installation and then
23 increasing the monthly charges to be higher than the current 50 HID lamp all contribute

1 to making it uneconomical. This situation is quite different for customer owned and
2 maintained lights where the repair and maintenance costs are competitively market based,
3 the tariff is an energy only tariff and customers can select the fixture they desire.

4 **Q. Did you review Mr. Ciccone's rebuttal in regards to equipment costs and**
5 **installation time and would you care to respond?**

6 A. Yes and my points remain. Keep in mind when the cost of these services are
7 competitively bid the market sets the pricing. When the Company does it they are not
8 constrained by competition but can pretty much do what they want within the limits of
9 what the PUC will allow and still be guaranteed a profit. I can only relate to my many
10 years experience with these costs in numerous states in the maintenance of over 300,000
11 lights across the country and projects installing thousands of roadway fixtures in multiple
12 states including Pennsylvania. Contrary to Mr. Ciccone's implication that my cost are
13 reflective of working in parking lots, 99% of the work I have supervised is roadway
14 lighting in the public way. His costs are based on assessments by company engineers and
15 mine are based on real world experience from a competitive perspective and personal
16 supervision of this type of work.

17 **Q. What about Mr. Ciccone's comments relative to the Lincoln MA project?**

18 A. The fixtures used were rated at a maximum of 53 watts so in fact greater than the 50
19 watt fixture compared to. The design was based on existing lumen levels, IESNA RP-8
20 Guidelines, the customer desires, and a comparison of the foot-candle distribution to the
21 existing lighting. In addition, the state bidding laws in Massachusetts requires this work
22 to comply with the prevailing wage statues so the workers were paid prevailing union

1 wages which I suspect are higher than the prevailing wage rates in Pennsylvania. So Mr.
2 Ciccone's assumptions are quite incorrect.

3 **Q. Mr. Ciccone asserts they have accounted for the maintenance savings?**

4 A. The company has not set forth any detailed analysis or records associated with the
5 costs for each system. Secondly the company should change their life expectancy to
6 twenty years. If you start with incorrect assumptions you end up with bad results. We
7 contend this is the case.

8 **Q. Do you have any other comments with regards to Mr. Ciconne's comments or**
9 **the issue of LED street lighting tariffs?**

10 A. The challenge the Commission faces is their responsibility to protect the consumer
11 from the excesses a monopoly can bring if not regulated, ensuring that the prices the
12 utilities charge are fair and reflective of the open market, while still ensuring the utility
13 receives a fair profit. In this case we have relatively new technology that is evolving
14 rapidly and could potentially offer the community a wide array of choices as to how they
15 want to light their roadways and provide for the public safety. The utility wants to deny
16 them that flexibility and offer only one overpriced alternative. The Commission should
17 consider an approach that gives the municipalities much greater control and provides
18 reasonable pricing. To this end the market pricing in those states where this work is
19 being competitively bid should influence what is allowed in Pennsylvania. Pennsylvania
20 should embrace an approach that encourages optimum energy savings and lowest
21 responsible costs.

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1 Q. Does this conclude your testimony?

2 A. Yes