

STATE OF IOWA
BEFORE THE IOWA UTILITIES BOARD

IN RE:)
)
) DOCKET NO. RPU-2013-0004
MIDAMERICAN ENERGY COMPANY)
) DIRECT TESTIMONY OF
) NATHANIEL BAER
)

1 Q. What is your name and business address?

2 A. My name is Nathaniel Baer. My title is Energy Program Director with the Iowa
3 Environmental Council. Our offices are located at 521 East Locust Street, Des Moines,
4 Iowa 50309.

5
6 Q. On whose behalf are you testifying today?

7 A. I am testifying on behalf of the Iowa Environmental Council and Environmental Law &
8 Policy Center.

9
10 Q. Please describe your background.

11 A. I have a Bachelor of Arts degree from Earlham College in Richmond, Indiana and a law
12 degree from the University of Iowa College of Law in Iowa City, although I am not a
13 practicing attorney. I have worked for the Iowa Environmental Council (IEC) since 2007.
14 The Iowa Environmental Council is a 501(c)(3) non-profit, member-based corporation
15 that works to advance public policies that provide a safe, healthy environment and
16 sustainable future for all Iowans. In my capacity at IEC, I have worked on a wide range

1 of energy policy issues, including renewable energy, transmission, energy efficiency,
2 biofuels, and transportation. This has included work on state and federal legislation and
3 administrative rules both with federal and state agencies, as well as a range of dockets at
4 the IUB. I have served on stakeholder committees, such as energy research or policy
5 committees, established by the Iowa legislature, Midwestern Governors Association,
6 Iowa Department of Transportation, and the University of Northern Iowa's Center for
7 Energy and Environmental Education. I have participated regularly in the Iowa energy
8 efficiency stakeholder collaborative convened by the Office of Consumer Advocate since
9 2009.

10
11 **Q. Have you testified with the Iowa Utilities Board before?**

12 A. I have not provided testimony previously. I have drafted or assisted in drafting our
13 organization's comments and joint comments in various dockets before the IUB,
14 including NOI-2006-0004, NOI-2009-0002, NOI-2011-0002, NOI-2011-0003, TF-2012-
15 0546 and TF-2012-0574.

16
17 **Q. What is the purpose of your testimony?**

18 A. The purpose of my testimony is to highlight concerns with MidAmerican's proposed
19 treatment of light emitting diode (LED) street lights in the Rate SL – Street Lighting
20 section of the proposed tariff.

1 **Q. Do LED street lights offer benefits compared to other street lighting technologies**
2 **used previously in Iowa, such as high pressure sodium street lights?**

3 A. Yes. LED street lights can offer a number of benefits. As a more efficient technology,
4 LED street lights use less energy than high pressure sodium (HPS) street lights and
5 therefore reduce energy costs. For example, IPL has estimated monthly energy savings of
6 \$2.06 a fixture from replacing a 250W HPS with a 135W LED, and monthly savings of
7 \$2.29 a fixture from replacing a 400 HPS with a 270W LED. In Iowa communities that
8 have used LED street lights, LED street lighting has reduced energy consumption
9 between 29% and 63% compared to the bulbs they replace This is consistent with results
10 achieved in MidAmerican’s pilot in Bettendorf that reduced consumption 49% and with
11 larger municipalities in other parts of the country. Operating costs for LED street lights
12 are further reduced because they have a much longer operating life, meaning that the
13 maintenance costs associated with replacing bulbs are much lower. While the upfront
14 costs can be higher for LED street lights compared to HPS, the reduced energy and
15 maintenance costs mean that most LED street lights can be expected to have a simple
16 payback well within the life of the street light. In addition to the savings, LED street
17 lights produce a whiter light, which, among other things, allows colors to be seen at
18 night, as compared to the yellow-orange light from HPS street lights. LEDs are capable
19 of providing a more uniform light across streets, while HPS street lights tend to provide
20 very bright spots right under the light and darker spots further away. These and other
21 benefits are summarized in a handbook on LED street lights prepared by the Iowa
22 Association of Municipal Utilities, attached as Exhibit NRB-1 , as well as various fact
23 sheets, case studies, and other materials available from the Department of Energy’s

1 Municipal's Solid-State Street Lighting consortium. One recent fact sheet, LEDs for
2 Street Lighting – Here Today, is attached as Exhibit NRB-2 and others are available at
3 <http://www1.eere.energy.gov/buildings/ssl/consortium.html>.

4
5 **Q. What is MidAmerican's proposed approach for LED streetlights?**

6 A. MidAmerican has proposed to include a limited set of light emitting diode (LED) street
7 lights in Rate SL – Street Lighting. Under its proposal, LEDs are available for company-
8 owned street lights with monthly rates for lamp sizes of 46 watts, 90 watts , and 121
9 watts. These lights are available for new installations and existing systems. However,
10 MidAmerican has proposed several limitations or restrictions on the installations of these
11 lights. The proposed tariff states that LEDs are only available for existing systems where
12 those systems have been redesigned to accommodate any differences in lighting levels,
13 mounting heights or lighting patterns with the new LEDs. The tariff further states that
14 customers bear the responsibility of lighting system design and of ensuring that the lights
15 comply with any applicable lighting specifications and standards.

16
17 Finally, for customer-owned lights, it appears that LEDs are not an available option. The
18 rates listed for customer owned street lights in the tariff do not appear to have any LED
19 rates. The only rates listed are for HPS and mercury vapor (MV) street lights ranging
20 between 70 watts and 1,000 watts in size.

21
22 **Q. Are there other approaches in use today in Iowa regarding LED street lights?**

1 A. Yes. A number of municipal utilities have conducted retrofits of a set number of existing
2 streetlights (e.g., high-pressure sodium) with the more efficient LEDs during 2011 and
3 2012. I have attached a presentation given at the Iowa Association of Energy Efficiency
4 conference in November, 2012 that provides information on this overall effort as well as
5 a closer look at the installations of LED street lights in several communities. Field of
6 Beams, The Story of 15 Municipal Iowa Utilities Cooperatively Leveraging Funds,
7 Exhibit NRB-3. It is worth noting that the Iowa municipal utility effort benefited from
8 gaining lower prices by buying larger quantities of bulbs.

9

10 Interstate Power & Light (IPL) initiated a pilot program to replace and evaluate a small
11 number of HPS street lights with LEDs in 2010. IPL then expanded the pilot significantly
12 during the course of 2012, with a focus on 80 watt LED replacements for 100 watt HPS
13 street lights. IPL is continuing to expand the pilot in 2013 with 135 watt LED
14 replacements for 250 watt HPS street lights and 270 watt LED replacements for 400 watt
15 HPS street lights. For existing company-owned street lights, IPL is replacing HPS lamps
16 and fixtures with LEDs as the HPS lights fail or need maintenance. In addition, IPL only
17 uses LEDs for new installations of company-owned street lights. IPL also appears to be
18 conducting lighting studies to ensure compliance with lighting requirements, rather than
19 require the customer to conduct such studies. Given the expected burnout rate of existing
20 HPS street lights, IPL expects to replace all existing HPS street lights with LEDs in seven
21 years or less. The Iowa Environmental Council and Environmental Law & Policy Center
22 filed comments supporting IPL's approach to LED street lighting as described in its tariff

1 filing in TF-2012-0656. IPL also provided a presentation summarizing its approach to
2 LED street lights to stakeholders in October, 2012, attached as Exhibit NRB-4.

3
4 **Q. What are the results of these approaches?**

5 A. As a result of these efforts, IPL reported a total of over 1,000 LED street lights in its
6 service territory at the end of 2012. Municipal utilities, in aggregate, reported over 4,000
7 LED street lights in their service territories at the end of 2012. By comparison,
8 MidAmerican reported zero LED street lights at the end of 2012. This information is
9 included in utility annual reports and consolidated on the IUB's website. Exterior
10 Lighting Information Report, 2012, *available at*
11 [http://www.state.ia.us/government/com/util/industry_topics/annual_reports/exterior light](http://www.state.ia.us/government/com/util/industry_topics/annual_reports/exterior_lighting.html)
12 [ing.html](http://www.state.ia.us/government/com/util/industry_topics/annual_reports/exterior_lighting.html).

13
14 In addition to the numbers of LEDs reported in utility annual reports, new LEDs are well-
15 received in the communities where they have been installed. In presentations attached as
16 NRB Exhibit-3 and NRB Exhibit-4, community leaders – such as mayors, city officials,
17 and utility managers – have all compared LEDs favorably to former HPS street lights.
18 These comments indicate that LEDs provide brighter, clearer, and whiter light with fewer
19 dark spots on streets.

20
21 **Q. Do you have general concerns with the MidAmerican proposal?**

22 A. Yes. Overall, the proposal continues to provide HPS lights as the default technology for
23 street lighting applications while unnecessarily restraining the number of LED street

1 lights that could be installed in coming years. This will mean that the inefficient HPS
2 lights will continue to dominate street lighting in MidAmerican's service territory, while
3 more efficient LED installations will lag behind other Iowa communities and the market.
4 More specifically, the proposal treats all communities as if they were the same and does
5 not recognize the differences that exist in different cities in MidAmerican's service
6 territory. Most communities in MidAmerican's service territory do not have locally-
7 adopted minimum lighting standards. Exhibit NRB-5. The proposed tariff has been
8 developed for the communities with minimum lighting standards, but is being applied to
9 all communities, even those without minimum lighting standards. It is overly restrictive.

10
11 **Q. Do you have concerns with MidAmerican's study requirements?**

12 A. Yes. MidAmerican's proposal puts the burden on customers to conduct studies and
13 lighting system redesign for existing systems to ensure compliance with lighting
14 standards. This approach makes continuing the use of HPS lighting the path of least
15 resistance and creates an unnecessary barrier to the use of LEDs. It also appears that the
16 studies could be redundant or unnecessary. MidAmerican is using design specifications
17 for vendors of LED streetlights. Exhibit NRB-6. MidAmerican has required past city
18 lighting studies and designs that resulted in the current placement location of lights.
19 Exhibit NRB-7. It is unclear why further study is required if a vendor meets the
20 specifications required by MidAmerican. While there may be some instances where a city
21 wants or needs more lighting in an area than they have had previously or needs special
22 consideration in an area, these type of uses will be the exception. MidAmerican's street
23 lighting tariff should be designed for the typical customer experience and not the

1 exception. MidAmerican should develop a process to work with its customer's to address
2 the exceptions.

3
4 **Q. What are your recommendations?**

5 A. In communities without minimum lighting standards, LEDs should be the default for all
6 new construction street light installations. In addition, MidAmerican should begin a
7 replacement program to replace all HPS with LEDs in a five to seven year period of time.
8 The IPL approach to replace existing HPS street lights as those bulbs or fixtures burn out
9 or otherwise need maintenance provides a useful model for doing this. The tariff should
10 clearly state that these customers can request LED lights without the need for lighting
11 studies or lighting redesign, and that LEDs are the default technology for new
12 construction and replacement.

13
14 In communities with lighting standards, MidAmerican should take the same basic
15 approach for new installations and existing replacements, but should take a more
16 proactive approach to ensure LED street lighting complies with any applicable lighting
17 standards. For example, MidAmerican should notify these communities of the new tariff
18 and new approach for LED lighting and offer to meet with each community to discuss the
19 technology, its design specifications, studies from Iowa or other jurisdictions on lighting
20 performance, and address any questions or concerns. MidAmerican should also conduct
21 or assist in conducting lighting studies and lighting redesign. If concerns remain, the
22 community could have the option of requesting that MidAmerican install LEDs in a
23 limited area in order to evaluate the technology before it is installed more widely.

1

2 In addition, MidAmerican should include a full range of LEDs for customer-owned street
3 lights.

4 **Q. Does this conclude your testimony?**

5 **A. Yes.**

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AFFIDAVIT OF
NATHANIEL BAER

STATE OF IOWA)
) ss.
COUNTY OF BLACK HAWK)

I, Nathaniel Baer, being first duly sworn on oath, depose and state:

1. that I am Energy Program Director at the Iowa Environmental Council;
2. that I have personal knowledge of the facts alleged in the attached testimony; and
3. that said facts are true and correct to the best of my knowledge and belief as of the date of this Affidavit.

Further affiant sayeth not.

/s/ Nathaniel Baer

Nathaniel Baer

Subscribed and sworn to before me,
a Notary Public in and for said County and
State, this 10 day of September, 2013.

Michelle Davis
Notarial Seal, Iowa
Commission Number 767506
My Commission Expires 4-11-14