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June 4, 2020

VIA ELECTRONIC MAIL

Mr. Steven M. Kahl, Executive Secretary
North Dakota Public Service Commission
State Capitol Building, Dept. 0408
600 East Boulevard
Bismarck, ND 58505-0480

RE: STREET LIGHT TARIFF REVISIONS (CASE NO. PU-20-093)

Dear Mr. Kahl:

Northern States Power Company, doing business as Xcel Energy, respectfully submits the attached information as requested by Commissioner Kroshus at the May 13 Informal Hearing in the above-referenced docket.

Commissioner Kroshus requested the Company provide an example of energy savings experienced by a community as a result of converting their city-owned street lighting systems to LED technology. Attached are 5 short articles that provide insight into the savings being generated from these conversions:

1. Installation of LED lights in Bismarck, ND;
2. An LED pilot project in Sioux Falls, SD;
3. LED installations in a number of small Colorado towns served by Delta-Montrose electric cooperative;
4. Street lighting savings experienced in Los Angeles, CA; and
5. Information on how LED street lights will benefit cities from a project and asset management firm.

Please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads 'David H. Sederquist'.

David H. Sederquist
Sr. Regulatory/Financial Consultant
Xcel Energy

Bismarck gets LED street lights

[Source: KFYR News website]

Posted: Tue 5:19 PM, Oct 24, 2017, Updated: Tue 8:11 PM, Oct 24, 2017

BISMARCK, N.D. - The city of Bismarck has been replacing the old HPS street lights with new LED ones.

The fixtures produce better lighting and 60 percent less consumption than the HPS lights.

The new bulbs are also less maintenance for the city because the old lights needed to be changed every three to five years, while the new LED ones need to be changed every 10.

"Well, we feel like it's pretty important for cost savings for one thing. One thing with LED's is part of it is security. You can see things better on the street, they also direct the light better," said Paul Lies, electric department supervisor.

Money for the bulbs comes out of the Public Works maintenance budget.

The department believes the new bulbs are a preventative maintenance that will save the city money and it'll be safer for the public. (KFYRTV.com)

Sioux Falls LED Streetlight Neighborhood Pilot Project

[Source: City of Sioux Falls Website]

We Want to Hear What You Think!

The City of Sioux Falls plans to eventually switch out all HPS streetlights within City limits to LED streetlights. That's why your input is so important! Residents are invited to provide input about the LED Neighborhood Streetlight Pilot by taking a brief survey. [Click here to take the survey.](#)

Street lighting is a vital piece of the City of Sioux Falls' infrastructure. However, it also represents a significant portion of the City's electricity consumption. Each year the City spends about \$1.4 million dollars to power 18,000 streetlights. In an effort to decrease the City's electricity consumption, the City of Sioux Falls has replaced traditional high-pressure sodium (HPS) streetlights with light-emitting diode (LED) streetlights in six pilot areas across Sioux Falls.

In total, 65 light fixtures will be replaced with the LED Streetlight Neighborhood Pilot Project. The new LED streetlights will provide the same amount of light but use about half as much energy. The project is expected to realize annual energy savings of over 48,000 kWh, equating to over \$4,000 per year. The project will pay for itself in savings in just under five years, or 20,000 operating hours. The new streetlights will also be on their own meter, allowing City officials to monitor the power consumption of the new lights and compare to traditional streetlights.

Measurable Energy Savings

The City of Sioux Falls has already realized energy savings by converting all traffic signals to LED lights. Lake Lorraine was the City's first LED pilot area, with nine metered LED streetlights lighting the development. Since the lights were installed in November of 2014, City officials have been able to track the energy savings, with each LED streetlight costing just \$0.15 per day to light, in comparison to \$0.33 per day it would cost per HPS streetlight.

The City will also spend less on maintaining the new streetlights, as each LED streetlight lasts on average 20 years, versus the 4- to 5-year life span of HPS lights.

Quality of Light

Street lighting is essential for public safety and security on all streets. The LED streetlights are designed to focus the light emitted and direct it precisely to where it is needed: on the streets and sidewalks. This helps to cut down on “light pollution” into yards and above the light fixture, improving the aesthetics of the neighborhood. This also helps to reduce the appearance of shadows and improves visibility on streets. In addition, the light emitted from LED streetlights is a whiter, clearer light, which results in a uniform light coverage and provides greater clarity than the amber shade of HPS lights.

Towns Swap Traditional Lights for LED Streetlights

[Source: Colorado Country Life Website – Cooperative News]

Delta-Montrose Electric Association’s LED streetlight initiative is making a tremendous energy-savings and aesthetic impact in the Delta, Montrose and surrounding areas, and the reception has been positive.

In the fall of 2015, the town of Cedaredge made the switch to LED streetlights, cutting its monthly street lighting costs in half. In addition to using less energy than traditional lights, LEDs last much longer. On average, LED lamps last 10 to 15 years as compared to 4 to 6 years for older technologies. By swapping out the town’s 92 streetlights, Cedaredge will see significant savings on its energy bill and also cut DMEA’s maintenance and material costs.

“We’re very happy with the LED lights. They are a lot brighter, and many people have commented that they just feel safer. The new LEDs provide a better quality of light. And of course, the reduced electric bill for the town of Cedaredge is a huge plus,” said Kathleen Sickles, Cedaredge town administrator.

“Credit must be given to our town governments, like Cedaredge, for recognizing the value of LEDs, both from an efficiency standpoint and a quality standpoint. I’m proud to see our small towns leading the way and making changes that haven’t even happened in some of the largest cities in the U.S.,” said Phil Zimmer, DMEA energy services supervisor.

The towns of Crawford and Cedaredge already made the transition to all LED street lighting. Montrose made the switch for its highest rated lamps, trading in 400-watt mercury vapors for 38-74 watt LEDs. Olathe and Hotchkiss are next. Both recently approved plans to move forward with LED street lighting.

“Our board of trustees is constantly working to find ways to use taxpayer money in the most efficient way possible. DMEA’s proposal to transition our streetlights to LEDs provided an opportunity to reduce our energy costs and improve the quality of lighting throughout town. With a payback period of just 3.5 years and the potential for future savings, it just made sense,” said Patty Gabriel, Olathe town administrator.

DMEA proposed plans for transitioning to the energy-saving technology to all towns and cities within the co-op’s service territory.

How LA is now saving \$9M a year with LED streetlights and converting them into EV charging stations

[Source: TechRepublic Website] by Teena Maddox, July 7, 2016, 9:38 AM PST

Smart streetlights are saving Los Angeles big money and becoming a cornerstone of their smart city initiative by improving the infrastructure for traffic, mobile broadband, EVs, and public safety.

LED smart streetlights have benefited LA. This before and after shot shows the brighter new blue-white LED lights (bottom image) compared to the older lights (top image).

The City of Los Angeles is replacing all of its old sodium-vapor streetlights with smart LED versions that use less energy and save money. And, the resulting savings and excess power is being reinvested in new electric vehicle charging stations attached to the streetlight poles.

Over the past 7 years, the city has converted nearly 80% of its 215,000 streetlights to LED smart lights, at a cost of \$57 million, as part of a smart city initiative. The ROI is a quick turnaround with the city saving nearly \$9 million annually on energy costs with the lower-energy LED's, said Ed Ebrahimian, director of the Bureau of Street Lighting for the City of Los Angeles.

"In addition to that, because we've done our LED conversion, we've reduced the load on our circuits. We've changed the fixtures and installed lower wattage fixtures. All of a sudden, the load on our entire circuit is less. It gives us the ability to use the power for other purposes and we have started a new program of installing EV charging stations attached to street lighting poles," he said.

The city will have installed 30 EV charging stations by the end of this week, and there are plans to install 50 to 100 more in the next 6-12 months. "Our goal is to populate the entire city of Los Angeles with these as much as we can in the coming years," he said.

Smart City Deep Dive: LED Street Lights

[Source: SiteTracker Website]

Smart cities are on the rise. By definition, a smart city uses information and communication technologies to improve operational efficiency, share information with the public, and improve both the quality of government services and citizen welfare. Every day, smart city technologies are deployed across the globe, improving the lives of citizens everywhere, but it can be daunting to implement a radically different technology initiative. That's why cities around the world are taking small, impactful steps first, by installing LED streetlights.

Streetlights are essential critical infrastructure

The streetlight is a piece of critical infrastructure that many civilians take for granted. While residents don't notice streetlights until they stop working, utility companies and city officials struggle to keep hundreds of thousands of streetlights on every day. The traditional streetlights' (Incandescent, mercury vapor, and high-pressure sodium) average lifespan is 3-5 years and a city has anywhere from 150,000 to 350,000 of them. Utility companies have their work cut out for them.

LED streetlights save money

Constant maintenance and upgrades to streetlights take time, but the amount of electricity used costs the city money, as well. Traditional streetlights cost anywhere from \$95 to \$150 per light per year. In a city like New York, with over 300,000 streetlights, the electricity and maintenance costs for streetlights are astronomical, and switching to LED could and has saved the city millions. LED streetlights produce more light with less energy and also cost less, around \$30 to \$40 per light per year. And, LED streetlights last for over 20 years. With lower annual costs, less maintenance, and increased energy efficiency LED streetlights are a great first step for cities making the move to be a smart city.

Decrease cost and increase safety

Currently, there are 304 million streetlights in the world. By 2025, there will be 352 million. LED and smart street lighting will cumulatively represent a \$63.5 billion market opportunity. In addition to offering longer lifetimes, lower energy consumption, and less in maintenance LED play a critical role in improving cities operational efficiency. When LED streetlights are networked together, they are

able to decrease cost and increase city safety by off-peak dimming, reduced downtime, and lower maintenance costs.

LED streetlight installation

The process of upgrading a streetlight from traditional to LED takes about 30 minutes. Remove the streetlight head, replace it with the new LED, and repeat. Sounds simple, right?

Switching over an entire city's streetlight system to LED is a high-volume project that involves hundreds of thousands of sites. Even though an individual installation will only take about 30 minutes, installing an entire network is much more complex. In San Francisco, installing 18,500 LED streetlights will take about 555,000 hours. For high volume projects, it is important to have a single source of truth, real-time updates, and robust reporting in order to make data-driven decisions that will affect the future of the project. Sitetracker is a project and asset management platform trusted by utility companies to track their LED streetlight installations. Learn how Sitetracker can help your city get smarter.