



414 Nicollet Mall  
Minneapolis, MN 55401

October 15, 2015

—Via Electronic Filing—

Daniel P. Wolf  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7<sup>th</sup> Place East, Suite 350  
St. Paul, MN 55101

RE: PETITION  
LIGHT EMITTING DIODE (LED) STREET LIGHTING RATE  
DOCKET NO. E002/M-15-\_\_\_\_

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits the attached Petition for approval of a Light Emitting Diode (LED) Street Lighting Rate as an addition to our existing Street Lighting System Service.

The development of this rate was informed by our LED Streetlight Pilot Project, Docket No. E002/M-12-974, and responds to increasing customer interest in LED street lighting options. The Company is pleased to offer our customers greater optionality with this new voluntary rate offering, as well as the potential to reduce bills, achieve greater efficiency, improve lighting quality, and help to meet energy usage and greenhouse gas emissions reduction goals.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies of the Summary of Filing to parties on the attached service list.

Please contact Amber Hedlund at [amber.r.hedlund@xcelenergy.com](mailto:amber.r.hedlund@xcelenergy.com) or 612-337-2268, or me at [amy.a.liberkowski@xcelenergy.com](mailto:amy.a.liberkowski@xcelenergy.com) or 612-330-6613 if you have any questions regarding this filing.

Sincerely,

/s/

AMY LIBERKOWSKI  
MANAGER, REGULATORY ANALYSIS  
RATES AND REGULATORY AFFAIRS

Enclosures  
c: Service List

STATE OF MINNESOTA  
BEFORE THE  
MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
John Tuma	Commissioner
Betsy Wergin	Commissioner

IN THE MATTER OF A PETITION OF  
NORTHERN STATES POWER COMPANY  
FOR APPROVAL OF A LIGHT EMITTING  
DIODE (LED) STREETLIGHT RATE

DOCKET NO. E002/M-15-\_\_\_\_

**PETITION**

**INTRODUCTION**

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission this Petition for approval of a the addition of a Light Emitting Diode (LED) option to our existing Company-owned street lighting rate, as the Company indicated in our LED Streetlight Pilot Project Docket (Docket No. E002/M-12-974).

Since the implementation of an LED pilot project in West St. Paul, we have heard from a number of our municipal customers that they are interested in LED street lighting options. We are therefore pleased to offer this voluntary service to street lighting customers, which has the potential to:

- reduce bills;
- decrease maintenance and other expense allocations;
- achieve greater efficiency;
- help to meet energy usage and greenhouse gas emissions reduction goals, and;
- improve lighting quality.

A typical street lighting customer in Minnesota may see an average monthly savings of four to five percent on their bill by switching to the LED street lighting service.<sup>1</sup> This service will be available for all Company-owned streetlight wattage options, so that the

---

<sup>1</sup> The majority of cobra-head streetlights in Minnesota are 100W and 150W in size, which result the highest monthly savings potential.

majority of our Company-owned high pressure sodium (HPS) streetlights could be converted to this LED rate within the next five years.

This rate would be an addition to our existing Street Lighting System Service, introducing LED fixture options at the 100-Watt, 150-Watt, 250-Watt, and 400-Watt equivalent levels, and therefore requires a change to our tariff. The legal standard of review for this petition is found in Minn. Stat. § 216B.03, which states that “every rate made, demanded, or received by any public utility, or by any two or more public utilities jointly, shall be just and reasonable.” We believe that our petition has met that standard. The rates proposed in this LED Street Lighting Service Tariff are being offered to our Company-owned street lighting customers, incorporate the maintenance and other expense-allocated cost savings, and will result in overall customer cost-savings. The rates proposed are just and reasonable, satisfying the statutory requirements.

Given the potential community and financial impact of the LED streetlight technology, we determined it would be valuable to work with several of our largest municipal stakeholders to help them better understand the impact of the proposed LED offering on energy savings and customer bills. To that end, we engaged the City of Minneapolis and the Suburban Rate Authority (SRA) in pre-filing rate design discussions. In March of 2015, we initiated discussions with the City of Minneapolis related to the results of the West St. Paul pilot and the request for proposals we had issued to LED vendors. Meetings occurred through August of 2015 with the City of Minneapolis and the SRA to talk through the specifics of our LED rate design. We appreciate both of these stakeholders for taking the time to have an open dialogue with us about our proposed LED tariff in advance of the filing.

We respectfully request that the Commission approve the Company’s proposed tariff, including the proposed monthly rates and the terms and conditions of service. This Petition provides background on the pilot project and scoping of the rate offering, a description of the proposed tariff and rate design, and a proposal for making the LED street lighting system service available to customers in our Minnesota service territory.

The following attachments are included with this Petition:

- Attachment A: LED Street Lighting System Service Rate Design
- Attachment B: LED Street Lighting System Service Tariff Sheet
- Attachment C: LED Street Lighting Service Bill Mockup

## **I. SUMMARY OF FILING**

A one-paragraph summary of the filing is attached pursuant to Minn. R. 7829.1300, subp. 1.

## **II. SERVICE ON OTHER PARTIES**

Pursuant to Minn. R. 7829.1300, subp. 2 and Minn. Stat. § 216.17, subd. 3, we have electronically filed this document. A summary of the filing has been served on all parties on the Company's miscellaneous electric service list.

## **III. GENERAL FILING INFORMATION**

Pursuant to Minn. Rules 7825.1400 and 7829.1300, subp. 3, the Company provides the following required information.

### **A. Name, Address, and Telephone Number of Utility**

Northern States Power Company doing business as:  
Xcel Energy  
414 Nicollet Mall  
Minneapolis, MN 55401  
(612) 330-5500

### **B. Name, Address, and Telephone Number of Utility Attorney**

Alison C. Archer  
Assistant General Counsel  
Xcel Energy  
414 Nicollet Mall, 5<sup>th</sup> Floor  
Minneapolis, MN 55401  
(612) 215-4526

### **C. Date of Filing**

The date of this filing is October 15, 2015. The Company requests approval of the LED Streetlight Service Tariff as an addition to our Electric Rate Book to become effective 90 days following Commission approval.

#### **D. Statute Controlling Schedule for Processing the Filing**

This Petition is made pursuant to Minn. Stat. § 216B.16, subd. 1, which prescribes general timelines for rate and tariff changes, including but not limited to a requirement of 60-days' notice prior to any rate or tariff change.

Under Commission Rules, the proposed rate change discussed in this Petition falls within the definition of a "miscellaneous tariff filing" under Minn. Rule 7829.0100, subp. 11, since no determination of Xcel Energy's general revenue requirement is necessary. Minn. R. 7829.1400, subp. 1 and 4 permit comments in response to a miscellaneous filing to be filed within 30 days and reply comments to be filed no later than 10 days from the expiration of the original comment period. This permits the Commission to act within the 60-day notice period.

#### **E. Utility Employee Responsible for Filing**

Amy Liberkowski  
Manager, Regulatory Analysis  
Xcel Energy  
414 Nicollet Mall, 7<sup>th</sup> Floor  
Minneapolis, MN 55401  
(612) 330-6613

#### **IV. MISCELLANEOUS INFORMATION**

Pursuant to Minn. R. 7829.0700, the Company requests that the following persons be placed on the Commission's official service list for this proceeding:

Alison C. Archer  
Assistant General Counsel  
Xcel Energy  
414 Nicollet Mall, 5<sup>th</sup> Floor  
Minneapolis, MN 55401  
[alison.c.archer@xcelenergy.com](mailto:alison.c.archer@xcelenergy.com)

SaGonna Thompson  
Regulatory Administrator  
Xcel Energy  
414 Nicollet Mall, 7<sup>th</sup> Floor  
Minneapolis, MN 55401  
[regulatory.records@xcelenergy.com](mailto:regulatory.records@xcelenergy.com)

#### **V. EFFECT OF CHANGE UPON XCEL ENERGY REVENUE**

Based on the proposed pricing and anticipated strong demand for this product, the Company expects to replace a large portion, if not all, of the Company-owned streetlights in Minnesota within the next five years. However, we do not anticipate a

significant change in revenue as a result of this tariff over time since the new LED street lighting rate is similar to the HPS street lighting rate.

## VI. DESCRIPTION AND PURPOSE OF FILING

The Company proposes adding an LED fixture option to its existing Street Lighting System Service (Rate Code A30) for Company-owned streetlights in four wattage-equivalent replacement levels: 100-Watt, 150-Watt, 250-Watt, and 400-Watt. Today, the Company offers several street lighting options for customers:

- **Street Lighting System Service (HPS, Metal Halide) – Rate Code A30**
  - *Standard service:* Under this rate schedule the Company provides energy distribution, furnishes lighting equipment, and is responsible for all necessary maintenance for a flat monthly rate based on the wattage of the streetlight. Customers are also billed the applicable fuel clause rate for the dusk-to-dawn energy usage of the lights.
  - *Pre-Pay Option:* Under this option, customers receive the same standard service as outlined above, except payment for the lighting service must occur before establishing service. The monthly tariff rate reflects customer payment and ownership of the streetlight.
- **Street Lighting Energy Service (HPS, Mercury) – Rate Code A32 (Closed)**

The Company provides energy distribution and necessary maintenance for a flat monthly rate based on the wattage of the streetlight. The customer owns a Company-approved street lighting system. Customers are also billed the applicable fuel clause rate for the dusk-to-dawn energy usage of the lights.
- **Street Lighting Energy Service – Metered – Rate Code A34**

The Company provides energy distribution services and meter. Customer owns and maintains the lighting system. Customer is billed a customer charge per meter and a per kWh energy charge for the distribution of energy. Customers are also billed the applicable fuel clause rate for the dusk-to-dawn energy usage of the streetlights.

We are not currently proposing an LED rate for customer-owned fixtures; therefore customers on Closed Rate Code A32 are not impacted by this new offering. Customers on Rate Code A34 also have the option to switch their fixtures to LEDs, as they are customer-owned. Because that rate is billed on a kWh basis, they would see a savings reflected on their bill as soon as they replace the HPS fixtures, due to the reduced energy consumption of the LEDs.

The proposed tariff rate incorporates the maintenance savings and expense-allocated cost reductions, as well as the higher cost of LED fixtures. We expect the aforementioned cost reductions, along with the expected fuel charge savings, to more

than offset the incremental cost of the LED fixtures, which are more expensive than their HPS counterparts.

This initiative is an effort to respond to customer interests by providing expanded choices of products and services. As LED technologies have experienced reductions in cost and advancements in performance, the Company believes that it is a prudent time to invest in the technology for use on our system since it can now deliver cost savings to customers. In addition, the LED streetlight fixtures provide improved light quality and color rendering. These features translate into decreased light trespass and better nighttime visibility for pedestrians and motorists, contributing to an enhanced sense of safety. As the owner of over 100,000 streetlights in Minnesota, this rate would enable us to play a key role in helping communities transition to more energy-efficient lighting options.

## **A. Background**

### *1. West St. Paul Pilot*

In 2012, the Company implemented a pilot program in the City of West St. Paul to test the viability of LED streetlights. The goal of the pilot program was to gain experience to inform the development of a future LED street lighting rate option. The full results of the pilot program were described in our LED Streetlight Pilot Project Final Report in Docket No. E002/M-12-974, filed on March 13, 2015.

West St. Paul was selected for the pilot program through a screening criteria based on its: (1) ability to accommodate approximately 500 lights; (2) location in proximity to other interested communities to facilitate observation; (3) scheduled re-lamping in 2012; (4) overhead lighting distribution infrastructure; and (5) urban setting with established vegetation. The coordination of the pilot project with a scheduled re-lamping meant that overall costs were reduced and the Company was able to avoid replacing lights prior to the end of their assigned lives.

As expected, initial results of the pilot showed substantial energy savings and improved lighting performance as a result of switching from HPS to LED fixtures. The pilot also gave the Company experience installing LED streetlights and an opportunity to observe the performance of the lights in Minnesota's climate. In general, the LED fixtures required fewer service orders than the HPS fixtures. This reduction in maintenance needs, combined with the approximately 50 percent average energy savings from the replacement fixtures, resulted in a decrease in maintenance and fuel costs as a result of the project. It is important to note that HPS fixtures are already a more efficient version of incandescent light, so the savings may not be as

significant as some might expect based on their experience converting home lighting to LEDs.

The illumination performance of the LED fixtures increased by an average of 50 percent in each of the test sites, and customer satisfaction with the brightness and appearance of the lighting was high among respondents in West St. Paul. These pilot program results confirmed for the Company that LED street lighting technology can provide adequate energy savings, as well as equal or better visibility, making it a good candidate for broad implementation on our system. LED technology has advanced significantly since the initiation of the pilot program, meaning that this rate relies on even lower wattage LED fixtures than were used in the pilot and provide equivalent street illumination. As mentioned above, the price of LED fixtures has also come down significantly since the pilot was initiated, allowing the Company to offer a valuable service at a competitive rate. After completion of this and two other LED pilot installations across Xcel Energy's service territory, along with a technical review of the cobra-head style of LED street lighting, the Company determined that the LED fixtures could meet its reliability and performance standards and were ready to be made available to all customers.

## 2. *Program development*

While LED streetlights have been available for some time, until recently the price and efficiency were not cost-competitive with current rate options. With increasing customer interest in LED street lighting, Xcel Energy issued an enterprise-wide Request for Proposals, leveraging the size of the Company's comprehensive streetlight fleet across all operating companies to obtain competitive LED street lighting fixture pricing. This initiative generated interest from a number of leading manufacturers and resulted in cost-competitive bids for LED fixtures. The combination of the pricing we are able to obtain by leveraging our bulk purchasing power and the expected impact of increased efficiency of the LED fixtures on Company operations makes LED street lighting a competitive option that can reduce customer bills.

Cobra-head fixtures are the most cost-effective utility-scale design at this time, so the Company is offering an attractive LED rate option to customers at four proposed wattage levels in that style. In selecting the type of fixtures for this offering, the Company completed a technical specification stipulating performance requirements, and performed an extensive analysis of vendor conformance to this specification in all areas, including pricing.



## B. Description of the Proposed Program and Tariff

### 1. *Subscription*

In this Petition, we seek Commission approval of our proposed tariff, which will add four LED fixture options for those customers receiving Street Lighting System Service from Company-owned assets on Rate Code A30. Customer participation in this service is voluntary, and available for year-round illumination of public streets, parkways, and highways by LED fixtures supported on poles, where the facilities for this service are furnished by the Company. The Company proposes to provide four wattage-equivalent options in order to provide a full range of replacements for the existing HPS fixtures on the Street Lighting System Service Rate Code A30. See Table 1 for the corresponding LED fixture replacements.

**Table 1**  
**LED Streetlight Wattage**

<b>HPS Wattage</b>	<b>LED Equivalent Wattage<sup>2</sup></b>
100W	39W
150W	65W
250W	155W
400W	246W

### 2. *Rate Design*

The rate design calculations and resulting customer bill impacts are shown below in Table 2. A current street lighting customer with a 100-Watt HPS fixture would have that streetlight replaced with an equivalent 39-Watt LED fixture. Approximately 75 percent of the Company-owned streetlights in Minnesota are 100-Watt fixtures, so that rate is expected to be the most widely-applicable to customers.

As shown in Table 2 under the Rate Impact heading, the LED rates are based on the currently monthly HPS overhead rates, adjusted for the reduction in maintenance costs, decrease in energy and demand-related costs, and increase in capital costs for the LED fixtures.

---

<sup>2</sup> The LED equivalent wattage is a simple average across vendor fixtures that qualify for the Company's technical specification, at each size level. We recognize that LED technology will continue to evolve and perhaps become more efficient. For this reason the Company will monitor this evolution over time, and adjust accordingly.

**Table 2**  
**Company-Owned LED Street Lighting Rate Design**

NSP-MN  
Per HPS/LED Streetlight Equivalent

<b>RATE IMPACT</b>	<b>100W/39W</b>	<b>150W/65W</b>	<b>250W/155W</b>	<b>400W/246W</b>
<b>Current HPS Monthly Rate Per Streetlight - Overhead</b>	<b>\$9.44</b>	<b>\$10.15</b>	<b>\$12.77</b>	<b>\$15.50</b>
<i>Maintenance Savings</i>	(\$0.91)	(\$0.91)	(\$0.91)	(\$0.91)
<i>Base Rate Energy and Demand Charge Savings</i>	(\$0.85)	(\$1.14)	(\$1.65)	(\$2.58)
<i>Incremental Capital Revenue Requirement</i>	\$1.91	\$2.11	\$3.15	\$4.62
<i>LED Fixture Rate Impact - Company Owned Streetlights</i>	\$0.15	\$0.06	\$0.59	\$1.13
<b>Proposed LED Monthly Rate Per Streetlight – Overhead</b>	<b>\$9.59</b>	<b>\$10.21</b>	<b>\$13.36</b>	<b>\$16.63</b>
<b>BILL IMPACT (Estimated)</b>	<b>100W/39W</b>	<b>150W/65W</b>	<b>250W/155W</b>	<b>400W/246W</b>
<b>Current HPS Monthly Average Bill Per Streetlight - Overhead</b>	<b>\$10.34</b>	<b>\$11.46</b>	<b>\$15.12</b>	<b>\$19.19</b>
<i>LED Fixture Rate Impact - Company Owned Streetlights</i>	\$0.15	\$0.06	\$0.59	\$1.13
<i>Fuel Clause Savings Estimate <sup>1</sup></i>	(\$0.60)	(\$0.81)	(\$1.17)	(\$1.82)
<b>Total Monthly Bill Impact</b>	<b>(\$0.45)</b>	<b>(\$0.75)</b>	<b>(\$0.58)</b>	<b>(\$0.69)</b>
<b>Proposed LED Monthly Average Bill Per Streetlight – Overhead</b>	<b>\$9.89</b>	<b>\$10.70</b>	<b>\$14.54</b>	<b>\$18.50</b>
<i>Percentage Savings (increase)</i>	4.4%	6.6%	3.9%	3.6%
<i>Memo: LED Fixture Rate Impact - Pre Pay Option</i>	(\$1.76)	(\$2.05)	(\$2.56)	(\$3.49)

<sup>1</sup> Includes impact to resource adjustment

As the table illustrates, the Company expects LED streetlights will decrease maintenance expenses. The Company will no longer need to change a lamp approximately every five to six years or replace malfunctioning ballasts or broken glass lamp coverings, which are common maintenance requirements of HPS fixtures. The eliminated maintenance translates into a saving of \$0.91 per month per light, as shown in the Maintenance Savings line above.

The Base Rate Energy and Demand Charge Savings shown in the table are the result of the reduction in energy and demand usage when HPS fixtures are replaced with

LEDs, which reduces the allocation of system resources to street lighting. This results in a reduction in the proposed LED Street Lighting System Service monthly rate.

In spite of their associated energy and maintenance savings, the LED fixtures are more expensive than their HPS counterparts, and hence require an incremental investment. Therefore the revenue requirement associated with the LED fixture is higher than that of the HPS fixture, which is included in the table above as Incremental Capital Revenue Requirement. The higher revenue requirement associated with the capital cost does offset a large portion of the energy and maintenance savings. The result is a slight increase in the monthly rate, shown as LED Fixture Rate Impact - Company Owned Streetlights in the table, but we expect the HPS fixture replacement will still result in an overall bill savings for the when combined with fuel savings. The anticipated Bill Impact is estimated in the bottom section of Table 2.

The lower energy usage of the LED fixtures, in addition to yielding some base rate energy savings for customers as described above, results in a reduction in the fuel clause cost. This impact is not included in the monthly rate, but customers will see the saving reflected in the fuel clause cost line of their bill. This is illustrated in the Fuel Clause Savings Estimate line in the Bill Impact section of the table.

In addition, fuel clause costs account for only approximately 10 percent of the street lighting bill, so these cost savings impact only 10 percent of the bill. Therefore, if LED streetlights achieve a 60 percent reduction in usage, we could expect a 6 percent bill reduction. When factoring in the fuel savings driven by LED streetlights, along with the small increase in the monthly rate, the Company expects customers to see an average of four to five percent savings on their bill. A more detailed version of the rate design calculations can be found in Attachment A.

### *3. Pricing*

As explained above, customers participating in this service will pay a monthly rate that reflects savings in energy costs and maintenance, which help to offset increased capital costs. The proposed LED Streetlight charges are provided in Table 3 below.<sup>3</sup>

---

<sup>3</sup> The Company also proposes to make LED rates available to any cobra-head assets customers have invested upfront costs in through the Pre-Pay Option at \$4.38, \$4.89, \$6.27 and \$7.89 for the 100W, 150W, 250W and 400W equivalent replacement levels, respectively.

**Table 3**  
**Proposed Monthly Rate per LED Streetlight**

<b>Designation of Lamps</b>	<b>Standard Service</b>	
	<b>Overhead</b>	<b>Underground</b>
39W	\$9.59	\$18.31
65W	\$10.21	\$18.92
155W	\$13.36	\$21.87
246W	\$16.63	\$24.85

**C. Proposed Implementation of the Program**

If approved, we plan to offer the LED option for all street lighting system service customers in our Minnesota service territory over approximately the next five years. We have established a tentative plan for installing the LED fixtures that will follow our existing re-lamping schedule as guidance in order to manage costs, but will also maintain flexibility to adjust the schedule if necessary. The program is voluntary, meaning we will offer the service to all customers scheduled for re-lamping, with the option to opt-out if they want. As customers convert to LED fixtures via the System Service or the metered Energy Service, the Company will work to make the transition as seamless as possible from an internal accounting and billing perspective.

**D. Proposed Tariff Sheet**

In this filing, the Company proposes to make the LED Street Lighting rate a permanent offering. Our proposed LED Street Lighting System Service Tariff Sheet is included as Attachment B to this Petition. An example bill illustrating the LED Street Lighting Rate is also enclosed with this Petition as Attachment C.

**E. Implementation and Ongoing Operation**

The Company proposes that the LED Street Lighting System Service Tariff become effective and available to customers 90 days after the Commission Order is issued.

**CONCLUSION**

The Company respectfully requests that the Commission approve the addition of an LED option to our existing Street Lighting System Service. This rate addition was indicated in our LED Streetlight Pilot Project Docket and responds to increasing customer interest in LED street lighting options.

Dated: October 15, 2015

Northern States Power Company

STATE OF MINNESOTA  
BEFORE THE  
MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
John Tuma	Commissioner
Betsy Wergin	Commissioner

IN THE MATTER OF A PETITION OF  
NORTHERN STATES POWER COMPANY  
FOR APPROVAL OF A LIGHT EMITTING  
DIODE (LED) STREETLIGHT RATE

DOCKET NO. E002/M-15-\_\_\_

**PETITION**

**SUMMARY OF FILING**

Please take notice that on October 15, 2015, Northern States Power Company, doing business as Xcel Energy, filed with the Minnesota Public Utilities Commission a Petition for approval of a Light Emitting Diode (LED) Street Lighting Rate. This rate would be an addition to our existing Street Lighting System Service, to introduce LED lighting to the list of options provided under that Tariff.

## Company-Owned LED Street Lighting System Service Rate Design

Rate Code A30 - 29 Year LARR%

### Monthly LED Street Lighting Rate Design Summary

	NSP-MN			
	Per HPS/LED Street Light Equivalent			
	100W/39W	150W/65W	250W/155W	400W/246W
<b>Current HPS Street Lighting Overhead Rates</b>	<b>\$9.44</b>	<b>\$10.15</b>	<b>\$12.77</b>	<b>\$15.50</b>
<i>Maintenance Expense Impact (Savings)</i>	(\$0.91)	(\$0.91)	(\$0.91)	(\$0.91)
System Allocation Expense Savings	(\$0.85)	(\$1.14)	(\$1.65)	(\$2.58)
<i>Incremental Capital Revenue Requirement</i>	\$1.91	\$2.11	\$3.15	\$4.62
Net LED SL Fixture Rate Impact - Company Owned Street Lights	\$0.15	\$0.06	\$0.59	\$1.13
<b>Proposed Monthly LED SL Overhead Rates</b>	<b>\$9.59</b>	<b>\$10.21</b>	<b>\$13.36</b>	<b>\$16.63</b>
<b>Current HPS Monthly Average Bill Per Street Light - Overhead</b>	<b>\$10.34</b>	<b>\$11.46</b>	<b>\$15.12</b>	<b>\$19.19</b>
LED Fixture Impact on HPS Street Lighting Rate	\$0.15	\$0.06	\$0.59	\$1.13
Fuel & Resource Adj. Savings Estimate	(\$0.60)	(\$0.81)	(\$1.17)	(\$1.82)
Total Monthly Bill Impact (savings)	(\$0.45)	(\$0.75)	(\$0.58)	(\$0.69)
<b>Proposed LED Monthly Average Bill Per Street Light - Overhead</b>	<b>\$9.89</b>	<b>\$10.70</b>	<b>\$14.54</b>	<b>\$18.50</b>
<i>Percentage Savings (increase)</i>	4.4%	6.6%	3.9%	3.6%
<i>Memo: LED Fixture Rate Impact - Pre Pay Option</i>	(\$1.76)	(\$2.05)	(\$2.56)	(\$3.49)

### Annual Impact of LED Fixtures on the A30 Street Lighting System Service Rate

	NSP-MN			
	Per HPS/LED Street Light Equivalent			
	100W/39W	150W/65W	250W/155W	400W/246W
<b>Maintenance Savings</b>				
Relamp Expense Savings	\$4.57	\$4.57	\$4.57	\$4.57
Service Order Expense Savings	\$6.36	\$6.36	\$6.36	\$6.36
Total Maintenance Savings	\$10.93	\$10.93	\$10.93	\$10.93
<i>Monthly Savings (increase)</i>	\$0.91	\$0.91	\$0.91	\$0.91
<b>System Allocation Cost Savings</b>				
Base Rate Energy Charge Savings	\$7.18	\$9.66	\$13.96	\$21.80
Demand Related Expense Savings	\$3.02	\$4.08	\$5.89	\$9.19
Total Maintenance Savings	\$10.20	\$13.74	\$19.85	\$30.99
<i>Monthly Savings (increase)</i>	\$0.85	\$1.14	\$1.65	\$2.58
<b>Incremental Capital Revenue Requirement</b>	(\$22.94)	(\$25.34)	(\$37.81)	(\$55.49)
<i>Monthly Savings (increase)</i>	(\$1.91)	(\$2.11)	(\$3.15)	(\$4.62)
<b>LED SL Base Rate Savings (Increase)</b>	<b>(\$1.81)</b>	<b>(\$0.67)</b>	<b>(\$7.03)</b>	<b>(\$13.57)</b>
<i>Monthly Savings (increase)</i>	(\$0.15)	(\$0.05)	(\$0.59)	(\$1.12)
<b>Fuel &amp; Resource Adj. Savings Estimate</b>	<b>\$7.20</b>	<b>\$9.70</b>	<b>\$14.00</b>	<b>\$21.86</b>
<i>Monthly Savings (increase)</i>	\$0.60	\$0.81	\$1.17	\$1.82
<b>Annual Bill Savings - LED Street Lights</b>	<b>\$5.39</b>	<b>\$9.03</b>	<b>\$6.97</b>	<b>\$8.29</b>
<i>Monthly Savings (increase)</i>	\$0.45	\$0.76	\$0.58	\$0.70

**Redline**

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**STREET LIGHTING SYSTEM SERVICE**  
**RATE CODE A30**

Section No. 5  
~~21st~~22nd Revised Sheet No. 74

**AVAILABILITY**

Available for year-round illumination of public streets, parkways, and highways by High Pressure Sodium (HPS), ~~or Metal Halide~~ or Light Emitting Diode (LED) electric lamps in luminaires supported on poles, where the facilities for this service are furnished by Company. Underground Service under this schedule is limited to areas having a Company owned underground electric distribution system. Standard Service includes a monthly payment for the lighting system cost. Pre-Pay Option requires customer payment for the lighting system cost before establishing service.

I  
TN

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and / or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

**RATE**

Designation of Lamp	Monthly Rate Per Luminaire				Pre-Pay Option
	Standard Service			Pre-Pay Option	
	Overhead	Underground	Decorative		
70W High Pressure Sodium	\$8.95	\$17.67	--	\$5.50	
100W High Pressure Sodium	\$9.44	\$18.16	\$28.16	\$6.14	
150W High Pressure Sodium	\$10.15	\$18.87	\$29.25	\$6.94	<u>R</u>
200W High Pressure Sodium*	\$11.89	--	--	--	
250W High Pressure Sodium	\$12.78	\$21.29	\$31.11	\$8.83	<u>R</u>
400W High Pressure Sodium	\$15.50	\$23.72	\$33.36	\$11.38	
175W Metal Halide	\$13.86	\$25.51	\$33.36	\$12.47	<u>I</u>
<u>39W Light Emitting Diode</u>	<u>\$9.59</u>	<u>\$18.31</u>	<u>--</u>	<u>\$4.38</u>	<u>N</u>
<u>65W Light Emitting Diode</u>	<u>\$10.21</u>	<u>\$18.92</u>	<u>--</u>	<u>\$4.89</u>	<u>N</u>
<u>155W Light Emitting Diode</u>	<u>\$13.36</u>	<u>\$21.87</u>	<u>--</u>	<u>\$6.27</u>	<u>DN</u>
<u>246W Light Emitting Diode</u>	<u>\$16.63</u>	<u>\$24.85</u>	<u>--</u>	<u>\$7.89</u>	<u>N</u>

\*Closed to new customers

**PRE-PAY OPTION SURCHARGE**

A monthly surcharge per luminaire of 0.2% applies to the amount the purchase price exceeds \$1,200.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

(Continued on Sheet No 5-74.1)

Date Filed: ~~11-04-13~~09-01-15 By: Christopher B. Clark Effective Date: ~~11-01-15~~  
 President, Northern States Power Company, a Minnesota corporation  
 Docket No. E002/~~GR-13-868~~M-15-xxx Order Date: ~~08-20-15~~



**Clean**

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**STREET LIGHTING SYSTEM SERVICE  
 RATE CODE A30**

Section No. 5  
 22nd Revised Sheet No. 74

**AVAILABILITY**

Available for year-round illumination of public streets, parkways, and highways by High Pressure Sodium (HPS), Metal Halide or Light Emitting Diode (LED) luminaires supported on poles, where the facilities for this service are furnished by Company. Underground Service under this schedule is limited to areas having a Company owned underground electric distribution system. Standard Service includes a monthly payment for the lighting system cost. Pre-Pay Option requires customer payment for the lighting system cost before establishing service.

T  
 TN

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and / or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

**RATE**

Designation of Lamp	Monthly Rate Per Luminaire				Pre-Pay Option
	Standard Service				
	Overhead	Underground	Decorative		
70W High Pressure Sodium	\$8.95	\$17.67	--	\$5.50	
100W High Pressure Sodium	\$9.44	\$18.16	\$28.16	\$6.14	
150W High Pressure Sodium	\$10.15	\$18.87	\$29.25	\$6.94	
200W High Pressure Sodium*	\$11.89	--	--	--	
250W High Pressure Sodium	\$12.78	\$21.29	\$31.11	\$8.83	
400W High Pressure Sodium	\$15.50	\$23.72	\$33.36	\$11.38	
175W Metal Halide	\$13.86	\$25.51	\$33.36	\$12.47	
39W Light Emitting Diode	\$9.59	\$18.31	--	\$4.38	
65W Light Emitting Diode	\$10.21	\$18.92	--	\$4.89	
155W Light Emitting Diode	\$13.36	\$21.87	--	\$6.27	
246W Light Emitting Diode	\$16.63	\$24.85	--	\$7.89	

T  
 N  
 N  
 N  
 N

\*Closed to new customers

**PRE-PAY OPTION SURCHARGE**

A monthly surcharge per luminaire of 0.2% applies to the amount the purchase price exceeds \$1,200.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

(Continued on Sheet No 5-74.1)

Date Filed: 09-01-15 By: Christopher B. Clark Effective Date:  
 President, Northern States Power Company, a Minnesota corporation  
 Docket No. E002/M-15-xxx Order Date:

NORTHERN STATES POWER COMPANY

Page 1 of 2



MAILING ADDRESS	ACCOUNT NUMBER	DUE DATE	
J. SMITH 5555 MAIN STREET CITY MN 55XXX-XXXX	XX-XXXXXXX-X	05/18/2015	
	STATEMENT NUMBER	STATEMENT DATE	AMOUNT DUE
	XXXXXXXXX	4/09/2015	\$1036.46

**QUESTIONS ABOUT YOUR BILL?**

See our website: xcelenergy.com  
 Email us at: Customerservice@xcelenergy.com  
 Please Call: 1-800-481-4700  
 Hearing Impaired: 1-800-895-4949  
 Fax: 1-800-311-0050  
 Or write us at: XCEL ENERGY  
 PO BOX 8  
 EAU CLAIRE WI 54702-0008

**SUMMARY OF CURRENT CHARGES** (detailed charges begin on page 2)

Other Recurring Charges	\$1,036.46
<b>Current Charges</b>	<b>\$1,036.46</b>

**ACCOUNT BALANCE**

Previous Balance	\$1,020.29
Payment Received	Check 03/19
	-\$1,020.29 CR
Balance Forward	\$0.00
Current Charges	\$1,036.46
<b>Amount Due</b>	<b>\$1,036.46</b>

**INFORMATION ABOUT YOUR BILL**

Thank you for your payment

RETURN BOTTOM PORTION WITH YOUR PAYMENT - PLEASE DO NOT USE STAPLES, TAPE OR PAPER CLIPS



ACCOUNT NUMBER	DUE DATE	AMOUNT DUE	AMOUNT ENCLOSED
XX-XXXXXXX-X	05/18/2015	\$1036.46	

To avoid a late pay charge of 1% of the unpaid balance,  
 payment of total amount must be received by due date.  
 Make your check payable to XCEL ENERGY

MAY						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

----- manifest line -----

J. SMITH  
 5555 MAIN STREET  
 CITY MN 55XXX-XXXX

XCEL ENERGY  
 P.O. BOX 9477  
 MPLS MN 55484-9477



MAILING ADDRESS	ACCOUNT NUMBER	DUE DATE	
J. SMITH 5555 MAIN STREET CITY MN 55XXX-XXXX	XX-XXXXXXX-X	05/18/2015	
	STATEMENT NUMBER	STATEMENT DATE	AMOUNT DUE
	XXXXXXXXXX	04/09/2015	<b>\$1036.46</b>

**OTHER RECURRING CHARGES DETAILS**

INVOICE NUMBER:	XXXXXXXXXX
ADDRESS:	5555 Main St City, MN 55XXX-XXXX

DESCRIPTION	Usage Units	Unit Charge	Qty	Charge
Install Number XXXXXX 03/08/15 to 04/07/15 39WATT CLASS LED CO OWNED OH Street Lgt Co Owned		\$9.59	78	\$748.02
Install Number XXXXXX 03/08/15 to 04/07/15 65WATT CLASS LED CO OWNED OH Street Lgt Co Owned		\$10.21	18	\$183.78
Install Number XXXXXX 03/08/15 to 04/07/15 155WATT CLASS LED CO OWNED OH Street Lgt Co Owned		\$13.36	3	\$40.08
Install Number XXXXXX 03/08/15 to 04/07/15 246WATT CLASS LED CO OWNED OH Street Lgt Co Owned		\$16.63	1	\$16.63
Fuel Cost Charge	1,706 kWh	\$0.02098		\$35.80
Resource Adjustment				1.89
<b>Sub-total</b>				\$1,026.20
City Fees @1.00%				\$10.26
<b>Total</b>				\$1,036.46

## CERTIFICATE OF SERVICE

I, Carl Cronin, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

xx electronic filing

### **XCEL ENERGY MISCELLANEOUS ELECTRIC SERVICE LIST**

Dated this 15<sup>th</sup> day of October 2015

/s/

---

Carl Cronin  
Regulatory Administrator

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St  Duluth, MN 558022191	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
James J.	Bertrand	james.bertrand@leonard.com	Leonard Street & Deinard	150 South Fifth Street, Suite 2300  Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Michael	Bradley	N/A	Moss & Barnett	150 S. 5th Street, #1200  Minneapolis, MN 55402	Paper Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Jeffrey A.	Daugherty	jeffrey.daugherty@centerpointenergy.com	CenterPoint Energy	800 LaSalle Ave  Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Ian	Dobson	ian.dobson@ag.state.mn.us	Office of the Attorney General-RUD	Antitrust and Utilities Division 445 Minnesota Street, BRM Tower St. Paul, MN 55101	Electronic Service 1400	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500  Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Michael	Hoppe	il23@mtn.org	Local Union 23, I.B.E.W.	932 Payne Avenue  St. Paul, MN 55130	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law	2265 Roswell Road Suite 100 Marietta, GA 30062	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Richard	Johnson	Rick.Johnson@lawmoss.com	Moss & Barnett	150 S. 5th Street Suite 1200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Mark J.	Kaufman	mkaufman@ibewlocal949.org	IBEW Local Union 949	12908 Nicollet Avenue South  Burnsville, MN 55337	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Thomas	Koehler	TGK@IBEW160.org	Local Union #160, IBEW	2909 Anthony Ln  St Anthony Village, MN 55418-3238	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W  Farmington, MN 55024	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E  St. Paul, MN 55106	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
David W.	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	Suite 300 200 South Sixth Street Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750  St. Paul, MN 55101	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd  St. Paul, MN 55102	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ron	Spangler, Jr.	rlspangler@otpc.com	Otter Tail Power Company	215 So. Cascade St. PO Box 496 Fergus Falls, MN 565380496	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Byron E.	Starns	byron.starns@leonard.com	Leonard Street and Deinard	150 South 5th Street Suite 2300 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
James M.	Strommen	jstrommen@kennedy- graven.com	Kennedy & Graven, Chartered	470 U.S. Bank Plaza 200 South Sixth Street Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
SaGonna	Thompson	Regulatory.records@xcele nergy.com	Xcel Energy	414 Nicollet Mall FL 7  Minneapolis, MN 554011993	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Lisa	Veith	lisa.veith@ci.stpaul.mn.us	City of St. Paul	400 City Hall and Courthouse 15 West Kellogg Blvd. St. Paul, MN 55102	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric