COMMERCE DEPARTMENT

October 31, 2017

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101-2147

RE: **Response Comments of the Minnesota Department of Commerce, Division of Energy Resources**
Docket No. E017/M-17-152

Dear Mr. Wolf:

Attached are the Response Comments of the Minnesota Department of Commerce, Division of Energy Resources (Department) in the following matter:

> Otter Tail Power Company's Petition for Approval of the Company's Proposed LED Street and Area Lighting Rate Schedule 11.07 and Associated LED Implementation Plan.

The Department recommends that the Minnesota Public Utilities Commission (Commission) **approve, with modification,** Otter Tail Power's Petition. The Department is available to answer any questions the Commission may have.

Sincerely.

/s/ DANIELLE WINNER
Rates Analyst

DW/lt
Attachment

Before the Minnesota Public Utilities Commission

Response Comments of the Minnesota Department of Commerce
Division of Energy Resources

Docket No. E017/M-17-152

I. BACKGROUND

On February 22, 2017, Otter Tail Power (Otter Tail, OTP or the Company) filed with the Minnesota Public Utilities Commission (Commission) its *Petition for Approval of the Company's LED Street and Area Lighting Rate Schedule 11.07 and Associated LED Implementation Plan* (Petition). In this Petition, the Company proposed to replace all Company-owned street and area lights throughout OTP's Minnesota service territory from high-intensity discharge (HID) lights to equivalent light-emitting diodes (LEDs) over a five-year period starting in 2017. This proposal entailed opening a new rate schedule, closing an existing rate schedule, and recovering associated costs through different mechanisms: tariffed rates, the Conservation Improvement Program's (CIP) Conservation Cost Recovery Adjustment (CCRA), and a future rate case. Otter Tail indicated that its proposal would impact customers' monthly lighting charges slightly, but would be revenue neutral to the Company.

On June 5, 2017, the Minnesota Department of Commerce, Division of Energy Resources (Department) filed Comments supporting Otter Tail's proposed rates for the LED lights, which would allow continued cost recovery of the Section 11.04 revenue requirement through the Section 11.07 rates, even though the costs of LED lights are lower. However, the Department raised concerns about the treatment of retirement expense, disposal expense, and undepreciated asset balance of the existing lights; the Department noted that representative amounts of these costs are already being recovered in base rates. The Department also asked for clarification as to whether the administrative expenses proposed for recovery through the CIP tracker were for internal or external labor.

On July 10, 2017, Otter Tail filed Reply Comments. In those Comments, Otter Tail changed its proposal to address the Department's concerns. The Company proposed to roll the retirement expense, disposal expense, and undepreciated asset balance into accumulated depreciation, which would then be factored into future depreciation rates, as per the typical treatment of these costs. In addition to this change, the Company proposed to recover a rate of return of 7.5056 percent on the accumulated depreciation of the new lights through the CIP tracker. The Company clarified that the administrative expenses were for both internal and external labor; the internal labor was for an "existing" employee.

Following up on those reply comments, the Department and Otter Tail spoke by phone to clarify certain expenses. After this conversation, the Department concluded that Otter Tail incurred unexpected retirement cost overruns from the old lights, and therefore the retirement and disposal costs of the old lights are not currently being recovered. Evidence of these cost overruns is provided in Attachments A and B to these Comments; Attachment A is an email exchange between Otter Tail and the Department, and Attachment B is Otter Tail's master lighting spreadsheet.

On August 31, 2017, the Department recommended filed Response Comments, where the Department recommended that the Company be allowed to recover their unexpected retirement and disposal cost overruns, similar to what was permitted for Xcel Energy in the retirement of the Black Dog coal plant in Xcel's 2012 General Rate Case (Docket No. E002/GR-12-961). The Department also recommended that costs of external administrative labor be allowed recovery through the CIP tracker, but that internal labor for the existing employee be denied, as these costs were already factored into rates. The Department did not recommend that Otter Tail be permitted to recover a return on the costs of the new lights. However, given Statute § 216B.03, which directs the Commission to "set rates to encourage energy conservation," the Department stated that it did not oppose allowing Otter Tail recovery of its rate of return on the *incremental* cost of the new LED lights over the undepreciated value of the old, less efficient lights.

On September 28, 2017, Otter Tail filed Response Comments. In those Comments, Otter Tail updated its internal administrative costs, clarifying that rather than $64,460/year for internal employee labor, the Company's actual expenses are projected to be only $45,000/year, with $20,000/year for the existing employee labor and $25,000/year for incremental general communications/advertising. Further, the Company calculated an expected return on the incremental costs of the new lights over the undepreciated costs of the old lights. Finally, the Company clarified that it may have a start date in 2018 rather than 2017, depending on when the Commission's Order is issued.

The Department now provides these Response Comments.

II. DEPARTMENT ANALYSIS

A. ADMINISTRATIVE COSTS

The Department accepts OTP's revised figure of $45,000 for internal labor costs. New internal costs used for promotional or advertising would not have been captured during the rate case, and so the Department does not object to the recovery of these costs. However, a representative amount for an existing employee's labor would have been captured during the rate case (unless, for example, OTP could demonstrate that an employee who was part-time at the time of the rate case became full-time as a result of this program). Therefore, labor costs for the existing employee is already being recovered and should not be permitted to be recovered again through the CIP tracker, as it would constitute double recovery. As a result, the Department recommends that the Commission allow recovery of the following administrative costs: $100,000/year for an outside vendor and $25,000/year in incremental advertising costs.

B. RETURN ON INCREMENTAL COSTS OF NEW LIGHTS

Otter Tail proposed a schedule for earning a rate of return on the incremental costs of the new lights over the undepreciated value of the old lights. The Company first determined that the total capital cost of the new lights was $5,089,635 and the Net Book Value (undepreciated value) of the old lights was $2,638,557. The Company used a Net Book Value date of June 30, 2016 because the Net Book Value on this date was close to the value included in the Company's 2016 test year during General Rate Case (Docket No. E017/GR-15-1033). The Company then assumed that $1,017,927 in new lights would be installed each year and $527,711 of old lights would be retired each year; OTP accumulated these values over the five year period. Based on Otter Tail's assertion that the Company would earn $36,794 the first year and $183,968 the fifth year, the Department produced the following table to represent the Company's proposal:

Table 1. Otter Tail's Proposed Rate of Return on Incremental Cost of New Lights, as Understood by the Department

		Year 1	Year 2	Year 3	Year 4	Year 5
A	Cost of New Lights, Cumulative	$1,017,927	$2,035,854	$3,053,781	$4,071,708	$5,089,635
B	Value of Retired Lights, Cumulative	$527,711	$1,055,422	$1,583,133	$2,110,844	$2,638,555
C [A – B]	Incremental Cost of New Lights	$490,216	$980,432	$1,470,648	$1,960,864	$2,451,080
D	Rate of Return	7.5056%	7.5056%	7.5056%	7.5056%	7.5056%
E [C*D]	Rate of Return on Incremental Costs of New Lights	$36,794	$73,587	$110,381	$147,174	$183,968

The Department generally supports the Company's methodology. However, the Department notes that to find the true incremental cost of the new lights over the old lights, OTP's calculations should also account for the passage of time for both sets of lights. The Department therefore requests that Otter Tail rerun its calculation, accounting for the effect of time on both the new lights and old lights, and provide its final result in a table in response to these comments.

C. TIMELINE

The Department is not opposed to Otter Tail changing the project's timeline to correspond to the Commission's final Order on this docket.

III. CONCLUSIONS AND RECOMMENDATIONS

The Department concludes that the Company's proposal is reasonable, save the $20,000/year of existing employee labor, and the methodology used to calculate the incremental cost between the old and new lights. Therefore, the Department recommends that the Commission deny the Company's request to earn $20,000/year for existing employee labor and approve the Company's request to earn a rate of return on the incremental costs of the new lights over the old lights, once the calculation is modified to account for the passage of time.

These updates mean that the Department recommends that the Commission approve Otter Tail's proposed LED Street and Area Lighting rate schedule 11.07, modified to allow recovery of the following costs through the CIP tracker, as they are incurred.

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**5-Year Total**
CIP Program Evaluation	$3,000	$3,000	$3,000	$3,000	$3,000	$15,000
CIP Rebate	$178,572	$178,572	$178,572	$178,572	$178,572	$892,859
Administrative Costs	$125,000	$125,000	$125,000	$125,000	$125,000	$625,000
Retirement and Disposal Costs	$432,803	$432,803	$432,803	$432,803	$432,803	$2,164,015
Return on Incremental Costs of New Lights	TBD	TBD	TBD	TBD	TBD	TBD
Total Recovery through CIP Tracker	TBD	TBD	TBD	TBD	TBD	TBD

Further, the Department recommends that the Commission condition its approval on the following:

- This approval is capped at dollar amounts and time periods shown in the table above;
- OTP must track and report these costs in the Company's annual CIP tracker filings, and must account for the CIP tracker recovery of the retirement and disposal costs in its depreciation studies and next rate case.

/lt

From:	Grenier, Jason
To:	Winner, Danielle (COMM)
Cc:	Fabre, Jon; Demmer, Loyal
Subject:	RE: LED lighting
Date:	Wednesday, August 09, 2017 1:10:21 PM
Attachments:	2016 OTP Lighting Postings.xlsx

Hi Danielle,

I worked with Loyal Demmer our Depreciation Accountant on putting some answers together to your questions.

1. **Provide the amount of cost of removal less salvage estimated in most recent deprecation filing (provide reference);**

In Otter Tails, most recent approved depreciation filing (Docket E-017/D-16-729) as of books date 12/31/2015, Otter Tail provided in Statement G, companywide lighting account plant in service balances of $4,482,178 for 371.20 – Lighting Installations on Customer Premises and $5,156,980 for 373.00 – Street Lighting and Signal Systems. Then later in Statement H, it provides companywide lighting account, accumulated depreciation reserve balances of $1,091,142 for 371.20 – Lighting Installations on Customer Premises and $2,775,730 for 373.00 – Street Lighting and Signal Systems. Otter Tail does not track, nor does the depreciation filing statements provided the amount of cost of removal less salvage estimated to be in the accumulated depreciation reserve. Historically, for both accounts the depreciation accrual percentage has included a salvage and cost of removal component. Additionally, actual cost of removal and salvage postings have taken place interposing into these accounts during the history of the Company, which together with the regular investment depreciation accruals are comingled in the balance of the respective accumulated depreciation reserve accounts for these accounts. Otter Tail is not able to distinguish from its accumulated depreciation reserve records, or from its depreciation filings the amount of cost of removal less salvage in the accumulated depreciation reserves for these accounts.

2. **Provide actual costs of removal less salvage to date (through June 30 or July 31, 2017); and**

The last approved depreciation filing for Otter Tail (Docket E-017/D-16-729) was for books dated 12/31/2015. Otter Tail provides below 2016 and YTD 7/31/2017 accumulated depreciation reserve postings in the tables below:

2016"

Accumulated Depreciation - Lighting Plant in Service (Companywide):		Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance
371.20	Lighting Installations of Customer Premises	$1,091,142.12	$180,549.85	$(226,928.42)	$(9,301.30)	$11,561.21	$-	$1,047,023.46
373.00	Street Lighting	$2,775,730.02	179,668.15	(102,472.35)	(10,418.70)	9,984.06	-	$2,852,491.18

2017 – YTD July

Accumulated Depreciation - Lighting Plant in Service (Companywide):		Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance
371.20	Lighting Installations of Customer Premises	$1,047,023.46	$113,868.38	$(76,676.66)	$(5,139.80)	$8,920.42	$-	$1,087,995.80
373.00	Street Lighting	$2,852,491.18	112,860.03	(48,007.95)	(12,923.63)	5,126.52	-	$2,909,546.15
		$3,899,514.64	$226,728.41	$(124,684.61)	$(18,063.43)	$14,046.94	$-	$3,997,541.95

3. **Provide actual costs of removal less salvage to date (through June 30 or July 31, 2017); and**

See Attachment, tab "2017 YTD July Lighting Postings".

4. **Provide estimate of any remaining costs of removal less salvage – including any competitive bid or contractor information that support this.**

Unfortunately at this time Otter Tail has not received a competitive bid for the "removal less salvage" costs. For the original LED filing the strategy was to just use actual costs from retirement to be recovered through the CIP tracker. An estimate of the costs to remove the exiting fixtures was calculated at $58.16/fixture using our work order estimating system. An additional 20% of capital material costs was included for disposal of existing fixtures. I have recently reached out to a contractor to get an actual bid on the disposal costs. In the past, our accounting realized a salvage value, but we know going forward there is no value and instead an expense. Going forward our Net Salvage will be an expense.

A solution could be as follows…..Please see cell F35 and F36 of the attached spreadsheet. You will see a in F35 an estimated Cost of Removal in 2016 of $12.70 per a unit, this is based on our actual retirement numbers. The unit costs should be a good representation of what was included in our 2016 test year for our current Rate Case. These values represent our lighting retirement expenses (included in depreciation expense) which will be recovered through our Rate Case rates effective October/November 2017. In cell G35 we show a Salvage credit of $13.87. The Net Salvage value is a credit of $1.18/unit. We believe rate approved in our current rate case reflect these numbers and will recover these costs. Our goal through this exercise is to determine how much incremental costs we have and can that be recovered through the CIP tracker? This would ensure a full roll-out of the program as well as a fair cost-recovery.

We know going forward we will not gain the $13.87 of salvage value credit. We are facing a paradigm shift in the technology which means the existing fixture will no longer provide value to us. Since the exiting lights are an old technology and inefficient, they are now likely a substantial cost to dispose. At this time we don't know for certain what the Disposal Expenses will be. Included in our original filing is an estimated 20% of the capital material costs, which is $51.66/fixture for disposal. The difference of a salvage value credit of $13.87 (built into retail rates this fall) and a new salvage expense estimated at $51.66, is an overall cost of $65.53/fixture. This would be the incremental costs of disposing the existing lights above what our rate case rates will collect. Of course we would want to use the actual costs of disposing of the lights. I propose we use the $51.66/fixture and then have a true-up annually based on actual disposal costs. Once we do this for a year we could use the new disposal cost/fixture rate for the next year and then include a true-up. This way we would not over or under collect. This could all be included in our annual CIP status report with a schedule showing transactions.

Our rate case rates would continue to collect the $12.70/fixture for Cost of Removal. The removal costs of the existing lights would be collected over the next 16 years, however we would retire them over the next 5 years. We would fall a bit short on full recovery of costs here, but I think we can give that one up.

I still believe getting a return of 7.5% on the material installed is justified, as discussed in my last formal reply comments. Recovering this through the CIP tracker mechanism until our next rate case would make OTP whole on the material investment. The items we would not gain full recovery on is the capital labor, administrative labor from non-CIP employees, and part of the stranded costs I mentioned above as the existing asset is depreciated out over 16 years instead of an accelerated 5 years.

See attachment for more details.

I will be out of office through the 17th. Please don't hesitate to call me with questions at 218-770-0080. I don't want my schedule to slow this project down. Our team of Jon Fabre and Loyal Demmer can also assist on questions. I look forward to hearing your thoughts.

Take care.

Jason

From: Winner, Danielle (COMM) [mailto:danielle.winner@state.mn.us]
Sent: Wednesday, August 02, 2017 9:42 AM
To: Grenier, Jason <jgrenier@otpco.com>
Subject: RE: LED lighting

Hi Jason-
All right, maybe ignore my last request. Sounds like it was too vague. The accountants said they actually want the following:

1. Provide the amount of cost of removal less salvage estimated in most recent deprecation filing (provide reference);
2. Confirm that the cost of removal less salvage was the same in the rate case (if not what was the change);
3. Provide actual costs of removal less salvage to date (through June 30 or July 31, 2017); and
4. Provide estimate of any remaining costs of removal less salvage – including any competitive bid or contractor information that support this.

I'm also sorry for the messiness- my understanding is that there are two main ways this filing is different from other CIP projects: it involves capital costs (rather than just regular expenses), and the installs directly inform the lighting rates (unlike other CIP installs that just get recovered through the CIP rider). Really, the program-level stuff is not the kind of thing our team gets involved in, so I don't think you should be having to worry about this many hurdles in the future. For what it's worth, though, this is my favorite filing I've worked on so far in the 14 months I've been in this job!

Thank you so much for your help,

Danielle

From: Winner, Danielle (COMM)
Sent: Tuesday, August 01, 2017 11:50 AM
To: 'Grenier, Jason' <jgrenier@otpco.com>
Subject: RE: LED lighting

Awesome, thanks Jason!

From: Grenier, Jason [mailto:jgrenier@otpco.com]
Sent: Tuesday, August 01, 2017 11:48 AM
To: Winner, Danielle (COMM) <danielle.winner@state.mn.us>
Subject: RE: LED lighting

I am out of the office today, but I will try to track down this information. Thanks for your diligence on this. I wish this one were a bit cleaner. Don't worry, I don't plan to make requests like this a habit. :)

Jason

From: Winner, Danielle (COMM) [mailto:danielle.winner@state.mn.us]
Sent: Tuesday, August 01, 2017 11:29 AM
To: Grenier, Jason <jgrenier@otpco.com>
Subject: RE: LED lighting

Hey Jason-

Hope you're doing well. Okay, I'm hopeful this route (of putting the removal/disposal cost overruns of the old lights in the CIP tracker) may work. Sounds like it's not the preferred way of doing things, but we did let Xcel do something similar back in their 2012 rate case, so I'm going to track that down and try and see if it makes sense as a comparable situation. Can you send me something that shows that the depreciation reserves have been or will be used up, and show that it matches the last depreciation filing?

Also, in the original comments for this docket, as well as in the CIP filing (16-116), there were retirement costs of $229,217/year and disposal costs of $203,585/year, but the most recent spreadsheet you sent listed Costs to Remove Existing Lights as $0/year and Existing Light Disposal Costs at $239,631/year. Can you tell me what changed between these?

Thanks,
Danielle

From: Winner, Danielle (COMM)
Sent: Friday, July 28, 2017 5:13 PM

To: 'Grenier, Jason' <jgrenier@otpco.com>
Subject: RE: LED lighting

All right, I explained to the one accountant that the depreciation reserves are close to 0. He said since that's the case, it's a cost overrun for retirement expenses, and which would not have been built into the revenue requirement from the rate case, and therefore should not be reflected in current rates. I'm going to try and convince the other accountants that we could potentially put those disposal and removal cost overruns into the CIP tracker. The undepreciated costs of the old bulbs would still be rolled into accumulated depreciation, but I think I might be able to convince folks on the removal/disposal front. I'll let you know if I find out anything new before your 10am meeting on Monday.

From: Grenier, Jason [mailto:jgrenier@otpco.com]
Sent: Friday, July 28, 2017 3:57 PM
To: Winner, Danielle (COMM) <danielle.winner@state.mn.us>
Subject: RE: LED lighting

I am in the office now. Yes the former (first) is the one we are proposing. We discussed several methods but ended up with what is in the comments.

Jason

From: Winner, Danielle (COMM) [mailto:danielle.winner@state.mn.us]
Sent: Friday, July 28, 2017 10:24 AM
To: Grenier, Jason <jgrenier@otpco.com>
Subject: LED lighting

Hi Jason-
Hope all is well. Thanks for the spreadsheet. I would definitely appreciate you walking me through it, although I'm in a stakeholder meeting today until about 2. Will you be around after then? If so, I can try giving you a call this afternoon.

In the meantime, I have another question. The comments and a previous email seem to say different things regarding the treatment of retirement costs. The filing says:

"The Company plans to treat the retirement of existing lights in the traditional manner of treatment for any other asset which is retired early. The existing lighting facilities would be removed from their plant in service account balance as well as from its accumulated depreciation reserve. The accumulated depreciation reserve has not been built up enough to fully satisfy the plant in service retirement, which leaves a deficiency in the light account's accumulated depreciation reserve. This deficiency will lower reserve ratios, resulting in higher future depreciation rates throughout the lighting account's remaining life. Under this method, Otter Tail will account for the depreciation changes to its lighting accounts in its next rate case and depreciation filings."

Your old email says:

"Since the existing lights will no longer be depreciated over their full life they become a stranded asset which forces Otter Tail to write off the net book value and associated costs of removal for a loss. We propose to keep the project to a 5-year life, retire the assets off the books as they are physically retired. We would like to move these retirement costs into an account and amortize the costs over 25 years to be recovered as an expense included in our next rate case."

So my understanding is that the first one is what is typically done for group or composite accounting (not recording a loss on the income sheet and instead putting the calculated loss into accumulated depreciation) and the second one is what is more commonly done for unitary accounting (creating a regulatory asset through deferred accounting). Our assumption had been that the lights are accounted for through group accounting, and so should be treated in the first way. Can you verify that this is the case for me?

If you can't tell, I've learned a LOT about accounting recently!
Hope you're doing well,
Danielle

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Response Comments

Docket No. E017/M-17-152

Dated this 31st day of October 2017

/s/Sharon Ferguson

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	Yes	OFF_SL_17-152_M-17-152
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	No	OFF_SL_17-152_M-17-152
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	OFF_SL_17-152_M-17-152
Ian	Dobson	Residential.Utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_17-152_M-17-152
James C.	Erickson	jericksonkbc@gmail.com	Kelly Bay Consulting	17 Quechee St Superior, WI 54880-4421	Electronic Service	No	OFF_SL_17-152_M-17-152
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_17-152_M-17-152
Bruce	Gerhardson	bgerhardson@otpco.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_17-152_M-17-152
Jason	Grenier	jgrenier@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_17-152_M-17-152
Shane	Henriksen	shane.henriksen@enbridge.com	Enbridge Energy Company, Inc.	1409 Hammond Ave FL 2 Superior, WI 54880	Electronic Service	No	OFF_SL_17-152_M-17-152
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-152_M-17-152

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_17-152_M-17-152
Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	OFF_SL_17-152_M-17-152
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-152_M-17-152
David G.	Prazak	dprazak@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_17-152_M-17-152
Larry L.	Schedin	Larry@LLSResources.com	LLS Resources, LLC	332 Minnesota St, Ste W1390 St. Paul, MN 55101	Electronic Service	No	OFF_SL_17-152_M-17-152
Cary	Stephenson	cStephenson@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_17-152_M-17-152
Stuart	Tommerdahl	stommerdahl@otpco.com	Otter Tail Power Company	215 S Cascade St PO Box 496 Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_17-152_M-17-152
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_17-152_M-17-152

Otter Tail Power Company
2016 Depreciation Study
Books: 12/31/2015
Street Lighting Accounts
Source: 2016 Technical Update, Foster Associates

	Statement A			Statement B					Statement C							Statement F		
	Remaining Life	Salvage %	Accrual Rate	12/31/2015 Plant Investment	MN Allocation Factor	MN Portion 12/31/2015 Plant Investment	Annual Depreciation Accrual	MN Depreciation Accrual	**Recorded Reserve**	**Reserve Ratio**	**MN Recorded Reserve**	Computed Reserve	Computed Ratio	Reserve Imbalance	Multiple	Projected Life	Curve Shape	Vintage Group Average Service Life
371.20 Other Private Lighting	16.83	10.0%	3.90%	$ 4,482,178	0.43341119	$ 1,942,626	$ 174,856	$ 75,785	**$ 1,091,142**	**24.34%**	**$ 472,913**	$ 1,081,021	24.12%	$ 10,121	0.93%	23	LO	23.17
373.00 Street Lighting and Signal Systems	15.03	-5.0%	3.40%	5,156,980	0.43341119	2,235,093	175,589	76,102	**2,775,730**	**53.82%**	**1,203,032**	1,843,553	35.75%	932,177	33.58%	22	LO.5	22.55
				$ 9,639,158		$ 4,177,719	$ 350,445	$ 151,887	**$ 3,866,872**	**40.12%**	**$ 1,675,945**	$ 2,924,574	30.34%	$ 942,298	24.37%			
			(1-L-D)/C			(F x G)	(E x F)	(G x I)		**(K / F)**	**(G x K)**		(N / F)	(K - N)	(P / K)			

Otter Tail Power Company
2016 Depreciation Study
Books: 12/31/2016
Street Lighting Accounts
Source: 2016 Technical Update, Foster Associates

	Statement A			Statement B					Statement C							Statement F		
	Remaining Life	Salvage %	Accrual Rate	12/31/2016 Plant Investment	MN Allocation Factor	MN Portion 12/31/2016 Plant Investment	Annual Depreciation Accrual	MN Depreciation Accrual	**Recorded Reserve**	**Reserve Ratio**	**MN Recorded Reserve**	Computed Reserve	Computed Ratio	Reserve Imbalance	Multiple	Projected Life	Curve Shape	Vintage Group Average Service Life
371.20 Other Private Lighting	17.03	10.0%	4.00%	$ 4,786,865	0.43977948	$ 2,105,165	$ 191,495	$ 84,216	**$ 1,047,023**	**21.87%**	**$ 460,459**	$ 1,105,846	23.10%	$ (58,823)	-5.62%	23	LO	23.14
373.00 Street Lighting and Signal Systems	15.13	-5.0%	3.49%	5,464,004	0.43977948	2,402,957	190,662	83,849	**2,852,491**	**52.21%**	**1,254,467**	1,929,823	35.32%	922,668	32.35%	22	LO.5	22.56
				$ 10,250,869		$ 4,508,122	$ 382,157	$ 168,065	**$ 3,899,514**	**38.04%**	**$ 1,714,926**	$ 3,035,669	29.61%	$ 863,845	22.15%			
			(1-L-D)/C			(F x G)	(E x F)	(G x I)		**(K / F)**	**(G x K)**		(N / F)	(K - N)	(P / K)			

Otter Tail Power Company
Lighting Analysis
2016

Investment - Lighting Plant in Service (Company wide):	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	$ 4,348,943.87	$ 282,471.18	$ (149,037.06)	$ (200.00)	$ -	**$ 4,482,177.99**
373.00 Street Lighting	$ 4,982,666.49	259,850.01	(85,536.20)	-	-	**$ 5,156,980.30**
	$ 9,331,610.36	$ 542,321.19	$ (234,573.26)	$ (200.00)	$ -	$ 9,639,158.29

Quantity - Lighting Plant in Service (Company wide):	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	18,874	549	(583)	-	-	18,840
373.00 Street Lighting	30,874	729	(676)	-	-	30,927
	49,748	1,278	(1,259)	-	-	49,767

Average Cost - Lighting Plant in Service (Company wide):	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	$ 230.42	$ 514.52	$ 255.64			$ 237.91
373.00 Street Lighting	$ 161.39	356.45	126.53			$ 166.75
	$ 187.58	$ 424.35	$ 186.32			$ 193.69

Accumulated Depreciation - Lighting Plant in Service (Company wide):	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	Net Salvage Calculation
371.20 Lighting Installations of Customer Premises	$ 1,068,936.56	$ 170,082.86	$ (149,037.06)	$ (9,471.28)	$ 10,696.05	$ (65.01)	**$ 1,091,142.12**	$ 1,224.77
373.00 Street Lighting	$ 2,692,807.77	170,090.71	(85,536.20)	(4,268.72)	2,636.46	-	**$ 2,775,730.02**	(1,632.26)
	$ 3,761,744.33	$ 340,173.57	$ (234,573.26)	$ (13,740.00)	$ 13,332.51	$ (65.01)	$ 3,866,872.14	$ (407.49)

Reserve Ratio - Lighting Plant in Service (Company wide):	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	
371.20 Lighting Installations of Customer Premises	24.58%	3.85%	100.00%	6.35%	-7.18%		24.34%	-0.82%
373.00 Street Lighting	54.04%	3.35%	100.00%	4.99%	-3.08%		53.82%	1.91%
	40.31%	3.59%	100.00%	5.86%	-5.68%		40.12%	0.17%

Average Cost of Retirements - Lighting Plant in Service (Company wide):	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	
371.20 Lighting Installations of Customer Premises			$ 255.64	$ 16.25	$ (18.35)			$ (2.10)
373.00 Street Lighting			$ 126.53	$ 6.31	$ (3.90)			$ 2.41
			$ 186.32	$ 10.91	$ (10.59)			$ 0.32

Accumulated Depreciation - Lighting Plant in Service (Company wide):	Beginning Net Plant	Ending Net Plant
	$ 3,280,007.31	$ 3,391,035.87
	2,289,858.72	2,381,250.28
	$ 5,569,866.03	$ 5,772,286.15

Otter Tail Power Company
Lighting Analysis
2016

Investment - Lighting Plant in Service (Company wide):

	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	$ 4,482,177.99	$ 519,833.92	$ (226,928.42)	$ -	$ -	$ 4,775,083.49
373.00 Street Lighting	$ 5,156,980.30	391,632.81	(102,472.35)	-	-	$ 5,446,140.76
	$ 9,639,158.29	$ 911,466.73	$ (329,400.77)	$ -	$ -	$ 10,221,224.25

Quantity - Lighting Plant in Service (Company wide):

	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	18,840	691	(773)	-	-	18,758
373.00 Street Lighting	30,927	851	(780)	-	-	30,998
	49,767	1,542	(1,553)	-	-	49,756

Average Cost - Lighting Plant in Service (Company wide):

	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	$ 237.91	$ 752.29	$ 293.57			$ 254.56
373.00 Street Lighting	$ 166.75	460.20	131.37			$ 175.69
	$ 193.69	$ 591.09	$ 212.11			$ 205.43

Accumulated Depreciation - Lighting Plant in Service (Company wide):

	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	Net Salvage Calculation
371.20 Lighting Installations of Customer Premises	$ 1,091,142.12	$ 180,549.85	$ (226,928.42)	$ (9,301.30)	$ 11,561.21	$ -	$ 1,047,023.46	$ 2,259.91
373.00 Street Lighting	$ 2,775,730.02	179,668.15	(102,472.35)	(10,418.70)	9,984.06	-	$ 2,852,491.18	(434.64)
	$ 3,866,872.14	$ 360,218.00	$ (329,400.77)	$ (19,720.00)	$ 21,545.27	$ -	$ 3,899,514.64	$ 1,825.27

Reserve Ratio - Lighting Plant in Service (Company wide):

	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	
371.20 Lighting Installations of Customer Premises	24.34%	3.90%	100.00%	4.10%	-5.09%		21.93%	-1.00%
373.00 Street Lighting	53.82%	3.39%	100.00%	10.17%	-9.74%		52.38%	0.42%
	40.12%	3.63%	100.00%	5.99%	-6.54%		38.15%	-0.55%

Average Cost of Retirements - Lighting Plant in Service (Company wide):

	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	
371.20 Lighting Installations of Customer Premises			$ 293.57	$ 12.03	$ (14.96)			$ (2.92)
373.00 Street Lighting			$ 131.37	$ 13.36	$ (12.80)			$ 0.56
			$ 212.11	$ 12.70	$ (13.87)			$ (1.18)

Otter Tail Power Company
Lighting Analysis
2017 - YTD July

Investment - Lighting Plant in Service (Company wide):

	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	$ 4,775,083.49	$ 183,986.43	$ (76,676.66)	$ -	$ -	$ 4,882,393.26
373.00 Street Lighting	$ 5,446,140.76	182,014.70	(48,007.95)	-	-	$ 5,580,147.51
	$ 10,221,224.25	$ 366,001.13	$ (124,684.61)	$ -	$ -	$ 10,462,540.77

Quantity - Lighting Plant in Service (Company wide):

	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	18,758	214	(241)	-	-	18,731
373.00 Street Lighting	30,998	374	(373)	-	-	30,999
	49,756	588	(614)	-	-	49,730

Average Cost - Lighting Plant in Service (Company wide):

	Beginning Balance	Additions	Retirements	Transfers	Adjustments	Ending Balance
371.20 Lighting Installations of Customer Premises	$ 254.56	$ 859.75	$ 318.16			$ 260.66
373.00 Street Lighting	$ 175.69	486.67	128.71			$ 180.01
	$ 205.43	$ 622.45	$ 203.07			$ 210.39

Accumulated Depreciation - Lighting Plant in Service (Company wide):

	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	Net Salvage Calculation
371.20 Lighting Installations of Customer Premises	$ 1,047,023.46	$ 113,868.38	$ (76,676.66)	$ (5,139.80)	$ 8,920.42	$ -	$ 1,087,995.80	$ 3,780.62
373.00 Street Lighting	$ 2,852,491.18	112,860.03	(48,007.95)	(12,923.63)	5,126.52	-	$ 2,909,546.15	(7,797.11)
	$ 3,899,514.64	$ 226,728.41	$ (124,684.61)	$ (18,063.43)	$ 14,046.94	$ -	$ 3,997,541.95	$ (4,016.49)

Reserve Ratio - Lighting Plant in Service (Company wide):

	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	
371.20 Lighting Installations of Customer Premises	21.93%	2.36%	100.00%	6.70%	-11.63%		22.28%	-4.93%
373.00 Street Lighting	52.38%	2.05%	100.00%	26.92%	-10.68%		52.14%	16.24%
	38.15%	2.19%	100.00%	14.49%	-11.27%		38.21%	3.22%

Average Cost of Retirements - Lighting Plant in Service (Company wide):

	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage & Other Credits	Transfers & Adjustments	Ending Balance	
371.20 Lighting Installations of Customer Premises			$ 318.16	$ 21.33	$ (37.01)			$ (15.69)
373.00 Street Lighting			$ 128.71	$ 34.65	$ (13.74)			$ 20.90
			$ 203.07	$ 29.42	$ (22.88)			$ 6.54