STATE OF MINNESOTA
BEFORE THE PUBLIC UTILITIES COMMISSION

Katie Sieben	Chair
Joseph K. Sullivan	Vice-Chair
Valerie Means	Commissioner
Matt Schuerger	Commissioner
John Tuma	Commissioner

In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design	DOCKET NO. E015/M-12-233 DOCKET NO. E015/M-20-850

COMMENTS OF THE OFFICE OF THE ATTORNEY GENERAL

INTRODUCTION

The Office of the Attorney General—Residential Utilities Division ("OAG") respectfully submits the following Comments in response to the Minnesota Public Utilities Commission's ("Commission") Notice of Comment Period issued on December 4, 2020, which solicits comments on Minnesota Power's ("Company") Petition for Approval of Changes to its Residential Rate Design, dated December 1, 2020 ("Petition").

Well-designed Time of Use ("TOU") rates empower customers by giving them more control over their electricity bills and, in the long run, reduce system costs for all customers. Minnesota Power's Petition is a step in the right direction, but its proposed TOU rate has serious design flaws that will limit the resulting cost reductions, thereby reducing the efficacy of the rate. Moreover, the Company's proposed transition plan is needlessly complicated and prolonged.

These Comments highlight the benefits and explain the limitations of MP's proposal. They also demonstrate why the Commission should adopt an alternative TOU design that incorporates the best practices established nationally and better conforms to Minnesota's policy directives. Finally, they provide recommendations to streamline the transition and accelerate the customer benefits of TOU rates.

I. BACKGROUND

Minnesota Power's Petition provides a detailed description of its proposal to transition its Residential customers from the existing Increasing Block Rate ("IBR") design to default TOU rates over a five- to seven-year period. As proposed, the Company would first transition customers from IBR to flat rates before slowly transitioning customers to default TOU rates. The Petition includes a proposed discount for low-income customers with low usage, which would begin when customers are transitioned from IBR to flat rates and would continue indefinitely.

The Petition also includes a proposed TOU rate design. The design features three time periods with moderate price differentials between the periods. Customers would pay a slightly higher rate (14.9 ¢/kWh) for usage during the "Peak" period, which would run from 3 p.m. to 8 p.m. on weekdays, and a slightly lower rate (7.6 ¢/kWh) for usage during the "Super off-peak" period from 11 p.m. to 5 a.m., daily. For all other hours—which constitute the "Off-peak" period—customers would pay 10.7 ¢/kWh.

Lastly, the Petition details Minnesota Power's planned transition and evaluation plan, which includes a two-phased transition from IBR to flat rates, followed by a four-phase transition to default TOU for all Residential customers.

II. MINNESOTA POWER'S PETITION HAS SEVERAL IMPORTANT BENEFITS.

In some ways, Minnesota Power's Petition is a step in the right direction. For example, the Company's commitment to ensuring low-use, low-income customers are not harmed by any rate design transition is commendable. The Company's existing IBR design provides a natural benefit to low-use customers, who tend to contribute very little to Minnesota Power's system costs. The Company's Petition includes a targeted discount for customers that are both low-use and low-income, to ensure that these customers are not harmed by the transition away from IBR. Importantly, this discount is intended to be a permanent component of the default TOU design, not

merely a temporary feature during the transition. The OAG strongly supports this valuable low-use, low-income customer protection.

The Petition also notes that the Company is working with the Energy CENTS Coalition to simplify the process for income-eligible customers to enroll in the discount. It is important to make the self-declaration process simple, and utilities should use eligibility criteria beyond Low-Income Home Energy Assistance Program ("LIHEAP") participation. LIHEAP reaches only a fraction of income-eligible customers, and it is often targeted to high-use, low-income customers. The self-declaration process contemplated in the Petition would be a positive development.

The OAG also agrees with the Company's sentiments regarding the importance of customer education and outreach. As the Company asserted, "[a]t the heart of this transition is the need for a thoughtful, proactive customer engagement strategy."[1] Customer understanding is essential if TOU rates are to shape customer behavior and reduce system costs.

While many features of the Petition are well-designed, additional modifications are needed to maximize the benefits of TOU rates. Specifically, two components should be modified: the TOU rate design and the TOU transition plan. Section III, below, explains the limitations of the Company's proposed TOU design and provides an improved rate design. Section IV provides recommendations to streamline the transition to default TOU rates.

III. MINNESOTA POWER'S PROPOSED TIME OF USE RATE DESIGN NEEDS TO BE IMPROVED.

Minnesota Power's proposed TOU design has significant faults that will limit the effectiveness of the TOU rate and any benefits it could produce. Specifically, the Company's design is rooted in a flawed methodology and ignores the best practices identified in hundreds of rate design pilots from across the country and around the world. Accordingly, Minnesota Power's

[1] *In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design*, Docket No. E-015/M-20-850, Petition for Approval of Changes to Minnesota Power's Residential Rate Design at 34 (Dec. 1, 2020) ("Petition").

proposed TOU design should be rejected. In light of the weaknesses of the Company's proposal, the OAG has developed an improved rate design. This design incorporates TOU best practices, better fulfills Minnesota statutes' policy directives, and empowers customers by giving them more control over their bills.

A. Minnesota Power's Proposed Rate Design is Flawed.

There are at least three problems with Minnesota Power's proposed TOU design. First, the price differentials Minnesota Power has proposed are too small to meaningfully impact consumption patterns. This is important because the purpose of TOU rates is to encourage customers to adjust their consumption in ways that reduce system costs. Under the Company's proposed design, however, customers would save just 4 ¢/kWh by shifting usage from the Peak period to the Off-peak period, and just 3 ¢/kWh by shifting from Off-peak to Super off-peak hours. These minimal savings will not be large enough to produce a behavior change for many customers.

The common-sense conclusion that small TOU price differentials lead to subdued customer response has been substantiated by hundreds of TOU pilots in the U.S. and abroad. In fact, Minnesota Power's own consultant, Lon Huber, explained this phenomenon in his presentation at the August 15, 2019 stakeholder meeting. Mr. Huber cited a U.S. Department of Energy study that examined 67 TOU pilot treatments around the country and found peak demand reductions were larger when customers faced higher on-peak to off-peak price ratios. For example, the average peak demand reduction was just 6 percent for TOU rates with a price ratio of less than 2:1, but the average peak reduction increased to 18 percent when the price ratio was greater than 4:1.[2] In other words, peak demand reduction was *three times larger* when customers saw a stronger price signal. The economic consulting firm the Brattle Group, which maintains a database

[2] U.S. Department of Energy Office of Electricity Delivery and Energy Reliability, Final Report on Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies at 63 (Nov. 2016) (last visited Jan. 30, 2021).

of over 350 time-varying pricing treatments across 23 states and 8 foreign countries, has made similar findings.[3] In spite of this evidence and the recommendations of its own consultant, Minnesota Power still proposed a TOU design with an unreasonably low Peak to Super off-peak price ratio of slightly less than 2:1.

Second, the Company's recommended TOU design is rooted in the flawed contention that peak demand costs should be collected in all hours of the year. This is the sole reason the Company's proposed rate design has such a low ratio between Peak to Super off-peak rates. It is inappropriate to require customers to pay for peak demand costs when they are consuming during non-peak hours.

Like most utilities, Minnesota Power's class cost of service study classifies costs as demand-related, energy-related, and customer-related. Demand-related costs represent the costs necessary for the utility to be able to serve customers' load during the highest-usage hours of the year.[4] Yet, in spite of the fact that demand-related costs are meant to recover the costs of meeting *peak* load, Minnesota Power proposes to recover these costs in *all hours of the year.* In fact, the Company explained in Appendix B of the Petition that the sole difference between the Company's preferred 2:1 design and its alternative 4:1 design is that "the 4:1 attributes no demand/capacity revenue to the super off-peak period, while the 'Updated 2019 Option 2' does."[5]

Apportioning demand-related costs to the Super off-peak period is non-sensical because it ignores the underlying cost drivers. Peak demand events typically occur only in the afternoons on

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[3] *See, e.g.,* Ahmad Faruqui *et al*., Arcturus 2.0: A meta-analysis of time-varying rates for electricity, *The Electricity Journal*, Volume 30, Issue 10 at 64-72, (Dec. 2017) (last visited Jan. 30, 2021) (Abstract: "Our analysis of the impact of several studies of time-varying rates from across the globe finds that much of the discrepancy in results across the studies goes away once demand response is expressed as a function of the peak to off-peak price ratio.").

[4] *See, e.g., In the Matter of the Application of Minnesota Power for Authority to Increase Rates for Electric Utility Service in Minnesota*, Docket No. E-015/GR-19-442, Direct Testimony of Stewart J. Shimmin at 22 (Nov. 1, 2019) ("Demand-related costs include those rate base and expense items that relate to demands coincident with the system peak or annual maximum non-coincident demands and include all Production, Transmission, and Distribution Bulk Delivery costs.").

[5] Petition, Appendix B at 12.

hot summer weekdays and in the early evenings on cold winter weekdays. The Super off-peak period—which runs from 11 p.m. to 5 a.m. year-round—was specifically designed to comprise the lowest-usage (and lowest cost) hours of the year. These ultra-low-usage hours clearly do not contribute to the Company's peak demand costs; they occur at times when the Company—and the MISO system as a whole—has an abundance of spare capacity. Moreover, customers who respond to the TOU rate and shift usage from on-peak to off-peak times will help to *reduce* the Company's demand-related costs. It makes no sense to charge customers who shift usage a portion of the costs that they are helping to lower.

Third, Minnesota Power's proposed design is out of step with recent Residential TOU proposals from Minnesota's other large investor-owned utilities. The TOU time periods in Xcel Energy's Residential TOU pilot are nearly identical to Minnesota Power's, with a deep off-peak period of midnight to 6 a.m., daily and an on-peak period of 3 to 8 p.m. on non-holiday weekdays. But while the time periods are similar, the rates are dramatically different. Xcel's rate design provides a much stronger incentive for load-shifting, with a deep off-peak rate of just 2.8 ¢/kWh and an on-peak price of 19.3 ¢/kWh in winter months and 22.6 ¢/kWh in the summer.[6] Otter Tail Power's recent Residential TOU pilot proposal cannot be directly compared to Minnesota Power's or Xcel's, as its proposed time periods are significantly different.[7] But Otter Tail's Summer on-peak to off-peak price differential is roughly 6:1. And Otter Tail's off-peak period price is significantly lower than Minnesota Power's, even though Otter Tail's off-peak period would cover more than twice as many hours.

[6] *See generally In the Matter of the Petition of Northern States Power Company for Approval of a Time of Use Rate Design Pilot Program*, Docket No. E002/M-17-775, Compliance Filing (Jan. 21, 2020).
[7] *See generally In the Matter of Otter Tail Power's Proposal for a Residential Time of Day Pilot Plan*, Docket No. E017/M-20-331, Petition for Approval for a Residential Time of Day Pilot Plan (Feb. 28, 2020).

In short, Minnesota Power's proposed TOU rate design will not achieve its stated goals. Its minimal price differentials will not produce a meaningful reduction in peak demand, a result substantiated by hundreds of TOU rate designs and highlighted by the Company's own consultant in its stakeholder meetings. It also inappropriately collects peak demand costs during non-peak hours, and it is inconsistent with other recent TOU rate designs in Minnesota. Minnesota Power's proposed TOU design should be rejected.

B. The OAG's Alternative Rate Design Addresses Minnesota Power's Flaws.

To address the weaknesses of the Company's proposed TOU design, the OAG developed an improved rate design that incorporates TOU best practices and better fulfills Minnesota statutes' policy directives. This alternative design includes two components: a lower monthly fixed fee and larger TOU period price differentials. Figure 1, below, summarizes the two proposals.

Figure 1. MP proposed and OAG alternative TOU rate designs

	Standard customers		Low-income discount	
	MP	OAG	MP	OAG
Fixed fee ($/mo.)	$8.00	$6.00	$8.00	$5.00
Peak rate (¢/kWh)	14.9	19.9	11.7	13.9
Off-peak rate (¢/kWh)	10.7	10.9	7.5	8.4
Super off-peak rate (¢/kWh)	7.6	3.9	4.3	2.9

The OAG's alternative design was calculated using the same sales data as the Company, and it would recover the same amount of revenue as the Company's proposal (for both Standard and Low-income discount customers). The Standard customer fixed fee would recover all of the customer-specific costs of serving Residential customers, as identified in Minnesota Power's most recent embedded class cost of service study, including the costs of connecting a customer to the common distribution system and ongoing metering, meter reading, and customer records and

collection expenses.[8] The full customer-specific cost calculation is included as Attachment B, below.[9]

The OAG's rate design provides three main advantages over the Company's proposal: it will produce larger peak demand reductions, better fulfill Minnesota's policy objectives, and empower customers by giving them more control over their bills.

Greater peak demand reductions

As detailed above, the experience from TOU pilots across the U.S. and around the globe has demonstrated that larger price differentials lead to larger peak demand reductions. The OAG's TOU rate design includes significantly larger price differentials than Minnesota Power's. Specifically, under the Company's proposal, a Standard customer would save **4.2¢/kWh** by shifting consumption from the Peak period to the Off-peak period and **7.4 ¢/kWh** by shifting from the Peak period to the Super Off-peak period. Under the OAG's design, that same customer would save **9 ¢/kWh** by shifting consumption from the Peak period to the Off-peak period and **16 ¢/kWh** by shifting from the Peak period to the Super off-peak period. In other words, the cost savings from shifting usage are *more than double* with the OAG's design. These stronger incentives will likely result in more usage being shifted to Off-peak and Super off-peak hours.

Minnesota policy objectives

The OAG's proposed design will also better fulfill Minnesota's policy objectives. Minnesota statutes provide clear guidance for rate design, beginning with the Reasonable Rate statute's requirement that the Commission use rate design to promote conservation: **"**[t]o the maximum reasonable extent, the commission shall set rates to encourage energy conservation and

[8] Specifically, the customer-specific cost calculation for Standard customers includes the cost of meters (including depreciation expense, return on rate base, and operations & maintenance expenses), service drops (including depreciation expense, return on rate base, and operations & maintenance expenses), installations and leased property on customers' premises, meter reading, and customer records and collection expenses.

[9] The lower fixed fee for Low-income discount customers reflects the fact that low-income customers are more likely to live in multi-unit dwellings, which tend to have significantly lower cost to serve relative to single-family housing.

renewable energy use and to further the goals of sections 216B.164, 216B.241, and 216C.05."[10] Notably, section 216B.164 relates to cogeneration and small power production (e.g., rooftop solar photovoltaic installations) and sections 216B.241 and 216C.05 relate to energy conservation.[11]

The OAG's proposal is consistent with this policy goal by lowering Minnesota Power's fixed charge and allowing the Company to recover these amounts in its volumetric charges. Large fixed fees discourage energy conservation and renewable energy use. Because rate design is performed *after* the class revenue requirement has been established, increases to fixed fees must be offset with equivalent decreases to per-kWh rates, and vice versa. Thus, increasing the customer charge will discourage conservation by lowering the value of each kWh that is saved and decreasing the customer charge amount will encourage conservation by increasing the value of each kWh that is saved. For the same reasons, an increased fixed fee reduces the incentive for customers to install renewable energy, because lower per-kWh rates reduce the value to the customer of each kWh produced by a solar installation.[12]

High fixed fees also disproportionately harm low-income customers and people of color. Both across the country and in our region, low-income households tend to use less electricity than higher-income households, and households headed by people of color tend to use less electricity than households headed by Caucasians.[13] According to Minnesota Power's 2016 Low Income Customer Study, the Company's low-income customers are much more likely to use less electricity

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[10] Minn. Stat. § 216B.03.

[11] *See also* Minn. Stat. § 216B.2401 ("The legislature finds that energy savings are an energy resource, and that cost-effective energy savings are preferred over all other energy resources. The legislature further finds that cost-effective energy savings should be procured systematically and aggressively in order to reduce utility costs for businesses and residents, improve the competitiveness and profitability of businesses, create more energy-related jobs, reduce the economic burden of fuel imports, and reduce pollution and emissions that cause climate change.").

[12] This increases the "payback period" required for a customer to recoup a solar system investment. If fixed fees are set high enough, customers may never be able to fully recoup their investment in the renewable generation system. *See, e.g.*, Whited, Melissa *et al*., Caught in a Fix: The Problem with Fixed Charges for Electricity, *Synapse Energy Economics* at 16-17 (Feb. 9, 2016) (last visited Jan. 30, 2021).

[13] *See* U.S. Energy Information Administration, 2015 Residential Energy Consumption Survey at Table CE4.8 (Annual household site end-use consumption by fuel in the Midwest—averages, 2015) (rel. May 2018) (last visited Jan. 30, 2021).

than the Residential average, and they are much less likely to have extremely high consumption levels. Decreasing fixed charges will decrease bills for these lower-use customers. Thus, the lower fixed charges in the OAG's rate design proposal will especially benefit low-income households and people of color.

Empowering customers

The third major benefit of the OAG's recommended rate design is that it will empower customers by giving them more control over their electric bills. The design accomplishes this in two ways. First, lower fixed charges reduce the minimum required amount that customers must pay each month, regardless of their consumption level. This provides a natural benefit to low-use customers, which will help ease the transition from the current IBR design. It also shifts more revenue collection into variable rates, which the customer can control. Second, the lower Super off-peak period price and the higher TOU period price differentials doubles the amount customers can save by shifting their usage. Customers can still save money by reducing their overall consumption, with the largest conservation incentives occurring at the times in which conservation is most valuable for the Company's system.

C. Rate Design Recommendation.

Minnesota Power's proposed TOU design is fatally flawed and should be rejected. Instead, the Commission should approve the OAG's alternative TOU design, which incorporates TOU best practices, better fulfills Minnesota statutes' policy directives, and empowers customers by giving them more control over their electricity bills.

IV. THE COMPANY'S TRANSITION AND EVALUATION PLAN MUST BE IMPROVED.

Minnesota Power's proposal to implement its TOU rate is also problematic. The Company's proposal includes a two-phased transition from IBR to flat rates and then a four-phased transition to default TOU rates for all Residential customers. In Phase One of the TOU transition,

the Company would test its rate design and underlying technology—such as the Advanced Metering Infrastructure ("AMI") and the Meter Data Management System ("MDMS")—on a small subset of customers. In Phase Two, it would randomly sample a subset of residential customers and default them onto the rate, allowing for more accurate evaluation of the rate's effectiveness. Phase Three would repeat Phase Two, and in Phase Four the Company would extend default TOU rates to all Residential customers.

These phases are sometimes redundant and would unnecessarily prolong the transition.[14] Below, the OAG provides two recommendations to streamline the transition.

A. The Company's Proposal Needlessly Delays Phase One of its Transition.

Phase One of the Company's TOU transition plan is designed to test the rate design and especially the underlying technology on a small subset of customers. While it is appropriate to include a testing phase with a small number of customers, the Company's proposal needlessly delays this process. Though the timelines in Minnesota Power's Petition are inconsistent, it appears that the Company does not plan to begin Phase One of the TOU implementation until Phase Two of the flat rate transition (i.e. July 2022 at the earliest).

Rather than delaying Phase One of the TOU transition for an entire year, the Company should initiate Phase One of the TOU transition at the same time as Phase One of the IBR to flat rate transition. According to Minnesota Power's testimony in its last rate case, its MDMS deployment is ahead of schedule, with the first phase of the MDMS installation being completed in 2020.[15] The Company's AMI transition is even further along, having already completed over 60 percent of installations.[16] Since the technology is already in place, and since the primary objective of Phase One of the TOU transition is to test the new technology on a small subset of

[14] Petition at 26-34.
[15] Docket No. E015/GR-19-442, Direct Testimony of Daniel W. Gunderson at 82 (Nov. 1, 2019).
[16] *Id.* at 80.

customers, it is reasonable to begin the testing sooner rather than later. This approach would also be more consistent with the Commission's prior direction to the Company. The Commission has already found "it is important to phase in a TOD rate as soon as practicable," and has required Minnesota Power to explore "the possibility of phasing in a TOD rate as soon as the MDM system is implemented."[17]

B. Phases Two and Three of the TOU Transition Should be Merged.

Minnesota Power's proposed Phases Two and Three would also needlessly extend the TOU transition. The primary objective of Phase Two is to perform a more detailed evaluation of the effectiveness of the TOU design. Unlike Phase One, in Phase Two the Company would randomly sample a subset of residential customers and default them onto the rate. This will allow a better evaluation of the effectiveness of the TOU design while also providing the Company opportunity to hone its customer education techniques in advance of a broader rollout.

While Phase Two is a valuable step in the transition, the Company's proposed Phase Three would simply repeat this process for no apparent reason. Minnesota Power's brief summary of Phase Three makes it clear that the Company would simply be continuing the analysis of Phase Two.[18] The only outcome of Phase Three, then, seems to be that it would delay the process of evaluating the Company's TOU rate and transitioning a broader set of customers. The Company should eliminate this redundancy by combining Phases Two and Three of the TOU transition and initiating this combined Phase Two at the same time as Phase Two of the IBR to flat rate transition. This will not only avoid unnecessary delays in the TOU transition, but will also better align the TOU and flat rate transitions. As the Company itself acknowledges, aligning these transitions

[17] *In the Matter of Minnesota Power's Compliance Report for its Temporary Rider for Residential Time-of-Day Rate for Participants of the Smart Grid Advanced Metering Infrastructure Pilot Project*, Docket No. E-015/M-12-233, Order Accepting Compliance Report as Complete and Modifying Requirements for 2020 Annual Compliance Report at 5 (Aug. 16, 2019).
[18] Petition at 32.

"creates several opportunities for coordinated messaging and offers some optionality for customers who tend to actively engage in understanding and managing their electricity consumption and bills."[19]

When combined, these recommendations would streamline the TOU transition and bring it into alignment with the IBR to flat rate transition. This approach avoids redundancy and unnecessary delays while still accomplishing the primary objectives of the TOU transition: testing the underlying technology, evaluating the effectiveness of the rate design, and honing customer outreach and education techniques. This approach has the additional benefit of limiting administrative costs and accelerating the usefulness of Minnesota Power's large AMI and MDMS investments to its customers.

CONCLUSION AND RECOMMENDATIONS

In conclusion, while Minnesota Power's Petition is a step in the right direction, additional modifications are necessary to optimize the TOU rate design and streamline the transition to default TOU rates for all Residential customers.

The OAG recommends that the Commission:

- Reject Minnesota Power's proposed TOU rate design;
- Adopt the OAG's alternative TOU design;
- Direct the Company to begin Phase One of the TOU transition at the same time as Phase One of the IBR to flat rate transition; and

[19] *Id.* at 28.

- Direct the Company to Combine Phases Two and Three of the TOU transition, and to begin this combined Phase Two at the same time as Phase Two of the IBR to flat rate transition.

Dated: February 16, 2021

Respectfully submitted,

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OFFICE OF THE ATTORNEY GENERAL—
RESIDENTIAL UTILITIES DIVISION

Attachment A

Annual customer count, usage, and revenue

	Minnesota Power		OAG Recommendation		
	Standard	**Low-income**	**Standard**	**Low-income**	**Calculation**
Customer count	89,553	19,643	89,553	19,643	a
Service charge	96	96	72	60	b
Service charge revenue	8,597,132	1,885,772	6,447,849	1,178,608	a*b = c
Usage in Peak hours	139,814,904	17,517,178	139,814,904	17,517,178	d
Rate in Peak hours	0.149	0.117	0.199	0.139	e
Peak hour revenue	20,876,918	2,050,038	27,891,675	2,443,471	d*e = f
Usage in Off-peak hours	519,480,662	65,084,873	519,480,662	65,084,873	g
Rate in Off-peak hours	0.107	0.075	0.109	0.084	h
Off-Peak hour revenue	55,525,405	4,855,220	56,856,562	5,468,239	g*h = i
Usage in Super off-peak hours	170,846,920	21,405,128	170,846,920	21,405,128	j
Rate in Super off-peak hours	0.076	0.043	0.039	0.029	k
Super off-peak hour revenue	12,943,376	930,524	6,746,745	631,237	j*k = l
Total revenues	97,942,831	9,721,555	97,942,831	9,721,555	c+f+i+l = m

Attachment B

MP Residential customer-specific cost calculation[1]

Account	Description	Minimum[2]	Maximum[2]	Calculation
Net plant in service				
369	Service lines	$2,927,683	$2,927,683	a
370	Meters	$9,251,364	$27,754,091	b
372	Leased property on cust. premises	$0	$0	c
Total net plant in service		$12,179,047	$30,681,775	sum(a:c)=d
Pre-tax return		9.07%	9.07%	e
Total rate base and taxes		$1,104,828	$2,783,311	d*e=f
Depreciation expenses				
369	Service lines	$163,419	$163,419	g
370	Meters	$629,647	$629,647	h
372	Leased property on cust. premises	$18,586	$18,586	i
Other expenses				
583/584	Service line operations expenses	$2,258	$2,258	j
586	Meter operations expenses	$249,714	$249,714	k
593/594	Maintenance of service lines	$84,631	$84,631	l
597	Maintenance of meters	$13,811	$13,811	m
902	Meter reading	$331,869	$331,869	n
903	Customer records and collection	$4,716,765	$4,716,765	o
Total expenses		$6,210,700	$6,210,700	sum(g:o)=p
Total customer-specific revenue requirement		$7,315,528	$8,994,011	f+p=q
Annual customer bills		1,351,853	1,351,853	r
Customer-specific cost ($/month)		**$5.41**	**$6.65**	**q/r=s**

Notes:

1. FERC account totals are from Minnesota Power's class cost of service study (CCOSS) in its most recent rate case (Docket 19-442).
2. The sole difference in the Minimum and Maximum calculations is the classification of meter costs. The Maximum calculation classifies meters as 100% customer-related, as the Company did in its 2019 CCOSS. However, this approach is inappropriate. Because the Company's Advanced Metering Infrastructure serves multiple functions, it is necessary to classify its costs as a combination of demand-related, energy-related, and customer-related. Accordingly, the Minimum calculation classifies metering costs as 1/3 demand-related, 1/3 energy-related, and 1/3 customer-related.

Minnesota Power's pre-tax return

	Ratio	Calculation
Capital structure		
Long-term debt	46.189%	a
Short-term debt	0.000%	b
Common equity	53.811%	c
Cost of capital		
Long-term debt	4.517%	d
Short-term debt	0.000%	e
Common equity	9.250%	f
Weighted cost of capital		
Long-term debt	2.086%	a*d=g
Short-term debt	0.000%	b*e=h
Common equity	4.977%	c*f=i
Total	7.064%	sum(g,h,i)=j
Pre-tax return		
Taxable component of return	4.977%	i
Income tax rate	28.742%	k
Tax allowance rate	40.335%	k/(1-k)=l
Tax allowance	2.008%	l*i=m
Return	7.064%	j
Pre-tax return	**9.072%**	**j+m=n**

OAG No. 002

State of Minnesota
Office of the Attorney General
Utility Information Request

In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design	**MPUC Docket No.**	E015/M-20-850

Requested from: Minnesota Power

By: Andrew Twite

Date of Request: December 15, 2020
Due Date: December 28, 2020

Please complete the following table detailing the forecasted annual customer count, usage, and revenues for Standard customers under the Company's proposed 2:1 time of use rate design. Rates in each period should include the cost of fuel and purchased energy. If there are any additional revenues included in line m, please provide an explanation of how these revenues will be collected (e.g. fixed amount per-customer, fixed amount per-kWh, etc.).

Annual customer count, usage, and revenue: Standard customers			
		Unit	Calculation
Customer count		#	a
Service charge		$/year	b
Service charge revenue		$	a*b = c
Usage in Peak hours		kWh	d
Rate in Peak hours		$/kWh	e
Peak hour revenue		$	d*e = f
Usage in Off-peak hours		kWh	g
Rate in Off-peak hours		$/kWh	h
Off-Peak hour revenue		$	g*h = i
Usage in Super off-peak hours		kWh	j
Rate in Super off-peak hours		$/kWh	k
Super off-peak hour revenue		$	j*k = l
Other revenues, if any		$	m
Total revenues		$	c+f+i+l+m = n

Response by: Benjamin Levine
Title: Utility Load Forecaster
Department: Customer Experience
Telephone: 218-355-3120

RESPONSE:

Attachment “OAG IR 002_20-850 Attach 1.xlsx” contains a completed table for Residential General and All Electric customers that are ineligible or not receiving the Low-Income, Usage Qualified Discount.

Response by: Benjamin Levine
Title: Utility Load Forecaster
Department: Customer Experience
Telephone: 218-355-3120

OAG IR 002_20-850 Attach 1

Annual customer count, usage, and revenue:

	Non-Discount*	Discount**	Calculation
Customer count	89,553	19,643	a
Service charge	96	96	b
Service charge revenue	8,597,132	1,885,772	a*b = c
Usage in Peak hours	139,814,904	17,517,178	d
Rate in Peak hours	0.149	0.117	e
Peak hour revenue	20,876,918	2,050,038	d*e = f
Usage in Off-peak hours	519,480,662	65,084,873	g
Rate in Off-peak hours	0.107	0.075	h
Off-Peak hour revenue	55,525,405	4,855,220	g*h = i
Usage in Super off-peak hours	170,846,920	21,405,128	j
Rate in Super off-peak hours	0.076	0.043	k
Super off-peak hour revenue	12,943,376	930,524	j*k = l
Other revenues, if any			m
Total revenues	97,942,831	9,721,555	c+f+i+l+m = n

*Standard

**Low-Income Usage Qualified

State of Minnesota
Office of the Attorney General
Utility Information Request

In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design	**MPUC Docket No.**	E015/M-20-850

Requested from: Minnesota Power

By: Andrew Twite

Date of Request: December 29, 2020
Due Date: January 11, 2021

For each of the following FERC accounts, please provide the dollar amount the Company classified as customer-related and allocated to retail Residential customers for the test year in its 2019 rate case.

a. 583 (amount associated with service lines only)
b. 584 (amount associated with service lines only)
c. 586
d. 587
e. 593 (amount associated with service lines only)
f. 594 (amount associated with service lines only)
g. 597
h. 902; and
i. 903

Response:
Please see the table below for the requested dollar amounts from Docket No. E015/GR-19-442 Initial Filing Test Year 2020 COSS Results. Accounts 583 and 593 reflect only the amounts associated with service lines. The methodology used was to first calculate the net plant balances for 364 Poles, towers and fixtures, 365 Overhead conductors and devices, and 369.1 Services - Overheads, then calculate the pro-rata share of account 369.1 and apply this rate to the total expenses in accounts 583 and 593. Accounts 584 and 594 reflect only the amounts associated with service lines. The methodology used was to first calculate the net plant balances for 366 Underground conduit, 367 Underground conductors and devices, and 369.2 Services - Underground, then calculate the pro-rata share of account 369.2 and apply this rate to the total expenses in accounts 584 and 594.

FERC Account	Residential Customer-Related
583	$1,351
584	$907

Response by Amanda Turner
Title Costing and Pricing Analyst
Department Finance and Rates
Telephone 218-355-3530

586	$249,714
587	$0
593	$57,275
594	$27,356
597	$13,811
902	$331,869
903	$4,716,765

Response by Amanda Turner
Title Costing and Pricing Analyst
Department Finance and Rates
Telephone 218-355-3530

OAG No. 006

State of Minnesota
Office of the Attorney General
Utility Information Request

In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design	**MPUC Docket No.**	E015/M-20-850

Requested from: Minnesota Power

By: Andrew Twite	**Date of Request:**	December 29, 2020
	Due Date:	January 11, 2021

Please provide the sub-accounts that comprise FERC account 903. For each sub-account, provide the dollar amount the Company classified as customer-related and allocated to retail Residential customers for the test year in its 2019 rate case.

Response:
Please see the table below for the requested dollar amounts from Docket No. E015/GR-19-442 Initial Filing Test Year 2020 COSS Results.

FERC Account	Sub Account	Residential Customer-Related
903	0000	$4,543,493
903	1000	$173,271

Response by Amanda Turner
Title Costing and Pricing Analyst
Department Finance and Rates
Telephone 218-355-3530

OAG No. 007

State of Minnesota
Office of the Attorney General
Utility Information Request

In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design	**MPUC Docket No.**	E015/M-20-850

Requested from: Minnesota Power

By: Andrew Twite	**Date of Request:**	December 29, 2020
	Due Date:	January 11, 2021

Please provide the Company's forecasted total number of Residential customer bills for the test year in its 2019 rate case.

Response

Below are the total number of Residential customer bills for the test year in Minnesota Power's 2019 rate case, including the total Residential customer class:

Residential Standard (20/22):	1,310,363
Residential Seasonal (23):	37,636
Residential Controlled Access (24):	3,818
Residential Electric Vehicle (28):	36
Total Residential:	1,351,853

Response by Susan Ludwig
Title Manager, Rates
Department Rates
Telephone 218-591-6573

OAG No. 008

State of Minnesota
Office of the Attorney General
Utility Information Request

In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design	**MPUC Docket No.**	E015/M-20-850

Requested from: Minnesota Power

By: Andrew Twite	**Date of Request:**	December 29, 2020
	Due Date:	January 11, 2021

Please provide the Company's most recently approved capital structure and overall cost of capital.

Response:

Please see MPUC Docket No. E-015/S-20-279 (IR 008.01 Attach), dated November 10, 2020, for Minnesota Power's most recently approved capital structure. The order includes the following:

a. total capitalization of $6,145 million, including a contingency of $559 million, and flexibility to allow total consolidated capitalizations to exceed the cap for a period not exceeding 60 days;
b. an equity ratio of 60.56% with a contingency range of +/- 15% (resulting in an equity range of 51.48% to 69.64%);
c. a maximum debt limit of $2,578 million; and
d. if there is a conflict between the authorized maximum debt and the authorized equity range, the debt limit would override the equity range.

In the settlement for the 2019 rate review (see Docket No. E-05/GR-19-442), the Company's overall cost of capital did not change from its previous rate order (Docket No. E-015/GR-16-664).

	Ratio	Cost	Weighted
Long-Term Debt	46.1892%	4.5170%	2.0864%
Common Equity	53.8108%	9.2500%	4.9775%
Total	100.0000%		7.0639%

Response by Tara Anderson
Title Supervisor – Financial Planning & Analysis
Department Finance
Telephone 218-355-3470

The Office of
Minnesota Attorney General Keith Ellison
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February 16, 2021

Mr. Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

Re: ***In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design***
Docket No. E015/M-20-850

Re: ***In the Matter of Minnesota Power's Petition for Approval of a Temporary Rider for Residential Time-of-Day Rate for Participants of the Smart Grid Advanced Meter Infrastructure Pilot Project***
Docket No. E015/M-12-233

Dear Mr. Seuffert:

Enclosed and e-filed in the above-referenced matters please find Comments of the Minnesota Office of the Attorney General–Residential Utilities Division.

By copy of this letter all parties have been served. Certificates of Service are also enclosed.

Sincerely,

/s/ **Kristin Berkland**
KRISTIN BERKLAND
Assistant Attorney General

(651) 757-1236 (Voice)
(651) 296-9663 (Fax)
kristin.berkland@ag.state.mn.us

CERTIFICATE OF SERVICE

Re: ***In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design***
Docket No. E015/M-20-850

Re: ***In the Matter of Minnesota Power's Petition for Approval of a Temporary Rider for Residential Time-of-Day Rate for Participants of the Smart Grid Advanced Meter Infrastructure Pilot Project***
Docket No. E015/M-12-233

I, JUDY SIGAL, hereby certify that on the 16th day of February, 2021, I e-filed with eDockets ***Comments of the Minnesota Office of the Attorney General—Residential Utilities Division*** and served a true and correct copy of the same upon all parties listed on the attached service lists by e-mail, electronic submission, and/or United States Mail with postage prepaid, and deposited the same in a U.S. Post Office mail receptacle in the City of St. Paul, Minnesota.

/s/ Judy Sigal
JUDY SIGAL

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_20-850_M-20-850
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_20-850_M-20-850
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	Yes	OFF_SL_20-850_M-20-850
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_20-850_M-20-850
Anne	Rittgers	arittgers@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_20-850_M-20-850
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_20-850_M-20-850

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_12-233_Official
Brooke	Cooper	bcooper@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	No	OFF_SL_12-233_Official
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_12-233_Official
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_12-233_Official
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_12-233_Official
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_12-233_Official
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_12-233_Official