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February 18, 2021

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: Errata
In the Matter of the Petition for Approval of Changes to Minnesota Power's Residential Rate Design
Docket No. E015/M-20-850
Docket No. E015/M-12-233

Dear Mr. Seuffert:

Please find attached an Errata filing correcting and replacing Fresh Energy's February 16, 2021 *Initial Comments* in the above dockets. The corrected filing withdraws our comments regarding the initial transition from inverted block rates to a flat rate before transitioning customers to a time-of-day rate, which was inadvertently included. Clean and redline versions of the corrected filing are attached.

Please contact me at (651) 294-7148 or ricker@fresh-energy.org if you have any questions regarding this filing.

/s/ Isabel Ricker
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CLEAN

STATE OF MINNESOTA
PUBLIC UTILITIES COMMISSION

Katie Sieben	Chair
Joseph Sullivan	Vice Chair
Valerie Means	Commissioner
Matthew Schuerger	Commissioner
John Tuma	Commissioner

February 16, 2021
Corrected February 18, 2021

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

CORRECTED COMMENTS OF FRESH ENERGY

Fresh Energy submits these comments in response to the Commission's January 29, 2020 Notice of Extended Comment Period regarding Minnesota Power ("MP" or "the Company")'s proposal to transition all residential customers to a future time of day (TOD) rate structure.

Fresh Energy has been a vocal advocate of time of use and TOD rate designs, which when done well, send price signals to encourage behavioral changes that lower cost and advance public policy goals. TOD rates should shift electricity usage and peak demand to times of day with lower costs and higher renewable energy generation, more accurately reflecting the costs of service and increasing system flexibility. We support Minnesota Power's goal of shifting residential customers from the current Inverted Block Rate (IBR) to a TOD rate and strongly support preservation of discounted rates for low-income low-usage customers. However, one element of the TOD rate design as proposed is flawed, and Minnesota Power's proposed transition process is overly long and complex. Below we discuss our concerns with these elements of the proposal, and recommendations for moving forward.

1. **The rate implementation plan Minnesota Power has proposed is overly long and complex and should be consolidated.**

Minnesota Power's proposed rate implementation plan includes two phases for the transition from current IBR structure to a flat rate (or "Flat") and four phases for the transition from the flat rate to a new TOD structure. The whole process is estimated to take place over five to seven years (2021 through 2027).[1] This timeline is quite long and will likely create unnecessary customer confusion.

a. The proposed rate transition timeline is too long.

MP proposes to begin transitioning from IBR to Flat in July 2021, and to begin the TOD roll-out in July 2022 (or other date determined by the Commission). The Company's plan then envisions three additional Phases of the TOD roll-out from 2023-2027. We believe there are at least two relatively simple ways to accelerate this timeline without causing customer confusion or jeopardizing MP's ability to evaluate the rate implementation.

Phase 1 of the TOD roll out targets customers who opt-in and those with a new service agreement. We see no reason to first transition these customers to a flat rate. New customers can automatically be enrolled in TOD and provided educational materials about managing their usage, avoiding a near-term rate transition for customers who begin service after July 2021. Likewise, customers who seek out TOD rates are likely to prefer the option of moving directly to that structure and skipping the initial transition to a flat rate. Thus, we recommend that, to the extent practicable, Phase 1 of the TOD transition begin in July 2021, concurrent with Phase 1 of the IBR to Flat transition. This would accelerate the TOD transition by one year, so the start date for TOD Phases 2 through 5 should each move one year sooner.

Phase 2 of MP's proposed transition to TOD rates involves adding customers to the TOD rate through random sampling and expanded opt-in, and conducting formal analysis of "bill impacts, customer response load shifting), revenue impacts, and customer feedback."[2] Phase 3 is not well-defined and appears nearly identical to Phase 2 in function, intended learnings, and the evaluation envisioned.[3] MP's description implies that it anticipates spending at least 30 months on Phases 2 and 3.[4] We recommend these phases be combined. This will simplify the process and enable the final phase of TOD transition to begin in the 2023-2025 timeframe.

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[1] Minnesota Power, Petition for Approval of Changes to Minnesota Power's Residential Rate Design, December 1, 2020, Docket No. E015/M-20-850, p. 5

[2] *Id.*, p. 30

[3] *Id.*, p. 32

[4] *Id.* p. 30-34 indicates that Phase 2 is expected to take "~15 (+) months" and that the end of Phase 3 is uncertain but may push the beginning of Phase 4 out to 2026 or 2027.

Fresh Energy Proposed Implementation Timeline

Phase	**Minnesota Power Proposed Start**[5]	**Fresh Energy Proposed Start**
IBR to Flat Phase 1	July 2021	July 2021
IBR to Flat Phase 2	July 2022	July 2022
TOD Phase 1	July 2022	July 2021 or as soon as practicable
TOD Phase 2	July 2023 or later	July 2022
TOD Phase 3	Oct 2024 or later	July 2022
TOD Phase 4	2025-27 or later	2023-25
Total timeframe	At least five-seven years	Three-five years

While rate transitions should be done deliberately, there are also costs to customers from waiting until the end of this decade for TOD rates. MP began implementing advanced metering infrastructure (AMI) in 2008 and has now transitioned 80% of its meters to AMI. TOD rates and other advanced rate designs are one of the larger drivers of customer benefits from AMI.

2. **The TOD rate structure should have a higher on-peak to super-off-peak price ratio to encourage behavior change, result in meaningful cost savings, and accurately reflect the costs of service.**

Minnesota Power selected peak, off-peak, and super-off-peak time periods well. A simpler peak structure with consistent periods year-round is significantly easier to communicate to customers and is likely to have more success in facilitating behavior change. The five-hour peak period is also short enough to enable relevant price signals and successful load shifting.

However, we strongly disagree with the company's preference for a price differential of 2:1 rather than 4:1 for peak to super-off-peak periods. As the Clean Energy Organizations recently discussed[6] in Docket 20-86 regarding Xcel Energy's proposed General Service Time of Use rate:

> Time of Use ("TOU") pilots around the country and across the world have demonstrated that TOU price ratios have significant implications for peak demand reductions. For example, a U.S. Department of Energy study examining 67 separate TOU pilot treatments around the country found peak demand reductions tended to be larger when customers faced a larger on-peak to off-peak price ratio: the average peak reduction was just 6 percent when customers faced a price ratio of less than 2:1, and the

[5] These dates are taken from Section VI of MP's Petition (pages 24-37)
[6] Clean Energy Organizations, Reply Comments, January 13, 2021, Docket No. E-002/M-20-86, p. 12

> average peak reduction was 18 percent when the price ratio greater than 4:1.[7] In other words, on average peak demand reduction was **three times larger** when customers saw a stronger price signal. The Brattle Group, which maintains a database of over 350 time-varying pricing treatments across 23 states and 8 foreign countries, has made similar findings.[8]

MP does not dispute that higher ratios between peak periods are best practice. In fact, the Company states, "Price differentials between peak periods induce customer load shifting…a higher price differential will lead to greater load shifting."[9]

MP prefers the rate design with a 2:1 ratio because it "introduces less risk as the Company and its customers work through significant transitions over the next several years" and "shows the lowest range of bill increases among customers who are not eligible for the low-income, usage qualified discount and are also not naturally benefiting from the move away from IBR to a flat rate structure."[10] MP appears to prefer the 2:1 ratio because causes less bill impact if customers do not shift usage in response to TOD price signals.[11] However, the entire purpose of TOD rates is to encourage shifts in usage. A rate with a weaker price signal appears to impact bills less (assuming no shifts in usage), but it also provides little system benefit.

MP considered two rate designs with higher ratios (4:1 and 5:1) which use the same periods as MP's preferred rate ("Updated 2019 Option 2" with a 2:1 ratio) but assign costs differently among the periods. MP states that the only methodology difference between "Updated 2019 Option 2" and the 4:1 Alternative is the "allocation of demand revenue; the 4:1 attributes no demand/capacity revenue to the super-off-peak period, while the "Updated 2019 Option 2" does."[12] Given that super-off-peak hours have significantly lower demand and are significantly lower cost to serve,[13] allocating demand revenue to these hours may not be necessary. Indeed, *not* assigning demand revenue to these periods appears to result in a pricing ratio that is likely

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[7] U.S. Department of Energy, "Final Report on Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies," November 2016, at page 63.
[8] *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, December 2017, Pages 64-72 (Abstract: "With the rapid deployment of smart meters, utilities and regulators across the globe are considering the deployment of time-varying rates for residential customers. 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.")
[9] Minnesota Power, Petition for Approval of Changes to Minnesota Power's Residential Rate Design, December 1, 2020, Docket No. E015/M-20-850, p. 47
[10] *Id.*, p. 23
[11] *Id.*, p. 52
[12] *Ibid.*
[13] *Id.*, Attachment B, page 9: "Lowest cost periods (shaded red) mostly occur overnight and reflect the combination of low demand on Minnesota Power's systems, and low MISO market prices." The referenced periods shaded in red are 11pm-5am, the proposed super-off-peak period.

to yield more behavior change and greater reductions to peak demand – which benefits all MP customers.

3. **The proposed low-income usage-qualified discount is an important rate design element and should be preserved throughout the rate transition.**

Fresh Energy strongly supports MP's proposal to preserve a 30 percent discount for low-income low-usage customers in the transition to a TOD rate and expand eligibility for this rate program to non-LIHEAP customers. The discount is critical for minimizing bill increases for low-income low-usage customers currently benefitting from lower IBR pricing and advances important public policy goals. Most low-income Minnesotans do not receive LIHEAP benefits, so the ability to self-declare or use one's participation in other income-qualified programs to self-identify is important for ensuring that MP customers who need the discounted rate are able to access it.

Conclusion

Thank you for the opportunity to comment on this important matter and for your consideration of Fresh Energy's comments.

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REDLINE

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1. **The rate implementation plan Minnesota Power has proposed is overly long and complex and should be consolidated.**

Minnesota Power's proposed rate implementation plan includes two phases for the transition from current IBR structure to a flat rate (or "Flat") and four phases for the transition from the flat rate to a new TOD structure. The whole process is estimated to take place over five to seven years (2021 through 2027).[14] This timeline is quite long and will likely create unnecessary customer confusion.

a. An initial transition to a flat rate is unnecessary.

MP's plan includes initially transitioning all residential customers to a flat rate beginning in 2021. In stakeholder meetings, Fresh Energy opposed the flat rate phase for several reasons. First, undergoing two significant rate design transitions within a few years is likely to be more confusing for customers than a single transition process. Each transition will require significant communication to customers about the changing rate structure, potential bill impacts, and how customers can manage costs via changing their electricity consumption behavior. In the stakeholder process, Fresh Energy proposed transitioning directly from IBR to TOD rates by gradually phasing out the IBR cost differentials and beginning to use TOD periods with gradually increasing cost differentials between time periods. This would allow for clearer, more concise messaging and we believe would facilitate greater acceptance and satisfaction among customers.

Secondly, IBR encourages energy conservation and energy efficiency compared to flat rates because it charges lower rates to lower-usage customers. Given the conservation benefits of IBR and the electrification and system flexibility benefits of TOD, Fresh Energy does not see a reason to implement flat rates.

MP indicates that the transition to flat rates is non-negotiable[15] but does not offer a compelling reason for this position. The Company states the flat rate will "provide time to educate customers about energy behavior changes necessary for migrating to TOD,"[16] and is a "necessary change to accommodate future electrification efforts, simplify customer program offerings, and improve the customer experience."[17] However, the additional rate transition may in fact increase the work MP must do to educate customers, cause confusion, and diminish

[14] Minnesota Power, Petition for Approval of Changes to Minnesota Power's Residential Rate Design, December 1, 2020, Docket No. E015/M-20-850, p. 5

[15] *Id.*, p. 18: "Initially, the current IBR structure must be replaced with a transitional flat rate. Minnesota Power will not support a transition to TOD with an IBR structure still in place."

[16] *Id.*, p. 3

[17] *Id.*, p. 20

~~customer satisfaction. We also see no reason why customers could not remain on IBR until transitioning to TOD rates, or why those that opt out of TOD cannot remain on IBR.~~

~~Fresh Energy recommends the Commission reject MP's proposal to transition to flat rates before implementing TOD, and direct the company to begin the TOD transition within 60 days of the Order on this matter. As discussed further below, we also recommend that Phases 2 and 3 of the TOD roll-out be combined to further accelerate the process by one year.~~

~~b.~~ a. The proposed rate transition timeline is too long.

~~We continue to see the transition to flat rates as unnecessary, and potentially confusing for customers who will see three different rates over the course of a few years. Should the Commission agree that the transition to a flat rate before a TOD rate is appropriate for some customers, we offer the following recommendations for modifying the implementation timeline.~~

MP proposes to begin transitioning from IBR to Flat in July 2021, and to begin the TOD roll-out in July 2022 (or other date determined by the Commission). The Company's plan then envisions three additional Phases of the TOD roll-out from 2023-2027. We believe there are at least two relatively simple ways to accelerate this timeline without causing customer confusion or jeopardizing MP's ability to evaluate the rate implementation.

Phase 1 of the TOD roll out targets customers who opt-in and those with a new service agreement. We see no reason to first transition these customers to a flat rate. New customers can automatically be enrolled in TOD and provided educational materials about managing their usage, avoiding a near-term rate transition for customers who begin service after July 2021. Likewise, customers who seek out TOD rates are likely to prefer the option of moving directly to that structure and skipping the initial transition to a flat rate. Thus, ~~should the Commission approve MP's flat rate proposal,~~ we recommend that, to the extent practicable, Phase 1 of the TOD transition begin in July 2021, concurrent with Phase 1 of the IBR to Flat transition. This would accelerate the TOD transition by one year, so the start date for TOD Phases 2 through 5 should each move one year sooner.

Phase 2 of MP's proposed transition to TOD rates involves adding customers to the TOD rate through random sampling and expanded opt-in, and conducting formal analysis of "bill impacts, customer response load shifting), revenue impacts, and customer feedback."[18] Phase 3 is not well-defined and appears nearly identical to Phase 2 in function, intended learnings, and

[18] *Id.*, p. 30

the evaluation envisioned.[19] MP's description implies that it anticipates spending at least 30 months on Phases 2 and 3.[20] We recommend these phases be combined. This will simplify the process and enable the final phase of TOD transition to begin in the 2023-2025 timeframe.

Fresh Energy Proposed Implementation Timeline

Phase	**Minnesota Power Proposed Start**[21]	**Fresh Energy Proposed Start**[22]
IBR to Flat Phase 1	July 2021	~~N/A, or~~ July 2021
IBR to Flat Phase 2	July 2022	~~N/A, or~~ July 2022
TOD Phase 1	July 2022	July 2021 or as soon as practicable
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Total timeframe	At least five-seven years	Three-five years

While rate transitions should be done deliberately, there are also costs to customers from waiting until the end of this decade for TOD rates. MP began implementing advanced metering infrastructure (AMI) in 2008 and has now transitioned 80% of its meters to AMI. TOD rates and other advanced rate designs are one of the larger drivers of customer benefits from AMI.

2. The TOD rate structure should have a higher on-peak to super-off-peak price ratio to encourage behavior change, result in meaningful cost savings, and accurately reflect the costs of service.

Minnesota Power selected peak, off-peak, and super-off-peak time periods well. A simpler peak structure with consistent periods year-round is significantly easier to communicate to customers and is likely to have more success in facilitating behavior change. The five-hour peak period is also short enough to enable relevant price signals and successful load shifting.

However, we strongly disagree with the company's preference for a price differential of 2:1 rather than 4:1 for peak to super-off-peak periods. As the Clean Energy Organizations recently

[19] *Id.*, p. 32
[20] *Id.* p. 30-34 indicates that Phase 2 is expected to take "~15 (+) months" and that the end of Phase 3 is uncertain but may push the beginning of Phase 4 out to 2026 or 2027.
[21] These dates are taken from Section VI of MP's Petition (pages 24-37)
[22] ~~Fresh Energy's preference is to avoid the transition to flat rates. Start dates for IBR to Flat are included to illustrate our alternative preferred timeline, should the Commission approve a flat rate transition.~~

discussed[23] in Docket 20-86 regarding Xcel Energy's proposed General Service Time of Use rate:

> Time of Use ("TOU") pilots around the country and across the world have demonstrated that TOU price ratios have significant implications for peak demand reductions. For example, a U.S. Department of Energy study examining 67 separate TOU pilot treatments around the country found peak demand reductions tended to be larger when customers faced a larger on-peak to off-peak price ratio: the average peak reduction was just 6 percent when customers faced a price ratio of less than 2:1, and the average peak reduction was 18 percent when the price ratio greater than 4:1.[24] In other words, on average peak demand reduction was **three times larger** when customers saw a stronger price signal. The Brattle Group, which maintains a database of over 350 time-varying pricing treatments across 23 states and 8 foreign countries, has made similar findings.[25]

MP does not dispute that higher ratios between peak periods are best practice. In fact, the Company states, "Price differentials between peak periods induce customer load shifting…a higher price differential will lead to greater load shifting."[26]

MP prefers the rate design with a 2:1 ratio because it "introduces less risk as the Company and its customers work through significant transitions over the next several years" and "shows the lowest range of bill increases among customers who are not eligible for the low-income, usage qualified discount and are also not naturally benefiting from the move away from IBR to a flat rate structure."[27] MP appears to prefer the 2:1 ratio because causes less bill impact if customers do not shift usage in response to TOD price signals.[28] However, the entire purpose of TOD rates is to encourage shifts in usage. A rate with a weaker price signal appears to impact bills less (assuming no shifts in usage), but it also provides little system benefit.

MP considered two rate designs with higher ratios (4:1 and 5:1) which use the same periods as MP's preferred rate ("Updated 2019 Option 2" with a 2:1 ratio) but assign costs differently

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[24] U.S. Department of Energy, "Final Report on Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies," November 2016, at page 63.
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[26] Minnesota Power, Petition for Approval of Changes to Minnesota Power's Residential Rate Design, December 1, 2020, Docket No. E015/M-20-850, p. 47
[27] *Id.*, p. 23
[28] *Id.*, p. 52

among the periods. MP states that the only methodology difference between "Updated 2019 Option 2" and the 4:1 Alternative is the "allocation of demand revenue; the 4:1 attributes no demand/capacity revenue to the super-off-peak period, while the "Updated 2019 Option 2" does."[29] Given that super-off-peak hours have significantly lower demand and are significantly lower cost to serve,[30] allocating demand revenue to these hours may not be necessary. Indeed, *not* assigning demand revenue to these periods appears to result in a pricing ratio that is likely to yield more behavior change and greater reductions to peak demand – which benefits all MP customers.

3. **The proposed low-income usage-qualified discount is an important rate design element and should be preserved throughout the rate transition.**

Fresh Energy strongly supports MP's proposal to preserve a 30 percent discount for low-income low-usage customers in the transition to a TOD rate and expand eligibility for this rate program to non-LIHEAP customers. The discount is critical for minimizing bill increases for low-income low-usage customers currently benefitting from lower IBR pricing and advances important public policy goals. Most low-income Minnesotans do not receive LIHEAP benefits, so the ability to self-declare or use one's participation in other income-qualified programs to self-identify is important for ensuring that MP customers who need the discounted rate are able to access it.

Conclusion

Thank you for the opportunity to comment on this important matter and for your consideration of Fresh Energy's comments.

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